19 · Southeast Asian Nautical Maps

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The diffusion of Austronesian cultures in late prehistoric time extended over a vast, primarily oceanic domain covering more than 208 degrees of longitude, from Madagascar in the west to Easter Island in the east. So wide a distribution presupposes an early and substantial development of maritime technology and a concomitant accumulation of knowledge of the sea and the stars. Some of this knowledge resulted in celestial mapping, examples of which have been noted above (pp. 712–13), and one cannot help but speculate on how far it also gave rise to various forms of nautical charts. The stick charts of Marshall Islanders, of course, have been amply documented; but what, if anything, might have been their cartographic antecedents? Was there a process of transmission from the nearby Malay world? Did Malay seafarers learn to use maps, as Ferrand suggests, in their repeated voyages not only to Madagascar, but at least as far as the Cape of Good Hope, beginning about the first century A.D.?[1] Unfortunately, firm evidence for answering such questions is meager. It is uncontestable, however, that the Portuguese did make use of Javanese charts early in the sixteenth century. A letter dated 1 April 1512, sent by their Indian viceroy Afonso de Albuquerque from the port of Cochin to King Manuel, refers to an accompanying piece of a map made by Francisco Rodrigues, a cartographer and the pilot-major of the armada that discovered the Molucca Islands. That map fragment was described as being from

> a large map of a Javanese pilot, containing the Cape of Good Hope, Portugal and the land of Brazil, the Red Sea and the Sea of Persia, the Clove Islands, the navigation of the Chinese and the *Gores* [inhabitants of Formosa], with their rhumbs and direct routes followed by the ships, and the hinterland, and how the kingdoms border on each other. It seems to me, Sir, that this was the best thing I have ever seen, and Your Highness will be very pleased to see it; it had the names in Javanese writing, but I had with me a Javanese who could read and write. I send this piece to Your Highness, which Francisco Rodrigues traced from the other, in which Your Highness can truly see where the Chinese and *Gores* come from, and the course your ships must take to the Clove Islands, and where the gold mines lie, and the islands of Java and Banda, of nutmeg and maces, and the land of the king of Siam, and also the end of the navigation of the Chinese, the direction it takes, and how they do not navigate farther. The main map was lost in *Frol de la Mar*. With the pilot and Pero de Alpoim I discussed the meaning of this map, in order that they could explain it to Your Highness; you can take this piece of map as a very accurate and ascertained thing, because it is the real navigation, whence they come and whither they return.[2]

Though Ferrand appears to accept the notion, seemingly implicit in Albuquerque's letter, that the Javanese actually knew of places such as Portugal and Brazil, that proposition strikes me as untenable and based on too literal a reading of what was probably a carelessly written original statement. What Albuquerque probably meant to say was that the map in question, essentially a map of the then known world, was based *in part* on a Javanese map. But even that more modest interpretation demonstrates that the Javanese did indeed make maps to aid navigators.

Apart from this map, which went down with the *Frol de la Mar*, Rodrigues drew many others. Twenty-six such maps, based both on direct observation and on a variety of secondhand sources—including, it appears, the lost original Javanese map—were assembled, along with numerous other illustrations, in the form of an atlas titled *O livro de Francisco Rodrigues*, published in 1513, a copy of which is at present held in the Bibliothèque de l'Assemblée Nationale in Paris.[3] The original manuscript

1. Gabriel Ferrand, "A propos d'une carte javanaise du XV^{e} siècle," *Journal Asiatique*, 11th ser., 12 (1918): 158–70. For the history of Malay maritime connections with Madagascar, see Gabriel Ferrand, "Les voyages des Javanais à Madagascar," *Journal Asiatique*, 10th ser., 15 (1910): 281–330.

2. Quoted from the translation of the Portuguese original by Armando Cortesão in *The Suma Oriental of Tomé Pires . . . and The Book of Francisco Rodrigues . . .*, 2 vols. (London: Hakluyt Society, 1944), 1:lxxviii–lxxix.

3. Cortesão briefly describes each of these maps in appendix 2 of *Suma Oriental*, 2:519–26 (note 2); he also discusses them in his *Cartografia e cartógrafos portugueses dos séculos XV e XVI*, 2 vols. (Lisbon, 1935), 2:122–30. Facsimiles of all the maps at the Bibliothèque de l'Assemblée Nationale are found in Manuel Francisco de Barros e

was allegedly held by a well-known Portuguese theologian, philosopher, and historian, Jerónimo Osório (1506–80), and the Paris copy is said to date from sometime after 1520.[4] The Rodrigues atlas is the subject of an analysis by Winter, who discusses the remarkable difference in style between those maps that were based on firsthand observations and those that were not.[5] Figures 19.1 and 19.2 illustrate this difference. Since much has been written about Rodrigues's opus, I shall not discuss it further.

Figure 19.3 presents a map of the Malay Peninsula that was brought to light and analyzed in detail by Phillimore, with the aid of two Malay scholars.[6] As of 1956 the map was held by S. T. C. Parsons-Smith, having been passed down through his mother's family, the Cracrofts, one of whom probably obtained it while taking a sea voyage from India, where a number of them had been in service. The work is thought to date from the early eighteenth century. Many natural features on the map are highlighted with an indigo tint. Also highlighted are the hulls of the several fully rigged European sailing ships, whose style helps date the work. The remarkably clear script used on the map suggests that its author was an educated Malay.

The obvious contortion in the alignment of the peninsula is somewhat surprising, given that the cardinal and secondary directions are all noted on the map by straight lines and in words as well. Of this Phillimore observes:

> The southern half of the peninsula has, indeed, been so twisted round to the east . . . that the general direction of the east coast is made to run but slightly north of west, till it narrows up to the Isthmus of Kra. From Kra it then sweeps away to the east to suggest the confines of the Gulf of Siam. It is as if the map-maker found that his paper was not long enough from north to south.
>
> The disregard of more than four degrees of latitude between Singapore and Penang is hardly consistent with the map-maker being a professional sailor, skilled in the art of the astrolabe, and yet, on the other hand, he seems entirely taken up with coastal details, of interest to a navigator, and to be particularly interested in the safe harbour of Patani. . . . Most of the names that appear on the map are those of river mouths (*kuala*), promontories (*tanjong*), islands (*pulau*), or hills (*bukit*) that might be valuable aids to navigation.[7]

A particularly noteworthy map feature is Bukit Pattani, the prominently drawn hill from which the eight directional lines radiate. Also identified are near-coastal shoals and a number of features that have no direct bearing on navigation, such as three areas of rice cultivation, areas near Johor and Pattani said to be plains, the boundary of Pattani (noted by text, but not drawn), and an island off the "frontier" of Pattani. The frequent mention of places associated with Pattani, the fact that no other boundaries or frontiers are noted, and the exaggerated size of the Pattani Point, harbor, and region suggest (though Phillimore was silent on this point) that the mapmaker was a resident of that place. Until its conquest by Siam in 1785, Pattani was the capital of an independent Malay sultanate that carried on a vigorous trade with both the Dutch and the British, and before them with the Portuguese, as well as with ships from China and Japan. I assume further that the mapmaker, or perhaps his employer, was himself engaged in frequent trading contacts with Europeans; first, because the only ships shown on his chart are European, and second, because he inserts into the map the eight directional lines, which are essentially a pointless Western affectation that adds little or nothing to the utility of the work. Finally, I hypothesize, for reasons to be developed below, that the presumed merchant used Pattani as an entrepôt, gathering spices, rice, and other goods in small consignments, carried mainly by small native craft plying coastal routes from many of the other ports shown on the map, and then reselling those goods to the Europeans and other nonlocal traders.

However inaccurately plotted the details on the map may seem, they are all useful and correctly disposed in their sequence along the coast or, in the case of offshore features, in respect to proximate peninsular features. The map provides little information, however, on areas away from the coast. Of this Phillimore observes:

> A remarkable disregard, or ignorance, of the internal geography is displayed by the joining up of the Pahang and Perak rivers to continue right through the heart of the peninsula from coast to coast, as if the map-maker had no conception of the formidable mountain mass of the Cameron Highlands that rise to peaks of over 2000 metres. There are no indications of national or political boundaries [not quite correct, as I have demonstrated with respect to Pattani] or subdivisions. No town sites or forts, and no land communications.[8]

A question that Phillimore fails to address, however, is why the mapmaker would have chosen to indicate this

Sousa, Viscount of Santarém, *Atlas composé de mappemondes, de portulans et de cartes hydrographiques et historiques depuis le VI^e^ jusqu'au XVII^e^ siècle*, 3 vols. (Paris, 1849); facsimile ed., *Atlas de Santarem*, with explanatory text by Helen Wallis and A. H. Sijmons (Amsterdam: R. Muller, 1985).

4. Hiroshi Nakamura, *East Asia in Old Maps* (Tokyo: Centre for East Asian Cultural Studies, 1962), 28–35 and fig. 8. Nakamura ventures no opinion as to the present whereabouts of the original.

5. Heinrich Winter, "Francisco Rodrigues' Atlas of ca. 1513," *Imago Mundi* 6 (1949): 20–26.

6. Reginald Henry Phillimore, "An Early Map of the Malay Peninsula," *Imago Mundi* 13 (1956): 174–79.

7. Phillimore, "Early Map," 178 (note 6).

8. Phillimore, "Early Map," 178 (note 6).

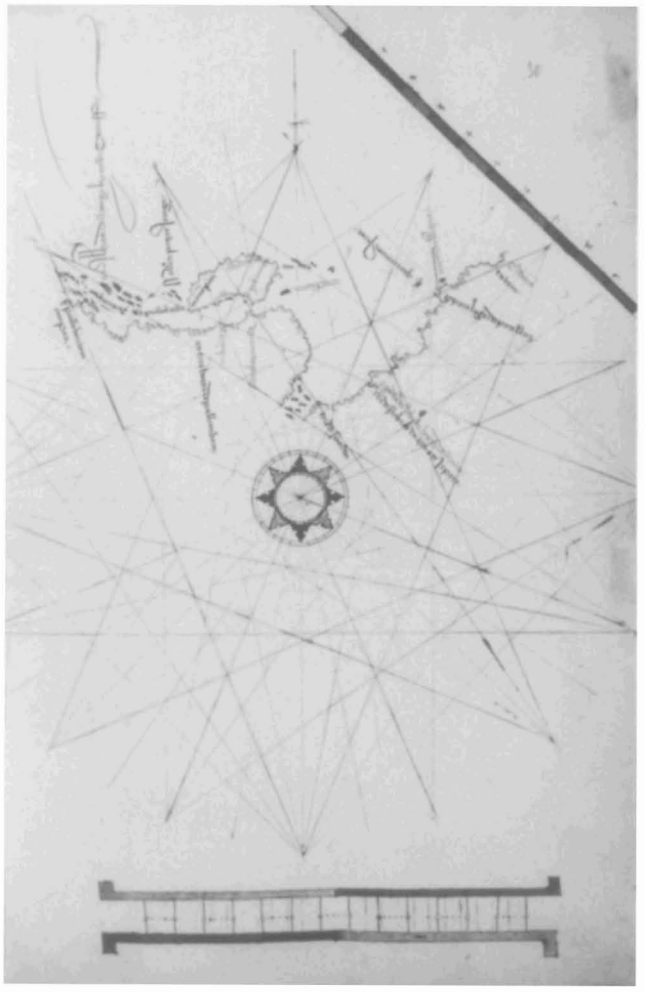

FIG. 19.1. ISLANDS IN THE WESTERN PORTION OF THE MALAY ARCHIPELAGO FROM THE ATLAS OF FRANCISCO RODRIGUES. Figures 19.1 and 19.2 are judged to be from a copy, believed to date from sometime after 1520, of Francisco Rodrigues's original atlas of 1513. The manner of depicting islands on these two folios indicates that the maps were based on entirely different sources. This figure shows a portion of the northeast coast of Sumatra, the adjacent Lingga Islands, the island of Bangka, and the northwest coast of Java. It was undoubtedly drawn from personal observation and rendered in the style of other Portuguese maps of the period.
Size of the original: 39 × 27 cm. By permission of Bibliothèque de l'Assemblée Nationale, Paris (*Journal du Pilote portugais Francisco Roïs*, MS. 1248, fol. 30).

FIG. 19.2. ISLANDS IN THE EASTERN PORTION OF THE MALAY ARCHIPELAGO FROM THE ATLAS OF FRANCISCO RODRIGUES. This map displays a completely different cartographic style from that shown in figure 19.1. Here, Solor and the eastern portion of Flores are merged into a single island. Other islands shown include Timor, Banda, the Moluccas, Ambon (Amboina), and Ceram. The combination of sketchy planimetric views and coastal profiles seems to be a distinctive Javanese map trait. The stark contrast between the conventions of this map and those of the map shown in figure 19.1 underlines the fact that Rodrigues himself failed to reach this area and had to depend on indigenous sources for his information.
Size of the original: 39 × 27 cm. By permission of Bibliothèque de l'Assemblée Nationale, Paris (*Journal du Pilote portugais Francisco Roïs*, MS. 1248, fol. 37).

one transpeninsular connection and no other. Rather than being a pointless whim, I suggest that the apparent all-river connection on this map, like many we have noted on a number of Burmese and Siamese maps (including also cosmographies), was intended to signify not an all-water route, but merely a continuous route that was negotiated partly via rivers and partly via overland portages across an intervening hill barrier. If, as suggested, our merchant was concerned primarily with trade and with gathering goods to sell from many widely scattered localities, it would have mattered little to him whether his goods came by sea or overland. Although sea transport would normally have been easier and cheaper than overland shipment and therefore preferred, there were

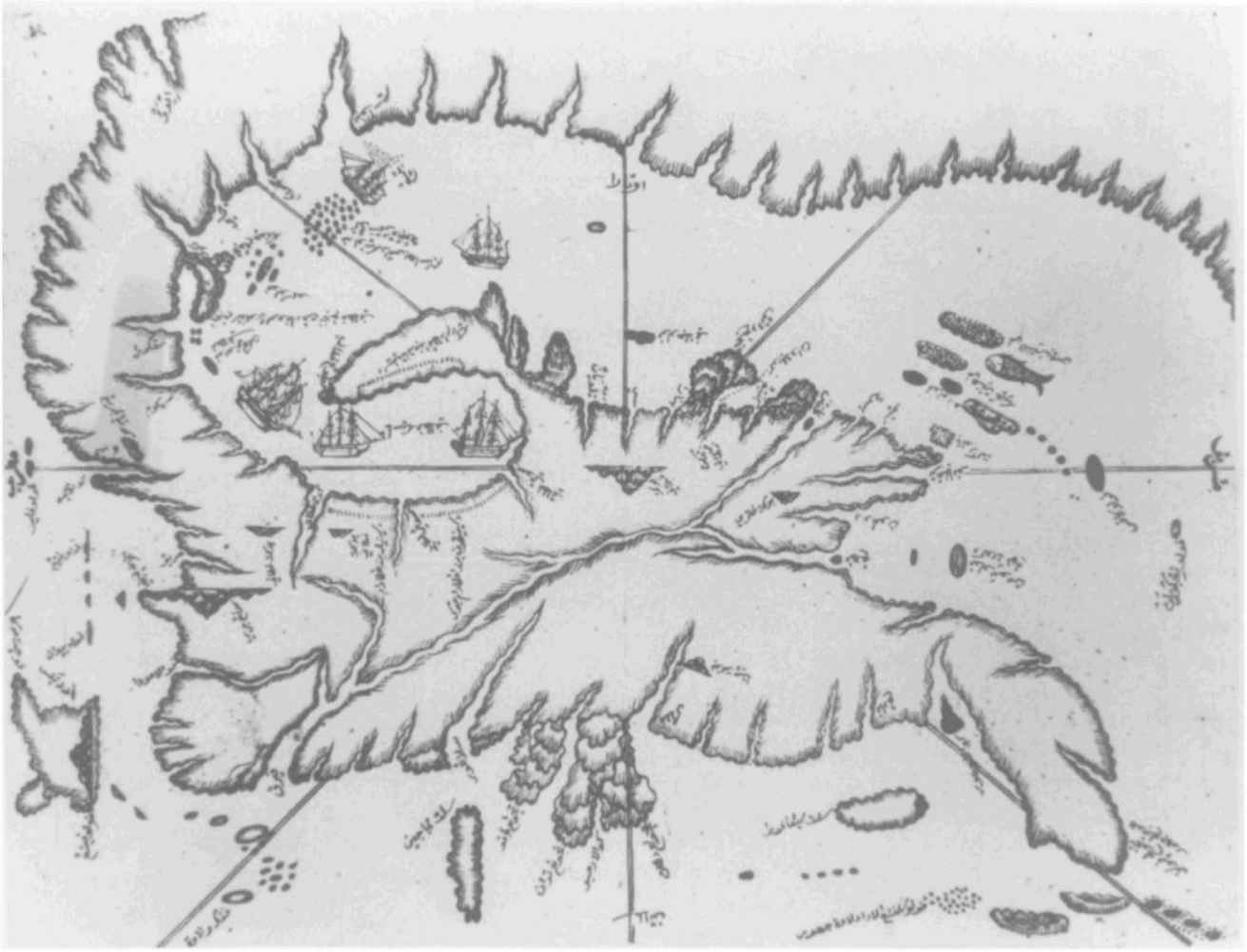

FIG. 19.3. MALAY CHART OF THE MALAY PENINSULA AND THE GULF OF SIAM. This privately held early eighteenth-century work is drawn in black ink on tough locally made paper. The text is in Malay, written in the Arabic script. The map is a curious admixture of indigenous and European elements. Among the latter are the directional lines radiating outward from a hill, Bukit Pattani, a landmark near the port and Bay of Pattani to its left. The map, despite its grossly inaccurate representations of shape, distance, and direction, is believed to have had some utility as an aid to coastal trade focused on Pattani. The puzzling transpeninsular channel conveys the impression that there was a navigable route across what is now West Malaysia; but analogues of such nonexistent waterways seen on maps from Burma and Thailand suggest a different interpretation of what they were actually intended to signify. Size of the original: roughly 30 × 40 cm. From Reginald Henry Phillimore, "An Early Map of the Malay Peninsula," *Imago Mundi* 13 (1956): 174–79.

situations, as the history of the region repeatedly demonstrates, in which land transport would have made sense. Perhaps the most common such situation was when pirates—for centuries active in the waters shown on the map (especially the Straits of Malacca)—become so dangerous that ships had to avoid the routes they frequented. The second circumstance that would lead to overland shipments was when traders at one entrepôt, say Penang or Malacca, acting in collusion or as monopolists, fixed the prices they were willing to pay for certain commodities so low that it became worthwhile for middlemen to bear the extra expense of finding a different, though distant, outlet. This was the case, for example, when the Dutch tried to monopolize the spice trade of India's Malabar Coast, only to find that the commodity they most sought was rerouted over the Palghat Pass to the eastern Coromandel coast and sold to a different set of traders.[9] Thus it seems plausible that the route depicted was the one actually used, as occasion warranted, by the merchant's suppliers or, more generally perhaps, by small traders carrying goods from Malaysia's west coast to Pattani.

9. The Dutch experience in India is well documented in Marcus Vink, "The Dutch East India Company and the Pepper Trade between Kerala and Tamilnad, 1663–1795: A Geohistorical Analysis," unpublished paper, University of Minnesota, December 1990.

There were, to be sure, various other routes that might have been selected. Two of these are illustrated and discussed by Wheatley in a paper dealing with the persistent depiction, on European maps over the period 1519 to 1623, of nonexistent transpeninsular rivers.[10] Wheatley also notes that these routes were on occasion used for trade. He does not go so far as to suggest that the initial placement of the rivers on the European maps stems from some European's having seen them on an indigenous map and, in the absence of firsthand knowledge of the area, copied them on faith. But that possibility seems worthy of further investigation. The opposite situation is of course also possible—that the Malay mapmaker copied his transpeninsular river from a European map. However, since there are no known European maps showing such a feature after 1623 (assuming Wheatley's list is complete), a century or so before the assumed date of the Malay map, that does not appear especially likely.

A final question worth considering is why drawing the map under review was deemed necessary. The text would probably have been meaningless to many, if not most, pilots of small coastal ships, who one may assume were illiterate. And the visual differentiation on the map of one harbor or stretch of coast from another, in contrast to the maps we shall next examine, is subtle at best and probably unintentional. In sailing the coastal routes for which the map might seem relevant, local ships would rarely be far from land and would largely sail within sight of the coast. Furthermore, unlike South Asian sailing maps, this one includes no specification of sailing times or directional guides based on the sighting of asterisms and shows little that a local navigator could not have committed to memory.[11] Writing of navigation, as currently practiced by seamen from Trengganu, a Malay state not far south of Pattani, Gosling observes:

> Navigation is simple, based primarily on piloting from known landmarks. The use of a simple and usually inaccurate hand compass for extended voyages out of sight of land is common. No charts are used and successful piloting depends a great deal on experience and judgment: "One must have a map in the heart." Whether in the heart or the head, the "mental" maps of the Trengganu navigators are impressive. They can accurately identify navigation routes by approximate bearing, and the intervening ports by name, for the entire Gulf of Thailand. They are able to sketch charts with remarkable accuracy, distorted only by the use of time as a variable instead of distance. In addition to these "heart" maps, complex sailing directions are passed on in the oral tradition.[12]

These observations lead me to suggest that the map was made to ease trading transactions between our hypothetical Pattani merchant and his foreign clients. More specifically, it would inform those individuals of areas from which the merchant might be expected to obtain the goods they sought and, incidentally, would let them know that an overland route was available for obtaining or disposing of goods if its use became necessary.

To conclude my discussion, I take note of a group of three remarkably similar nautical charts from a century or so later than the Malay map. Each of these covers the greater part of Southeast Asia. All three are exhaustively analyzed by Le Roux in a scholarly tour de force on which most of the following discussion is based.[13] All include abundant toponymic detail in Bugi, as well as hundreds of depth soundings noted in arabic numerals written in the Western style. Though all employ the language and script of the Bugis, who are to this day the foremost among the indigenous navigators of the Malay world, they appear to have been adapted from one or more European prototypes. One of the maps is shown in full in figure 19.4. This map was reported, as of 1935, to be part the map collection of the Koninklijk Bataviaasch Genootschap van Kunsten en Wetenschappen, in what is now Jakarta; but I do not know what successor organization came into existence after Indonesia obtained its independence or whether the map is still there. An excerpt from another nautical chart appears in figure 19.5. The latter work is in the map library of the Geografisch Instituut van de Rijksuniversiteit, Utrecht. A third chart is in the Museo Naval in Madrid. In the rest of this account I shall refer to these maps as the Batavia, Utrecht, and Madrid maps.[14]

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10. Paul Wheatley, "A Curious Feature on Early Maps of Malaya," *Imago Mundi* 11 (1954): 67–72. Wheatley lists thirty-two such European maps. Most show only one transpeninsular river, but some show two. All the routes shown lie to the south of the one on the map we are now considering (fig. 2, p. 68), which is appropriate in light of Pattani's relatively northerly location, but a number do have the same eastern terminus in the Pahang River.

11. On South Asian sailing maps, see Joseph E. Schwartzberg, "Nautical Maps," in *The History of Cartography*, ed. J. B. Harley and David Woodward (Chicago: University of Chicago Press, 1987–), vol. 2.1 (1992), 494–503.

12. L. A. Peter Gosling, "Contemporary Malay Traders in the Gulf of Thailand," in *Economic Exchange and Social Interaction in Southeast Asia: Perspectives from Prehistory, History, and Ethnography*, ed. Karl L. Hutterer (Ann Arbor: Center for South and Southeast Asian Studies, University of Michigan, 1977), 73–95; quotation on 85.

13. C. C. F. M. Le Roux, "Boegineesche zeekaarten van den Indischen Archipel," *Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschap*, 2d ser., 52 (1935): 687–714. This article was translated for me in its entirety by L. Ruyter, whom I hereby thank.

14. The Batavia map, the only one of the three I have not personally seen, was registered in the catalog of maps in the year 1913 as number 1410. The Utrecht map has been thoroughly studied, in respect to the island of Sulawesi, by Edouard Cornelius Abendanon, *Midden-Celebes-expeditie: Geologische en geographische doorkruisingen van Midden-Celebes (1909–1910)*, 4 vols. (Leiden: E. J. Brill, 1915–18), 4:1868–71, particularly 1870–71 and pl. 183. The Madrid map, according to Le Roux, had the catalog number "R. 151," but it had none, I was told,

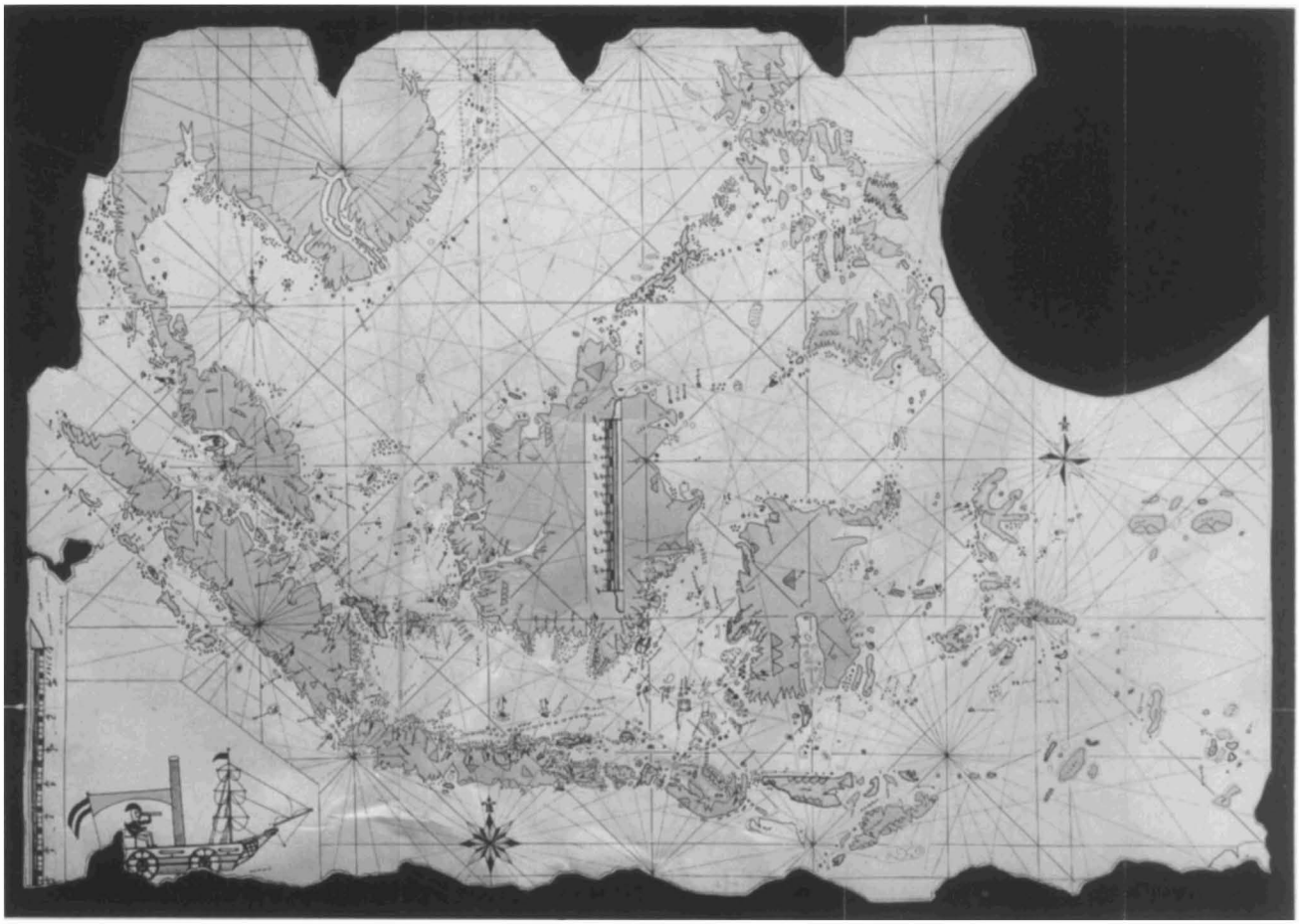

FIG. 19.4. REDRAWING OF A BUGI NAUTICAL CHART COMPILED FROM EUROPEAN SOURCES, CA. 1830. The original (current location unknown) is painted in several colors on cowhide, and is one of three similar works adapted from various Dutch cartographic sources and used by Bugi navigators over large parts of the Malay Archipelago. It was obtained from Bugi pirates on an island off the coast of Sumatra. In addition to the abundant toponymic detail and numerous depth soundings, the map abounds in details relating to coastal configurations, shore profiles (as seen from the sea), and the locations of reefs and shoals and of harbors, and it even shows the flags of European powers occupying some of the key maritime positions within the region.
Size of the original: unknown. Redrawing from C. C. F. M. Le Roux, "Boegineesche zeekarten van den Indischen Archipel," *Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschap*, 2d ser., 52 (1935), map IV.

The manner of acquisition of two of the three maps is of considerable interest. The Madrid map was found in a bamboo tube on a Philippine "Moro" pirate ship captured near Jolo, in the Sulu archipelago, and was subsequently given to a Spanish naval officer, who donated it to the Naval Museum in 1847. Given the language of the map, one may safely infer that it was acquired—whether by force or otherwise—from a Bugi source. A note accompanying the Batavia map indicates that it was found in 1859 by J. H. G. Jordens, a Dutch naval officer, off the coast of Sumatra "in the pirate *kampong* of Santhel, in the Bay of Sekana, on the Island of Singkep."[15] There is unfortunately no record of how the Utrecht map reached its present location.

All three of these charts are drafted in ink on cowhide, with highlights in various watercolors. They vary slightly in size and in area of coverage. The Utrecht map, the best-preserved example, measures approximately 76 by 105 centimeters; that in Batavia 75 by 105 centimeters; and that in Madrid 72 by 90 centimeters. The northern limit in all three cases is at about 17° or 18°N latitude, so that they include much of mainland Southeast Asia and almost the whole of the Philippines. To the south,

when I examined it in September 1984. It was then referred to simply as "Carta indígena filipina [*sic*] en dialecto BUGI MAKASSAR"; its inventory number was 90. It was, at the time, undergoing restoration. The map had been studied in detail two months previously by Jean-Paul G. Potet of Clichy, France, but I am not aware that any publication has come from his study.

15. Le Roux, "Boegineesche zeekaarten," 687 (note 13).

all include Timor, and the Utrecht map also shows a very small portion of the coast of Australia. That map also extends farthest west, including the Andaman and Nicobar islands, while the others stop just west of the northern tip of Sumatra. To the east, the Utrecht and Madrid maps extend to the eastern tip of the island of Ceram in the Moluccas, and the Batavia map also encompasses several additional islands as far as Aru, lying to the south of New Guinea, which is not indicated.

Almost all the information on the maps relates to features on or near the coast. Along many stretches of coast, highlands are drawn in frontal elevation, as they would be seen from the sea, and descriptive notes appear along some of them. Within the seas, features such as shoals, shallows, marine banks, and sea depths are shown in considerable detail. The number of depth soundings on each map runs into many hundreds. The Paracel Islands, in the South China Sea, are particularly prominent. Estuaries and embayments are greatly exaggerated in size, especially in respect to their depth, more so than one would expect of Dutch charts of the period. Three major rivers are also indicated as deep embayments, the Kapuas in western Kalimantan (Borneo); the Mekong, as far inland, it appears, as Phnom Penh; and the Mae Nam (Chao Phraya), at least as far as Ayutthaya. In virtually all these respects there are variations from map to map, suggesting that the mapmakers' local intelligence played some role in what was included. For example, the large Gulf of Tomini in northern Sulawesi (Celebes) is only suggested on the Batavia and Utrecht maps, on both of which the line of the coast is interrupted, whereas it appears with greater certainty on the Madrid map.

Distinctive colors are systematically used to differentiate particular types of features. Of particular note is that, at least on the well-preserved Utrecht map, where the colors are most vivid, the traditional nests of pirates occur among the islands that are drawn with a red border. In this connection Le Roux cites an 1873 Dutch report on piracy in the East Indies mentioning that "pirates indicated, by a smoking chimney *on their own charts*, the locations where they would run into steamships. . . . This served to warn them not to show up there."[16]

At many points flags—mainly Dutch, but in a few cases British—indicate the presence of European powers. These too differ substantially from map to map and are important features in dating each of them. For example, on none of the maps does a British flag appear at Singapore, which was established as a city in 1824, five years after the island was ceded to Britain. Curiously, on the Utrecht map there is a Dutch flag at Manila.

Another key feature used to date the maps is the side-wheeler steamboat, with auxiliary sails, drawn near the lower-left corner of the Batavia map. Since it was not until 1825 that the *Van der Cappelen* (the first small private steamboat to be built in the East Indies) was launched, no earlier date can be assigned to the map. But the boat shown appears to be of a substantial size and would more likely represent either the first steamboat to arrive from the Netherlands—in 1836 (only to be wrecked the following year)—or the large *Konigin der Nederlanden*, purchased from an English company in 1840, or some English ship. The flag of the steamship is Dutch; but the English firm of Maclaine Watson had already become established in Batavia by 1840, and the red jacket of the ship's captain suggests to Le Roux that he was English.[17] Additionally, all three maps are inscribed with dates in the Hijra (Muslim) Era, which tells when they were initially completed, though not necessarily the date of the information they contain, which either could be based on knowledge of a somewhat earlier date or could reflect updating with supplemental information of a later time. The Utrecht map is inscribed as A.H. 1231 (A.D. 1816) and the Batavia map as A.H. 1244 (A.D. 1828). The date on the Madrid map, seen only on a photograph, could not be read by A. A. Cense, the Dutch linguist who worked with Le Roux in interpreting all three charts.[18]

All three maps have one or more Western-style bar scales with regular distances marked off in French or German nautical miles, or both, and numbered in arabic numerals. The approximate ratio scale works out to be 1:4,500,000. All three maps are oriented toward the north and include compass roses (one on the Madrid map, two on the Utrecht map, and three on the Batavia example) and regularly spaced rhumb lines. Those running in the cardinal and secondary directions are drawn as thick black lines, and the sixteen intermediate directions are shown by lighter dotted or pencil lines.

Since Singkep, where the Batavia map was found, lies well over a thousand miles west of Jolo, where the Madrid map was obtained, it appears that the area of use of nautical charts copied by Bugis from European sources was extensive. One wonders, naturally, how many more copies may have been made and modified in addition to those we can document. Cense, to whom the Batavia map was lent, showed it to some Bugi sailors in Makassar, presumably in the early 1930s, and was told that only a few persons were left who undertook long sea voyages; but one of his informants stated that as a youth he had seen his grandfather consult a chart drawn on cowhide that might well have been of the type we are discussing.[19]

A puzzling feature of the maps is their maintaining a European system of rhumb lines. The position of the lines

16. Le Roux, "Boegineesche zeekaarten," 692; quotation on 690 n. 1 (note 13).
17. Le Roux, "Boegineesche zeekaarten," 693–94 (note 13).
18. Le Roux, "Boegineesche zeekaarten," 694–95 (note 13).
19. Le Roux, "Boegineesche zeekaarten," 694 (note 13).

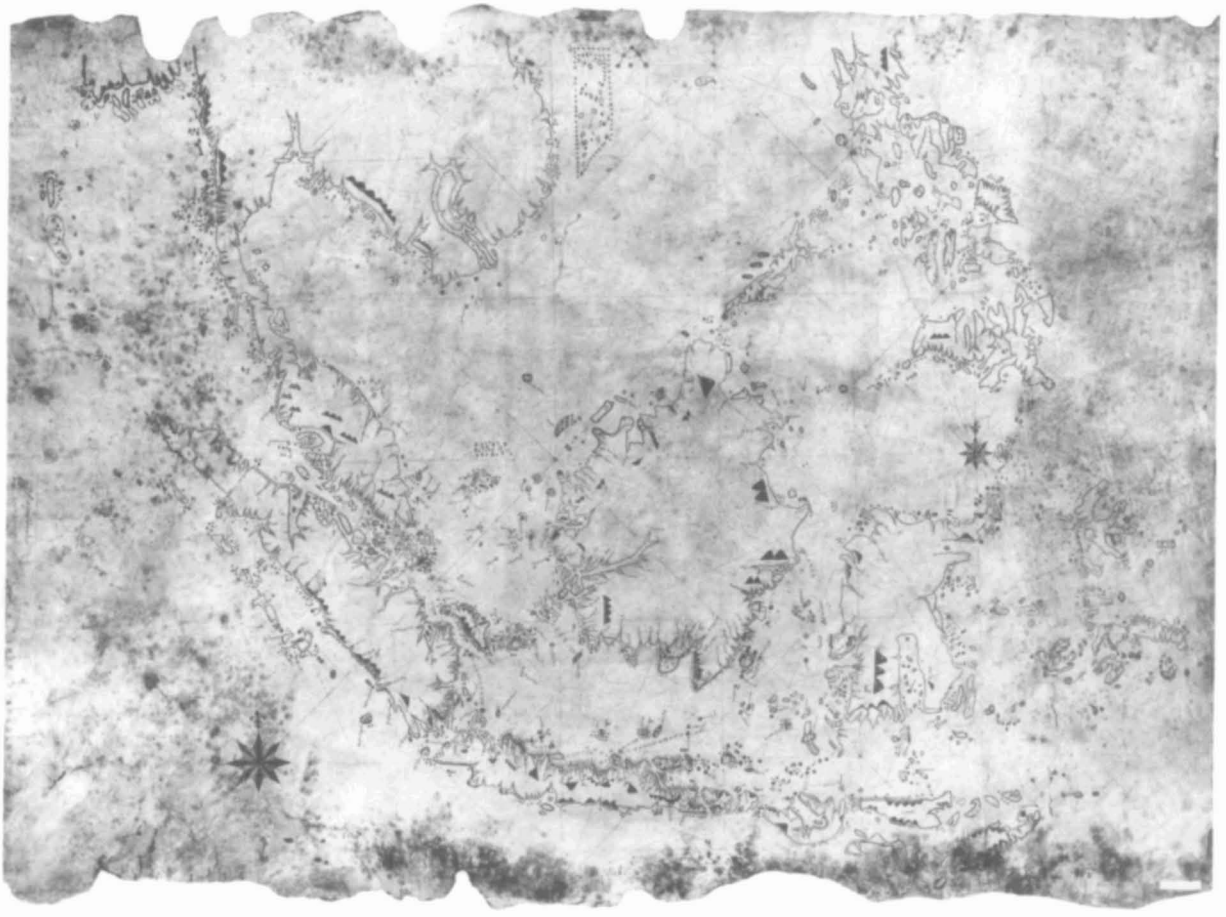

FIG. 19.5. JAVA AND NEIGHBORING ISLANDS, AS DEPICTED ON A BUGI NAUTICAL CHART. The chart from which this view is excerpted is the largest, best preserved, and territorially most extensive of the three such works that are known. Like the others, it is on cowhide. This small portion of the map conveys some idea of the remarkable detail that characterizes all three.
Size of the entire original: 76 × 105 cm. By permission of the Kaartenverzameling, Geografisch Instituut, Rijksuniversiteit te Utrecht (Sign. VIII, C.a.2.).

varies slightly from one map to another, but the set of main and subordinate directions is the same throughout. The use of rhumb lines runs counter to what I stated above, quoting Gosling, about the contemporary Malay method of navigation. But we must be remember that Bugi navigators traversed greater distances than did other maritime groups in Southeast Asia and might, even by the early nineteenth century, have altered their navigational practices as a result of contacts with Europeans. Alternatively, they may have copied the rhumb lines out of some sense of respect for the originals that led them to adhere faithfully to what was portrayed there, whether or not they perceived it as useful.

But, specifically, what map or maps provided the model for the remarkably detailed Bugi charts? To answer that question Le Roux compared the charts with a large number of European maps, mainly Dutch, that might have found their way into Bugi hands. He concludes that, in general, the configuration of coasts and other features of the Bugi charts corresponds to those of parchment manuscript charts of the second half of the seventeenth century and first half of the eighteenth, and he cites five such works in particular that are in the Dutch state archives in The Hague. Here and there, however, specific details appear to have been taken from later works, including, among others that are named, *Die nieuwe groote lichtende Zee-Fakkel* (The new great illuminating sea torch), published by Johannes Van Keulen II in 1753, especially in respect to its sixth section dealing with the Dutch East Indies; the Gerrit De Haan manuscript atlas of 1760–61, *Ligtende zee fakkel off de geheele Oost Indische waterweereldt* (Illuminating sea torch of the entire water world

of the East Indies); and for much of the Moluccas and the Philippines, various works by François Valentyn.[20] Hence one must conclude that the Bugi mapmakers acquired a number of European maps and had the ability to compile from them an original work at a more or less uniform scale, choosing from their diverse sources those features they had faith in while rejecting other portions.

We are quite certain of one of the Bugis' sources of European maps. A British navigator, Thomas Forrest (1729?–1802?), spent many years in the service of the East India Company, had a good command of the Malay language (the lingua franca of the East Indies) and, in a small ship (a ten-ton galley of local design) with a predominantly Malay crew, charted much of the coast of New Guinea, the Moluccas, and Borneo and visited Mindanao as well, during 1774–76. Of the Bugis, Forrest observed:

> They are fond of sea charts, I have given many to certain *Noquedas* (commanders of Prows) for which they were very grateful, and often wrote names of places in their own language, which I read to them on the charts; and they were always very inquisitive about Europe, and *Neegree Telinga* (Indostan).... Long before the passage round the Cape [of Good Hope] was discovered; and in those days, before Dutch oppression, the Buggesses certainly traded largely to most of the eastern islands ... and held many of them in subjection.

Elsewhere Forrest writes,

> I shall now describe the great gulf (*Sewa*) [Gulf of Bone in southern Sulawesi] from the information of *Noquedah Inankee*.... I presented the *Noquedah* with a set of the charts (*Pata*) and views of land (*Toolisan*) of my *New Guinea* voyage; on each of which he wrote name and explanation in the Buggess language, and was much gratified with the present.[21]

Forrest's generosity extended not only to the Bugis, but to other groups he came in contact with. One such group were the Illanos of the region around Illana Bay in southwestern Mindanao. He writes that during a prolonged layover during the time of the southwest monsoon, when he was the guest of the Illano sultan, whose hospitality he wished to repay, he

> constructed upon two thick planks, well pinned together, a map of the world; it was 8½ feet by 4½, allowing a margin, and when finished, by cutting a strong outline to mark both continents and islands (taken from a small plain chart), it was hung up in Rajah Moodo's hall, where, unless destroyed by fire, it is likely long to remain: whilst paper maps, had I such to present him, would, it is most likely, be lost, tore, or neglected.[22]

This world map is illustrated in figure 19.6. He also reports having given several mariner's compasses and a planisphere as gifts to various Illanos and Sulu Islanders.[23]

Of course, the maps that Forrest would willingly have parted with most probably were the most out of date among those in his possession. If we assume that those maps formed the models for the Bugi maps we are now considering, that would account for the coastal configurations of the late seventeenth or early eighteenth century as described by Le Roux.

But Forrest was hardly the first European to make maps available to curious individuals within the Malay world. Forrest also noted that Francisco Domingo Fernández Navarrete, who visited Makassar in 1650, observed even then that he was shown some European maps and books (as well as Chinese books) that formed part of the famous library of his host's father.[24] Le Roux suggests that the bibliophile in question was a renowned scholar named Karaëng Pattingalloang, who was appointed by the Dutch as ruler of Makassar. Pattingalloang was "a great lover of geography" and conversant with several languages, including Latin. For his services to the Dutch East India Company he was rewarded with a giant copper globe made by Joan Blaeu.[25]

It appears, then, that we can take it as established that Bugi navigators appreciated maps and had little difficulty understanding those of foreign origin. Le Roux states his conviction that apart from maps received from Forrest, the Bugis bought maps from employees of the Dutch East India Company, although these likely were poorly printed maps from atlases and not patented company maps.[26] But when they and neighboring seafaring peoples of South-

20. Le Roux, "Boegineesche zeekaarten," 696–97 (note 13).

21. Thomas Forrest, *Voyage from Calcutta to the Mergui Archipelago, Lying on the East Side of the Bay of Bengal* (London: J. Robson, 1792), 82 and 87. A very revealing account of Forrest appears in Leslie Stephen and Sidney Lee, eds., *The Dictionary of National Biography: From Earliest Times to 1900*, 22 vols. (first published in 66 vols., 1885–1901; reprinted London: Oxford University Press, 1937–38), 7:443–44.

22. Forrest, *Voyage from Calcutta*, 139 (note 21). The context in which the quoted passage appears is of some interest. It forms part of a several-page disquisition titled "Idea of Making a Map of the World," in which Forrest asks, "Why does nobody turn a level verdant plain of a very few acres into a map of the world?" He then proposes the means of executing such a project, which he suggests "would be pleasant and healthful to young folks,... and make very young persons expert in simple geography, far beyond what they get from books and maps even at a more advanced age" (139). The point of citing this passage is that it demonstrates, as do others in Forrest's narrative, that he was a teacher by inclination. To what extent, over his many years of working amicably among Malay peoples, he might have imparted useful cartographic knowledge to his indigenous shipmates and to the chiefs he befriended is worthy of conjecture.

23. Le Roux, "Boegineesche zeekaarten," 699 (note 13).

24. Forrest, *Voyage from Calcutta*, 81 (note 21).

25. Le Roux, "Boegineesche zeekaarten," 699–700 (note 13).

26. Le Roux, "Boegineesche zeekaarten," 701 (note 13).

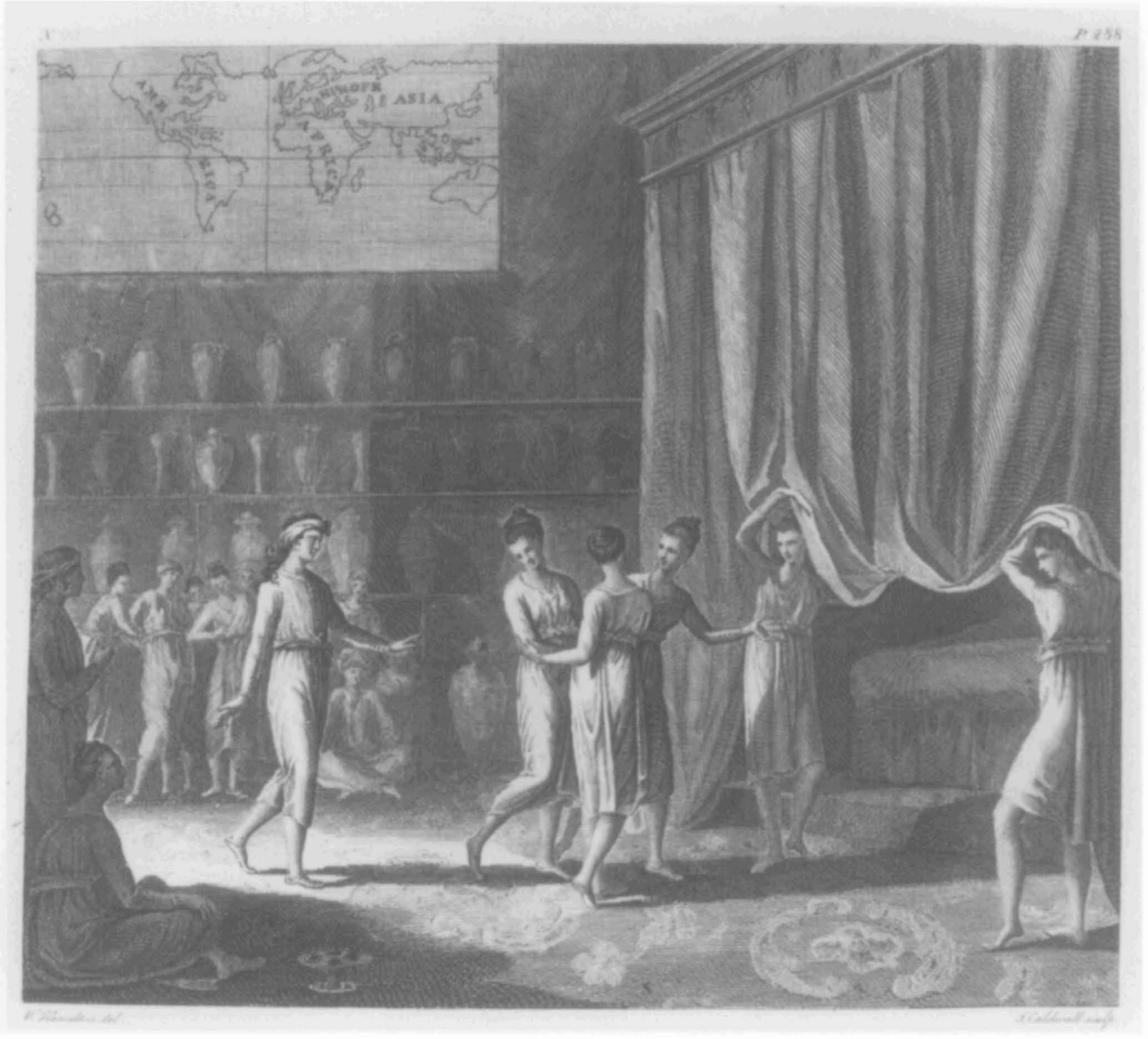

FIG. 19.6. WORLD MAP MADE BY THOMAS FORREST ON THE WALL OF THE ROYAL CHAMBERS OF THE SULTAN OF MAGHINDANO (MINDANAO), 1774. Forrest, a British navigator and hydrographer who was obliged by circumstances to spend some months as the guest of the sultan, drew on wood an illustrated large map of the world, which he then presented to his host in return for his hospitality. The romanticized portrayal of a nuptial scene has nothing to do with the essential point that this was only one of numerous examples of the two-way transmission of cartographic information between Europeans and various seafaring Malay peoples, of whom the Bugis displayed the most avid curiosity about all matters relating to geography and navigation.
From Thomas Forrest, *Voyage from Calcutta to the Mergui Archipelago, Lying on the East Side of the Bay of Bengal* (London: J. Robson, 1792).

east Asia began to make maps on their own is a question that calls for additional comment. Leaving aside the already discussed question of the alleged fifteenth-century Javanese map of eastern Indonesia that was imparted to Rodriguez in 1511, there is other unmistakable evidence of Indonesian maps.

Although he did give maps to Malays, a hasty perusal of two of Forrest's books on his voyages in Southeast Asia reveals no instance of his having received maps from them. Notices in an 1832 catalog of Malay manuscripts, however, provide evidence to that effect. Among the Bugi manuscripts in the library of the renowned Malay scholar William Marsden (1764–1838) were noted maps with place-names written in Bugi characters, presented by Forrest to Marsden. The number of maps is not stated. A footnote to the notice says that Marsden gave the orig-

inals to the "Bibliothèque de la Société asiatique de Londres."[27] Le Roux's search for the maps proved unsuccessful. The catalog also notes that a Prince Fakkymoulana, brother of King (i.e., sultan or "rajah") Pahareddin of Maghindano (an old name for Mindanao) presented Captain Forrest with several navigation maps written in "Maghindano."[28] These were very likely in exchange for the wooden map of the world that Forrest made for the sultan. One of these maps, said by Le Roux to be in the London Museum (British Museum?), is mentioned in Forrest's account of his trip to Mindanao. I do not know whether that or any of the associated maps survives. Le Roux appears not to have been aware of the existence of any but the published example.[29] He does, however, note a statement in the catalog of the Bibliotheca Marsdeniana in London that says "a map of the Dutch East Indies is in the collection of the Nederlandsch Bijbelgenootschap [Dutch Bible Society], on which the names are written intermittently in Makassar [Bugi] script." Le Roux's attempt to find that map was also fruitless.[30]

Forrest's more illustrious contemporary, Alexander Dalrymple, was also the recipient of Malay maps. He noted, for example, that in 1764 while he was in the Philippines a servant, Pedro Manuel from Ilocos on the island of Luzon, prepared a plan on which "the bearings of several places . . . [were] found to agree with their positions as I [Dalrymple] had determined them."[31] There are additional indications of Dalrymple's reliance on local sources, including maps, to supplement his own hydrographic charting. His "Map of Part of Borneo and the Sooloo Archipelago: Laid down Chiefly from Observations Made in 1761, 2, 3, and 4," published on 30 November 1770, bears a note just below the title that reads, "The Coast of Borneo from Unsang [east of Sandakan in what is now Sabah] Southward is not confirmed by any exact Observations but is laid down from a Sketch of Dato Saraphodin and from a Chart of Noquedah Koplo who came up that Coast in 1761." The stretch of coast in question is several hundred miles long and shown with a degree of detail not remarkably different from that of the rest of the map. Another note on the map indicates a number of places "well determined" from Dalrymple's own observations, as well as others based on bearings by C. Alves, and then adds, "The other Places are from Sketches I received from the Sooloos [a Malay people of the Sulu archipelago], but chiefly from the information of Bahatol an intelligent old Pilot [ethnic identity not given, but surely of some Malay group]." A Dalrymple chart at a larger scale, "The Sooloo Archipelago Laid down Chiefly from Observations in 1761, 1762, 1763, and 1764," published on 30 November 1770, bears a note that certain observations marked "F" were laid down "by the Falmouth, Man of War not very correctly determined," while others marked "S," were "from the Report of the Sooloos." I counted nine places of the latter type. Five of these were individually delineated banks, the largest of which covered an area of about fifteen by three kilometers, and four were points indicated as "no ground," presumably signifying soundings that failed to determine the depth of the sea floor. Thus, in the absence of adequate surveys by European hydrographers, Dalrymple had enough confidence in the observational and sketching capabilities of local Malay seamen to put their findings on his own charts.[32] There are, however, no firm grounds for supposing that they were then in the habit of preparing charts or sketches of any kind except at the request of Europeans, despite one or more possible exceptions cited above.

Until now no one besides Le Roux, so far as I am aware, has made a sustained and systematic effort to uncover evidence of Malay nautical maps, and no one at all has tried to find such maps from mainland Southeast Asia—which, if they existed, would not likely be numerous. But further searches within the libraries and private archives in that region and in the relevant archives of the former colonial powers definitely seem warranted.[33]

27. "Cartes de l'archipel oriental, avec les noms des lieux écrits en caractères boughis (reçu du C. Th. Forrest)," in E. Jacquet, "Mélanges malays, javanais et polynésiens," *Nouveau Journal Asiatique*, 2d ser., 9 (1832): 97–132 and 222–67, esp. 262–63.

28. Jacquet, "Mélanges Malays, Javanais et Polynésiens," 263 (note 27).

29. Le Roux, "Boegineesche zeekaarten," 699 (note 13); Thomas Forrest, *A Voyage to New Guinea, and the Moluccas, from Balambangan, Including an Account of Magindano, Sooloo, and Other Islands . . . during the Years 1774, 1775, and 1776*, 2d ed. (London: G. Scott, 1880; reprinted Kuala Lumpur: Oxford University Press, 1969), pl. 18 (in two parts).

30. Le Roux, "Boegineesche zeekaarten," 689 (note 13).

31. Alexander Dalrymple, *A Collection of Charts and Memoirs* (London, 1772), viii. I am indebted to Andrew Cook, Oriental and India Office Collections, British Library, for this reference. Though described by Dalrymple as a "native," Pedro Manuel may have been, in Cook's opinion, partially of Spanish extraction (correspondence dated 17 March 1993).

32. I have consulted only a few of the numerous charts by Dalrymple at the James Ford Bell Library, University of Minnesota, and think it likely that a more extended search would yield many examples of the use of indigenous sources in addition to those I have cited.

33. I was told, for example, by the librarian of the Centre for Southeast Asian Studies in Singapore that there were indigenous maps in the Sarawak Archives in Kuching; but my letter to that agency was not answered. A personal visit would probably have yielded the information I sought.