

MORPHOGENETIC PROCESS OF SPATIAL STRUCTURE IN MALAY TOWN: A CASE STUDY OF KOTA BHARU, KELANTAN

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ABSTRACT

A systematic assessment of urban morphological analysis is crucial to understand the patterns in which cities are built and transformed henceforth revealed its character. However, there is a significant lag in integrating the analytical process of urban morphological approaches to explain the spatial formation and transformation process of Malay towns which remains unclear. Aims to excerpt the morphogenetic processes that had shaped and influenced the spatial structure of Malay town, a case study in Kota Bharu, Kelantan were employed to present the historical evolution of the town and recognise the socio-physical influences contributed to the structural changes based on data gathered from archival research and site observation. From a diachronic comparison, the mapping analysis process outlined three morphological phases between the years of 1816 until 1909 at five defined urban morphological zones (UMZ). The findings revealed significant changes had occurred at the level of urban block which created a more complex spatial structure in its composition and layout. This study enhanced the understanding of the organic forms of spatial evolution in Malay town for delineation of area-based in urban conservation planning.

Keywords: : character, Malay town, morphogenetic process, spatial structure, urban block, urban morphological approaches, urban conservation

1. INTRODUCTION

The emergence and growth of Malay urban centres or town started with the dispersal of the villages (*kampung*) as an independent nucleus unit typical for Malay settlement. Arose along the rivers, especially at the mouths or at the confluence of two rivers, these villages merged with several other villages that were built surrounding the palaces (*Istana*). The construction of the palace, in close relations to the state capital, marked as a focal point which eventually influenced the development of the surrounding settlements into an urban area (Khor et al., 2017). Conveniently navigable by boat, the area grew naturally into ports that supported its growth into a commercial centre where trading activities were closely administered by the Malay Rulers. Therefore, several distinct characters can be inferred from its evolutionary process, which are: (i) A strategic location close to rivers and seas; (ii) Heavily dependent on rivers as an essential reference for habitation and transportation; (ii) Developed due to flourished port-trading activities; and iii) Established and administered by Royal Malay ruler as an early capital for Malay States.

These characters henceforth augmenting the position of the towns referred either as Estuaries Towns (Sendut, 1962; Arbi & Talib, 1986) or esteemed as Royal Towns (Shukri et al., 2018; Samsudin et al., 2018) as well as recognized as Early Malay Towns (Rajoo, 1998; Harun & Jalil, 2012; 2014) and Traditional Malay Town (Ossem et al., 2010). Regardless of the various terms referred to these towns, this study generally classified the town as 'Malay town' due to its historical significance in terms of Malay state formation. States such as *Chieh-cha* (Kedah), *Chih-tu* (Kelantan) and *Teng-ya-nung* (Terengganu) had been described in China's imperial record long before the establishment of Malacca Empire, as being achieved the level of 'city-states' surpassing the 'Kingdom' (Wheatly, 1961). In a similar vein,

Sendut (1962) believed that these states formed as a 'convergence of areas' and recognised as '*Pulau Budaya*', a depiction of the higher status achieved within the surrounding of the primitive settings.

In the beginning of 19th century, the influence on colonial political development with the introduction of modern capitalism had considerably changed the physical form of these towns such as Alor Setar, Kota Bharu, Kuala Terengganu, Kuala Dungun, Johor Lama, Bandar Maharani, Pekan, Kelang and Kuala Selangor into a more complex and organized political entities (Arbi & Talib, 1986; Harun & Jalil, 2014). Apart from these aforementioned towns, Alor Setar (Kedah), Kota Bharu (Kelantan), Kuala Terengganu (Terengganu) and Johor Bahru (Johore) remained as the state capital since its establishment. With the political transformation following Anglo-Siamese Treaty signed in 1909, these states including Arau (Perlis) were categorised as five protected Malay Sultanates known as Unfederated Malay States (UMS) by British administration (Khor et al., 2017).

In urban morphological research discourse, understanding how the physical form for each particular towns and cities has been formed and transformed has received a significant contribution in shaping various approaches to analyze the evolutionary process. For example, Kropf (2013; 2014) argued for a more contained version who firmly stated that the primary focus of urban morphological analysis is to reveal the process that contributed to the changes rather than enlighten the historical meaning and genesis of such form and pattern as contended by Conzen (2013). Central to any approaches in urban morphological analysis, apparently, evaluating its morphogenetic process is the utmost priority and unequivocally importance.

Assessing the morphogenetic process of Malay town requires elucidation of the various dimension of influences due to the organic growth of the towns that adapting to the specific conditions of the dominant activities (i.e. port trading) and which change over time. In order to understand such dynamic of influences which had shaped the spatial structure of the town, several studies had attempted to provide a theoretical formation and transformation of Southeast Asian cities in regional context such as McGee (1967), O'Connor (1983), Miksic (2016) as well as reconstructing the morphology of the Malay towns in local context; for instance the study conducted by Tajudeen (2005) and Kassim et al. (2018). These studies had provided an insight into the early physical forms of the observed Malay towns that identically display similar patterns in its spatial structure. Nevertheless, further research needs to be done to systematically analyze the evolutionary process that had contributed to imprint such patterns which then portrayed as the unique characters for Malay town.

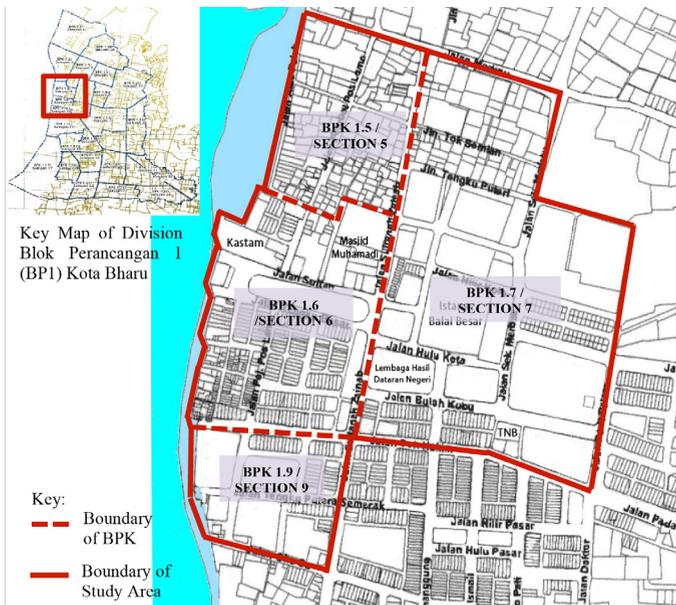
This study, therefore, aimed to excerpt the morphogenetic processes that had shaped and influenced the spatial structure of Malay town prior to the advent of Western colonial influence. A vital feature involves mapping of the various physical forms within urban areas. Accordingly, the study used three main principles that were fundamental in urban morphological analysis approaches that are: (i) Morphological elements, (ii) Different levels of resolution, and (iii) Historical time comparison as identified by Moudon (1994) and further conceptualised by Oliveria (2016) to provide a framework for evaluating the morphogenetic process at the selected case study area in Kota Bharu, Kelantan. The established framework based on the hierarchical structure of time-related layers of the town able to guide for a systematic intervention in conservation planning, which response to the historical and cultural significance and settings of the town.

2. METHODOLOGY

The study uses qualitative research methods to provide an in-depth understanding of the spatial formation and transformation processes that formed the significant components of Malay town. In an attempt to comprehend such a dynamic process in a real-life phenomenon, a case study approach had been employed as a strategy of inquiry. A particular design case at Kota Bharu, Kelantan was purposefully selected to analyze the evolutionary process of spatial patterns that carved upon within the purview of urban morphological analysis framework. The site was chosen as a representative of Malay traditional town on the basis of four distinct criteria; that are: (i) Retains an intact significant components of physical structure within a proximity of a defined area, reflecting the typical spatial layout of Malay town (Ossem et al., 2010); (ii) Among the early Malay States founded, developed and continually ruled by the Malay Sultans with minimal British intervention (Harun & Jalil, 2014); (iii) Remains its administrative center in Kota Bharu since 1845 which then encouraged the growth of the surrounding settlement into an urban area (Salleh, 1984); and (iv) Constantly accommodates a highest proportion of Malay population as recorded in the earliest official census data of British Malaya Population Census 1911 until present (Gullick, 1989; Graham, 1908; Talib, 1995).

Data acquisition in urban morphological research typically applies multiple sources of evidence (Scheer, 2015). Accordingly, the data collection method in this study henceforth entails a combination of qualitative data which include two main techniques that are document analysis and fieldwork. The document analysis technique involving archival research collected from various sources of data such as cartographic materials (maps and town plans), visual data (photographs) and historical documents (books

developed land areas (Rancangan Tempatan Jajahan (RTJ) Kota Bharu 2020). The concentrated area of study at the town Kota Bharu is focused on four designated areas delineated according to the administrative and operational boundaries of BPK boundaries or previously referred as Section (*Seksyen*). Covering a total area of approximately 65.90 hectares, these areas comprised of BPK 1.5/Section 5, BPK 1.6/Section 6, BPK 1.7/Section 7 and BPK 1.9/Section 9. Over the last 174 year, these four areas have been the center of attraction to the early growth of Kota Bharu town since 18th century, established as Old Town Centre of Kota Bharu (*Pusat Bandar Lama Kota Bharu*). Figure 2 delineates the concentrated study area.



Study Area at Old Town Centre of Kota Bharu, Kelantan

Bil.	Blok Perancangan (BP)	Blok Perancangan Kecil (BPK)	Seksyen / Mukim	Keluasan (Hektar)	Bil.	Blok Perancangan (BP)	Blok Perancangan Kecil (BPK)	Seksyen / Mukim	Keluasan (Hektar)
1	Kota Bharu	BPK 1.1	Seksyen 1	82.86	15	Kota Bharu	BPK 1.15	Seksyen 15	25.44
2	Kota Bharu	BPK 1.2	Seksyen 2	37.96	16	Kota Bharu	BPK 1.16	Seksyen 16	25.44
3	Kota Bharu	BPK 1.3	Seksyen 3	26.63	17	Kota Bharu	BPK 1.17	Seksyen 17	179.04
4	Kota Bharu	BPK 1.4	Seksyen 4	75.77	18	Kota Bharu	BPK 1.18	Seksyen 18	31.50
5	Kota Bharu	BPK 1.5	Seksyen 5	7.09	19	Kota Bharu	BPK 1.19	Seksyen 19	25.67
6	Kota Bharu	BPK 1.6	Seksyen 6	27.84	20	Kota Bharu	BPK 1.20	Seksyen 20	48.39
7	Kota Bharu	BPK 1.7	Seksyen 7	21.62	21	Kota Bharu	BPK 1.21	Seksyen 21	43.45
8	Kota Bharu	BPK 1.8	Seksyen 8	22.90	22	Kota Bharu	BPK 1.22	Seksyen 22	39.45
9	Kota Bharu	BPK 1.9	Seksyen 9	9.05	23	Kota Bharu	BPK 1.23	Seksyen 23	43.18
10	Kota Bharu	BPK 1.10	Seksyen 10	10.51	24	Kota Bharu	BPK 1.24	Seksyen 24	39.74
11	Kota Bharu	BPK 1.11	Seksyen 11	16.99	25	Kota Bharu	BPK 1.25	Seksyen 25	51.90
12	Kota Bharu	BPK 1.12	Seksyen 12	60.15	26	Kota Bharu	BPK 1.26	Seksyen 26	52.65
13	Kota Bharu	BPK 1.13	Seksyen 13	29.47	27	Kota Bharu	BPK 1.27	Seksyen 27	83.64
14	Kota Bharu	BPK 1.14	Seksyen 14	34.67	28	Kota Bharu	BPK 1.28	Seksyen 28	61.94

Tabulation of land area size in each Blok Perancangan Kecil of Kota Bharu (BP1)

Figure 2: Study Area at Old Town Centre Kota Bharu, Kelantan

4. MAPPING ANALYSIS

4.1 Morphological Phases

Extracting from phenomenological formation and transformation of the historical construction of 'Kota' as a central dominating landmark representing the growth of town or city, significant changes in the spatial structure of the town were observed in a diachronically time series comparison; that is viewing the same area in a different period. Three formative periods between the years of 1816 until 1909 were identified and outlined as morphological phases in accordance with the historical events which had subsequently influenced the spatial structure of the town. The systematic evaluations according to the morphological phases delineated provide an in-depth understanding of the dynamic mechanisms of the formation and transformation of spatial structure that indeed had strongly tied to a multitude of contextual factors including social, economic and cultural influences occurred in that particular period. These three morphological phases described as follow:

(i) **Phase I: From 1816 until 1844;** a substantial period that marked the changes of location from Istana Kota Galuh in Kampung Sireh (7km from the study area) to the nearer area of the present site in old town Kota Bharu (within the study area boundary). The year of 1816 indicates the sequential establishment of state capital following the tradition of fort construction with the construction of Istana Kebun Mengseta in Pulau Saba by Sultan Muhammad I. The area, however, had vanished entirely due to the recurrent erosions at the riverbank of Sungai Kelantan, resulted to destruction of the surrounding place of Pulau Saba.

(ii) **Phase II: From 1845 until 1902;** a significant period that witnessed a rebuilding of the new fort and palace, translated as Kota Bharu from the former site of Istana Kebun Mengseta to the present location of Istana Balai Besar circa 1845 by Sultan Muhammad II. As such, the momentous year of 1845 often being associated with the historical

(iii) **Phase III: From 1903 until 1909;** a transformative period that signifies an early intervention of foreign influence, notably the Siamese and British in Kelantan state administration. The 1903 Treaty and 1909 Anglo-Siamese Treaty, lead to influence the development growth of Kota Bharu with an establishment of various institutions being separated from Istana, thus changing and diversify the inherited spatial composition, characters, and fabric of the town.

4.2 Urban Morphological Zones

On the substantial ground for site inventory and analysis to observe the changes according to the three formative periods identified earlier, the selected four areas of Old Town Kota Bharu (BPK 1.5/Section 5, BPK 1.6/Section 6, BPK 1.7/Section 7 and BPK 1.9/Section 9) were grouped and re-classified to be analyzed according to the Urban Morphological Zones (UMZ). Defined as a set of urban areas laying less than 200m apart, UMZ can be determined from land cover classes which contributing to the urban tissue and its function (EEA, 2014). Indeed, understanding how urban tissue has developed and reconstructing the process of its development based on artefacts and spatial forms deposited in the existing tissues were regarded as the fundamental in urban morphological analysis. The conception of urban tissue is interrelated with land use that being applied within zoning systems of planning and development control. Nevertheless, a clear distinction can be seen concerning objective classification between UMZ and land use zone in which UMZ classifies the area according to form-based rather than use-based zoning. The intensification of such approach can increase the sensitivity of zoning systems to the nuances of a wider range of both specific urban forms and activities on the one hand, and increase the level of control in areas of particular historical or cultural significance on the other (Kropf, 2017).

The areas of UMZ were distinguished and marked based on comparative analysis of archival data gathered through document analysis and delineated its context and definite boundaries through detailed site observation as well as with the assistance of aerial photos and drone image captured during fieldwork. The classification of UMZ was made in accordance with Corine Land Cover guidelines established by the European Environment Agency (EEA) and was tailored according to the research as well as site context. Particularly, four parameters were used to ascertain the zoning that are land-use types, socio-economic function, historical or cultural significance and building period. In certain circumstances, however, where the absence of details information on the particular area is evident, the rules for outlining the UMZ might include other measures that are deemed significant and defined primarily according to the rooted historical and cultural function of the area. Accordingly, five UMZ were identified as illustrated in Figure 3. Detailed description of each zone delineated is as follows:

i) Urban Morphological Zone 1 (UMZ 1): Royal Palace Complex (RPC)

The zone mainly comprised of BPK 1.7/Section 7, which partly included within 'Cultural Heritage Zone' as outlined by *Kajian Pelan Tindakan dan Garis Panduan Rekabentuk Bandar Kota Bharu Bandaraya Islam 2005*. The area accommodates a

significant component of the grand palace and its surrounding ground that are substantial in any formation of Malay States. The Palace (i.e., Istana Balai Besar), mainly positioned at the core centre of town to signify the centralised power of Malay Sultanate and tied strongly to the concept of king fort, fort palace or locally referred to 'Istana Kota'. The features within the palace complex serve multipurpose functions extended to royal administration and royal residences which were surrounded by the fort (Kubu) for defense purpose and approachable through a remarkable gateway as the entrance to the town.

(ii) Urban Morphological Zone 2 (UMZ 2): Institutional Building Area (IBA)

The interconnected zone with RPC which covers the upper part of BPK 1.6/Section 6 and areas adjacent to Istana Balai Besar in BPK 1.7/Section 7. This particular area composed of several institutional buildings that play a pivotal role in the administration of traditional Malay States. Indirectly, these buildings composed the significant setting of Malay town. Such buildings includes: (i) The Mosque (i.e Masjid Muhammadi) in the vicinity of the Istana Balai Besar which symbolizes the centre of Islam as the main religion in influencing the spiritual, intellectual and social development of the Malays (Ossem, 2002); (ii) The Syariah Court, built close to the Masjid Muhammadi holding the authority for the implementation of Shari'a laws; (iii) Land Office (Pejabat Tanah) established to perform as a commission assisting the Sultan in terms of land ownership issues; and (iv) Treasury building (Bilik Perbendaharaan Negeri) as a vault which located within the palace compound to keep the State's currency, financial records and important documents.

(iii) Urban Morphological Zone 3 (UMZ 3): Open Recreational Ground (ORG)

The zone forming an axial line consists of the central area of BPK 1.6/Section 6 extending to the open ground in BPK1.7/Section 7 overlooking the palace of Istana Balai Besar. Served as a recreational ground, this grass-covered area known as Padang (Padang Merdeka) held an important social occasion related to the vast array of royal celebration, parades, stage performance as well as a venue for sports activities. Padang, therefore, provides a vital ground for public gathering either in formal or informal social occasions.

(iv) **Urban Morphological Zone 4 (UMZ 4): Traditional Commercial Street (TCS)**

The zone located along the shore of Kelantan River at BPK 1.6/ Section 6 and BPK 1.9/Section 6 were predominantly focused for trading and commercial activities that were made close to the river as the main transportation routes during the early growth of the town (i.e. at the riverbank along Jalan Pos Ofis Lama and Taman Sekebung Bunga). Such activities along the street of Jalan Pos Ofis Lama contributed to the growth and vitality of Malay estuaries towns during the last decade of 17th until the 19th century (Arbi & Talib, 1986). Strategically located near the jetty (Tambatan DiRaja), this area consists of a marketplace that serves as a hub for trading and exchanging goods carried from suburb and remote hinterland areas to the town.

(v) **Urban Morphological Zone 5 (UMZ 5) : Early Malay Village (EMV)**

Existed in all four sections of the study area, the settlements of Malay villages were located along the edge of Kelantan River and close to the palace complex. These villages formed a large area of land stretching the from present location of Kampung Atas Paloh downwards to Kampung Gajah Mati (Salleh, 1984). Among the early identified villages that were densely populated were Kampung Kota Sultan (presently an area of Royal Custom Department) and Kampung Masjid (surrounding the Masjid Muhammadi). Apart from that, there were also villages resided by Malay aristocratic and palace officials such as Kampung Kota Bendahara and Kampung Tok Semian. These villages eventually developed into a town ward that influences the increase of urban population in Kota Bharu.

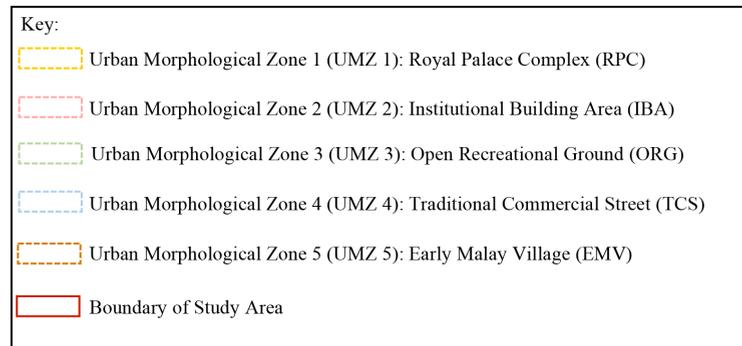


Figure 3: Delineated Urban Morphological Zones (UMZ) of Old Town Centre Kota Bharu, Kelantan

4.3 Morphological Elements

Urban pattern reflected in its spatial composition of urban forms ingrained as a distinctive morphological structure that evolves in time according to the changing needs and choices of society (Kaya & Bolen, 2017). In the context of this research, a close examination on the hierarchical level of the urban block can be used as indices to reveal the structural changes of spatial patterns and characteristics of wider urban level according to the observed period occurred at Old Town Kota Bharu, Kelantan. The position of urban block within the morphological frame of the traditional city's growth represents a key morphological concept (Nikovic et al., 2014). Urban block formed as the

basic unit or segment of urban tissue reflects the characteristics of the town on a smaller scale, which is a logical consequence illustrating the gradual growth formation of the traditional town that is developed according to the organic principles.

Analyzing the diachronic changes in urban block according to the observed morphological phases from 1816-1909, therefore, formed the result and discussion of this research as explained in the next section. The discussion revolves around the two parameters in scrutinizing the changing of urban block that is composition and layout of the physical components in overall depicted UMZ.

5. RESULTS AND DISCUSSION

The findings obtained from mapping analysis revealed that Old Town Centre of Kota Bharu, Kelantan has gradually developed as one of the significant town with distinct urbanization process experienced at the beginning of second morphological phase (1845-1902). The prevailing process, invariably, were mainly concentrated at the central town of Kota Bharu itself (Khor et al., 2017); which signifies its dominant position encapsulated as ‘involutional character’ (Clarke, 1976). As a dominant Malay town, Kota Bharu were densely populated by the Malays and a few Chinese that were drawn to the broad fertile alluvial plains by the river stretching the northern part of Sungai Kelantan. The strategic geographical location intensified by the reconstruction of ‘kota’ symbolized the state capital and town from Kota Kebun Mengseta to the present location of Kota Bharu, had indeed, accelerate the growth of villages which then formed as an urban agglomeration with markets and public building were built in close proximity to the palace. In a larger context, the manifested of the town’s morphogenetic process can be inferred from the establishment of kota following the traditional Malay state formation.

Thus, it is indispensable to scrutiny the term of kota as an expression to urban connotation from Malay historiographical perspective as expressed by Perret (1999) which initially entails to three meanings: (i) A center focusing on Sultanate administration and royal palace complex; (ii) An area equated with a fortification; and (iii) Town. The description of the process of formation and transformation of state capital (ibu kota) in terms of its physical structure can therefore, generally reflects the spatial composition and layout of the Malay town as whole. Though the observable period starting from 1816, the emergence of the town which depict the functional components of urban centers had indeed been recorded as early as 1777 following the transition of administrative capital from Kota Kubang Labu which is located on the west part of Kelantan River (currently known as Pasir Pekan, Tumpat) to Kota Galuh (presently known as an area of Kampung Sireh and is still referred to as Kampung Kota Lama among the locals). The growth of Kota Galuh with flourished trading activities at the port has been documented in the Chinese account, Hsieh Ching-Kao, who visited and lived in Kelantan from the 1780s to 1790s (Tweedie, 1923). It thus provides an important reference that able to illustrate in general the early spatial structure of the Malay town which can be delineated into two interconnected structure that are Dalam Kota and Luar Kota.

This spatial structure remained preserved after the subsequent shift of the state capital in 1816 to Kota Kebun Mengseta and finally the relocation of the

capital to Kota Bharu in 1845. Figure 4 illustrates the diagrammatic changes of spatial structure at the study area of Old Town Kota Bharu, Kelantan which revealed the evolutionary composition and layout of the town. Meanwhile, Figure 5 demarcates the changes of urban boundary according to the observed period.

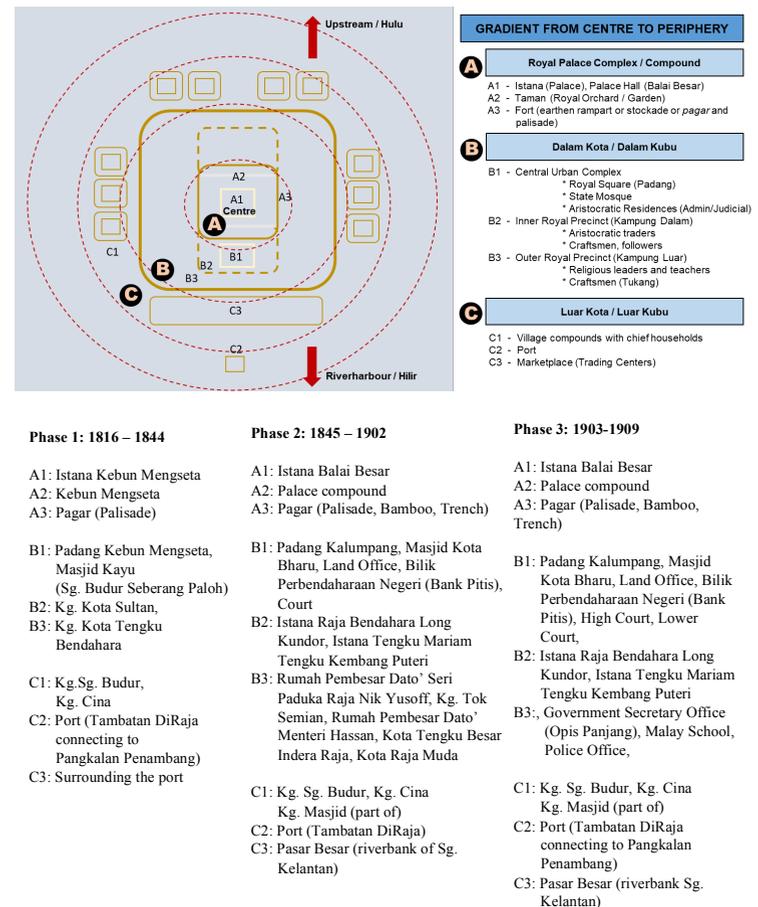


Figure 4: Changes in Composition and Layout of Spatial Structure at Old Town Centre Kota Bharu, Kelantan from 1816-1909 (Adapted and Revised from Tajudeen (2005))

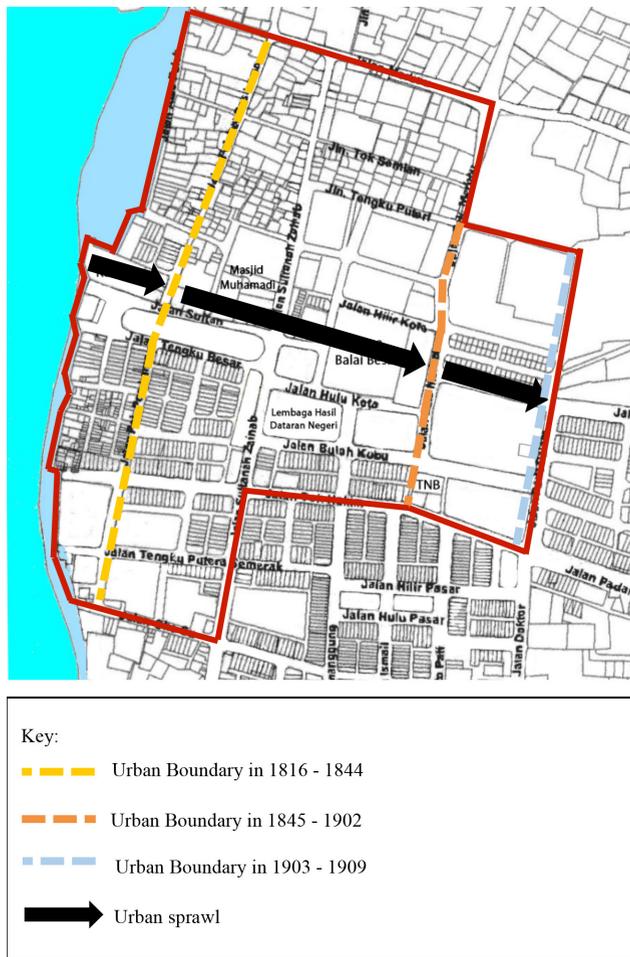


Figure 5: Changes of Urban Boundary in Old Town Centre, Kota Bharu, Kelantan from 1816 – 1909

6. CONCLUSION

This study has uncovered the morphogenetic process of the spatial pattern with regards to its composition and layout in the selected study area of Old Town Centre Kota Bharu, Kelantan. The changing process can be analyzed through systematic mapping analysis established as the framework of this research, which involves three stages, that are: (i) Identification of morphological phases within the observed period from 1816-1909; (ii) Delineation of five UMZ according to the historical and cultural significance, thus, reflected the characters of each area; and (iii) Selection of urban block as indices to represent as key morphological elements. Understanding the morphogenetic process in each town that is individually unique, not only able to depict the structural changes in the formation and transformation process throughout its historical development which is largely qualitative. However, it can be extended to recognize the interrelationship and systemic dimension of urban forms and how it is aggregated into a quantifiable term for town's formation which is of crucial importance. From this understanding, it is hoped that it can point out some possible directions for further exploration on specifying the 'pattern language' of organic form of Malay town towards a comprehensive urban conservation planning.

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