

The Example of BANGKOK

กรุงเทพมหานครบรรณารักษ์โกสินทร์มหินทรายุชชยามหาฉลล

พลภพพรัตน์ราชธานีบุรีรมย์อัครมราชนลเวศนัฒมหาศถานอมร

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By Curtis Thomson

In an attempt to improve geographic literacy around the world and provide educational standards, the National Geographic Society has identified several themes that form the basis of geographic inquiry. These themes were written in 1984 by the Joint Committee on Geographic Education of the National Council for Geographic Education (NCGE) and the Association of American Geographers (AAG). They provide focus and direction for the study of the earth's landscape, and are defined as follows:

LOCATION—the position of a site based on lines of longitude and latitude or some other reference system, the characteristics of that site, and where it is in relation to other places.

PLACE—properties of a site that provide meaning, identity, and character that help to distinguish it from other places. Places are usually identified and described by their physical and/or human characteristics. Location and place are often discussed in the same context by first identifying the location and then describing its characteristics.

HUMAN/ENVIRONMENT INTERACTION—studying the effects that occur when people interact with their surroundings.

MOVEMENT—this is the interaction of people, places, things, and ideas that come from beyond one's immediate location.

REGION—an area defined by the interaction between places on the earth's surface for unifying physical or human/cultural characteristics.

The city can be an excellent example for teaching geography, as each of the above themes is easily conveyed. Among the cities of Asia, Bangkok provides some notable illustrations. From its initial establishment and its selection as a seat of monarchy, to its present-day growth and domination of the urban system, geography's themes provide a framework for interpreting and understanding the present-day city. This framework can be easily adapted to teaching about the geography of cities throughout the world.

LOCATION AND PLACE

Bangkok lies in the center of an area known as mainland Southeast Asia. Using the common globe-based reference system, the city is at 100° 30' East Longitude and 13° 45' North Latitude; although when used with a typical map-based referencing system (necessary when the round globe is converted to a flat map) other coordinates must be identified. Within Southeast Asia are a number of comparable cities that serve as their national capitals and as the largest urban center of their respective countries; their differences, however, are easily expressed through geography's themes.

In studying the city, the concepts of location and place are most prominent in identifying the role that it was established to fill. Three of these roles (defensive, religious, and economic) demand specific functions that result in important differences in the initial location of the city and its interaction with the surrounding region. A city designed to protect a surrounding area (hinterland), for example, will be built at an easily defended location, such as at a

crucial bend or fork in a river or against a mountain. By design this location, along with the city's internal layout, will impede movement both in and around the city through the construction of only a few transportation routes that can be effectively monitored. On the other hand, a city whose main function is economic will be located in an easily accessible area with a variety of transportation routes that accommodate movement of people and goods. There will also be much more interaction between this city and its surrounding region than one designed for protection.

The site for Bangkok was an ideal defensive choice by the first ruler of the current Chakri dynasty, King Rama I (Ramathibodi, 1782–1809) who decided to move the capital across the river where it might be less vulnerable to attack from the Burmese. The king considered the eastern bank of the Chao Phraya River a more easily defended location than the western bank. It was on a bend in the river so that a large proportion of the city would be surrounded by water, protecting its western and southern flanks from encroaching armies (Figure 1). Because this site was generally lower than the western bank, it also flooded occasionally, but the high water table was ideal habitat for tall dense grasses growing in the boggy ground to the north and east of the city and provided a nearly impenetrable barrier to access from the east.

On April 21, 1782 the City Pillar for the new capital was laid, and the construction of the first defensive canal was begun along the eastern rim of the city. Ten thousand Cambodian prisoners of war¹ labored on this canal, which was

completed in 1785. In the seventy succeeding years, a number of additional canals were dug in the region for similar purposes, and to move troops to potential battle sites. Throughout this area the marshy land proved an effective barrier to invading cavalry arriving by land and on elephant.

The result of this planning and layout provided an easily defended site with the river as the only accessible transportation link to the outside (Figure 2). Although a hindrance to the land based military movements of the Burmese with their large numbers of troops, animals, and equipment, the river served as a marvelous transportation corridor for the water-based Thai society.² Housing was located near or on the river or canals, and each household could access the waterways in their small boats.

The King celebrated the completion of this canal and the laying of the City Pillar with a ceremony that gave the city a new name. Names given to places usually result from one of five factors: the physical environment of the location, a person important to the city, an event or curious discovery that took place there, in memory of some other place, or as a transliteration from some other language. The first of these factors provided the name for Bangkok. Originally founded by the Chinese as a favorable trading location, its name was derived from two separate words: *bang*—a village on a waterway, and *makok*—the hog plum, a type of olive.

Although known by this name in the West for the past four hundred years, when the city became the kingdom's capital, a more appropriate name had to be given to the new seat of monarchy. The city's name was therefore changed from a common description of place to something that would evoke

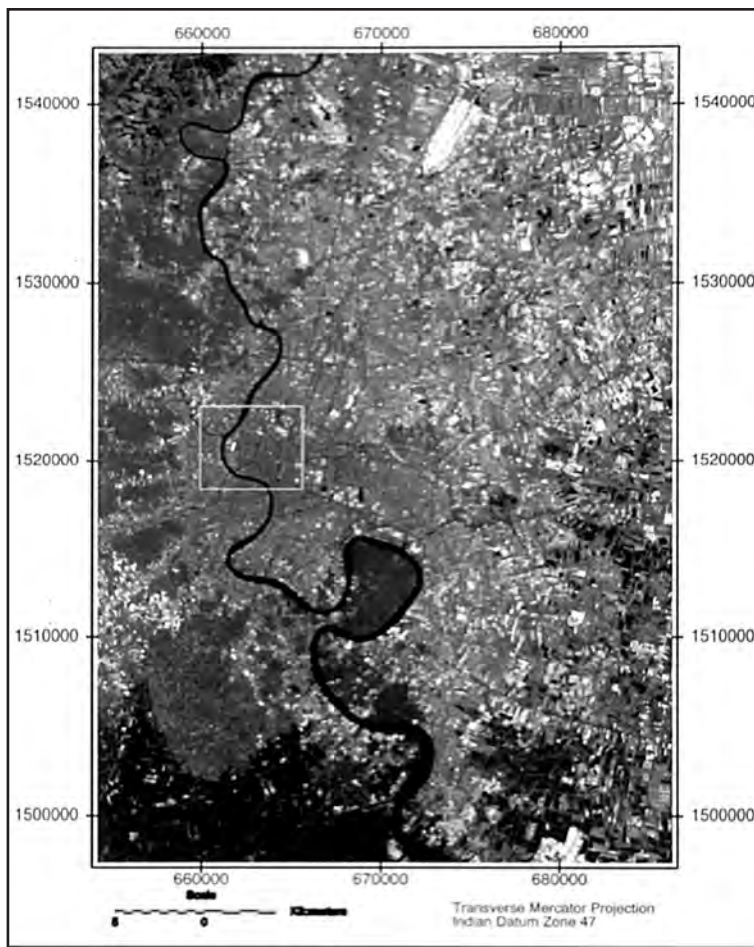


Figure 1
Mid-infrared wavelength of a Landsat TM satellite image acquired over Bangkok in December 1989. The distance covers approximately 35 kilometers north to south with the Chao Phraya River running along the left or western edge of the city. The historic center of the city is located within the box, and the lighter areas indicate urban growth that is mainly spreading to the north and east. The brightest area, in the upper right portion of the image, is the airport.

the station and grandeur of a royal residence. The official name for the city successfully incorporated this ideal and resulted in what is likely the world's longest official city name:

Krungthepmahanakornboworn-ratanakosinmahintarayudhayamahadilokpipopnoparatanarajathaniburiromudomrajniwesmahasatarnamornpimarnavatarsatit-sakatattiyavisanukamprasit.

กรุงเทพมหานครนครบรรทัดน โทสินทร์มหินทรายุชยามหาดิลก
พิภพพนพรัตน์ราชธานีบุรีรมย์อู่ทองมราชินีเวศน์มมหาสถานอมร
พิมานอวตารสถิตย์สัถกษัตติยะวิเศษนครมประสิทธิ์

Although its meaning is really found in only the first two syllables, the list of accolades that follows provides the grandeur befitting the seat of monarchy, “City of Angels, Great City of Immortals, Magnificent City of the Nine Gems, Seat of the King, City of Royal Palaces, Home of the Gods Incarnate, Erected by Isavakarman at Indra’s Behest.” Fortunately for general use, the name has been shortened to the first two syllables, Krungthep (City of Angels), the name the Thai use when referring to their capital. Although many of the words in this name are a transliteration from Indic languages, they provide meaning in constructing the kingdom’s identity. The overall result clearly indicates the significance of a city, now aptly named in memory of a heavenly abode, and whose layout was increasingly designed according to religious ideals.

HUMAN/ENVIRONMENT INTERACTION

The most distinguishing physical feature of Bangkok is its canals. In addition to their contribution in defining and describing the city’s place, they also serve as the most prominent example of human/environment interaction (Figure 3). Since the Ayuthaya period (1350–1767) monarchs had been aware of the advantages of facilitating the movement of goods and people within the realm. Canals were a dominant form of transport, and they became increasingly important to the growing international trade of the kingdom. While canals were dug to link the entire realm, the most important were dug to shorten the distances between natural waterways in the lower river basin.

One of these canals also resulted in altering the course of the river. The natural channel of the river ran along what is now the southern entrance to the

Another aspect of the nature of water-related human/environment interaction in Bangkok is that the city is sinking.

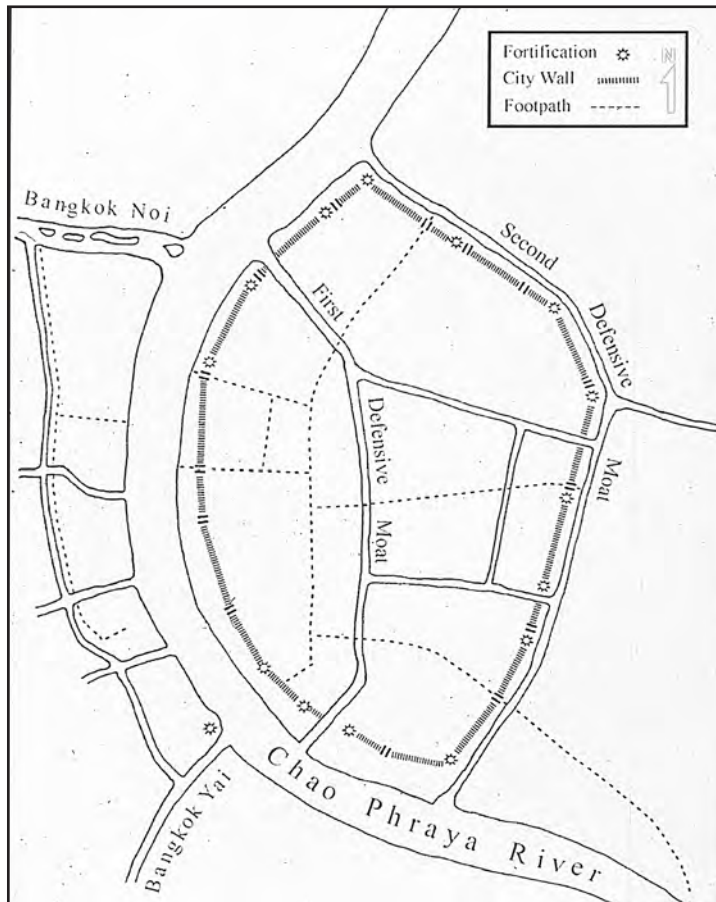


Figure 2
Layout of the capital during the reign of Rama I (1782-1809)

Bangkok Noi Canal, around Taling Chan district and into Bangkok Yai Canal, exiting across from the present-day market of Bang Khlong.³ Originally dug to provide a more direct passage along the meandering channel, the canal altered the river's course as the current shifted to this more direct route, changing the main channel of the river to its present-day location. Further digging and dredging to widen and deepen the river produced the current result, which would surprise the traveler taking any of the water taxis that run regular routes along the former river course. Over the years they have now been narrowed by vegetation and houses attracted by the calmer waters and less swift current.

As Bangkok became more prosperous in the 1800s, it began to expand in area, and increase its international trade, further modifications to the city's site were required. Although canal construction was still undertaken for defense and to facilitate troop movement, it was increasingly done to provide access for the water-borne cargoes that were now flocking to the country's ports. The Phasi Charoen Canal, running west from Bangkok to the Tha Chin River, was one of the first. Its success gave rise to additional canals such as Damneon Saduak, which accessed the western portion of the Central Plain. By the late 1800s, canal excavation formed a complex network of waterways that opened up the interior of the Central Plain to agriculture and allowed the country to become a leading exporter of rice and sugar.⁴

Another aspect of the nature of water-related human/environment interaction in Bangkok is that the city is sinking. Although the low elevation and high water table on the eastern edge of the river was beneficial to the defensive function that canals provided for the older city, the poor drainage and flooding have today become one of the most widely recognized problems, and one of the most difficult to resolve. Because large tracts of the city (which is less than 1 meter above mean sea level) are severely flooded each year, it is not uncommon to find oneself knee deep in water in certain parts of the city during the early part of October. In 1983, when the floods were reported to be the worst in thirty years, water was hip deep through much the city! The most



The idyllic view of life along Bangkok's canals, which is increasingly rare.

affected areas (in the eastern suburbs) are sinking at a rate of five to ten centimeters per year, which is far more than the sinking of Venice during its worst period.

The underlying reasons for this condition are not the weight of this rapidly growing place, as one might expect, but the combined effects of tidal movements, a faulty drainage system, and extremely serious land subsidence. While the tide and drainage system seem to be the most obvious contributions to the flooding, the widespread uncontrolled pumping of water from the underground aquifer is the main culprit in the city's subsidence. Because the area is not supplied with normal tap water service, the rapid residential and industrial growth in the suburbs has led to the consumption of large volumes of artesian water. The continual pumping of this water over the past twenty years is rapidly depleting the aquifer, resulting in flooding, as well as problems with road construction and maintenance.

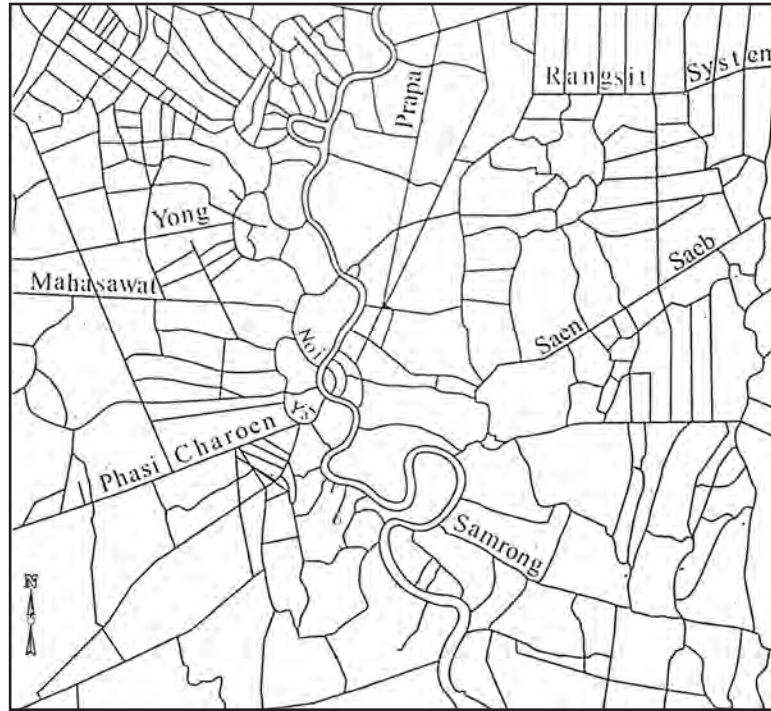


Figure 3
Canals surrounding Bangkok and its environs.

MOVEMENT

The growing interaction between Bangkok and its surroundings has placed enormous demands on the transportation system to accommodate both the volume and type of traffic seeking access to the city from increasingly distance places. At the beginning of the current dynasty, there were no roads in Bangkok. Movement on land was by way of narrow footways, as the Thai usually lived beside the bank of the river and on floating houses that did not require much access to land transport. In 1861, King Mongkut initiated the construction of several new roads in the capital that could accommodate the changing modes of land transportation and provide greater access into, and particularly within, the city. This development can be considered a turning point for the capital, as it marked the city's changing role from performing a defensive function in time of war to performing an economic function where accessibility becomes a key factor to the city's prosperity.

The gradual expansion of the national road network in the 1960s made travel to Bangkok much easier. Because it also served as the country's domestic and international transportation hub, the city came to dominate the center of the national economy and links with the outside



Water taxis awaiting passengers. These taxis run fixed and regular routes along the city's canals.

Queuing for the water taxis at rush hour.



Eastern Bangkok after a heavy rainfall

. . .there were only about 12,000 registered motor vehicles in the city (Bangkok) in 1925, this number has increased to over 2 million today.

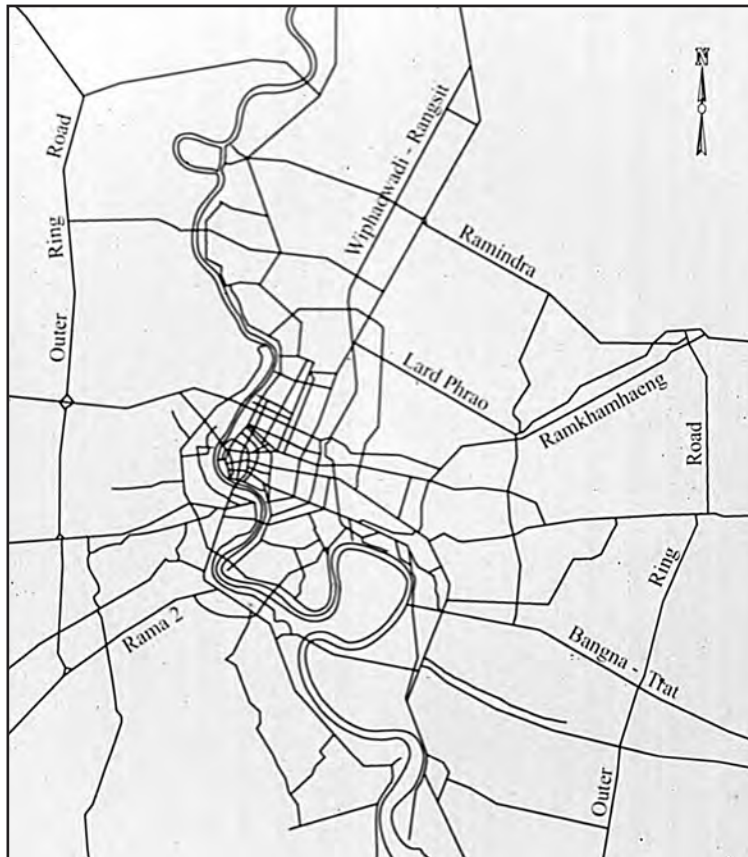


Figure 4
Major roads in the Bangkok Metropolitan Area

world, without compare in Asia. Although there were only about 12,000 registered motor vehicles in the city in 1925, this number has increased to over 2 million today. Bangkok accounts for over 70 percent of all passenger cars registered in the country, and in 1992 an average of 232 new passenger cars were registered there each day.⁵ The traffic volume created by this growth is enormous. More than 20 million trips per day take place around the city,⁶ with the only highway leading north from Bangkok recording the heaviest use of any highway in mainland Southeast Asia. Trucking has now become the major mode of shipping materials and goods throughout the Kingdom, and almost all goods transported across the country pass through the Bangkok region.

Although the city's road network grew steadily since the time of King Mongkut, it still lagged in providing the accessibility required for economic functions. Unlike well-developed and integrated road networks in cities originally laid out for economic purposes, Bangkok's roads developed over the years with little planning or control (Figure 4). As a result, the marginal network lacks coherence and, apart from capacity problems, serves traffic needs inefficiently. Since the construction of these early roads, expenditure on new construction and improvement has been minimal, and today Bangkok has one of the lowest proportions of road surface for any city in the world. In the early 1980s only 9 percent of land in the city was comprised of roads, compared with 22 percent in London and 24 percent in New York.⁷

Unfortunately for those who travel this road network, most of the secondary roads, which generally serve to link main roads with local lanes, are all but absent and mainly consist of narrow, winding, and unconnected streets. The bulk of recent industrial and population location therefore has occurred in the form of ribbon development along the three major transportation corridors leading out of the city to the north, southeast, and southwest. This has resulted in some of the worst traffic jams in the world, as increasingly, private vehicle commuters contend with mass transit and commercial vehicles for the limited road space. Traffic congestion is now among the worst in the world, and at peak periods speeds can average less than ten kilometers per hour. Although public transport runs over 200 lines and thousands of buses, it is inadequate. Construction of the light rail system, that has been planned and discussed for over twenty years, has only recently started. As a result, Bangkok's roads become more congested each day, and the traffic moves a little slower; it can take anywhere from forty minutes to four hours to cover the eighteen miles from the airport to the central business district.

REGION

The movement arising from transportation is also related to another form of movement: migration. Together these processes help to introduce the fifth geo-

graphic theme, region. Like many other developing countries, Thailand is experiencing dramatic growth of its urban population. In 1947, only 5 percent of the country's population was living in urban places; in 1990, it had climbed to 30 percent.⁸ Most of this growth has focused on Bangkok, where over 90 percent of the country's migrants end up.⁹ The increasing scarcity of farmland in rural areas, the wealth of Bangkok, and the widening economic disparities between Bangkok and the rest of the country have all contributed to this flow toward the national capital and the expansion of Bangkok into the countryside.

In wealthy countries, migration to urban areas is usually distributed throughout the country, as people tend to move to the closest larger city when looking for work. In poorer countries, however, there is often a lack of jobs in the closest city, and migrants often seek out the country's largest city believing it will have the greatest number of jobs, as well as other activities not found in the smaller cities. If this largest city also performs other urban functions such as serving as the country's capital, as is the case in much of the world, then the attraction becomes even greater.

In Thailand, all the major urban functions, which are performed by several cities in the United States, have been located in a single city. This has produced an urban area that can be considered the world's quintessential Primate City. This is a city that is both considerably larger than the second city and dominant in all the country's urban functions such as politics, economics, and culture; it characterizes the country and epitomizes its culture.¹⁰ During the colonial era, the economy was increasingly influenced by the export of natural resources, and the expansion of these exports enhanced the dominance of Bangkok. The political and military administrators and the most sophisticated economic institutions, such as banks and agency houses were located in the city. The country's transportation-communication network also radiated from the city, serving as the most important hub in the collection, export, import, and distribution of goods.

As a result of these conditions, in few countries of the world can one find the dis-



Traffic congestion causing increasing commuting times along the city's major roadways.

parity between the largest city and smaller cities as great as in Thailand. From an initial population of perhaps 50,000, by 1900 Bangkok expanded to about 600,000.¹¹ With a population of almost six million in 1995 (more than 10 percent of the country's total population), the formal legal city of Bangkok is by far the most populous in the kingdom. Today about 40 percent of the country's urban population lives in Bangkok, compared with only 3.5 percent for New York, the largest city in the United States. In 1990, the greater Bangkok area was more than ten times larger than the second largest urban place, Nakorn Ratchisima.¹² In addition, over 75 percent of the country's university graduates, 78 percent of its pharmacists, and 45 percent of its physicians live in this area,

The city is a marvelous example for teaching geography, as each of the main themes can be easily visualized through graphical materials such as maps, photographs, and drawings.

which contains 70 percent of the country's telephones.¹³

The rapidly growing population of Bangkok is not confined to just the formal city boundaries. The increasing demand for land to house this growth has resulted in extending both the legal area of the city as well as the size of the territory under the daily influence of the city. The city's legal area has expanded from 1.3 sq. km. in 1900, to 96.4 sq. km. in 1958, and to 470 sq. km. in 1974.¹⁴ The increased demands on, and interaction with, the city's environs (known as the Bangkok Metropolitan Region—the legal city plus the surrounding area administered by the Bangkok Metropolitan Authority) today encompass some 1,565 sq. km.

While the river (or more precisely, lack of bridges across the river) serves as a partial barrier to westward urban expansion, the lands to the north, east, and southeast of the city have most easily accommodated the city's growth. This sprawl is the outcome of a complex web of economic and technological processes. They have allowed for rural and urban interaction that shows up as daily commuting and commercial transactions along roadways between the central city and the rural hinterland that now extend far beyond the areas of interaction of just a few decades ago. Bangkok's 'extended metropolitan region' now reaches more than 100 kilometers from the location where King Rama I first established his defensive site and seat of monarchy.

CONCLUSION

The city is a marvelous example for teaching geography, as each of the main themes can be easily visualized through graphical materials such as maps, photographs, and drawings. From this material a variety of description and analysis can be undertaken, starting with a discussion of the functions that the city performs, which help to shape its structure and layout. This description can also show how functions differ from one city to another and from

early periods to the present. The historical development of the city is of particular importance, as it provides context and meaning for comprehending the processes that result in the city's growth. This knowledge further contributes to an understanding of how related activities such as settlement and transportation patterns, and availability of resources that attract migrants and economic activities, each contribute to the city's interaction with its surrounding area.

The diversity of the world is strikingly reflected in its cities, and their extraordinary variety is due to their people, heritage, and the desire of their inhabitants to shape their local environment. They are a product of their history and their own social, economic, and political environment. These conditions shape growth and result in those qualities that make each city unique. ■

NOTES

1. Abha Bhamorbutr. *The History of Bangkok: Summary of Political and Cultural Events from the Age and Establishment to the Present* (Bangkok, 1982).
2. See Sumet Jumsai, *Naga Cultural Origins in Siam and the West Pacific* (Singapore: Oxford University Press, 1988), for an engaging study of this water-based society and the ubiquity of water symbolism in contemporary Thailand.
3. Shigeharu Tanabe. "Land Reclamation in the Chao Phraya Delta," in *Thailand: A Rice Growing Society*, ed. Ishii Yoneo, translated by Peter Hawkes and Stephanie Hawkes (Kyoto: Monograph of the Center for Southeast Asian Studies, Kyoto University, 1978); Chulalongkorn University, *ongprakob thang kayaphaab krung ratanakosin (Elements of the Physical Geography of Ratanakosin Bangkok)* (Bangkok: Chulalongkorn University Press).
4. Lauriston Sharp and Lucien Hanks. *Bang Chan: Social History of a Rural Community in Thailand* (Ithaca: Cornell University Press, 1978).
5. Alpha Research Co. Ltd. *Pocket Thailand in Figures*, 1st edition (Bangkok, 1994).
6. National Economic and Social Development Board. *National Urban Development Policy Framework*. Volume 2, Study Area 8 (Bangkok, 1991).
7. Medhi Krongkaew and Pawadee Tongudai. *The Growth of Bangkok: The Economics of Unbalanced Urbanization and Development*. Discussion Paper No. 90, Faculty of Economics, Thammasat University (Bangkok, 1984).

8. National Economic and Social Development Board. *National Urban Development Policy Framework*. Volume 1, Study Area 2 (Bangkok, 1991).
9. National Economic and Social Development Board. *Recommended Development Strategies and Investment Programmes for the Sixth Plan* (Bangkok, 1986).
10. The geographer Mark Jefferson first developed this concept in a short paper where he noted that London, Paris, and a number of other cities of their respective countries were functionally dominant. Mark Jefferson, "The Law of the Primate City," *Geographical Review* 29(2): 226-32, 1939.
11. International Bank for Reconstruction and Development. Thailand: *Urban Sector Review*, Working Paper #7 (Washington D.C., 1978).
12. National Economic and Social Development Board. *National Urban Development Policy Framework. Final Report*. Vol. 1, Study Area 2, Urban Population, Employment Distribution, and Settlement Patterns. Table 4.7 (Bangkok, 1991).
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