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Afonso de Albuquerque's Pre-Portuguese 'Javanese' Map, Partially Reconstructed from Francisco Rodrigues' *Book*

1. Introduction

The existence of pre-Portuguese maps in the Indonesian Archipelago is well attested. Ludovico de Varthema, a Bolognese who travelled in South-east Asia a few years before the arrival of the Portuguese, mentioned in passing that the pilot of the ship that took him from Brunei to Java in about 1505 used a compass or lodestone¹ and a large navigational map on which there were many lines indicating the winds. Ramusio described this map as having 'lines all over, perpendicular and across' (Wieder 1918:229). Afonso de Albuquerque, the second Governor of India, in his letter to King Manuel of Portugal of 1 April 1512 gave a detailed description of a Javanese map², appending *hum pedaço de padram* (a piece of map) copied from the original by Francisco Rodrigues. About 1514 Tomé Pires mentioned indigenous³ charts as an important source of information for his *Suma Oriental*, though less so for cartographic and navigational purposes as they lacked rhumb lines.

With the progress of Portuguese surveying and cartography, many such older charts disappeared through sheer neglect. Others may have been deliberately destroyed following the secrecy enjoined by Dom Manuel by Royal Decree of 13th November 1504 with respect to all maps, charts and log-books connected with navigation south of the equator. Not a single

¹ The use of the magnetic needle in Chinese navigation is on record since the eleventh century, and is referred to in Arab sources since 1282 (Teixeira da Mota 1963:60-62).

² This map will be referred to in the present article as 'Javanese' for no other reasons than that Albuquerque acquired it from a Javanese pilot, that its labels were in Javanese characters, and that he had had these explained by a (second?) Javanese.

³ The term '(Muslim) indigenous' here is my translation of Port. '*mouro*'. Teixeira da Mota (1963:89) implied that Pires was referring to Arab maps.

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indigenous specimen is known to have been preserved, which presumably explains why pre-Portuguese Indonesian cartography has never been the subject of any specific study.

In this article, I shall first look for traces of such maps where these are most likely to be found: in the oldest still extant Portuguese maps, notably those in Francisco Rodrigues' *Book*, the Reinel maps, and folio 3 of the 'Miller Atlas'.⁴

Rodrigues was the cartographer on the first Portuguese voyage to the Spice Islands in 1512 under the command of Antonio de Abreu. Of Rodrigues' work, only his hand-written *Book*, now preserved in the Bibliothèque de l'Assemblée Nationale in Paris, has survived. It is commonly accepted that Rodrigues drew the maps of eastern Indonesia in this *Book* on the basis of the observations he made during this expedition, marked the expedition's itinerary on these maps, and added some details from indigenous charts.

I shall demonstrate that Rodrigues' maps of the Indonesian Archipelago do *not* show Abreu's route, and further that these maps together constitute an incomplete and imperfect copy of Albuquerque's Javanese map which was not intended for further use. I will demonstrate in addition that in Portugal the Reinels combined the results of Rodrigues' survey of the southern coast of Seram with some details of another indigenous map, and that a third indigenous prototype was used in the preparation of folio 3 of the Miller Atlas.

2. Francisco Rodrigues' Book (I)

Shortly after the conquest of Malacca in August 1511, Albuquerque acquired *ũa grande carta* (a large map) from a Javanese pilot, presumably one of the many whose ships were destroyed during the fierce fighting. He wrote to King Manuel that it showed

'the Cape of Good Hope, Portugal, the land of Brazil, the Red Sea and the Persian Gulf, the Clove Islands, the navigation[al routes] of the Chinese and Gores⁵, with their sea lanes and the direct routes their ships take [...]. It seems to me the best thing I have ever seen, *Senhor*. [...] It had the names in Javanese characters, but I had these explained by a Javanese who was able to read and write.'

The presence of 'the land of Brazil' on this map is reminiscent of the 1513 map of Piri Re'is. Both maps inspired several wild theories which – as far as

⁴ Cortesão (Cortesão and Teixeira da Mota 1960, I:61) proposed replacing this name with 'The Lopo Homem – Reinels Atlas of 1519'.

⁵ There is no consensus about who these Gores were; Pires stated that the names Gores and Lequios (Ryukyuans) were synonymous, but his description of the country of the people concerned suggests Korea rather than a group of small islands.

the Javanese map is concerned – were disproved by Cortesão (1935, II:126-8). The inclusion of information about Brazil testifies to the efficiency of Arab commercial and scientific intelligence, and to the rapid spread of new information in maritime Asia. The inclusion of the sea lanes of the Chinese, on the other hand, might be the result of ‘an adaptation of Chinese documents comparable to the *Wou pei tche*, which were probably left in Java or Malacca by the expeditions of Tcheng-ho in the fifteenth century’ (Manguin 1972:52).

The original map was lost together with numerous other treasures, whose value is currently estimated at between one and nine billion dollars – if they were ever found – , in the shipwreck of the *Froll de la Mar* (*Time Magazine* 43 (1993):45). In order to give Dom Manuel at least an idea of its quality, Albuquerque enclosed *hum pedaço de padram* (a piece of map), copied from the original by Rodrigues, with his letter. This *pedaço*, however, only showed what in the Far East was of practical importance, such as:

‘where the Chinese and the Koreans come from, and what route Your ships should take to the Clove Islands, and the location of the gold-mines, and of the island of Java[,] and of Banda of the nutmeg and mace, and the kingdom of Siam, and also the farthest point of Chinese navigation. [...] I discussed the reliability of this map with the pilot and Pero d’Alpoem so that they might fully inform Your Highness; you may take this *pedaço de padram* at face value and as being based on sound information, as it shows the genuine routes they follow on the way out and back; [however,] the group of islands called *Çelate*⁶, lying between Java and Malacca, is missing.’ (*Alguns Documentos* 1892:261).

The fact that even the King had to content himself with a partial reproduction implies that Rodrigues had not made any complete copies. For the area west of Ceylon the Portuguese already had their own maps, and the Javanese map apparently provided no new information with regard to that area. When Albuquerque mailed the *pedaço de padram* to Dom Manuel from Cochin in April 1512, Rodrigues was already well on his way to the Spice Islands, so that this copy must have been made in Malacca between August and December 1511, before the *Froll de la Mar* was lost. Rodrigues did not draw this *pedaço* for the King, who was to be presented with the original, therefore, but prepared it for use in the Far East. Undoubtedly several copies were made and it stands to reason that Abreu and Rodrigues took a few of these with them on the all-important expedition to the Spice Islands.

⁶ ‘Salites’ in the *Descobrimentos*; from Malay ‘*selatan*’, ‘straits, south’, denoting the Riouw and Lingga islands.

Rodrigues' *Book* contains twenty-six maps (*PMC* I, plates 34-36), a number of drawings, a number of nautical rules, and two ruttiers. Some of the maps and drawings are unfinished, while four folios contain wind roses and/or a scale of leagues but actually remained unused. All the lettering in the drawings and maps seems to be in Rodrigues' handwriting.⁷

The twenty-six maps can be divided into two groups, each presented in a distinct style of contour drawing. The two groups overlap in the area from Ceylon to the Sunda Straits.

(a) The maps on folios 18-30 and 114-116 are drawn in the usual, slightly angular Portuguese style; nos. 18-30 extend from Scotland to the north-western coast of Java, and nos. 114-116 are focused on the Mediterranean and the Black Sea areas.

(b) Those on folios 33-42 are drawn in a totally different style; unlike the maps of the first group, none of them includes a scale of latitudes and/or a scale of leagues. Nos. 33-37 show the area from Ceylon to Seram, and nos. 38-42 show parts of the coasts from Malacca to North China and perhaps some of the islands of the Philippines. In figure 1, I have tentatively combined folios 33-39 into a single map.

Within group (b), again, two, or perhaps three, different styles are distinguishable. Large islands and continental coasts are drawn in beautiful, fluent lines that show but little detail; to my knowledge, there is no other specimen of this style extant. Other islands, mainly smaller ones, are drawn in profile, 'which recall[s] the Arabic manner of charting' (Winter 1949:21) – a style that was hardly ever used by the Portuguese. Finally, Banka, Bali, Lombok and Sumbawa are drawn in a style vaguely foreshadowing that used on folio 3 of the Miller Atlas.

Scholarly attention in the past has focused in particular upon folios 36 and 37, which show the Indonesian Archipelago from Java on as far eastward as Seram and Halmahera. Only five of the place-names marked on them can be said with certainty to relate to Abreu's itinerary, namely *Agreçii* (Gresik, in East Java), *pude homde sse perdeo a ssabaia* (Sapudi, where the *Sabaia* was wrecked), *Gulli-gully* (the village in Seram where the ships waited out the westerly monsoon), *Bamda*, and *Cabo das fffroless* (Cape Flores⁸). The latter also appears in the panoramic drawings made by Rodrigues on the way back. These drawings, on the other hand, show several places that are absent on the maps.

It is certain that neither Abreu nor Rodrigues sighted Brunei, Udama

⁷ Cortesão (Cortesão and Teixeira da Mota 1960, I:82) dismissed Winter's contrary opinion.

⁸ 'Cape Flores' is a translation of the Malay Tanjung Bungah, referred to in the *Livro de Marinharia* as Tanjambão; the Javanese equivalent is Ujung Kembang. To complicate matters, Javanese *kembang tanjung* designates the fragrant *tanjung* flower.

2. Indonesia as it actually is, with some of the names from Rodrigues' map and Abreu's itinerary marked in.

(Sollewijn Gelpke 1992), the Moluccas⁹, Halmahera, or other places to the north of Seram which are shown on folios 36 and 37. Since they were the first Europeans to sail beyond Java, both these islands and the names must derive from the Javanese map or from other non-Portuguese charts, for example those belonging to the indigenous pilots of Abreu's fleet.

When Winter tried 'to see in which way Rodrigues used the material he had access to for the European cartography [he] soon encounter[ed] considerable difficulties', and thus was 'led to the conclusion that [Rodrigues' maps] are more probably copies made from the Javanese pilot's chart' (Winter 1949:21, 23). In Cortesão's analysis, however, Rodrigues' maps of eastern Indonesia were made 'probably with the help of sketches and notes gathered during the voyage of 1512 and information obtained from oriental pilots'. 'Undoubtedly [the islands that were not sighted by Rodrigues] were copied from some Javanese map or [one] similar to the one mentioned by Afonso de Albuquerque' (Cortesão 1944:xciv; 1975:58-9). Cortesão concluded that 'the maps of the Eastern Archipelago and the Far East, the most important of all, can be dated *circa* 1513', and 'that Rodrigues' *Book* was abruptly sent to Lisbon, perhaps in compliance with some urgent demand, shortly after he had drawn the charts of the Eastern Archipelago and China, i.e. about 1514' (Cortesão 1944:xcv).

In this view, Rodrigues (a) did not have a copy of the Javanese map at his disposal; (b) drew his eastern maps himself in 1513, after his return to Malacca (Cortesão 1975:58), on the basis of observations and other sources; and (c) marked the route followed by Abreu on these maps. I shall first try to determine to what extent these maps reflect Abreu's itinerary and Rodrigues' observations, therefore.

3. Abreu's itinerary to Banda

As soon as Afonso de Albuquerque had conquered Malacca with a small group of fearless *fidalgos* in August 1511, he immediately had the message 'business as usual' sent in all directions, and prepared three ships to reconnoitre the route to Banda and the Moluccas, the ultimate goal of Portuguese expansion. The command of the expedition was entrusted to Antonio de Abreu, with Francisco Rodrigues as cartographer and one of the three European pilots. Two indigenous pilots completed the crew.

Abreu had strict orders to observe the utmost restraint and discretion everywhere, to allow no one except the *feitor* with three to four followers to go ashore anywhere, to conform to prevalent trading practices, to acquire a knowledge of the route, and to make maps. He was provided with presents and textiles for the kings and princes along the route and on

⁹ Unless otherwise stated, the name 'Moluccas' in this article is used in the old Portuguese sense of 'Clove Islands', hence designating Ternate, Tidore, Motil, Makyan and Bachan.

the Spice Islands (Albuquerque 1774, III:183), so visits to Bali, Sumbawa and the Timor archipelago may have been intended. He was to go to Banda first, and then bring his ships ashore on Cape *Ambam*, located on a large island four days' sailing from the Clove Islands, for any necessary overhauls (Sá 1956, I:36).¹⁰

The ships left Malacca in November 1511. They were to follow behind the junk of *nakhoda* (merchant ship owner) Ismael, who was to announce the new political situation in Malacca in all the ports of call and to acquaint the Portuguese with trading practices along the route (see figure 2).

Three more pilots were hired at Gresik, then the principal port of East Java. The *Sabaia*, under the command of Francisco Serrão, was wrecked in a storm at the island of Sapudi, east of Madura. The two remaining ships waited out the westerly monsoon in Guliguli, a village on the south coast of Seram, near its eastern extremity.

Not until three months later was Abreu able to set sail for Banda, where a junk was obtained to replace the *Sabaia*. He purchased a full shipload of spices, and the three ships, instead of sailing on to the Moluccas, returned to Malacca. Serrão lost his second ship in the Lucipara islands, to the south-west of Banda; he managed with nine men to make his way to Ternate, where he lived until 1521.

Abreu and Rodrigues returned to Malacca via Flores and Java, arriving there in December 1512 and sailing on to India in January or February 1513. Rodrigues was posted to the Red Sea area, and Abreu sailed home with the spices and the maps and reports of his explorations, but died in the Azores en route.

There is no extant first-hand account of Abreu's route on the outward journey. There has been no dispute about the first leg of this journey, from Malacca along the trade route to Gresik (*Agreçii* on folio 36), nor about the entire voyage from Banda back to Malacca, which from Solor to Krawang (West Java) is documented by Rodrigues' panoramic drawings. The part of the itinerary on the outward journey from Gresik to Guliguli, however, has been the subject of debate, giving rise to various widely diverging reconstructions. We shall only consider the authoritative one by Cortesão (1944:lxix-lxxxiii and 1975:58), who pointed out that Hakluyt, Bethune and Hamy, as a result of the incorrect translation of a single word in Galvão's *Descobrimentos*, were led to believe that Abreu took the long cabotage route via the Aru Islands.

Cortesão inferred Abreu's itinerary mainly from the 1555/1563 account by António Galvão, according to which the ships pursued a 'course to the north of a small island called Gunong Api (*Gumuapè*) [...]. From there they

¹⁰ The *Commentários* state the destination to be the Moluccas and 'all the other islands of that archipelago'.

went to the islands of Buru (*Burro*) and Amboina (*Damboino*), and coasted along that [island], called Ceram (*Muar Damboino*), and anchored in a haven called Guli Guli.'

He saw indirect confirmation of Galvão's description in a ruttier in the 1560 *Livro de Marinharia* which recommended the route to Banda via Cape Flores and Batutara, then NE to *Gilimão*¹¹ (Lucipara), and thence NNE to Buru and SE to Banda.¹² In practice there were several routes to Banda, the choice between which depended upon the type of trade in which the ships concerned were engaged (the long-distance bulk trade or the coastal retail trade) and was dictated by the vicissitudes of the monsoon.

Cortêsão quoted a passage from Pires' *Suma Oriental* stating that after Batutara 'the route is straight ahead for Banda and Amboina'. He concluded that 'no doubt this was the route followed by Abreu, and so Rodrigues recorded it on his map (folio 37), [which] has only thirteen place-names and inscriptions, seven of which refer to the said route: Cape Flores – Batu Tara – Buru – Amboina – Ceram – Gule Gule – Banda'. Taking all these elements together, he traced Abreu's itinerary in full, stating that after Sapudi 'they sighted Batu Tara and then Gunong Api, landed at Buru and Amboina, sailed along the south coast of Ceram, anchored at Gule Gule [...]' (Cortêsão 1944:lxviii, also 204 note 1).

The flaw in Cortêsão's argument is that he combined all the places mentioned by Rodrigues, Galvão and the *Livro de Marinharia* into a single course, taking it for granted that Galvão's account is trustworthy and that Rodrigues' maps are a reflection of Abreu's itinerary. In point of fact, neither premise is true.

Galvão's account is not wholly reliable, to put it mildly. The factors prompting this conclusion are:

- It jumps from Madura to Gunung Api (a Malay term meaning 'volcano'), about half-way between Flores and Banda, describing a stream of lava running from its peak into the sea. Rodrigues, on the return trip, made drawings of a different volcano, Sangeang near Sumbawa (*Ilha de fogo*, folios 83-84), but marked in neither on folios 36 and 37. Pires refers to Sangeang as *Foguo*, and it appears on Reinel 1517 as *Ilha do fogo*.¹³
- Galvão states that Serrão's ship was burnt at Guliguli because 'she was

¹¹ *Gilimão* probably stands for Kili Mai. The word '*kili*' ('quarter', sometimes 'islet') occurs in many toponyms in East Seram. Mai is the name of one of the Penyu Islands. The Indonesian name of the Lucipara Islands is Maisel (Mai anchorage?).

¹² Actually, Buru lies to the NNW of Lucipara, not to the NNE. For it to make sense, this passage should be read as: 'Cape Flores, Batutara, and NE to Lucipara; from Lucipara either NE straight to Banda or NNW to Buru and thence SE to Banda'.

¹³ Villiers confused the volcano Gunung Api in the Banda group with Sangeang and the Gunung Api north of Solor, possibly because he thought that Galvão was a travelling companion of Abreu's (Villiers 1981:742-3).

old and rotten'. We know for certain from Rodrigues' folios 36 and 43 that the *Sabaia* was lost at Sapudi.

– Galvão states Banda's position to be '*oito graos da parte do sul*' (Lat. 8° S.), which in fact is 3°30' too far to the south.

– As regards Galvão's statement that Abreu went to Buru and Amboina and coasted along Muar Damboino (Seram), it will be shown further down that in the sixteenth century the name Amboina was used to indicate both modern Ambon and the Hoamoal peninsula; the latter was often believed to be an island lying next to Seram. Barros, who frequently consulted Galvão on Moluccan matters, probably wrote on his authority that Abreu sailed from Java to the island of Amboina; in the next paragraph he states in exactly the same wording that Abreu went from Sapudi to the island of Banda, however (Barros 1946, Déc. III:265-6).

– Galvão's account seems to be based mainly upon hearsay. Or perhaps he just described the course he himself travelled on his way home in 1540.¹⁴

To demonstrate that Rodrigues' maps do not reflect Abreu's itinerary, we must return to Gresik, where Abreu hired three more pilots, in whose selection we may presume Rodrigues was involved. Since the Portuguese trusted that Ismael and the two pilots they had engaged at Malacca were experts on spice routes, the three additional pilots were probably hired for their experience and their charts of the waters between the islands on the route to Sumbawa and perhaps Timor. From Gresik the ships followed a course between Java and Madura.

I would posit that after the loss of the *Sabaia*, Abreu decided to give up the secondary visits in Nusa Tenggara so as not to jeopardize the main objective of the journey: the exploration of the route to Banda and the Moluccas and the purchase of spices. He had *nakhoda* Ismael take the safe, direct route to Banda and steer clear of all obstacles; so they sailed eastwards through the Flores Sea, changing to an east-north-easterly course after Kalatoota.

The two ships could only sail before the wind. When approaching Banda, they could not reach it because of 'adverse weather'¹⁵, and were blown past Banda to south-east Seram. The mere fact that Abreu ended up as far east as Guliguli points to his following an east-north-easterly course from the Lucipara islands to Banda, far to the south of Buru and Amboina.¹⁶

¹⁴ In 1536 he sailed to Ternate via North Borneo, but there is no record of the route he followed on the way back.

¹⁵ Statement by Diogo Brandão in the 'Process of the Moluccas' (Cortesão 1944:lxviii).

¹⁶ The meticulous Rumphius stated in his Description of Amboina that Abreu sailed from Java to Banda, but did not mention him as the first Portuguese visitor to Ambon or Buru (Rumphius 1983:206). The claim that Abreu erected a column in Amboina 60 (sic) miles from Gresik is based upon a confused statement by Maffei in 1614,

Abreu had orders to visit Banda first, and then to beach his ships for any necessary repairs at Cape Ambam, on a large island four days' sailing from the Clove Islands (Sá 1956, I:36). Albuquerque must have based this unambiguous instruction upon information from people whom he trusted and who knew the area, probably Ismael and the two pilots.

This instruction implies that Abreu expected to have some three months' time to visit Banda and then to continue eastward to the Seram Laut and Gorong area. There he would have to wait for the easterly monsoon to carry him to the Moluccas along the usual route via north Seram. We have to look for Cape Ambam on the *northern* side of Seram, therefore. On folio 37 the name Ambom indeed appears in the north-western point of Seram¹⁷, the Hoamoal peninsula.

There is no place Ambam in Hoamoal on record¹⁸, but according to the *Suma Oriental*, 'the Amboina islands are these: Amboina, Hitu, Haruku [etc.],' and 'Amboina is one island and next to it are Hitu (*Yta*) [etc.]' (Cortese 1944:210-1). Hitu is the old endonym for modern Ambon, and clearly Pires was also referring to a different island by 'Amboina'.

Antonio Pigafetta's 1521 journal leaves no doubt that the Hoamoal peninsula was referred to as 'Ambon' island. It says: 'Ten *leguas* east of [Buru] is a large island which is bounded by Jiaalolo [Halmahera]. [...] It is called Ambon. Between Buru¹⁹ and Ambon are found three islands surrounded by reefs, named Vudia, Cailaruri, and Benaia.' (Pigafetta 1906:149 and 153.)

The three islands, which can only be modern Manipa, Kelang and Boano, and the proximity of Halmahera point to northern Seram rather than modern Ambon. The latter appears as Leytimor (the eastern half of Ambon) among a number of islands (and regions) inhabited by cannibals which Pigafetta did not himself observe; of the ones that can be identified, several lie in and off southern Seram, namely Silan (Seran), Noselao (Nusalaut), Biga (Bega in Sanana or Piru in Seram?), and (a second) Benaia (Benuar). In many Portuguese, Spanish and Dutch sources, the island of Seram and the Hoamoal peninsula were referred to as Ambon, Amboina and Muar d'Amboina until the end of the sixteenth century.²⁰

cited by Rumphius in his History of Amboina.

¹⁷ The name Seram derives from Seran, designating a region in south-eastern Seram.

¹⁸ It appears as Buoino on the maps by Lázaro Luís (1563), who left Seram unnamed (*PMC* II, est. 217), and Bartolomeu Velho (c. 1560), which shows both 'ceiram' and 'amboino' (*PMC* II, est. 234).

¹⁹ On the map in the French ms. (Pigafetta 1969), Buru is erroneously labelled 'Tenetum'. The map in the Italian ms. (Pigafetta 1906) labels modern Sanana as 'Tenetum'.

²⁰ As 'I. de Amboina' by Gaspar Viegas in 1537 (*PMC* I, 52); as '*batachina de ambo*' by Diego Homem in 1568 (*PMC* I, 139); and as 'Ambon' on Mercator 1569,

Rodrigues entered no name, and not even an island, in the spot on his map where the modern island of Amboina should be – an unlikely omission if Abreu indeed visited it.

After three months of fretting, Abreu was finally able to leave Guliguli for Banda just before or at the beginning of the 1512 easterly monsoon, which in eastern Indonesia blows from the south-east and accordingly is called '(*angin*) *selatan*', 'south (wind)'. Here he was able to buy a ship and a load of spices. To obey his instructions to visit *Ambam* and the Moluccas, however, he would have had either to wait in Amboina or Buru for the next westerly monsoon or to stay almost a year in the Banda-Gorong area waiting for the 1513 easterly monsoon²¹; in either case he would not have been back in Malacca until the second half of 1514. He apparently judged that any further information on the spice routes was not worth as much time as this, or the concomitant risk to his cargo, and decided to return to Malacca in 1512.

Serrão's second shipwreck is evidence that this time the ships followed a course to the south of the Lucipara Islands. Serrão would have been safe if they had taken the northern route, but in that case the ships might have been trapped east of Sulawesi for months.

Sailing from Lucipara to Solor²² and Flores, as is evident from Rodrigues' drawings (folios 43-44), they may have sighted Gunung Api. Yet Rodrigues did not mark this volcano on his map, and on his drawing of Solor/Alor noted that this was the first land they had sighted since Banda. If he did see Gunung Api, he paid no attention to this lonely rock, so it was probably dormant in 1512.

As regards Batutara, Tomé Pires found out from indigenous informants and their maps that from this island opposite Solor²³ one took 'the route before the wind to Banda and to Ambon' (*a rrota abatida pera bamdan & pera ambon*). In mentioning Banda first and using the word '*pera*' twice, Pires seems to be talking of two different routes, both with Batutara as starting-

Ortelius 1570, and Langren and De Houtman 1600. Galvão stated in his account of Abreu's itinerary that the latter 'coasted along 'Muar Damboino' to Guliguli (*Descobrimentos*), but in the *Treatise on the Moluccas*, attributed to Galvão, 'Muar' refers to Hoamoal (Jacobs 1971:303); the name Ceram does not occur in either. Velasco (1894:578) mentions an 'Isla de Ambon', 60 or 70 *legas* long, at 3°30' S.

²¹ According to a statement by Rui de Brito Patalim at the Moluccas Process, 'the two [remaining] vessels went [from Guliguli] to Banda because the weather was not favourable for going to the Moluccas' (quoted by Cortesão 1944:lxvii).

²² Probably Alor is meant here, as is suggested by Cortesão 1944:526.

²³ Batutara is beyond doubt the small, 818m-high island of Komba, 40 km. to the north of the Solor Islands. Pires described it as 'a heathen island with many foodstuffs', which does not seem to fit Komba at all. As he said exactly the same of Solor in the preceding paragraph, perhaps we must once more put the blame for the inconsistency on an ignorant copyist.

point, namely the north-north-eastern one direct to Buru and Amboina (or Hoa Moal), whence one could sail to either the Clove Islands or Banda, and the east-north-eastern one, going in a straight line via Gunung Api and the Lucipara Islands to Banda.²⁴

Once Abreu arrived in the Solor/Alor area on his way back, the peak of Komba must have been visible on the northern horizon. If Rodrigues had marked Batutara in on this map from personal observation, he would certainly not have drawn it in profile, nor as seen from the north. So the drawing of Batutara on folio 37 is not the result of personal observation by Rodrigues, but was copied from an indigenous map.

Rodrigues' maps of eastern Indonesia include a few other peculiarities, as set out below.

(a) Folio 37 shows a curious distortion where the eastern half of Seram curves to the north and the Kai and Watubela islands have been compressed in a north-westward direction as if the maker had misjudged the space needed for that region. The western half of Seram is correctly represented in an east-west line, but the eastern half incorrectly in an almost north-south line, with 'Gulli-gully' marked at the angle which – if anything – represents Cape Seitú, west of Teluti Bay. Since Seram has never again been represented in this shape, Rodrigues may have personally observed that the northern bulge of Seram as it occurs on folio 37 did not exist, as he would have already learned from the indigenous pilots and the local population. He probably made the short trip through Kedda Creek, which links Guliguli with Arnanan on the east coast.

(b) Unlike the other large islands on folios 36 and 37, Seram does not bear a name (except *ambom* on the north-western tip), but has the words '*ceiram tem houro*' (Seram has gold) written next to Guliguli. This should not be read as a(n incorrect) reference to important gold-mines on Seram, but as specific information about Seram Laut, which was then a very wealthy regional emporium for products from New Guinea, with a brisk trade in slaves and gold (Sollewijn Gelpke 1994:131-3).

(c) On folio 36 a string of small islands shown in profile to the east of Madura represents the islets from Kangean to Kalaotoa. On folio 37 a number of strange wavy signs or symbols, each surrounded by tiny dots, extends from Kalaotoa to Buru. They are curiously reminiscent of the flow of the waves in the monsoon, and presumably indicate the monsoon route, just like the lines noted by Varthema. Similar signs on folio 38 perhaps indicate fairways between islets.

To recapitulate, the following peculiar features of Rodrigues' maps of eastern Indonesia are pertinent to our argument:

²⁴ This is in agreement with the reading suggested in note 12 with regard to the course recommended in the *Livro de Marinharia*.

- Rodrigues made drawings of the volcano Sangeang, but did not mark it in on folio 36;
- it is unlikely that on the outward journey Rodrigues observed Batutara from the north, and that if he did, he would have drawn it in profile; if he saw it on the way back, he would not have drawn it in profile as seen from the north;
- he probably sighted Gunung Api on both the outward and the return journey, but did not mark it in on folio 37;
- it is unlikely that he saw Buru; if he did, he would not have drawn it in profile as seen from the north;
- it is unlikely that Rodrigues visited the island of Amboina; if he did, he omitted to mark it in on this map;
- he did not rectify the shape of Seram in accordance with the results of his survey²⁵;
- Rodrigues on the return journey made drawings of Tuban, Japara and the area of Krawang (adding the note 'and we discovered the Island of Java up to here'), but failed to mark not only these places but also the corresponding coastline of Java in on folio 36.

Our conclusion must be, therefore, that folios 36 and 37 are definitely not a record of Abreu's itinerary to the Spice Islands.

4. *Francisco Rodrigues' Book (II)*

The pivotal question about Rodrigues' *Book* is why the author did not complete and update his maps of eastern Indonesia during, or shortly after, the expedition to Banda. Cortesão suggested that he stopped working on it in 1513 because it had to be forwarded to Lisbon, perhaps at some urgent official request. This is not an adequate explanation for the amazing absence of many details, for Rodrigues would have been able to add quite a few place-names and other information – if only the town of Malacca – even at short notice. We know from the *Suma Oriental*, written shortly afterwards, that such data were amply available. In the final analysis, Rodrigues added only the names of the few places where he went ashore himself: Sapudi, where he probably took part in the rescue of Serrão and his crew, Guliguli, and (possibly) Gresik, where he helped to select pilots.

From 1512 on, a stream of new information and updated maps began to flow to Lisbon, and in 1513 Abreu of course took some new maps with him to Portugal, presumably including an updated copy of the *pedaço de padram*. Since at least one, and probably two, copies of the *pedaço* had already been forwarded to Portugal, one wonders what in 1514 or 1515 could have been the special importance of Rodrigues' *Book*, and in particular of its outdated maps. As we shall see, however, Rodrigues' *Book* was not meant to be used by anyone.

²⁵ This survey is discussed below in section 6.

5. *The Javanese map*

In contrast with Albuquerque's eulogy, Tibbetts' conclusion was that the Javanese map 'can only have been very sketchy, for [in Rodrigues' maps of 1513] the coasts not already sailed by the Portuguese were shown in a very imperfect way' (Tibbetts 1992:256). In fact, Rodrigues' folios 33-42 are bad copies of a good map.

The map on folio 33 is hopelessly botched. River banks come down to the sea and then the seashore itself becomes the bank of another river. At least three different coastlines in the area from Madras to what seems to be the Brahmaputra River are mixed up and superimposed on the estuary of the Ganges (*Rio de bemgalla*), entailing the loss of a stretch of between 3° and 6° longitude. I was unable to unravel the tangle to my satisfaction. After a rough correction, however, folio 33 appeared to be drawn on about the same scale as folios 35-37.²⁶ But then other anomalies of and discrepancies between the maps of the second group began to stand out.

The maps on folios 34 and 38 seem to suffer from the same sort of defects. The Gulf of Thailand here is far too small, the Gulf of Tongking too big, and the town of Malacca is missing. So it looked as though these ancient and well-known trade regions had changed places. Once put in their correct places (see figure 3), they fit in quite well, and the scale of the maps is seen to approach that of folios 35-37. The large city on the coast of Vietnam that so far remained unidentified (Cortêsão 1944:523; Manguin 1972:156) is seen to be Malacca, although its location has shifted some distance to the north-east.

The maps on folios 35 and 36 are unfinished and look like preliminary sketches. Rodrigues identified only the extremities of Borneo, Sumatra and Java here. It seems rather unlikely that these reminders were present in the original. Their presence here proves, however, that Rodrigues was aware of Sumatra and Java each being a single, undivided island – something that Reinell did not yet know in 1517. On folio 36 the north coast of Borneo stops at Brunei, and the Lesser Sunda Islands at East Sumbawa.

Folio 37 seems to represent a correct copy, with only the south coast of Timor missing. The true shape of Sulawesi was only discovered by the Portuguese in the course of the sixteenth century, but may have been known in Majapahit in the fourteenth century (Sollewijn Gelpke 1992:245).

The coasts of China on folios 39-41 more or less join on to folio 38. The 'Ilhas Allegados' on folio 39 seem to represent the Spratly Islands, with Palawan to the east. The island labelled 'Lequeoller' and drawn in profile then would be Mindoro and/or Luzon as seen from the north-west.

²⁶ Cortêsão (1944:522-3) calculated the approximate scales of the maps on folio 33 at 1:6,000,000, folio 34 at 1:4,500,000, and folios 35-37 at 1:7,000,000.

All this confirms that the Javanese map constituted a single item, as Albuquerque's wording implied, and attests to its having been transferred piecemeal to the sheets of paper Rodrigues had at his disposal. When Rodrigues closed his Malaccan workshop in November 1511, and again when he returned from Banda, he had to hand the fair copies of his maps over to Albuquerque and Abreu for official use. He kept for himself folios 33-42 of the remaining preliminary and rejected maps. The name 'Emmanuel' written in highly ornate lettering at the head of the first page of his *Book* does not necessarily show that he dedicated it to King Manuel (Cortêsão 1944:lxviii). More likely, this page is a draft or a copy of the dedication that accompanied the original Javanese map on its ill-fated course to Lisbon.

Rodrigues took pleasure in preserving these bits and pieces as souvenirs of his voyage and of the cartographic marvel that was lost with the *Froll de la Mar*. Like his drawings, artistic masterpieces in their own right, the maps and his 1515-6 copy of the *Suma Oriental* found a place in his private collection.

The above interpretation explains why Rodrigues' maps were left unfinished and why they do not add up to a continuous map. It also provides an answer to Cortêsão's remark that 'we can hardly understand why [Rodrigues] did not include in his *Book* a rutter of the voyage to Banda. Perhaps he was unable to finish it in time, before the *Book* was suddenly sent to Lisbon' (Cortêsão 1944:xcvi). This ruttier may have been rather uninteresting, for that matter: after the catastrophe at Sapudi, the fleet took to the high seas, a good part of the way in bad weather. So most of the time Rodrigues was at sea. In view of the quite copious annotations in the Ceylon area on folio 33, it is doubtful that the sparseness of toponyms in the rest of Rodrigues' copies reflects the Javanese original.

For all their shortcomings, Rodrigues' maps of group (b) (see section 2 above) still answer Albuquerque's description of the *pedaço de padram*. Both maps show:

- the same area, from Ceylon (folio 33) to Seram (folio 37) to North China and Korea (folio 41, bearing the label '*ate aqui tem desscuberto os chims*' (the Chinese have discovered up to here));
- the sea lanes from Korea and China (folios 38-42);
- the kingdom of Siam ('amssiam' on folio 34);
- the routes to the Clove Islands (the waves on folios 36-37);
- the location of the 'gold-mines' ('*çeiram tem houro*' on folio 37);
- the islands of Java and Banda (folios 35-6 and 37).

4. Pedro Reinel's map of about 1517.

'And on both, the Riouw and Lingga archipelagos are missing between samgepura' (folio 34) and 'Ilha de Bamca' (folio 35).²⁷

For the very reason that these maps were rejected, the outlines and most of the (translated) labels on folios 33-42 of Rodrigues' *Book* show them to represent true copies of Albuquerque's Javanese map – except for the errors for which they were rejected.

As Brazil was discovered by the Portuguese in 1501, the Javanese map must have been updated not long before Albuquerque acquired it. This makes it about contemporaneous with the map of Piri Re'is, of which the part covering the east is lost. In view of their scope, both maps may have been scientific documents rather than tools for merchants and pilots.²⁸ Perhaps the surviving part of each map gives a general idea of the lost part of the other one.²⁹

It seems beyond doubt that both Arab and Chinese cartography contributed to this 'Javanese' map. Its representation of the area from Ceylon to Seram was remarkably accurate, except for the extreme eastern part of the Indonesian Archipelago. If we accept Rodrigues' copies as being true to the original, its style was unique. Nevertheless, it remains an open question to what extent this map and the two prototypes to be discussed in sections 6 and 7 below testify to the existence of a pre-Portuguese, distinctly Javanese and/or Malay cartographic science.³⁰ The present writer is not qualified to assess the origins and age of the underlying surveying and cartographic techniques.

6. Rodrigues and the origins of Reinel 1517

As regards the use made of Rodrigues' work by cartographers in Portugal, estimates range from a flat denial that he had any influence, viz. 'it would appear that Rodrigues did not influence Portuguese cartography, since on the [Reinel] charts of the Indian Ocean [...] large islands are completely missing, while Java is depicted as two islands' (Winter 1949:26), to a cautious admission that he may have had some, viz. 'evidently [the Portuguese] cartographers took their clues partly from maps similar to Rodrigues's, if not indeed from these [Rodrigues' maps themselves]' (Cortês 1975:60). Both these authors overlooked a particular aspect of the Reinel maps.

The anonymous map of about 1517 (see figure 4) that is generally attributed to Pedro Reinel was destroyed in the Armeebibliothek in Munich

²⁷ The Lingga islands are present on the Portuguese-style map on folio 30.

²⁸ Cf. Teixeira da Mota 1963:73.

²⁹ Cf. Tibbetts 1992:257, and 262, last paragraph.

³⁰ Cf. Teixeira da Mota 1963:73, 80-1, 89.

AS ON MAPS

INVERTED

REINEL 1517

ATLAS MILLER 1519

MODERN MAP ON SAME SCALE

S E R A M

5. Seram as it appears on different maps.

towards the end of the Second World War. Also lost was a 1519 copy of this map attributed to Pedro's son Jorge; a second copy dated about 1522 is preserved in the British Library (PMCI, est.10, 12 and 11).

On comparing Reinel 1517 with Rodrigues' maps, it is clearly seen to derive from a different prototype. It is less accurate in that Borneo is missing and that Sumatra³¹ is depicted as two islands. Also, Java and the Lesser Sunda Islands are greatly elongated towards the south. On the other hand, Reinel 1517 shows the Riouw and Lingga Islands and, far to the west of 'Solitarya' (a corruption of Batutara), 'Ilha de fogo', the volcano Sangeang.

Reinel 1517 bears no trace of the cartographic findings of Abreu's journey. To the east of 'Ilha de Jaavaa' it has labels similar to, but not identical with, those of Rodrigues' folios 36 and 37, viz. '*cabo da flloresta*', '*solitarya*' (which Rodrigues correctly referred to as Batutara), '*ilhas de babāy aquy nas maisis*' (the Banda islands, here grows mace), and '*ilhas de maluco domde a o clavo*' (the Moluccas, where the cloves are). Its indigenous prototype was less expertly translated than the *pedaço de padram*.

The most significant difference with Rodrigues' map is that Reinel 1517 shows Seram with a new southern coast and no north coast. This new coastline can only derive from Rodrigues' observations, as, in compliance with his instructions, he will have taken advantage of the three-month stay at Guliguli to map the nearby coasts. At first sight, this coastline looks rather sketchy, even dubious. When one collates it with a modern map of Seram, however, it appears to have been drawn in reverse.³² If one turns it around on a north-south axis (see figure 5), one obtains a remarkably accurate outline of South Seram from Amahai to Arnanan, the village on the east coast to which I suggested Rodrigues punted from Guliguli. Surely Rodrigues would have corrected the reversed representation of this coastline as well as the erroneous name *solitarya* if he had seen these. Hence it follows that he had nothing to do either with the prototype of Reinel 1517 or with the transfer of the results of his survey onto the Reinel maps.

This (indigenous or translated) prototype showed a monsoon route from a point to the north of Sumbawa to Butung that was something similar to the 'waves' on Rodrigues' maps on folios 36 and 37. Additionally it depicted a second trade route from Sumbawa to East Seram along the great arc of islands between them, and a third one from East Seram to an island

³¹ Rather than Java, as Winter believed.

³² Such a reversal is no exception in the work of the Reinels. On folio 3 of the Miller Atlas, Java and Madura with *pude* island are inverted (see Wieder 1918:231), as are also the islands of 'ambonyo' and 'buyo'.

which, from its relation to the Moluccas, seems to be Halmahera.³³ Reinell 1518 (generally known as Kunstmann IV) and 1519 are somewhat less detailed, but otherwise identical.

For some reason, however, the results of Rodrigues' survey were not transferred onto Reinell 1522. This map still shows the information contained on the prototype, namely the end of the southern island route in the area of Gorong, Seram Laut and East Seram. This early indication of the monsoon routes from Java to the Buru-Seram-Gorong area survived in the form of mainly non-existing islets and reefs on some Portuguese and Spanish maps until the end of the sixteenth century.³⁴

7. A trace of a third indigenous map

Like Reinell 1517, folio 3 of the Miller Atlas depicts Seram in reverse, as well as the two trade routes in the Banda Sea. From the fact that Sapudi and Guliguli are indicated on it and Ternate has a Portuguese standard marked in it, we can conclude that this map was completed after Reinell 1519.

The remarkable novelty about this rather chaotic map is that it depicts Seram with a correct northern coast. As the latter seems to be too good to be an inspired fancy, it was presumably copied from yet another indigenous map. Since Rodrigues expected to sail to the Moluccas by way of north Seram, he must have purchased or copied maps of that area. There can be little doubt that Abreu took these maps to Portugal along with the results of Rodrigues' survey.

³³ Hamy (1891:18) took this island to represent both the Onin Peninsula and the Papuan Islands, which were 'vaguely seen' by the Portuguese (apparently Abreu).

³⁴ See i.a. Bartolomeu Lasso 1590, map XII, from Madura to Bataimbar (Tanimbar). Nuño García de Torenó 1522 shows only the island route, but does so on a different scale from that of the Spice Islands (Skelton 1958: fig. 87).

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