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Enhancing Land Use Planning in Kuala Lumpur Through the Interaction of Formal and Informal Spatial Representations

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PhD in Architecture

The University of Edinburgh

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Declaration page

This should be inserted at the front of the thesis

"I hereby declare that I am the sole author of this thesis; that the following thesis is entirely my own work; and no part of this thesis has been submitted for another degree or qualification".

Signed ……………………………………………………………………………….

ACKNOWLEDGEMENT

Abstract

Enhancing Land Use Planning in Kuala Lumpur Through the Interaction of Formal and Informal Spatial Representations

The Southeast Asian region, as any other regions in the world, has experienced significant impact of globalisation for the past few decades. This development scenario is evident in Southeast Asian mega cities such as Singapore, Kuala Lumpur, Jakarta, Bangkok and Manila. Kuala Lumpur in particular has developed into a center of economic growth activities for its Klang Valley and the country. The development of Kuala Lumpur has the pattern of a definite concentration of physical and economic activities in the center with ribbon development happening along the major arterials leading into the city. Development control is very important for Kuala Lumpur Metropolitan, especially in the Commercial Central Area. The existence of a good formal spatial representation such as land use map will enhance the development process in Kuala Lumpur.

The thesis focuses on the land use planning process and development in Kuala Lumpur. The aim is to improve land use planning in Kuala Lumpur and the image and identity of Kuala Lumpur through the interaction between formal and informal spatial representations. Thus, the first step is to study the existing formal spatial representation implemented in Kuala Lumpur City Hall. The scope and limitation of the GIS system and its customised SKP application is investigated to identify the potential of enhancing its database.

The thesis also looks into the informal spatial representation in Kuala Lumpur. Kampung Baru and Jalan TAR shopping district were identified as the appropriate cases study in investigating the land use planning related issues, informal spatial representation available and public perception in relation to land use planning. The investigation was carried out through observation and random interview using survey questionnaire. Findings from the investigations in Kuala Lumpur City Hall and the two case study areas are compiled to form the basis of integration of the formal and informal spatial representations. Recommendations are then put forward for the possibility of integrating both types of spatial representation in one database.

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ABBREVIATIONS

DFP   Dewan Filharmonik Petronas
DUP   Department of Urban Planning
FDTP   Federal Department of Town Planning
KLCC   Kuala Lumpur City Centre
KLCH   Kuala Lumpur City Hall
KLSP   Kuala Lumpur Structure Plan
MATIC   Malaysia Tourism Centre
MPD   Master Plan Department
NPP   National Physical Plan
PPGIS   Public Participatory Geographic Information System
PWTC   Putra World Trade Centre
SKP   Sistem Kawalan Pembangunan (Development Control System)
TAR   Tuanku Abdul Rahman

CHAPTER 1: RESEARCH BACKGROUND, MOTIVATIONS AND RATIONALE

1.1   INTRODUCTION

> Looking at cities can give a special pleasure, however common the sight might be. At every instant, there is more than the eyes can see, more than the ear can hear, a setting or a view waiting to be explored. Nothing is experienced by itself, but always in relation to its surroundings, the sequence of events leading up to it, the memory of past experience. Every citizen has had long associations with some part of his city, and his image is soaked in memory and meanings (Lynch, 1960: 1).

> The goal of rendering legible the complex, dynamic and living entity that is a city remains an urgent one. But today's acute awareness that cartographic images can never be innocent vehicles of information dissolves neat distinctions between celebratory and regulatory urban maps. Urban space and cartographic space remain inseparable; as each is transformed, their relationship alters (Cosgrove, 2006: 157).

The two quotations above describe the complexity of a city's surroundings and spaces. A good platform to understand a city's image and spaces is through the eyes of its local authority. Therefore, when an invitation to attend a meeting (as an observer) to finalise the Development Control System for the Planning Department of Dewan Bandaraya Kuala Lumpur (DBKL) was extended to me in March 2008, I took the opportunity to attend.

One of the main issues discussed then was incompatible land uses in Kuala Lumpur. It was highlighted in the meeting that one of the major concerns for Kuala Lumpur is the presence of large number of commercial activities and industries located in residential areas and commercial precincts as well as on unplanned industrial sites and government land which did not conform to the Kuala Lumpur Land Use Map. Everyone present

agreed that these activities created nuisance to adjoining land and residential neighbourhoods, unsightly physical environment of commercial centres and uncontrolled discharges of effluents into drainage system. The Director of Planning Department stressed the importance of having an effective development control system to properly regulate the activities in order to realise the city's vision for 'a world class urban environment' (DBKL, 2008). However, the meeting could not come to an agreement on a set of standard procedures to be implemented by all the departments in Kuala Lumpur City Hall. As the result, land use conformity to the Land Use Map remained a significant issue to be resolved.

An opportunity to explore the Kampung Baru area in Kuala Lumpur city centre a few days after the meeting at Kuala Lumpur City Hall revealed the problem. With a copy of the formal land use map in hand as the guide, it was discovered that the activities and land uses on actual site contradicted that on the map. On the land use map obtained from the City Hall, Kampung Baru is zoned as residential area. Kampung Baru is an urban village with the Malay Reservation Area (MRA)[1] legal restriction attached to it (DBKL, 2004). According to the Kuala Lumpur Structure Plan 2020, the MRAs were 'originally conceived and planned as traditional villages comprising individual dwelling units with associated lands sufficient to provide agricultural smallholdings'.

However during the site visit, I came across numerous business units, workshops and restaurants in the area. Kampung Baru on site is not the same as it is on the map. Various questions came to mind then. How did this happen? Do they have planning permission? How can this scenario be changed? Is there any existing mechanism in dealing with this issue? How can the land use map be updated effectively? How can the public contribute to the updating?

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[1] Article 89(6) of the Malaysia Federal Constitution 1957 defines "Malay Reservation" as land reserved for alienation to Malays or to natives of the State in which it lies.

These questions set up the motivation for the study, that is, to identify possible measure(s) for the interaction of the formal land use maps and informal observations of the actual setting of the city. Therefore, it is important to probe further into the issue and to look at it from both perspectives (formal and informal representations) in order to find some answers to the above questions. This research will be beneficial in complementing an existing formal spatial representation and improving its viability. It will also provide a channel for a better informed decision making.

1.2   RESEARCH BACKGROUND

1.2.1 Research Significance

In the local scene, the weakening of identity is frequently cited as one of the urban design issues concerning the city of Kuala Lumpur (DBKL, 2004). According to the Kuala Lumpur Structure Plan 2020 (DBKL, 2004) report, commodification of places and the increasing power of global economy dictated the local economic environment, setting and image in most situations. This is reflected in the homogeneity of buildings' scales and appearances and the losing of buildings and spaces of traditional and cultural values (DBKL, 2004). It is argued that this can be resulted in 'the decrease in the legibility and sustainability of local place identity' (DBKL, 2004). Based on the above, a research on legibility and how it can be exploited to improve site planning will give significant contribution to solving the above design issue.

The term "legibility" was first used in design context by urban designer Kevin Lynch in his analysis of North American cityscapes in the post-war period. He argued then on the importance 'to see the hidden forms in the vast sprawl of our cities' (Lynch, 1960: 12), which meant giving attention to the legibility of the cityscape. Lynch also pointed out that urban legibility relates closely to the question of orientation. He explained further that for a tourist, it may simply mean finding one's way, but for a migrant, it may be

central to how one comes to feel at home. The capacity to 'read' the city affects how one performs and acts in the city, and ultimately feels accommodated by, and empowered within, urban space and society (Lynch, 1960). Kevin Lynch's concept of legibility is used to operationalise the landscape image. Lynch (1960: 2-3) defines the legibility of the cityscape as "the ease with which its parts can be recognised and can be organised into a coherent pattern", reflecting his concern with the architectural or built environment.

According to Lynch, a city is considered legible under these three conditions: the interaction between the landscape and its inhabitants has created a mental schema in which places, buildings and landscape elements are easily identified; there is a relative ordered and coherent structure; and its inhabitants have a functional sense of place. A legible landscape can help an individual interpret information and guide action; give him/her an important sense of emotional security; heighten the potential depth and intensity of human experience; and play a social role by furnishing the raw material for the symbols and collective memories of group communications (Lynch, 1960). In studying the question of legibility in the city, this research assumes that this urban condition has something to say about Kuala Lumpur, and other cities in Southeast Asia.

On the other hand, the word 'ort' (site) originally meant, in the German language, the pointed end of a lance and suggests a gathering together (Abraham, 1982: 6). Abraham (1982: 7) suggests that 'the conquest of the site, the transformation of its topographical nature, manifests the ontological roots of architecture'. In more recent literatures, the word site refers to 'the bounded piece of property on which a particular project is to be undertaken' (Marcuse, 2005: 249); and to 'the ground chosen for something and to the location of some set of activities or practices' (Burns and Kahn, 2005: viii).

Kahn (2005) discusses site in a smaller scope; in an urban scope and setting. According to Kahn (2005), a site is defined as an urban site based on either geographical milieu, where the site refers to a limited area within an urban area or to the entire urban area, or

physical size, where the site is presumed to be larger than an architectural site and smaller than a regional one. In the same literature, she stresses that an urban site is dynamic rather than static, porous rather than contained. She then relates site to its representation, stating that 'site representations propose working hypotheses for comprehending and testing working definitions of urban sites' (Kahn, 2005: 288); and 'site representation produce different artefacts, but each artefact instantiates a similar dialogic and creative performance' (Kahn, 2005: 289). Deleuze (1988: 97) sees representation as 'an experiment in contact with the real'. In other words, it can be said that site representations build the platforms for putting forward the knowledge and information about the sites that are being studied.

Moving on to site planning, it is defined as 'the art of arranging structures on the land and shaping the spaces between, an art linked to architecture, engineering, landscape architecture, and city planning' (Lynch and Hack, 1984: 1). Lynch and Hack (1984) point out that site planning is an integral part of land use process; a process to guide the development of land in relation to natural resources and human requirements. They argue that in overall planning process, site planning comes in after strategic planning has taken place and the land use has been decided.

Burns (1996) describe site as a product of nature and influenced by culture. She explains that a site is human's work of art and that it remains flexible to changes. These descriptions of the complexity and versatility of site is described by Burns in her article '*On Site: Architectural Preoccupations*' as

> …. a product of culture, it is by nature, not a finished or closed product. It is an artefact of human work that can neither be completed or abandoned. …. The site, like the human condition, is open (Burns, 1996: 165)

Still, more often than not, a site is taken as a straightforward entity contained by boundaries that delimit it from the surroundings (Burns and Kahn, 2005). Burns and

Kahn (2005) argue that each specialised area of physical design, namely architecture, landscape architecture, urban design and urban planning, nevertheless interprets the location of its activities and practices plainly and completely through its own normative approaches. They give urban planning as an example, considering that it is a field that has concerns beyond the purely physical, tends to interpret location more broadly, incorporating social, economic, and political concerns. Taking on this cue, Kuala Lumpur is chosen to be the site for this research and as an exemplar to the other Southeast Asian cities.

Undertaking a research on Kuala Lumpur from the above perspectives has a number of significances. First, the Kuala Lumpur urban landscape itself deserves sustained academic attention as it is emerging as an important metropolitan in the Southeast Asian region. As I will show below, Kuala Lumpur has yet to receive enough attention from academic researchers studying on spatial representation and legibility in relation to site planning in urban areas. Researchers studying on Kuala Lumpur in the 1990s were focusing on completely different scopes of study such as urban geology (Tan and Komoo, 1990) and squatter settlements (Yaakup, 1994). In contrast, most of the academic literatures on Kuala Lumpur after the year 2000 such as Morshidi (2000), Bunnell and Barter (2002) and Bunnell (2004), focus on the wider scope of globalisation in relation to its physical and economic growth. Perhaps, the study on the use of Geographical Information System (GIS) in the planning and management of Klang Valley development (Yaakup et. al., 2004) is closer to this research. However, Yaakup et. al. (2004) focuses only on the development of GIS, whereas this research looks into the interaction between the formal spatial representation (local authority's GIS) and the less formal representation (public's perception) while taking the perspective of legibility into the equation.

Second, there has been, to date, little work on the ways in which visual media and representational systems impact upon the design, planning and management of extended metropolitan regions (Cairns and Reitsma, 2006). As highlighted by Cosgrove (2006), in

the past and at present, urban forms are explained using maps and plans but the precise relations between these images and the built form of cities are seldom being critically explored. Cairns and Reitsma (2006) point the fact that while architectural, urban and landscape theory have usefully theorized the 'agency' of different visual media, it rarely draws on empirical material from outside the west. They explain that the existing geography, planning and Southeast Asian studies have not engaged substantively with the innovative work on representation conducted in these design-oriented disciplines. These situations explain the reason why most work in GIS remains its focus on the technology and taking 'the community' as an uncomplicated and unproblematic set even though the technology itself has productively extended the boundaries of public participation planning. In contrast, this research aims to examine the fluid socio-spatial configurations of the community.

Third, the proposed outputs of this research will represent significant innovations in their own right, as they will 'exploit the qualitative potentials of advanced information technologies by putting them in touch with new modes of urban representation' (Cairns and Reitsma, 2006: 3). In addition, this research will address inter-linked academic audiences in architecture, urban and landscape design theory, urban theory, urban geography, cultural studies, and postcolonial studies, and qualitative GIS research. The research will contribute to improving our understanding of emerging forms of settlement, develop better appreciations of popular forms of creativity and world-making, and will offer new modes of design practice informed by, what historian of cartography J. B. Harley has called, a 'cartographic ethics' (Harley, 1989: 155).

Moreover, most of the existing literature suggests that most empirical examples in published materials are drawn from European and American cities. However, there is no evidence to confirm that the same constitutive elements of the image of the city can be found in or relevant to cities in developing countries (Karan and Bladen, 1982; Del Rio, 1992). A relevant methodological implication of this study is that an understanding of the image of the city by employing techniques from cultural and humanistic geography

can provide a more fruitful and insightful area for future research. Thus, this research has the potential to contribute to (theoretical and policy) debates (from the above points of view) about Kuala Lumpur urban landscape and Southeast Asian cities, and to link these debates to wider discussions on landscape urbanism.

1.2.2 Goal and Objectives

Based on the earlier discussed motivations and rationales, this research sets out to examine the hypotheses that formal and informal understandings of the city must interact in order to improve land use planning and management of a city; and that they have different representations, with different forms of 'legibilities'. While the formal representation has a tendency of being uniform and stable, the informal representation is variable and differs according to individual perception and past experiences. This research looks into how these two different representations, formal and informal, could interact with each other. In order to examine the interaction, the idea of 'site planning' will be explored and two cases study will be presented to support the idea. Thus, the aim of this research is to investigate how formal (local authority) and less formal (individuals, citizen groups) views interact, with the view to exploring better responsiveness of one to the other, as a way of contributing to improved urban planning system in Kuala Lumpur. This research focuses on the specific issue of 'site planning' as one key point within the wider planning system.

With respect to the goal of testing the hypothesis, this research is approached in six steps.

Step 1:   Explore international discussions on urban legibility and landscape urbanism; as well as spatial representation, mapping and GIS.

Step 2:   Elaborate these debates in relation to the specific urban landscapes emerging in Southeast Asia.

Step 3:   Investigate and document the representational scope and limitations of official planning maps, specifically GIS spatial planning tools which had been developed for the city of Kuala Lumpur.

Step 4:   Explore the urban form and land use using less formal urban representations of Kuala Lumpur which circulate in the community circles as tools.

Step 5:   Investigate cultures of legibility in the city of Kuala Lumpur as perceived by the public.

Step 6:   Examine the capacities of these cultures of legibility to inform and extend the representational conventions and media used in urban planning and design generally.

1.3   KUALA LUMPUR AS THE SITE OF ANALYSIS

When Prime Minister Tunku Abdul Rahman Putra Al-Haj proclaimed *Merdeka* (Freedom, Independence) for the new nation of Malaya in the Merdeka Stadium on the morning of 31 August 1957, Kuala Lumpur was a modest, up-country mining and administrative town. Having been the centre for the preceding British colonial administration, it had some fine buildings but was still a small town by the standards of most other modern capitals. KL, as its denizens more fondly know it, had yet to emerge from the shadow of Singapore, or indeed even of Penang. More than fifty years on now, the transformation and achievement overwhelm (Ross, 2008).

Although historically a Chinese town, Kuala Lumpur today is culturally hybrid. The spaces and fabric of the city have matured and transformed from a rather dilapidated mining town to a diverse, multicultural and multi-community metropolis (DBKL, 2008). As Ross (2008: xxv) describes, 'while spatial segregations still exist in the city, Kuala Lumpur at its best presents a plethora of places where mixing of the races and even of

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the social classes can and does occur'. Therefore, it is only appropriate to take Kuala Lumpur (Figure1.1) as the site of analysis for this research.

Figure 1.1: Kuala Lumpur in the Southeast Asian Region (adapted from DBKL 2004)

1.3.1 Kuala Lumpur in General

Kuala Lumpur, often abbreviated as KL, is the capital city and the largest city of Malaysia in terms of population. In 2005, Kuala Lumpur's population was 1.6 million and it is projected to be 2.2 million by the year 2020 (DBKL, 2008). Kuala Lumpur is defined within the borders of the Federal Territory of Kuala Lumpur and is one of three Malaysian Federal Territories. It is an enclave within the state of Selangor, on the central west coast of Peninsular Malaysia. The geography of Kuala Lumpur is characterized by a huge valley, known as the Klang Valley, bordered by the Titiwangsa Mountains in the east, several minor ranges in the north and the south and the Malacca Straits in the west. The name Kuala Lumpur literally means *muddy confluence*; Kuala Lumpur is located at

the confluence of the Klang and Gombak Rivers, facing the Malacca Straits (Figure 1.2 and 1.3) (DBKL, 2008).

Located in the centre of Selangor State (Figure 1.7), Kuala Lumpur was previously under Selangor State Government. In 1974, Kuala Lumpur was separated from Selangor and was given the status of a Federal Territory to form today's Kuala Lumpur under the administration of Malaysian Federal Government (Forbes, 1996). Its location on the West Coast of the Peninsula of Malaysia, which has wider flat land than the East Coast, has contributed to its faster development relative to other cities in Malaysia. The city is currently 243.65 km² (94.07 sq mi) wide, with an average elevation of 21.95 m (72 ft) (DBKL, 2004).
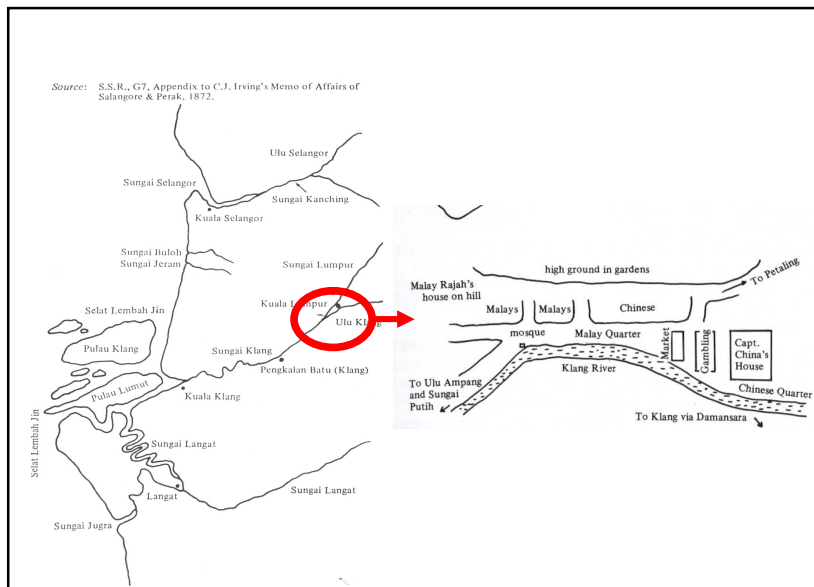
Figure1.2: The earliest settlement in Kuala Lumpur at the confluence of Gombak River and Klang River. (*Source: KLCH, 2008*)

Figure 1.3: Kuala Lumpur at the confluence of Gombak River and Klang River in the 1870s (photo courtesy of KLCH 2008)

Like most cities in the developing world, Kuala Lumpur has grown at a phenomenal rate (Figure 1.4 and 1.5) driven primarily by the need to create wealth. As Malaysia moves toward a developed status, Kuala Lumpur has experienced rapid development (Figure 1.6 and 1.8) which has left a city that is, in many respects, disjointed and lacking in visual and physical coherence (DBKL, 2004). Consequently there has been a decrease in the legibility of the city structure together with a certain loss of historical variety and sense of identity (DBKL, 2008). Some peculiarities of the expansion of Kuala Lumpur include the way in which rural villages have been incorporated in the city. As cities expand, they normally swallow up rural villages and small towns in their pathway. In the case of Kuala Lumpur, the Malaysian land code guarantees certain areas as Malay reservations which cannot be transferred to non-Malays. However, the land law has encouraged the persistence of rather depressed and crowded enclaves within the city (Forbes, 1996). This scenario supports the need to have an extensive system to control the spatial development of the urban and sub-urban areas of Kuala Lumpur.

PETALING STREET

SULTAN ABU SAMAD BUILDING

MALAYSIAN RAILWAY STATION

KUALA LUMPUR

PETALING STREET

SULTAN ABU SAMAD BUILDING

MALAYSIAN RAILWAY STATION
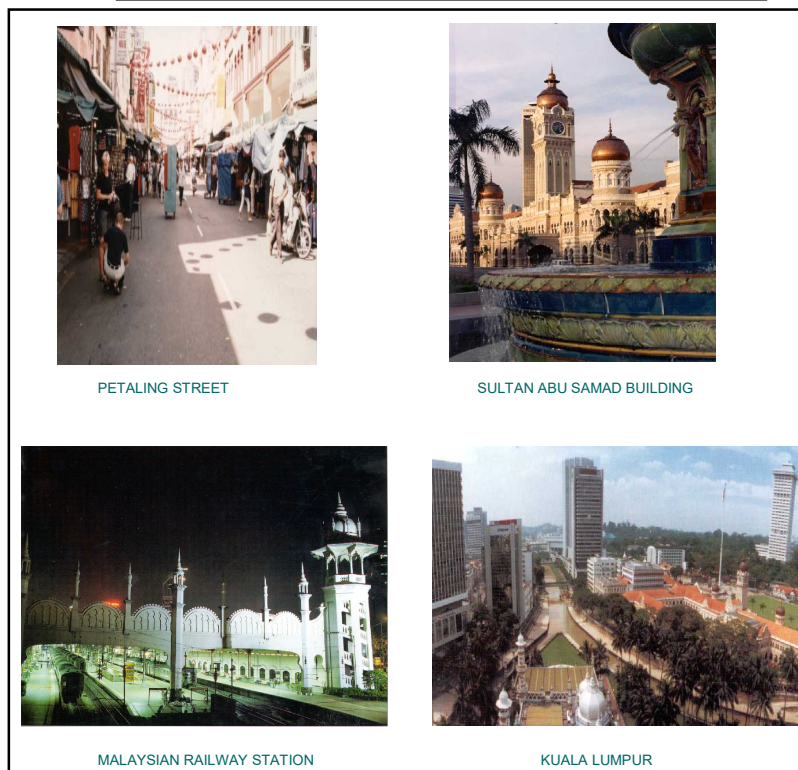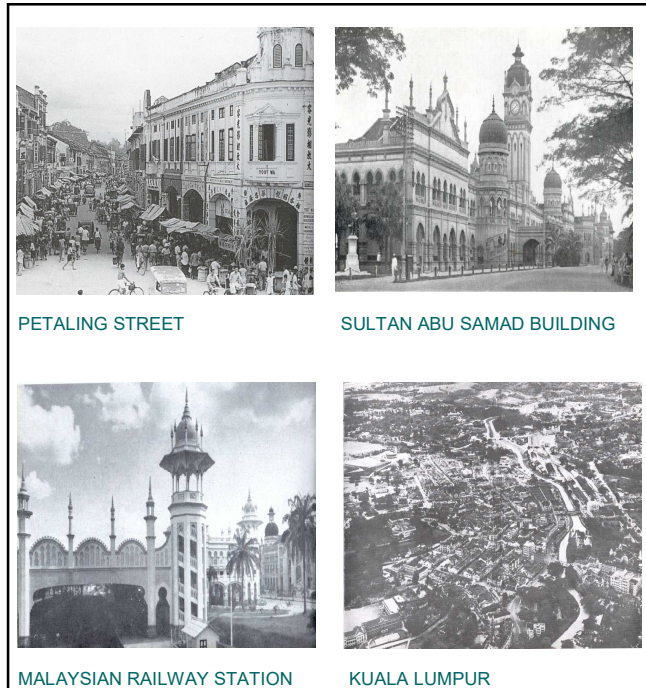
KUALA LUMPUR

Figure 1.4 (top) and 1.5 (bottom): Images of Kuala Lumpur in its early days (top) and today (bottom) show significant changes to the city. (photos courtesy of KLCH, 2008)

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Figure 1.6: Images of landmark skyscrapers as symbols of strong economic growth in Kuala Lumpur (photos courtesy of KLCH 2008)
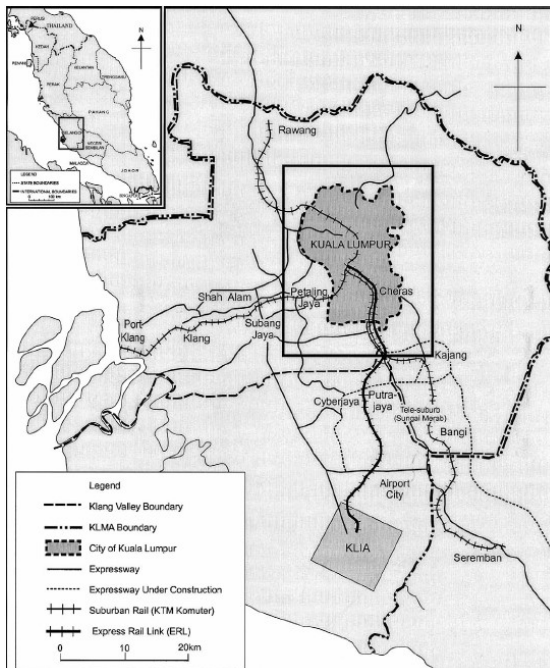
Figure 1.7: Location of Kuala Lumpur in Peninsular Malaysia (Bunnell, 2002)

Figure 1.8: Kuala Lumpur, the capital and largest city of Malaysia (*Source: KLCH, 2008*)

The term of reference for Kuala Lumpur's sub-national context is the Kuala Lumpur and its conurbation (KLC) (Figure 1.9). The KLC refers to the entire Klang Valley Region as originally defined by the Klang Valley Study (1972) together with much of the Kuala Langat district and the remaining part of the Sepang district where the KLIA is located (Figure 1.10) (DBKL, 2008). The KLC is one large urban entity which incorporates the complete range of urban functions. However, it is important to distinguish between Kuala Lumpur, which is an administrative unit and the much larger KLC which represents the total urban entity within which Kuala Lumpur is located and functions in many ways as the nucleus of the KLC.
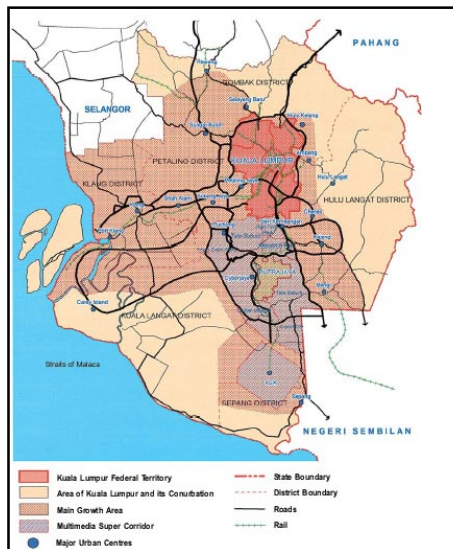
Figure 1.9: Kuala Lumpur and its conurbation (Kuala Lumpur Structure Plan 2020)

Figure 1.10: Kuala Lumpur in KL Conurbation context (Kuala Lumpur City Plan 2020)

The other urban centres in the Klang Valley Region, notably Petaling Jaya, Shah Alam and Subang Jaya (Figure 1.11), have grown at a rate that far outstrips that of the City. There has been strong in-migration to the KLC outside Kuala Lumpur from all over the country and net out-migration from Kuala Lumpur into residential areas located outside the City. In the year 2000, the population of Kuala Lumpur was approximately 1.42 million compared to 4.30 million for the whole of the KLC (DBKL, 2004).
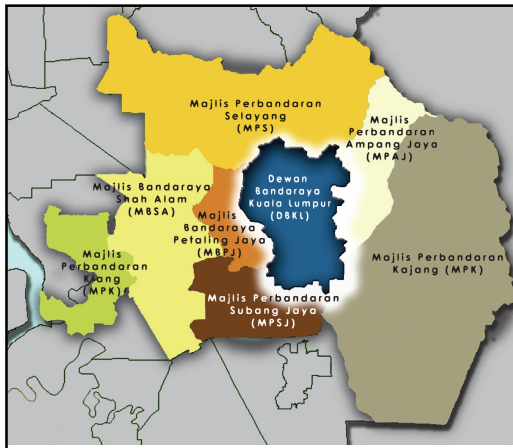
Figure 1.11: Kuala Lumpur and the surrounding municipalities (Kuala Lumpur City Plan 2020)

For the purpose of the research, the site of analysis covers only the Kuala Lumpur city centre (Figure 1.12 and 1.13). The city centre is dominated by office-block architecture interspersed with occasional colonial, Islamic and some traditional structures. However, the organic growth of Kuala Lumpur and particularly the recent rapid growth and scattering of new urban development within the City Centre has resulted in a city, which has no planned formal large-scale visual structures (DBKL, 2008). This situation makes it a suitable choice for the analysis.
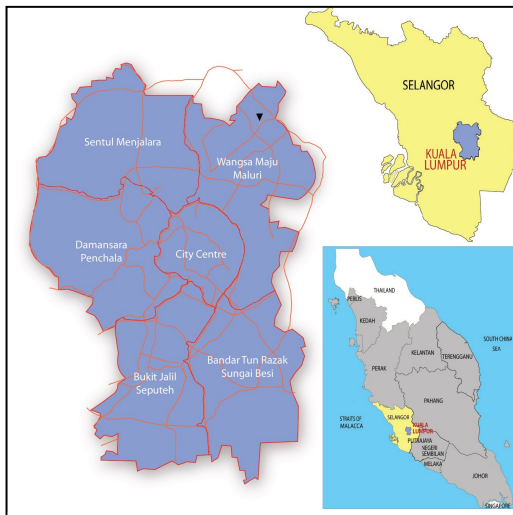
Figure 1.12: Kuala Lumpur city centre boundary within Kuala Lumpur City Hall administrative area (Kuala Lumpur City Plan 2020)
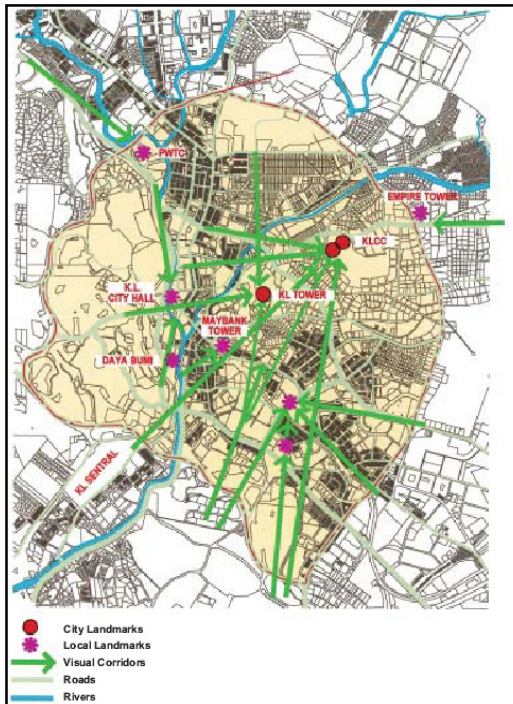
Figure 1.13: Kuala Lumpur city centre with its landmarks (Kuala Lumpur Structure Plan 2020)

1.3.2 Kuala Lumpur City Image and Identity

Kuala Lumpur is a city of different races and cultures. Therefore, it has to define its image and identity to ensure that its heritage is conserved and new developments within the city reflect greater awareness towards urban design excellence (DBKL, 2008). From a mining town in the 1860s to a vibrant developing city today, Kuala Lumpur has acquired its image and identity from the British colonization period. The 19th century buildings in the city were influenced by the Islamic heritage of Mughal and pre-World War II shop houses have distinctive Chinese influence (Ross, 2008). Today, its economic growth has changed the skyline of the city and brings the challenge of how to manage its urban development, retain its cultural vibrancy and make Kuala Lumpur liveable and attractive (DBKL, 2008).

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The ethnic and cultural composition of a city determines its character as much as, if not more than, its physical manifestations, and should therefore form urban design considerations. Kuala Lumpur's vibrant multi-ethnic and multi-cultural society will provide the stimulus to guide urban design initiatives to create a distinct and unique city identity, which will enable people to identify more closely with the City and each other. This in return will foster a sense of community and social harmony. Kuala Lumpur City Hall aims to create a city which is highly legible and comprehensible to its users to enable more effective use of its facilities and a fuller appreciation of its visual and other environmental qualities (DBKL, 2004). The Kuala Lumpur Structure Plan 2020 aims to establish the highest quality living, working and business environment for Kuala Lumpur. In order to achieve this aim, the Kuala Lumpur City Hall is geared to ensure that the infrastructure, environment, city management and cultural, social and community facilities meet the highest expectations of the majority of its residents, workers, visitors and investors (DBKL, 2004).

In recent years, a few important structures, notably the Petronas Twin Towers and KL Tower, have been added which have significantly altered the character of Kuala Lumpur's skyline (DBKL, 2008). The linear nature of the old city and its small-scale grid patterns has created some smaller view corridors and axes. The road system has been developed in a piecemeal fashion and therefore, linkages between major and minor roads lack clarity in movement pattern (DBKL, 2004). Similarly, piecemeal development has adversely affected the quality of streetscapes (Figure 1.14), that is the overall character and continuity of streets as represented by pavements, building frontages, street lighting and other forms of street furniture.

Figure 1.14: Piecemeal development has negatively affected the quality of streetscapes in Kuala Lumpur city centre

There are some issues relating to legibility and pedestrian movement that is being highlighted in the Kuala Lumpur Structure Plan 2020. Among others is the lack of legible pedestrian patterns which results in a lack of clarity in the movement pattern (DBKL, 2004). Furthermore, some other issues such as lack of definition of identity areas and major new infrastructure which is not sensitively integrated with the overall urban pattern have also being highlighted in the report. The Kuala Lumpur Structure Plan 2020 has also identified some significant issues relating to land use such as commercial growth outside the designated growth areas, dilapidated industrial areas and underdevelopment of Malay Reservation Areas and traditional villages. In dealing with these issues and establishing a world-class city, a comprehensive approach to urban planning and management is crucial.

In response to these findings of Kuala Lumpur Structure Plan 2020, Kuala Lumpur City Plan 2020 as the local plan for the city has detailed out some plans to solve the issues. Among the aims significant to this research are to 'create a city which is highly legible and comprehensible to its users; create an environment which is functional and liveable, safe, clean, aesthetically pleasing and user friendly; and create a city that is highly accessible for all its occupants and users' (DBKL, 2008: 9.9).

In line with the above strategies of the Kuala Lumpur City Plan 2020, this research is focusing on the public's and the local authority's forms of spatial representation and the integration of both in seeking some answers to a better site planning practice for the city of Kuala Lumpur.

1.4   THESIS STRUCTURE

The thesis has seven chapters and is divided into three sections. Section A is on the general framework and includes Chapters 1-4. Section B puts in the picture of the existing situation in Kuala Lumpur and covers Chapters 5 and 6. Section C is on critical reflections and the way forward which comprises of Chapters 7. The structure of the thesis is set up to meet the sequence of the research approach. The specific ordering of the chapters in the thesis, a synopsis of their content and the link between their content and the objectives is provided below.

Chapter 1 presents the general framework and background of the research. It highlights the existing issues which motivate the research, and the importance and significances of the research supported by relevant literatures. This is followed by research hypotheses and objectives. The chapter is ended by looking into Kuala Lumpur as the site of analysis. Some background information on Kuala Lumpur is presented and urban design and site planning concerns are highlighted.

Chapter 2 gives detailed explanation on the methodology used to carry out the research. In order to give the best flow of explanation, the methodology is discussed based on data levels i.e. Level 1 is on formal urban representation, Level 2 is on informal urban representation, and Level 3 is on finding a common ground for the interaction of both types of representation.

Chapter 3 focuses on critical theories of cartography, mapping and urban representations. On urban representation, the discussion is centred upon urban legibility and city image. Discussion on cartography and mapping looks into the technologies, mapping as a tool and Geographical Information System (GIS). Literatures on GIS in public participation are also discussed with the aim to identify the scope and platform for formal and informal urban representations to interact.

In order to conclude Section A, Chapter 4 discusses on urban studies, cartography and mapping in the Southeast Asian region. The chapter sketches the landscape urbanism paradigm and practices in the region. First, the chapter discusses on the existing Southeast Asian urban studies. This sub-chapter looks at urban forms and patterns in Southeast Asian cities, concepts and theories applicable to the region, and its urban representation practices. Next, it moves on to cartography and mapping practices in Southeast Asia and how it relates to representation practices.

In Section B, Chapter 5 aims to discuss on the formal spatial representation of Kuala Lumpur, its planning system and GIS. The chapter starts with the discussion on development control and GIS applications in Malaysia. Then it focuses on the GIS application in Kuala Lumpur City Hall. The scope and limitations of the existing system is further discussed to identify the platform for interaction with the informal representation. Chapter 6 discusses on cases study i.e. Kampung Baru and Jalan Tuanku Abdul Rahman (Jalan TAR)/Masjid India. It takes readers travelling through the two areas to experience their urban form and land use. This chapter also includes the analysis of data from questionnaire survey in Kampung Baru and Jalan TAR/Masjid India.

The last section of the thesis i.e. Section C, is concerned with the critical reflections on the findings and the way forward for future research. Therefore, Chapter 7 is designed to discuss on the possible settings for interaction between the formal and the informal spatial representations in Kuala Lumpur. In this chapter, discussion returns to the

questions set out earlier on the capacities of the cultures of legibility in Kuala Lumpur to inform and extend the representational conventions; and the media used in urban planning and design generally. At the end of the chapter, the overall conclusion on the way forward is presented.

1.5   CHAPTER SUMMARY

This research is first motivated by the issue of incompatible land uses in Kuala Lumpur. It then developed into a more focused interest on the formal representation implemented by Kuala Lumpur City Hall and the less informal representation practised by the public. Thinking again on the incompatible land uses issue, the research steers towards finding possible ways to integrate both forms of representation to assist site planning in Kuala Lumpur and create a platform for a better informed decision making. It is hoped that the findings will also be a model for site planning in other Southeast Asian cities.

CHAPTER 2: RESEARCH METHODOLOGY

2 .1 INTRODUCTION

This chapter discusses the methodology of the research. Divided into six sections, it covers the research strategy, research design, research stages, method of data collection, validity and reliability issues, and ethical issues. Justifications for the selection of research strategy, research design and methods used in data collection will be discussed in each section.

2.2 RESEARCH STRATEGY

The study is premised on a qualitative research paradigm and its inherent deductions. The choice of a qualitative research paradigm is based on the ontological, epistemological and methodological assumptions of the study phenomenon. Firstly, ontology, which concerns itself with the nature of reality, is seen as subjective and multiple in the eyes of the participants in the study. The process and issue of the role and implementation of a formal spatial representation in development control in Malaysia is more likely to be better understood from a qualitative ontological viewpoint because of a multiplicity of factors such as socio-cultural, economics, politics and the local context. Therefore, a critical realist perspective of the ontological position will be adopted in this research.

Critical realism is a philosophy of science with a particularly ontological perspective (Lawson, 2006: 45). It entails a structured notion of reality with related overlapping domains: real (mechanism), actual (events) and empirical (experience). Critical realism also promotes active acknowledgement of the structured, open and dynamic nature of the object or phenomenon under examination regarding important causal dimensions

that may or may not be directly observed or recorded. Realism not only acknowledges the existence of socially constructed experiences (multiple meanings and actor's interpretations), but also physical and non-physical conditions, actual events and influential social relations. Meanwhile, Social Constructionism claims access to the material world is mediated through language and discourse (Jacobs et. al., 2004: 3). The research will focus on understanding the spatial representation system and development process in Malaysia according to various key players' interpretations from a critical realist perspective.

Secondly, epistemology is understood to be the source and nature of knowledge. The key question regards the relationship of the researcher to that of the researched. In the qualitative paradigm, the researcher interacts with the research subjects. This is in contrast to the quantitative paradigm assumption, where the researcher is viewed as being independent of that being researched, which implies non-interaction. The qualitative approach is advantageous in the context of this study because it facilitates the gaining of deeper insights from the researcher's immersion in the processes, thus illuminating the research issue rather than adopting an aloof stance that brings a greater understanding of the research phenomenon.

Finally, there is the issue of methodological assumptions. Qualitative research is an inductive rather than a deductive process. As explained by Cresswell (1994: 5), one issue is the cause-effect relationship and the desire to prove causality in the quantitative paradigm against 'a mutual simultaneous shaping of factors' in the qualitative paradigm. Although the research looks at the effect of the relationship between various agents in low cost housing allocation, it will be impossible to prove a cause and effect relationship between the two aspects. Thus, a triangulation of evidence drawn from multiple sources may indicate how the factors affect one another. The qualitative paradigm also allows for the possibility of an evolving design in terms of categorisation of data during the research process. In quantitative research, data categorisation is conducted beforehand,

with minimal scope for flexibility with regard to the emergence of new data categories during the collection process.

2.3   RESEARCH DESIGN

The study is based on the use of multiple methods in the context of a case study design. The selection of a case study design was made based on several reasons. Firstly, the case study is a powerful empirical research method that provides the opportunity to investigate an actual context (Bryman, 2001: 49). As a research strategy, the case study method allows researchers to retain the holistic and meaningful characteristics of real life events such as the individual's life cycle, organisational and managerial processes (Yin, 2003: 2). Thus, in the context of this research, the Geographical Information System (GIS) for development control in Kuala Lumpur City Hall or better known as SKP is selected as a case study to analyse the role of the local authority in land use allocation process and development control in Malaysia.

Secondly, case study design is suitable for individual researchers as it gives an opportunity for in-depth study of one aspect of a problem within a limited time scale (Yin, 2003: 2). Since the study was conducted within a limited time period and required the involvement of various people from local government and the general public, only one local authority in Malaysia was selected to investigate the role of the local authority in land use allocation process and development control in Malaysia. Thirdly, case studies are preferable when it comes to focussing on contemporary phenomena within a real-life situation where the researcher has little control over events (Yin, 2003). In this study, the researcher obviously has no control over events related to the implementation of SKP.

Finally, there is the ability of the case study to draw evidence from multiple sources (Hakim, 1987). This is facilitated by the use of a variety of data collection techniques

and methods, thus making the case study potentially overlap with other research strategies which offers their combined and complementary strengths and allows the investigation to retain a more holistic and meaningful approach to real life situations (Hakim, 1987; Yin, 2003). To achieve a more holistic and meaningful approach to the role of local government and the public in GIS implementation, the study combines several data collection methods which include documentary analysis, qualitative interviews and focus group discussion.

There are four types of case study; these comprise the critical case, unique case, revelatory case and exemplifying case, which is important when addressing the issue of external validity (see Yin, 2003; Bryman, 2001). In the critical case study, the researcher usually has a specific hypothesis and a case is chosen on the grounds that it will allow a better understanding of the circumstances (Bryman, 2001: 51). The unique case is commonly used in clinical studies. The revelatory case exists when the researcher has an opportunity to observe and analyse a phenomenon previously inaccessible to scientific investigation (Yin, 2003: 44). Meanwhile, the exemplifying case is the most common type and is 'often chosen not because they are extreme or unusual in some way but because they will provide a suitable context for certain research questions to be answered. As such they allow the researcher to examine key social processes' (Bryman, 2001: 51). In this research, the SKP provides a suitable context to understand the land use allocation process in development control in Malaysia and answer the research questions.

One rationale for a single case is the representative or typical case (Yin, 2003: 41). The objective is to capture the circumstances and conditions of an everyday or commonplace situation. SKP can be categorised as a typical case of a land use allocation process and development control system implemented by the local government in Malaysia. If an independent low cost housing allocation system in a particular state in Malaysia was chosen for the case study, the outcome would be more likely to discuss the operation of

the system rather than a larger contribution towards the theory of the role of the state and market in housing provision.

Meanwhile, in terms of the research question or the choice of data collection strategies, Yin (2003: 5) observes that 'in general, case studies are the preferred strategy when "how" or "why" questions are posed...', but in general the design is appropriate for a whole range of familiar research questions which includes "who", "what", "where", "how" and "why".

However, the case study strategy has also been criticised on various grounds. The main concern is that case studies provide an insufficient basis for scientific generalisation (Bryman, 2001: 52). However, the exponents of case study research suggest that the purpose of this research design is not to generalise to other cases or to populations beyond the case. Yin (1984: 10) also provides an explanation on this issue; he distinguishes between analytic and statistical generalisability. He points out that, in fact, scientific facts are seldom based on single experiments, but rather on multiple experiments which replicate the same phenomenon under different conditions. Therefore, like experiments, the generalisation of a case study is intended for theoretical propositions rather than for populations.

Secondly, the opponents of case study strategy suggest that when using this method the researcher often tends to become sloppy and allow anecdotal evidence or biased views to influence the direction of the findings and conclusions. However, the critics forget that bias can also encroach into the conduct of experiments, as well as into the design of the questionnaire in the case of social surveys. Finally, a common objection is that case studies take too long to complete and often result in enormous unreadable documents. Yin (2003: 11) explains that there is no need for case studies to take a long time, as this assumption incorrectly confuses the case study method with a specific method of data collection such as ethnography.

2.4   RESEARCH METHODS AND STAGES OF DATA COLLECTION

This research employs a case study method eliciting data which includes a questionnaire survey and an interview. A case study approach has been selected in order to obtain the depth of study required to investigate the complex and interrelated processes underlying the use of GIS at the Department of Urban Planning (DUP) in Kuala Lumpur City Hall (KLCH). The DUP of the KLCH had been chosen on the basis of statutory responsibilities, active involvement with the development of GIS in the development control and the support and willingness given to facilitate the study.

A case study approach was employed as one of the stages of collecting data. It provides the most appropriate basis for exploring the complex processes influencing the utilisation of information technology in organisations (Khalfan, 2004). This approach refers to an in-depth study or investigation of a contemporary phenomenon using multiple sources of evidence within its real-life context (Khalfan, 2004; Yin, 1994). A case study approach is the most appropriate approach for exploratory and explanatory research since it is able to capture a greater depth and breadth of detail on the subject's activity. It helps to construct validity which will be established by triangulation, chain of evidence and formal review by the interviewees for verification. It has been suggested by researchers within the GIS community that a case study approach is appropriate for researching a range of GIS implementation, utilisation, and diffusion issues (Budic and Godschalk, 1993; Onsrud et. al., 1992; Onsrud et. al., 1993). The issues include identifying the forms of decision-making which have utilised GIS, identifying factors and processes leading to rejections of previously embraced GIS, and identifying organisational and societal consequences of GIS.

The research process for this study can be divided into three stages as outlined in Figure 2.1. The data collection for each stage was conducted in sequence during the fieldwork which was carried out between February and May 2008. Each stage seeks to facilitate a

different set of steps which were listed in Chapter 1. This chapter explains the methodology for each stage in detail.

2.4.1. Stage 1: The Formal Spatial Representation

The first stage is to facilitate Step 3 which is to investigate and document the representational scope and limitations of official planning maps, specifically GIS spatial planning tools which was developed for the city of Kuala Lumpur. Therefore, this involves investigation and documentation of the representational scope and limitations of official planning maps. This study focuses on specifically the Geographical Information System (GIS) application that is being used in Kuala Lumpur. There are two main authorities which has the custody over the formal GIS spatial representation covering the area of Kuala Lumpur, namely The Ministry of Federal Territory and Kuala Lumpur City Hall (KLCH). The Ministry of Federal Territory is an authority at federal level, whose administrative area covers Kuala Lumpur and Putrajaya. KLCH on the other hand, is a local authority responsible for the administration for the city of Kuala Lumpur only. However, since the study area will only cover Kuala Lumpur city centre, this first level of study focuses only on the formal GIS spatial representation adopted by KLCH. This approach is taken based on the assumption that the scope and limitation of GIS spatial representation in KLCH represent that of the Ministry of Federal Territory. The investigation started with a few visits to KLCH in February 2008 to study both the broad system package Development Control System (SKP) for KLCH and the custom-designed Interactive Maps Application for the Planning Department. The broader package Development Control System was studied in general to understand the workflows of the seven sub-systems. Emphasis then was given to the Information Kiosk sub-system where detail study was carried out on the Interactive Maps Application. The scope and limitations of this application are presented in Chapter 5.

STAGE 1
Formal spatial representation
- official GIS spatial planning tool in KLCH
- scope and limitations

GIS

SCOPE

LIMITATIONS

KLCH

STAGE 2
Informal spatial representation
- digital photo image capture
- informal maps i.e. street directories, tourist maps
- identify characteristics of the informal representations
- possible integration with the formal representation

STREET DIRECTORIES,
TOURIST MAPS, ETC

DIGITAL IMAGES

CHARACTERISTICS

POSSIBLE
INTEGRATION

INTEGRATION

STAGE 3
Public perception of urban image
- questionnaire survey
- public legibility perception
- assessment of potential integration with Level 1 and Level 2

PERCEPTION OF
LEGIBILITY

Masjid India/Jln TAR

SURVEY AREA
KLCC   Kg Baru

IMAGE CAPTURE &
RANDOM INTERVIEW

POTENTIAL
INTEGRATION

Figure 2.1: Stages of study (Author's illustration)

The list of data sets available in the application was identified to support the assumption of the absence of qualitative data sets (i.e video and photo images) which form the study foundation for Stage 2. The availability of data sets in the application is discussed in Chapter 5. During the visits, some informal interviews were carried out with two Planning Officers. One officer was from the Planning Department and in charged of the SKP, while the other was from the Master Plan Department and in charged of the updating of land use map. These interviews helped to further enhance the understanding of the procedures and workflows in the application, as well as to gain insights on the land use updating in KLCH.

2.4.2. Stage 2: The Informal Spatial Representation

The second stage is to facilitate Step 4, that is, to explore the urban form and land use using less formal urban representations of Kuala Lumpur which circulate in the community circles as tools. Investigation at this level was carried out in Kampung Baru and Jalan TAR/Masjid India. At this level, the informal urban representation is explored by travelling around the areas to experience its urban form and surrounding land use. This investigative study was carried out by referring to planning maps, informal maps and street directories for guidance and direction. Digital photo data capture was done on foot and also while travelling on various forms of private and public transport along the streets within the designated area.

An example of such informal representation is shown in Figure 2.2. The characteristics of these informal spatial representations (i.e. scale, format) were studied in the view to examine possibilities of integration with the formal representation studied in the first level. Some of these materials later on were also used to guide way finding in data collection at Stage 3.

Figure 2.2: An example of a street directory in Kuala Lumpur (*Source: Malaysia Tourism Centre*)

2.4.3. Stage 3: The public perception of urban image and legibility

The third stage of study is to facilitate Step 5 which is to investigate cultures of legibility in the city of Kuala Lumpur as perceived by the public. It involves field work, where questionnaire survey and interviews were carried out on the ground. This stage is important as real space is tightly coupled with time in people's conceptualisations. Urban landscape perception examples go back at least to the work of Kevin Lynch (1960).

It is almost impossible for a single researcher to carry out fieldwork in a big city like Kuala Lumpur. Therefore, other methods must be used which take into account the vast size and complexity of the build-up area. For this study, a sample street method (Cross and Daniel, 1968) was adopted. This method involves selecting a series of streets in different sections of the city. In this study,

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two areas/streets were chosen to represent different sections and activities in Kuala Lumpur. They are Jalan Tuanku Abdul Rahman (Jalan TAR)/Masjid India (retail commercial area), and Kampung Baru (residential/urban village).

The activities were carried out on streets within these selected areas as shown in Figure 2.3. This area was identified as the appropriate area for the study because it represents the main land use zones in Kuala Lumpur. Table 2.1 gives the summary of data collection for each stage.

After data collection was completed, the possibilities to integrate these data with the existing formal GIS spatial representation of Kuala Lumpur were assessed and its potentials in complementing the existing formal GIS application in use will be determined.
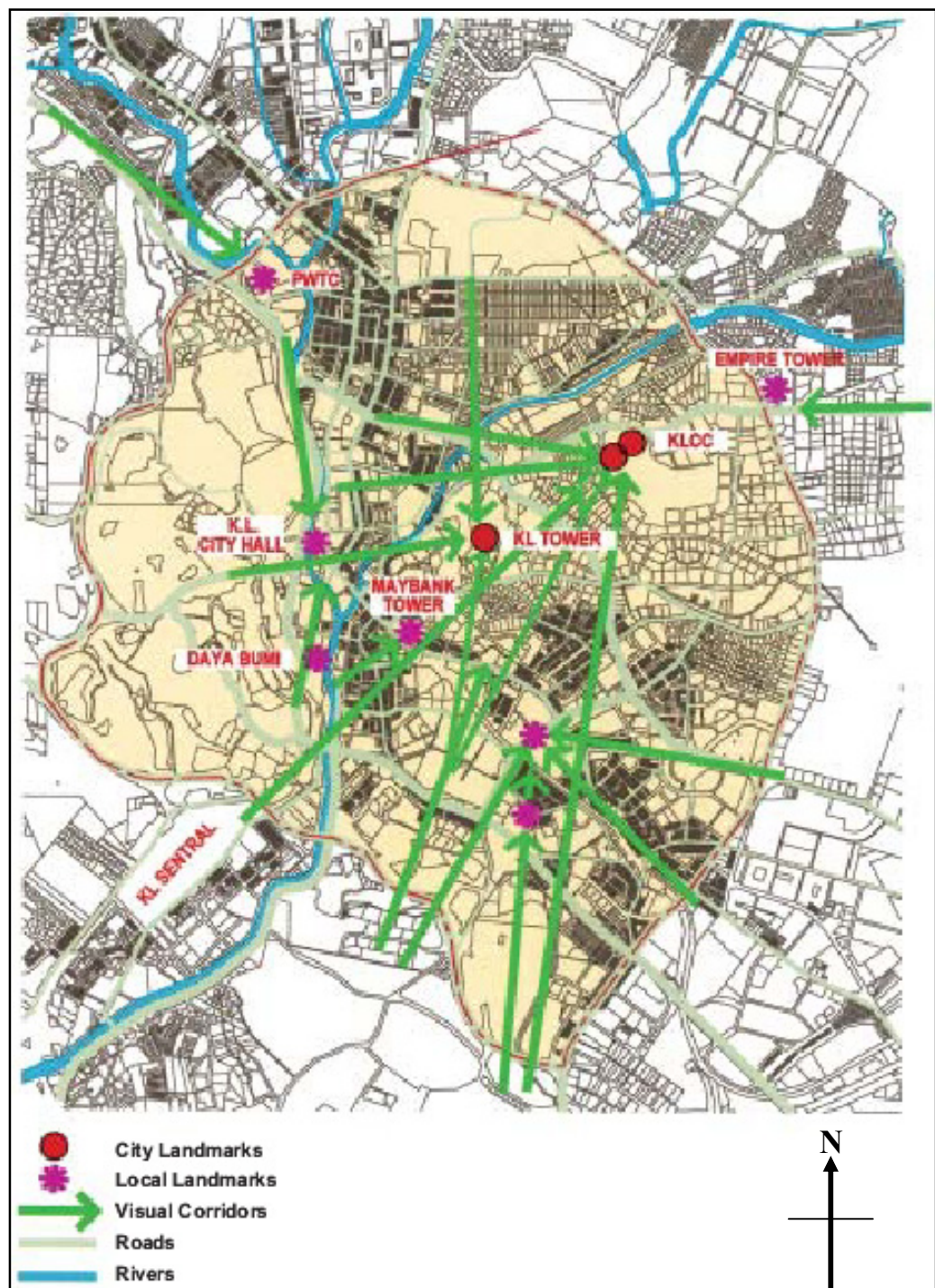
Figure 2.3: The study area (Source: Kuala Lumpur Structure Plan 2020)

Data	Source	Analysis	Result
1. Stage 1 Formal spatial representation i.e. GIS spatial representation of Kuala Lumpur - existing system (workflow, database, etc.) - manual/report	Kuala Lumpur City Hall	1. System evaluation 2. Content analysis 3. Interview	1. Identification of representational scope and limitation of the existing system. 2. Documentation of the above scope and limitation
2. Stage 2 Informal spatial experience - Visual images of urban landmarks and landuses	By travelling around the city on foot, public transport and private vehicle. Photo capture	Reporting the experience	1. Landuse updates 2. Legibility perception 3. Method(s) of integration with data from Stage 1.
3. Stage 3 Perception of urban legibility - Public opinion	Questionnaire survey, public interview.	1. Two cases study are identified in the city centre as the survey area for photo capture and questionnaire survey. 2. Assessment of possible integration with data from Stage 1 & 2.	1. Integration with data from Stage 1 & 2.

Table 2.1: Summary of Research Stages and Data Collection (*Source: Author*)

2.5   METHOD OF ANALYSIS

A combination of both qualitative and quantitative methods of data analysis gives a comprehensive explanation of the gathered information. The data collected from the survey were analysed by statistical analysis and content analysis. The quantitative data which were measured in numbers were analysed using descriptive and inferential statistics. The interview data were analysed using content analysis.

a) Descriptive Analysis

The types of data used in descriptive analysis are nominal, ordinal and categorical. Discrete data presented are individually by listing the attributes of each case and are presented in raw numbers or percentage analysis. Continuous data, such as age, race, educational background, discipline, position/job title and years of experience, are grouped together in order to allow the data to be presented in a more manageable form. This type of data is presented in the form of summary averages or measure of central tendency which includes mode, mean and median. In this study, the data sets obtained from the interview and questionnaire survey were transcribed and then analysed using the Statistical Package for Social Sciences (SPSS) software. The results are presented in the form of tables, pie charts and histograms in order to support and provide more insight into the issues discussed.

b) Content Analysis

In this study, content analysis technique was used to analyse the data/information from SKP reports and manuals. Content analysis has become a research tool used by social scientists in making inferences. It has been defined as a systematic, replicable technique for compressing many words of texts into fewer content categories based on explicit rules of coding (Krippendorff, 1980). Neuendorf (2002) defines content analysis as summarising quantitative analysis of messages that relies on scientific methods (including attention to objectivity-intersubjectivity, a priori design, reliability, validity, generalisability, replicability, and hypothesis testing) and is not limited to the types of variables that may be measured or the context in which the messages are created or

presented. The process of content analysis involves simultaneously the coding of raw data and the construction of categories that capture relevant characteristics of the document's contents (Tahir, 2005).

2.6   VALIDITY AND RELIABILITY ISSUES

The concepts of reliability and validity are often used either closely or interchangeably (Neuman, 1997: 145). However validity is the most prominent or widely used of the two. It has been argued that reliability is necessary for validity and it is also easier to achieve than validity (Neuman, 1997: 45). Although reliability is necessary to achieve the valid measurement of a concept or construct, it does not guarantee validity. In other words, reliability is a necessary, but not sufficient, condition of the achievement of validity, since a measure can produce the same result many times (i.e. be reliable), but without necessarily matching the definition of the construct (i.e. be valid). It is apparent that there are problems in defining the concepts of validity and reliability. There is also a lack of one agreed definition of validity and it has been argued that the concept has been overused and confused with related ideas, according to Neuman (1997: 145). There are several definitions of validity in quantitative research, in which validity relates to description and explanation. It is about whether the explanation fits or fails to fit the description (Janesick, 2000). Validity is concerned with the credibility of explanation. There is not a single way, no one "correct" interpretation of an event or issue.

In fact, construct validity is always a major issue highlighted by people who criticise the case study design. They point out '...the fact that a case study researcher fails to develop a sufficiently operational set of measures and that "subjective" judgement are used to collect the data' (Yin, 2003: 35). However, Yin suggests, in order to meet the test of construct validity, a researcher must cover two steps. Firstly, they must select the specific types of changes that are to be studied and, secondly, must demonstrate that the selected measures of these changes do indeed reflect the specific types of change that have been

selected. Thus, in the context of this study, the changes in the spatial representations are studied and the measurement used is the public's legibility perceptions.

The second issue is related to external validity in order to know whether a study's findings are generalisable beyond the immediate case study. The problem of external validity has been a major barrier to conducting case studies (Yin, 2003: 37). However, Yin explains that generalisation is not automatic and a theory must be tested by replicating the findings in other areas. Once such direct replications have been made, the result might be accepted as providing support for the theory. Thus, a similar study on formal and informal spatial representations in other Local Authorities in Malaysia can also be carried out based on the result of this research.

In terms of the reliability of case study design, the objective is to ensure later researchers can follow the same procedures as described by an earlier researcher and conduct the same case study all over again (Yin, 2003: 37). The goal is to minimise the errors and biases in a study. Yin also suggests that the researcher should follow case study protocol to maintain reliability. This is because, in the past, case study research procedures have been poorly documented, making external reviewers suspicious of the reliability of the case study (Yin, 2003: 38). The general way to solve the issue is to make as many steps as possible operational so others can check their reliability. Every piece of information and procedure necessary to conduct this research has been well documented for the reference of future researchers.

2.8   ETHICAL ISSUES

Ethical practice is an important consideration in the conduct of social research. Ethics have been defined as what is or not legitimate or right to do, or what a "morally correct" research procedure should entail (Neuman, 1997: 443). In some instances, a researcher may resort to short-cuts which culminate in unethical practice because they may be under some form of pressure such as time. According to Swetham (1997: 16), the achievement

of ethical research practice is based on several elements; for example, no harm should be inflicted on participants in a research project, either physically, mentally or socially. Secondly, care should be taken not to exploit vulnerable groups. Thirdly, no physical or environmental damage should caused by a research project. Fourthly, participants in a research project should, wherever possible, be fully informed of the nature of the work and should give their consent rather than being forced or hoodwinked into participation. Fifthly, anonymity, confidentiality and privacy, where requested, should be guaranteed and honoured. Finally, researchers have a duty to ensure that they do not bring their own institutions of affiliations into disrepute.

According to Bulmer (2001), ethics is a matter of principled sensitivity to the rights of others. From an ethical point of view, respect for human dignity is more important than the observation of the truth. Those ethical considerations influence all scientific research and, when the research is designed, the ethical implications should be treated as a key issue. During social science research, a study needs to be ethically sound. The possible ethical issues within this study have been dealt with, as have concerns over how the names of respondents are used, how the data will be published, how the anonymity of individual respondents will be preserved, and how the confidentiality of the final data will be safeguarded.

Yates (2004: 160) raises seven issues of concern in ethics, namely gaining access to participants: what is your route in? Secondly, getting past the "gatekeepers": who controls access? Those people may control or have power within the research context you are proposing to explore. The third issue is informed consent: how much do you tell the participants? How much do you tell the participants about the research project? In many cases researchers do not wish to overly inform participants in case this knowledge will impact on how they respond in an interview. The fourth issue is deception: are there grounds for deceiving the participants? In nearly all cases the answer to this question is "no" on principled moral and ethical grounds.

The fifth issue is right to privacy: how private are the things being discussed? To what extent do the participants wish to be identified as the individuals involved in the research? This is followed by the sixth issue, the right to withdraw: how do participants get out of research? Finally, self-presentation: how do you present yourself in the interview/research context? Ethical research therefore requires a concerted effort to strike a balance between the value of advancing knowledge against the value of maintaining non-intrusion or non-interference in the lives of other people affected by research (Neuman, 1997: 445).

Permission from the relevant authority in Malaysia was obtained prior to fieldwork from the Director of Planning Department of Kuala Lumpur City Hall. Since some information related to SKP was classified as confidential, the specific individual records or the latest data from the SKP database could not be released. Permission was also granted to access selected planning officials for in-depth interviews. However, in Malaysia it is not required to gain permission from the government to perform public perception survey.

2.8   CHAPTER SUMMARY

This chapter has discussed the methodology of the research. The choice of the qualitative research paradigm was influenced by the objective of the research to seek an understanding of the relationship between the formal and informal spatial representations. The issues of validity and reliability were also addressed in this research to ensure it follows the usual case study protocol as suggested by Yin (2003). Prior approval from related bodies on research ethics and in order to access sensitive materials was also obtained before the fieldwork was conducted in Malaysia.

CHAPTER 3: CRITICAL THEORIES ON CARTOGRAPHY, MAPPING AND URBAN REPRESENTATION

3.1   INTRODUCTION

Maps are fundamental to the process whereby any city is to be discovered, explored, or conquered. They can also take us on imaginary voyages or provide the means to chart geographical transformations, demographic changes, and historical development. Furthermore, city maps help to define contemporary developments in visual modes that expanded methods of representation and cartography.

Most urban forms are illustrated with maps and plans but the precise relations between these images and the built form of cities is rarely being critically explored (Cosgrove, 2006: 148). Against this background, this paper will discuss the various literatures on urban planning and design, and landscape theory; Southeast Asian studies; and GIS science, public participatory GIS and geospatial hypermedia.

Mapping, if applied efficiently, can lay a strong foundation for good governance of cities. A map is a scientific instrument and artistic representation of city space and life. It can be used to create and record a city.   The use of maps as a means in the reconstruction and expansion of a city is known for 'virtually every great city – Paris, Rome, Vienna, Amsterdam, Jerusalem' (Cosgrove, 2006: 148). A map is also an instrument of urban policy, where it is used to sustain the physical and social coherence of a city and, in the case of metropolitan cities, to control their growth. A map's capability to regulate and coordinate a city can precede the physical presence of the city itself.

Theoretically, scientific cartography should create highly rational, coherent spaces in cities. However, in most cases, 'cities are among the least legible places on earth' (Cosgrove, 2006: 149). The problem of legibility is made clear by the constant presence of the high volume of written language in the form of, among others, street signs and billboards in the public spaces of contemporary cities. The term "legibility" was first used by urban designer Kevin Lynch in his analysis of North American cityscapes in the post-war period. He argued on the importance 'to see the hidden forms in the vast sprawl of our cities' (Lynch, 1960: 6), which meant giving attention to the legibility of the cityscape.

The problem of legibility in contemporary urbanism however does not reduce the importance of the map's role in urban place making and experience. The fact that 'urban space and cartographic space are inseparable' cannot be argued (Cosgrove, 2006: 148). The feeling of being lost when walking in an unfamiliar city is often resolved by the use of various maps available, such as, of transit routes, of streets and of tourist destinations. One important aspect to look into is the possibilities to integrate these informal maps into the formal urban representation by the use of GIS technology.

GIS technology plays an effective role in the presentation and analysing of planning information. Spatial representation is critical to environmental problem solving. The attribute data related to the problems or issues to be addressed need to be translated into spatial manifestation to ease the process of analysis and decision making. Basically, information is utilised to perform two sets of task. Firstly, information has a role in the process of deciding what action to take, including both operational and strategic decision making and secondly, how activities are organized in terms of managerial control.

Reliable information is therefore needed at the management level to facilitate administrative procedures, policy planning and implementation as well as development strategy. It is a necessity for forecasting, modelling and evaluation of current situation and changes that are in progress. The quality of urban planning and management can be

upgraded when available and valid data are handled in an advanced manner with the aid of computers having the ability to retrieve information rapidly and efficiently, to model different scenarios and to evaluate alternative solutions generated by various modelling procedures.

3.2   URBAN REPRESENTATION

The first theoretical framework is that work in planning, urban design and landscape theory which highlight on strategies and approaches of qualitative modes of representation, avoiding the quantitative and instrumental modes of representation. A range of distinguishing elements can be identified in these work such as anthropologically inspired interest in pre-modern spaces and vernacular forms, reactivation of the unconscious as motor of urban experience, and typo-morphological concern for the formal permanences of the city fabric. Each element was developed using new, innovative representational styles such as de-layering techniques, hybridized figure-ground drawings, adapted choreography and musical notations, and collage (Cairns and Reitsma, 2006). This general work has created a considerable amount of interest and motivation for other researchers to carry out further work on urbanism such as recombinant urbanism (Shane, 2005) and sprawltown (Ingersoll, 2006). This material later intersects with the idea of landscape urbanism, an attempt to develop new design strategies that draw on landscape ecology and performative, temporal analyses of everyday life, supported by new styles of digital mapping and diagramming (Corner, 2002).

Several attempts have been made to develop theory and method directly concerned with the relation between the society and its architectural and urban forms. In architecture, space is a central theoretical concern. We are able to recognise society through the ways in which buildings, individually and collectively, create and order space (Hillier and Hanson, 1988). Either in the past or at present, maps and plans are used to illustrate

urban form but critical explorations on the precise relations between these images and the built form of cities are rarely found (Cosgrove, 2002). Unfortunately, only a small amount of this now rich intellectual work has addressed the rapidly extending metropolitan regions in Southeast Asia.

3.2.1 Urban Legibility

This research is also theoretically linked to two much researched on traditions: the image of the city and urban landscape studies. In conceptual terms, urban landscapes possess both tangible and intangible elements. Tangible elements are constituted by urban morphology and everyday events. Because they are expressed mainly in forms and patterns, these elements affiliate more closely with those elements discussed in Lynch's (1960) concept of legibility. On the other hand, landscape symbolism (Appleyard, 1979; Cosgrove and Daniels, 1988; Hull, Lam et al., 1994) and its spirit, known as genius loci (Norberg-Schulz, 1980), comprise the intangible elements of an urban landscape. They are largely humanistic and subjective; they are also often misunderstood by people from different socio-economic and cultural backgrounds. It appears that Lynch's (1960) legibility is concerned mainly with the tangible elements, whereas his concept of imageability addresses the intangible and symbolic elements of the urban landscape.

The term "legibility" was first used by urban designer Kevin Lynch in his analysis of North American cityscapes in the post-war period. He argued on the importance 'to see the hidden forms in the vast sprawl of our cities' (Lynch, 1960: 12), which meant giving attention to the legibility of the cityscape. Urban legibility relates closely to the question of orientation. For a tourist, it may simply mean finding one's way, for a migrant, it may be central to how one comes to feel at home. The capacity to 'read' the city affects how one performs and acts in the city, and ultimately feels accommodated by, and empowered within, urban space and society. In diagnosing the emerging cultures of legibility in the city of Kuala Lumpur, this research assumes that this urban condition has something to say about Kuala Lumpur, and other cities in Southeast Asia, but also to

wider international debates on urban landscapes, urban design and the representational technologies and languages of urban planners and managers.

Kevin Lynch's (1960) concept of legibility is used to operationalise the landscape image. Lynch (1960: 2-3) defines the legibility of the cityscape as 'the ease with which its parts can be recognised and can be organised into a coherent pattern', reflecting his concern with the architectural or built environment.

The character and totality of an urban landscape can be broken down into distinctive sets of constitutive elements. Landscape is thus not just 'everything', but a choice of interconnected elements within a totality (Kobayashi, 1989: 171). On the other hand, the perspective or recognition of individual beholders is equally important in understanding the image of the urban landscape. Such landscape imagery performs an existential role in guiding the dwellers. By looking into the human cognition of landscape, this theoretical framework is not only responding to the general upsurge of humanistic and perception studies in human geography (Tuan, 1975; Ley, 1985; Pocock, 1989; Bailly, 1993; Ira and Kollar, 1994), landscape design and planning (Berger, 1987; Downing, 1992; Hull, 1992; Purcell, 1992) and landscape aesthetics (Appleyard, 1981; Nasar, 1994); but also attending to the more recent issue of scientific cartography inability to capture the contemporary city (Cosgrove, 2006) .

3.2.2 Reconsidering the Image of the City

Several motives led Kevin Lynch to the study:
1. An interest in the possible connection between psychology and the urban environment.
2. Fascination with the aesthetics of the city landscape.
3. Persistent wonder about how to evaluate the city.

4. Hope of influencing planners to pay more attention to those who live in a place – to the actual human experience of a city and how it should affect city policy.

In this study Lynch tried to address the question of city orientation; how people actually found their way about the streets of cities. He concluded that people had relatively coherent and detailed mental image of their city, created in an interaction between self and place. This image was both essential to their actual function and important to their emotional well-being.

The study was carried out on the assumption that images are much modified by culture and familiarity. The principle aim of the study was to urge on designers the necessity of consulting those who live in a place they were designing. The perception of a city is a transaction between person and place, which varies with variations in each factor, but which has stables rules and strategies. Armed with a sense of those strategies and a set of analytical methods, a designer can help citizens to understand what they see and value and can thus help them to judge proposed changes.

However, he was criticised for using a very small and biased sample of 30 people. Variation was neglected when choosing the sample which could result in inaccurate and biased findings. Apart from that, the techniques that he used were inadequate to get a true mental image. The image which was drawn out was static and of a momentary pattern. The static view is mistaken not only as a matter of understanding, but also as a matter of value. The possibility remains that the image brought forth in an interview is not the same one that is used in actually operating in a city.

Criticism also came from designers who were afraid the methods would take over their creative skill. This will not happen because analysis can describe the present situation and its consequences, and even may predict the consequences of some altered arrangement, but cannot generate new possibilities. But, the most critical comment was

that the study focused on way finding and not on the basic principle of place quality. It set the meaning of places aside and dealt only with their identity and their structuring into larger wholes.

3.3 CARTOGRAPHY, MAPPING AND GIS

3.3.2 Cartography and Mapping

Renewed interest in maps and ways of mapping has been apparent across a range of cultural, intellectual and political spheres in recent years. Cartographic pictures and metaphors have become central to much critical and cultural endeavour and are being discussed, deployed and reinvented in numerous ways. Perhaps maps appeal to some because they seem to offer the reassurance in 'uncomfortable world' as a means of navigation, plotting routes and taming its unknown and bewildering complexities. Other appeals include the recognition that maps are difficult to make in 'splintered times' and the impossibility and undesirability of seeking a point from which the world can be represented, and from which the partiality of viewing practices erased. Important for this process has been the critical literature, developed in particular by J.B. Harley, Denis Wood and others, on the power and politics of maps and mapping. This has helped to undermine claims about the neutrality of scientific maps by addressing how maps work in practice and by placing cartography firmly within worldly struggles and conflicts between social interests.

Alongside theoretical moves, however, has been a flourishing of mapping practices themselves from a variety of perspectives including from within the creative arts, design, architecture, activism, community groups and grassroots initiatives. While much academic discussion has tended to portray maps as a discourse of the powerful, and mapping as an instrument of power and authority, these practices suggest the potential for other ways of conceiving them as more exploratory, experimental, playful, popular and even revolutionary activities. This has been particularly apparent in recent art

practice where, as Denis Cosgrove puts it, 'maps and mapping have proved astonishingly fertile material for artistic expression and intervention' (Cosgrove, 2006: 4).

3.3.1.1 Technologies of mapping

Awareness of the need for new ways of mapping spaces and places to respond to social, political and economic changes is fuelling cartographic imaginations and interest in maps and mapping among artists and designers. Technological changes in map making, reproduction and display is another reason. This is not only in deepening the extent to which social life is map immersed and hence, the extent to which maps are a significant part of the social world with which to engage, but also in increasing the availability of digital forms of map generation, design, manipulation and display.

Such technological changes are addressed by John Pickles in the final chapters of *A History of Spaces,* where he poses significant questions about 'the worlds that are being produced, in the digital transition of the third industrial revolution, the conception of history with which they work, and the forms of socio-political life to which they contribute' (Pickles, 2004: 146). A key concern of his book is, in general, to understand 'the ways in which mapping and the cartographic gaze have coded subjects and produced identities' (Pickles, 2004: 12). Drawing particularly on Harley and Wood to consider maps as social products and social actors, his approach revolves around the 'dreams' embedded in mapping enterprises, the 'magic' that enables them to transform worlds, and the 'performances' through which they shape understandings and produce effects. Pickles, also notes how maps and mapping 'precede the territories they "represent" as they inscribe boundaries, define spatial categories and construct forms that have material effects' (Pickles, 2004: 5).

Pickles also discusses on visualisation and the rendering of the "world-as-picture" (2004: 7), the historical intertwining of cartographic reason, economy and state in

processes of colonisation, dispossession and the production of abstract spaces, and the perpetual decoding and recoding of the world by maps and their associated interests in both past and present. A striking aspect of Pickles' approach is his emphasis on multiplicity, on tracing out different forms of mapping impulse and his insistence that cartographic imaginaries might be other than they seem. He situates development in digital mapping and geographical information systems within transformation of capitalism and the emergence of new 'cyber-empires' (Pickles, 2004: 149-153), and in relation to techniques of war, surveillance and security.

Since *A History of Spaces*, increasingly advanced imaging and mapping practices have been deployed. Transparency may be the wish image of the new cartographies but, while often being presented in seductive ways, it is not something that should go unquestioned. Nor should attendance claims about the democratising effects of the new techniques, based as they are on myths of open discussion that fail to consider sufficient geopolitical issues of uneven access and the interests of private property and state power. However, such digital mappings should not be simply rejected. The possibilities of the maps creating 'new potentialities for social action and new configurations in social life' should be explored. Investigations into ways that they might be employed in anti-imperial projects, for instance through being turned into a form of 'critical theatre or art which challenges and destabilises the categories and arrogance of bourgeois culture and life' (Pickles, 2004: 171), should be carried out.

3.3.1.2   Mapping as 'a way of making sense of things'

Rethinking cartography as it already is as well as what it could become is one way of looking into its potentials. As Janet Abrams and Peter Hall suggest in their introduction of *Else/Where: Mapping New Cartographies of Networks and Territories*, technological changes have led to the spawning of a 'new generation of "user cartographers" who are not necessarily trained mapmakers in the traditional sense, and are more likely to be working in groups than alone' (Abrams and Hall, 2006: 12). Freed from imperatives to

represent territories with comprehensive accuracy, they 'can manipulate their data into any number of visual representations' as they approach mapping as a way of making sense of things (Abrams and Hall, 2006: 12). An example of this approach is discussed by Denis Cosgrove in his 'Carto-City' essay. In the essay, Cosgrove examines the historical intersections between urban and cartographic space, and tries to project the connections between city space, life and mapping (Cosgrove, 2006: 148-157).

More than two decades ago, Frederic Jameson issued the challenge for 'an aesthetic of cognitive mapping', which he presented as a response to the spatial and social confusions wrought by contemporary capitalism and its cultural clothing of post-modernism, and as 'a pedagogical political culture which seeks to endow the individual subject with some new heightened sense of its place in the global system' (Jameson, 1984: 92). The challenge puts 'cognitive mapping' as a solution to the problem of 'experience' verses 'structure'. The power and politics of drawing maps is described in a question posed by Gunnar Olsson, as quoted by Pickles, 'What is geography if it is not the drawing and interpretation of a line?', And what is the drawing of a line if it is not also the creation of new objects?' (Pickles, 2004: 3). Choosing which lines to draw and how they are drawn will change the effects they have on the space they represent. Because lines are not abstract entities, small changes determine the fate of a neighbourhood, a village or a town. Lines drawn on a map may not always be followed because the map is not absolute. The power it represents can never be perfect because it can constantly be subverted and challenged. Lines may also be drawn and redrawn on maps for other purposes, taking open approaches that interact with standard cartographic procedures.

Against the background of dominant mapping technologies, it is possible to distinguish here the rise of a 'cartography of dissemination' (Holmes, 2006: 24) that may avoid panoptic administration and regulation. As Pickles emphasises, rethinking cartography should involve not only looking towards the development of new techno-cartographic practices, but also to explore contradictory moments within existing practices to see

where they might lead, as well as to appreciate the multiple , imaginative and contested modes of mapping and counter-mapping that have long been present.

3.3.1.3   Maps as 'a vehicle for the imagination'

Katherine Harmon visualises the idea of maps as 'a vehicle for the imagination' (Harmon, 2004: 10) and proves that maps are captivating and diverse in *You Are Here: Personal Geographies and Other Maps of the Imagination*, through an extensive collection of maps, complemented by short captions and scattered with several short reflections on maps and mapping. Although without any central argument and little discussion, Harmon proves that through maps (albeit informal) and images within particular themes, dialogues and thoughts could be encouraged. This scenario supports the proposal to incorporate informal representations into a formal representation in creating an enhanced spatial information system.

Marrying formal and informal representation has its challenges. There is a developing concern within academic, artistic and activist circles with critical exploration of cities. This concern includes studying and representing the cities, which involves ways of sensing, feeling and experiencing their spaces differently, and with contesting proper orderings of space to allow something other to emerge. In order to realise Katherine Harmon's idea of maps as 'a vehicle for the imagination' in the planning process, putting formal and informal spatial representation of cities together is hoped to be an answer. Taking mapping as a way of investigating place, the combination will demonstrate the inventiveness and dynamism of mapping practices in sharing and conveying stories about places, or in exploring and intervening in spaces.

3.3.2 Geographical Information System

The third theoretical framework for this research is the field of Geographic Information Systems (GIS) studies, public participatory GIS and geospatial hypermedia. GIS are well

known for their ability to store statistical data, for the analysis of trends and development and for the presentation of this information geographically (Scholten and Stillwell, 1990). However, a GIS can be more than this. It can be a tool to assist public participation in the spatial planning process. Previous studies show that public participation GIS (PPGIS) is applied frequently in Canada, the United States, and United Kingdom (Kim, 1998; Kingston, 2002; Dieber and Allan, 2003; McCall, 2003). Poole (1995) found multiple examples of PPGIS outside these big countries; in Brazil, Philippines, Indonesia, Peru, Thailand, Kenya, and 15 other countries. However, the list from ESRI's PPGIS website (ESRI, 1997) shows only one application from six Asian or African countries, compared with approximately 75 cases from North America. In the urban field, PPGIS is maintained, among others, to promote transparency in decision-making (Drew, 2003). Representations in PPGIS are made from the maps, images, 3-D models and GIS outputs working with new visualisation software (McCall, 2003).

3.3.2.1 Public Participation GIS

Public Participation GIS (PPGIS) is, as the name implies, the use of the Internet and web-based GIS systems in citizen participation processes (Craig, Harris and Weiner, 2002). Increased public involvement in the definition and analysis of questions tied to location and geography is the domain of PPGIS. This approach facilitates the meaningful introduction of appropriate forms of spatial information and related technologies for widening public participation in the planning process. The acceptance of GIS as an appropriate technology for handling environmental information is for example recognised in Agenda 21. Many opportunities for public participation are laid down in the environmental legal framework and Internet GIS can support and facilitate citizen involvement in environmental planning and decision-making (Hansen, 2004a).

Carver (2001) has illustrated the complicated issue of public participation and geographic information through a SWOT analysis.

1. Local people usually know their neighbourhood better than anyone else and they can thus provide detailed insight into local phenomena, which is not available from standard national GI data sets. In this way, incorporation of local knowledge into the decision-making process will be a major strength. Additionally PPGIS holds ability to visualise environmental information and communicate this information to interested stakeholders.

2. The main weakness is related to the fact that the public generally do not possess the required knowledge to understand the generally complicated matters related to for example environmental impact assessment balancing environmental protection against mainly economic matters. Furthermore, the public does not have all the relevant information. As stated in both the Aarhus Convention and Agenda 21 the real opportunity for public participation lies in making the citizens more accountable for decisions made by given them more responsibility.

3. The real threats for the participatory process are related to the antipathy against the politicians and other decision-makers. Although this is not the prevailing situation in for example the Northern Europe if we look at the participation at the general elections, we should not underestimate the potential feeling among ordinary citizens of why they should be involved if their input would simply be ignored or even worse misused or distrusted.

3.3.2.2   Interactive GIS

Interactive might represent the early 21st century concept of instant gratification: plug it in, ask it a question, and get an instant response. However, in the real world, interaction with the electronic knowledge system (i.e., the GIS) can occur in a number of conceptually distinct ways, each of which provides a legitimate use for the adjective interactive. These include:

1. Interacting (individually) across functions or departments. This can be either an employee of the authority or a citizen. The idea is that it is possible to peruse a large

amount of data owned by many individual departments or functional areas. The ability to share data across units is one characteristic of an interactive GIS system.

2. Interacting (individually) within a single data set by applying workflow models or data models, usually in pursuit of an analytical response. The ability to perform analytical tasks, such as choosing a site or combining layers of information in a land suitability analysis, within the GIS is a second, but different, characteristic of an interactive GIS. Here, the interaction is meant in terms of getting an answer to a specific problem.

3. Interacting (as a group) either across functions or departments and/or in depth in an intra-agency capacity is a third characteristic example of interactive GIS. This typically involves use of newer web-based GIS in an intra-agency setting. Here, the focus is clearly on intra-agency efficiency. It is similar to the first type of interaction, but involves groups.

4. Interacting (as a group) either across functions or departments and/or in depth in an environment of public access up to and potentially including shared decision-making. Again, an answer is sought or a decision is created and supported. This last version of what could be meant by 'interactive GIS' has evolved, since the advent of the Internet Age (roughly post 1995), into what is now known as Public Participation GIS. Nowadays, it is generally accepted that participatory on-line systems will become a useful means of informing the public and allowing access to data and planning tools (on-line GIS) as an additional means of public participation. These will provide mechanisms for the exploration, experimentation and formulation of decision alternatives by the public in future environmental planning processes and have the potential to move the public further up the participatory ladder, although we must be aware of the weaknesses and threats mentioned above.

3.3.2.3   The Key Elements of a Successful PPGIS in an Organisation

There appears to be five key elements of a successful PPGIS in an organisation: (a) some meaningful inclusion; (b) a notion of a PPGIS organisation; (c) an appropriate level of interaction; (d) Internet use; and (e) collective efforts of the stakeholders.

1. Inclusion. There have been attempts to update the Arnstein ladder to its e-participation analogue (Carver, 2001). The second manner in which inclusion is given priority is like the 'guiding principles' developed by Sieber (2003) that appear on the home page of URISA PPGIS Conference web site (http://www.urisa.org/ppgis.htm). The notion of inclusion is basic to democratic participation; but governments cannot force individuals to become involved. What they can do is to provide as much information accessible as possible. On the other hand, government may or may not want to undertake specific projects that are better initiated by individuals or groups of individuals.

2. PPGIS organisation. The design and implementation of a Public Participation GIS framework is an evident action taken by some organisation or agency. There is recognition that PPGIS involves elements of organisational design and change, and Tulloch and Shapiro (2003) encourages treating PPGIS as a science (i.e., the science of organisational design) rather than just as a technology. Thus, the GIS community recognises the need to go outside their own mostly technologically driven community to get help in understanding and designing GIS based citizen participation systems. Sawicki and Peterman (2002) describe PPGIS organisations as those that: (a) collect demographic, administrative, environmental or other local area databases; (b) prepare the data for general use; (c) provide this information to local non-profit community-based groups at low or no cost.

3. Levels of interaction. As in the ladder of citizen participation, GIS, interactive or participatory, are built with certain capabilities. At a very gross level of abstraction, these capabilities vary roughly from Viewing, Analysis and Support for Decision-Making. Viewing is akin to passive interaction. It is like searching some travel

related web site for information. The fact that the data and maps are available should not be overlooked or downplayed, but this level of interaction is at best minimal in terms of participation in a government process. Analysis involves seeking an answer, usually to a well-defined problem posed by a citizen, singularly or as a representative of a group. The third level of interaction involves some discussion about both the modelling effort being employed and/or some aggregation of preferences in an environment where group decision-making is important. Citizen participation processes are clearly more akin to the last level of interaction than the previous two. Based on a survey from the Netherlands, Geertmann (2002) concludes that PPGIS should be both more user-friendly and transparent but also flexible and adaptable to the planning situation at hand. These obvious contradictions cannot be removed unless the developers really address the target groups in the PPGIS design process.

4. Internet use. The open structure and architecture of the Internet provide a rather simple mechanism by which information can be released to the public at relatively low cost for as well provider (the public authority) as the consumer (the citizens). However, despite the general spread of information and communication technologies, large parts of the world remain technologically disconnected. This so-called digital divide threatens to cut off populations from good jobs and the chance to participate in the affairs of the broader society. Among the Nordic countries the digital divide exists but perhaps less pronounced than in other countries (Hansen, 2004a). Thus, gender does not have any significant effect on the use of the Internet, but age has more remarkable effects on the use. A more serious inequality is related to education, where Nordic persons with only primary education have Internet user rate at about 50% while academic and advanced professionals have user rates between 70% and 80% (Hansen, 2004a). One important finding is that if a person lives in a household with children he or she will be more likely to have access to computer and the Internet than those living in households without children. Thus children can be considered as the key to close the digital divide. However, solely relying on Internet based system for public participation may have to potential to

strengthen the voice of younger, male, higher-income people who have more frequent access to the Internet, and thus possibly overriding the voice of the poor.

5. Collective efforts of the stakeholders. Stakeholders, in this case is defined as those who are affected by, bring knowledge or information to, and possess the power to influence a decision or programme.

3.3.2.4. PPGIS frameworks and some recent advances

Many public authorities at national, regional and local level around the world have already today published maps related to spatial and environmental planning on their homepages. However, some public authorities have gone further than just putting static maps on the Internet. These authorities have implemented real Internet based GIS using standard software, but in many cases these rather expensive solutions are used only for dynamic map viewing, enabling the user to pan, zoom and change the map contents. A few authorities have really tried to utilise the power of Internet GIS in the participatory phase of environmental planning. For the most part, they are interactive GIS initiated by and maintained by government units.

3.3.2.4.1. The range of PPGIS possibilities

The widespread adoption of the Internet together with rapid development of software platforms for development of Internet GIS, such as ArcIMS and Map Server, has led to enhanced use of Internet mapping for planning purposes. Peng (2001) provides a framework of an Internet based public participation system and categorises the provided level of service based on the information content and interactivity.

In Figure 3.1, the level of service in a PPGIS ranges from the lowest level at the upper-left corner to the highest level at the lower-right corner. The lowest level of service only deals with information distribution, whereas the highest level of service offer the citizens

a much more active role in building scenarios and suggesting alternatives. There is a clear similarity between Arnstein's ladder of public participation and Peng's framework. To facilitate the description and analysis of the case studies a typology for PPGIS is needed.

Table 3.1 is a matrix of PPGIS possibilities (Prosperi, 2004). On the vertical axis are functional areas of urban and regional planning, beginning with a general category and then focusing on more specialised areas of practice. On the horizontal axis are summary descriptors of form of participatory GIS that encapsulate the thinking of Arnstein, Carver, Smyth and Peng, and the functional capabilities of GIS. In addition to the marginal descriptors, each cell is conceptually partitioned into four micro cells reflecting the categorisation of citizen developed earlier.

Figure 3.1: Framework for web-based public participation systems (after Peng, 2001).

Participation/function	Non-participation	Tokenism	Citizen power
	(viewing)	(analysis)	(decision-making)
General	G2G	G2G	G2G
	G2E	G2E	G2E
	G2B	G2B	G2B
	G2C: Portland	G2C: Orlando	G2C
Economic development	G2G	G2G	G2G
	G2E	G2E	G2E
	G2B	G2B: Indianapolis	G2B
	G2C	G2C	G2C
Environment	G2G	G2G	G2G
	G2E	G2E	G2E
	G2B	G2B	G2B
	G2C	G2C	G2C: Leeds
Services	G2G	G2G	G2G
	G2E	G2E	G2E
	G2B	G2B	G2B
	G2C: San Diego	G2C	G2C

Table 3.1: The PPGIS possibility nexus (Prosperi, 2004)

3.3.2.4.2. Recent advances in PPGIS

Although we should not forget the human aspects of PPGIS, its recent advances are driven by the rapid technological development which facilitates still more advanced possibilities of citizen participation in spatial and environmental planning. At the 2004 UDMS Conference in Chioggia, Italy, there was strong focus on PPGIS and related fields. Taking what they call a Public Participatory Spatial Decision Support System (PP-SDSS), Barton, Plume, and Parolin (2005) have developed a prototype aiming at public participation for the New South Wales Department of Housing. The system is based on non-proprietary international standards like XML, SVG, GML and X3D. It is not intended to support advanced urban design functionality, but the rather simple user interface supports the input of points, lines and polygons as well as comments. Navigation through the site is linear, guiding the citizen through the various steps similar

to the quite popular so-called wizards included in a wide range of software today. Although this kind of step-by-step approach is slow and even painful for the expert user, it is nevertheless important not to forget the ordinary user. A successful participation implies involvement not only by the powerful elite, but also from a broad range of citizens. Although the technology is available important ethical aspects of public participation must be considered (Barton et al., 2005). For the detailed neighbourhood planning addressed in their system, it is of critical importance that individuals cannot be personally identified. Furthermore, the discussion forum has potential for adding false or even malicious remarks. Trying to avoid problems concerning accountability, the city council has refused to by participate in the discussion. However, an unhappy situation like this is not normal, and at least some experiences demonstrate a fruitful discussion between citizens, professionals and politicians (Hansen, 2004b). Therefore, this kind of anti-social behaviour must be averted by some kind of moderating facility.

The integration of GIS and multi-media will give new possibilities for public participation. Zeiner, Kienast, Derler, and Haas (2005) have developed a geo-multimedia service infrastructure enabling users to store, retrieve and share geo-referenced video. The GIS based multimedia content can provide its users with the advantage of getting additional audio-visual information for areas of interest. According to the authors, additional visual information will simplify the use of geographical information by users. Thus multiple video sequences recorded at the same location but at different times can help citizens, or other specialist users, to observe changes over time by simultaneous playback. Additionally, adding virtual reality video illustrating the future changes of the urban landscape can enhance the system. Although the concept seems promising there is a risk that only the elite will have sufficient Internet bandwidth to handle the video sequences in a proper way.

The amount of research on public participation via technologies such as the web and GIS has shown a steady increase over the years (Pickles, 1995; Elwood, 2002; Steinmann, Krek et al., 2004). Most of the works focus on the use of relatively cheap

and widely available technologies, such as cell-phones, to capture increasingly high quality audio and (moving and still) images. Such digital material can be presented on the web in a hypermedia format that integrates audio and images with graphics and text to form non-linear, qualitative information narratives (Cairns and Reitsma, 2006). Geospatial hypermedia, furthermore, couples hypermedia potentials with quantitative geographical co-ordinates. It is this combination of qualitative and quantitative information that gives geospatial hypermedia the capacity to support community participation in planning processes (Grønbæk, Vestergaard et al., 2002).

GIS data which were made accessible on the internet by web-based GIS technology has offered an effective medium for public participation and collaborative planning. The internet is currently considered an important media. Its ability in enabling users to interact across the network has provided opportunities for retrieval of hypermedia information in an easy and effective way. Through the World Wide Web (WWW) multimedia capabilities, users all over the world have turned this technology into an important media to access and acquire information as well as interact using diverse types of visual representation such as images, maps, diagrams and graphs which are easy to implement as text supported by graphical interface, sound, video, animation and so forth (Silva, Saul et al., 2002).

3.3.3 GIS for Public Participation in Malaysia

The notion of Malaysian public involvement in planning can be traced to the Town Board Enactment of the Federated Malay States of 1927. It provides for the general town plan to be displayed to the public to make objections and propose recommendation on how to overcome the objections. Later the Town Board Enactment 1930 provides similar arrangements for public involvement. In all these cases, the public was only allowed to participate after a draft plan has been completed.

The Town and Country Planning Act (TCP Act), 1976 which succeeded the Town Board Enactment was the only significant planning legislation which covers all local authorities in Peninsular Malaysia. The rationale of the TCP Act 1976 was basically to replace the Town Board Enactment which was considered extremely physical in approach and too rigid in accommodating changes in socio-economic needs for a country experiencing rapid development.

Public participation in Malaysia has been quite successful in informing the public about the development plan of their respective area. However, more significant contribution from the public is desirable to improve the relationship with the authority, which would facilitate better development effort for the country (Shamsudin, 1994). Apparently, the web-based GIS technology has played an important role in encouraging public participation in many countries in the world. The GIS approach is seen able to handle the problem base on integration of GIS analysis and open public communication through proposals and objection from the public perspective. The capability in simplifying access and management of data has led to the implementation of data sharing between government organisations and local groups involved.

3.3.4 GIS Web Applications in Planning and Monitoring of Urban Development – Some Malaysian Examples

In Malaysia, the growing interest of developing web-based GIS in government organisations as well as private sectors has been a positive sign in extending the use of GIS application to the public, apart from allowing for refer and acquiring of geographic information in digital form. The need to obtain views and feedbacks from the public is the main factor that motivates the development of web-based GIS pertaining to their relevant fields and activities. The examples are GIS web applications at three different planning and management levels, that is, the regional level, the state level, and the local level.

Web-based GIS for Klang Valley or also known as AGISwlk was initiated as an extension to the prior developed database and application modules of the GIS for Klang Valley Region (AGISwlk). While AGISwlk was meant as a planning support system for decision makers in planning and monitoring of the region, the web-based GIS is more toward inviting public participation apart from providing information in the form of maps and data for public access, and paving the path for data sharing with agencies having the same interest (Yaakup et. al., 2004). The AGISwlk Web has two application modules to serve two different target groups base on the requirement and role of each one. The first module, the Public Interactive Maps Application, aimed at providing information on Klang Valley apart from inviting public participation from the general public. Meanwhile, the second module, the Stakeholder Application was designed to enable data sharing and collaborative planning between government agencies and planning authorities. The potential users intended for the Stakeholder Application are government officers. Figure 3.2 shows the interface for map display via the two applications.

Figure 3.2: Map display for the two different applications in AGISwlk Web (*Source: Kuala Lumpur City Hall, 2008*)

At state level, there is the development of web-based GIS application for the State Structure Plan of Malacca. This application was aimed at disseminating information in the form of development programmes for the state. Initially, the adopted concept was more toward display of information in the form of image and maps and allowing for easy and interactive access to maps and relevant policies (Yaakup, et.al., 2004). The web GIS developed is intended to improve public participation and collaboration in the decision making process through data sharing with government agencies, the private sectors as well as the general public. It allows for objections and proposals to be forwarded to the Department of Town and Country Planning through the feedback column provided (Yaakup, et. al., 2004) and hence helps improve the quality of planning apart from providing transparency to the current planning process.

The Interactive Maps Application for the Planning and Building Control Department, Kuala Lumpur City Hall was developed within a broader system package known as the Development Control System for Kuala Lumpur City Hall (KLCH). This first such support system for local authority in Malaysia which emphasises on the planning and building control procedures and workflows, integrates as many as seven sub-systems

including the Planning Authorisation, Building Control, Enforcement, Geospatial and Planning Information, Information Kiosk, Document Processing and Meeting Presentation (Yaakup et. al., 2004). The Interactive Maps Application is one of the modules developed under the Information Kiosk sub-system which serves to provide information regarding planning and development activities within KLCH planning zones. By keeping the public well informed of the development status in Kuala Lumpur and receiving feedback from users, the web-based GIS developed is seen to support the Planning and Building Control Department and Kuala Lumpur City Hall in upgrading the quality of planning and development control in its jurisdiction .

In general, all the web-based GIS applications being developed for urban management, regional planning and as well as for development control purposes at local level in Malaysia aim at improving public participation in the planning process. However, none of these applications took up the perspectives of legibility in spatial representation and try to integrate this qualitative information into the existing application. Therefore, this research is timely to address this issue.

3.4   URBAN FORM AND LEGIBILITY, SCIENTIFIC CARTOGRAPHY AND COMPUTER-BASED TECHNOLOGIES

A History of Spaces (Pickles, 2004) provides an essential insight into the practices and ideas of maps and map-making. It draws on a wide range of social theorists, and theorists of maps and cartography, to show how maps and map-making have shaped the spaces in which we live. The book begins by asking a seemingly very simple question: what does it mean to draw a line? It answers this question with the seemingly simple answer: to create a boundary, to define a space, and to shape an identity. The book builds on this foundation by exploring how historically maps have reached deep into social imaginaries to code the modern world. Going beyond the focus of traditional cartography the book draws on examples of the use of maps from the sixteenth century

to the present, including their role in projects of the national and colonial state, emergent capitalism and the planetary consciousness of the natural sciences. It also considers the use of maps for military purposes, maps that have coded modern conceptions of health, disease and social character, and maps of the transparent human body and the transparent earth. The final chapters of the book turn to the rapid pace of change in mapping technologies, the forms of visualization and representation that are now possible, and what the author refers to as the possibilities for post-representational cartographies.

This research on cultures of legibility is strongly based on Cosgrove's work, Carto-City (2006). The functions of scientific cartography in urban mapping, its practicality and effectiveness, and as well as its advantages and disadvantages is discussed by Cosgrove in this work. Cosgrove also focused on ways that the urban map is positioned between creating and recording the city. He explored on ways the modern city and social space interacts with 'the map as scientific instrument and artistic representation of its space and life' (Cosgrove, 2006: 149). He suggested that this interaction is 'apparent in post-modern American city such as Los Angeles, Houston and Phoenix' where every square metre is geo-coded for various purposes ranging from environmental protection to religious evangelism.

Theoretically scientific cartography should make these cities highly rational and coherent spaces. However, in reality they 'are the least legible places on earth' (Cosgrove, 2006: 149). Cosgrove claimed that the urban landscape seems to confirm the problem of legibility in the constant and competitive presence of words, phrases and whole texts (billboards, street signs and posted ordinances) within it. He argued that the extensive volume of written language in the public spaces of contemporary urbanism has eroded the effective harmonising relationship of image and text. Cosgrove suggested that a characteristic way of negotiating movement within the post-modern American city is the computer generated map. He mentioned the use of Map Quest© which 'can create an instant digital image of any urban location at any requisite scale using simplified set

of standard colours and cartographic signs' (Cosgrove, 2006: 150). However he pointed out that the image totally ignores the context of place they represent and unconcerned with the city as public space.

Cosgrove suggested that scientific cartography inability to capture the contemporary city has opened new possibilities for urban mapping to look into the connections between city space, city life and mapping. Improvement of urban legibility was thought to be achieved through the use of geometry in the early modern city planning. Urban legibility then became the goal of city mapping, to be achieved through precisely measured survey producing maps whose intent is analytic rather than synthetic. By mid-19th century, plain-style urban plans were used as base maps for urban statistics. In the 20th century, controlling metropolitan cities was a dominant theme in urban mapping. Maps were used to their maximum capacity either to make the city more legible or to regulate its material and social disorder. Map was used as an instrument of urban policy, to recapture the legibility of the city on paper and sustain its physical and social coherence.

Advanced computer-based technologies of the 21st century have been more successful in assisting urban mapping to project the future form of the city than in capturing the legibility of its daily life. These mappings may deploy the analytic capacities of scientific cartography in capturing legibility from the contemporary city as a way of enhancing the experience of everyday life. Cartographers used the latest GIS technology to coordinate and plot diverse data sets realising that the contemporary city 'presents both complex new challenges and enormous opportunities for mapping' (Cosgrove, 2006: 157). Cosgrove concluded that the goal of rendering legible the city remains an urgent one and the current visual technologies open up greater opportunity for creativity in shaping and recording urban experience. Taking on this line of thinking, the framework for this research is thus developed.

The concept of legibility promoted by Lynch in 1960 is closely related to 'cognitive mapping', the process of representing a city so as to mentally grasp its form and

adequately orient oneself within it. Lynch invented an important notational system that enabled him to diagnose and assess the variable legibilities of a given city. Lynch's work in the 1960 led to along line research in other fields such as anthropology, sociology, geography and environmental psychology. Some studies extended the concepts of urban legibility and cognitive mapping into consideration of late-capitalist urban form. These new urban configurations, (motorized by global flows of capital, goods, information and people) extended into the landscape and, in a virtual sense, beyond into wider national and trans-national spaces. The sub-disciplines of information, urban and way finding design responded by going further into investigating new and practical aids to legibility within these emergent urban landscapes. Fredric Jameson, and other theorists of postmodern cultural politics, echoed this more applied work by calling for new kinds of cognitive mapping that would enhance our capacities to read the late capitalist city. Jameson also argued that such a project would require some kind of inventive breakthrough to radically new and as yet unimaginable notational systems and forms of representation (Cairns and Reitsma, 2006).

These new urban phenomena cannot be analysed with ideas developed for the reality of the ancient town or the old industrial metropolis. As such, they pose particular challenges to the conventional GIS-based (Geographic Information Systems) cartography used by planning authorities. In contexts such as these, the call to diagnose the hidden forms of the cityscape (Lynch, 1960) and to invent representational breakthroughs (Jameson, 1992) has a new perspective. Apart from identifying the appropriate approach to 'more accurately representing what is there so it might be better managed and planned, it is also a matter of generating a representational system that recognises the complexity of local visual, orientational, navigational practices and empowers them by bringing them into contact with, and allowing them to restructure, the very parameters of existing official systems of representation' (Cairns and Reitsma, 2006: 1-2).

3.5   CHAPTER SUMMARY

This research is significant in a number of perspectives. First, the Kuala Lumpur urban landscape itself deserves sustained academic attention as it is emerging as an important metropolitan in the Southeast Asian region but has yet to receive enough attention from academic researchers. This research has the potential to contribute to (theoretical and policy) debates about Kuala Lumpur urban landscape and Southeast Asian cities, and to link these debates to wider discussions on landscape urbanism, which are currently oriented almost exclusively towards European and American exemplars. Second, there has been, to date, little work on the ways in which visual media and representational systems impact upon the design, planning and management of extended metropolitan regions. As highlighted by Cosgrove (2006), in the past and at present, urban forms are explained using maps and plans but the precise relations between these images and the built form of cities are seldom being critically explored. While architectural, urban and landscape theory have usefully theorized the 'agency' of different visual media, it rarely draws on empirical material from outside the west. On the other hand, the existing geography, planning and Southeast Asian studies have not engaged substantively with the innovative work on representation conducted in these design-oriented disciplines. While the work in GIS has productively extended the boundaries of public participation planning, most of it remains its focus on the technology and taking 'the community' as an uncomplicated and unproblematic set, whereas this research aims to examine the fluid socio-spatial configurations of the community. Third, the proposed outputs of this research will represent significant innovations in their own right, as they will 'exploit the qualitative potentials of advanced information technologies by putting them in touch with new modes of urban representation' (Cairns and Reitsma, 2006: 3).

In addition, this research addresses inter-linked academic audiences in architecture, urban and landscape design theory, urban theory, urban geography, cultural studies, and postcolonial studies, and qualitative GIS research. The research will contribute to

improving our understanding of emerging forms of settlement, develop better appreciations of popular forms of creativity and world-making, and will offer new modes of design practice informed by, what historian of cartography J. B. Harley has called, a cartographic ethics. Moreover, the existing literature suggests that most empirical examples in published materials are drawn from European and American cities. There is no evidence to confirm that the same constitutive elements of the image of the city can be found in or relevant to cities in developing countries (Karan and Bladen, 1982; Del Rio, 1992).

Thus, this research has the potential to contribute to theoretical and policy debates about Kuala Lumpur and Southeast Asia, and to link these debates to wider discussions on landscape urbanism, which are currently oriented mostly towards European and American exemplars.

CHAPTER 4: URBAN STUDIES, CARTOGRAPHY AND MAPPING IN SOUTHEAST ASIA

4.1   SOUTHEAST ASIAN URBAN STUDIES

The city is the frontier of modern Southeast Asia. In 1975, 22 per cent of the region's population was in urban areas; by 2000, it will have increased to over 37 per cent; and by 2025 will exceed 55 per cent (United Nations, 1995). Since the 1970s, industrialisation has been the driving force of rapid urbanisation. Industrialisation and urbanisation have involved dramatic changes in urban form and land use. The urban peripheries have now become the locus of job creation, especially in manufacturing plants and urban population growth.

These phenomena have been attributed to the accelerating integration of south-east Asia into the world economy, the process known as globalisation. Yet, ironically, the few attempts to interpret this transformation in spatial terms have reverted to the paradigm of a discrete Southeast Asian variant of the Third World city. McGee (1967) was the first study to identify south-east Asian cities as a discrete category among Third World cities.

> One of the main themes running through this study has been the comparison ... of South-East Asian cities with the pattern of urbanization that has emerged in the Western industrialized societies. The value of such an exercise lies not so much in *the obvious conclusions that Southeast Asian cities are different but rather ... to establish the unique elements of Southeast Asian urbanization* (McGee, 1967: 171, italics added).

This view of south-east Asian cities as being obviously different and having unique elements has never since been seriously challenged. McGee (1991) and others have sought to update the south-east-Asian-city-as-Third-World-city paradigm by invoking

the *desakota*[1] model. It is argued that these new regions of extended urban activity are characterised by a specifically south-east Asian settlement pattern.

One theoretical framework for this research is formed against the background painted by the literature that has addressed Southeast Asia region in a sustained way; in geography, planning and urban studies. Analysis of Southeast Asian cities within an explicitly spatial framework traces back no earlier than the 1940s (Dick and Rimmer, 1998). The first studies emerged out of the colonial schools of geography: the British school typified by Dobby (1950) and Fisher (1964) had a heavy bias towards Malaya; the French characterised by Gourou (1940) and Robequain (1944, 1952) emphasised Indo-China; conventional American geographers were preoccupied with the Philippines (Spencer, 1952, 1954; Wernstedt and Spencer, 1967); and the Dutch sociological and town planning school extended little beyond the first tentative anthology on Indonesian towns by Wertheim (1958). This early literature was in general agreement that in south-east Asia the size of cities had been inhibited by colonial rule (Spate and Trueblood, 1942; Fryer, 1953). This phenomenon became apparent in the mid 1950s when geographers and sociologists began to analyse demographic data, beginning with Keyfitz (1953) and Ginsburg (1955).

In the 1970s, interest turned to the employment consequences of migration in terms of the new paradigms of 'formal-informal sector' and 'petty-commodity production' (Sethuraman, 1975; McGee, 1978; Dick and Rimmer, 1980; Forbes, 1981; Rimmer and Forbes, 1982). During the 1980s, the focus had moved to 'world cities' which were the product of the international division of labour, the internationalisation of finance and the global network strategies of multinational corporations (Friedmann and Wolff, 1982; Sassen, 1991; Knox, 1995; Knox and Taylor, 1995). By the early 1990s the impact of these global forces on local cultural identity and urban change in south-east Asia were being explored (Askew and Logan, 1994; Lo and Yeung, 1995; McGee and Robinson, 1995).

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[1] Desakota is Malay language term which literally means village-city.

Ginsburg et al.'s (1991) The Extended Metropolis: Settlement Transition in Asia therefore is a curious throwback. Seeking to rediscover Asia's urban geography, the book attacks the persistence of the rural-urban paradigm. However, it is not rooted in the contemporary literature but in debates over rural-urban transitions of the 1950s and 1960s. Its central hypothesis is that there has been 'the emergence of what appear to be new regions of extended urban activity surrounding the core cities of many countries of Asia' (Ginsburg, 1991: xiii). New and different kinds of settlements in Asia are seen as

> complex and compound regional systems consisting of central cities, fringe areas of those cities, exurbs, satellite towns, and extensive intervening areas of dense population and intensive traditional agricultural land uses in which wet paddy tends to dominate (Ginsburg, 1991: xiii).

This settlement pattern has been made possible by a simple "transportation revolution" (Ginsburg, 1991: xiii-xiv) of improved all-weather roads and "cheap intermediate transportation technology such as two-stroke motorbikes" (McGee, 1991: 5).

This process of settlement transition involving the urbanisation of the hinterland without massive in-migration was referred to by McGee (1989, 1991) as *kotadesasi--kota* in Bahasa Indonesia for town, *desa* for village and *si* to denote process. Later, the term for these new regions of economic interaction was rearranged as *desakota* for the settlement and *desakotasi* for the process (Ginsburg, 1991). *Desakota* areas have six main features: a dense population engaged in smallholder cultivation, commonly of wet rice; an increase in non-agricultural activities; a well-developed infrastructure of roads and canals; a reservoir of cheap labour; highly integrated 'transactive' environments in terms of movements of people and commodities; and a state perception as being 'invisible' or 'grey' zones (McGee, 1991: 15-18).

Among this work, McGee's (1967) is particularly important in setting out a basis for discussion on Southeast Asian urbanism. He discussed on the main features of the growth, characteristics and roles of the great cities in the region of Southeast Asia.

McGee attempted to compare the features and growth of Southeast Asian cities with the pattern of urbanisation which has emerged in the Western industrialised societies. His analysis of city growth pointed out clearly to the fact that the economic, political and social conditions underlying the process of urbanisation in Southeast Asia region were very different from conditions which existed in Western Europe (McGee, 1967). In his later work, McGee concluded that in the context of Southeast Asian and Third World cities, 'a theoretical framework which regards the city as the prime catalyst of change as applied to Western cities must be discarded' (McGee, 1971: 31). The design of Asian cities has come to be defined by huge urban agglomerations as the basis for a new kind of city form. Taking Bangkok and Kuala Lumpur as examples, this approach is made clear by the existence of mega projects in both cities (Marshall, 2004). This phenomenon in Southeast Asian cities again supports the fact that the conventions of practice developed in the West have no relevance for these new conditions.

Two decades after McGee's seminal work, Smith and Nemeth (1986) attempted to analyse the issue of the similarities and differences between urban structure and growth patterns in Southeast Asian region and other parts of the world. They concluded that contemporary cities and urban systems of Southeast Asia were much affected by their histories because 'urbanisation is a political process' (Smith and Nemeth, 1986: 138). Forbes (1996) highlighted the importance of having a good understanding of the Southeast Asian region's urban development pattern as the old frameworks as applied to the Western cities become less relevant and less accurate for Southeast Asian region. Evers and Korff's (2000) *Southeast Asian urbanism: The meaning and power of social space* gave a late twentieth century update of the early work of McGee. In their work, they had produced a more ambitious mapping of urbanism in Southeast Asia through globalisation perspective. The tensions between the flows of capital, information and labour that threaten to dissolve Southeast Asian cities into generic world cities, and other localising forces that persist and thrive within these flows were discussed.

Against this background, this research aims to investigate the practical and theoretical dimensions of urban legibility and apply it to the peri-urban or *desakota* zones of Southeast Asian megacities. Megacity growth tends to sprawl along major expressways and railroad lines radiating out from older urban cores, leap-frogging in all directions, building new towns and industrial estates in areas thus far agricultural and rural. In such areas, regions of dense population and mixed land uses are created, in which traditional agriculture is found side by side with modern factories, commercial activities and suburban development (Marshall, 2004). The concept of extended metropolitan regions or *desakota* zones has been coined for this amoebic-like spatial form. These desakota zones seem diametrically opposed to the city-based urbanization to which we are accustomed, where downtown cores radiate rings of lower and lower density.

4.1.1 The emergence of *desakota* zones

Ginsburg (1991) and McGee (1991) argue that in the Asian context, the conventional view of the urban transition which assumes that the widely accepted distinction between rural and urban will persist as the urbanisation process advances, needs to be re-evaluated. Distinctive areas of agricultural and non-agricultural activity are emerging adjacent to and between urban cores, which are a direct response to pre-existing conditions, time-space collapse, economic change, technological developments and labour force change occurring in a different manner and mix from the operation of these factors in the Western industrialised countries in the nineteenth and early twentieth centuries.

The conventional view of the urban transition is inadequate in three respects.

1. It is too narrow in its view that the widely accepted spatial separation of rural and urban activities will persist as urbanisation continues.
2. It is inadequate in its assumption that the urbanisation transition will be inevitable because of the operation of 'agglomeration economies' and comparative advantage, which are said to facilitate the concentration of the

population in linked urban places. In many parts of Asia, the spatial juxtaposition has created densities of population that are frequently much higher than in the suburban areas of the West.

3. The Western paradigm of the urban transition, which draws its rationale from the historical experience or urbanisation as it has occurred in Western Europe and North America in the nineteenth and twentieth centuries, is not neatly transferable to the developing countries' urbanisation process. The uneven incorporation of these Asian countries into a world economic system from the fifteenth century onward created divergent patterns of urbanisation, which reflect the different interactions between Asian countries and the world system. For example, the British, French and Dutch all developed the productivity of wet-rice agriculture in Southeast Asia. British intervention in Malaysia created an urban system oriented to the production export products on the west coast away from the heavily populated rice bowls of Kedah and Kelantan, limiting the possibilities of an emergent mega-urban region.

4.1.2 Definitions and parameters

A model of the spatial configuration of a hypothetical Asian country identifies five main regions of the spatial economy.

1. The major cities of the urban hierarchy, which are often dominated in the Asian context by one or two extremely large cities.

2. The peri-urban urban regions, which are those areas surrounding the cities within a daily commuting reach of the city core.

3. The regions labelled *desakota*, which are regions of an intense mixture of agricultural and non-agricultural activities that stretch along corridors between large city cores.

4. Densely populated rural regions, which occur in many Asian countries, particularly those practicing wet-rice agriculture.

5. The sparsely populated frontier regions found in many Asian countries that offer opportunities for land colonisation schemes and various forms of agricultural development.

The pace and characteristics of this settlement transition vary from country to country, reflecting the features of socioeconomic change at the macro level. The role that the growth of metropolitan cores and the *desakota* process play in this transformation is of major importance. The mega-urban regions that emerge often incorporate large urban cores linked by effective transportation routes. These regions include the major cities, peri-urban zones and an extensive zone of mixed rural-urban land use along such routes. Travel time between any two points in a region would probably be no more than three to four hours but in most cases is considerably less. Mixed economic activities may also occur in villages in these zones, which are less accessible and where economic linkages are more reliant on social networks. However, this model of the transition of the space economy is not intended to be universally applicable. It is modelled to fit the situation where one or more urban cores are located in densely settled rural areas. In the case of Kuala Lumpur in Malaysia, the urban cores are located in lightly populated regions of plantation agriculture.

In the Asian context, the existence of high-density agricultural regions adjacent to large urban cores offers an opportunity for a particular form of mega-urban region to emerge. There are at least three types of spatial economy of spatial economy transition occurring in Asia in regions that have the pre-requisite of the historical evolution of high-density, mostly rice-growing agro-economics niches.

1. Countries that has seen a decline in rural settlement, land use and agricultural population as the population has moved to the urban centres – *Desakota* Type 1 or *konjuka* (the Japanese term for landscapes that have a mixture of small farm plots, residences and industry). These regions are characterised by rural

landscapes in which most of the economically active work is in non-agricultural activities.

2. Those regions in which, over varying periods of time, productivity gains in agriculture and industry, and secular shifts from agricultural to non-agricultural activities are focused particularly on the urban cores and adjacent regions – *Desakota* Type 2. These regions are characterised by rapid economic growth compared to other regions of the country.

3. Those regions of high density in which economic growth is slow and are located close to secondary urban centres – *Desakota* Type 3. These regions are characterised by slow growth of income and involuntary economic activity.

Desakota regions have six main features.

1. Have large population engaged in small-holder cultivation of rice .

2. Show an increase in very diverse non-agricultural activities in areas that have previously been largely agricultural.

3. Show extreme fluidity and mobility of the population, not only commuting to the large urban centres but also by intense movement of people and goods within the zones.

4. Have an intense mixture of land use with agriculture, cottage industry, industrial estates, suburban developments and other uses existing side by side.

5. The increase of females in non-agricultural labour.

6. To some extent, these zones are 'invisible' or 'grey zones' in the eyes of the authorities.

There appear to be six priorities for many Asian countries in developing pragmatic strategies that attempt to recognise the importance of *desakota* regions.

1. The government will have to make some significant decisions with respect to agricultural policy.

2. Asian governments will seriously need to consider in what manner the release of labour from agricultural labour pools is going to occur.

3. Asian governments will have to recognise the reality of these zones of intense urban-rural interaction and direct much of their investment to these areas.

4. Asian governments will need to monitor carefully the growth of economic activities in these zones for the obvious problems that will arise over conflict in incompatible land uses and environmental pollution because the economic vitality of the *desakota* zones is the mixture of land uses.

5. Asian governments will need to improve access in these zones of intense rural-urban interaction with improved roads and fast railway communication.

6. Asian governments should develop new spatial systems of data collection similar to those of the 'living parameters' of Taiwan, which will enable them to monitor effectively the impact of investment decisions on labour force composition and income, among others, within the *desakota* zones.

4.2   SOUTEAST ASIAN CITIES IN GLOBAL CONTEXT

Following the opening of the Suez Canal in 1869, south-east Asian cities were subject to most of the same influences as metropolitan cities and became much more westernised. However, the path of urban development did not always run parallel between metropolitan and south-east Asian cities. There have been extended phases of convergence but also periods of divergence.

Figure 4.1 shows the phases of convergence and divergence between south-east Asian cities and metropolitan cities. Taking the latter as the yardstick, the figure shows a time-scale down the vertical axis with city size scaled by population, in orders of magnitude. The horizontal dimension shows the nature and intensity of interaction between metropolitan and south-east Asian cities. Periods of weak interaction are denoted by dotted lines, periods of strong interaction by bold lines. This figure is distinguished by three separate phases of globalisation defined by the intensity of technology transfer:

1. Convergence between urban forms in metropolitan countries and south-east Asia from about the 1880s to the 1930s was brought about by the increase in political and economic control exerted by metropolitan powers through colonial rule, trade, investment and new transport technologies.

2. Divergence in urban forms between metropolitan countries and south-east Asia occurred from the 1940s to the 1970s as a consequence of the breakdown of colonial political and economic control and the installation of indigenous administrations; marked by the disintegration of transport systems.

3. Convergence between urban forms in metropolitan countries and south-east Asia was renewed in the 1980s by increasing trade and investment and the application of telecommunications and high-speed transport.

Date	City type	Metropolitan country	South-east Asia	City type	Date
	Walled city	Trade		Pre-colonial city	
1880s					1880s
1930s	Suburban city	Political and economic control	CONVERGENCE I	Late colonial city	1930s
1940s 1950s		DIVERGENCE II		Third World city	1940s 1950s
1970s 1980s	Post-suburban city	Neo-colonial dependency			1970s 1980s
	Global city	Trade, investment and telecommunications III	CONVERGENCE	Global city	
Date	City type	World		City type	Date

Figure 4.1: A model showing phases of convergence and divergence in the development of Southeast Asian cities against the yardstick provided by the metropolitan cities (Dick and Rimmer, 1998)

The effects of these trends on urban land use in south-east Asia during these three phases are elaborated below.

4.2.1 Convergence: Pre-colonial City to Late-Colonial City

The early south-east Asian cities were built around the palace of the ruler, surrounded by compounds of the aristocracy and their dependents, and commercial quarters (Chinese and Indian). Typically, they were without walls (Reid, 1993). Settlements clustered around the compound of the leading aristocrats. Their often large populations were concealed by groves of trees. In appearance and morphology there was more in common with suburban garden cities of the 20th century than with contemporary walled cities of Europe and China. In the 19th century, the best examples of such cities were Bangkok and, perhaps on a smaller scale, Phnom Penh and Luang Prabang. Walled cities were introduced to Southeast Asia by the Europeans. The first of these were Malacca in 1511 and Manila in 1570, followed in 1619 by Batavia (now Jakarta) (Blusse, 1986). In 1810 the Europeans abandoned the old walled city of Batavia to the Chinese and moved to create a new city on higher ground.

The model south-east Asian city of the 19th century was Singapore, founded in 1819 at a time of British naval supremacy. Singapore was protected by a fort and gun batteries, but was not a walled city. In terms of population and economic activity, it was more a Chinese than a British city. There was also a group of Malay settlements clustered around the palace of the nominal Malay ruler. Thus, from the outset Singapore exemplified the plural character of most south-east Asian cities. As colonial rule was consolidated over the course of the 19th century, the European model town came to dominate all other cities with the exception of Bangkok. The British took over Rangoon in 1834 and the French seized Saigon in 1859.

During the 19th century, the growth in international trade and investment along with the consolidation of colonial role provided channels for technology transfer. This was most

direct between metropolitan cities and the main south-east Asian cities. It can be seen most clearly in transport technology. The new industrial revolution technologies of steamships, railways, electric tramways and motor vehicles were introduced to south-east Asian cities with very little time-lag. By the 1920s, towards the end of the colonial period, the European enclaves of south-east Asia's main cities looked remarkably like contemporary Western cities. This can be seen most easily in the International Style in urban architecture and design (King, 1990).

By the 1900s, most of the world's port cities had a Victorian facade. This included the basic infrastructure of docks, steam railways, electric tramways, telegraph, roads and bridges. In south-east Asia, such a port city was Singapore with its Tanjong Pagar docks, modem office buildings, warehouses, roads, railway station and electric tramways (AOHD, 1981; Allen, 1983). A perusal of travel guides of the late colonial period shows that Europeans and Americans could travel comfortably by sea and visit, or carry on business, in south-east Asian cities without any knowledge of the local cultures or languages. The exotic East was there in the background but at a comfortable cultural and social distance. These cities were accessible and safe to Westerners. It was because of colonialism and empire that these cities belonged to the West.

By the late 19th century, almost all Southeast Asian cities had a distinct central business district dominated by European firms. The exception was Bangkok, where these activities were dispersed along the river. Adjacent to the central business district (CBD) was a much more populous Chinese quarter. This quarter was physically distinct and was characterised by long rows of shop-houses. In cities such as Saigon, Singapore and Surabaya, the Chinese quarter was located on the other side of the river or canal. Surrounding the CBD and the Chinese quarter, the indigenous population lived in single-storey, wooden-framed dwellings with woven matting walls.

Around the turn of the century, south-east Asia's port cities were also 'walking cities' (Rimmer, 1986). The shift away from crowded and unsanitary towns can be traced back

as far as the 18th century, when leading European officials and merchants built country houses within comfortable riding distance of the city (Abeyasekere, 1987; Blusse, 1986).

Until late in the 19th century, transport was too primitive to allow daily commuting. Port cities were still walking cities that relied heavily on water as the means of transporting goods and people. In Singapore, the hackney carriage and the jinrikisha were introduced in the 1880s, allowing Europeans to house themselves in the cooler environs of the hills (Rimmer, 1990). In Java, the first housing estates for Europeans were developed during the 1890s in both Jakarta and Surabaya (Abeyasekere, 1987). In Manila, the Americans, who arrived in 1898, almost immediately sought to develop a suburban lifestyle. Along the main roads all of these cities had tramways linking the European and Chinese quarters, and the port (Roschlau, 1985). This trend was facilitated by the electrification of tramways and first-class compartments. By the eve of the First World War, Europeans were already importing motor cars.

This trend was accelerated during the inter-war years. By the 1930s, most southeast Asian cities had bifurcated into distinct upper and lower towns. The lower town, having lost its European population, remained the central business district and Chinese quarter. The upper town consisted of European garden suburbs oriented around family life. These included the amenities of hotels, clubs and entertainment and modern prestige shopping centres.

The new garden suburbs of the wealthy European community were land-extensive. Indigenous society was controlled in the interests of the Europeans. Legislation, the colonial bureaucracy and police force were used to enforce town planning and zoning laws to keep petty traders from European main roads and footpaths. There was a high level of social comfort for the European population as they were protected from unauthorised intrusion. Crime rates were low. By virtue of colonial power, Europeans were able to enjoy an American style of suburban living insulated from a Third World environment. Its distinctively colonial feature was rigid ethnic segregation.

4.2.2 Divergence: Late-Colonial to Third World City

The exclusive colonial city began to break down during the Japanese occupation of 1942-45. The relapse of colonial control allowed cities to become porous to rural-urban migration. Informal-sector employment opportunities proliferated and squatters began to build their shacks throughout the city on any unoccupied land. Urban populations began to soar with the infill of already-settled areas and accretion of settlement on the periphery. In the 1950s and 1960s, these cities changed and became increasingly alien and dangerous for Westerners. Political unrest, first against colonial rule and later between communists and non-communists, was the main factor for this change.

This is precisely the point (the 1950s and 1960s) at which literature on Third World cities was developed (McGee, 1967). The preoccupation with rural-urban migration, squatters and the informal sector gave rise to a view of south-east Asian cities (other than Singapore) as being dysfunctional. Evidence of urban breakdown marked by the overloading of infrastructure, congestion, overcrowding, poverty and pollution appeared overwhelming. South-east Asian governments looked to be unable to manage cities. By the 1960s, south-east Asian cities had come to look like other Third World cities and to be regarded as a distinct urban category.

In hindsight, judgements of south-east Asian cities may be more positive. Despite massive problems, south-east Asian cities have continued to function and to sustain a remarkable rate of industrialisation and economic growth. Looking back from the mid 1990s, it is easier to appreciate that much of the post-colonial influx of population was an adjustment to a big disequilibrium. The breakdown of the colonial order meant the collapse of the segregated colonial city. As the European population lost its power and privileges, not least over land use and personal privacy, people moved with impunity into low-density urban space. Only much later did indigenous administrations try to regain lost ground by planning cities according to the needs of the new political and economic elites. The only city where this occurred as a relatively smooth transfer of

power was in Singapore. In Singapore, there was no transitional phase of planning anarchy.

4.2.3 Convergence: Third World City to Global City

By the 1980s, the growth processes in southeast Asian cities were again converging to a remarkable degree with those of the First World and, in particular, those of the US. There is a rich and growing literature that challenges conventional ideas of urban form in the US. Gated communities, shopping malls, edge cities and the decline of public space are issues in the deconstruction of the very notion of 'the city' (Christopherson, 1994; Davis, 1990; Garreau, 1991; Gottdiener, 1991, 1994, 1995; Gottdiener and Kephart, 1991; Jacobs, 1984). This vigorous questioning would seem to be in a world remote from south-east Asia. And yet, high-rise offices, gated residential communities, giant shopping malls and freeways have already taken root in south-east Asia and have become key elements in the restructuring of urban space. Although there remain separate debates and literatures for the US and southeast Asia, in reality many issues are the same.

Rising real incomes and the rapidly expanding urban middle class have created a new urban dynamic in south-east Asia. Although there is no reliable way to measure the size of the middle class in Thailand, Malaysia and Indonesia, it is probably at least one-third of the population of Bangkok, Kuala Lumpur and Jakarta (Hewison, 1996; Hughes and Woldekidan, 1994; Robison and Goodman, 1996). Since the 1980s, the swollen middle class has attracted investment in multiple satellite towns surrounding the old central business district. This is especially true of Jakarta, Manila and Singapore.

As shown in Figure 4.2A, the old relationship between the lower town and the upper town had been a simple one of daily commuting. The proliferation of multiple urban centres in the 1980s diminished the importance of the movement into and out of the CBD in favour of increasing movements between urban centres around the urban fringe

(Figure 4.2B). This new pattern was facilitated by rapidly increasing rates of vehicle ownership, which freed the middle class from dependence on public transport. One symptom of this new pattern was the proliferation of suburban centres. However, this second and more complex system of multiple centres proved to be an unstable transitional form.

The logic and momentum which generated activity and movement between satellite towns necessarily generated expansion beyond them into cheaper peri-urban land (Figure 4.2C). In effect, the city is now being turned inside out. The share of movements into and out of the old CBD is now declining. Commuting is occurring over greater distances and along increasingly congested roads. The locational incentives that arise from the urban land market are to locate or relocate workplaces on or beyond the urban fringe. A growing proportion of commuter movements are therefore oriented away from the CBD.
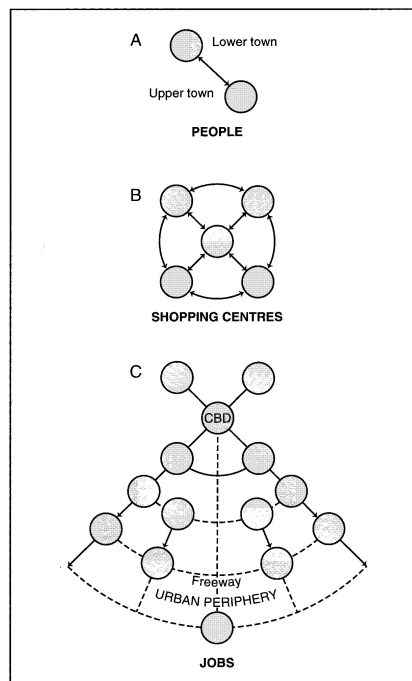
Figure 4.2A, B and C: Turning the city inside out (Dick and Rimmer, 1998)

In the extended metropolitan area, settlement has spilled beyond recognised urban boundaries and even beyond contiguous urban areas, especially along main highways (referred to by McGee as *desakota*). Factories are now located where they can draw labour from surrounding villages. There is no sharp rural-urban dichotomy. No longer is it functional to bring labour to the city. It is easier to take work to rural areas to avoid social overhead costs as bulging cities outstrip their modest infrastructure.

4.2.4 Rebundling Urban Elements

A new starting-point may be to recognise that many of the elements of the south-east Asian city are not only familiar, but are also common to the Western city. The elements include, for example, the home, which may be taken as the trip origin, and the destinations of office, shops, restaurants, schools, hospitals, sports centre, hotel and cinema (Figure 4.3). These are linked by the same technologies of the motor car and public transport. They may, however, be arranged or bundled in different ways. In other words, the city may be viewed in abstract as a set of elements which over time can be bundled, unbundled and reassembled in new urban forms. This process is restructuring, but in a specifically urban context.

In historical perspective, the impulse for restructuring urban space in south-east Asia was the development in the 1960s of the first homogeneous new middle-class communities. These could be observed in Singapore, Kuala Lumpur (Petaling Jaya) and Manila (Makati). In Jakarta, the new town of Kebayoran Baru was under construction in the 1950s, but urban middle-class development slowed down in the 1960s because of the national economic crisis. As these 'new towns' acquired a threshold population of mobile consumers with relatively high disposable incomes, there arose market opportunities for entrepreneurs to build workplaces, and shopping and entertainment facilities in adjacent locations well beyond the old town core. In the 1970s and 1980s, as real incomes grew rapidly because of export-oriented industrialisation, new centres proliferated around the

urban fringe (Figure 4.4). Foreign aid funds were invested in new freeways and toll roads to link these centres (see Figure 4.2C).
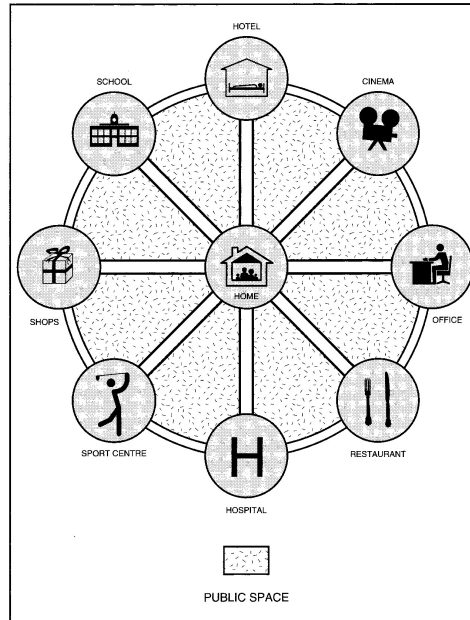
Figure 4.3: Unbundled cities (Dick and Rimmer, 1998)

During the 1980s, there were signs that private urban development had reached new thresholds of investment and land area. Hitherto, the process could still have been described as suburbanisation. Entrepreneurs for the most part continued to invest in discrete facilities such as hotels and office blocks, each of which generated custom for others. The innovation of the 1980s was the recognition by some of the richest south-east Asian businessmen that enhanced profitability would flow from bundling as many as possible of these discrete facilities into integrated complexes. These complexes comprise hotels, restaurants, shopping malls and office towers (Figure 4.4). Such integrated projects enjoyed enhanced profitability because each facility fed the other, by attracting and circulating custom. The externalities were thereby internalised. These projects required the ability to mobilise huge sums of risk capital to buy up land and finance construction in anticipation of the market.

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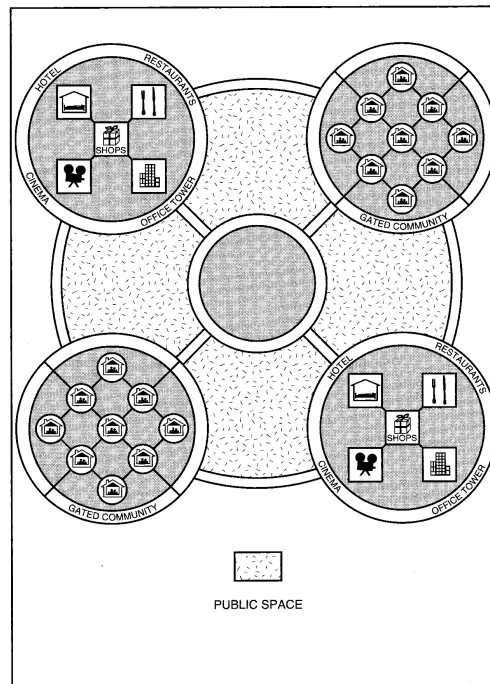
Figure 4.4: Semi-bundled cities (Dick and Rimmer, 1998)

The problem of these integrated projects was to attract sufficient custom to earn a profit from the huge initial outlays. Because consumers lived in discrete communities, and by virtue of vehicle ownership enjoyed the freedom of choice between competing centres, there was no captive market. As competition drove new developers to open ever more luxurious complexes with hitherto undreamed of facilities (such as bowling alleys and skating rinks), existing developers were at risk either of not recovering their outlay or of failing to enjoy the anticipated return. The solution, which became characteristic of the 1990s, was to buy up even larger tracts of land for integrated residential and commercial complexes (Figure 4.5). The externalities are therefore internalised: facilities help to sell houses and the captive residential clientele sells facilities. A developer owning 10 hectares can build a suburban block, with 100 hectares, an entire suburb; but with 1000 hectares or more, a new town.

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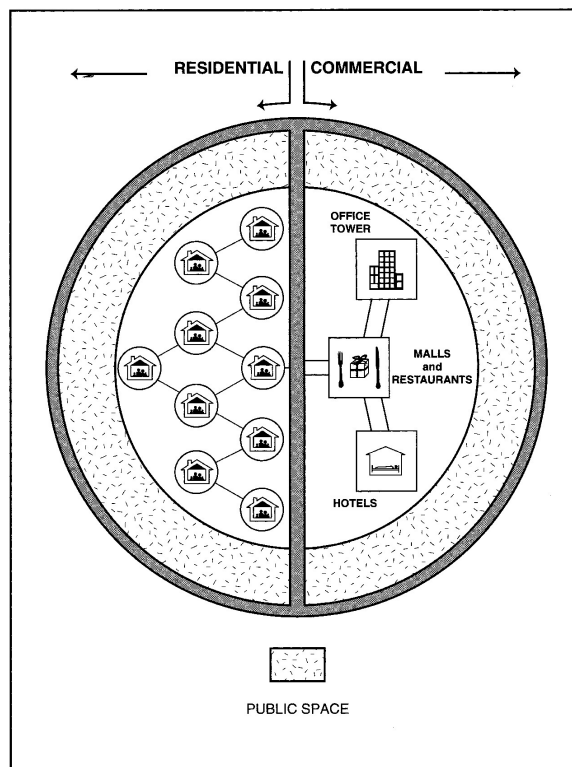
Figure 4.5: Bundled cities (Dick and Rimmer, 1998)

The dramatic increase in the scale, range and sophistication of facilities for the urban middle class has been accompanied by the emergence of new institutional forms. Foremost among these is the gated community. The 20th century phenomenon of suburbanisation was a shift in residence from traditional or European two-storey dwellings to detached single-storey bungalows or mansions; these were set amidst spacious lawns and gardens in quiet shady streets, recognisably the garden suburb of Britain or the US (King, 1990).

Such low-density open living is attractive only in a situation of good public security, as in the colonial era. In post-independence south-east Asia, the street is typically perceived as a source of danger. Decorative fences and hedges are no longer a deterrent to thieves. Open suburban living thus becomes very insecure. One solution, especially for expatriates, was the compound--that is to say, a group of dwellings with a single

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controlled point of entry. An increase in scale allows controlled access and patrolled security to be provided to an entire suburb. By the logic of the market, in which the richest people sought the highest level of personal security, real estate developers were almost obliged to construct gated communities. In the late 1960s, gated communities appeared in Manila; in the late 1970s, in Jakarta; and by the 1980s, in Surabaya. In Singapore, where security was least problematic, the equivalent communities were high-rise condominiums. These have become popular for expatriates in Jakarta and Manila.

The other new institutional feature is the shopping mall. South-east Asian cities had long been familiar with shopping streets, multistorey markets and department stores. In the late colonial period, prestige shopping districts became differentiated from low-cost, downtown retailing. Shopping malls or plazas were much larger in scale and integrated many retailing and entertainment functions within a single complex, linked to multistorey carparking. They were designed to encourage access by the mobile high-spending middle-class population and to discourage patronage by ordinary people who were for the most part window-shoppers. The step up from shopping-centres-cum-plazas to plaza-cum-malls can be dated to the 1980s in Manila, Bangkok, Jakarta and Kuala Lumpur.

4.2.5 New Urban Geography of Southeast Asia

The elements and the patterns that are now observed in new towns and settlements around the main cities of south-east Asia resemble those observed in the US. At first sight, this American architectural imperialism seems implausible. If there were to be a convergence between south-east Asian and Western cities, one would surely look for a model towards Europe, with its intensive agriculture and high-density cities. Aside from America's cultural dominance, there seem to be two main reasons why south-east Asia is borrowing institutions more readily from the US. The first is the highly skewed distribution of income in Asia between the expanding middle class and the bulk of the population. The second, and associated reason, is the perceived low level of public

security. In the US the respective features are poor minority populations and urban ghettos.

The driving force behind the new urban geography of south-east Asia is the avoidance of social discomfort. In Indonesia and Malaysia, racial antagonism between the Chinese and Indonesians/Malays encouraged wealthy Chinese to seek the security of gated communities. In the Philippines, there is also the fear of kidnapping. However, more and more middle-class indigenous Indonesians, Malays and Filipinos are also choosing to live in such secure communities, primarily to protect their property against theft. The level of insecurity rises as people acquire more private possessions.

The common experience which draws together the separate urban experiences of North America and south-east Asia is the perceived deterioration in personal security. In the US, the fear of public space--in fact, the fear of the city itself--is grounded in racism and drug-related crime. In south-east Asia, the immediate threat is less apparent. However, rising real household incomes and the emergence of an identifiable middle class have been accompanied by a growing differentiation from, and fear of, the rest of the inchoate urban mass. In countries such as Indonesia, Malaysia and the Philippines, where the middle class is disproportionately ethnic Chinese, that fear has a palpable racial edge. Gated residential communities, condominiums, air-conditioned cars, patrolled shopping malls and entertainment complexes, and multi-storeyed offices are the present and future world of the insecure middle class in south-east Asia.

This preoccupation with comfort and security is reflected in attitudes towards public space. In Europe, despite the popularity of the motor car, public space remains an integral part of social life. In the US, and increasingly in south-east Asia, public space has become an area of uncertainty. Middleclass people, therefore, seek to control their environment by insulating themselves from the uncertainties of casual social interaction with the poor. They live in air-conditioned houses in gated communities; travel in private air-conditioned vehicles to air-conditioned offices and shopping malls. Home,

office and mall are increasingly patrolled by private security personnel backed up by overhead video cameras.

The level of insecurity in the street is an important motive for patronising shopping malls. Other factors are the convenience of park and shop and the opportunity to shop, eat or play in a socially comfortable, air-conditioned environment that eliminates the aggravations of pickpockets, jostling, name-calling and the challenge of the crowd. The attitude is reminiscent of 19th-century attitudes towards the threatening London crowd, which was regarded as being uneducated, uncouth and unpredictable. The attitude of the middle class in south-east Asia towards the urban mass is also not so very different from that of the colonial Europeans to their indigenous subjects. A common language does not bridge the cultural gap or the economic divide.

The desire of middle-class south-east Asians for security and social comfort has, therefore, given rise to market opportunities for well-funded entrepreneurs to borrow urban elements from the US. This scenario occurs because those businessmen have visited or have studied in the US and are familiar with those models.

In fact, the technology transfer has worked through an even more direct mechanism. Most developers of these large projects have hired master planners, design consultants, managers and advisers, property specialists and architects from the US and occasionally also from Australia, Canada, Japan and Singapore. In Jakarta, for example, Lippo Kawaraci hired at the outset a team of experts from the US. Other Jakarta examples are Alam Sutera (SWA Group, California), Bumi Serpong Damai (John Portman and Associates, US, Pacific Consultants International Japan), Bintaro Jaya (Development Design Group, Baltimore, us) and Cikarang Baru (Klages Carter Vail and Partners, US). Even the promotional brochures reveal a style and nomenclature that is characteristically Western. Western retailers such as WalMart, J. C. Penney and TOYS 'R' US and food franchisers such as KFC, McDonalds, Pizza Hut and Wendys are becoming familiar tenants in the large shopping malls.

This heavy reliance on foreign expertise for both master planning and the design of individual elements leads to a social and cultural dissonance with the rest of the city. Although most of these new towns are located close to toll roads, other links with the road network and with the public transport system remain tenuous. Similar problems apply to other infrastructure links. Little attention is given to the housing and welfare of the lower-paid, unskilled workforce that cannot afford to live on these middle-class or luxury housing estates. The consequence is a separating out of two societies. In the US the disintegration of the city is a recent, and to many people, an alarming phenomenon. In south-east Asia, it is familiar to anyone of the older generation. Formerly, it was the situation identified as colonialism; nowadays, the distinction is primarily one of wealth and status.

4.3   CARTOGRAPHY AND MAPPING IN SOUTHEAST ASIA

After World War 11, geographers became more concerned with interpreting Asian countries for a Western audience. The majority of geographic writing was published by Western presses for a Western audience. Examples of this work are Dobby's (1950) *Southeast Asia*, Goureau's (1953) *L'Asie*, Robequain's (1955) *Malaya, Indonesia, Borneo and the Philippines*, Fisher's (1971) *The Middle East*, Spate's (1954) *India and Pakistan*, and Fisher's (1964) *Southeast Asia*. In the United States, Ginsburg's (1958) *Pattern of Asia* and Spencer's (1954) *Asia, East by South* were examples of the style.

From the 1960s this relationship has begun to change to a more multi-stranded approach to Asia. Representative of the work were Ginsburg's edited volume, *Essays on Geography and Economic Development* (1960), many parts of which focused on Asia, and the efforts of the 'modernization' geographers to quantify the spatial impacts of modernization on indigenous society, such as Leinbach (1972) on Malaya. Much of this work relied at least in part on the geographical ideas of non-geographers such as Skinner (1964), Hirschman (1958), and Friedmann and Alonso (1974). In the regional context,

Fryer's Emerging Southeast Asia (1979) is an aggressive defence of the Western model of development and a sharp attack on countries that want to tinker with it. There is also an attempt to break away from this mould by emphasizing indigenous solutions to development. For such studies, Buchanan's (1970) fine overview of China, Missen's (1972) study of Indonesia, and Brookfield's (1975) overview of interdependent development are important guidelines.

McGee (1967) has described the growth of the Southeast Asian city as unique in comparison to Western industrialized cities, due to its rural-urban contrast, level of migration, proliferation of squatters, and bazaar-like economy. Scholars since have proffered other readings of the Southeast Asian city and have even challenged McGee's point of view due to radical changes in the region and the world in general. In their essay *Beyond the Third World City: The New Urban Geography of Southeast Asia*, Dick and Rimmer (1998: 2304) argue that 'globalisation has made the paradigm of the Third World City obsolete in south-east Asia'. Dick and Rimmer go on to argue that the recent and rapid growth in the economies of countries like Indonesia, Malaysia and Thailand have brought about patterns of urbanization that closely resemble those of the United States.

The growing middle class coupled with development strategies that tend towards 'bundled' developments materialise in the form of large residential/commercial complexes, megamalls integrated with new infrastructure, edge city developments and the most odious American trend: the gated community. Kuala Lumpur, Malaysia's capital city, is at once a place careening with the ambition of being globally prominent while caught up in an internal struggle for identity. Since its founding as a nation, Malaysia remains a self-conscious state with multiple ethnicities and religions. However, the British colonial system of racial classification through the census and job/industry sectorialization created a legacy that persisted into the new nation; one that has produced and supported great disparities in both wealth and access to power.

Southeast Asia is arguably the most insubstantial of world areas, being at once territorially porous, internally diverse and inherently hybrid (cited in Day, 2002: 292). McGee argues that it is this diversity and hybridity that creates an intellectual excitement about the region (McGee, 2005). He emphasises the importance of comparison in Southeast Asian studies. Since 1970s, one recurrent theme of McGee's research has been the questioning of what may be termed the 'Western bias of urban theory.' McGee has always emphasised that 'western bias' is simply regarded as a component of Eurocentrism. Along with many other theories of social change, the urbanization process in developing countries has been portrayed as essentially repetitive of the Western experience and therefore subject to the same theoretical postulates. Arguably, this position is largely untenable for a majority of developing countries. These ideas must be placed in the framework of the overall patterns of urbanization at a global and regional level, which are predicting a continuing increase in the proportion of the world's urban population.

4.4 CHAPTER SUMMARY

Rapid urbanisation has been a worldwide phenomenon since the industrial and transport and communications revolution of the 19th century. The tempo of trade, investment and technology transfer quickened more than a century ago in the era of high imperialism, long before globalisation became the catchword of the 1990s. In the heyday of colonialism, between the late-19th century and the 1930s, south-east Asian cities became much more like Western cities; especially with the separation of central business districts and garden suburbs. There was very little lag in technology or modem design between the colonial mother country and the colony. This period may be considered as one of convergence.

After the 1940s, in the period of decolonisation, south-east Asian cities became distinctively Third World cities. Western influence waned (Singapore and Kuala

Lumpur) or disappeared (Jakarta). Because the literature on south-east Asian and Third World cities began at this time, there has been a presumption that their urbanisation can be studied as a separate phenomenon. In a new phase of rapid technology transfer and economic growth, south-east Asian cities are again showing clear evidence of converging with Western patterns of urbanisation. South-east Asian cities should now be viewed with a fresh and observant gaze.

All the main trends in Western cities in the 19th and 20th centuries have eventually become formative influences on the development of south-east Asian cities (Table 4.1). What has differed over time and between cities is the length of the lag and the extent of the influence. The issues and debates in the vigorous literature on cities in the US are highly relevant to what is now happening in south-east Asia.

Industrialisation and job creation on the urban fringe and in the hinterland of Southeast Asian cities reflect the shift of industry from the First to the Third World that has been facilitated by rapid improvements in the speed and cost of transport and communications. International demand has switched from south-east Asia's agricultural products, which required labour and land, to manufactures which are also labour-intensive but have only a marginal requirement for land. It is this international demand for the manufactures of south-east Asia which is leading footloose industries to locate in the vicinity of main cities and transport hubs in order to exploit abundant cheap labour.

Period	Metropolitan cities	Southeast Asian cities
Pre-19th century	Walled city	Patron-client city. Aggregation of palace and surrounding compounds of aristocrats and commercial quarters (Chinese, Europeans, Indians, etc.) (e.g. Bangkok)
19th century	Compact cities (new-rich build country villa)	Compact cities (expansion of European quarter)
Early 20th century	Suburban city (radial version); fixed route public transport	Colonial city ethnic divide (lower town of business, Chinese quarter, kampongs; upper town of European garden suburbs, shopping centre/hotel district)
Post Second World War	Post-suburban city (decentralisation of work, shopping and recreation, automobile age)	New towns (public initiatives) Kebayoran, Indonesia (late 1940s) Quezon City, Phillipines (late 1940s) Petaling Jaya, Malaysia (mid 1950s) Makati, Indonesia (1960s) Toa Payoh, Singapore (1970s) Shah Alam, Malaysia (1980s)
1980s	Post-modern metropolis Re-incorporation of public space as private space	Semi-bundled towns (private) Bangkok, Jakarta, Kuala Lumpur,Manila
Late 1990s	-	Bundled towns (large-scale private ownership) and aggregation of business districts

Table 4.1: Main trends in metropolitan cities and Southeast Asian cities during the 19th and 20th centuries (Source: Adapted from various sources)

The spatial dimension of this process has been portrayed by Ginsburg et al. (1991) as desakotasi. This helps to draw attention to the phenomenon but confuses as much as it clarifies. It is not a uniquely south-east Asian phenomenon. The emerging urban forms

take after North American patterns to a remarkable degree that has yet to be recognised, let alone explained.

The study of south-east Asia's cities must now be informed by knowledge of urban processes. Even though the Southeast Asian currency crisis of mid 1997 leads to a slowdown in real estate development and causes the collapse of some prominent companies and suspension or scaling back of new town projects, the pattern of urban development will not change markedly from that which has been observed in recent years.

CHAPTER 5: GIS AND DEVELOPMENT CONTROL IN KUALA LUMPUR

5.1   INTRODUCTION

Information technology such as GIS is a tool that supports strategic change and effective guidance rather than one that imposes rigid organisational structure (Sugarbaker, 2005; Campbell, 2005; Drummond and French, 2008). This suggests that the introduction of GIS in the planning organisation helps to support the planning process and decisions. According to Kraemer *et al.* (1995) and Drummond and French (2008) the introduction of new information technology such as GIS can be used either to reinforce the status quo or to help bring about new and better order. It has great potential for positive changes within a planning organisation, especially throughout the planning process. However, the use of this technology can be realised only if the individual staff at the planning organization implemented and utilised it successfully. Kraemer *et al.* (1995) suggest that the direction taken depends on the skills of the users and their willingness to change to computing-based systems. The word 'change' used here includes organisational and individual aspects, and how they respond to GIS.

The introduction of computers into urban planning activities in 1950s and 1960s forms part of a more fundamental transition of the planning authority from the profession's traditional concern with the design of the physical city to a new focus on the quantitative techniques and theories of the social sciences (Huxhold and Levinsohn, 1995; Klostermann, 2001; Harris and Batty, 2001; Yaakup *et al.,* 2005; Yaakup and Sulaiman, 2007). Planners were in fact one of the earliest users of computers in local government utilising the facility introduced to serve the operational needs of finance departments in order to fulfil more strategic functions (Yeh, 2005; Batty, 2005; Bernhardsen, 2005). However, at that time, the initial access by planners to mainframe computing technology

was indirect and had not been used extensively (Prastacos and Karjalainen, 1990; Masri and Moore, 1993). It was very expensive and the usage of information technology among planning departments was limited.

The process of development control involves a technique for the systematic compilation of expert quantitative analysis and qualitative assessment of project land use and property development viability, including its effect on the surrounding area, and the presentation of results in a way that enables the importance of the predicted results, and the scope of modifying or mitigating them to be properly evaluated by the relevant decision making body before a planning permission is rendered. Taking the local authorities in Malaysia as an example, this chapter will examine and discuss the development of GIS database and its integration and application for development and building control.

Given the dynamic nature of planning and management carried out at local level, it is not surprising that the local authorities become one of the largest users of GIS in advanced and developed countries. In Malaysia, the number of local authorities that had invested in GIS has increased. Encouragingly, the previous reluctance of local authorities to accept the challenge to embrace the technology due mainly to lack of support from the management level, the lack of in-house expertise to make use of the system and the high cost of GIS has been countered by the support given directly by the Federal Government in realising the concept of electronic planning (e-planning). This is a positive sign of moving towards a more transparent planning approach apart from building up a more efficient government as the implementation of e-planning would very much speed up the overall conventional planning process.

The first part of the chapter examines the functions of local authorities particularly in the context of development control. Next, the chapter will focus on the development of the GIS for the purpose of development control. The overall discussion will reflect on the Kuala Lumpur City Hall as the case study to represent the local authorities in Malaysia.

5.2   GIS FOR URBAN PLANNING AND MANAGEMENT

The notion of Malaysian public involvement in planning can be traced to the Town Board Enactment of the Federated Malay States of 1927. It provides for the general town plan to be displayed to the public to make objections and propose recommendation on how to overcome the objections. Later the Town Board Enactment 1930 provides similar arrangements for public involvement. In all these cases, the public was only allowed to participate after a draft plan has been completed.

The Town and Country Planning Act (TCP Act), 1976 which succeeded the Town Board Enactment was the only significant planning legislation which covers all local authorities in Peninsular Malaysia. The rationale of the TCP Act 1976 was basically to replace the Town Board Enactment which was considered extremely physical in approach and too rigid in accommodating changes in socio-economic needs for a country experiencing rapid development.

> The birth of planning, as a specialised profession, developed from seeing the world in one particular way, on two-dimensional drawings which privilege a certain aspect of the environment. As the death of planning in this limited sense is imminent, the future life of planning lies with specialised plans, based on specialised surveys, stored within GIS and assembled for defined purposes.
>
> (Turner, 1996: 51)

The above quotation indicates the importance of using information technology systems, particularly GIS for planning activities. GIS has been used in urban planning since the 1950s (Batty *et al.,* 1998; Drummond and French, 2008). In fact, GIS traces their roots to Ian McHarg book's *Design with Nature* (1969). According to Al-Kodmany *et al.* (2001), city planners for Dusseldorf, Germany and Billerica, Massachusetts, extracted data from one map and added it to another in the early part of 1912. This evidence shows how early information systems were introduced into the urban planning process. By the early 1980s, the widespread diffusion of inexpensive personal computers and the

introduction of easy-to-use software provided planners with direct access to computers (Masri and Moore II, 1993). The introduction of computers into planning in the 1950s and 1960s was part of a more fundamental transition from the profession's traditional concern with the design of the physical city to a new focus on the quantitative techniques and theories of the social sciences (Campbell, 2005; Drummond and French, 2008; Huxhold and Levinsohn, 1995; Yaakup *et al.,* 2005). It was hoped that this computational power and the emerging tools of systems analysis and regional science could provide the foundations for a new and more scientific planning (Carsjens and Ligtenberg, 2007; Drummond and French, 2008; Klosterman, 2001).

However, during the early stage of GIS implementation, the initial access by planners to mainframe computing technology was indirect (Masri and Moore II, 1993) and had not been used extensively (Prastacos and Karjalainen, 1990). It was very expensive and the diffusion of these applications among planning departments was limited. The effectiveness of an urban planning system can be improved by the use of a suitable information system. Information is produced and then analysed in order to support decisions made by decision makers. Several organisations, such as the Urban and Regional Information Systems Association (URISA) and the Urban Data Management Society (UDMS), have spent decades exploring the issues of computers for urban planning (Rubenstein-Montano 2000; Drummond and French 2008). The significance of computers for planning lies in their capability to store and process large amounts of information (Carsjens and Ligtenberg, 2007; Comber *et al.,* 2008; Drummond and French, 2008; Geneletti, 2008; Fedeski and Gwilliam, 2007; Fin *et al.,* 2007).

Before GIS was introduced, planners had been using traditional techniques and had made very little use of computers (Prastacos and Karjalainen, 1990). Prastacos and Karjalainen (1990) suggest that urban and regional data must be organised in computer databases if they are to be used efficiently. It has been argued that the necessary idea for establishing a computerised information system is to improve planning in its broadest

sense in order to increase efficiency in allocating and distributing the available resources and to reduce regional inequality (Al-Ankary, 1991; Drummond and French, 2008).

The use of DUPated mapping information, especially from sources such as satellite images and aerial photographs, allows automatic linking between statistical and mapping information, and solves many problems concerning the DUPating of data as well as ensure topicality. This facilitates the creation of more useful planning materials from the available data. As well as helping to solve many problems of traditional planning and data gathering techniques, this electronic-based data processing allow large quantities of data to be processed quickly and to be combined in many ways.

Although computers have been applied in urban planning almost since its inception, it is only recently with the development of graphics, distributed processing, and network communications software that has emerged as a tool that can now be used routinely and effectively (Batty and Densham, 1996; Yaakup *et al.,* 2005). The application of information technology (IT) to support the information processing needs of large organisations is a relatively well-established and mature practice (Drummond and French, 2008; Raman, 1990). However, all attempts have suffered from the fact that only part of the planning process could be carried out with computer technology support while old techniques had to be used for the others so that the saving of time and money were relatively small (Al-Ankary, 1991; Carsjens and Ligtenberg, 2007). Furthermore, Al-Ankary (1991) suggests that computerized information/information technology could be used much more effectively when there are no manual operations, such as map drawing and transferring of calculations, between input and output. Despite the fact that the application of GIS within planning practices has increased, current geo-information tools are too complex, too inflexible, too incompatible with most planning tasks are technology driven rather than user oriented (Carsjens and Ligtenberg, 2007).

Public participation in Malaysia has been quite successful in informing the public about the development plan of their respective area. However, more significant contribution

from the public is desirable to improve the relationship with the authority, which would facilitate better development effort for the country (Shamsudin, 1994). Apparently, the web-based GIS technology has played an important role in encouraging public participation in many countries in the world. The GIS approach is seen able to handle the problem base on integration of GIS analysis and open public communication through proposals and objection from the public perspective. The capability in simplifying access and management of data has led to the implementation of data sharing between government organisations and local groups involved.

5.2.1 Development Control and the Need for GIS in Malaysian Planning

In local planning authorities in Malaysia, development control is the most important activity for urban planners (Bruton, 2007). To increase development control efficiency, planners require the most up-to-date planning data while considering development applications as the basis for decision-making. Thus, an information system is necessary to not only keep and display data pertaining to planning application for the purpose of administrative functions but should also be designed to facilitate planning and development control at strategic levels (Yaakup *et al.,* 2003; Yaakup, 2004; Yaakup and Sulaiman, 2007; Johar *et al.,* 2007).

The control of development, which involves the process of analyzing the appropriateness of planning application, requires various data from relevant agencies. A planning application is assessed in terms of current development scenario, land information, planning requirements and planning design (Johar *et al.,* 2007; Yaakup *et al.,* 2003). Consideration given to an application requires a tedious process as it will have to go through several committees and technical evaluation (Bruton, 2007; Johar *et al.,* 2007). This raises a number of drawbacks as follows:

1. Delay related to the overall process of development control processes and procedures. This may be divided into consultation-caused; planning committee-caused; and applicant-caused.

2. Lack of consistency in making decisions due to personal judgment and lack of comprehensive information.

3. Lack of transparency in decision-making process. Transparency means that decisions taken and their enforcement are done in a manner that follows rules and regulations. It also means that information is freely available and directly accessible to those who will be affected by such decision and enforcement. It also means that the information provided is in easily understandable forms and media.

4. Lack of DUPated information. This is due to difficulties in obtaining specific data as data exchange mechanisms are not fully automated in order to facilitate cooperation between data holders. Data, which is in hardcopy, is often difficult to retrieve and, at times difficult to trace their whereabouts.

5. Lack of public participation in planning decision-making process due to the lack of readily available information.

Ideally, consideration for planning and building approval involves a technique for the systematic compilation of expert quantitative analysis and qualitative assessment of project land use and property development viability; including its effect on the surrounding area and the presentation of results which indicate the resulting scenarios (Bruton, 2007; Yaakup, 2004). These steps allow the proposed development to be properly evaluated by the decision-makers before a planning permission is provided (Table 5.1).

GIS is seen as the most suitable solution for supporting the handling of spatial information throughout the development control and approval process (Yaakup, 2004). The advent of GIS has created a large field of opportunities for the development of new

approaches to computer processing of geographically referenced data needed in supporting planning decisions.

Stages	Activities	Function of GIS
Initial discussion	Consultation to owner/developer regarding potential, planning, requirement, policies involved in the area	Data Retrieval: • Existing development • Development status, approval • Development plan • Planning policies
Processing of Planning Application	• Registration • Site visit • Gathering data from various developments • Identify planning issues • Preparing technical report • Analysis the application	• Identify potential land for development • Translate policies formulated into spatial context Identify development • pressure area
Consideration by the Urban Technical Committee	• Comment on technical requirement • Recommend the technical amendment to applicant	• Data retrieval from various agencies • Able to facilitate technical evaluation
Consideration by the Town Planning Committee	• Formulate and review planning policies • Considering planning application	• Capable of analyzing the development strategy • Provide information to evaluate the planning implication

Table 5.1: Typical Stages involved in the Planning and Building Approval and relevant functions of GIS (source: adapted from various Malaysian Local Authorities planning application procedures)

5.2.2 The Benefits of GIS in Urban Planning and Management

The local government is one of the most important users of GIS with a range of potential applications extending from property registers and highways management to emergency and land use planning (Alterkawi, 2005; Campbell, 1993). GIS has been used by some planning departments to improve the services they provide and the decisions they make for public. It has been pointed out by previous studies that there are many benefits of using GIS in urban planning (Alterkawi, 2005; Carsjens and Ligtenberg, 2007; Comber *et al.,* 2008; Drummond and French, 2008; Fedeski and Gwilliam, 2007; Fin *et al.,* 2007; Geneletti, 2008; Hall, 2004; Kraemer *et al.,* 1995; Huxhold and Levinsohn, 1995; Nedovic-Budic and Godschalk, 1996; Richter, 1995; Yeh, 2005). They are:

i) Save time, therefore accelerate official procedures;

ii) Improve and increase efficiency, and afford innovative application possibilities;

iii) Provide decision support in a faster and cost-effective way;

iv) Improve accuracy, even between different data providers;

v) Provide greater consistency in information, hence in operations and decision;

vi) Provide better government organization because of a holistic, rather than a departmental, view of data;

vii) Improve interaction between the public and the government;

viii) Manage resources in the territory of the municipality with respect to environment protection;

ix) Automate tasks; thus, saving time, money and human resources;

x) Provide spatially referenced data to represent a large proportion of data processing in local government agencies. Information is considered a fundamental resource for local government;

xi) Provide pressure for improving government performance which then has prompts governments to look for more efficient ways of doing their work;

xii) Improve mapping – better access to maps; improve map currency, - more effective thematic mapping, and reduce storage cost;

xiii) Provide greater efficiency in the retrieval of information;

xiv) Provide faster and more extensive access to the types of geographical information important to planning and the ability to explore a wider range of 'what if' scenarios;

xv) Improve spatial analysis;

xvi) Provide better communication to the public and the staff; and

xvii) Improve the quality of services; for example, speedier access to information for planning application processing.

In spite of the cost of GIS, acquisition by local governments, particularly planning departments, is now widespread in Malaysia. Therefore, these benefits must be used properly by planning departments for their planning activities. At the same time, the awareness of the planning staff about the benefits of GIS is seen as an important aspect in order to use GIS effectively. Thus, this helps to institutionalise GIS at local planning departments.

5.2.3 Impediments to the Implementation of GIS in Planning Organisations

Whilst there are benefits to the use of GIS, there are also impediments to its implementation in planning organisations. Factors that impede the use of GIS in planning organisations have been highlighted in previous studies (Campbell, 2005; Carsjens and Ligtenberg, 2007; Drummond and French, 2008; Yeh, 1991 & 2005).

a) Effort to ensure and manage the quality of data. As a type of information system, the lack of available data is one of the major hindrances in the use of GIS. GIS needs graphic and textual data in order to function. Data in developed countries that are needed for setting up GIS are collected and readily available thus making

establishment of GIS is easy. However, data in developing countries like Malaysia are not so readily available;

b) The awareness of the benefits of GIS. Not all planners are aware of the benefits and potential applications of GIS in planning processes. Planners and the planning system may not be ready to use the data and functions provided by GIS. Much effort has been spent on data collection but only little effort has been spent on transforming data into information for making planning decisions;

c) A low level of GIS understanding and education. Only a few planning officers possess a general understanding of data, models and relational data structures, and the use of GIS functions in different stages of the urban planning processes;

d) The cost of purchase and maintenance of equipment and cost of software development. Most of the GIS hardware and software used are expensive and are imported from developed countries. It often takes a long time to repair a piece of hardware, particularly when the necessary components are not readily available locally and, sometimes, it is also difficult to consult software companies when problems arise;

e) Inadequacy of leadership and organisational infrastructure. As GIS is rather new to the local planning authorities in Malaysia, the department heads may not know their advantages and may be slow in pushing for the installation of GIS facilities in their departments. They need to be exposed to GIS before they can lead the way in promoting the use of GIS in their departments;

f) The issue of standardisation. Data and maps need to be standardised if the data were to be shared within the planning departments and with other departments at the same local authority. In Malaysia, the development of GIS is often developed by different agencies at different levels of the local governments. There exists a problem of data sharing among different types of GIS, such as like the accuracy of data, the scale used in digitising, the classification used and the frequency of DUPating the GIS data;

g) Over-concentration of GIS development. In Malaysia, most of the GIS development is concentrated on a few rich local authorities in a few large cities.

This is because of the financial aspects where some of the small local authorities may not have the budget to purchase GIS; the concentration of expertise and the lack of computing facilities and maintenance outside the large cities; and

h) Inhibiting policies and regulations. GIS policies should include the training programmes and the financial aspects to all levels of departments in each local authority in order to utilize GIS particularly in planning departments.

This section has examined the assumptions underlying the various impediments uptake of GIS in planning organisations. The next section reviews the urban planning systems and the need for an information system in local government planning departments in Malaysia.

5.3 GIS APPLICATIONS IN PLANNING AND MONITORING OF URBAN DEVELOPMENT IN MALAYSIA

In Malaysia, the growing interest of developing web-based GIS in government organisations as well as private sectors has been a positive sign in extending the use of GIS application to the public, apart from allowing for refer and acquiring of geographic information in digital form. The need to obtain views and feedbacks from the public is the main factor that motivates the development of web-based GIS pertaining to their relevant fields and activities. The examples are GIS web applications at three different planning and management levels, that is, the regional level, the state level, and the local level. Planning departments in the regional, state and local tier of Malaysian local government presently take responsibility for formulating strategic frameworks for planning through the production of structure plans. The activities of planning departments in city councils and district levels focus on development controls and the preparation of more specific local and unitary development plans.

5.3.1 Review of Urban Planning Systems in Malaysia

The practice of Town Planning in Malaysia is closely linked to the British systems of civil administration as with most of the other public utility departments, such as the Public Works Department, Drainage and Irrigation Department and the Forestry Department, which among others, had been established during the early 1950s. In Malaysia, it is apparent that urbanisation problems are the main concerns of current town planning objectives and, to a large extent, the national planning objectives (Jamil, 2003; Yaakup, 1992; Zen, 1994). Urban planning activities are tied up within the framework of the successive five-year national development plans, known officially as The Malaysia Plans. The plans themselves are further controlled by long-term strategic planning, for example, the New Economic Policy (NEP 1971-1990) and the current New Development Policy (NDP 1991-2020) (Bruton, 2007; Jamil, 2003).

Thus, it is important to review the history of urban planning systems in Malaysia as it is support the institutionalisation aspects of the use GIS in the planning departments. The first part reviews the Malaysian administrative system; the second part reviews the planning practice; the third part reviews the urban planning hierarchy in Malaysia; and the final part examines the use of GIS for every level of the Malaysian Development Planning System. As the aim of the research is to identify the degree of organisational and individual factors influencing the use of GIS, this section reviews the planning systems in general and examines the government use levels that have been using GIS for their activities. This review helps to generalise organisational and individual factors in the use of GIS in local authority planning departments in Malaysia.

5.3.2 Local Government Planning Departments in Malaysian Administrative System

The Malaysian administrative system is divided into three major levels: the Federal Government, the State Government and the Local Government; the last being the local

authority for its area (Bruton, 2007; Yaakup, 2003). The powers of each tier of the government are enshrined in the Malaysian Constitution under a number of Parliamentary Acts. Under the present organisation, the Federal Government alone is responsible for matters set out in what is known as the 'Federal List'. It includes foreign affairs, defence, transport and education. Similarly, the 'State List' includes land and religion. Matters related to the local government and urban planning are contained in what is called the 'concurrent list'; meaning that they are the joint responsibility of both federal and state governments.

In practice, the Federal Government of Malaysia exerts a strong influence over the running of the state government and, through them, the local authorities. This is performed through dispensing, or withholding, federal grants. The control of the local authority by the State Government is even stronger. First, the President, or Chairman, and members of the local councils are appointed on the recommendations of the State Government. Therefore, the local authority follows closely the views of the State Government. Secondly, the local authority is a creation of the State Government; hence, the State Government defines the spatial areas and the powers of the local authority. In turns, the powers of the local authority are based on what is termed as the 'decentralised competence system'. It means that the local authority can do only what it is specifically empowered to do. Among the powers given to the local authority include preparing development plans and enforcing them.

5.3.3 Planning Practices in Malaysia

The local governments in Malaysia have a different patterns and organisations. They are the City Hall (such as Kuala Lumpur City Hall), the City and Town Councils for the state capitals and big towns (fourteen cities and towns), and the District Councils (eighty Districts). In 1976, the Federal Government introduced two major pieces of legislation: i) the Local Government Act 1976 (Act 171) and ii) The Town and Country Planning

1976 (Act 172) (Bruton, 2007). The later act has been amended three times - in 1993, 1995 and 2001.

The main purpose of the Local Government Act 1976 (Act 171) is to provide a consolidated legal framework for local authorities. Act 171 enables local authorities to undertake a wide range of functions, thus changing the narrow field of operation accepted in the past. At the same time, the Act gives extensive powers to the new local authority units. Particularly important are powers to acquire land in the general interests of the public, to develop industrial estates, and to enter into joint ventures with other local authorities, and even with the private sector. The municipalities and the district councils have the same functions although the scope and scale of these functions differ. Although the new units of local government are granted wide ranging powers, absolute control laid in the hands of the state, which both creates and supervises local authorities within its area. Part XII (Act 171) offers an immense choice; permitting involvement in practically all services at the local level which provide for controlled and well-managed public places, environmental control, the collection of taxes on premises and issuance of licences for commerce ,and industry (Bruton, 2007; Yaakup and Sulaiman, 2007).

The planning powers in Malaysia are set out, not in Act 171, but in the Town and Country Planning Act 1976 (Act 172). The Town and Country Planning Act 1976 for the Peninsular Malaysia does not include the federal territories of Kuala Lumpur and Putrajaya (Bruton, 2007). The Town and Country Planning Act (Act 172) have undergone substantial modifications and amendments since it came into force in 1976. The Act is a useful 'tool' to assess whether planning activity in Malaysia is pre-emptive or reactive (Bruton, 2007; Jamil, 2003). Under this Act, the State is responsible for the general policy in respect of the planning of the development and use of all land within the State. According to Clause 5 of the Act, 'every local authority shall be the local planning authority for the area of the local authority'; thus confers a primary physical planning responsibility at the local level (Act 172 2001). Each state discharges its planning obligation through a State Planning Committee and the Local Planning

Authorities in the State and must do so within the framework supplied by the national development plan.

Act 172 makes provision for the production of a development plan. The development plan consists of two elements: (a) The Structure Plan (SP) consists of a written statement formulating a state's policy and general proposals for the development and use of land in its area including; (i) the principal physical, economic, environmental and social characteristics of the area; (ii) the size, composition and distribution of the population of the area; and (iii) the communications, transport systems and traffic of the locality and (b) the Local Plan (LP) comprises the next level down in the hierarchy of planning levels in Malaysia (Bruton, 2007; Yaakup et. al., 2003). The Local Plan amplifies the policies contained in the structure plan and formulates them in such detail as the planning authority sees fit; proposals for the development and use of land in the area covered by a local plan. The local plan is presented on a map base, and thus gives a precise indication of the proposals put forward for the use or development of specific sites – the improvement of communications and the management of traffic. The local plan is intended plainly to be the strategic planning vehicle for the next level down in the hierarchy and affords detailed and specific guidance to the agencies concerned with the implementation of physical development policies. These development plans have become key documents which need to be continually DUPated and revised (Bruton, 2007; Yaakup *et al.*, 2005).

The Federal Territory (Planning) Act 1982 is responsible for the federal capital, Kuala Lumpur. It was transferred from the State of Selangor to the Federal Government under the Federal Capital Act 1960 which at the same time imposed a unique administrative structure on the federal capital (Bruton, 2007). With the intention of achieving efficiency, the day-to-day administration of Kuala Lumpur was and is entrusted to a Commissioner – Datuk Bandar Kuala Lumpur or Lord Mayor.

5.3.4 Incorporating GIS in Malaysian Planning

The Town and Country Planning (Amendment) Act 2001, requires the formulation of plans at various spatial and administrative levels to ensure effective planning (Bruton, 2007; Yaakup and Sulaiman, 2007). The amended Act plays a major role in the reform of the development planning system in the sense that it insists the incorporation of GIS into the development plan preparation process at all planning hierarchy, be it at the macro or the micro level (Bruton, 2007). As such, GIS has long been applied in planning activities, which essentially include plans formulation as well as development control (Yaakup and Sulaiman, 2007). The various plans are as follows (Figure 5.1):

1. The National Physical Plan (NPP) which outlines the strategic policies for the purpose of determining the general direction and trend of the nation's physical development. The NPP guides planning in Malaysia and the strategic policies, which set out the national physical trend of development, are translated into the State Structure Plan. The control of development at the local level is tied to the District Local Plan which is the detailed land use plan that incorporates the national as well as the state development policy;

2. The Regional Plan (RP), which establishes policies to guide and coordinate development of a region, especially in the provision of infrastructure and facilities within the region;

3. The State Structure Plan (SSP), which sets out the policies and proposals for the development and use of the land in a state;

4. The District Local Plan (DLP), which translates the state policies at the local level; and

5. The Action Area Plan (AAP), which translates the specific policies and guidelines for certain areas at the local level.
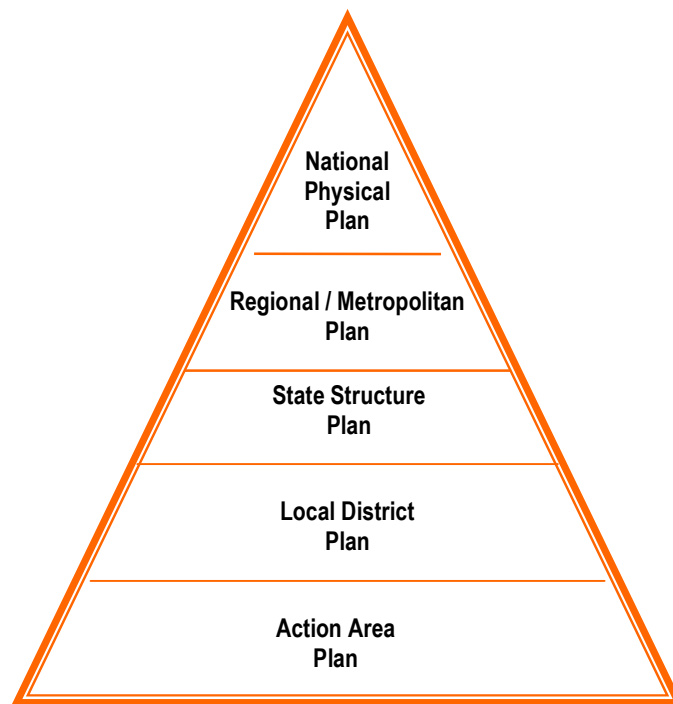
Figure 5.1: Hierarchical Framework of Malaysian Development Planning System (Yaakup, 2007)

5.3.4.1   The National Physical Plan (NPP)

At the national level, information technology, particularly GIS, are useful mainly for data collection, land suitability analysis and generating suitability maps (Bruton, 2007; Yaakup, 2004 & 2007). In the NPP, several study objectives are addressed in order to achieve the aims of providing comprehensive database and management systems for spatial planning, indicative maps, policies and planning strategies for national spatial development as well as providing a public institutional structure responsible for the management, implementation and monitoring of the NPP. The NPP focuses only on major and significant factors determining the level of suitability of areas for future urban development at a macro level and a further detailed criterion of a study would need to be covered at the state and local level of studies (Bruton, 2007).

Figure 5.2 shows the National Physical Plan Planning System which consists of five major criteria: (i) broad land use strategy; (ii) infrastructure development; (iii) green areas; (iv) green spine; and (v) residential hierarchy (Bruton, 2007; Yaakup, 2004 & 2007). The use of GIS is to determine land suitability based on factors such as existing urban areas, areas with physical constraints, water catchments and agricultural areas that need to be preserved (Bruton, 2007). The objective for carrying out the land suitability analysis is to identify land which would be available for future urban development based on the two objectives of maximising existing resources and the preservation of the natural environment and national assets (Yaakup, 2004; Bruton, 2007) adds the uses of GIS for the NPP also are able to generate economic growth and job projection through the analysis of relationship between population and job created in the region. Such analysis becomes important in projecting future requirement for housing, commercial floor space, school, and recreational facilities and to forecast the future economic linkages, manpower demand and supply. In the context of accessibility and transportation aspect, GIS is useful for undertaking transportation network planning, such as trip generation, travel pattern, gravity model and travel mode for inter-region and intra-region connectivity.

Therefore, the NPP requires comprehensive information systems and the planning staff, especially officers, need to be equipped with GIS skill, training and knowledge in order to determine trends and patterns of development in Malaysia. This is because there is a need to link physical data and socio-economic information which enable inter and intra-regional analysis to be carried out and to support various analysis and planning models such as economic base analysis, regional input-output and shift-share analysis. This is undertaken in order to support the formation of regional strategies (Bruton, 2007; Yaakup, 2004 & 2007).

Figure 5.2: The National Physical Plan Planning System (*Yaakup, 2007*)
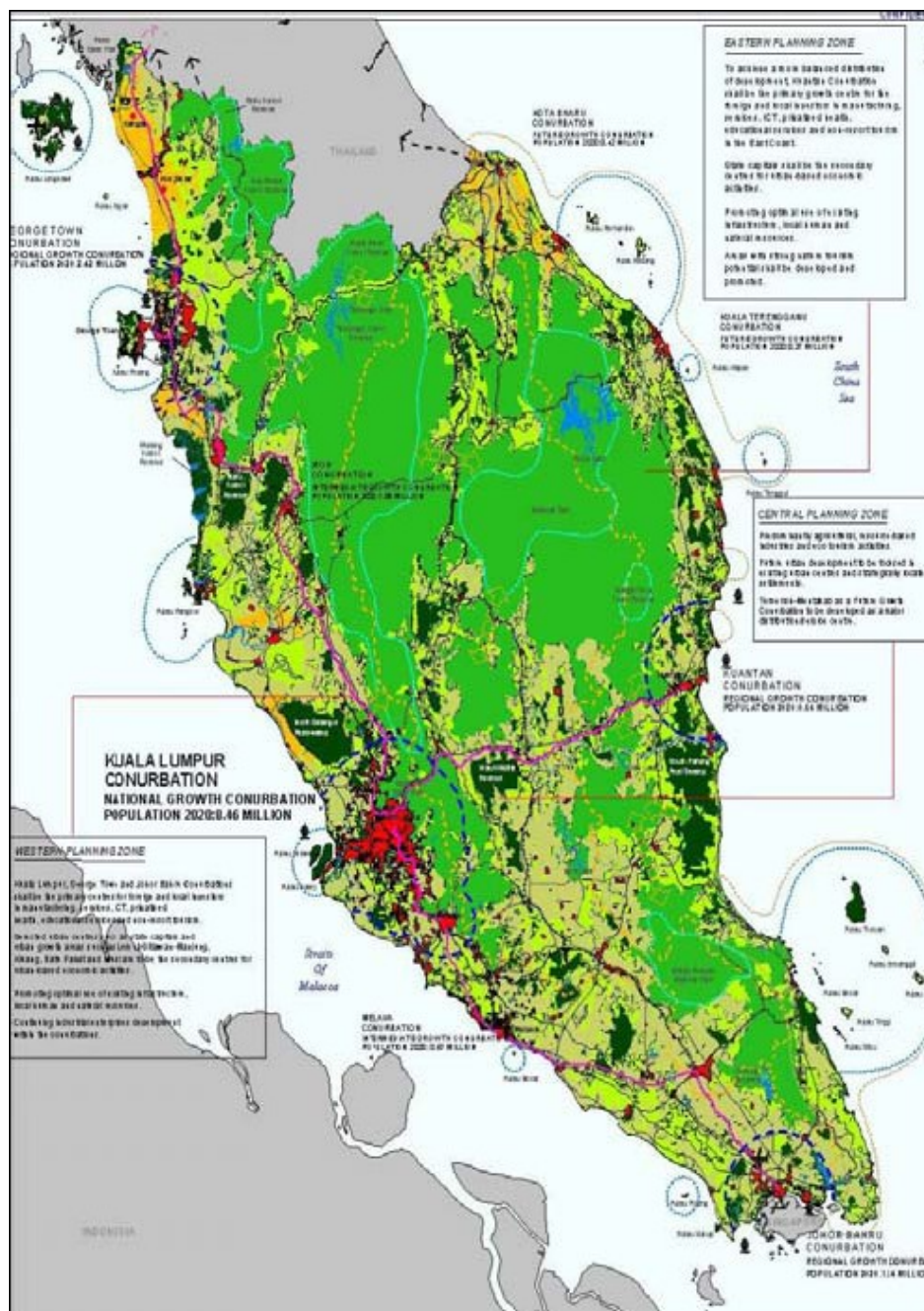
5.3.4.2 The Regional Plan (RP)

In urban and regional planning, databases have become important in developing regional policy and are used in formulating new policies or reviewing existing policies. In regional industrial development, industrial strategies are translated into spatial forms that take into consideration the regional development strategies, existing industrial sites, existing infrastructure, and population and its socio-economic background. Thus, with the help of GIS, a number of development alternatives can be generated and evaluated allowing for the most viable one to be implemented.

An example of GIS application at this level is the application of GIS for the Klang Valley Region (AGISwlk) that was prepared for the Ministry of Federal Territory. It was meant as a planning support system for decision-makers in the planning and monitoring of the region (Yaakup, 2004). A well-integrated and comprehensive GIS database had been designed and developed regionally to support ten main application modules, namely built-up area, green and recreational area, traffic and urban transportation, squatter and low cost housing, environment, utilities and community services, industrial and commercial development, population and socio-economic, and geo-hazard and tourism (Figure 5.3).
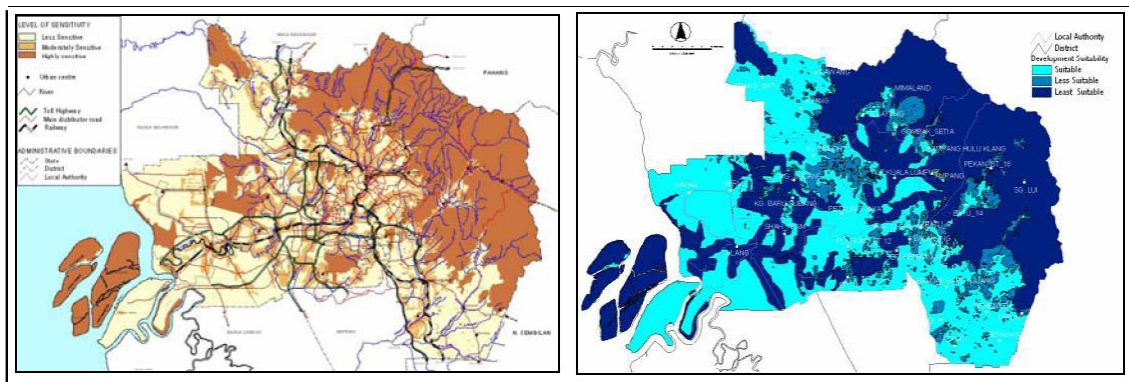
Figure 5.3: Identification of Environmentally Sensitive Areas and Development Suitability Analysis in AGISwlk (*Yaakup, 2004*)

Therefore, a comprehensive skill, training and knowledge of GIS by planning staff and officers are needed in order to determine trend and pattern of regional developments in Malaysia. These criteria are used to support decision-makers in decision-making processes and leads to a better decision.

5.3.4.3   The State Structure Plan (SSP)

Part III of the Act 172 (Amendment, 2001) states that the State Structure Plan (SSP) is a written statement of the policies and general proposal by the State Planning Committee regarding the development and use of land for the state. According to Yaakup (2004 & 2007), the preparation of the SSP is crucial in order to initiate inspection on the state development when required or if changes in the sectoral policies, which will consequently affect the pattern in the state development, occur.

For example, the system developed for the Pahang State Structure Plan covers three main aspects where GIS is concerned (Yaakup, 2004 & 2007). These are the database development, spatial analyses and development of an Executive Information System. The database developed was based on the guidelines by the Federal Department of Town and Country Planning (FDTCP) to support sectoral studies and analyses relevant to the structure plan formulation. The main concern of this SSP would be the preparation of the key diagram that involves a combination of analyses, such as the determination of an area which has potential for future development and area for conservation (Figure 5.4).

The determination of various development alternatives involve enormous collection of data to be analysed for the purpose of formulating policies, strategies and key diagram, which in turn determine the direction of the state development (Yaakup, 2004). Yaakup (2004) adds that the Multi-Criteria Decision-Making (MCDM) method is adopted to generate various development scenarios (Figure 5.5). The preparation of the key diagram involves determination of area having potential for future development and area for conservation (Figure 5.6).
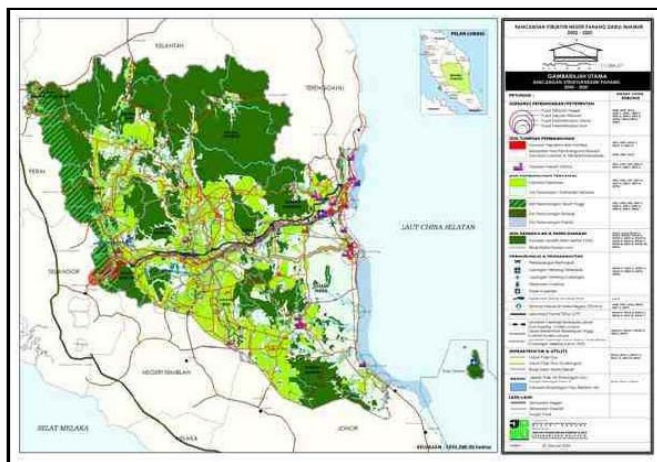
Figure 5.4: Key diagram of the Pahang State Structure Plan (*Yaakup, 2004*)
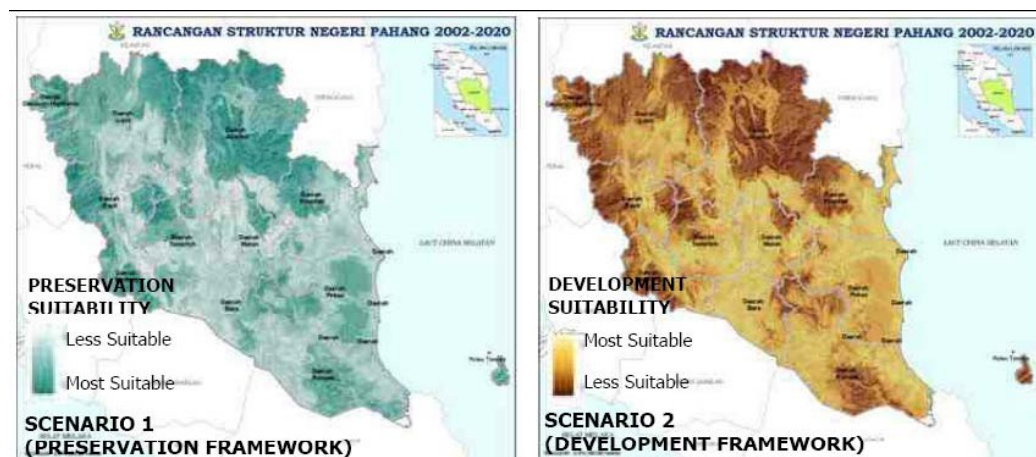
Figure 5.5: The resulting Development and Conservation Scenarios of State Government of Pahang (*Yaakup, 2004*)

Figure 5.6: Conceptual Development Alternatives for the State of Pahang (*Yaakup, 2004*).

5.3.4.4 The District Local Plan (DLP)

The District Local Plans (DLP) is a legal document that becomes the basis for development guidelines and control. These plans contain details of land use zoning, development density, building height and plot ratio which require detailed information of each plot of land (Yaakup, 2004 & 2007). A zoning plan, for example, covers a large area that contains various land uses (Figure 5.7). The tasks of preparing and analysing this information can be speeded up and made easier with the help of GIS. GIS can be used in delineating suitable areas for a specific development – housing for example – by taking into consideration the impact upon and from surrounding areas, such as impacts from nearby industrial areas.
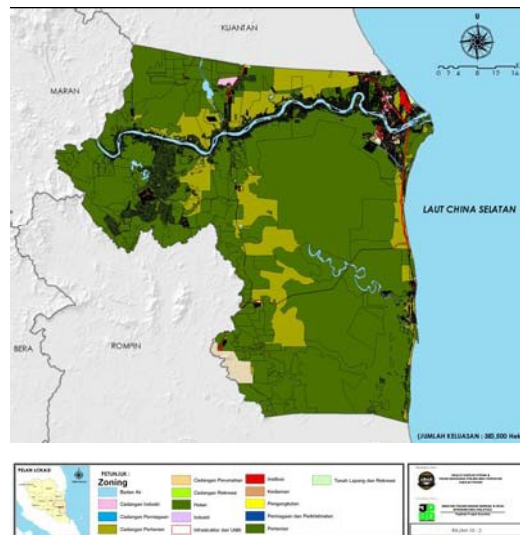
Figure 5.7: The District Plan (Zoning Plan- The District of Pekan, Pahang (*Yaakup, 2007*)

In the case of the Pekan district, the GIS database was developed for facilitating the preparation of the District Local Plan (Yaakup, 2004). The district covers an area of about 380, 500 hectares; located in the east coast of the State of Pahang. A well integrated lot-based GIS data layers and base map were designed to meet the local authority's requirement. At this level, spatial analyses involve determination of land suitability and allocation; combining the technique of multicriteria evaluation (Figure 5.8).
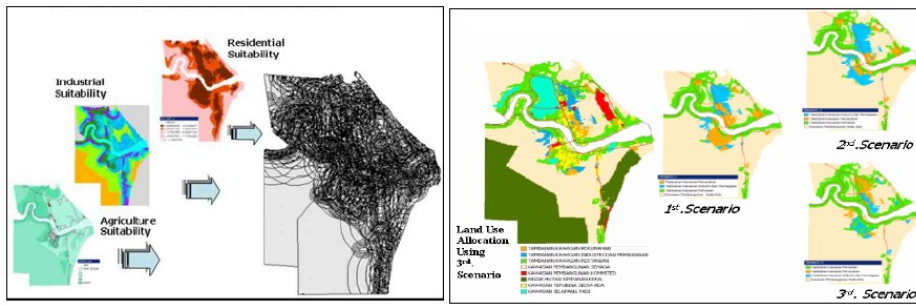
Figure 5.8: Land Suitability Analysis and Land Use allocation (right hand figure) (*Yaakup, 2004*)

5.3.4.5 The Action Area Plan (AAP)

The Action Area Plan (AAP) is a written statement of the strategic and specific policies and detail proposals for the land use plan within the local authority. The preparation of the AAP is crucial in order to develop and redevelop the land use which consequently affects the pattern in local area developments. Thus, with the help of GIS, a specific development alternative can be generated and evaluated allowing for the most viable one to be implemented.

For example, the system developed for the AAP for Kg Bharu, Kuala Lumpur (DBKL, 2007) is meant as a planning support system for decision-makers in planning and monitoring of the area. A well integrated and comprehensive GIS database had been designed and developed to support the spatial analysis, which consequently affect the pattern in the area development. There are ten main application modules, namely basic map, physical planning, administration, transportation, economy, population, socio-economic, land use plan, utility and land information (Figure 5.9 and Figure 5.10).

Figure 5.9 The Existing Land Use Plan of Kg Bharu, Kuala Lumpur (*DBKL, 2007*)
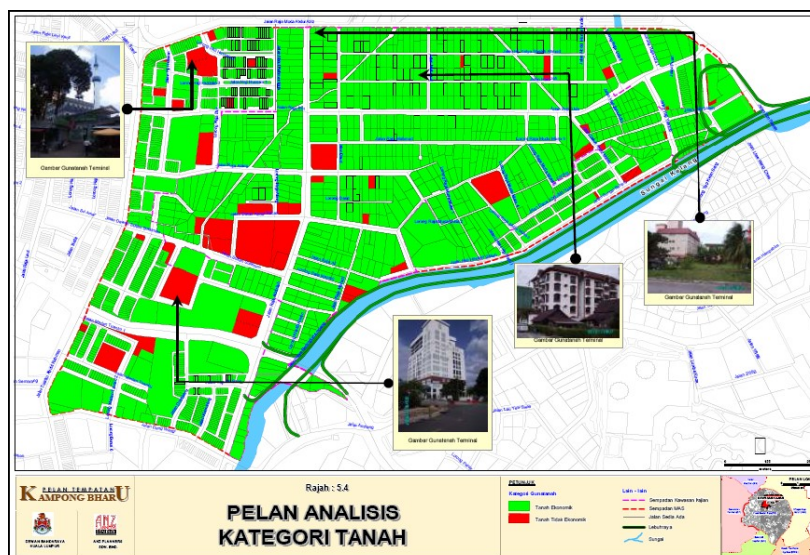
Figure 5.10: The Land Analysis Map of Kg Bharu, Kuala Lumpur (*DBKL, 2007*)

According to Yaakup and Sulaiman (2007) the concern for adopting GIS in the development planning process, especially in the preparation and review of development plans as well as development control involving evaluation of planning applications, had encouraged many local planning authorities to embark on small scale, multi-faceted GIS in order to suit their functions and work procedures. Geospatial information is being

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used daily by almost every agency of the federal, local and regional governments as well as public authorities. Recently, much concern is given to effective methods of creating, obtaining, distributing and sharing information especially for better decision-making.

5.3.5 The Level of GIS Usage in Malaysian Planning

Each level of the above plans, the use of GIS in determining their purposes and skills needed for using GIS at the advance level is shown in Table 5.2. This research focuses on the use of GIS at the local planning authority which involves the preparation of Local Plan and Structure Plan. Most planning department in local authorities use GIS as a tool for their planning activities and planning process. Moreover, the instruments to regulate, control and plan the development and use of land are the Structure and Local Plans. In the case of the Structure Plan, the local authority only prepares the plan; the approving authority is the State Planning Committee, or the minister in-charge of the Federal Territory under the Prime Minister's Department in the case of Kuala Lumpur. In the case of the Local Plan, the local authority prepares as well as approves the plan. Since the Local Plans are the ones which gave the details on what can and cannot be built on each piece of land, under the present system, the local authority yields wide powers in the direction and form of urban development in areas under its jurisdiction. Under the new direction of the local plan preparation, the implementation of the plan is guided by various design guidelines pertaining to a particular element.

In general, all the GIS applications being developed for urban management, regional planning and as well as for development control purposes at local level in Malaysia aim at improving public participation in the planning process. However, none of these applications took up the perspectives of legibility in spatial representation and try to integrate this qualitative information into the existing application. Therefore, this research is timely to address this issue.

Development Planning System in Malaysia	GIS Level of Use	Skills Needed
1. National Physical Plan	Data compilation; Land suitability analysis; Generate suitability maps.	Advance skills in GIS training and knowledge
2. Regional Plan	Regional analysis for improving decision-making.	Advance skills in GIS training and knowledge
3. State Structure Plan	Database development; Spatial analyses; Development of an Executive Information System (EIS)	Advance skills in GIS training and knowledge
4. District Local Plan	Spatial analyses; Multi-criteria evaluation; Require detailed information of each plot of land.	Advance skills in GIS training and knowledge
5. Action Area Plan	Database development; Spatial analyses; Require detailed information of each plot of land	Advance skills in GIS training and knowledge

Table 5.2: Summary of the Development Planning System in Malaysia with GIS level of use and Skills Needed (Source: Author)

5.4 GIS APPLICATIONS AND SPATIAL REPRESENTATION IN KUALA LUMPUR CITY HALL

The preparation of plans and the processing of planning applications, known as development control, are the main statutory responsibilities of the Kuala Lumpur City Hall (KLCH) Planning Department. In the context of urban planning, Yeh (2005) and Rainis and Abdullah (2006) proposes that other than technical issues, the availability of data, organisational change, and staffing are also factors that contribute to the effective use of GIS.

This section discusses the history of the planning legislation in Kuala Lumpur as it contributes to the planning activities of two planning departments in the KLCH. The importance of the planning legislation is to regulate and to control the urban planning activities and development of Kuala Lumpur. The planning departments involved are the Master Plan Department (MPD) and the Urban Planning Department (DUP). The DUP is the focus of this section as it is the department which developed the Development Control System (SKP) that fully utilised the application of GIS. This case study was conducted during a site visit from March until May 2008. The roles and responsibilities of the DUP and the MPD are summarised in Table 5.3.

a) The Urban Planning Department (DUP)
Task, Roles and Responsibilities:
1) To process the planning applications across six sub-sections within the planning areas of: 1) The City Centre; 2) Wangsa Maju-Maluri; 3) Sentul- Menjalara; 4) Damansara Penchala; 5) Bukit Jalil-Seputeh; and 6) Bandar Tun Razak-Sungai Besi;
2) To ensure that the planning applications comply with the Master Plan;
3) To give technical advice pertaining to planning and development in Kuala Lumpur and to the secretariat of the Town Planning Committee (set up under the Kuala Lumpur Planning Act 1974).
b) The Master Plan Department (MPD)
1) Task, Roles and Responsibilities:
2) To prepare a Master Plan for the City of Kuala Lumpur, a Structure Plan and a Local Plan;
3) To provide information and technical advice to other internal technical departments and external agencies (the Planning and Development Control, the Urban Design and Conservation Divisions, the Urban Development Authority and individual developer and investors).

Table 5.3: The tasks, roles and responsibilities of the DUP and the MPD (Source: Author)

5.4.1 Planning Legislation in Kuala Lumpur

The history of planning legislation in Kuala Lumpur can be traced back to 1881, when important and crucial legislative action was taken after a big city fire in that year. Yaakup et al., (2003) and Bruton (2007) states that urban planning was first introduced in Malaysia in 1921. Legislation that directly regulates town planning activities was introduced later in 1930 (Bruton, 2007). More recently, the need for better planning was reflected in the new Kuala Lumpur City Act (Planning) in 1973 (Act 107). It was the first legislation intended to control urban planning, development and related activities. When the Local Government Act (Act 171), which incorporated the Structure Plan from twenty years of strategic planning was introduced in 1976, it also included a Local Plan which was meant to develop a framework for social policies, urban economic activities and environmental issues. Later, a dedicated Act meant only for Kuala Lumpur was passed by Parliament, and it incorporated major principles covered under Acts 107 and 172.

The DUP of KLCH is the controlling public agency that oversees and facilitates development in the city centre and across the Kuala Lumpur territory as a whole. In addition, the Urban Development Authority (UDA) plays an important role in the city centre development and the agency adheres to the guidelines and planning standards established by the DUP.

The need to control development in the Kuala Lumpur city centre is very important because of the fast growing urbanisation compared with that of other urban areas. It has a mixture of traditional shop houses, office complexes and modern hotel-cum-shopping complexes. The DUP receives numerous planning applications for new development or redevelopment (Yaakup et al., 2003). The applications for new developments range from small to large, and include hotels and shopping complexes with floor spaces of more than 1 million square feet. Potential areas planned for such developments include open space, government lands, schools and rivers.

At present, development is based on the outdated development plan of 1970, which does not provide adequate guidelines to control such developments. The KLCH has applied various planning standards and restrictions based on plot ratio, density and plinth area. However, such restrictions can still be negotiated by compensating with payments of development charges, provision of car parking and other facilities, surrendering land for road widening or providing building setbacks. The concern here is that if development is not properly and efficiently controlled, it will adversely affect the form of the planned growth, and the image and the identity of Kuala Lumpur will be eventually lost.

5.4.2 Planning Practice in Kuala Lumpur

Planning in Kuala Lumpur is based on a new structure plan since January 2005, namely the Kuala Lumpur Structure Plan 2020 (KLSP 2020) which is an amendment of the Kuala Lumpur Structure Plan 1984 (KLSP 1984). It is regarded as a comprehensive plan whose goal is to guide the development growth of Kuala Lumpur (Bruton, 2007). The purpose of KLSP 2020 is to propose more realistic and effective guidelines with regard to the controlling of the physical development city areas in Kuala Lumpur. The Structure Plan (SP) addresses its economic base and population, land use and development strategies, commerce, tourism, industry, transportation, infrastructure and utilities, housing, community facilities, urban design and landscape and environment and special areas. The development of Kuala Lumpur has taken the form of concentrations of physical and economic activities in the centre; with stretch developments taking place along the major arterial routes leading into the city.

The 1984 Kuala Lumpur Structure Plan was the first formally documented strategic plan adopted by the city (Bruton, 2007; Tahir, 2005). This plan helped to provide direction for city planning authorities, to ensure that its upcoming development was in line with national development. The KLSP 2020 was formulated in the year 2000. It outlines the visions, goals, development strategies and sector policies aimed at galvanising the growth of the city in new and exciting ways (Tahir, 2005). The structure plan indicates

that a city will be considered 'world class' if it is able to provide the highest quality of living, working and business environment; benchmarked against the best in the world.

To help achieve the above vision, the following goals were formulated in the structure plan produced for the city (KLSP 2020):

i)   To enhance the role of Kuala Lumpur as an international commercial and financial centre.

ii)   To create an efficient and equitable city structure.

iii) To enhance the city living environment and the quality of life.

iv)   To create a distinctive city identity and image.

v)   To have an efficient and effective governance.

It is apparent that, in setting up these goals besides targeting the future development of the city, KLSP 2020 is also focused on having efficient and effective governance. This could be considered the right move by the city, and it is timely for it to consider this approach because increasing information technology, such as GIS, is useful for making the performance of the government more efficient and effective towards good urban governance. Having efficient and effective governance means there is an urgent need for local authorities as well as related professionals to seriously develop the strategies in applying information technology such as GIS in local authorities. More important roles and greater strategic efforts have to be made by the KLCH in order to achieve these goals.

5.4.3 The Kuala Lumpur City Hall (KLCH)

The KLCH is the local authority that has been given responsibility by the government for administering the city of Kuala Lumpur. With the rapid growth of urban development, the roles played by the KLCH are becoming more complex as it faces bigger challenges. The KLCH has to develop the city according to the development guideline formulated in the Kuala Lumpur structure plan together with other guidelines

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that have been developed from time to time by the authority. The KLCH is the only local authority in Malaysia allowed to prepare the structure plans and the local plans. For the other local authorities, the Federal Department of Town & Country Planning (FDTCP) prepares the structure plans and the local plans.
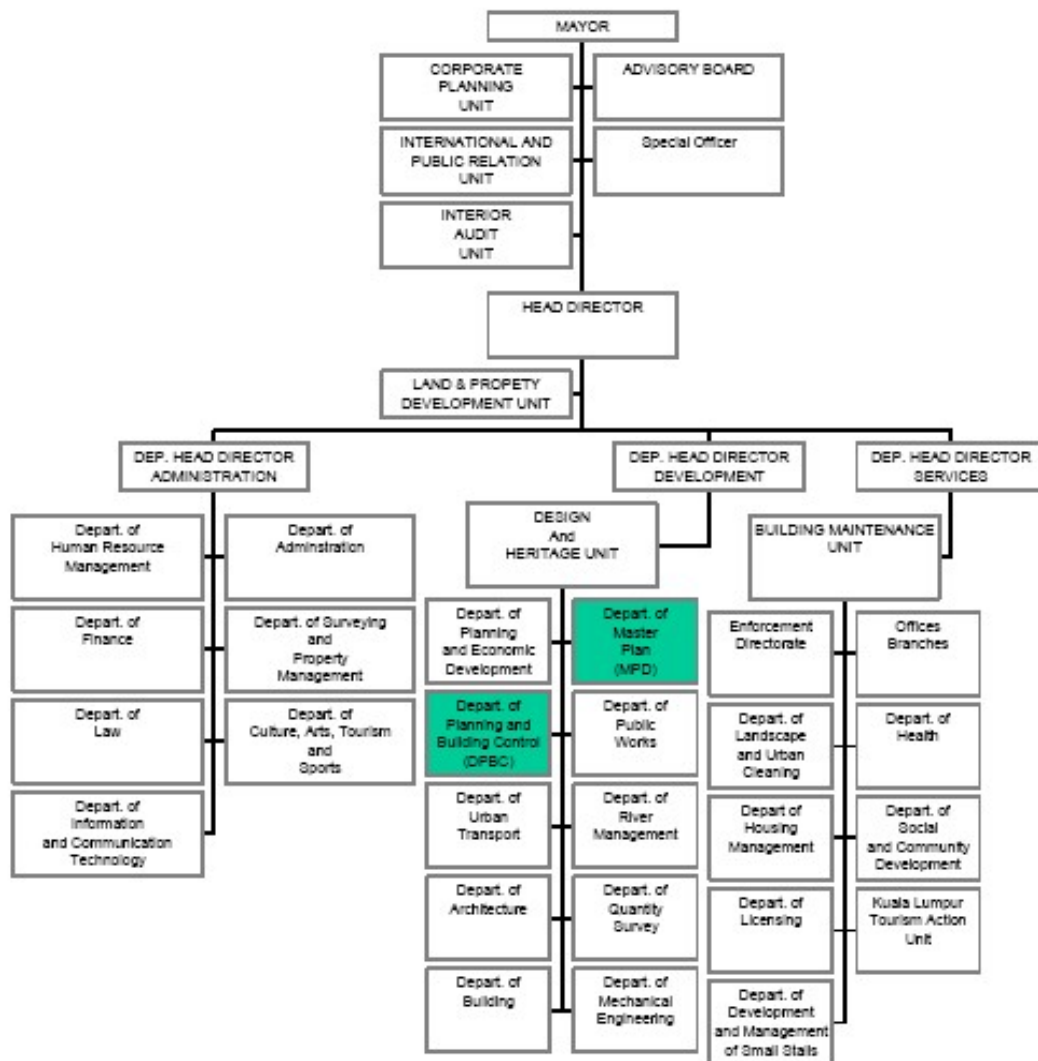
Figure 5.11:   The Organisational Structure of the KLCH (Source: Kuala Lumpur City Hall)

The KLCH is the largest municipal authority as far as size and functions are concerned. It is headed by a Mayor and is assisted by a 12 – member Advisory Board. They are

appointed by His Majesty the King of Malaysia based on the recommendation of the federal government. The Mayor acts as the Chief Executive and Chairman of the Advisory Board. To achieve the goal of the city, the KLCH functions as manager, administrator, planner, developer and provider of a number of services. There are 23 departments which are headed by directors charged with various tasks. The MPD and the DUP are highlighted within the organizational structure of the KLCH (Figure 5.11). The two planning departments are using GIS in their daily work processes.

5.4.4 Development Control in KLCH

Kuala Lumpur has evolved to become the center of economic growth activities for the Klang Valley and the country. The development of Kuala Lumpur has taken the form of a definite concentration of physical and economic activities in the center with ribbon development taking place along the major arterials leading into the city. Development control is considered very important for Kuala Lumpur Metropolitan, especially in the Commercial Central Area which has the highest concentration of development compared to the rest of the city. To date, the area which consists of a mixture of traditional shop houses, office complexes and modern hotel-cum shopping complexes, still receives numerous applications either for new development or redevelopment.

The City Hall receives many applications to redevelop the traditional shop houses to be replaced by a more up-beat commercial building (Adom, 1992). Small-scale development often carried out by private developers can be completed in record time but does little to contribute to the aesthetic aspect of the city since it is done in a piecemeal manner. Potential areas being planned for such developments include open spaces, government lands, schools and rivers. Though restrictions are imposed based on development plan and planning standards such as plot ratio, density and plinth area applied by the City Hall, these can still be negotiated by compensating with payment of development charges, provision of car parking and other facilities, surrendering land for road widening or providing building setback. The concern is that the development of the

area if not properly and efficiently controlled, will not only adversely affect the form of the planned growth but that the image and identity of Kuala Lumpur will be eventually lost.

The control of development, which involves the process of analysing the appropriateness of planning applications, requires various data from relevant agencies to be gathered (Bruton, 2007). In this case, planning applications are assessed in terms of current development scenarios, land information, planning requirements and planning designs. The applications are reviewed in terms of basic utilities (water supply, sewerage and telecommunication) and public facilities (availability of public transport, education facilities, religious facilities and safety factors). The strategy adopted by the KLCH is based on the assumption that information represents an important resource for strategic planning. The strategy is to combine day-to-day data uses with strategic information via the SKP operated by the DUP.

The Development Control System (SKP) within the DUP was set up to control development in the city area of Kuala Lumpur. There are six aspects of development control system and each of the aspects requires individual planning staff with proper skills and knowledge in order to use GIS efficiently (Yaakup, 2002) (Table 5.4).

Planning legislation in Kuala Lumpur started in the year 1881 (Baharom and Yusof, 2001) whereby an important and critical legislative action was taken after the big fire catastrophe. However, 'urban planning' was only introduced in 1921, while legislation that directly regulates town planning activities was later introduced in 1930. Eventually, the sudden need for better planning was realized with the new Kuala Lumpur City Act (Planning) in 1973 (Act 107). It is the first ever legislation meant to control urban planning and development and related activities (Kerajaan Malaysia, 1973). When Town and Country Planning Act (Act 172) was introduced in 1976 (Kerajaan Malaysia, 1976), which incorporates Structure Plan under 20 years strategic plan, it also included Local Plan meant to develop spatial framework for social policies, urban economic activities.

Later, a dedicated Act meant only for Kuala Lumpur was passed by the Parliament that incorporates major principles under Act 107 and Act 172.

	Aspects of the Development Control System	Skills Required by Planning Staff
a)	Analysing development strategies in terms of the role and function of Kuala Lumpur taking into consideration the policies outlined by the government. This can be done using the current data relating to floor space of the development area as well as the whole planning area. By comparing this information with projected figures from the Kuala Lumpur Structure Plan, the effectiveness of the development policies can be evaluated.	The ability of using GIS in order to analyse the planning development strategy.
b)	Providing information in order to assess the implication of planning applications in terms of the provision of social and community facilities.	The ability of planning organisation to provide an assessment of the affected area to the public.
c)	Identifying potential land available for development. This is useful to both the public and private sectors in order to determine supply of floor space. Land supply is an economically dynamic process and very much dependent on government policies. Such information therefore forms the basis for strategic planning.	The role of individual planning staff to collect and analyse the data for the strategic planning.
d)	Identifying areas receiving development pressure in order to facilitate development control and monitoring of the areas.	The ability of planning staff to use the system for monitoring the development.
e)	Facilitating technical evaluation of planning applications by displaying data on land use, plot ratio, transport system, and used by other agencies involved in technical aspects	The ability of planning staff to facilitate displaying the user interface display to the public.
f)	Providing information on development and administrative policies formulated by the municipality that has been translated into spatial entities. This is important in order to enable planners to advice applicants. The system therefore is capable of displaying information on development status, surrounding development, available infrastructures and other planning requirements.	The ability of planning organisation to facilitate and advice the public specifically the applicants toward planning application. The ability of planning staff to show the planning application system about development area to the public.

Table 5.4: The aspects of Development Control System and the relationships between the planning staff and the department *(Source: Adapted from Yaakup, 2002)*

In terms of related acts pertaining to development control at the KLCH, the Federal Territory of Kuala Lumpur has its own planning law that is the Federal Territory Planning Act, Act 267, 1982. In Act 267, development control is stated in Division IV Section 20 and 21. In this act, Section 20 states the Prohibition of Development without the Permission for Planning. All forms of development involving building work, engineering, mining or industrial-whether the work is inside, on top or above the land including transferring of land and building usage, border separation or land merging- need the permission for planning with the exception of development under the allocation of Section 20(2), Federal Territory Act 1982 (Act 267). In principle, the act is similar to Act 172. However, in replacing the local government, the Mayor is given a wide discretion to administer as allowed by the act.

5.4.4.1   Process and Procedures

The Kuala Lumpur City Hall (KLCH) is the largest municipal authority as far as size and functions are concerned. Administration and management of KLCH is undertaken by more than 20 different departments or units including the Master Plan Department, Planning Control Division, Building Control Division, Enforcement Unit, Administrative Division as well as the Secretariat, each having its own head. All these departments are under the supervision of a Director General who is assisted by two Deputy Director Generals. The Mayor appointed by the Prime Minister, heads the entire organization and is an administrator with vast power and authority over decision making as far as development is concerned.

All applications for any development in the city of Kuala Lumpur will have to be submitted to the City Hall for approval. Depending on the type and scale of development, these applications will be processed and considered by either 'Town Planning Committee I' or 'Town Planning Committee II'. Town Planning Committee I chaired by the Mayor looks at proposals for comprehensive and large-scale development, layout plans, change of use of land and increased density, and the

application for the use of government land. This committee comprises the Director General of City Hall, Deputy Secretary to the Minister of Federal Territory, and all the directors of the technical divisions. Before an application is reviewed by this committee, it will have to go through all the technical departments for comments and recommendations, based on which decision is derived whether to approve, approve with conditions or reject the proposed development. Then, Development Order will be issued by the Mayor. Meanwhile, Town Planning Committee II looks into the applications for development of shop houses, detach houses, mosques, industrial building, etc. The procedure adopted by Town Planning Committee II is similar to the former committee, except that Development Order will be issued by the Director General.

5.4.4.2   Requirements

The process of development control and approval involves a technique for the systematic compilation of expert quantitative analysis and qualitative assessment of land use and property development viability, including its effect on the surrounding area, and the presentation of results in a way that enables the importance of the predicted results, and the scope of modifying or mitigating them to be properly evaluated by the relevant decision making body before a planning permission is rendered. Development at the local level such as KLCH obviously involves a lot of policies and implementation decisions, which have to consider the cost and benefit to every level of urban dwellers. To plan and control development in such area requires the technology that is capable of not only assisting in day-to-day routines but should also aid in formulating development strategies able to cope with the fast changing scene. Given the wide range of activities over the years, the local authority has amassed a huge amount of information of which a substantial portion is geographical in nature such as layout of housing scheme, road and drainage system, composition and distribution of population, distribution of land use and so forth. Unfortunately, these data are often inaccessible even to the local administrators, the main reason being the database management system which is based on manual filing system, making retrieval of information difficult and time consuming (Yaakup et al.,

1997). While previous systems developed help tremendously in information retrieval and analysis, they do not handle spatial data very well. Thus, jobs assigned to the system are quite limited to routine retrieval.

Development control and approval in KLCH, which involves the process of analyzing the appropriateness of planning applications, requires various data from the relevant agencies. A planning application will be assessed in terms of current development scenario, land information, planning requirements and planning design (Yaakup et al., 2002). An information system is necessary not to only keep and display data pertaining to planning application for the purpose of administrative functions, but also designed to facilitate planning at strategic level. The system developed for development control and approval, thus need to comprise the following features:

i.   Capabilities of analysing development strategies in terms of the role and function of Kuala Lumpur taking into consideration the policies outlined by the government. This can be done using current data on floor space of the development area as well as the whole planning area. By comparing this information and control figure projected by the Kuala Lumpur Structure Plan, the effectiveness of the development policies can be evaluated;

ii.   Capabilities of providing information to assess the implication of planning application in terms of the provision of social and community facilities;

iii.   Capabilities of identifying potential land available for development. This is useful to both the public and private sectors to determine supply of floor space. Land supply is an economically dynamic process and very much dependent on government policies. Such information therefore forms the basis for strategic planning;

iv.   Capabilities of identifying areas receiving development pressure to facilitate development control and monitoring of the areas;

v.   Capabilities of facilitating technical evaluation of planning applications by displaying data on land use, plot ratio, transport system, etc. used by other agencies involved in technical aspects;

vi.　　Capabilities of displaying information on development status, surrounding development, available infrastructures and other planning requirements. This is because information on development and administrative policies formulated by the municipality, which has been translated into spatial entity is important to enable the planners to advice applicants.

The system developed should also allow for integration with other stand-alone databases apart from further enhancement to cope with the fast changing technology.

5.4.5　Scope of the Development Control System (SKP)

To plan and control development requires an information system that is not only capable of assisting in day-to-day routines but should also aid in formulating development strategies able to cope with a fast changing scene. The establishment of the development control at the KLCH is different from other local governments in Malaysia. The KLCH is governed under the Ministry of Federal Territory. Hence, any decision made is under the jurisdiction of the Mayor. Based on these, the KLCH through the DUP has developed a centralised computer system that has been constructed to assist employees in the planning of application processes. This systems known as Development Control System (SKP), facilitates users who are the departmental staff and applicants in executing a more systematic, efficient and orderly task.

The advent of information and telecommunication system at the KLCH has also been a factor responsible for the establishment of SKP (Noordini, 2006). The Treasury Department, for example, has introduced a financial system known as the Financial Management System (FMS) which manages financial matters in the KLCH. It attends to matters especially those pertaining to payments by the public. The SKP is also linked to the FMS for filing fee payments and development charges imposed on the applicants.

The formation and design of the SKP are based on departmental needs and in accordance with the workflow of the departments involved (Noordini, 2006). Therefore, it has to take into consideration all user needs besides anticipating the capability of the system. The scopes of formation of the SKP are as follows:

a) The SKP has the facility for application acceptance in development approval either in hard copy or digital copy. Apart from that, the SKP is able to cater to future needs towards accepting planning application online.

b) The formation of the SKP is based on the Relational Data Base Management System (RDBMS).

c) The development of the SKP involves seven subsystems for the Planning and Building Control Division. The subsystems are Planning Authorisation Subsystem, Building Control Subsystem, Enforcement Subsystem, Information Kiosk Subsystem, Geospatial and Planning Information Subsystem, Documentation Processing Subsystem, and Meeting Presentation Subsystem.

d) The design of the SKP is based on customer concept and operating in Windows Operational System as well as being user-friendly for the usage of officers and the departmental staff involved.

e) The SKP has security control characteristics in storing documents and data, and interfacing with other departments.

The database for the SKP was designed and developed in order to combine several data layers used in analysis such as:

1. Base map – plot coordinate, topography, map series, locational relationships and spatial entity at land parcel level.

2. Administrative boundary – state, city hall, planning zone.

3. Built environment – residential, commercial, industrial, institutional, educational, religious and recreational.

4. Transportation – roads, Light Rail Transit, railways, transport station and airport location.

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5. Planning requirement – development plan, planning policy, land use, plot ratio, development status and land information (parcel number, district, section and status).

6. Geology and soil.

7. Hydrography – lake, river, reservoir and drainage.

8. Relief Element – contour and slope.

9. Vegetation – natural vegetation and cultivated vegetation.

10. Meteorology – rainfall, humidity and wind.

11. Utility – electricity (overhead cable and transmission), telecommunication (cable line, public phone and transmitter), water (pipeline and pump station), sewerage (sewerage line, sewerage tank and treatment plant).

12. Community facilities – religious places, civic halls, health centres, education facilities (kindergarten, primary, secondary and tertiary).

5.4.6 Sub-Systems in SKP

The SKP has seven subsystems that are interrelated with each other. They are the:

i. Planning Authorisation Subsystem

ii. Building Control Subsystem

iii. Enforcement Subsystem

iv. Geospatial and Planning Information Subsystem

v. Meeting Presentation Subsystem

vi. Information Kiosk Subsystem

vii. Documentation Processing Subsystem

The GIS modules developed in the development control system integrate seven subsystems in order to execute specific functions (Table 5.5):

Subsystem	GIS Functions	The Process of using GIS
Planning Authorisation Subsystem (processing planning applications; beginning with the submission of applications through to the Policy Approval or Development Order Approval)	The GIS functions support users in making data entry, data analysis and manipulation, conducting queries and generating reports for the Planning Evaluation Reports (LPP) and generating Site Investigation Reports and other planning approval processes. This sub system allows users to observe the effects of related policies and spatial information while evaluating planning applications and requirements. Apart from saving time and space, it helps to minimise workload and reduce the use of paper and increase the quality and productivity of work.	The complicated process to get the approval for planning application which has many stages makes this subsystem very important in expediting the approval process. The design of the subsystems which is structured according to the work flow of the department requires the process to go through. Though it is not flexible, this subsystem is transparent and able to avoid problems in bureaucracy.
Building Control Subsystem (developed as support to the building plan approval process that begins with the submission of building plan approval applications, and includes production of the Certificate for Occupation)	The GIS functions make it easier for users to refer and search the required spatial information based on location, owner information and land use.	Preparation of this sub-system is a continuation of the planning authorisation subsystem which can assist the planning staff to process the approval of building plan. Data sent during the planning approval process can be retrieved from the main data base which can save processing time.

Enforcement Subsystem	The GIS functions developed enable enforcement officers to monitor land use and building faults by providing reports on site investigation, site information, planning approval reports, building plan reports, warning notices and control actions.	Monitoring and enforcement of building construction disobedience is important to ensure the development within KLCH area adheres to the rules and regulations. This subsystem needs to be prepared as a support to the enforcement process at the Department of Urban Planning and the Department of Building.
Geospatial and Planning Information Subsystem	The GIS functions enable tracking of development order approval, building order approval, and building occupation orders.	This subsystem is needed to prepare a complete data base for spatial analysis and contribute to the whole of Kuala Lumpur area. Centralised data preparation facilitates users to retrieve the data. DUPating information could also be done easily since they are stored in a centralised data base.
Meeting Presentation Subsystem	This GIS function was built using web-based technology for users as well as the public to view and retrieve spatial information related to land use and building development using query operations based on lot number, street name, building type and area through the DUP web site.	This subsystem makes presentation in a planning meeting more informative and interesting. The form of presentation would be in 2 and 3 dimensions. This would give more precise picture on the development that is taking place.

Information Kiosk Subsystem	This sub-system enables users to display and query planning applications as well as related policies and development plans such as the Local Plan and Structure Plan. It also assists decision-makers to ensure a smoothprogression of meetings via supply of related information including plans, GIS-related data and other associated information.	Setting up a webpage is important to facilitate users who consist of planning staff and the public to find the latest information about the urban planning department besides being a reference for GIS information which is interactive. The public can also check their application status without having to go/refer to the department.
Documentation Processing Subsystem	This sub-system enables users to store and retrieve all documents in a more systematic manner. Users can manage the documents more efficiently and effectively as and when the document is needed.	This subsystem is required to determine the location of document storage, document retrieval, format, titles of documents which should be given when the application is received. All application information which has been uploaded will be entered into a data base through this subsystem. Beside this, previous application records could be retrieved by using this subsystem.

Table 5.5: The SKP, GIS functions and Description (*Source: Author*)

The seven subsystems make up a combination of the overall development control process implemented by the DUP at the KLCH. Interaction between each subsystem would enable the processing of the application to become more transparent and efficient. Figure 5.12 shows the structure between each subsystem that has been designed for the SKP. Each developed module is based on the process stated in the quality procedure of the development control system.

Based on the description in Table 5.5, it is suggested the SKP is a complete system involving the overall development control process implemented at the KLCH. However,

the development of this integrated system is costly. Yet, its functions and advantages have been able to assist the departmental in providing the best service to the society. Apart from its uses at the DUP, the SKP is also able to interact with existing system that has been developed by other departments at the KLCH. However, it needs a configuration and different interfaces design in order to link the systems. Each subsystem has its importance especially in providing the best service to the public.

5.4.7 The Use of GIS in the SKP Sub-systems

The Planning Authorisation Subsystem is the main subsystem in the development of the SKP. The GIS database usage in this subsystem assist in the processing of planning applications forwarded to the DUP. This subsystem has been developed to support the needs of the DUP to manage staff daily tasks for the purpose of management, control, uniformity, and monitoring the development of the municipality (Noordini, 2006). In this subsystem, six modules have been developed (Table 5.6).

The Planning Authorisation Subsystem covers the overall process to obtain the Development Order (DO) from the DUP. This subsystem is linked with other subsystems, namely the Meeting Presentation, the Planning Information and Geospatial, and the Information Kiosk Subsystems. Compared to the conventional planning application processing, the strength of this subsystem lies on its capability to process application based on different types and sizes (Noordini, 2006). Apart from this subsystem is also able to process numerous applications at each session. A centralised data management enables this system to manage the data more efficiently and systematically.

The GIS database is capable of acting as the rightful information provider, especially the spatial information data that gives a clear picture on developments within Kuala Lumpur. GIS database is linked to all subsystems in the SKP for the purpose of retrieving, displaying and application analysis.

Modules	Function	Interface Display
Planning Advice	To advise applicant on any forms of development that will be forwarded to departments and to distribute checklist for applications.	• Local GIS information Bills issuance & local information • Bills reprint • Bills DUPate & form checklist • Digital checklist
Registration Application	After payment is made, applicants will register their applications.	• Type of application • Bills listing • Basic information record Application records • Receipts information • Lists of application Consultants information
Duties Division	The registered application will be distributed to the Planning Area Officer to be distributed again to the staff in charge.	• Division of duties
Application Analysis	To analyse applications based on data entered from detailed information in proposed location.	• Basic application details • Background of application • Issues and problems • Development proposal Results recommendation
Minutes and Agenda	To organise agenda based on 'first come first serve' basis and draft of minutes of meeting will be issued after a meeting is over.	• Agenda arrangements • Minutes preparation
Results Document	To DUPate planning information based on the decision of the Urban Planning Committee (Town Planning Committee – TPC) and to issue direction of Development Order (DO) if application is approved.	• Developments order (DO) • DO conditions • Charges

Table 5.6: The Modules of Planning Authorisation Subsystem with its functions and interface display
(Source: Author)

The function that has supported each development application of the Geospatial Planning Information Subsystem clearly shows that the need for digital geographical information system is important in assisting the work process of the DUP in making decision on the development suggestion or programs. In the Planning Authorisation Subsystem, GIS data is used on modules as seen in Figure 5.12 and Table 5.7
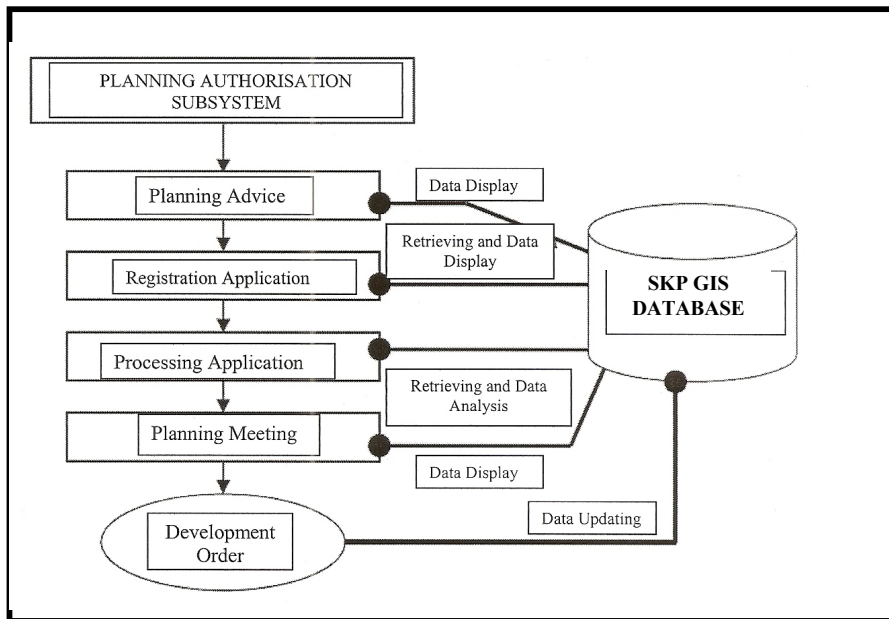
Figure 5.12: GIS usage in the Planning Authorisation Subsystem (KLCH, 2008)

Table 5.7 indicates the importance of GIS skills, training and knowledge acquired by individual planning staff at each modules of the Planning Authorisation Subsystem.

Modules	GIS Usage by Planning Staff
Advice Service	The ability of the planning staff to use data from the GIS data base to support information and advice given to the applicant on the development site based on current situations and surrounding areas.
	The data include the information on current land use, basic planning plans and surrounding site information.
Application Registration	During the registration of applications, GIS data is used by planning staff to identify planning areas and the development of the application of location proposed.
	Plan revisions are taken to ensure that digital plans which have been forwarded follow the guideline and design criteria.
Application Analyses	In the application analysis, GIS data is used to evaluate forwarded planning applications.
	The GIS data can also be used to assist users in preparing the Planning Evaluation Report (Laporan Penilaian Perancangan –LPP). The data retrieval that helps users are:
	• The development location and surrounding area information of proposed development • The current land use and committed land use • The current planning guidelines and policies.
Site Investigation	This module is used to investigate the site. Site information is collected either through GIS data or the Information Kiosk Subsystem before running the investigation.
Planning Meeting	Applicant information, developer and owner, application document, GIS database and Computer Aided Design (CAD) are integrated during the planning meeting. The data are retrieved from the data base management system which keeps all information related to the tabled application. The GIS presentation during the meeting would help users to: i. display automatically the site location which are discussed ii. display basic information such as land use, building use, roads and others iii. display information of a discussed lot iv. display information of surrounding lots v. display basic information of application vi. display previous applications on the proposed site vii. display information related to guidelines such as plot ratio, building height, and

	complete development plans 1039, 1040, and 1041. viii. display building information, transportation and others Through the GIS data, the planning analysis which involves spatial data can also be achieved in order to give a clear picture of the planning application.
Development Kiosk	The display information of the GIS data for the development control that can be retrieved through a webpage include current land use, planning guidelines and information, such as rivers, train tracks and utilities. This information helps the public, such as developers to know specific planning guidelines stated for any proposed areas without having to go to the DUP more than once.

Table 5.7: The Modules of GIS Usage by the Planning Staff (Source: Author)

5.4.8 Challenges and Limitations in the Implementation of SKP

Since the early 1980s, there have been major breakthroughs in the cost, speed and data storage capacity of computer hardware and software (Yaakup et al., 2002). With computer costs still dropping, with the emerge of powerful portable machines, and with the possibility of massively increased network bandwidths, enabling a larger and larger segment of Kuala Lumpur city dwellers to connect up, the prospects for new types of computer use in problem solving and policy domains have never been more promising (Yaakup et al., 1997). The application of the computerised development control and approval system (SKP) will inevitably influence the existing structure and practice of urban planning and management in KLCH.

The implementation of the computerised system provides a good prospect for e-submission of planning application. However, one of the most important requirements is that the system should cover all the necessary work process involved in development control and approval. Effective use of ICT such as the SKP, however, requires personal

commitment of individuals at all levels of the local authority with respect to overall leadership, general awareness and technical capabilities. Successful utilization depends on clear leadership and a commitment from senior staffs that are aware of the potential opened up for urban planning and management. Training and education is another essential component to ensure the smooth transfer of knowledge. Sophisticated system requires trained and experienced technicians to operate and maintain the system, and, more importantly, sophisticated planners, analysts and managers to determine what type of information should be collected and to interpret and use the information that the system produces.

The implementation of the system, therefore, involves far more than hardware and software decisions. Effective implementation rests on a thorough and systematic evaluation encompassing planning, operational, organizational, institutional, personnel, financial and technical aspects. More research and attention need to be directed toward the organizational and institutional issues.

The critical component for the effective use of information in geographic information systems is the manner in which implementation is undertaken (Budic, 1994; Campbell, 2005; Campbell and Masser, 1995; Rainis and Abdullah, 2006). The concept of implementation in the context of organisations may be viewed as a change phenomenon or a process for creating organisational changes (Obermeyer and Pinto, 1994). Yeh (2005) lists three sets of conditions that are important in an effective implementation of GIS:

1. An information management strategy that identifies the needs of users and takes account of the resources at the disposal of the organisation;
2. Commitment to, and participation in, the implementation of any form of information technology by individuals at all levels of the organisations;

3. A high degree of organisational and environmental stability. GIS that is most likely to be used is one that can deal with identifiable problems. More complex application is less likely to be developed than simple ones.

Rainis and Abdullah (2006) list seven sets of conditions in order to ensure a successful implementation of GIS:

1. User participation and Awareness
2. Top level Management Support
3. Organisation Setup
4. Incremental or Project-based Implementation Approach
5. Database Development
6. User Training
7. Staffing

Researchers on GIS highlight several factors for the successful implementation of information technology in organisations (Table 5.8) (Batty, 2005; Campbell, 2005; Burrough, 1993; Cooper and Zmud, 1990; Ferrari and Onsrud, 1995; Huxhold and Levinsohn, 1995; Obermeyer and Pinto, 1994; Sieber, 2000; Holahan *et al,* 2004; Rainis and Abdullah, 2006; Yeh, 2005).

The implementation of GIS in planning organisational settings is a complex process that involves installing, maintaining, and using a system in environments that have diverse functions, tasks, resources, motifs, interests and goals. For GIS and its database to be jointly built, there needs to be a critical mass of participants interested in the geographic information relationship, and this participant take various roles, such as information providers, service providers, distributors and users (Nedovic-Budic and Pinto, 1999b).

According to Budic and Godschalk (1994), each agency planning to employ GIS needs to develop an adoption strategy to account for its organizational circumstances and its employees' capability to embrace the technology. This approach should be tailored to

the particular combination of institutional and individual factors pertinent to each organisation. Budic and Godschalk (1994) add that high correspondence between organisational adoption of GIS and the extent of GIS management suggest that intensive, diverse and explicit GIS management activities raised the likelihood of a successful of GIS implementation.

Factors for the Successful Implementation of Information Technology in Organisation	Scholars
1. Characteristics of the user community (job tenure, education, resistance to change) 2. Characteristics of the organisation (specialisation, centralisation, formalisation) 3. Characteristics of the technology being adopted (complexity) 4. Characteristics of the task to which the technology is being applied (task uncertainty, autonomy and responsibility of person performing the task, task variety) 5. Characteristics of the organisational environment (uncertainty, inter-organisational dependence)	Batty, 2005; Campbell; 2005; Cooper and Zmud, 1990; Rainis and Abdullah, 2006
1. Managers know how to use it strategically 2. Operators know how to use it technically 3. They communicate effectively with each other	Batty, 2005; Burrough, 1993; Campbell; 2005; Cooper and Zmud, 1990; Rainis and Abdullah, 2006
1. Technical validity 2. Organisational validity 3. Organisational effectiveness	Batty, 2005; Campbell; 2005; Cooper and Zmud, 1990; Rainis and Abdullah, 2006; Obermeyer and Pinto, 1994

1. Flexible plans 2. Organisational actions 3. Commitment to change or the group's attitude toward change (positive or negative)	Batty, 2005; Campbell; 2005; Ferrari and Onsrud, 1995
1. Successful dealing with the characteristics of organisational culture 2. The dynamics of people interacting in teams 3. Change processes 4. The impacts of introducing new technology.	Batty, 2005; Campbell; 2005; Huxhold and Levinsohn, 1995
1. Evaluation of user needs 2. Long-term upper management commitment to the project 3. Sufficient allocation of resources 4. Adequate staffing 5. Timely and sufficient training 6. Someone called a "GIS champion" who will shepherd the project from acquisition to use 7. Organisational communication of diffusion to smooth the transition to full utilisation	Batty, 2005; Campbell; 2005; Sieber, 2000
1. Access to technical competence 2. Listening to staff 3. Adequate training and technical support 4. Quality of upward communication	Batty, 2005; Campbell; 2005; Holahan et al., 2004
1. An information management strategy 2. Commitment to, and participation 3. A high degree of organisational and environmental stability	Batty, 2005; Campbell; 2005; Yeh, 2005

Table 5.8: Factors for the successful implementation of information technology in organisation (Source: Adapted from various sources)

Thus, it can be concluded that the factors for the successful implementation of GIS in planning organisations are in essence between individual connection and organisation's decision to adopt a new technology. It is believed that, with an effective implementation of GIS in planning organisations, it helps to ensure an effective use of GIS for planning activities. Table 5.9 summarises the five characteristics of the factors for the successful implementation process of GIS technology in the planning organisation.

1. Characteristics of user community - Job tenure - Education and adequate training and timely technical support - Resistance to change - The dynamics of people interacting in teams
2. Characteristics of the planning organisation (specialization, centralization,formalisation) -Listening to staff -Evaluation of user needs -Sufficient allocation of resources -Organisational actions
3. Characteristics of the technology being adopted (complexity) - 'Usable' systems, accurate, reliable, easy to operate - The impacts of introducing new technology - Adequate staffing and easy access to technical competence - Acceptance by user community
4. Characteristics of the task to which the technology is being applied (task uncertainty, autonomy and responsibility of person performing the task, task variety). - Matching GIS function to organisational tasks - Commitment to change or the group's attitude toward change - To communicate effectively with each other - Managers know how to use it strategically - A "GIS champion" who will shepherd the project from acquisition to use.
5. Characteristics of the organisational environment (uncertainty, inter-organisational dependence): - Long-term upper management commitment to the project - Quality of upward communication and targeted users - Organisational communication of diffusion to smooth the transition to full utilisation - Successful dealing with characteristics of organisational culture - Flexible plans

Table 5.9: Summary of the factors for the successful implementation of GIS in planning organisations (Source: Author)

5.5 CHAPTER SUMMARY

This chapter has examined the various perspectives concerning the development and implementation of Development Control System (SKP) in Kuala Lumpur City Hall (KLCH). Implementation of the computerised development control and approval system is seen as an important tool in facilitating and accelerating the process of development control and approval in KLCH. However, an important issue not to be overlooked in the implementation of the system is the overall information management strategies, which takes into account the availability of data, computing capabilities and management requirements. Without well-developed strategies and availability of data, it is likely that major problems will arise in relation to its utilisation. In such situation, there will be mismatches between information needs and data availability as well as between data collection and information processing.

In Southeast Asian cities and other Third World cities, illegal land use activities and changes is a commonly shared issue especially in metropolitan areas. Describing the situation in Jakarta, Cairns (2002) wrote that 'on any one day someone confidently heads for an address across town only to find that upon arriving, no such address exists' (Cairns, 2002: 101). Complaining about a similar situation in Sao Paulo, Levi-Strauss wrote that the city 'is developing so fast that it is impossible to obtain a map of it; a new edition would be required every week' (Levi-Strauss, 1992: 45).

As presented earlier in the chapter, the database for the SKP was designed and developed in order to combine several data layers used in analysis such as base maps, administrative boundaries, built environment components or land use, transportation elements, planning requirements information, geology and soil, hydrographic elements, relief elements, vegetation, meteorology, utilities and community facilities. Given the scenario that land use change in Kuala Lumpur happens relatively faster than the updating process of the formal land use map in KLCH, a method should be devised to allow the general public to contribute their inputs to the existing GIS database. With an

appropriate platform, public participation in updating some of this information could be promoted and encouraged. This process, in return, would enhance the effectiveness and success of development control in KLCH administrative area.

Success or failure of SKP very much depends on a variety of human, organizational and technical factors. Following that, the next chapter looks into the informal spatial representation adopted by the community in Kuala Lumpur and how it could be used to complement the formal spatial representation system used in KLCH to assist a better informed decision making process in local planning authorities in Malaysia.

CHAPTER 6: THE CASE STUDY OF URBAN LAND USE AND LEGIBILTY

6.1   INTRODUCTION

When Prime Minister Tunku Abdul Rahman Putra Al-Haj proclaimed Independence for the new nation of Malaya on 31 August 1957, Kuala Lumpur was a modest, up-country mining and administrative town. Having being the centre for the preceding British colonial administration, it had some fine buildings but was still a small town by the standards of most other modern capitals. Kuala Lumpur had yet to emerge from the shadow of Singapore, or indeed even Penang (King, 2008). More than fifty years on, the transformation and achievement overwhelm and there is much to celebrate.

The Kuala Lumpur history traces back to the mid-19th century, when a group of tin prospectors came to settle around the convergence of the Klang and Gombak Rivers at the Masjid Jamek (Figure 6.1). Although historically a Chinese town, Kuala Lumpur today is culturally hybrid. Malays, Chinese and Indians comprise the main races among others in this multicultural backdrop. Better known as KL to the locals, the city is a mix history and culture intertwined mushrooming skyscrapers and office towers.

Kuala Lumpur has evolved from the 1860's mining town to a modern and vibrant developing city. Colonization from the western countries has brought some of the most endearing features to the City, where 19th century buildings were influenced by the Islamic heritage of Mughal and pre-World War II shop houses became a key feature to business and retailing activities. Today, Kuala Lumpur's economic growth has changed the skyline of the city. Ultra-modern buildings and large scale developments now frames the city's urbanscape. The challenge now is to make Kuala Lumpur distinctive, where its

urban development has a high level of cultural vibrancy and creativity that will make Kuala Lumpur liveable and attractive.

Figure 6.1: The Convergence of Klang and Gombak Rivers at the Masjid Jamek. (*Photo by Author*)

Kuala Lumpur is the main location for business and trade in Malaysia. It accommodates regional headquarters of national and multinational companies, international and regional commercial and financial services, specialised high-end retail services, high-technology manufacturing activities, education training services, and national cultural institutions. The dynamic growth of the Asean and Asia-Pacific region also exerts a significant influence on Kuala Lumpur and Malaysia's economy. However, Kuala Lumpur needs to remain competitive and the diversity of multi-cultural society makes Kuala Lumpur an ideal location to live and work.

The City of Kuala Lumpur shares boundary with several districts that falls under different municipalities or local planning authorities within the state of Selangor. The urbanization and dynamic growth of Kuala Lumpur has great impacts towards the surrounding areas and this lead to many issues that are common to the various municipalities as well as to the Kuala Lumpur City Hall. Areas surrounding Kuala Lumpur are Petaling Jaya (under the Petaling Jaya City Council, Ampang (under the Ampang Jaya Municipal Council), Selayang (under Selayang Municipal Council) and Kajang (under Kajang Municipal Council) (Figure 6.2).
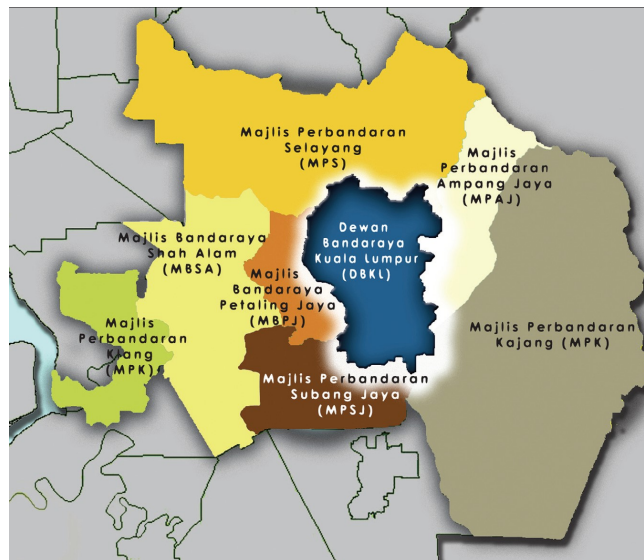
Figure 6.2: Kuala Lumpur and the surrounding districts (*Source: Kuala Lumpur City Plan 2020)*

Kuala Lumpur is a multi-cultural city with multi-racial population. The Malays (41%) and Chinese (39%) almost equally share the majority population in the City while the Indians comprise of 10%, followed closely by the foreign population at 7% (DBKL, 2008). Such trend will continue until 2020 when Kuala Lumpur population grows to 2.2 million, as all areas are expected to increase in population with the highest being in Bukit Jalil-Seputeh followed by City Centre and Sentul Menjalara (Table 6.1).

Kuala Lumpur is a city with high proportion of working-age residents, where more than 53% of its residents are of 20 to 55 years of age (DBKL, 2008). This indicates strong human resources available in the City to participate actively in economic activities of the City. It also has 42% of youth group of 20 to 45 years of age (DBKL, 2008). This reflects young adult population that is significantly high and thus creates demand for affordable accommodation, active recreation and social facilities in the City. Another estimated 25% of the City's resident populations are students whilst only 4% of the residents are 65 years and above (DBKL, 2008). These are vital contributing factors to planning and development of Kuala Lumpur as the City Hall strives to serve the needs of its population.

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Strategic Zones	Area (km²)	Population 2005	Density 2005 (person/km²)	Population 2020	Density 2020 (person/km²)
City Centre	17.7915	143,000	8,038	245,611	13,805
Wangsa Maju-Maluri	46.5858	380,300	8,163	443,712	9,525
Sentul-Menjalara	46.0998	344,500	7,473	445,025	9,654
Damansara-Penchala	47.4531	167,100	3,521	259,078	5,460
Bukit Jalil-Seputeh	43.2288	318,300	7,363	464,271	10,740
Bandar Tun Razak- Sungai Besi	41.1694	266,900	6,483	340,669	8,275
KUALA LUMPUR	**242.3284**	**1,620,100**	**6,840**	**2,198,366**	**9,577**

Table 6.1: Population Density Structure of Kuala Lumpur. (Source: Kuala Lumpur City Plan 2020)

In the Kuala Lumpur City Plan 2020, Kuala Lumpur City Hall has designated a premier business and financial zone in the City Centre, which is also identified as an international zone (Figure 6.3). The premier zone has two main areas; the financial precinct and the business precinct. The financial precinct will provide for corporate international and national headquarters whilst the international zone will provide for agencies and embassy functions which are becoming increasingly important because of globalization.
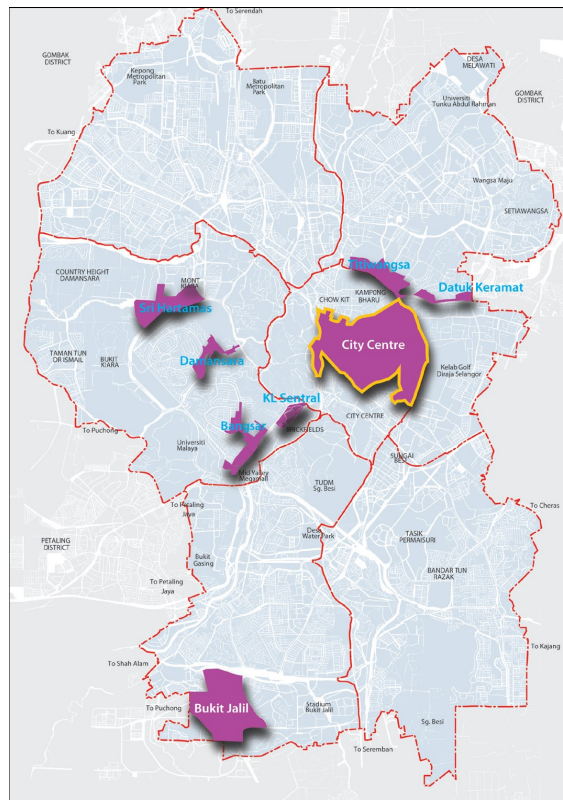
Figure 6.3: Premier Zone in the city centre and International Zone outside the city centre. (*Source: Kuala Lumpur City Plan 2020)*

The business precinct is the immediate area outside of the financial precinct within the area of Jalan Ampang-Jalan Tun Razak-KLCC-Bukit Bintang leading into Jalan Imbi; Jalan Tun Abdul Rahman- Chow Kit-Jalan Dang Wangi, Jalan Pudu-Jalan Petaling-Jalan Sultan-Jalan Hang Jebat (Table 6.2). Within this area, all kinds of businesses are attracted by the spillover effects of Kuala Lumpur's dynamic economic activities in the financial precinct which will serve as the catalyst for the growth of other business and professional services. For the International Zone, Kuala Lumpur City Hall has designated four areas in the zone. These areas include the City Centre, Bangsar - Damansara, Jalan Ampang -Jalan Tun Razak - Jalan U-Thant – Jalan Damai - Jalan Semarak, Titiwangsa and Bukit Jalil (Figure 6.3 and Table 6.2).

Zone/Precint	Designated Area	Characteristics and Activities
Financial Precint	Jalan Sultan Ismail-Jalan Raja Chulan-Jalan Tun Perak –Jalan Raja Laut	• Corporate international and national headquarters
Business Precint	• Jalan Ampang-Jalan Tun Razak-KLCC-Bukit Bintang leading to Jalan Imbi • Jalan Tunku Abdul Rahman-Chow Kit-Jalan Dang Wangi • Jalan Pudu-Jalan Petaling-Jalan Sultan-Jalan Hang Jebat • Jalan Davis	• International Islamic financial and banking hub • Insurance, stock broking, financial services, investment banking etc • International Business • Embassy enclaves • Wide range of hotels • Cultural and entertainment facilities • World class professional services
International Zone	• City Centre Kuala Lumpur • Bangsar-Damansara • Bukit Jalil • Jalan Ampang-Jalan Tun Razak-Jalan U - Thant - Jalan Damai – Jalan Semarak and Titiwangsa	• Access to ICT hardware and software • Creative clusters • Education and training centres

Table 6.2: Kuala Lumpur Premier Zone and International Zone. (*Source: Adapted from Kuala Lumpur City Plan 2020)*

Apart from the bustling financial and business districts, Kuala Lumpur also boasts of a number of well-known landmarks. Circling the historical town to its north is Jalan Tun Razak, which, together with its extension to the south, now constitutes the Kuala Lumpur's avenue of national monuments. The arc of Jalan Tun Razak, with the Petronas Twin Towers as the focal point and all the other monumental buildings such as Putra World Trade Centre (PWTC) and Tabung Haji, represents the modern day Kuala Lumpur. The great diversity of the built fabric and urban spaces of Kuala Lumpur and the chaotic rush of their transformation call for a reading of the city that can reveal something of both its present metamorphoses and its potential.

That's exactly how I see the city. From the street and at speed, it's a punctual, linear experience, not continuous as in a movie. The city is perceived essentially as an interrupted sequence (Michael Dear, 1996: 17).

The new users' city is a fragile one, whose survival and successes are centred on an economy of high productivity, advanced technology, intensified exchange. It is a city whose space consists of airports, top-level business districts, top-line hotels and restaurants, a sort of urban glamour zone (Saskia Sassen, 1999: 108).

Both the quotations above evoke the question on how best to approach or read the city of Kuala Lumpur. As rapid sequences of images and impressions (Dear, 1996) or as a contender in the global competition of urban glamour zones (Sassen, 1996)? The cities of Southeast Asia do not conform to the neat preconceptions of Western conceits as to how the space of a city should be seen, read or understood. The postmodern cities of Southeast Asia are composed of more random and juxtaposed bits. While something of both juxtaposition and imposition arises in the spaces of Kuala Lumpur, the racial divisions, the ambivalences of identity and the brilliance of representation make the city unique. Thus, insights into its present and future trajectories are best to be sought through the eyes of its residents and visitors.

6.2   THE CASE STUDY AREAS

Becoming completely lost is perhaps a rather rare experience for most people in modern cities. That is because we are supported by the presence of others around us, maps, street names and route signs. Street directories and tourist maps are easy to get hold on in any cities and very handy as tools for way-finding. The use of modern devices with advance technology such as mobile phones equipped with Global Positioning System (GPS) makes it almost impossible to become lost. However, legibility in a city is not limited to way-finding. A city which has a legible urban form and land use pattern will help to improve site planning process and promote a better informed decision making.

The process of site-planning involves reviewing past progress and assessing current and future issues and threats. It needs to prioritise and manage activities that will sustain ecological, economic, and cultural values. Thus, balancing multiple and often incompatible objectives, addressing priority threats to natural ecosystem, achieving sustainable development and, fulfilling institutional policy and legal needs are important

in site planning process. In order to appropriately follow through the process of site planning, planners need to have enough information at hand.

Therefore, as an attempt to improve the site planning process in the city of Kuala Lumpur, this chapter presents how informal spatial representation input from the public can be utilised to further enhance the formal spatial representation database in Kuala Lumpur City Hall. This formal spatial representation database is the basic information used by the Planning Department in their planning approval process.

This chapter is presented in the form of two case study areas (Figure 6.4):
a) Kampung Baru
b) Jalan Tuanku Abdul Rahman/Jalan Masjid India

These two cases study seek to improve spatial/physical information of the areas. It is presented in two sections. The first is the urban form and legibility experience by travelling through the two case study areas. Each area was walked through to experience its land use flow and representation, and identify spatial planning issues. Tools used to navigate within the areas were the formal spatial map from Kuala Lumpur City Hall and tourist maps. The experiences are then presented in a series of photos. The second section is the urban form and legibility perception. Questionnaire surveys and interviews were carried out to gauge information on the public's perception on the subject matter. The fieldwork for both cases study was carried out between February and May 2008. See Chapter 2: Research Methodology for detail explanation.

a – KG. BARU

b – JALAN TAR/
MASJID INDIA

JABATAN PELAN INDUK
Dewan Bandaraya Kuala Lumpur

Skala = 1 : 32,000

RESIDENTIAL	RELIGIOUS FACILITIES
COMMERCIAL	PUBLIC FACILITIES
INDUSTRY	TERMINAL
GOVERNMENT INSTITUTION	RECREATION & OPEN SPACE
NON-GOVERNMENT INSTITUTION	SQUATTER RESIDENTIAL
EDUCATION	SQUATTER COMMERCIAL
MEDICAL/EMERGENCY SERVICES	SQUATTER INDUSTRY
EMBASSY	CEMETERY
UNDEVELOPED LAND	RIVER/DRAIN RESERVE
COMMUTER LINE	LRT LINE
MONORAIL LINE	ERL LINE
ELECTRICITY RESERVE	KL BOUNDARY

Figure 6.4: The two case study areas. (*Source: Master Plan Department, Kuala Lumpur City Hall)*

6.2.1 Urban Land Use and Legibility Experience

a) Case Study 1: Kampung Baru

Figure 6.5: Map of Kampung Baru. (*Source: Master Plan Department, Kuala Lumpur City Hall*)

The story of Kampung Baru starts in 1900. The British colonial administrators in charge of Kuala Lumpur allocated 250 acres of land north of the city centre to be occupied exclusively by Malay people. Seemingly, the motivations behind this were to protect the Malays from Chinese or colonial appropriation of their land, in effect to preserve some place for them in the predominantly Chinese and British town. However, there are claims that the motivation of the colonial administrators as being less benevolent. Whatever the reason was, it has made Kampung Baru a Malay settlement right in the heart of Kuala Lumpur.

Kampung Baru can be considered a living heritage in Kuala Lumpur although its character has been somewhat diluted over the years. Located next to the Kuala Lumpur City Centre (refer to Figure 6.5 and Figure 6.6), Kampung Baru remains very much a *kampung* (village) due to historical reasons. It has so far managed to escape the long arm

of development because it was gazetted a Malay Agricultural Settlement, under Section 6 of the Selangor State Government Land Enactment 1987. Its formation in 1900 came after Malays residing in the then centre of Kuala Lumpur where Masjid Jamek is situated, were relocated to the area.
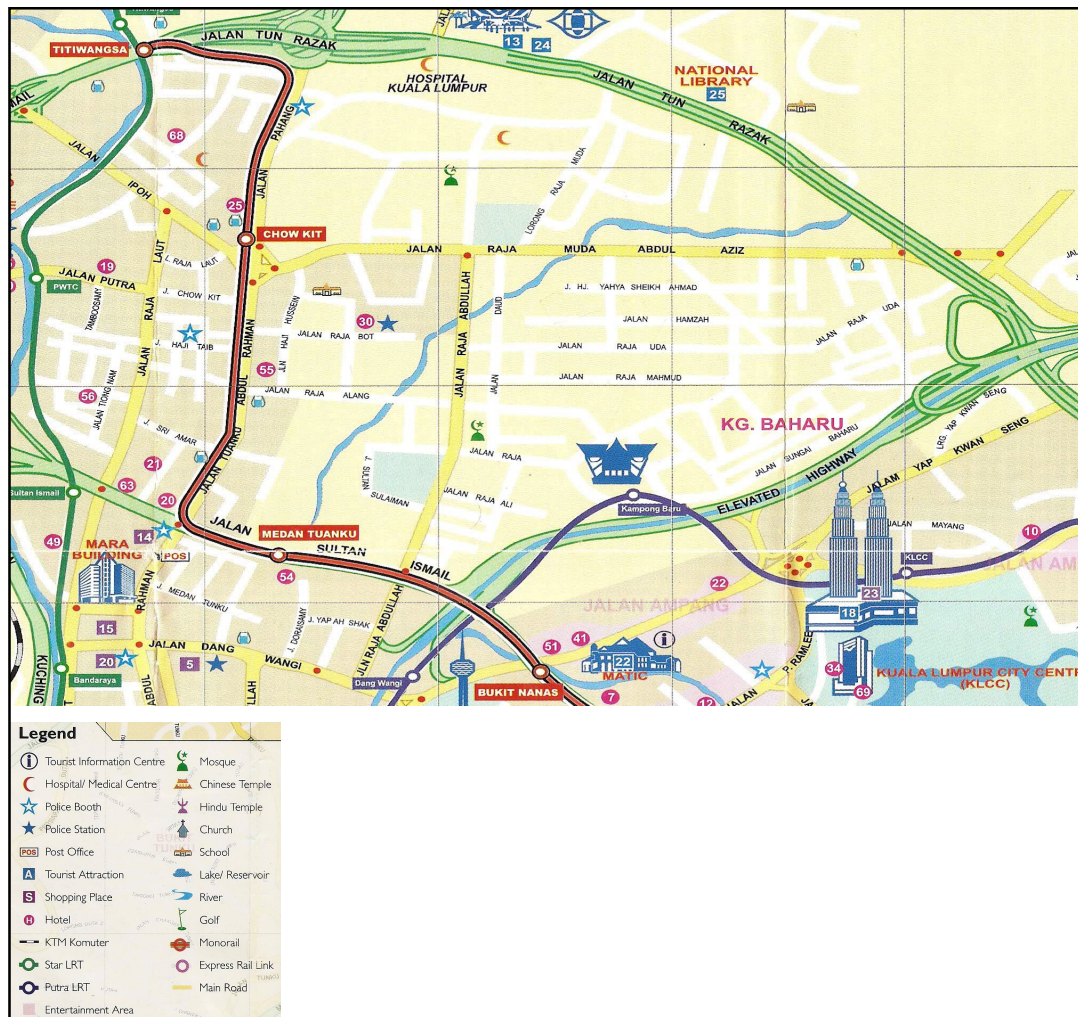
Figure 6.6: Tourist map of Kampung Baru. (*Source: Malaysia Tourism Centre*)

Alarmed at the declining culture and status of the Malays in Kuala Lumpur, the colonial government set aside some 250 acres (101 hectares) outside of the town and to the north of the Selangor Turf Club for a model, self-supporting, semi-agricultural Malay settlement. This became Kampung Baru (New Village). According to the first census

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which was done in 1928, there were 544 houses and 2,600 villagers in Kampung Baru. The urban village now has around 17,000 people.

The good intentions of the formation of Kampung Baru may be seen as born in a need to ease some collective conscience in the face of colonial exploitation and Malay enfeeblement, but its effect was to freeze aspects of the problem it sought to resolve. To 'protect' the Malays from Chinese or colonial appropriation of their land, in effect to preserve some place for them in the Chinese and British town, the government reserved Kampung Baru for exclusive Malay enjoyment. Subsequent Malay Reservations Enactments of 1913 and 1933 excised both small pockets and vast tracts of territory from the market of the formal economy. Land existed in two markets, only one of which was freely traded.

Kampung Baru bears witness to the fruits of this two-market situation. The racecourse has gone, replaced by the Kuala Lumpur City Centre (KLCC) with the twin towers, shopping mall, hotel and public park. Jalan Ampang is effectively a new CBD and venue for upmarket condominium blocks; and Jalan Tun Razak has become the nearest thing to an institutional avenue in Kuala Lumpur. These constitute the surround of Kampung Baru (Figure 6.7 – 6.9), which can make some claim as the very centre of gravity of the city. It is still a crowded settlement of one- and two-storey houses in a muddle every bit as complex as Chinatown but without the latter's fluidity, continuing waves of investments and consequent affluence.

Figure 6.7: Kampung Baru in the middle of a prime business district. (*Photo by Author*)

Figure 6.8: A village-city contrast: Kampung Baru's informal village environment against the formal city background. (*Photo by Author*)

Figure 6.9: Kampung Baru surrounded by modern, tall, commercial buildings. (Photo by *Author)*

So while the city has grown and developed around Kampung Baru, the enclave itself is primarily a site of one-story detached wood and concrete structures. Attempts to develop Kampung Baru in the past have led to nowhere. However, according to a KLCH town planner there are plans for an extensive redevelopment of Kampung Baru such as the re-development of Pasar Minggu, the popular Sunday Market that takes place every Saturday evening (Figure 6.10). Other projects include the improvement and beautification of major streets and pedestrian malls in the village. Changes in zoning, schemes for lot readjustments and incentive plans for developers are among the many planning instruments described in the Kuala Lumpur City Hall development plan.

Figure 6.10: The Sunday Market which will be replaced by a formal market within a three-story podium. (Photo by Author)

The development which will replace the Pasar Minggu market will still provide space for vendors to set up on Saturday nights. However, it will be difficult for many to comprehend the transformation of what is now a single-story informal market selling clothing, trinkets, pungent-smelling fresh fruit, and assorted low-cost steamed and fried foods into a formal market within a three-story podium. In *The Global Cultural City? Spatial Imagineering and Politics in the (Multi)cultural Marketplaces of South-East*

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Asia, Yeoh (2005) describes the fate of Singapore's Kampong Gelam after it was designated an historic district. Particularly controversial was the decision to turn the Istana (palace) into a Malay Heritage Center, a decision that necessitated the eviction of the family members of Sultan Hussein Shah, the nineteenth century Sultan of the state that became Johore and Singapore. In this example, heritage as museumification rather than as lived culture was the modus operandi.

Although Kampung Baru is a special site with special rules, Kuala Lumpur City Hall is not treating it as a site of heritage, either museumified or lived. Instead, Kampung Baru is being envisioned as a developer's playground. When asked whether there were any concerns about how a new demographic will change the street life of Kampung Baru, the town planner responsible for the enclave replied, ''We cannot control who will live there, but we want Kampong Bharu to be the Malay cultural centre of the modern Malay world''.

Kampung Baru is extraordinarily mixed, with profusions of wooden houses (Figure 6.11), degraded public housing blocks from a later era of misguided good intentions and more recent houses (Figure 6.12) that display some success on the part of their owners. Despite the high density, and except for the high-rise blocks, it is an area of separate, detached dwellings. There are no shophouses. This is decidedly not Chinese-Kuala Lumpur space. There are some reduced-scale replicas of colonial bungalows but also more traditional Malay house forms (Figure 6.13 – 6.15). Though this is not the most dilapidated and poverty-stricken of Kuala Lumpur's kampung, it is the most challenging to the idea and the legal status of Malay lands.

Figure 6.11: Wooden houses in Kampung Baru. (Photo by *Author)*

Figure 6.12: Modern housing units in Kampung Baru; double storey detached houses in the foreground and apartment blocks in the background. (*Photo by Author)*

Figure 6.13: An example of a Malay traditional house in Kampung Baru. (*Photo by Author)*

Figure 6.14: Another example of a Malay traditional house in Kampung Baru. (*Photo by Author*)

Figure 6.15: The informal and openness qualities of a traditional Malay house. (*Photo by Author*)

Certainly there is disorder in Kampung Baru. Kampung Baru has a famous Sunday Market (Figure 6.16), which spills over into the night market off Jalan Tuanku Abdul Rahman. Both of the market and local enterprises within the kampong have something of the freewheeling, 'out-of-control informal economy of Chinatown except that it is Malay.

Figure 6.16: Kampung Baru Sunday/Night Market. (*Photo by Author*)

Kampung Baru may be distinguished by its informality of its physical representation (Figure 6.17a and b) and economy. It stands as a symbol of past oppressions, of Malay pride and constitutional guaranteed privilege, of Malay economy stagnation, of radical responses in a generally docile community and of economic opportunities lost or stolen by misguided law. It also marks the gap between markets (the open versus the Malay) and thereby between ethnic communities and their respective economic power.

Figure 6.17a (top) and b (bottom): The informality and openness of kampung space. (*Photos by Author*)

Overlooked by the towers of Jalan Ampang and Kuala Lumpur City Centre (Figure 6.18), another gap is also displayed, that is, the gap between the well-connected corporate Malays and the unconnected *kampung* Malays. Kampung Baru's direct adjacency to the Petronas Towers, built for a global audience within the Kuala Lumpur City Centre (KLCC) development, reveals the stark contrast between ethnic enclave space and first-world bundled space, both of which persist in the city. As Kampung Baru is poised for development, the debates surrounding the site raise questions regarding modernization, urbanization, and identity.

The completion of the Petronas Towers in 1996, the tallest towers in the world at the time, was a declaration of Malaysia's ascendancy onto the world stage. A series of ambitious infrastructural projects and large-scale developments in the Kuala Lumpur Metropolitan Area give further evidence of an urbanization program that is still transforming the region. When the Petronas Towers were capped, however, a sharp disconnect existed (and still does) between the new modern, globally successful image of Malaysia and the reality of everyday life for many population groups. The question of building identity in a rapidly changing Asia is problematised by increased social stratification and the erasure of existing fabric. In this dynamic context, the manner in which cities are perceived, inhabited, and experienced is changing.

Figure 6.18: The KLCC twin towers and other office towers on Jalan Ampang overlooking Kampung Baru. (*Photo by Author*)

Another significant physical spatial planning issue in Kampung Baru is the incompatible land use activities in the area. Various commercial activities can be seen exist side by side with residential use. Among the activities are workshops (Figure 6.19a and b), restaurants (Figure 6.20a and b) and shops (Figure 6.21a and b). Most of these commercial units are attached either to the side or to the front of the houses. Effective monitoring and enforcement of planning regulations needs to be carried out in order to mitigate this land use issue.

Figure 6.19a (top) and b (bottom): Workshops in Kampung Baru. Note the houses at the back a), and to the left, b). (Photos by *Author*)

Figure 6.20a (top) and b (bottom): Restaurants attached to houses, a rather common sight in Kampung Baru. (*Photos by Author*)

Note that in both photos, restaurants are attached to dwelling units. From the business operators' point of view, it is an ideal arrangement having both their workplace and accommodation right next to the each other. A number of questions come across the author's mind as a trained town planner. Is this good for the city's image? Is this in line with the KLCH's vision in making Kuala Lumpur a 'World Class City'? Both images above were photographed after the peak lunch hour, therefore the environment is rather 'calm and quite serene'. During the peak lunch hour, situation in this area will be tremendously different. High volume of vehicular and pedestrian traffic creates an environment which is chaotic but at the same time, lively. Creating a venue for the public to upload these types of images onto KLCH's GIS platform not only would enrich its database but also assist a better-informed development control decisions.

Figure 6.21a (top) and b(bottom): a) A shop on the ground floor and residential use on the first floor; b) Restaurants on both side of the road generate high volume of vehicular traffic especially during lunch hour. (*Photos by Author*)

Within Southeast Asia, the case of Kampung Baru is not unique or extraordinary. Development inevitably involves destruction. And with destruction there is the opportunity to build new types of buildings and cities. Kampung Baru presents the opportunity to transform an urban community that operates according to certain values but without eradicating these very values. The form this community takes could diverge greatly from its present form and yet continue the most positive aspects of its non-economy state within the city; the space of possibility.

While the transformation of Kampung Baru does not come with expectations of capturing the entire scope of Malaysian or even Malay identity, it is a significant

development project with significant federal support and will have consequences on the urban space and experience of the city as a whole. The question of identity becomes an immediate and urgent one as the redevelopment of Kampung Baru means the erasure of this socially vibrant community and incursion into those adjacent.

This is where good land use planning and management comes in. In order to have an effective planning/development control process, data and information needs to be as close to complete as possible. The study on SKP and GIS database in KLCH carried out earlier shows that there is a void in the availability of qualitative data such as photos, videos and public perception/opinion. Having these types of data/information at their disposal when making development control decisions will assist decision makers in realising Kuala Lumpur's vision of becoming a world class city. More importantly, the design approach of retaining Kuala Lumpur's unique cultural identity and image as a multi ethnic/religious city will be realised.

The experience of navigating in the Kampung Baru area using both formal map and informal map (tourist map) strengthen the conclusion that navigation is easier with the assistance of a tourist map. The reasons are simple; roads and streets are appropriately labelled on tourist map and the existence of symbols of landmarks (refer to Figure 6.6) on the map is an additional help. On the formal maps, many road labels are omitted including that of the main roads (refer to Figure 6.4 in earlier section).

Jalan Tuanku Abdul Rahman / Jalan Masjid India
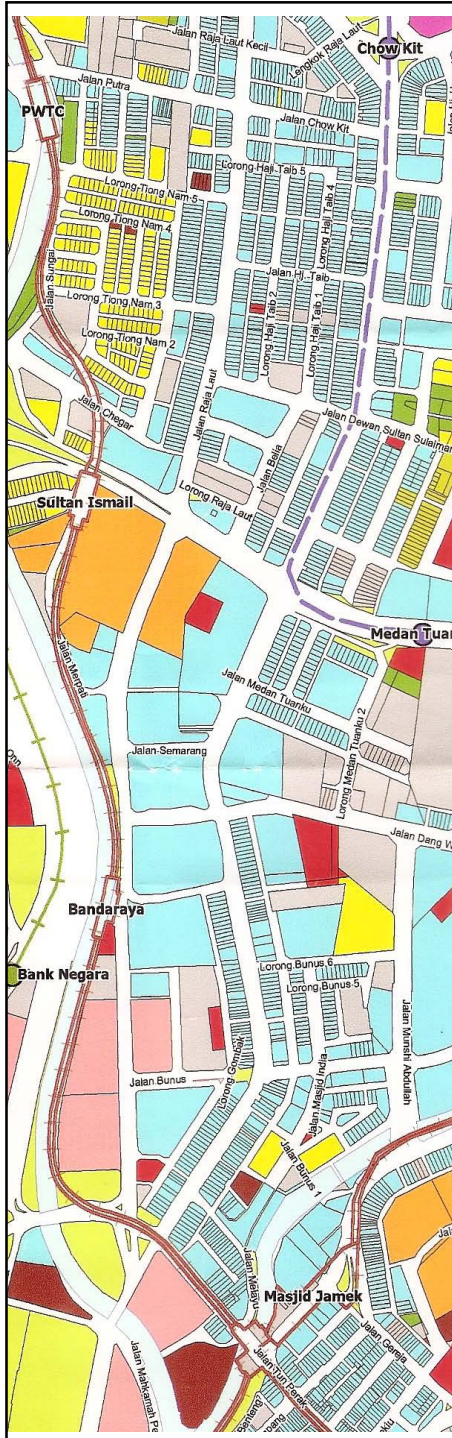
Figure 6.22: Map of Jalan TAR/Jalan Masjid India. (*Source: Master Plan Department, Kuala Lumpur City Hall)*
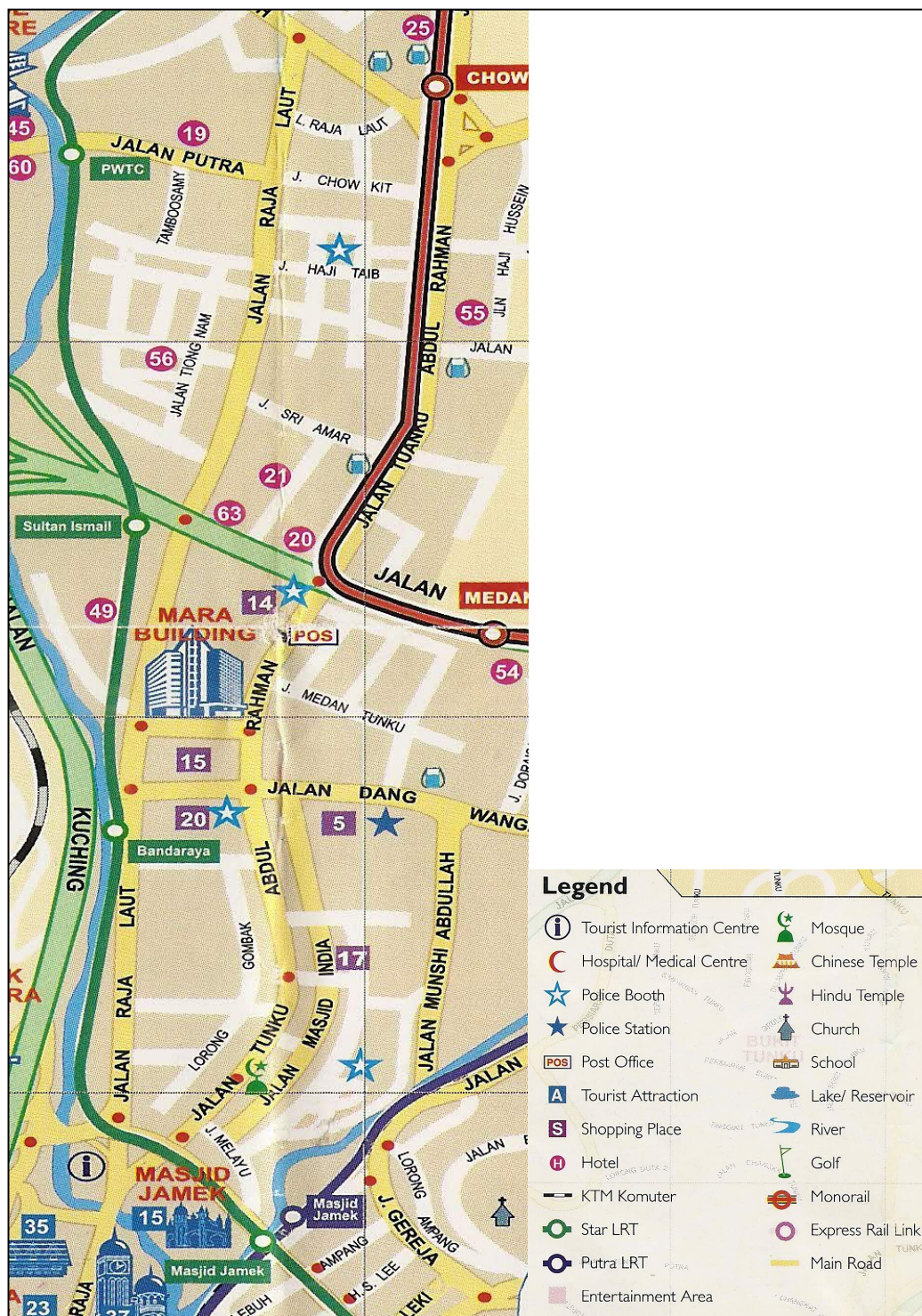
Figure 6.23: Tourist map of Jalan TAR/Jalan Masjid India area. (*Source: Malaysia Tourism Centre*)

Tuanku Abdul Rahman (TAR) is a traditional shopping district in Kuala Lumpur. It lies just north of the City Centre and is named after its main artery, Jalan Tuanku Abdul Rahman. Jalan Tuanku Abdul Rahman (Figure 6.22 and Figure 6.23), locally known as Jalan TAR, was the epitome of Kuala Lumpur shopping in the days before modern shopping complexes took the Kuala Lumpur metropolitan city by storm. This stretch of road is flanked by pre-war buildings whose distinctive facades have been preserved and readapted to accommodate modern retailing businesses (Figure 6.24). Here, visitors can walk through the archways of shops for an immersion into a shopping and cultural experience that goes back several decades (Figure 6.25). The shops here offer a wide range of fabrics and textiles, imported leather goods, bags and luggage, carpets, sports goods and winter clothing.

Figure 6.24: Pre-war buildings which houses modern retail businesses on Jalan TAR. (*Photo by Author*)

Figure 6.25: Archways of shops which give unique shopping and cultural experiences on Jalan TAR. (*Photo by Author*)

These pre-war colonial buildings give Jalan TAR its unique character. Although the building façade is unmistakably colonial; the buildings themselves are of Chinese shophouses. Interestingly, although the majority of the business activities are owned by the Indians but most of the visitors to the area are Malays. The area is very 'loud' as a result from the brightly painted building facade (Figure 6.26), the blaring sound of Indian music and the crowded presence of its visitors. This unique blend of architectural design and features, cultural space and ethnic background creates a distinguished cultural environment and experience. This unique character of Jalan TAR needs to be preserved. Unfortunately many of the buildings are in dilapidated state (Figure 6.27) which, if not being addressed appropriately might result in the loss of its unique character.

Figure 6.26: The brightly painted building facade on Jalan TAR. (*Photo by Author*)

Figure 6.27: Examples of dilapidated colonial buildings on Jalan TAR. (*Photos by Author*)

Another interesting feature of this area is its night market. Every Saturday between 5pm to 10pm, Lorong Tuanku Abdul Rahman is closed to traffic and transformed into a night market (*pasar malam*) where petty traders and hawkers sell an assortment of goods in the open air (Figure 6.28). Walking through the night market gives an interesting experience and it is also a good place to pick up some casual attire, local products, as well as to sample local delicacies.

Figure 6.28: The night market on Lorong TAR with stalls on both sides of the lane. (*Photo by Author*)

Besides Jalan TAR, the district is also home to the colourful shopping street of Jalan Masjid India, which is chock-a-block with shops specialising in saris and other Indian apparel (Figure 6.29). Indeed, the area is sometimes called Little India, although several other parts of Kuala Lumpur (notably Brickfields) compete for that title and these days there are at least as many Indonesians around.

Little India is to be found in the older section of the city on Jalan Tunku Abdul Rahman. Jalan Masjid India is the main street of Little India (Figure 6.30). Along this street, the environment and experience is of an interesting mixture of Indian and a-la Arab Street, where Indian, Indian Muslim and Malay traders merchandise their crafts, Muslim/Malay clothings, fabrics, religious books, traditional medicines and herbs, saris, spices, bangles, Indian traders making temple garlands, and so on.

Figure 6.29: The shops on Jalan Masjid India specialising in Indian apparels. (*Photo by Author*)

Figure 6.30: Jalan Masjid India, the main street in Little India. (*Photo by Author*)

Brightly hued sarees and Bollywood-inspired Indian dresses (salwar kameez and lengas) are some of the greatest temptations here. Salwars are loose fitting tunics with a long knee-length shirt/blouse while lengas are long skirts. Small crowded shops line Little India's narrow, hectic streets, filled with exquisite saris, gold jewelry, beautiful scarves, textiles and carpets. Street traders display brasses, silver tableware, glass bangles and silver anklets. Mysterious perfumed oils and delicate strings of luscious jasmine flowers dazzled the senses. There are also all the God and Goddess related items such as colour posters, bright coloured statues and flower offerings.

In 2004, the Indian street market around Jalan Melayu (Figure 6.31) and Jalan Masjid India (just off Jalan Tuanku Abdul Rahman) received a makeover. The makeover is in the form of a high, pitched-roof shed with towers of pyramidal roofs that point back to the early (Malay) mosques of the Archipelago (Figure 6.32). In covering Jalan Melayu and Jalan Masjid India, the shed-like canopy wrapped around Masjid India (Indian Mosque), obscuring it from view, restricting its entrance (Figure 6.33) and effectively bringing commerce to its door (Figure 6.34).

Figure 6.31: Jalan Melayu. (*Photo by Author*)

Figure 6.32: The pitched-roof shed with towers of pyramidal roofs that point back to the early (Malay) mosques of the Archipelago. (*Photo by Author*)

Figure 6.33: The Bazaar which obscures Masjid India from view and restricts its entrance. (*Photo by Author*)

Figure 6.34: The Bazaar brings commercial activities to the Masjid India's door. (*Photo by Author*)

Along Jalan TAR, the volume of vehicular traffic of all kinds between the hours of 8am and 6pm is exceptionally high. Between 1pm and 2pm, the traffic volume is particularly high. This abnormal flow is attributed to the movement of traffic when office workers go out for lunch and returning to work within the hour. Observation of the Jalan TAR stretch, including Jalan Masjid India, reveals that the area has a variety of uses of which retailing on the ground floor and residential use on the upper floor is not unusual. The area also houses administrative offices, bank and financial offices, shops for the sale of sundry goods, retail shops for textiles and cinemas. This area is a perfect example of

Kuala Lumpur's unique identity as a multi cultural/ethnic/religious city. It is presented in the form of its rows of Chinese shophouses, which houses Indian businesses, and attracting Malay shoppers. This vibrant area is the epitome of Malaysian identity.

6.2.2 Urban Land Use and Legibility Survey

This survey was carried out as random survey within the two case study areas i.e. Kampung Baru and Jalan TAR/Masjid India to gather information on public's perception on Kuala Lumpur's urban land use and legibility. This information is aimed to complement the qualitative data from the earlier stage of study in order to justify the need to allow for Public Participatory GIS in improving spatial information inputs for development control process in Kuala Lumpur.

Methodology

a)   Data Collection

In studying these cases study, a survey was conducted using a questionnaire. The questionnaire consists of three sections, which are sections A, B and C. Section A was designed for respondents' profile information, while section B was designed to investigate the respondents' perception on legibility and wayfinding in Kuala Lumpur. Last of all, section C focuses on the respondents' opinion on how to improve legibility and wayfinding in Kuala Lumpur.

The sample used for this study consisted of 179 respondents who have visited Kuala Lumpur around Kampung Baru and Jalan Tuanku Abdul Rahman (TAR)/Masjid India areas. They were randomly selected from traders, shoppers, workers, students and visitors in between March 2008 and May 2008. All the respondents had successfully answered each of the questions posed to them from this questionnaire.

b)   Respondent Profile

Based on the data collected from section A in survey questionnaire, 54.19% and 45.81% respondents are male and female, respectively (Figure 6.35). Most of them are adult (67.60%); the rest are adolescent (25.70%) and elderly (6.70%) (see Figure 6.36). Out of the total number of respondents, 48.05% are employed in either management or non-management sector, 9.50% are self-employed and 26.26% are retirees (Figure 6.37).
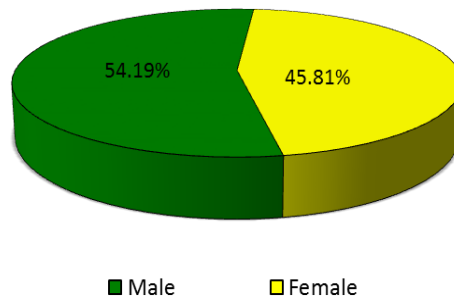
Figure 6.35: Percentage of respondents' gender (Source: Author)
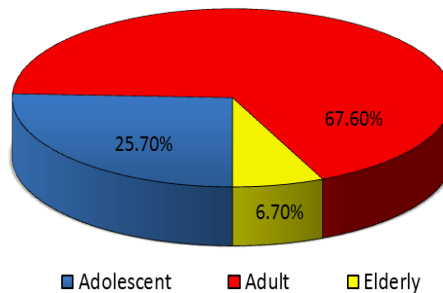
Figure 6.36: Percentage of respondents' age group (Source: Author)
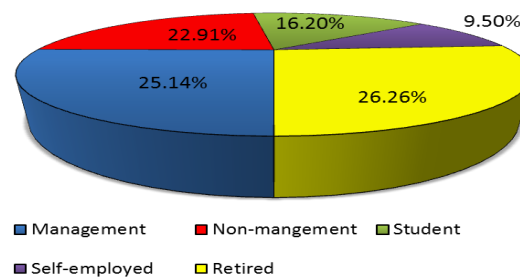
Figure 6.37: Percentage of respondents' occupation (Source: Author)

According to the survey results, there are several reasons for visiting Kuala Lumpur. Figure 6.38 shows that 14.56% of the respondents work in the city, 9.62% respondents are there to do their shopping and 7.97% respondents are trading in the city. However, there are also a number of foreign and local tourists among the respondents with 3.30% and 4.67%, respectively. Another 7.42% of the respondents are students studying in the city's various education institutions, 0.55% are visitors to the government offices, 0.27% are there for services and 0.82% for other purposes .
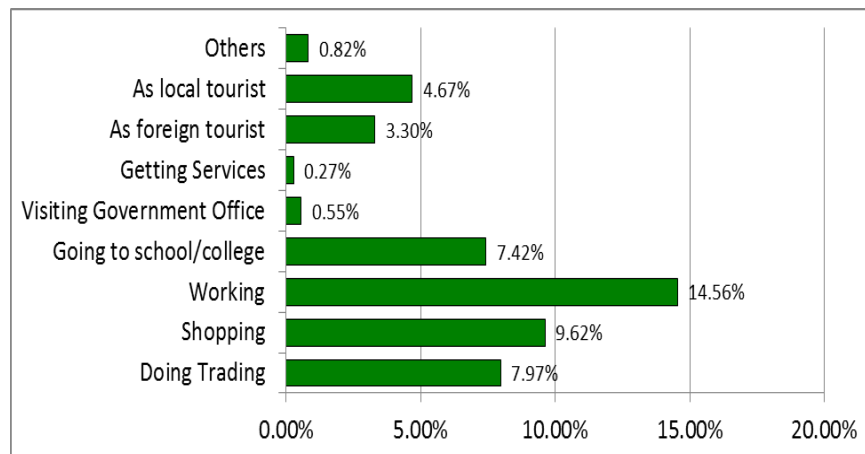
Figure 6.38: Purpose of visiting Kuala Lumpur (Source: Author)

c)   Analysis and Results

Perception on legibility and wayfinding in Kuala Lumpur

Table 6.3 shows that 67.6% of the respondents feel that the condition of Kuala Lumpur road system is average and 19.5% of them think it is poor/very poor; while only 13.3% feel that road system in Kuala Lumpur is good/very good. For land use layout, 58.3% categorise the layout as average and 22.5% say it is poor. Only 19.2% of the respondents feel that Kuala Lumpur's land use layout is good/very good. Looking at public transport network, almost half of the respondents (46.7%) believe that Kuala Lumpur's public transport network is of average quality, while 10.7% think it is poor/very poor. However, 35.4% of the respondents think that the transport network is good/very good. On the respondents' opinion on parks and open spaces quality, none feels that is in very poor condition. The majority of them (92.8%) feel that Kuala Lumpur has good/very good parks and open spaces. These results indicate that some improvement on land use planning and design is necessary in Kuala Lumpur.

Feature	Very Poor	Poor	Average	Good	Very Good
Road System	0.8%	18.7%	67.6%	6.4%	6.9%
Land use layout	0.0%	22.5%	58.3%	18.9%	0.3%
Public transport network	0.5%	10.2%	46.7%	34.6%	8.0%
Parks and open spaces	0.0%	0.8%	6.4%	73.6%	19.2%

Table 6.3: Percentage of respondents' rating on five features in Kuala Lumpur (Source: Author)

Table 6.4 shows the result when the respondents were asked to rate their frequency of visit to several types of land use activities. The rating scale is from 1 to 10; 1 for the least frequently visited and 10 for the frequently visited. Looking at the higher half of the rating (6-10) in Table 6.4, departmental stores and supermarkets are the most frequently visited places (93.85% and 88.28% respectively); followed by fast food

outlets and restaurants (85.48% and 82.69% respectively). The least frequented places according to the survey results are disco/lounge (10.05%), hotel (13.95%) and cinema (20.68%). The aforementioned percentages suggest that in the case of Kuala Lumpur, most people go to the city for shopping and food.

Place	Rating									
	1	2	3	4	5	6	7	8	9	10
Departmental stores	0.00%	0.00%	2.23%	4.47%	5.03%	10.06%	14.53%	11.73%	25.14%	26.82%
Supermarkets	0.00%	0.00%	1.68%	1.12%	3.35%	8.94%	6.70%	19.55%	30.17%	28.49%
Fast-food outlets	0.56%	2.23%	1.68%	1.68%	8.38%	13.41%	16.76%	25.70%	21.79%	7.82%
Boutique/ Clothing shops/ Textile stores	0.56%	8.38%	8.38%	10.61%	12.29%	8.38%	15.64%	13.41%	16.20%	6.15%
Restaurants	1.12%	1.12%	0.56%	4.47%	10.06%	6.15%	24.58%	24.58%	13.41%	13.97%
Financial institutions	0.56%	5.59%	15.08%	19.55%	10.61%	18.44%	12.85%	6.70%	8.94%	1.68%
Hotel	23.46%	27.93%	17.88%	10.61%	6.15%	2.23%	2.23%	2.23%	2.23%	5.03%
Disco/lounge	54.19%	23.46%	6.70%	4.47%	1.12%	2.79%	2.23%	1.68%	1.12%	2.23%
Cinema	13.97%	11.73%	12.29%	11.17%	14.53%	6.15%	8.94%	6.70%	8.94%	5.59%

Table 6.4: Percentage of respondents based on their rating on land use activities in Kuala Lumpur (Source: Author)

In order to gain some insights on Kuala Lumpur's legibility perception, the respondents were asked to give their opinions on whether Kuala Lumpur is a legible city. The results are: 83.71% think that Kuala Lumpur is a legible city while 16.29% think that Kuala Lumpur is not a legible city (Figure 6.39). Interestingly, results in Table 6.3 earlier show that only 13.3% of the respondents rate land use layout as good/very good, and 19.2% of them think that road system in Kuala Lumpur is good/very good. In comparison, 22.5% think that the land use layout is poor and 19.5% think the road system is poor/very poor.

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If Kuala Lumpur is legible, its parts (for example, its land use layout and road system) 'can be recognised and can be organised into a coherent pattern' (Lynch, 1960: 2-3).
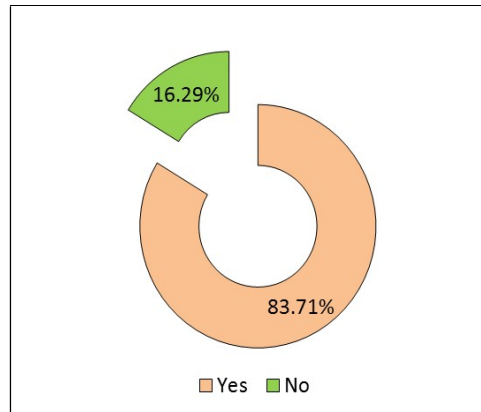
Figure 6.39: Respondents' perception on the legibility of Kuala Lumpur (Source: Author)

Contrary to the results in Figure 6.39, Figure 6.40 shows that majority of the respondents sometimes (65.92%) and 11.7% often face problems in finding their destinations of interest. Only a small number of respondents (22.91) said they never face any difficulty in finding their places of interest. These contradictions in the results are perhaps due to the subjectivity of the legibility quality itself, which makes it relatively difficult to quantify.
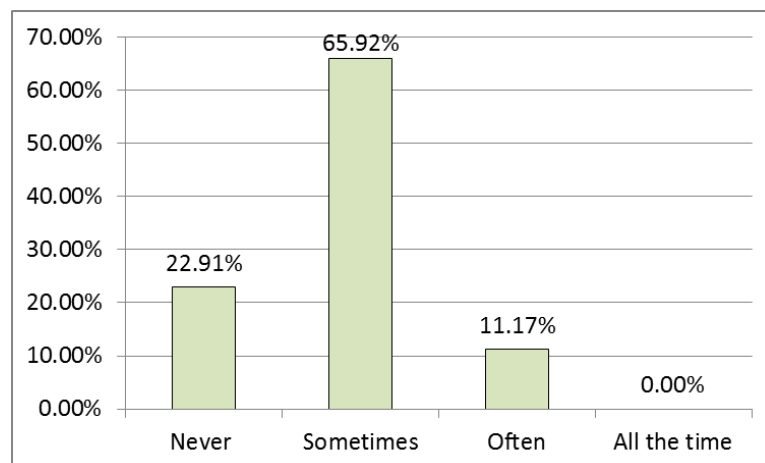
Figure 6.40: Percentage of respondents who had problems in finding their place of interest in Kuala Lumpur (Source: Author)

The respondents were also asked to rate the legibility of several land use activities in Kuala Lumpur. The scale is from 1 to 10, which is from the least legible to the most legible. Table 6.5 shows that based on the highest rating with value of 10, 29.05% of the respondents rated departmental stores and supermarkets (41.34%) as most legible. The least legible place, with the lowest rating with of 1, is disco/lounge (13.97%). Taking into account the higher half of the rating (6-10), Table 6.5 shows that the land use activities which are frequently visited by the respondents (refer to Table 6.4 presented earlier) are viewed as more legible. Supermarkets have the highest total percentage (95.53%), departmental stores (91.62%), fast food outlets (87.16%) and restaurants (86.04%). Whether these land use activities are legible as a result of good city planning is questionable in this case because frequency of visit enhances familiarity, and thus influences perception on legibility quality.

Place	Rating									
	1	2	3	4	5	6	7	8	9	10
Departmental stores	0.00%	0.00%	2.23%	2.79%	3.35%	6.70%	12.85%	16.20%	26.82%	29.05%
Supermarkets	0.00%	0.56%	0.56%	1.68%	1.68%	1.68%	3.35%	20.67%	28.49%	41.34%
Fast-food outlets	2.23%	0.56%	1.68%	3.35%	5.03%	6.15%	17.88%	25.70%	26.26%	11.17%
Boutique/ Clothing shops/ Textile stores	1.12%	7.26%	7.82%	5.03%	7.82%	14.53%	13.41%	11.17%	19.55%	12.29%
Restaurants	0.00%	1.68%	2.23%	3.91%	6.15%	14.53%	21.79%	21.79%	15.08%	12.85%
Financial institutions	1.12%	5.03%	6.70%	6.70%	12.85%	9.50%	15.64%	10.61%	11.73%	20.11%
Hotel	1.12%	4.47%	7.26%	6.15%	11.73%	6.15%	7.82%	8.94%	13.41%	32.96%
Disco/lounge	13.97%	26.26%	10.06%	8.94%	5.03%	6.70%	11.17%	10.06%	3.91%	3.91%
Cinema	4.47%	7.82%	7.82%	14.53%	8.94%	8.94%	11.73%	10.06%	7.82%	17.88%

Table 6.5: Percentage of respondents based on their legibility rating of land use activities in Kuala Lumpur
(Source: Author)

The respondent were also asked to give their opinion on legibility and wayfinding specifically for the areas of Kampung Baru and Jalan TAR. The results in Figure 6.41 shows that majority of the respondents feel that these two areas are well-planned and legible; well-planned but not legible; or moderate.
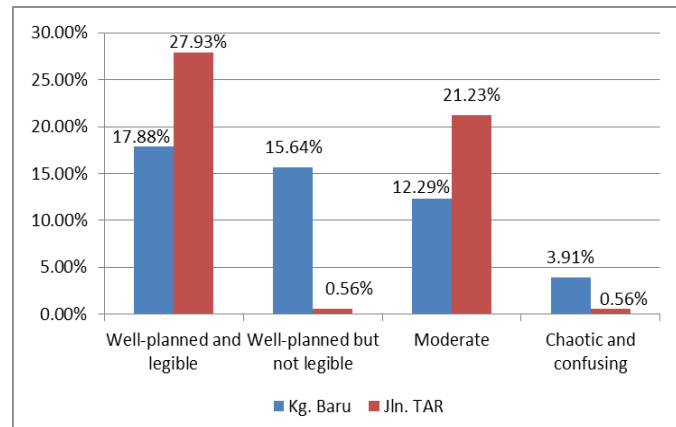
Figure 6.41: Respondents' perception on legibility and wayfinding in Kampung Baru and Jalan TAR/Masjid India areas (Source: Author)

Table 6.6 shows that even though they classify Kuala Lumpur as a legible city, the biggest percentage of respondents feel that the road system, land use layout, public transport network and parks and open spaces in Kuala Lumpur are average (36.31%, 48.04%, 39.11% and 41.90%, respectively).

Results from Table 6.7 shows that rating for frequency of visit and legibility gives similar percentage. For example, 25.14% rate their frequency of visit to departmental stores as 9, and 26.82% rate it 10. For the same rating of legibility of departmental stores, the percentages are 26.82% and 29.05% respectively. A slight difference between the two ratings occurs for supermarkets where 28.49% is for most frequently visited and 41.34% is for most legible. These results support the assumption that frequency of visit increases familiarity, which then influences perception of legibility.

Features	Rate	KL as a legible city?		Total
		Yes	No	
Road System	Very poor	1.12%	0.56%	1.68%
	Poor	15.64%	3.35%	18.99%
	Average	36.31%	9.50%	45.81%
	Good	27.93%	2.79%	30.73%
	Very good	2.23%	0.56%	2.79%
Land use layout	Very poor	0.00%	0.00%	0.00%
	Poor	2.23%	2.79%	5.03%
	Average	48.04%	9.50%	57.54%
	Good	32.40%	4.47%	36.87%
	Very good	0.56%	0.00%	0.56%
Public transport network	Very poor	0.00%	0.00%	0.00%
	Poor	6.70%	2.23%	8.94%
	Average	39.11%	6.70%	45.81%
	Good	30.73%	6.70%	37.43%
	Very good	6.70%	1.12%	7.82%
Parks and open spaces	Very poor	0.00%	0.00%	0.00%
	Poor	8.38%	3.91%	12.29%
	Average	41.90%	9.50%	51.40%
	Good	29.61%	2.23%	31.84%
	Very good	3.35%	1.12%	4.47%

Table 6.6: Comparison on rating of features and KL as a legible city (Source: Author)

Place	Rating									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Departmental stores F	0.00%	0.00%	2.23%	4.47%	5.03%	10.06%	14.53%	11.73%	25.14%	26.82%
Departmental stores L	0.00%	0.00%	2.23%	2.79%	3.35%	6.70%	12.85%	16.20%	26.82%	29.05%
Supermarkets F	0.00%	0.00%	1.68%	1.12%	3.35%	8.94%	6.70%	19.55%	30.17%	28.49%
Supermarkets L	0.00%	0.56%	0.56%	1.68%	1.68%	1.68%	3.35%	20.67%	28.49%	41.34%
Fast-food outlets F	0.56%	2.23%	1.68%	1.68%	8.38%	13.41%	16.76%	25.70%	21.79%	7.82%
Fast-food outlets L	2.23%	0.56%	1.68%	3.35%	5.03%	6.15%	17.88%	25.70%	26.26%	11.17%
Boutique/ Clothing shops/ Textile stores F	0.56%	8.38%	8.38%	10.61%	12.29%	8.38%	15.64%	13.41%	16.20%	6.15%
Boutique/ Clothing shops/ Textile stores L	1.12%	7.26%	7.82%	5.03%	7.82%	14.53%	13.41%	11.17%	19.55%	12.29%
Restaurants F	1.12%	1.12%	0.56%	4.47%	10.06%	6.15%	24.58%	24.58%	13.41%	13.97%
Restaurants L	0.00%	1.68%	2.23%	3.91%	6.15%	14.53%	21.79%	21.79%	15.08%	12.85%
Financial institutions F	0.56%	5.59%	15.08%	19.55%	10.61%	18.44%	12.85%	6.70%	8.94%	1.68%
Financial institutions L	1.12%	5.03%	6.70%	6.70%	12.85%	9.50%	15.64%	10.61%	11.73%	20.11%
Hotel F	23.46%	27.93%	17.88%	10.61%	6.15%	2.23%	2.23%	2.23%	2.23%	5.03%
Hotel L	1.12%	4.47%	7.26%	6.15%	11.73%	6.15%	7.82%	8.94%	13.41%	32.96%
Disco/lounge F	54.19%	23.46%	6.70%	4.47%	1.12%	2.79%	2.23%	1.68%	1.12%	2.23%
Disco/lounge L	13.97%	26.26%	10.06%	8.94%	5.03%	6.70%	11.17%	10.06%	3.91%	3.91%
Cinema F	13.97%	11.73%	12.29%	11.17%	14.53%	6.15%	8.94%	6.70%	8.94%	5.59%
Cinema L	4.47%	7.82%	7.82%	14.53%	8.94%	8.94%	11.73%	10.06%	7.82%	17.88%

Table 6.7: Comparison of frequency (F) and legibility (L) rating (Source: Author)

Table 6.8 shows that even though the respondents said that Kuala Lumpur is a legible city, more than half of them (59.22%) sometimes had problems in finding their destination of interest in Kuala Lumpur, while 2.23% of them often face problem in finding their destinations. Legibility is a visual quality and it means 'the apparent clarity of the cityscape' (Lynch, 1960: 2). 'A legible city would be one whose districts or landmarks or pathways are easily identifiable and are easily grouped into an overall pattern' (Lynch, 1960: 3). In other words, if a city is legible wayfinding should not be an issue because its districts, landmarks and pathways can easily be recognised. In the case of Kuala Lumpur, where finding destinations of interest is an obvious issue, classifying the city as a legible city is debatable.

Face problems?	Is KL a legible city		Total
	Yes	No	
Never	21.79%	1.12%	**22.91%**
Sometimes	59.22%	6.70%	**65.92%**
Often	2.23%	8.94%	**11.17%**
Total	**83.24%**	**16.26%**	**100.00%**

Table 6.8: Face problems vs KL as a legible city (Source: Author)

Methods to improve legibility and wayfinding in Kuala Lumpur

Figure 6.42 shows that respondents in Kampung Baru prefer using private vehicles (32.40%) than public transport (17.32%) because within Kampung Baru itself, public transport services are not reliable. However, respondents in Jalan TAR area of study prefer to use public transport (26.26%) than private vehicle (24.02%). This is due to the fact that traffic congestion is a major issue in the area and public transport services are easily accessible. Within both areas, none of the respondents travel on foot from one place to another.
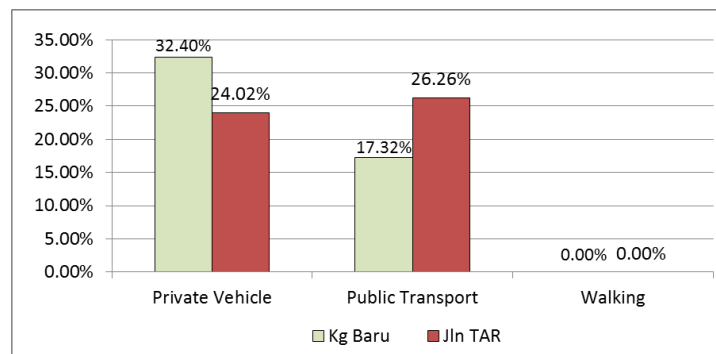
Figure 6.42: Respondents' mode of travel (Source: Author)

In an attempt to examine ways to improve legibility and wayfinding in Kuala Lumpur, respondents were asked the importance of a number of features in assisting access to places and which features assist them in getting to places. They were asked to give their

rating based on Scale 1 (least important) to 5 (highly important). Table 6.9 shows that 47.19% of respondents feel that building and 19.10% of respondents feel that streets are the most important features in assisting them to access places in Kampung Baru. On the other hand, 24.72% and 37.08% of respondents feel that natural features and greenery, and street landscape are the least important features.

Table 6.10 shows that respondents in Jalan TAR area have the same opinion as those in Kampung Baru. 54.44% of respondents feel that building is the most important features in assisting them to access places in the area. On the other hand, 24.72% and 37.08% of respondents feel that natural features and greenery and street landscape along streets are the least important features.

Features	Rating				
	1	2	3	4	5
Buildings	0.00%	4.49%	11.24%	37.08%	47.19%
Natural features (hill,river,etc)	24.72%	31.46%	23.60%	13.48%	6.74%
Streets/rail tracks	7.87%	10.11%	29.21%	33.71%	19.10%
Greenery and street landscape	37.08%	29.21%	29.21%	3.37%	1.12%
Signage/Advertisement boards	10.11%	13.48%	15.73%	23.60%	37.08%

Table 6.9: Rating of features based on their importance to assist wayfinding in Kampung Baru area
(Source: Author)

Features	Rating				
	1	2	3	4	5
Buildings	0.00%	0.00%	7.78%	37.78%	54.44%
Natural features (hill,river,etc)	35.56%	37.78%	12.22%	11.11%	3.33%
Streets/rail tracks	14.44%	14.44%	20.00%	27.78%	23.33%
Greenery and street landscape	35.56%	38.89%	15.56%	6.67%	3.33%
Signage/Advertisement boards	3.33%	1.11%	10.00%	42.22%	43.33%

Table 6.10: Rating of features based on their importance to assist wayfinding in Jalan TAR area (Source: Author)

Figure 6.43 gives the result that majority of the respondents use buildings and streets as the features to assist them getting from one place to another in Kuala Lumpur. 96.63% and 77.78% of the respondents in Kampung Baru and Jalan TAR, respectively, choose building and 52.81% and 57.78% of the respondents in Kampung Baru and Jalan TAR, respectively, choose streets. A small number of the respondents choose sculpture/structure and natural features as to assist them in getting from place to another in Jalan TAR and Kampung Baru.
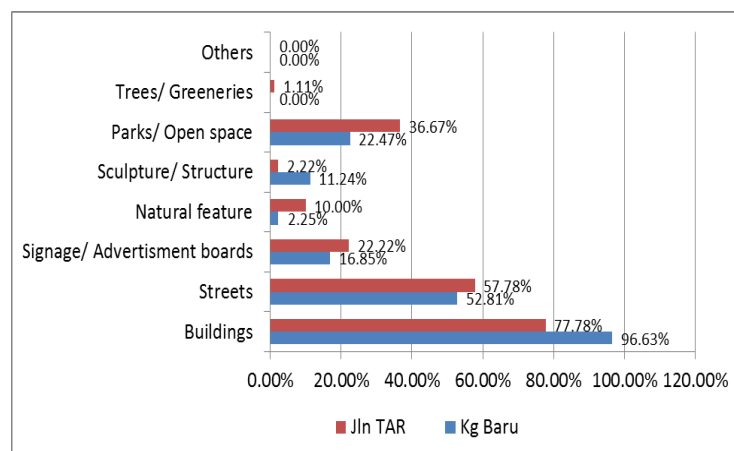
Figure 6.43: Features used to assist wayfinding in Kuala Lumpur (Source: Author)

Figure 6.44 shows that more than half of the respondents in Kampung Baru (68.54%) prefer to use road directories when having problems finding their way to their destination. A small number of the respondents (4.49%) used map from hotel/restaurant/brochures etc. On the other hand, the majority of respondents (43.33%) in Jalan TAR prefer to use mobile technology. Similar to respondents in Kampung Baru, only 6.67% of the respondents in Jalan TAR area used tourist maps from hotel or restaurant brochures. In addition, those respondents who have answered *others* for this question prefer to ask people for directions or follow the signage around them whenever they have problems to find their place of interest.

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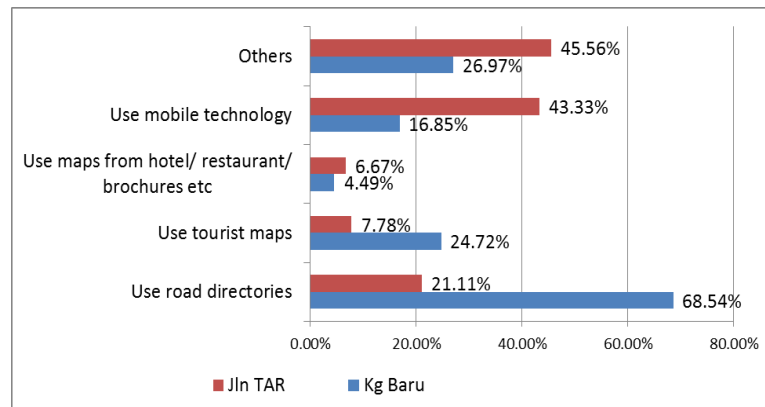
Figure 6.44: Methods used when respondents have problems in finding places in Kuala Lumpur (Source: Author)

The respondents were also asked to give their suggestions to improve legibility in the area of Kampung Baru and Jalan TAR. From the survey, the majority of the respondents in both areas suggested the authority to improve road sign, road network and road condition. They also suggested that public transport, as well as facilities for pedestrians, to be improved. The same answers were given to improve legibility in Kuala Lumpur as a whole when they were asked. The majority of the respondents suggested the authority to improve road sign, road network and road condition.

Table 6.11 shows that the respondents who use private vehicle as their mode of transport in Kuala Lumpur believe that building and street (29.05% and 11.73%, respectively) are the most important features in assisting them to find places in Kuala Lumpur, while 16.76% think that natural feature is the least important feature in assisting wayfinding. The result is also consistent with the respondents who used public transport. 21.79% and 9.50% believe that building and street are the most important features in helping them to find places in Kuala Lumpur, while 13.41% think that natural feature is the least important feature. Table 6.12 shows that majority of the respondents who used building, natural features and streets as the important features to access places in Kuala Lumpur prefer to use street, signage and natural feature to guide their travels in Kuala Lumpur.

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Features	Rating	Mode of Transportation		Total
		Private Vehicle	Public Transport	
Building	1	0.00%	0.00%	0.00%
	2	1.68%	0.56%	2.23%
	3	5.59%	3.91%	9.50%
	4	21.23%	16.20%	37.43%
	5	29.05%	21.79%	50.84%
Natural features	1	16.76%	13.41%	30.17%
	2	20.11%	14.53%	34.64%
	3	10.61%	7.26%	17.88%
	4	5.59%	6.70%	12.29%
	5	3.35%	1.68%	5.03%
Streets	1	6.15%	5.03%	11.17%
	2	7.82%	4.47%	12.29%
	3	12.29%	12.29%	24.58%
	4	19.55%	11.17%	30.73%
	5	11.73%	9.50%	21.23%

Table 6.11: Rating of features based on mode of transportation (Source: Author)

Features	Rating	Features used to move around					
		Streets	Signage	Natural feature	Sculpture	Parks	Trees
Building	4	12.85%	7.82%	0.00%	0.00%	0.00%	0.00%
	5	17.32%	11.73%	0.00%	0.00%	0.00%	0.00%
Natural features	4	1.68%	5.59%	12.85%	0.00%	0.00%	0.00%
	5	3.91%	2.23%	17.32%	0.00%	0.00%	0.00%
Streets	4	18.44%	6.70%	1.68%	2.79%	8.94%	0.56%
	5	14.53%	3.91%	1.12%	0.56%	3.91%	0.00%

Table 6.12: Features used to guide wayfinding in Kuala Lumpur (Source: Author)

6.3   IMPROVING URBAN LAND USE AND LEGIBILITY

Aspiring to be a world class city, Kuala Lumpur requires new integrated approach to development and land use management of the city. Attaining sustainability must become priority and focus for future development and growth of Kuala Lumpur. The pattern of land uses; their location, mix, and intensity; is a critical component of the city's character and structure. It is intended to provide sufficient land for residential, commercial, industrial, and public uses; to locate these various uses appropriately in order to enhance community balance and character; to preserve and protect important natural resources; and to enable the city to provide adequate public services to city dwellers and visitors. In achieving these objectives, an efficient and effective development control decision making process which takes into account public perception and input is necessary.

The diversity of the built fabric and urban spaces of Kuala Lumpur and the chaotic rush of their transformation can reveal something of both its present metamorphoses and its potential. Although both juxtaposition and imposition occurs in the spaces of Kuala Lumpur, what makes the city unique are the racial separations, the uncertainties of identity and the vividness of representation. Hence, insights into its present and future trajectories are best seen through the eyes of its residents and visitors.

In general, it can be concluded from the analysis outputs of the questionnaire survey that the public did not find Kuala Lumpur as a highly legible city. Analysis shows that even for the most frequented land use activities, they did not have high score on legibility. Output in Table 6.8 (see page 199) shows that even though the respondents feel that Kuala Lumpur is a legible city, more than half of them sometimes have problems finding their destination of interest in Kuala Lumpur. A legible city should have an easily recognised and organised pattern of its urban components. In other words, when travelling in a legible city wayfinding should not be a concern because its districts, landmarks and pathways are easy to distinguish. In the case of Kuala Lumpur, where

finding destinations of interest can be a struggle to many people, categorizing the city as a legible city is debatable. On the other hand, the survey results confirmed that buildings and streets are the most important urban elements in assisting wayfinding when travelling around Kuala Lumpur. Therefore, it is necessary to take public perception and opinion onboard when making decisions relating to land use and site planning.

In order to have an effective planning/development control process, data and information needs to be as close to complete as possible. The study on SKP and GIS database in KLCH carried out earlier shows that there is a void in the availability of qualitative data such as photos, videos and public perception/opinion. As the results in Figure 6.44 show (see page 202), most respondents rely on street directories, tourist maps and mobile technology applications to assist navigation in Kuala Lumpur. The widespread use of mobile technology enables the public to record on-site situation in both still photo and video format. Input of these formats from the public, if integrated into the existing formal spatial representation database, not only would enrich the database but also enhance decision making in development control process. Having these types of data/information at their disposal when making development control decisions will aid decision makers in realising Kuala Lumpur's vision of becoming a world class city. More importantly, the design approach of retaining Kuala Lumpur's unique cultural identity and image as a multi ethnic/religious city will be realised.

6.4   CHAPTER SUMMARY

Kuala Lumpur is seen as a patchwork of distinctively different, constantly transforming ecologies. The question arises of how these ecologies come together to make a city. At its inception, Kampung Baru had provided a market that others could exploit. Thus, Jalan Tuanku Abdul Rahman acquired Chinese shophouses as well as an identity linked to the name of Chinese tycoon Loke Chow Kit. Nowhere are territories more subtly

marked than in this north-south line of spaces of contested identities and struggles of self definition. The physical disposition of each territory is not dissimilar.

While each zone of Jalan Tuanku Abdul Rahman and its vicinity might boast its distinctive landmarks, all would be classed as sprawling unbounded and 'horizontal' rather than 'vertical' or hierarchical. All retain profusions of shophouses because the capital invested in the built environment of their time was overwhelmingly Chinese and the shophouse was the vernacular of the time. All are now in decay, all have their tiny lanes and alleys that an outsider might fear to enter and all have old and distinguished multi-storey offices and hotels interrupting the shophouse rows. Incidentally, all these characteristics exhibit cross-community employment and custom.

Today Jalan Tuanku Abdul Rahman manifests the ethnic dispersal of the nodes of the older town. To traverse it is to glimpse the communitarian politics of Kuala Lumpur. It is a street of allure, of ever-changing sounds, music sometimes blaring, sometimes scarcely heard, smells and glimpses of ethnically diverse foods. To the south is Chinatown, extending virtually to the colonial-era railway station, Indian Brickfields and the former Istana Negara, the Malay royal palace. The northern end is Malay and the vicinity of the old kampung. Sandwiched somewhat symbolically in the middle is the Indian area, covering the Masjid India area (the Indian Mosque).

Kampung Baru and Jalan Tuanku Abdul Rahman are spatially contiguous. There are no sharp dividing lines, though to walk from Jalan Tuanku Abdul Rahman into the kampong is to move gradually from cacophony to an ambience of calm unhurriedness amidst small houses and big trees. In the commercial area of Jalan Tuanku Abdul Rahman, most buildings carry Chinese names and Chinese characters abound. Yet, the traders are mostly Indian, the fact which greatly highlighted by the blaring Bollywood style music, the colours and the smells of Indian food. It is hard to avoid the impression that here is the epitome of 'the Malay dilemma'. We may be in 'Malay space' in a community sense but it is space that is seriously intruded upon, almost invaded. We are

certainly not in Malay economic space. Yet this is arguably the symbolic heart of Malay Kuala Lumpur.

Marina Warner (2002) writes of the wondrous transformations that become possible in those places and times (like Kuala Lumpur at present) where different cultures meet in transitional places and at the confluence of traditions and civilizations. These are the places of metamorphosis, the supreme force and vital principle of nature, the dynamic of cultural change, guarantee of personal freedom and the power at the heart of creativity. But its hope lies in yet further colonisations. It needs the Malays, the Chinese, the Indians, street stalls, rhizomatic invasions, to ensure its urbanity, creativity and the avoidance of casualty. These transformations are happening at the rate that is much faster than the KLCH can handle when it comes to updating its GIS database.

A well updated formal spatial representation such as a GIS map would help to improve legibility in a city. However, analysis outputs from the questionnaire survey show that the public did not find Kuala Lumpur as a highly legible city. Even the most frequented land use activities do not get high score on legibility. Although they classify Kuala Lumpur as a legible city, more than half of them felt that finding their way around Kuala Lumpur can be a problem. It is very important to include these types of input from the public in the site planning and development control decision making process. These inputs if integrated into the existing formal spatial representation database, not only would enrich the database but also enhance decision making in development control process. As the result, the attempt to preserve Kuala Lumpur's unique identity will stand a chance of becoming a success story.

CHAPTER 7: CRITICAL REFLECTIONS

7.1   INTRODUCTION

The objective of this chapter is to conclude the outcome of the research. It is divided into four sections and the first discusses the research findings. The second section focuses on the theoretical implications of the research and the third section explains the contribution of the research. The final section outlines suggestion for future research.

7.1   RESEARCH FINDINGS

This section will discuss the findings in relation to the research aim and the steps taken in order to achieve the aim as outlined in Chapter 1 of this thesis. The aim of the research is to examine the hypotheses that formal and informal understandings of the city must interact in order to improve land use planning and management of a city; and that they have different representations, with different forms of legibilities. Meanwhile, the findings according to each research step are also discussed in this section.

7. 1.1 Kuala Lumpur as an Emerging Southeast Asian Urban Landscape

The literature review in Chapter 3 and 4 shows the urban form of Southeast Asian region takes two seemingly conflicting conceptualisation of material urban conditions. On the one hand, anthropologists in particular have drawn architectural examples to identify and understand regional or indigenous cultural form. This is, perhaps in part, a response to geographical difficulties associated with imagining Southeast Asia as a coherent region in the first place. In cartographic terms, the literature review suggests that insular Southeast Asia was long found 'straddling maps on different pages' (Cairns, 2002: 110). It is precisely the context of an environment that defies easy formalisation in which

'architecture and architectural conceptions of settlement are required to take on an even greater burden in the proof and production of cultural identity' (Cairns, 2002: 112). The urban form has thus been conceptualised as a sign for a broader cultural identity. On the other hand, recent academic research has contested such cultural localism, rejecting any conception of a distinctively local or regional urban form in Southeast Asia. According to this line of argument, cities in Southeast Asia, as elsewhere, are increasingly understood as the product of dominant social and economic forces of globalisation.

The Southeast Asian region, as any other regions in the world, has experienced significant impact of globalisation for the past few decades. The movement of commodity, information, people and capital flow has helped the region to flourish in both physical and economic forms (Figure 7.1). This development scenario is evident in Southeast Asian mega cities such as Singapore, Kuala Lumpur, Jakarta, Bangkok and Manila. Unfortunately, some countries in the region such as Vietnam, Cambodia and Laos are 'comparatively insulated in the process' (McGee, 2002: 44). Thus, a reconstructed or reconceptualised Southeast Asian city would not only need to be attentive to the diversity of urban experiences in the region, but also to consider the importance of local agency in shaping such diversity. If Western scholars in the 1960s largely considered Southeast Asia to be the product of external forces and events, scholars in the new millennium are looking at the human dimensions of the growth of the large urban regions in relation to contemporary conditions of globalisation and its impacts that are grounded in urban lives and spaces (Evers and Korff, 2000; Bunnell, 2002).
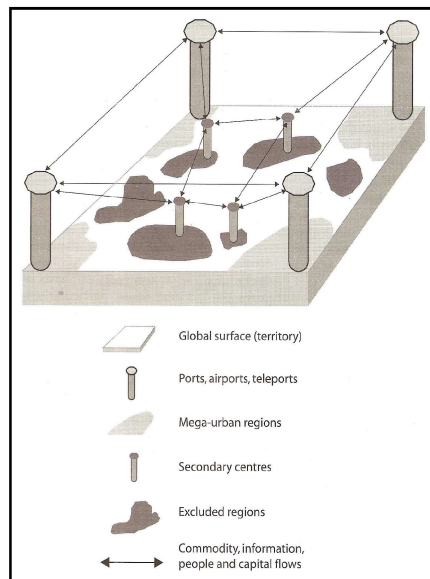
Figure 7.1: Spatial representation of globalisation (McGee, 2002: 43)

When McGee attempted to formulate the concept of *desakota* in the 1960s, he was trying to explain the special features of urbanisation that was emerging in some of the densely populated cities such as Jakarta, Bangkok and Manila. This concept however was later contested by Western writers such as Dick and Rimmer (1998) who suggest that the concept ignores the powerful homogenising forces of globalisation. They argue that McGee's construction of the concept of *desakota* is a specialist mode of thinking because it seeks to explain a process by actually studying the place in which the process is occurring. They argue that '…the study of Southeast Asia's cities must be informed by the knowledge of urban processes, especially in the US' (Dick and Rimmer, 1998: 2319). For them, the emergence of suburbs and industrial estates on the fringes of cities is part of the universal process of globalisation which is caused by the actions of foreign and local investors responding to the market demand '…and, therefore, reflects… the patterns and elements… observed in the US' (Dick and Rimmer, 1998: 2318).

The counter-arguments to these criticisms are straightforward. Firstly, Dick and Rimmer have reduced a set of arguments developed for Asia (and particularly the largest countries of China, Indonesia and India) to apply to all countries in Southeast Asia even

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though it is clear that the *desakota* hypothesis does not work well with Kuala Lumpur or Singapore. Secondly, the concept of *desakota* is not centrally concerned with the implanting forces of urban sprawl, let alone its geographic origin. The circuits of capital that feed the built environment of Southeast Asian cities are very diverse and certainly do not just emanate from the US (McGee, 1985). McGee's approach to the *desakota* concept was much more concerned with the interaction of these components of urban sprawl with the in-situ societies of these regions within the broader political economy of the urban region where these processes were working their way out. To focus on urban sprawl is probably legitimate research and presumably would be appreciated by developers, but to study only the process of urban sprawl as it has diffused from the US and applying it to Southeast Asia context is highly reductionist. Particularly in Southeast Asian context, emphasising the indigenous local components of the interaction with globalisation is a better suited mode of research.

Furthermore, there is another set of processes that is very central to the issue of convergence and divergence in Southeast Asian urbanisation. This issue focuses on the role of cities and their relationship to the global system. The revival of the concept of cities as integrating nodes in the international system is central to the work of Saskia Sassen (1991). This work suggests that contemporary globalisation is creating a new global urban hierarchy within which global cities such as London, Tokyo and New York dominate and control the financial flows of the system whilst sub-global cities such as Singapore and Hong Kong play an intermediary role in the system facilitating the flows of foreign investment and assembling regional capital for investment.

These examples illustrate the dangers of presenting the future of Southeast Asian urbanisation in terms of some form of global convergence. The appropriate assumption is the future of Southeast Asian urbanisation will be more diverse both at the macro level of urban form and at the micro level of urban household i.e. the *kampung* (village) and the everyday lives of people. Thus, the processes of divergence and convergence, inclusion and exclusion will occur at the same time as they work their way out in

particular urban sites such as Kuala Lumpur. In this context, research on Kuala Lumpur should not just be based on a Western model (American or European) since the elements which shaped Kuala Lumpur's urban form are diverse and do not only originate from Western cities, but also are the results of the interaction of these urban sprawl components with the in-situ societies of the city. In other words, in order to get a more accurate picture, research on Kuala Lumpur should emphasise on the indigenous local components of the interaction with globalisation.

In studying Kuala Lumpur's spatial representation, cartography and mapping are most relevant and related subjects. It is because the role of the map as a form of social proclamation is strengthened by the systems of classification and mode of representation, the so called conventional or cartographic signs, which have been adopted for landscape features. As the world embraces computer-assisted methods and Geographical Information Systems, the scientific rhetoric of map making is becoming more strident. By adding different nuances to our understanding of the power of cartographic representation, it enhances the way of building order into our world (Harley, 1989: 150-168). While much cartography is still largely concerned with technical issues dealing with the transformation of space and remains committed to the representational epistemologies, 'critical mapping theories and practices have blossomed in recent years' (Pickles, 2004: 10). The role of maps and mapping in the construction of socio-spatial identities has become an important area of new mapping studies particularly as digital mapping has begun to influence many more domains of social life. In geography, Mark Monmonier (1985) has been insistent about the potential public utility of cartography. However, it was texts from outside of the disciplines of geography and cartography such as Hall's *Mapping the Next Millennium* (1993) and King's *Mapping Reality* (1996) which gave maps and mapping a renewed status. As such, mapping Kuala Lumpur's diverse urban form and indigenous local components is necessary in order to best capture its spatial representation and document its land use changes.

7.1.2 Rethinking Site Planning in Kuala Lumpur: The Urban Land Use and Legibility Perception Approach

Malaysia as one of the rapidly developing countries has grown markedly in terms of population and urbanisation (Thompson, 2007). So much so that some of the local and traditional Malaysian urban environments are being replaced gradually by modern structures (Figure 7.2) and standardised images of global universal characteristics that may not be appropriate to the local cultural expressions, traditions and way of life (Ujang, 2008). Issues on impact of globalisation take centre stage in the visions of Kuala Lumpur to become a world-class city by 2020. One of the main goals of the Kuala Lumpur Structure Plan 2020 is 'To create a distinctive city identity and image through reflecting its multi-cultural society and its rich history' (DBKL, 2004: 33).

Figure 7.2: A lone, sad colonial building sandwiched by modern structures. (*Photo by Author*)

Attempts to develop a distinctive image of Kuala Lumpur were aggressively made in the 1980s with former Prime Minister Mahathir Mohamad's nationalist vision through a list of mega projects intended to showcase Malaysia as a modern and efficient country committed to a new model of economic development (Moser, 2009). Generally, these new development have been insensitive to their context and do not integrate successfully

with the surroundings, which caused a loss of historical continuum and lacking in a sense of identity (DBKL, 2004: 14).

It is this rather unfortunate scenario which has become a major concern to Kampung Baru and its residents. The 88-storey Petronas Twin Towers, among the world's tallest buildings, and other modern sky-scrapers loom over the enclave in the heart of downtown Kuala Lumpur (Figure 7.3). As highlighted in Chapter 6, Kampung Baru's direct adjacency to the Petronas Towers, built for a global audience within the Kuala Lumpur City Centre (KLCC) development, reveals the stark contrast between ethnic enclave space and first-world bundled space, both of which persist in the city.

Figure 7.3: The Petronas Twin Towers (top right corner) and other sky-scrapers looming over Kampung Baru. (*Photo by Author*)

As Kampung Baru is poised for development, the site raises questions regarding modernisation, urbanisation, and identity in the city. Instead of continuing with the demolish-and-rebuilt development philosophy, Kampung Baru offers the opportunity to consider new development in an existing, occupied neighbourhood while retaining its cultural space and *kampung* identity. It is important to understand the place *kampung* occupies in the Malaysian collective imagination to ensure the success of its development. *Kampung* is alive and well in the Malaysian imagination and remains the symbol of Malay tradition and culture. While much has changed in Kuala Lumpur since

the end of colonial rule, spatial remnants such as Kampung Baru persist in the city waiting to be developed. Additionally, the city needs to focus on its historic and heritage buildings as well as its modern buildings to reflect a mixed image between modern and traditional lifestyles. This fusion image can be a distinguishing icon for Kuala Lumpur as compared to other developing cities in Southeast Asia.

In an effort to create such an image unique to the city of Kuala Lumpur, the existing historic and heritage buildings on Jalan TAR could be exploited. As the centre of Kuala Lumpur shopping in the days before big, modern shopping malls took over, this area could be rejuvenated by restoring its dilapidated pre-war colonial buildings (Figure 7.4) while retaining its unique mixture of activities. Chapter 6 has presented that these pre-war colonial buildings give Jalan TAR its unique character. Although the building façade is unquestionably colonial; the buildings themselves are of Chinese shophouses. Yet the majority of business activities are owned by the Indians and the shoppers are mostly Malays. The area has a very vibrant atmosphere due to the bright colours of its building facade (Figure 7.5), the deafening sound of Indian music and the congested presence of its visitors. This unique blend of architectural design and features, cultural space and ethnic background creates a distinguished cultural environment and experience. The importance to preserve such a unique environment and experience is unquestionable.
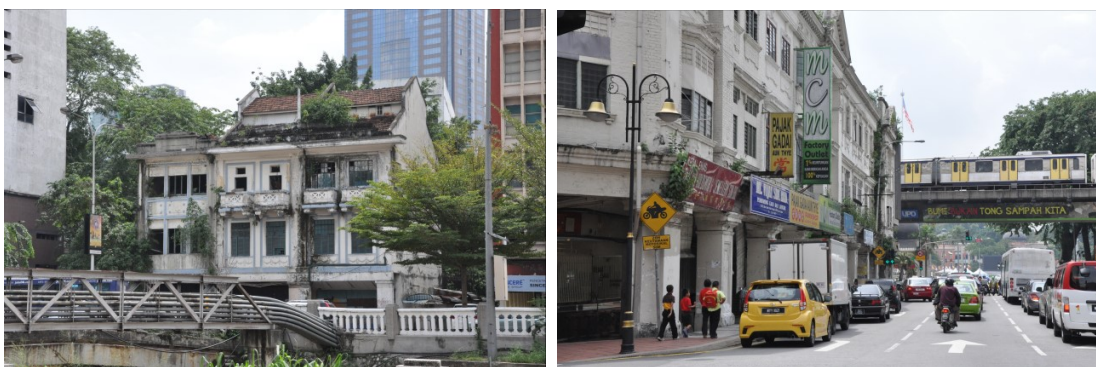
Figure 7.4: Dilapidated pre-war colonial buildings on Jalan TAR (*Photos by Author*)

Figure 7.5: Brightly coloured building façade on Jalan TAR. (*Photo by Author*)

Jalan TAR's pre-war buildings whose distinctive facades have been preserved and readapted to accommodate modern retailing businesses would massively benefit from such project. Besides Jalan TAR, the district is also home to the colourful shopping area called Little India. Its main street is Jalan Masjid India. Little India presents an interesting mixture of Indian and a-la Arab Street, where Indian, Indian Muslim and Malay traders merchandise their crafts; a slightly different environment and experience than that of Jalan TAR but no less unique. Similar to Jalan TAR, the area also boasts of Chinese shophouses; which houses Indian businesses, and attracting Malay shoppers. Little India has a variety of uses of which retailing on the ground floor and residential use on the upper floor is not unusual (Figure 7.6).

Figure 7.6: Scenario in Little India - retail businesses on the ground floor and residential uses on the upper floors. (*Photos by Author*)

The Jalan TAR/Little India area is a perfect example of Kuala Lumpur's unique identity as a multi cultural/ethnic/religious city. This vibrant area is the epitome of Malaysian identity. If planned and executed effectively, visitors to the area can walk through the archways of shops for a shopping and cultural experience that would be unique to Kuala Lumpur. Such an extraordinary and inimitable environment and experience would be very attractive especially to international visitors, thus facilitates the establishment of 'a distinctive city identity and image through reflecting its multi-cultural society and its rich history' (DBKL, 2004: 33).

The viability of such a rejuvenation project is highlighted in Kuala Lumpur Structure Plan 2020. The Plan has underlined the importance to redesign the city by adopting the original architectural styles to create a distinctive city image and identity. It also stresses the importance to emphasize on the macro image of the city, especially in the design to provide a variety of shapes and activities of buildings with a good harmony. This would avoid duplication and repetition of the same design or activity within the city, thus promoting buildings to be landmarks within the context of the city structure. Furthermore, it is imperative to enhance and develop the original activities in buildings and in the surrounding areas to create a strong relationship between the buildings as the main component of the city with the people. An important issue to be considered about Kuala Lumpur's image is the city's ability to be distinguishable from the other developing cities and reflect the reality that Kuala Lumpur is a mixed city between modern and traditional lifestyles. Forming a distinctive city image of Kuala Lumpur is not an easy task as it depends mainly on the manner of interactions between the people and their surrounding built environment.

The term 'city image' as first defined by Kevin Lynch in his book *The Image of the City* is 'a result of a two-way process between the observer and his environment, the environment suggests distinctions and relations, and the observer-with great adaptability and in the light of his own purpose-selects, organizes, and endows with meaning what he sees' (Lynch, 1960: 6). The adaptability of the observer depends on his perception as

well as his dealings with the surrounding environment. The perception influences and shapes the mental image of the observer by way of keeping the attractive and important elements of the city in their mind. Unfortunately for Kuala Lumpur, survey results in Chapter 6 show that even those who categorise the city as legible find its road system and land use layout as average in legibility perspective (see Table 6.6 on page 197).

Admittedly, human interaction with the surrounding environment differs from one person to another depending on his background and his needs from the city. Each person essentially develops a different view and perception. However, this perception is not all encompassing of the surrounding environment, but is partial in nature and mixed with other relevant concerns of respective individuals (Lynch, 1960). Results from the questionnaire survey in Chapter 6 seem to support these statements. The results reveal that the land use activities which are frequently visited (i.e. departmental stores and supermarkets) score the highest legibility rating while the least frequently visited land use activity such as disco/lounge scores low percentage for the best legibility rating (see Table 6.7 on page 198).

By the same token, the mental image of the same area may vary significantly between different observers (Lynch, 1960; Atik, Çakir, & Benian, 2009), because it is not a result of immediate perceptions only, but it is a product of both immediate sensation and the past experiences embedded in multifold personal memories and meanings (Lynch, 1960). This concept of perception requires a two-way process between two complementary views to form the notion of a city image. One is the physical aspect, related to the physical form of the city; and another is perceptual, referring to the way that the observer interacts with the physical form of the city. Moreover, this process is affected by the critical third dimension of time, which forms the city image simply by engaging more human interactions in the city space, leading to enhanced experiences and intense feelings of belonging and attachment (Zmudzinska, 2003). Hence, it is observed that people are able to recall places that they have strong feelings and association with (Nasar, 1990). Perhaps the lack of interactions and association between

the people and the city space is the reason why a high percentage of respondents face difficulties finding their destinations of interest in Kuala Lumpur despite classifying the city as legible (see Figure 6.39 on page 194 and Table 6.8 on page 199). These findings call for re-assessment of the city's land use layout and its development control process.

It is noteworthy that building a city image requires ample time and strategy to achieve its target. During the process of forming and promoting the image of a city, a good image may be distorted due to some unfortunate events, which lead to difficulties in restoring the intended images in the people's minds (Gavris, 2010). A city image is important because it contributes in forming the perceptions of the observers (or inhabitants), their level of tastes and behaviours; as well as the languages and range of notions that the observers' possess about their surrounding environment (Zmudzinska, 2003). Thus, a distinctive city image helps the observer to establish a harmonious relationship between self and the surrounding environment, and gives a personal feeling of familiarity and emotional security (Lynch, 1960). This positive sensation of familiarity and security exude a feeling of comfort and acquaintance amongst the visitors and tourists when they visit a city for the first time.

7.1.3 Interaction of Formal and Informal Spatial Representations: From GIS to PPGIS

Looking back at the case study of Kuala Lumpur City Hall (KLCH), GIS and SKP are important tools in facilitating and accelerating the process of development control and approval in the organisation. Their applications inevitably influence the existing structure and practice of urban planning and management in KLCH. Nevertheless, an important issue not to be overlooked in the implementation of the system is the overall information management strategies, which takes into account, among others, the availability of data.

As presented in Chapter 5, the database for the KLCH's Development Control System (SKP) was designed and developed in order to combine several data layers used in analysis such as base maps, administrative boundaries, built environment components or land use, transportation elements, planning requirements information, geology and soil, hydrographic elements, relief elements, vegetation, meteorology, utilities and community facilities. However, keeping up with land use changes on the ground from map updating perspective has been a challenge. Therefore, a method should be devised to allow the general public to contribute their inputs to the existing GIS database. With an appropriate platform, public participation in updating some of this information could be promoted and encouraged. This process, in return, would enhance the effectiveness and success of development control in KLCH administrative area.

It is acknowledged that the SKP developed for the Urban Planning Department has an existing database of land use layers. Nonetheless, regular updating of the database is crucial since any changes on the ground will affect the effectiveness of any development control decisions. Findings from the research lead to the conclusion that the land use map from KLCH GIS database is not sufficiently inclusive to assist the best informed decision making in development control process. Informal spatial representations such as tourist maps and photos, and public opinion of the evaluated area are an added bonus in enhancing the formal spatial representation i.e. the land use map. It will also put in the picture any land use issues on the ground such as incompatible land uses and illegal land use activities. An improved formal representation will assist a better informed decision making, which in return would improve the urban form of Kuala Lumpur.

Moreover, analysis outputs from the questionnaire survey show that the public did not find Kuala Lumpur as a highly legible city. Even for the most frequented land use activities, they did not have high score on legibility. Even though they classify that Kuala Lumpur is a legible city, more than half of them felt that finding their way around Kuala Lumpur can be a problem. It means measures need to be taken to improve land use layout and design in Kuala Lumpur. It is very important to include these types of

input from the public in the site planning and development control decision making process. These inputs if integrated into the existing formal spatial representation database, not only would enrich the database but also enhance decision making in development control process. As the result, the attempt to preserve Kuala Lumpur's unique identity will stand a chance of becoming a success story.

As Geographic information systems evolve, GIS research has also broadened considerably as purely technical issues have given way to research on implementation of the technology. More recently, institutional and societal issues have become important subjects of GIS research. Among the societal issues, concerns that all voices should be heard in a democracy have sparked recent research in 'public participation GIS', or PPGIS. At its core, the growing concern about PPGIS centres on the growing role of the powerful GIS technology in a democracy. The key to understanding the importance of the relationship between GIS and society is first to acknowledge that GIS is not just a 'tool designed to solve one aspect of a particular problem -- that of translating spatially referenced empirical information into a spatial language to enable cartographic representation of patterns and relationships, and of analyzing the nature of these relationships'; rather, 'the development of GIS, or any other, technology is a social process' (Sheppard, 1995:6). The current PPGIS movement in GIS scholarship seeks to develop GIS that will be more adaptable to extra-organisational input from regular citizens and other non-official sources.

As such there need to be an effective approach and strategy to support public participation in the desire to provide better governance. One platform to consider in allowing the public to participate in the development control process is the Internet, using web-based GIS technology. GIS data which were made accessible on the Internet by web-based GIS technology, offers an effective medium for public participation. The internet is currently considered an important media. Its ability in enabling users to interact across the network has provided opportunities for retrieval of hypermedia information in an easy and effective way. Through the World Wide Web (WWW)

multimedia capabilities, users all over the world has turned this technology into an important media to access and acquire information as well as interact using diverse types of visual representations such as images, maps, diagrams and graphs which are as easy to implement as text supported by graphical interface, sound, video, animation and so forth.

Web-based GIS technology plays an effective role in the presentation and analysing of planning information. Users need not have specific training or software to be able to interact. Its ability in enabling easy and simplified access and without limitation in terms of time and location should be able to increase the number of GIS users and involvement in the planning and development activities. This ability makes the Internet the best platform for the public to upload visual data such as photos and videos onto KLCH's GIS database. This form of information sharing would inevitably facilitate and support the planning agendas and urban management in Kuala Lumpur.

7.2   Theoretical implication and Research Contribution

Findings from literature research demonstrate that Kuala Lumpur urban landscape deserves sustained academic attention as it is emerging as an important metropolitan in the Southeast Asian region but has yet to receive enough attention from academic researchers. The existing geography, planning and Southeast Asian studies have not engaged substantively with the innovative work on representation conducted in these design-oriented disciplines. While the work in GIS has productively extended the boundaries of public participation planning, most of it remains its focus on the technology and taking 'the community' as an uncomplicated and unproblematic set, whereas this research aims to examine the fluid socio-spatial configurations of the community. The proposed outputs of this research represent significant innovations in their own right, as they will 'exploit the qualitative potentials of advanced information

technologies by putting them in touch with new modes of urban representation' (Cairns and Reitsma, 2006: 3).

Secondly, there has been, to date, little work on the ways in which visual media and representational systems impact upon the design, planning and management of extended metropolitan regions. While architectural, urban and landscape theory have usefully theorized the 'agency' of different visual media, it rarely draws on empirical material from outside the west. Moreover, the existing literature suggests that most empirical examples in published materials are drawn from European and American cities. There is no evidence to confirm that the same constitutive elements of the image of the city can be found in or relevant to cities in developing countries (Karan and Bladen 1982; Del Rio 1992).

Another significant contribution of this research is an in-depth analysis on the interaction of formal and informal representation in the development control and decision making process. The research findings corroborate the hypothesis that formal and informal understandings of the city do interact, and that they do have different representations, and they hold different forms of legibilities. Hence, both types of representations could be adopted and exploited as a package to create a better form of spatial representation for Kuala Lumpur, improve its legibility quality and enhance the effectiveness of the development control decisions.

This research also contributes in the verification of the presumption that the urban form of Kuala Lumpur does not conform to the urban theory of western cities. Kuala Lumpur has unique characteristics as the result of its multi-ethnic, multi-cultural way of life. Its buildings may hold colonial architecture (the façade), boast Chinese physical structure (the shophouses), possess an unmistakably Indian environment (the sound, smell and activities) but they are undeniably Malay spaces (the people). This juxtaposition of characters is unique to Kuala Lumpur and generates a distinctive urban form and identity. Kuala Lumpur does not share the characteristics of North American cities with

concentrated city centre or downtown. Instead it represents a diversity of nodes of differing functions and significance. Kuala Lumpur comprises of a brilliant display of architectural imagination and stylistic lavishness. Despite the fact that its architecture and layout is at first a British-Indian transfer, in Kuala Lumpur it evolved and took on an original quality of its own. Kuala Lumpur is a city of metamorphosis, where different cultures meet in transitional places and at the confluence of traditions and civilizations. It calls for the presence of the multi-ethnicity, multi-cultural of its people, of the informality and openness of its street activities, in order to create rhizomatic invasions, to guarantee its urbanity, creativity and the prevention of rigidness. It is the type of urban form that is different than that of many typical western cities.

Hence, this research holds significant contributions to theoretical and policy debates about Kuala Lumpur and Southeast Asia, and to link these debates to wider discussions on landscape urbanism, which are currently oriented mostly towards European and American exemplars.

CHAPTER 8: CONCLUSION

8.1 ENHANCING LAND USE PLANNING PROCESS IN KUALA LUMPUR

Development control is the primary activity for urban planners in Malaysian local planning authorities. The planners require up-to-date planning data as the basis of an efficient decision-making and development control process. Ideally, consideration for planning approval requires a systematic quantitative analysis and qualitative assessment of land use and development viability which includes its effect on the surrounding area. These steps allow the proposed development to be properly evaluated by the decision-makers before a planning permission is granted. Thus, the availability of an information system with up-to-date database is crucial in the bid to have the most appropriate decision in land use planning process.

Kuala Lumpur has developed into a center of economic growth activities for the Klang Valley and the country. The development of Kuala Lumpur has the pattern of a definite concentration of physical and economic activities in the center with ribbon development happening along the major arterials leading into the city. Development control is very important for Kuala Lumpur Metropolitan, especially in the Commercial Central Area. This economically prime area has the highest concentration of development compared to the rest of the city. Thus far, the area with a mixture of traditional shop houses, office complexes and modern hotel-cum shopping complexes, still receives numerous applications either for new development or redevelopment.

In this case, the planning applications are assessed in terms of current development scenarios, land information, planning requirements and planning designs. The strategy adopted by the KLCH is based on the assumption that information represents an important resource for strategic planning. The strategy is to combine day-to-day data with strategic information via the SKP operated by the Department of Urban Planning

(DUP). The Development Control System (SKP) within the DUP was set up as a tool to control development in Kuala Lumpur.

It is acknowledged that the SKP has an existing database of land use layers. The database for SKP is a combination of several data layers used in analysis such as base maps, administrative boundaries, built environment components or land use, transportation elements, planning requirements information, geology and soil, hydrographic elements, relief elements, vegetation, meteorology, utilities and community facilities. Nevertheless, it is an important fact that regular updating of the database is vital in ensuring the appropriateness of any development control decisions. Unfortunately, updating the fast changing land use of the city has proven to be a big challenge to the SKP administrators. It can be concluded from the research that the land use map from KLCH GIS database is not sufficiently inclusive to assist the best informed decision making in development control process.

For that reason, a platform where the general public could contribute their inputs to the existing GIS database is necessary. On a user-friendly platform, public participation in updating some of this information could prove to be invaluable. Informal spatial representations such as tourist maps and photos, and public opinion of the evaluated area are an added value in enhancing the formal spatial representation i.e. the land use map. It will also inform the decision makers of any land use issues on site such as incompatible land uses and illegal land use activities. Access to this important information will assist the decision makers in making a better informed decision. This access, in return, would enhance the effectiveness of land use planning and the success of development control in Kuala Lumpur. As the result, the urban form and land use pattern of Kuala Lumpur will benefit and improve.

The Kuala Lumpur City Hall receives many redevelopment applications to replace the traditional shop houses with contemporary commercial buildings. However, private small-scale piecemeal development completed in a short time does little to contribute to

the aesthetic quality of the city. Although restrictions are imposed by the City Hall based on development plan and planning standards, these can still be negotiated by compensating with payment of development charges, provision of car parking and other facilities, surrendering land for road widening or providing building setback. The concern is that if the development of the area is not properly and efficiently controlled, it will adversely affect the planned land use growth and put the image and identity of Kuala Lumpur at risk. Here is where PPGIS could play its role in easing the predicament. Allowing the public to upload the up-to-date on-site scenario and put forward their opinion in a simple and uncomplicated process would automatically enhance the effectiveness of the existing formal spatial representation database, that is, the GIS and SKP. This qualitative information could then be applied in the land use planning approval analysis and used to justify the City Hall's decision.

8.2   ENHANCING THE IMAGE AND IDENTITY OF KUALA LUMPUR

As any other regions in the world, the Southeast Asian region too has experienced significant impact of globalisation for the past few decades. The focus of academic research of contemporary conditions of globalisation in the new millennium is shifting towards the human dimensions of the growth of the large urban regions and its impacts that are grounded in urban lives and spaces. This shift calls for emphasis on the indigenous local components of the interaction with globalisation, especially in Southeast Asian context. The assumption is that Southeast Asian urbanisation in the future will be more diverse both at the macro level of urban form, as well as at the micro level of urban household i.e. the *kampung* (village) and the everyday lives of people. Therefore in order to get a more accurate picture on the urbanisation scenario in Kuala Lumpur, emphasis should be on tits indigenous local components of the interaction with globalisation. As such, mapping Kuala Lumpur's diverse urban form and indigenous local components is necessary in order to best capture its spatial representation and document its land use changes.

Malaysia is a rapidly developing country and has a noticeably growing population and urbanisation. Sadly in the process, some of the local and traditional Malaysian urban environments are being sacrificed for more modern structures and standardised images of global universal characteristics that are not suitable for the local cultural expressions, traditions and way of life. Generally, these new development have been insensitive to their context and do not integrate successfully with the surroundings, which caused a loss of historical continuum and lacking in a sense of identity. It is this rather unfortunate scenario which has become a major concern to the image and identity of Kampung Baru and Jalan TAR in Kuala Lumpur.

As Kampung Baru is poised for development, questions regarding modernisation, urbanisation, and identity of the Malay *kampung* in the metropolitan city of Kuala Lumpur linger. The Kuala Lumpur City Hall should evaluate its demolish-and-rebuilt development philosophy for Kampung Baru and question whether its plan to redevelop the *kampung* and turning it into developer's playground is the best approach. It is true that Kampung Baru has its issues such as incompatible land uses and illegal land use activities, but the site also offers the opportunity to consider new development in an existing, occupied neighbourhood while retaining its cultural space and *kampung* identity. It is imperative to understand the place *kampung* occupies in the Malaysian collective imagination to ensure the success of its development. *Kampung* is alive and well in the mind's eye of Malaysians and remains the symbol of Malay tradition and culture. However, it is equally important to avoid Kampung Baru from suffering the same fate as Kampung Gelam in Singapore after its designation as an historic district. It is a delicate and difficult balance to get right; the middle approach between museumification and lived-in concept.

On the other hand, the Kuala Lumpur City Hall also needs to look at the most appropriate approach for Jalan TAR. Jalan TAR with its existing historic and heritage buildings could be exploited to create a unique image for the city of Kuala Lumpur.

Jalan TAR was the centre of Kuala Lumpur shopping in the days before big, modern shopping malls took over. This area could be rejuvenated by restoring its dilapidated pre-war colonial buildings while retaining its unique mixture of physical form and activities. With its colonial building façade and Chinese shophouses arrangement, its businesses are Indian owned visited by mostly Malay shoppers. The area has a very vibrant atmosphere owing to the vivid colours of its building facade, the loud sound of Indian music and the overcrowded presence of its visitors. This unique blend of architectural design and features, cultural space and ethnic background creates a notable cultural environment and experience. Jalan TAR's pre-war buildings' distinctive facades should be preserved and readapted to accommodate modern retailing businesses in order to preserve its unique environment and experience.

The shopping district of Jalan TAR is also where the colourful shopping area called Little India located. The Jalan TAR/Little India area is a great example of Kuala Lumpur's unique identity as a multi cultural/ethnic/religious city. This lively and animated area is the essence of Malaysian identity. If planned and executed effectively, visitors to the area will have a shopping and cultural experience that would be unique to Kuala Lumpur. A remarkable and inimitable environment and experience as such would be very attractive especially to international visitors. It will also create a distinctive city identity and image by reflecting its multi-cultural society and its rich history.

In short, the City Hall needs to focus on its historic and heritage buildings as well as its modern buildings to reflect a mixed image between modern and traditional lifestyles. This fusion image can be a distinguishing image and identity for Kuala Lumpur compares to other developing cities in Southeast Asia. The viability of such a rejuvenation project is highlighted in Kuala Lumpur Structure Plan 2020 which emphasises the importance to redesign the city by adopting the original architectural styles in creating a distinctive city image and identity. It also stresses the importance to emphasize on the macro image of the city, especially in the design to provide a variety of shapes and activities of buildings with a good harmony. Furthermore, it is crucial to

expand and boost the original activities in buildings and in the surrounding areas so that a strong relationship between the buildings as the main component of the city and the people are formed. A significant issue to think about in relation to Kuala Lumpur's image is the city's ability to be distinguishable from the other developing cities and reflect the reality that Kuala Lumpur is a mixed city between modern and traditional lifestyles.

Creating a distinctive city image for Kuala Lumpur is a tricky task as it depends mainly on the manner of interactions between the people and their surrounding built environment. Even though the public classified Kuala Lumpur as a legible city, finding their way around the city is still a significant problem. This is an indication of the need to improve the existing land use layout in Kuala Lumpur. It is very important to include this form of input from the public in the site planning and development control decision making process. The integration of this information into the existing formal spatial representation database will enrich the database and support the decision making process. As the result, the effort to preserve Kuala Lumpur's unique identity will possibly be a success.

8.3 THE INTEGRATION OF FORMAL AND INFORMAL SPATIAL REPRESENTATIONS

The present PPGIS movement in GIS scholarship seeks to develop GIS that is more adaptable to extra-organisational input from regular citizens and other non-official sources. Taking into account data security issue and confidentiality of some of the information on the SKP database, it is recommended that a separate platform is designed for this purpose. Providing a platform for the public to upload their input in both visual (photos and videos) and textual (perception and land use comments) formats will significantly improve the existing database. This platform should then be securely linked

to the SKP database. Planning officers and decision makers will have access to both databases when making decisions.

In order to allow the public to participate in the development control process, a platform to consider is the Internet, using web-based GIS technology. An effective medium for public participation can be created using data which were made accessible on the Internet by web-based GIS technology. KLCH could turn this technology into an important media to access and acquire information through the World Wide Web (WWW) multimedia capabilities. The WWW multimedia capabilities can also be exploited to interact using diverse types of visual representations such as images, maps, diagrams and graphs. This interaction is easy to implement as text supported by graphical interface, sound, video, animation and so forth.

There is currently a variety of software that could be used to develop a web-based GIS application. Among the common ones include ArcIMS, ArcExplorer, MapObjects, MapGuide, MapExtreme, GeoMedia Web, Spatial WebBroker and few others. Each of the software is slightly different in approach and varies in terms of the underlying architecture and programming language used. In the public participation context, the web base GIS developed should allow for users to give feedbacks and support the decision making process. As such, the GIS web should be customised to take into consideration the suitable data requirement, spatial planning models, GIS tools and effective user interaction. The adoption of a web-based GIS application will act as a bridge for the interaction between the formal and informal spatial representation in SKP. Thus, it will create a more complete database for SKP and in return will enhance the land use planning process in general.

8.4   THE WAY FORWARD

Since there is still a gap of literature on Southeast Asian cities compares to the literature on western cities, further studies are required to fill in the gap in urban studies literature. An understanding of urban issues and planning practices in Southeast Asian cities like Kuala Lumpur is important to provide examples for other Southeast Asian cities. The findings of this research also contribute to answering the argument on whether Southeast Asian cities fit into the urban form theories based on Western exemplars. Similar research on other Southeast Asian cities could be carried out to confirm the findings of this research are also applicable to other cities in the region or otherwise.

However, this research could not cover in detail every aspect of interaction of formal and informal representation due to limitation of time and manpower. Attention is therefore focused on the legibility qualities of both types of representation based on perception. The research is concluded theoretically on the possibility of combining both types of representation to improve legibility. Further studies are necessary to develop a prototype application using one of the software available in the market; where both types of representation are shared in one system, and its effectiveness and efficiency tested. In the long run it is envisaged that the tested prototype, after some necessary modifications and adaptations, would be applicable to other Southeast Asian cities.

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APPENDIX

LEGIBILITY & WAYFINDING SURVEY IN KUALA LUMPUR

QUESTIONNAIRE ID NO:
INTERVIEWER:
LOCATION:

INSTRUCTIONS

The purpose of this survey is to collect data for my PhD research at the University of Edinburgh, United Kingdom. The topic is on *Enhancing Land use Planning in Kuala Lumpur Through the Interaction of Formal and Informal Spatial Representations.* **Informal Spatial Representation** is relating to methods adopted or measures taken by the public to improve imageability, clarity and their wayfinding in the city . **Site planning** is the process of identifying the most suitable piece of land or area for a specified type of **land use**. This survey is to be filled in by traders, shoppers, workers, students and visitors of Kuala Lumpur and have experience finding their way around the city. The study was set up to give better understanding on public perception of the problems relating to urban legibility and wayfinding and the methods used (and how it is used) to improve legibility and wayfinding in the city.

Please answer the questions as accurate and complete as possible. The answers should reflect your experience in Kuala Lumpur. The answer responses from the survey questionnaire are strictly for research purposes.

ADDRESS:
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CONTACT NO:
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Tick (√) the box and fill in your answer in the provided blank.

Q1. Gender:
- ☐ Male
- ☐ Female

Q2. Ethnicity:
- ☐ Malay
- ☐ Chinese
- ☐ Indian
- ☐ Others, please, specify

....

Q3. Your age group:
- ☐ Adolescent
- ☐ Adult
- ☐ Elderly

Q4. Where do you live?

....

Q5. Highest level of education:
- ☐ Primary school
- ☐ Secondary school
- ☐ College graduate
- ☐ University graduate
- ☐ Others, please specify.

....

Q6. Occupation:
- ☐ Professional
- ☐ Administration
- ☐ Educational
- ☐ Business
- ☐ Agricultural
- ☐ Homemaker
- ☐ Service Job
- ☐ Manufacturing
- ☐ Student
- ☐ Retired
- ☐ Others, please specify: ....

Q7. Monthly income in RM:
- ☐ 500 – 1000
- ☐ 1001 – 2000
- ☐ 2001 – 3000
- ☐ 3001 – 4000
- ☐ 4001 - 5000
- ☐ 5001 and above.
- ☐ Others, please specify ....

Q8. If you live in Kuala Lumpur, how long have been living here?
- ☐ Less than 5 years
- ☐ 5 – 10 years
- ☐ 11 – 20 years
- ☐ 21 – 30 years
- ☐ More than 30 years

SECTION B:
Legibility and wayfinding in Kuala Lumpur

Q9. Please tick (√) the main purpose(s) for visiting Kuala Lumpur city.
- ☐ Doing trading
- ☐ Shopping
- ☐ Working
- ☐ Going to school/college
- ☐ Visiting government office
- ☐ Getting services (hospital/clinic, bank, post office,etc)
- ☐ As foreign tourist
- ☐ As local tourist
- ☐ Others, please specify.

....

Q10. How do you rate the following components of Kuala Lumpur's urban form? Circle your answer and give the reason.

Feature	Very good	Good	Average	Poor	Very poor
a)　Road system	5	4	3	2	1
b)　Land use layout	5	4	3	2	1
c)　Public transport network	5	4	3	2	1
d)　Parks and open spaces	5	4	3	2	1
e)　Other component, please specify	5	4	3	2	1

Q11. Give ranking to these places of activities below in terms of the frequency of your visits. Refer to the following scale to write down each ranking.

Most frequent　10　　9　　8　　7　　6　　5　　4　　3　　2　　1　Least frequent
Ranking

	Departmental stores
	Supermarkets
	Fast-food outlets
	Boutique/Clothing shops/Textile stores
	Restaurants
	Financial institutions
	Hotel
	Disco/lounge
	Cinema
	Others, please specify ……………………………………………….

Q12. In your opinion, is Kuala Lumpur a legible city?
 ☐　Yes
 ☐　No

Q13. Have you ever had problems in finding your destination of interest in Kuala Lumpur?
 ☐　Never
 ☐　Sometimes
 ☐　Often
 ☐　All the time

Q14. Give ranking to these places of activities below in terms of its legibility (the ease of which you can find their location) in Kuala Lumpur. Refer to the following scale to write down each ranking.

Most legible   **10**   **9**   **8**   **7**   **6**   **5**   **4**   **3**   **2**   **1**   **Least legible**
Ranking

	Departmental stores
	Supermarkets
	Fast-food outlets
	Boutique/Clothing shops/Textile stores
	Restaurants
	Financial institutions
	Hotel
	Disco/lounge
	Cinema
	Others, please specify …………………………………………….

Section C:
Improving urban legibility and wayfinding

Q15. How do you get from one place to another in the area?
- ☐ Private vehicle (car, motorcycle, bicycle).
- ☐ Public transport (taxi, bus, train)
- ☐ Walking

Q16. Give ranking to the features shown below on their importance in helping you to access places in the area. Refer to the following scale to write down your ranking.

Highly important   **5**   **4**   **3**   **2**   **1**   **Least important**
Ranking

	Buildings
	Natural features (hill,river,etc)
	Streets/rail tracks
	Greenery and street landscape along streets
	Signage/Advertisement boards

Q17. Which features assist you to get from one place to another in the area? (You may tick more than one choice). Please name the feature(s).
- ☐ Buildings ....
- ☐ Streets ....
- ☐ Signage/Advertisement boards...
- ☐ Natural feature ....
- ☐ Sculpture/structure ....
- ☐ Parks/open spaces ....
- ☐ Trees/greeneries ....
- ☐ Others, please specify. ....

Q18. What do you do when you have problems finding your destination of interest? (You may tick more than one choice).

- ☐ Use road directories
- ☐ Use tourist maps.
- ☐ Use maps from hotel/restaurant brochures,etc
- ☐ Use mobile phone technology, please explain …………………………………………………………..
- ☐ Other(s), please specify. ....

Q19. How do you perceive this area as?

- ☐ Well-planned and legible
- ☐ Well-planned but not legible
- ☐ Moderate
- ☐ Chaotic and confusing

Q20. Give your suggestion(s) to improve legibility in this area.

………
………
………
………

Q21. Give your suggestion(s) to improve legibility in Kuala Lumpur.

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………
………

END OF QUESTIONS

Thank you for your assistance!