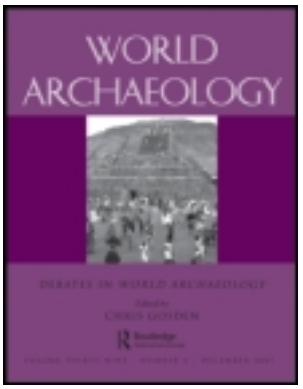

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Heterogenetic cities in premodern Southeast Asia

John N. Miksic

Abstract

Archaeologists working in non-Western areas of the world tend to employ monothetic, unilinear definitions of 'urbanization'. The definition of what constitutes a 'city' in archaeological terms is also ambiguous. Most definitions are biased by dependence on early archaeological work in the Mediterranean and Southwest Asia. Models of city formation must be based on multi-linear, polythetic criteria, in order to accommodate non-Western phenomena. A polythetic functional definition of urbanization recognizes two distinct forms of the city: orthogenetic and heterogenetic. Literature on Southeast Asia has mainly concerned itself with orthogenetic sites. This article presents archaeological data on under-studied heterogenetic cities in insular Southeast Asia.

Keywords

Urbanization; Southeast Asia; archaeology; Java; Sumatra; Singapore.

> The concept of 'city' is notoriously hard to define.
>
> (V. G. Childe 1950: 3)

Definitions of 'city' may be grouped into two classes: 'functional' and 'formal'. Formal definitions are based on physical characteristics such as population size and position of a site within a settlement hierarchy. Their strengths are also their weaknesses: specificity, which makes them vulnerable to charges of arbitrariness, and need for a great deal of data. Many investigators have avoided these problems by employing functional definitions, based not on physical criteria, but on the nature of activities or institutions found in a particular society.

Use of functional definitions at the present stage of knowledge amounts to putting the cart before the horse. Sites must be studied extensively before behavioural processes can be inferred. Scholars have used documents and art history to close this gap between scholarly goals and tools available to attain them, but conclusions based on the functional model are now generally judged unsatisfactory; they cannot accommodate the range of variation in urban forms discernible in the gradually mounting data.The use of simple

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models to understand urbanization in non-Western cultural realms is producing unease, as the following quotation illustrates:

> Cities in India today do not fit Western morphological models very well, and geographers have not been totally successful in offering South Asian descriptive models to explain those urban patterns. Part of the problem is the basic complexity of the cities, whose form has evolved over an extended period of time.
>
> (Noble 1998: 28)

Southeast Asian sites which have been conventionally grouped together in one catch-all category of 'cities' also display such disparate features that they cannot be accounted for on the basis of a single model.

Orthogenetic and heterogenetic cities in Southeast Asia

Fox (1971) noted the existence in medieval Europe of two types of societies: monument-building militaristic kingdoms inland and trading ports on coasts and margins of hinterland empires. His typology corresponds closely to the dichotomy of cities distinguished by Redfield and Singer (1954): orthogenetic, associated with stability and ritual; and heterogenetic, associated with change and entrepreneurship. Wheatley's treatment of Southeast Asian urbanization produced a hierarchy of orthogenetic sites (1983: 426, figure 22). Orthogenetic cities are correlated with areas of surplus staple crop production, which can be commandeered by authorities and redistributed without recourse to markets or money. Elites obtained exotic items as status symbols through long-distance trade and through ritual exchange of items with other élites.

Orthogenetic cities may be associated with manufacturing activities, but these are not centralized in the monumental area; they are either scattered around its fringes, or located some distance from the centre, and tend to specialize in one particular product, administratively the most convenient arrangement. Evidence for dense populations is normally lacking at orthogenetic sites. The permanent population of the orthogenetic city was composed of nobles, civil, religious and military bureaucrats, and their staff.

Heterogenetic cities are difficult to discover, since they produce few monuments. They are usually found at the borders of ecological zones rather than at their centres. Objects identifiable as money are usually found at the sites of such cities. Evidence for production of many types of commodities in the same settlement area is typical of the heterogenetic city. The main generator of heterogenetic sites is a dense population.

Early urban sites on Mainland Southeast Asia

Many late prehistoric (~2000 BP) sites with earthen embankments and 'moats' have been discovered in northeast Thailand (Kijngam et al. 1980; Moore 1988). Were these urban areas? Their functions and population are still unclear. They do not seem to have been ancestral to later urban traditions, in any case. Evidence of active long-distance trade appears at several sites in central, western and southern Thailand during the first and

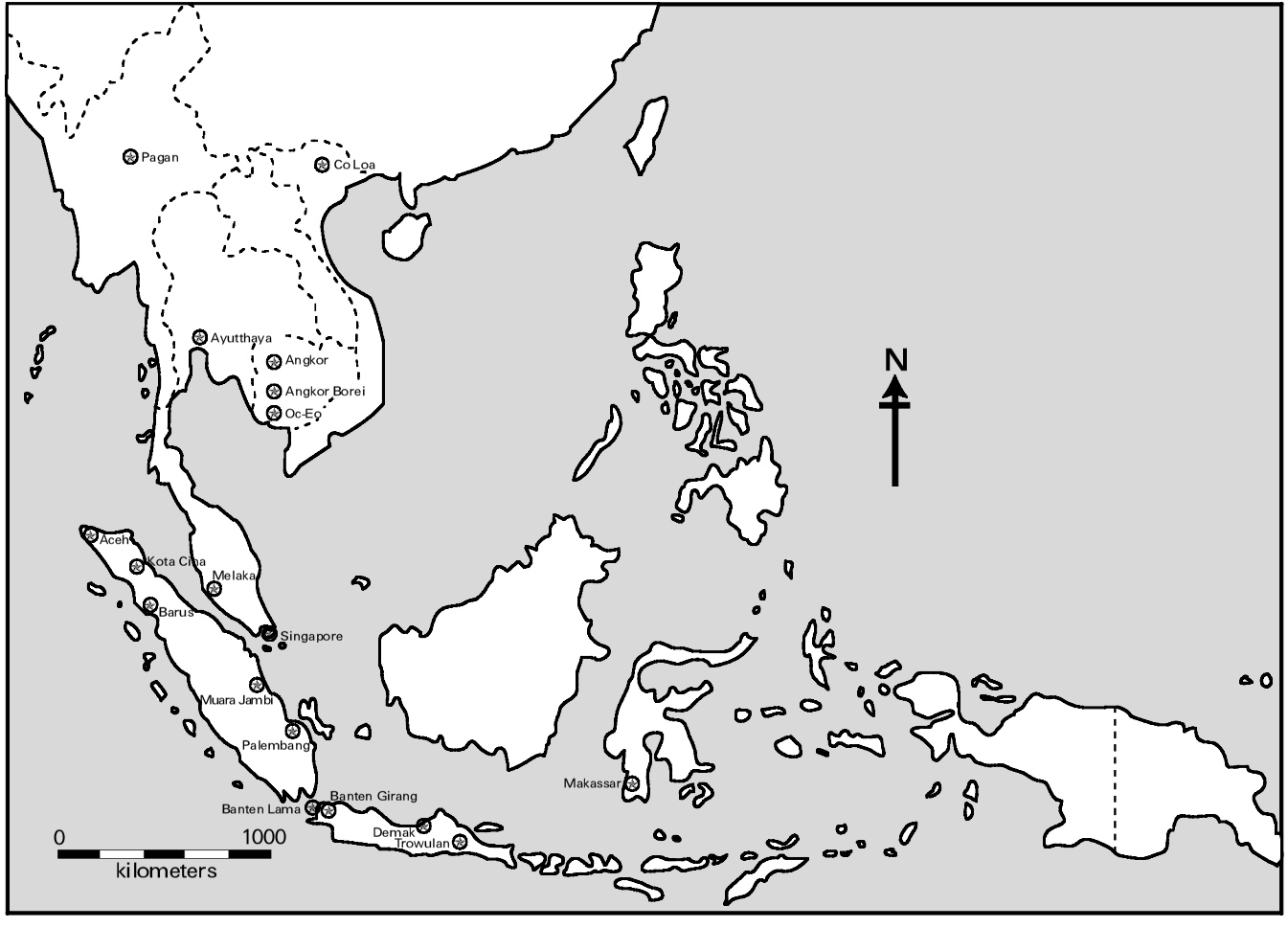

Figure 1 Important urban sites of premodern Southeast Asia

second centuries AD (Bronson 1979; Glover 1989). Published data on these sites is insufficient to characterize them as either orthogenetic or heterogenetic (or even as urban).

Two important early historic urban sites were located in the Mekong valley. One of these, Oc-èo, approximately 25km inland, was an impressive economic power. Despite the vicissitudes of warfare and looting, we now know that Oc-èo had a dense population within rectilinear ramparts and ditches. Oc-èo's people carried out a wide range of specialized occupations, engaged in direct commercial exchanges with places as far apart as China and India, and had indirect contacts stretching all the way to Rome (Malleret 1959–63). Oc-èo seems to fulfil the criteria for a heterogenetic city.

Oc-èo was probably not the political centre of its territory. That position may have belonged to Angkor Borei, further inland. Recent archaeological research has begun to define the range of activities conducted there during the first half of the first millennium AD (Stark et al. 1999), but it will take years of intensive work before enough is known to be able to sort out the different statuses of the variables which define the site's urban type. It may have been orthogenetic.

There is good evidence for a complex settlement hierarchy in Vietnam before the northern part of that country was incorporated into the Chinese empire in 111 BC. Hinh (1984) proposed that a three-tiered settlement pattern evolved in Vietnam around 500 BC, during the Dongson era. Co Loa by third century BC may already have possessed moats and ramparts enclosing approximately 600ha. (Higham 1989: 194). Most information about prehistoric Vietnam comes from burials and unprovenanced luxury items, rather than settlement surveys, so it is not possible to decide whether Co Loa and contemporary sites lay more toward the heterogenetic or the orthogenetic end of the scale.

In Burma, numerous sites with high potential to contribute to a synthetic perspective on early Southeast Asian urbanization have been identified, but few have been subjected to more than cursory study. Burma provides a comparable situation to the lower Mekong where coinage is concerned. Silver coins of many designs and denominations have been found in Burma, suggesting that heterogenetic urbanization may have taken place, but when the great site of Pagan was founded in the eleventh century, they disappeared from use. Pagan like Angkor, with which it was contemporary, seems to have exemplified orthogenetic urban development.

Angkor in Cambodia is a prime example of an orthogenetic city. It lies in the midst of a fertile rice-growing zone. Its remains consist primarily of religious monuments. Coinage was used in pre-Angkor Cambodia but vanished after the founding of Angkor, traditionally dated in AD 802.

Insular Southeast Asia

Wheatley's map of fourteenth-century Southeast Asian urban sites (1983: 426, figure 22) indicates that the densest concentration of cities lies in Java. These sites are almost all known either from monumental architecture or inscriptions; they are mainly orthogenetic. Not one Javanese site of the first millennium AD is yet known to possess characteristics which would allow us to classify it as heterogenetic.

Five sites have now yielded enough data to qualify as examples of early heterogenetic cities in insular Southeast Asia: Kota Cina; Singapore; Trowulan; Banten Girang; and Banten Lama. These sites date from overlapping periods between AD 1100 and 1700, and are spread over a wide area stretching from north Sumatra to east Java. This geographical and chronological variability obviously affects the data. Nevertheless the basic cultural homogeneity of the populations of these sites and their historical continuity enable us to assume that this source of variation is minimal. A comparison of these five sites provides an index of the diversity which an evolutionary typology of Southeast Asian cities has to reflect.

Sumatra

The most famous early Indonesian urban centre occupied the area of Palembang, South Sumatra, believed to have been the capital of the kingdom of Srivijaya. Recent efforts have recovered some data indicating late first millennium AD habitation and long-distance trade at Palembang (Manguin 1987), but the combination of modern development and settlement built over flowing water has created the archaeologist's worst nightmare: an urban area which has left almost no identifiable physical remains.

Dense concentrations of Chinese trade ceramics of the twelfth and thirteenth centuries have been recorded at a number of sites in east Sumatra. One of these, Muara Jambi has been studied, but the only features plotted were monuments. As brick walls enclosing Buddhist temples were being destroyed in the 1980s (for the purpose of replacing them with new walls, supposedly more attractive to tourists), quantities of Chinese and local ceramics were unearthed. These were however deemed irrelevant to the restoration process and their provenances were not recorded. Southeast Asia has perhaps suffered more than any place on earth as far as despoliation of ancient settlement sites is concerned. Thus our data may be seriously biased.

The earliest intensively studied habitation site in Indonesia is Kota Cina ('Chinese Stockade'), northeast Sumatra, approximately 7km from the modern coast (Miksic 1979; Sonny Wibisono 1981; Edwards McKinnon 1984). Survey and excavation indicate that Kota Cina was among the earliest settlements of overseas Chinese in Southeast Asia. Documentary sources report that Chinese began to settle in the Straits of Melaka around AD 1100. Marco Polo, who spent several months in Sumatra in 1292, describes what was apparently a common Chinese practice of establishing a fortified encampment in order to await the next season's favourable winds for a journey across the Bay of Bengal. Polo's encampment was apparently on the north coast of Sumatra, not far from Kota Cina, and his account could equally well account for the formation of this site.

Kota Cina perhaps formed around a core of seasonal Chinese visitation which gradually became permanent habitation, with a South Asian component (religious statuary seems to have been imported from south India and/or Sri Lanka, and Sri Lankan coins were discovered at the site), with a majority consisting of indigenous Sumatrans. Examplars of such seasonal settlements were to be seen in eastern Indonesia in the early nineteenth century. Alfred Russel Wallace described one such transitory trading centre: Dobbo, in the Aru archipelago (Wallace 1869: 335–6). Approximately 500 traders

including Chinese and Arabs gathered annually on a particular beach, set up shops, and exchanged iron tools and cloth for such local luxury products as pearls and feathers of the bird of paradise. This activity lasted for a season; then the traders bundled up the commodities which they had acquired, the Indonesians boarded their canoes, and within a week the entire beach lay deserted. Echoes of European medieval trade fairs may be discerned.

Archaeological remains at Kota Cina consist of Chinese and local ceramics, Chinese and Sri Lankan coins, gold objects, metal (bronze and iron) slag, moulds for making jewellery, bones, shells and wooden posts which formerly supported stilt houses. The site lacks monumental architecture other than foundations for simple rectilinear brick walls. One may have been a kind of mandapa associated with south Indian Hinduism; another may have been a Buddhist cloister. The best evidence for dating Kota Cina comes from tens of thousands of Chinese porcelain sherds found in excavations which can be assigned to the late Northern Song, which ended in 1126, and Southern Song, which lasted from 1127 to 1279. Kota Cina lasted for approximately two centuries.

Heterogeneous cities evolved on the Southeast Asian mainland beginning in the third century AD, but no evidence of such cities has yet emerged in the insular regions (although Palembang may have been such a city). The spread of heterogenetic cities in early second-millennium Sumatra may be correlated with the beginning of Chinese emigration. Kota Cina is the oldest heterogenetic city in Indonesia which can be unequivocally identified with archaeological data. Evidence suggestive of Chinese presence includes the large amount of Chinese porcelain; gold foil scraps with inscribed Chinese characters; and hundreds of bronze Chinese coins, some still in boxes and corroded together in sausages, indicating that they were originally tied in strings of uniform numbers to form larger units. Others were scattered randomly among habitation remains. The most probable inference is that they were used as an everyday medium of exchange. There is no evidence that Indian currency was ever used in Southeast Asia. It is possible that the use of imported currency arose as a result of Chinese immigration to Southeast Asia.

Kota Cina lies in a mangrove area. Sources of important potential exports lie in the site's hinterland, including gold and resins, and camphor, which was highly prized in the Chinese market. Previous ports known from documentary sources (and in the case of Barus recent archaeological research; Guillot 1998) had been located on the west coast, at Barus, and on the north coast (Aceh). Preliminary evidence suggests that Barus may have been a heterogenetic site predating Kota Cina; research now in progress there should clarify this point. Although there is some controversy on this point, Barus was probably a toponym known to foreigners (Arabs and Persians of the ninth century, possibly even Greeks of the second century). Kota Cina has not been identified in any ancient written source. We are thus left to speculate that the early Chinese immigrants may have preferred to locate themselves in areas where no major local kingdoms existed, where their activities might have been circumscribed by local officials jealous of safeguarding their status against sophisticated and wealthy foreigners.

Kota Cina thus can be interpreted as a fusion between a local population and a foreign element. The immigrants probably acted not as an imposer of a new way of life, but as a catalyst which caused a new stage of economic and social development to materialize.

North Sumatrans had previously experienced foreign trade indirectly, by bringing their products to Srivijayan rulers who acted as middlemen, thereby obtaining the lion's share of the profits. The arrival of a Chinese ship in the Deli River seeking gold and forest products would have been gladly greeted by the local society. Srivijayan power was broken by a naval attack from south India in AD 1025, and the old system which confined foreign trade to a very few designated ports was replaced by a more atomistic pattern. It is not known what happened to Barus, except that it seems to have declined soon after the Tamil invasion. Other early trading sites may exist on the north coast of Aceh, but archaeological evidence for them has not yet been seriously sought for. Kota Cina may well turn out to be representative of a whole class of sites along the coasts of the Straits of Melaka, formed as the result of new opportunities presented by the disappearance of a previous monopolistic system and a newly available source of business. In any case, the principal causal factors which led to Kota Cina's rise include Chinese immigration.

Singapore

Kota Cina seems to have been abandoned to the mangrove swamps around AD 1275. Around AD 1300 a new settlement began to grow along the left bank of the Singapore River, on the island of the same name. Singapore had apparently never attracted settlers previously, though on the island of Karimun, 30km west of Singapore, a ninth-century inscription attests to the existence of a local authority literate in Sanskrit. By 1320 Singapore attracted an embassy from the Yuan Dynasty then ruling China, and five years later was able to respond with an embassy of its own.

Sometime between 1330 and 1349 a Chinese merchant named Wang Dayuan visited Singapore twice. We know almost nothing of Wang, which is a pity because he was the first Chinese merchant to spend an appreciable amount of time in Southeast Asia and leave to us an account of his experiences. The non-Han Mongols had a more liberal policy *vis-à-vis* Chinese contacts with non-Chinese than their predecessors. Yuan commerce has attracted very little scholarly attention, yet the economic impact of this dynasty's policy on Southeast Asia seems to have been immense. Whereas the Chinese component of Kota Cina's ceramic assemblage is approximately 30 per cent, at Singapore it is approximately 67 per cent (in terms of weight).

Singapore was one of two locations in Southeast Asia where Wang specifically reports that Chinese lived; the other was an insignificant island off west Borneo where some sick sailors had been put ashore some forty years earlier. Wang gives an impression that Singapore's trade was of relatively minor significance, but he mentions Singapore several times in his record, so that his description of the place is relatively full. He provides several key data: (1) that pirates lay in wait at a strait near Singapore harbour, and that if Chinese ships were caught their crews were slaughtered and their cargoes sold in a kind of thieves' market; (2) that Singapore itself was a haven, where honest traders dwelt, and a few products such as cranes' crests could be obtained; and (3) that Singapore had been besieged by Siamese 'a few years' before his arrival; the defenders 'shut up their gates' and held off the siege, which lasted a month. The siege was lifted when an imperial envoy passed by. Imperial Chinese edicts against squabbles among China's 'vassals' (which Southeast

Asian kingdoms with pretensions to Chinese recognition had to claim to be) forced the besiegers to withdraw.

Wang's account (Rockhill 1915) provides one other datum relevant to the attempt to appreciate Singapore's significance in a study of early Southeast Asian urbanization: the settlement was called (in Chinese transliteration) Ban-tzu, an easily recognizable Malay word (*Pancur*) meaning 'spring of water'.

Archaeological research in Singapore has begun to yield an increasingly detailed portrait of a fourteenth-century Southeast Asian port. Three sites in the ancient city have now been excavated, and approximately 100,000 fourteenth-century artefacts recovered. The first site identified was on a hill now known as Fort Canning (Miksic 1985, 1989a), where the British in the early nineteenth century established the residence of the chief authority of their newly acquired possession. They recorded the existence of three major antiquities: on Fort Canning, a hillside full of brick ruins, between which were scattered Chinese coins and pottery, both Chinese and local; at the mouth of the river, an ancient stone inscription; and parallel to the river, an earthen embankment which ran from the shore to the hill, a distance of about 800 metres, with an average width of 16 feet (almost 5 metres) and height of 10 feet (three metres) (Crawfurd 1828). Local tradition recorded that the hill was called Bukit Larangan, 'Forbidden Hill' in Malay, in consequence of its having been an ancient palace site.

Unfortunately the interest in antiquities shown by early British authorities was not imitated by later officials. The stone inscription was blown up in 1843 to level ground for a fort; the brick ruins, pottery, and coins, and the rampart simply vanished. Apart from a chance find of some ancient gold jewellery on the hill in 1926, British colonial records show no interest in Singapore's pre-British past.

Excavations begun in 1984 provide evidence that Fort Canning was the site of a fourteenth-century palace complex. Loose bricks (but no structures) have been found, along with abundant quantities of luxury items including rare types of Chinese porcelain of the early fourteenth century. One area excavated in detail seems to have been a palace workshop, where shards of Chinese glass (of types as yet unreported elsewhere) were recycled to make bangles. Minuscule gold droplets and a possible crucible suggest that gold was also worked in the vicinity.

From November 1994 to January 1995 excavation on the site of Singapore's new Parliament House Complex, approximately 50 metres from the riverbank and halfway between Fort Canning Hill and the rivermouth, revealed fourteenth-century activity, including copper and bronze-working, producing wire and fish hooks.

In April–June 1998 another site on the riverbank was excavated. The location, Empress Place, lies about 50 metres upriver from the mouth where the ancient inscription once stood. No clear evidence of *in situ* activity was recorded. The site seems to have been a dumping ground on a sloping riverbank where a melange of artefacts used on land and perhaps on boats was discarded. Ceramics formed by far the bulk of the approximately 50,000 items found, but important unique items included a lead statue and a bronze or copper projectile point.

These excavations together with other information enable us to reconstitute a picture of a thriving commercial site which had a rather stormy and brief career. Besides the Siamese attack which Wang records, Malay and Javanese records refer to the pretensions

by the kingdom of Majapahit to be Singapore's suzerain between 1330 and 1389. In about 1392 a Malay ruler was driven from Sumatra by a Javanese attack, arrived in Singapore, assassinated the local chief, and for a few short years made Singapore the paramount Malay court. In 1396 he was again attacked, probably by relatives of the murdered chief, but again escaped and in about 1400 founded yet another Malay emporium: Melaka, which became the cynosure of the earliest European attempts to penetrate Southeast Asia. After Melaka's foundation, the principal focus of trade in the Straits of Melaka shifted there. Singapore remained a secondary port until 1612, when a Portuguese attack forced the trading population to disperse.

Like Kota Cina, Singapore had a population including an indeterminate proportion of immigrant Chinese merchants (and perhaps South Asians too; a Sri Lankan coin and an Indian glass bangle have been found in the fourteenth-century strata of Singapore), using Chinese currency, and both maritime trade and value-manufacturing were carried out there. As professional traders and perhaps craft specialists, they had to obtain their subsistence needs through exchange with local food suppliers. Prior to the establishment of the Chinese, Singapore apparently already had a stable local authority which promised some degree of predictability and security. Singapore also had an important commodity which was rather rare and precious in the Straits of Melaka: a source of potable water near the ocean. A spring (the eponymous *pancur*) was still spurting forth from the slope of Bukit Larangan when the British arrived; until 1830 it provided all the water for the ships visiting Singapore harbour. Fresh water is hard to come by in the swampy environs of the Straits; the prevalence of *pancur* as a toponym at several other locations within a radius of 100km of Singapore indicates that, wherever it existed, fresh water was a feature sure to attract attention.

Although data on this point are equivocal, the fact that an imperial envoy happened to pass by Singapore at a distance near enough to discern a siege in progress indicates that the Chinese sailing routes between the Indian Ocean and South China Sea at that time passed along the coast of Singapore. The Singapore area marks the midway point between India and China. Ancient ships were able to sail only halfway along the route connecting these two ancient centres of civilization in one monsoon. Thus a stopover port somewhere in this area has been a vital necessity as long as this traffic has existed.

Singapore had one attribute which stands out among the early cities of insular Southeast Asia: a permanent defensive wall. Wang refers to gates in the wall which enabled the Singaporeans to hold off the attacking Siamese; the indigenous semi-historical text of the Malay Annals mentions the parit Singapura, the moat on the wall's exterior face; John Crawfurd, Singapore's second Resident, described it in detail in 1822. Such earthworks are not attested for any urban centre of this period in insular Southeast Asia. This suggests that early Singapore's rulers possessed a degree of determination unusual in the insular realm, where population density was low, to hold on to their particular location.

Warfare has often been identified as a factor leading to urbanization. The prime example is the oldest acknowledged urban society in the world: Mesopotamia. In insular Southeast Asia this factor seems to have had little significance (though it may have carried greater weight on the mainland). Singapore's decline can be attributed directly to military attacks. Whether military factors also played a significant role in Singapore's original formation is uncertain, but this argument cannot be ruled out.

Trowulan

The Javanese poem 'Desawarnana' (more commonly known as 'Nagarakrtagama'), written in 1365, lists Temasik (Singapore) as one of the dependencies of the kingdom of Majapahit. Various sources confirm that Majapahit exerted influence over local kingdoms from Sumatra to the Moluccas. In the fifteenth century Majapahit was rent by internal disputes. By AD 1500 other claimants to the position of paramount polity of Java had surpassed Majapahit, and the kingdom vanished around 1527.

Majapahit's legacy from its roughly two centuries of existence is an extensive list of inscriptions, architecture and citations in foreign sources, from China to Rome. The kingdom's core, according to these various sources, lay in the hinterland of central Java. The Desawarnana describes the royal palace compound and associated religious complexes, but no comprehensive description of the capital survives.

It is generally believed that Majapahit's capital during most of its lifetime was located in the vicinity of a modern village called Trowulan. Numerous brick structures datable to the fourteenth and fifteenth centuries are associated by local legend with various people and institutions of Majapahit. Indonesian archaeological authorities conducted numerous small excavations and restoration projects at the site in the 1970s and 1980s, but no overall survey of the site's boundaries had ever been made. Only standing architectural remains had been mapped.

In 1991 to 1993 a three-year programme of surface survey was conducted at Trowulan (Miksic 1994). The project's main goals included efforts to obtain an index of the range of activities and population distribution on the site, and to define its boundaries. Much of the site was (and still is) being despoiled of its bricks by the present farming population. The principal aim was to record the presence of brick structures. It was assumed that Trowulan constituted an orthogenetic type of city. Its hinterland location and lack of references to trading activities in texts gave little indication that trade or manufacturing had formed important components of the site's functions. When the survey began, there was no reason to doubt Christie's assertion (1992: 171) that no quasi-urban sites of first or early second millennium were yet known in Java. 'The later, fourteenth century site of the Majapahit capital of East Java, although evidently large, shows few urban characteristics. . . . It is unlikely, however, that [the sites of early palace-capitals] will look any more like the remains of true cities than does Majapahit.'

The survey yielded two major surprises. The first was that evidence of dense population, intensive long-distance trade and specialized manufacturing was distributed over an area of at least 100 square kilometres (10,000 hectares). The second surprise was that this dense population and long-distance commerce continued unabated through much of the fifteenth century, long after Majapahit's political star had begun to wane.

The extent of the fourteenth-century remains mapped at Trowulan and vicinity cannot be directly compared with the figures for the other sites in this study (see Table 1). Kota Cina, Singapore, Banten Girang and Banten Lama all may have been sharply bounded by some sort of defensive perimeter, of either natural features or artificial materials. Trowulan does not seem to have had such a restrictive boundary, although excavations at Sentonorejo, one of the site's divisions, have revealed that at least two dwellings were constructed on the same site, one atop the ruins of the other, suggesting that space in some

Table 1 Estimated sizes and populations for some heterogenetic city sites of the twelfth to sixteenth centuries in Insular Southeast Asia

	Kota Cina	*Singapore*	*Trowulan*	*Banten Girang*	*Banten Lama*
Size (ha)	50	30	10,000	14	150
Population	10,000	6,000	200,000	2,800	30,000

Note:
The population estimates in this table are devised on the basis of Reid (1993: 73), where he reports that in seventeenth-century Southeast Asia population densities in more congested areas reached 20,000 people per sq km. (200/ha). Strict application of this figure would yield a figure of 2 million people for Trowulan. This is very unlikely to be accurate. I have arbitrarily reduced that figure by a factor of ten.

sectors of the site at some time was at a premium. The Trowulan site contains some large areas which could not have been inhabited, including large reservoirs and other hydraulic features. The statistical study of the archaeological survey results has not been completed, so it is not possible to give an estimate of the variation in density of habitation remains over this huge area. Trowulan, as the centre of an enormous empire, may well have had densely populated pockets mixed with relatively sparsely inhabited ceremonial zones. The discontinuous nature of non-agrarian settlement quarters (compounds, or *kuwu* in Javanese, under the jurisdiction of a nobleman and housing his dependants) combined with the royal citadel which may have stood slightly away from the main habitation areas seems to have been characteristic of other parts of Indonesia as well, for example Makassar in Sulawesi (Reid 1993: 74: table 8, fn. b). This aspect of the insular Southeast Asian pattern does not fit comfortably within the standard model of urban settlement.

It now appears that Trowulan and neighbouring villages were the site of a heterogenetic city in which commercial activity was sufficiently well-established to permit the continuation of the urban pattern of life long after the political horizons of the kingdom of which it formed the centre had shrunk significantly. The emphasis of the historical documents on religion and ritual as the central reasons for Majapahit's existence does not accurately reflect the proportions of resources allocated to various types of activity in the capital city.

Trowulan is not located on any major navigable rivers, nor does it lie near any important mineral resources. East Java has long been prominent as a source of rice, and it seems that this must have been one of the principal commodities which favoured Trowulan's growth. Part of the site was designated as a religious zone exempted from paying certain taxes to an earlier kingdom in the tenth century, and some tenth-century Chinese ceramic sherds discovered in one survey sector show that the inhabitants were moderately wealthy and connected to maritime trade routes at the time. However, there is no evidence of activity at Trowulan between AD 1000 and 1300.

One of the principal questions raised by the results of the Trowulan survey concerns the importance of ancient Javanese capitals as commercial centres. No urban areas associated with any earlier Javanese kingdoms have been discovered, despite the fact that Javanese began to build impressive religious monuments in the eighth century. Was Trowulan therefore the first Javanese site to combine the two functions of providing a

central place for both trade and politics? To what extent was Trowulan's growth as a commercial centre dependent on its political position?

Trowulan had walled compounds, but no outer fortifications. It seems that the walls were mainly intended for preservation of internal security and privacy rather than defence against attack. Textual sources and modern village names suggest that the urban area was divided into wards, each under the control of a nobleman, with specialized economic and manufacturing processes such as pottery making, bronze casting and gold working concentrated in certain wards. Chinese coins were used as the main medium of exchange.

In the early fifteenth century Chinese were reported to be residing at the capital of Majapahit, along with three other places in Java. Chinese porcelain is an important component of the site assemblage, but not nearly to the extent that it dominates the contemporary Singapore pottery statistics. One discovery of the 1991–3 survey programme was that the potters of Trowulan achieved a high degree of artistic skill and technical sophistication. Java sustained a much denser ancient population than any other island in Southeast Asia. It is less likely therefore that the Chinese of Trowulan played as important a role as a catalyst in stimulating early nucleation of population as the Chinese communities of Sumatra or Singapore.

Although no explanation is clearly superior, one plausible scenario for the evolution of the heterogenetic city of Trowulan is that early Majapahit was originally established as a ceremonial centre, an orthogenetic city, but that natural features of the site then fostered the development of a new type of heterogenetic society. Administrative and religious redistributive systems might have quickly given rise to market-based systems. These continued to function for decades after the ceremonial and administrative activities withered and contracted.

Banten Girang and Banten Lama

It would be most satisfactory to proceed from Trowulan to Melaka, another fifteenth-century economic centre. Unfortunately the archaeology of Melaka has not been studied. We must therefore leap ahead to Melaka's sixteenth-century successor: Banten Lama (better known in English by its Portuguese orthography Bantam).

Banten lies in West Java. The capital of Java's earliest known kingdom, fifth-century Tarumanagara, lay in the mountainous hinterland of this region. Sites in the coastal plain near Jakarta yielded artefacts including a few examples of Romano-Indian ware probably imported from India in the first to third centuries AD, found in association with a late prehistoric/early protohistoric culture known as Buni. Unfortunately Buni culture is known mainly from looted graves, so little can be said about its settlement pattern or economy. After the Tarumanegara phase, West Java seems to have been squeezed between powerful neighbours in south Sumatra and central Java. No significant sites have been identified between the Tarumanegara phase and the thirteenth century.

Banten Girang ('Upstream Banten') seems to have been founded sometime between 1200 and 1300 (Guillot et al. 1996). It lies 12km inland, along a river which flows north to the Java Sea. Banten Girang is unique among early urban sites of Indonesia because its main features are defensive. The site lies on raised ground and seems to have been

surrounded by a moat and perhaps an earthen rampart. Chinese ceramics indicate an approximate lifespan for the site of thirteenth to early sixteenth century.

Banten Girang was probably an outpost of a kingdom centred in the West Java highlands, the pre-Islamic kingdom of Pajajaran. In the 1520s the population of Banten Girang and its surroundings were non-Islamic. The most powerful kingdom on Java at the time, Demak, had a staunchly Islamic ethos. In about 1527 Demak and its allies conquered Banten Girang and established an Islamic power centre at the mouth of the Banten River. Pajajaran held out in the highlands for another fifty years, but posed no threat to the plans of the new coastal rulers.

The new port, now known as Banten Lama, 'Old Banten', quickly became the main trading port in western Indonesia. Demak soon collapsed, and in any case Banten Lama was better placed to act as a link between the spice-producing areas of the islands and the consuming markets in China and the west. Banten Lama held its position for about 150 years, until it was brought into the expanding Dutch colonial orbit, and Dutch policy shifted the centre of Indonesian trade to their main port of Batavia (Jakarta).

We possess relatively good archival data for Banten Lama (Hasan et al 1988; Miksic 1986, 1989b). The city's internal layout conformed to a standard pattern found in most Javanese administrative centres of the Islamic period. Three types of urban activity (government, religion and commerce) were allocated fixed spaces. Like Trowulan before it, Banten Lama was divided into walled wards under the supervision of a nobleman, many of which were identified with occupational specializations. Unlike Trowulan, the entire site also had a well-defined defensive boundary.

Most physical attributes of Banten Lama are now known from archaeological research. Questions on the evolution of Banten Lama however are still being debated. Why was Banten Lama fortified: because of European influence or the pre-existing traditions of Banten Girang and Pajajaran? If the latter, where did this unusual tradition of fortified royal citadels come from? To what extent was the characteristic layout of the site an invention of Banten? Can it somehow be connected with Islam? Banten Lama was one of the first, and certainly the largest, of the early Islamic cities of Indonesia. What effect did religious conversion have on Indonesian urbanization?

Conclusion

Archaeological data of some comprehensiveness are now available for five cities of insular Southeast Asia which were formed during the period AD 1200–1600. These sites confirm the general impression of Reid that 'In relation to its total population . . . Southeast Asia in this period [i.e. the fourteenth through seventeenth centuries] must have been one of the most urbanized areas in the world' (1980: 239). The evolutionary course of each was different, depending on specific historical and geographical variables. It is not possible to construct a unilinear sequence of evolution to account for their appearance or later development. One could argue that each may represent a different type of city, into which further sites may be added as they are studied.

The simple polythetic functional model of urbanization presented here can be elaborated to a much greater degree. Between the polar conditions of purely heterogenetic and

purely orthogenetic lie a whole range of sub-types. A complete classification system of cities should include environmental factors, warfare, range of occupations and population density. The preceding is but the beginning of the task which needs to be done. The formulation of a formal model able to discriminate urban from non-urban sites is yet another task for the future.

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