

INLAND ANGKOR, COASTAL KEDAH: LANDSCAPES, SUBSISTENCE SYSTEMS, AND STATE DEVELOPMENT IN EARLY SOUTHEAST ASIA

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ABSTRACT

The model of early state development as a process linked to irrigated agriculture and an agrarian economy has been found to be too general even for the large inland states for which it was devised. It is even less appropriate for the coastal states of Malaysia, Indonesia and the Philippines. The inland state of Angkor is compared to the coastal state of Kedah to show how two different sociopolitical systems developed out of Southeast Asian precedents with long and successful histories.

INTRODUCTION

Early researchers explained early historical era state development (AD 500-1500) in Southeast Asia as a process linked to irrigated agriculture and an agrarian economy. Evidence now suggests that this model is too general, even for the large inland states for which it was devised — states like Angkor, Java and Pagan. Angkor, a classic case, is discussed here in terms of land use, settlement distribution and sociopolitical developments in order to contrast an inland state with the distinctly different states that emerged in coastal areas of Malaysia, Indonesia and the Philippines. Although the coastal states displayed different attributes, their development too has been linked to irrigated rice agriculture and an agrarian economy.

State formation in Southeast Asia actually followed various trajectories, reflecting diverse combinations of sociopolitical traditions, land use and tenure, and economic bases that included extensive and intensive dryland (unirrigated) agriculture, irrigated agriculture, and,

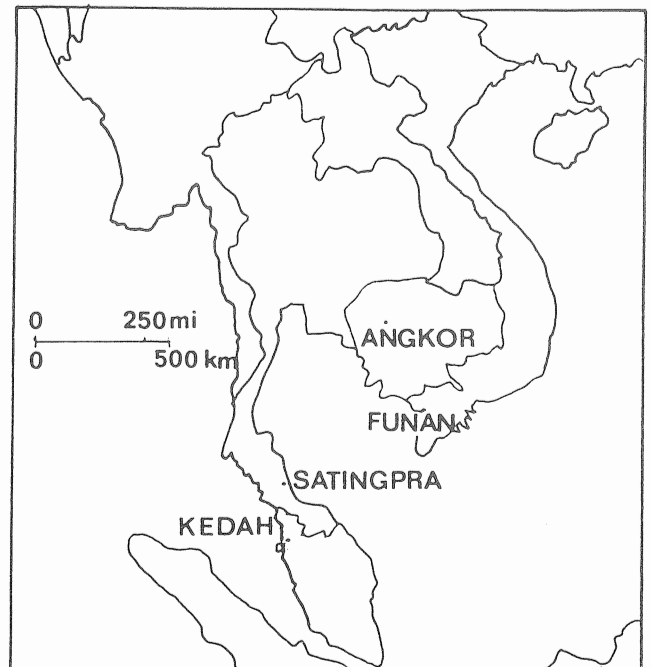


Figure 1: Southeast Asia, with major site areas mentioned in text

importantly, exchange in both subsistence and luxury goods.

Kedah, on the northwest coast of Peninsular Malaysia (Figure 1), is discussed here as an example of a coastal state whose political structure developed out of the organisational structures that were needed to control internal and later external exchange, and whose subsistence

base emphasised dryland cereal cultivation on hillslopes. Evidence from two other coastal centres — Funan, and Satingpra in South Thailand — is summarised in support of the coastal state model discussed for Kedah.

The first section below introduces the state concept, the main early explanatory model applied to Southeast Asia, and historiographic biases affecting that model. The remainder of the paper examines historical and archaeological evidence for state development in Angkor and Kedah and suggests, first, that these two sociopolitical systems reflect local cultural and physical needs and characteristics, and second, that both emerged out of Southeast Asian precedents with long and successful histories.

THE STATE, THE AGRARIAN MODEL AND SOUTHEAST ASIA

Following the combined criteria of several researchers, Angkor, Kedah and certain other Southeast Asian polities had become states by the early historical era (cf. Wheatley 1975). A state is an autonomous political unit that encompasses many communities and has a centralised government with the power to collect taxes, draft community members for work or war, and decree and enforce laws (Carneiro 1970: 733). Although a permanent *social* hierarchy characterises not only states but also other forms of complex society (e.g. chiefdoms) from which states emerge, the state's hierarchy is structurally more complex in that it possesses an elaborated *political* hierarchy with two or more ranks above the producer (Athens 1977; Hommon 1986: 58; Peebles and Kus 1977). Since each level of this political hierarchy needs a specialised administrative structure to process information and effect control over the society, the structure produces a geometric increase in social and economic centralisation at each level (Sanders 1974; Service 1975; Steponaitis 1981; Wright and Johnson 1975).

Early studies of states in other areas of the world, including China, Mesoamerica and Mesopotamia, suggested that an agrarian economy based on a hydraulic system that either irrigated or drained agricultural fields was virtually always associated with, and was probably responsible for, state development. Although the most extreme arguments for this model (e.g., Wittfogel 1957, 1974, regarding "hydraulic society") have been disputed over the years, many features of an agrarian economy do produce structures that promote sociopolitical complexity. For example, the need to coordinate pondfield construction and maintenance, to regulate crop production and to control the use of irrigation water promotes the bureaucratic elaboration that is characteristic of the state.

This intensive, agrarian model seemed consistent with what was known of early Southeast Asian states until the late 1960s. Earlier research focused on inland polities such as Angkor, whose monumental architecture, hydraulic works and Indian-influenced art and iconography had captured the attention of Western historical and art historical researchers for decades (e.g., Coedès 1968; Groslier 1962; Stutterheim 1956; Wheatley 1961). The monuments and art produced at Angkor during its peak period in the eleventh and twelfth centuries received especially widespread attention. Since Angkor is surrounded by extensive wet rice fields today and possesses canals that were interpreted as agricultural ditches, Angkor appeared to fit the classic model of an agrarian state supported by irrigated rice.

Another implicit aspect of the agrarian model as it was applied to Southeast Asia affected interpretations of Angkor, Java, Pagan and other states. The development of irrigated agriculture in most areas was attributed to Indian introduction (e.g., for Angkor, Groslier 1962: 49; also, reviews in Hall 1985: 55 and Moore 1989: 204, 208-209). In other areas such as Bac Bo, the Chinese were credited for its introduction (e.g., Groslier 1962: 43; Higham 1989: 349). Apparently supporting this attribution at Angkor was the fact that the canals that were interpreted as agricultural features originated in large ponds (*baray*) in the ceremonial centres, which certainly reflects Indian stylistic and iconographic connections. Angkor, Java and Pagan were described as "secondary" or derivative states. Evidence that these agricultural systems were not introduced wholesale by foreigners but had instead developed locally, and that state development had proceeded along local lines, would not become apparent for two decades.

Agrarian economies introduced by foreigners were also credited for the development of coastal states and centres including third century Funan (Groslier 1962: 56; review in Hall 1985: 55-57, 273 note 20), fifth century Satingpra in South Thailand (Stargardt 1983: 80-84), and fifth or sixth century Kedah (Zaharah 1969). All three areas were thought to have been wet rice based, their technologies introduced or heavily influenced by India or China or both.

Kedah's and Satingpra's extensive modern irrigated floodplain ricefields were thought to be evidence that the two states had been supported by wet rice even before AD 1000. Funan was believed to have been supported by irrigated or even floating rice. Canals at Funan and Satingpra were interpreted as parts of vast networks designed to irrigate, or in Funan's case possibly to drain, agricultural fields.

MODELLING LOCAL SUBSISTENCE AND SOCIOPOLITICAL DEVELOPMENTS

By the 1960s and 1970s a few researchers realised that many areas did not fit the existing models for agricultural intensification or state development in Southeast Asia. Local, indigenous adaptations to varied environments were investigated by researchers including historian van Leur (1967); archaeologists Bosch (1961), Bronson (1977), Dunn (1975), Hutterer (1973, 1976), Kennedy (1977a, b), Lamb (1961) and Miksic (1979). The geographer R.D. Hill's (1977) *Rice in Malaya* suggested new interpretations of early Chinese descriptions of agriculture in not only the Malay states but also areas including the probable predecessors of Angkor. Evidence presented by these researchers, along with the results of studies conducted since the 1970s, suggests that varied agricultural technologies ranging from swidden, through permanent dryland cereal agriculture, irrigated rice cultivation and combinations of these, supported the documented Southeast Asian states. Most of the agricultural systems were fundamentally indigenous rather than foreign-introduced, and many functioned in combination with internal and external exchange to support states as varied as their economic bases.

At Angkor, water control before AD 1000 included local systems that trapped receding floods, and even in the eleventh and twelfth centuries there is no solid evidence that water was diverted to irrigate crops (van Liere 1980). Funan probably relied on rainfed rice rather than floating or irrigated rice to support its sophisticated commercial centre (Hill 1977: 1). The canals of Funan and Satingpra were probably designed and used primarily for navigation and the transshipment of exchange goods, not for irrigation (Allen 1990: 170–171; Stargardt 1973: 10). Hall (1985: 278), citing van Liere's (1980) model for Cambodia, suggests a possible additional, ceremonial role for Funan's canals. At Satingpra certain major drainages interpreted earlier as canals are actually natural drainages formed in swales (Trebuil *et al.* 1983: 18). Kedah used rivers for the transport of exchange goods and was supported primarily by hillslope cultivation of cereals that probably included millets and hill rice until c. AD 1500 (Allen 1988: 561–605, 1991).

Palaeolandscape characteristics (Bradford 1972; Lamb 1961: 29–30, 33–34; Trebuil *et al.* 1983) suggest that no floodplain capable of supporting widespread wet rice agriculture even existed in Kedah or Satingpra until long after their peak periods of power in the ninth or tenth through twelfth centuries. Both the agricultural baseline for state development and the socioeconomic processes that resulted in state level complexity are made

more complex by this evidence. Internal and later external exchange was much more important as an economic base than was once thought, providing both foodstuffs and luxuries, even in inland states including Angkor. The control of exchange initiated both by Southeast Asians and by foreigners created elaborate administrative hierarchies that led easily to state formation.

The structures of internal and external exchange, and those of the exchange-based states, are very different from those of states focused on agricultural production. They leave distinctive site patterns across the landscape, as will be seen in the following discussion of what is known regarding state development at Angkor and in Kedah. The two systems worked in fundamentally different ways to bind their citizens together, deal with outside influences, provide a successful economic base, and support an increasingly elaborated, non-subsistence-producing political élite.

DEVELOPMENT OF THE STATE IN ANGKOR

The information that is available for Angkor is surprisingly scant for all aspects of life beyond (or below) the centres where the élites ruled. Direct, dated agricultural evidence is not yet available and other subsistence-related evidence is sparse, surprisingly for this important and long-studied state. Even information regarding how commoners distributed themselves and their villages or compounds around the state is scant.

A large part of what is known concerns the monuments of the main centres. We also have genealogies for many members of the ruling dynasties over several hundred years and inscriptions that record the conquests and other important accomplishments of many rulers, including the construction of *baray* and canals, as well as other structures (e.g., Higham 1989: 321–355; Jacob 1979; Jacques 1986; Vickery 1986).

Angkor's classical age spanned the years between AD 1113, when Suryavarman II began his rule (1113–c.1150), and c.AD 1218, when the rule (1181–c.1218) of Jayavarman VII ended. Angkor was a land-oriented state. Even its exchange tended to be in products of the land. Income from the land was the main source of the ruler's power. In order to support that system, a landed élite was created. Grants were awarded both to the landed gentry and to temples. These were encouraged to build monuments and hydraulic systems for merit and to invest in the land. Agricultural work forces composed of commoners were sometimes supplied.

According to one of Jayavarman's inscriptions, at Prah Khan (Hall 1985: 165), the twelfth century Khmer population numbered 306,372 and occupied 13,500 vil-

lages. Although no comprehensive site distribution survey has been published, it appears likely that settlements grew up across the landscape wherever there was adequate well-watered land for cultivation. The landscape was relatively stable, although seasonally flooded, and there was room for spaced, ranked settlements of the Central Place type modelled by Christaller (1966) to describe market economies centred on extensive, homogeneous plains in Western Europe. Linear settlements and dendritic networks of the types documented for modern coastal and riverine states such as Kedah, described below, were apparently not common in Angkor until relatively late, when rivers formed the basic transportation network for commerce.

Angkor was perhaps the most successful early historical era agricultural state in Southeast Asia, producing rice in large quantities by the sixth century (Hill 1977: 18). During the ninth through eleventh centuries Khmer cultivators produced three and even four rice harvests a year. Although Hall (1985: 170) credits this yield in part to the irrigation network that had been built around the centre by the rulers of pre-Angkorian and Angkorian Cambodia, van Liere (1980: 269, 274) argues convincingly that these works, as well as canals in the hinterlands, were ceremonial and political ("theocratic hydraulics"), not agricultural. No distributary channels are known to have left the canals or *baray* headed for the fields.

Two agricultural water control systems were in use in the fields around Angkor after the eighth century (van Liere 1980): banded field networks and floodwater entrapment systems. Millions of small banded fields, oriented uniformly in large blocks, were constructed in the wooded lowlands around the Tonle Sap and also in the Mun-Chi basin in northeast Thailand (van Liere 1980: Plate 3). Van Liere (1980: 271) comments that cooperative effort at the village level is suggested by the very similar orientations. More than one village may have participated in building and maintaining some blocks.

The second system dominated the Mekong River flood zone, around the Tonle Sap and further downstream. This system did not focus on bringing water to the fields: more than enough water was available naturally during seasonal floods. The system relied instead on earthworks that trapped river waters in the fields as they receded after floods. Hill (1977: 18) believes that the sixth century pre-Angkorian cultivation of rice relied primarily on shifting cultivation and trapping rainfall. If so, rainfall entrapment is a local adaptation of some antiquity. Modern Khmer cultivators still follow this traditional method and would not use *baray*-fed irrigation

canals in the 1960s when these were provided by modern engineers (van Liere 1980: 279).

In eleventh century Angkor, temples supervised agricultural production and were responsible for contributing their share to state support. The resultant estates were well integrated within the state. As documented by twelfth century inscriptions and accounts interpreted by Coedès (cited in Hall 1985: 165, 314 notes 100 and 101), every cultivator supplied the Khmer state and its temples with 120 kg of hulled rice annually and produced an additional 80 kg for his or her own use. This impressive amount is equal to the amount of hulled rice produced by each farmer in the (prewar) 1960s. The total amount produced by the 306,372 twelfth century Khmer villagers was 61,000,000 kg, of which approximately 60% went to state temples. The ruler could claim an additional 16–25% of each peasant's production. Perhaps 25% remained for disposition by the individual farmer (Hall 1985: 314 note 101).

At least physiographically, it would seem that farmers occupying villages throughout the plains and wooded lowlands around Angkor had options as to where to exchange their portions of their produce for other goods. They could, ideally, travel in any direction and deal with any of the 47 high-ranking centres that are recorded epigraphically, for instance, for the reign of Suryavarman I (AD 1002–1050) (Hall 1985: 170). Successful rulers, however, made certain that the relatively dense population of resident producers was tied effectively to the state through, to quote Hall (1985: 169), "a style of statecraft based on the interdependence of political, economic, and religious institutions."

Sociopolitical integration in Angkor was vertical, with "theocratic hydraulics" (van Liere 1980: 274) and monuments to extol the power of the state. It supported a landed élite class, and producers who, using traditional methods, were well-integrated into the state support system. The potential was great for enhancing a land-based economy and for intensifying subsistence technology. Intensive agriculture and the control of banded and flood waters were needed to support the population which included large numbers of temple personnel and retainers to the ruler. These systems were also complementary to the sort of labour-intensive, unified state system that is represented by Angkor.

DEVELOPMENT OF THE STATE IN KEDAH

Between AD 400–500 and AD 1300, centres in Kedah under the names of Chieh-ch'a, Kadáram, Katáha, and perhaps Kaláh functioned as important ports and entrepôts in the Southeast Asia/India/China/Middle East

trade network (Allen 1988: 206–223 and 606–619, 1991; Jacq-Hergoualc'h 1992; Lamb 1961: 19–37, 69–88; Leong 1973; Nik Hassan Shuhaimi 1984 [unavailable, not seen]; Nik Hassan Shuhaimi and Othman Mohd. Yatim 1990; Persatuan Sejarah Malaysia 1980; Quaritch Wales 1940). As is discussed below, the Kedah state was supported primarily by exchange, and by permanent dryland agriculture until late in its history.

Sites at initially Kampung (Kg.) S. Mas, followed by Pengkalan Bujang and then Kg. Sireh (Figure 2) acquired large numbers of Chinese ceramic wares, beads from various sources, ceramics and glass from as far away as the Middle East and other items. These were exchanged for local products that included fragrant woods, timbers for construction, tortoiseshell, bezoars, and probably monkeys and elephants (see Dunn 1975: Table 8.1 for comprehensive lists). Most of the local goods had to be collected some distance inland and transported down streams to the coastal port.

Kedah, like Angkor, possesses many Indian style temples. But, unlike Angkor's large, powerful, productive temples, Kedah's temples are small and often isolated in forested areas on coastal hills that were probably islands at the time, or in mountain or hill areas far upstream (e.g., Figure 2: Site 8), where they could not have overseen irrigated rice production or controlled Kedah either politically or economically. These shrines appear likely to have been commissioned by foreign visitors to give thanks for a safe journey or to gain merit, or both. The visitors were probably granted permission to build the shrines, using local labor, in exchange for goods needed by the local ruler.

The Kedah landscape is heterogeneous even today. Before the development of a broad coastal floodplain that apparently formed primarily during the later historical period, after AD 1200, nearly the entire state was forested, hilly to mountainous, and dissected by large rivers. Site distribution outside the coastal centres was dendritic, reflecting the needs of exchange which depended on streams as the main arteries along which forest products were bulked and transported to the coast. Coastal and later foreign products were transported along these same routes for redistribution inland. The Kedah network fits general dendritic patterns that have been developed for exchange-based economies in many areas around the world (e.g., Bird 1973; Hirth 1978; Kelley 1976) and agrees especially well with the model developed by Bronson (1977) for coastal states in Southeast Asia (Allen 1988: 528–60, 1991). The dendritic models developed by Bronson and Hirth in particular have been applied successfully to early historical-era exchange net-

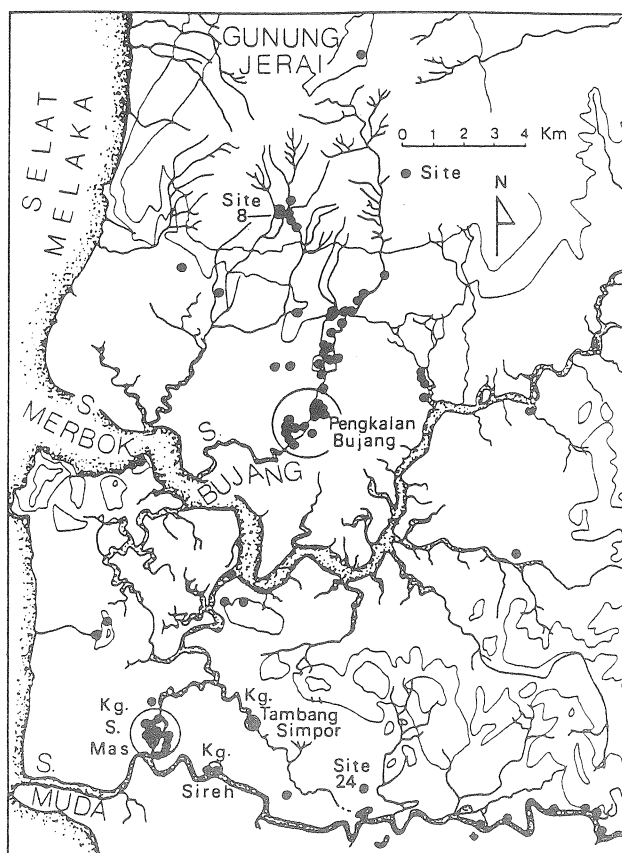


Figure 2: South-central Kedah, Malaysia, showing locations for exchange-related sites including those at Kampung Sungei Mas, Pengkalan Bujang and Kampong Sireh

works in Bais, Negros Oriental, the Philippines, and Kota Cina, Sumatra (Junker 1990, 1994; Miksic 1979: 249–57). Testing similar models will undoubtedly produce new perspectives regarding other early complex societies described by foreign visitors for Southeast Asia.

Increasing evidence, to be discussed, indicates that Kedah's relatively small population was supported adequately by dryland cereal cultivation, not by the extensive irrigated ricefields that supported the state throughout most of the early historical era and that support much of Peninsular Malaysia today. Kedah's population at the time is unlikely to have exceeded the 50,000 cited (Newbold 1971) for the state in 1835–1836; Zaharah (1970) considers this estimate too high. Kedah's low population figure provides a marked contrast with Angkor's reported 306,000.

Following Hill's (1977: 61) estimated average annual rice consumption rate of 100 *gantang* (300 kg) per person, 15,000,000 kg would have fed Kedah's 50,000 people (Allen 1988: 589–590). Hillslope lands in and near the population centres in south central Kedah were extensive enough to produce this amount without irrigation and with reasonable fallow periods. But dryland production gradually intensified and fallow periods shortened, reducing vegetation cover and producing increasing soil instability on inland slopes. Kedah's early historical era landscape underwent dramatic change between AD 900 and 1500, as shifting and then permanent dryland cultivation caused erosion of soils and fine sediments, which were then transported by streams to the coast. The broad coastal plain that characterises Kedah today formed as terrigenous silts and clays filled estuaries and swales, often blocked from further transport by beach ridges that paralleled the coast, progressively building outward into the Selat Melaka (Allen 1988: 561–648).

Kedah's economy during the early historical era was oriented primarily toward maritime and riverine exchange. Settlement distribution was dendritic; no broad floodplain existed and settlements could not have formed floodplain-based Central Place polygons. No landed élite class is known to have existed and no estates participated in a wet rice economy.

In contrast with the Angkorian situation, state control over Kedah's population was effective only in coastal centres and for short distances upstream. The actual collectors of forest products were autonomous, occupying upstream and mountain areas beyond the reach of the coastal centre. If the forest collectors, Dunn's (1975: 101) primary traders, preferred, they could cross the interfluvium to another watershed and participate in a competing network. It was therefore critical for the ruler of each riverine state to promote interdependence throughout the exchange network in order to persuade each producer to participate.

Fostering interdependence among all the participants in the network has been cited as one of the great strengths of internal exchange. Although each producer could subsist on his or her own, each was encouraged to maintain partnerships and relationships in order to acquire goods not available locally. Rather than the vertical integration seen in Angkor, the form that was vital to the success of Kedah's exchange was necessarily cooperative and horizontal. Even foreign visitors to the coastal gateways were allowed freedom, within certain limits.

In Kedah, the economic and political leader, not the land or the centre, was seen as central to the state. When there was a change in leadership, the coastal centre typi-

cally moved. And the rulers of trade-based states tended to move frequently. As noted by James Low (1849), "the Rajas of Kedda seem to have been given to locomotion. Almost every reign was followed by a change in the seat of government." Kg. S. Mas, Pengkalan Bujang, and Kg. Sireh, the three site areas mentioned earlier, functioned one after the other as the state's primary gateway, Bronson's (1977) A-level centre. Historians have described this tendency to focus on different gateways at different times for other Southeast Asian trade states as well. As a better-known example, Srivijaya was centred politically in various places through time. An inscription describing the Cola conquest of Srivijaya in AD 1025 even suggests that the ruler of Kedah (Kadaram) ruled over Srivijaya at that time (Wheatley 1961: 199).

At the coastal gateways, the Malay trade states and their rulers, Dunn's (1975) tertiary traders, developed very effective political hierarchies in order to maintain control, especially over exchange. With the development of external exchange, it became critically important to continue to receive the duties paid by foreign traders and visitors for local goods. Foreigners were encouraged or even forced to trade at a particular centre. The best historical records for a centre on the peninsula describe Melaka at its peak success in the fifteenth century, immediately preceding its takeover by the Portuguese and its almost immediate decline. Other Indonesian and Malaysian centres including Aceh in Sumatra, Banten in west Java, and north Javan ports used similar controls (Miksic 1979: 2–8). Kedah was so successful in maintaining control of foreign visitors that it remained independent of European control even in the nineteenth century (e.g. Lewis 1975).

In Malay Melaka, all foreign traders were welcomed equally under open market rules and without favouritism. Foreigners lived in separate communities while waiting for the monsoon to change. The ruler appointed five permanent officials to help and to control all trade and traders: the Bendahara or Prime Minister and Chancellor of the Treasury; Penghulu Bendahari or Minister of Finance; Laksamana or Admiral; Temenggung or Police Chief and taxation official; and the Syahbandar or harbourmasters, each of whom was directly responsible to and for specific ethnic groups of visitors (Birch 1880: 87–88; also, Andaya and Andaya 1982: 42–47; Anderson and Vorster 1983: 439; Brown 1970: 45–46; Cortesão 1944: 90: 268; van Leur 1967; Meilink-Roelofs 1962: 40–48).

In addition to the need to control foreigners and external exchange, the rulers of coastal states in Kedah and elsewhere (e.g., Junker 1994: 244) needed to control their

own Malay entrepreneurs in internal exchange. These were the secondary traders at the midriver centres where forest goods heading to the coast and imports and coastal goods heading upstream were bulked and transhipped. These midriver entrepreneurs were confined physiographically to a single valley, but could and apparently occasionally did shift allegiances to rulers in other valleys. Entrepreneurs, because of their direct and cultivated contacts with forest collectors, could also apparently pose direct threats to the coastal ruler and gateway. Kg. S. Mas and Pengkalan Bujang were gateways for networks in two different valleys. Pengkalan Bujang eventually replaced Kg. S. Mas in importance. Kg. Sireh was probably a threat to Pengkalan Bujang's continued success and became the gateway after Pengkalan Bujang ceased its trade. Each coastal ruler relied on cooperation and coercion to maintain control over both the internal and external exchange networks.

Coastal or even midriver entrepreneurial control over the forest collectors was probably nonexistent. Forest collectors, who belonged to various ethnic groups and travelled over large areas near headwaters in the interior, could choose one stream and exchange network or another. Upstream collection points were probably transitory and much exchange may have taken the form of silent barter. In cases where the collector, the primary trader, delivered forest goods to a midlevel entrepreneur, their trade relationship almost certainly had developed over a long time, as suggested by Dunn (1975: 114).

As suggested earlier, the ability to acquire goods not available locally promoted in each player in Kedah's exchange-based network a sense of interdependence with participants in other production zones. This interdependence was critical to the development of internal and then external exchange and to the development of the state.

Dryland hillslope cereal cultivation, conducted by the various members of this interdependent exchange network, granted producers a degree of autonomy not documented for Angkor and may have encouraged the individualised contributions that made Kedah's exchange system successful even during the colonial period and into the twentieth century. The vertical integration seen in Angkor was either not necessary or not worth the effort in Kedah, where the state that developed was strikingly different in structure, economic base and pattern across the landscape from the Angkorian state.

CONCLUSION

Neither Angkor nor Kedah was static. Angkor became increasingly involved in the foreign luxury trade through its conquest of isthmian areas. And, as noted, Kedah's

overuse of its fragile hillslope soils for dryland cultivation led to erosion and the creation of a coastal floodplain. That floodplain today supports a modern agrarian "rice bowl" that supplies areas throughout the peninsula.

States, like other cultural systems, are as variable as they are dynamic. No monolithic pattern was present either in Angkor or in Kedah. Understanding the intermingled processes that led to the formation and success of Angkor, Kedah and other Southeast Asian states requires close attention to all the components that can be identified. In conclusion, I submit that it is only by studying what might be considered mundane — agricultural sequences and technologies, commoners' settlement patterns, and soil and sedimentary changes — that we will eventually be able to understand the ways in which Southeast Asia's many states functioned and the reasons for their considerable successes.

ACKNOWLEDGMENTS

My dissertation research in Kedah was funded by the National Science Foundation and completed at the University of Hawai'i, Honolulu. The assistance that was provided throughout the field season by the Universiti Malaya, the Muzium Negara in Kuala Lumpur, and the Muzium Arkeologi Lembah Bujang in Merbok, Kedah, is very much appreciated. Many thanks to crew members Norain binti Md. Noor, Chan Sean Keong, and Chew Han Ngin, without whom the fieldwork could not have been completed successfully. Finally, thanks to the IPPA members and other colleagues who have provided feedback and good ideas.

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