

# **LOCATING SINGAPORE ON THE MARITIME SILK ROAD:**

**EVIDENCE FROM MARITIME ARCHAEOLOGY, NINTH TO EARLY NINETEENTH CENTURIES**



Artifacts from Bakau Shipwreck at the Maritime Experiential Museum and Aquarium, Singapore  
Photo by Foo Shu Tieng

**Kwa Chong Guan**



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# LOCATING SINGAPORE ON THE MARITIME SILK ROAD:

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# Locating Singapore on the Maritime Silk Road: Evidence from Maritime Archaeology, Ninth to Early Nineteenth Centuries

Kwa Chong Guan\*

In 2005, Sentosa Leisure Group purchased on behalf of the Singapore Tourism Board and Singapore government the cargo of a 9<sup>th</sup>-century shipwreck recovered off the Indonesian island of Belitung for US\$32 million.<sup>1</sup> This is a significant expenditure for a group of artefacts which at first glance has little relevance to Singapore's history – a history which has been officially claimed and publicly accepted to have begun with Stamford Raffles' arrival at the end of January 1819 to establish an East India Company settlement on the island.<sup>2</sup> "Modern Singapore," as the former Raffles Professor of History at the old University of Singapore, K G

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\* An amended version of this Working Paper was prepared for a June 2010 Asian Civilisations Museum conference, the proceedings of which will be published in "Innovation and Adaption: Marine Archaeology in Southeast Asia." The paper is based on and expands on a submission "Singapore's Maritime Shipping Heritage in the Pre-Modern Era: Evidence from Marine Archaeology, Tenth to Early Nineteenth centuries" by Derek Heng Thiam Soon, Kwa Chong Guan and Michael Flecker to an ASEAN-Committee on Culture and Information Symposium on "Maritime Ships and Water Crafts, Muzium Negeri Trengganu, Kuala Trengganu, 23-28 January 2006".

<sup>1</sup> The Sentosa Group Press Release on their purchase of the "Tang Cargo" is at [http://www1.sentosa.com.sg/about\\_us/press\\_releases/press\\_release\\_details.asp?id=11](http://www1.sentosa.com.sg/about_us/press_releases/press_release_details.asp?id=11) (accessed 18 Jun 2011).

<sup>2</sup> See the perceptive comment of Rachel Leow, who describes herself as "a fledgling historian," on "Curating the Oceans: The future of Singapore's past," in her "A Historian's Craft" blog at <http://idlethink.wordpress.com/2009/07/14/curating-the-oceans-the-future-of-singapores-past/> (accessed 4 Jul 2011) where she writes that "Curators and creative minds at the Singapore Maritime Heritage Foundation, which was brought into existence for the purpose of administering the treasure, are right now groping for a Grand Story, a narrative into which the Tang treasure can fit. In particular, there's talk of a great Maritime Silk Route Museum to be built in Singapore to house and exhibit these wares. Its story will no doubt vaunt Singapore's central place at the elbow of a great oceanic route that ran parallel to the overland Silk Road. Its objectives will no doubt be to inscribe Singapore into a wider and more ancient world history, and to give historical credence to a position that is crucial to Singapore's self-image today: as a global, maritime entrepot, and the lodestone on which Southeast Asia turns." A response to her entry points out that "the present owners would indeed try to weave a story of Singapore being a node in a thousand-year old trading route, but that would conflict with present doctrine that Singapore was a mere fishing village before the arrival of Raffles. Admittedly, historical accuracy has never stood in the way of entertainment for tourists, but it would be interesting to see a government-owned company try to square the circle of a glorious past that existed before the "official" history of Singapore begins." This report in a way joins this debate, not in attempting to "inscribe Singapore into a wider and more ancient world history" as Leow argues, but more in suggesting how the Belitung and other shipwrecks may provide a wider regional and long-cycle time context to explain the non-settlement of Singapore before 1819.

Tregonning, declared, “began in 1819. Nothing that occurred on the island prior to this has particular relevance to an understanding of the contemporary scene.”<sup>3</sup> These claims for starting Singapore’s history in 1819 beg the question of how nothing of significance occurred on an island that is a strategic junction of what has come to be known as the Maritime Silk Road linking the South China Sea with the Indian Ocean. This contradiction between Singapore being strategically located on the Maritime Silk Road and *terra nullius* until Raffles arrived was noted by Wong Lin Ken, Tregonning’s successor as Raffles Professor of History. Wong pointed out that “no historian has yet adequately explained why Singapore failed to be a major trading centre before the nineteenth century.”<sup>4</sup>

It is the contention of this paper that the evidence of the Belitung and other shipwrecks in the South China Sea may provide an answer to Professor Wong about Singapore’s location and fortunes on the Maritime Silk Road which an earlier generation of historians were unaware of. Working from only the textual records, these earlier historians could not reconcile Singapore’s supposed strategic location on the Maritime Silk Road with the paucity of references to the island in the documents they were examining.<sup>5</sup> For 14<sup>th</sup>-century Singapore, archaeological excavations on Fort Canning and its vicinity along the banks of the Singapore River since 1984 have confirmed the elliptical and fragmentary textual references to a thriving settlement, which an earlier generation of historians had queried the existence of.<sup>6</sup> Maritime archaeology may now provide the evidence to frame this settlement in a wider spatial context and longer cycle of time to help us understand its rapid rise which enabled it within some thirty years of its establishment to import some of the newest underglazed blue wares being developed in the Yuan kilns of Jingdezhen.

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<sup>3</sup> Kenneth Tregonning, “The historical background” in Ooi Jin Bee and Chiang Hai Ding, eds., *Modern Singapore* (Singapore: Singapore University Press, 1969), p. 14. The volume is a commemoration of the 150<sup>th</sup> anniversary of Raffles’ founding of Singapore.

<sup>4</sup> Wong, “A view of our past,” in Lee Yik and Chang Chin Chiang, eds., *Singapore in pictures* (Singapore: Sin Chew Jit Poh and Ministry of Culture, 1981), p. 15.

<sup>5</sup> For the period from the beginning of the Current Era to the 13<sup>th</sup> century, it is possible to identify approximately 24 ambiguous references to Singapore, a scant record for a supposedly geographically strategic location. However, there are more unambiguous textual references to Singapore after the 14<sup>th</sup> century. See Paul Wheatley’s benchmark study of these possible toponyms for Singapore in the classical texts in his *The Golden Khersonese; Studies in the historical geography of the Malay peninsula before A.D. 1500* (Kuala Lumpur: University of Malaya Press, 1961 and subsequent reprints).

<sup>6</sup> The 1984 excavations on Fort Canning are reported in J. N. Miksic, *Archaeological research on the “Forbidden Hill” of Singapore: Excavations at Fort Canning, 1984* (Singapore: National Museum Singapore, 1985). Miksic’s forthcoming *Singapore and the Silk Road of the Sea, 1300-1800* from National University of Singapore Press summarises the finds of later excavations in the environs of Fort Canning.

Much of our contemporary reconstruction of the Maritime Silk Road<sup>7</sup> through Southeast Asia has been based on a close reading of the classical Graeco-Roman texts, Arab rutters, Indian literary references to Suvarnavdipa/Suvarnabhumi, Southeast Asian epigraphic references to trade and, especially, Chinese dynastic records. The advent of the European merchant empires creates a new category of archival records documenting the transformation of the Maritime Silk Road. While the early historical texts have provided the historical framework of the Maritime Silk road, the information they provide concerning the ships themselves, or the nature of the shipping activities in the region, is scarce. Archaeological excavations and surface finds from Silk Road ports and their shorelines have supplemented these historical texts.<sup>8</sup> Artefacts recovered from shipwrecks are now providing us with a new category of evidence of trading along the Maritime Silk road.

Shipwreck excavations are increasingly forming a critical category of data for the study of the economic interaction that define the Maritime Silk Road. Data from shipwrecks reflect the shipping patterns and characteristics of the maritime trade that was taking place in the region at the time that the ship foundered, as well as types of products traded at that time. The snapshot nature of shipwreck data provide time-capsules which allow, with data from a sufficient number of wrecks spread over a substantial period of time, a moving image of the development of this maritime trade to emerge.

The artefacts recovered to date have been from wrecks in the South China Sea, the Java Sea and the Sulu Sea. They all date to between the ninth and nineteenth centuries. This paper

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<sup>7</sup> This vision of a Maritime Silk Road was in part a consequence of a UNESCO project on an "Integral Study of the Silk Roads; Roads of Dialogue (1988-1997)." The UNESCO vision is in their CLT/CPD/DIA/2008/PI/68 at <http://unesdoc.unesco.org/images/0015/001591/159189E.pdf> (accessed May 2010). The maritime component of this project was a well-publicised voyage from Venice to Osaka (13 Oct 1990 – 9 Mar 1991).

<sup>8</sup> See Pierre-Yves Manguin's survey in "The archaeology of early maritime polities of Southeast Asia," in Ian Glover and P. Bellwood, eds., *Southeast Asia; From prehistory to history* (London: RoutledgeCurzon, 2004), pp. 282-315. For the archaeology of the later port settlements see, *inter alia*, Michel Jacq-Hergoualc'h, *The Malay peninsula; Crossroads of the Maritime Silk Road (100BC-1300AD)*, Handb. orient. stud., Sect. 3: Southeast Asia, v. 13 (Leiden: Brill), p. 202); Southeast Asia Ceramic Society (West Malaysia Chapter), *A ceramic legacy of Asia's maritime trade; Song dynasty Guangdong wares and other 11<sup>th</sup> to 19<sup>th</sup> century trade ceramics found on Tioman Island, Malaysia* (Kuala Lumpur: Southeast Asia Ceramic Society (West Malaysia Chapter) / Oxford University, 1985); Claude Guillot, et al., eds., *Banten avant l'Islam: Étude archéologique de Banten Girang (Java – Indonésie) 932? – 1526* (Paris: École Française d'Extrême-Orient., 1994); Claude Guillot et al., *Barus; Seribu tahun yang lalu* (Jakarta: Gramedia, 2008), translation of *Histoire de Barus; Le site de Lobu Tua, II: Étude archéologique et documents*, Cahiers d'Archipel 30 (Paris: Assoc. Archipel, 2003).

attempts an inventory of the major wrecks which have been recovered and reported in the South China Sea and the Java Sea.<sup>9</sup> The most significant wrecks on which there are reports include, chronologically, the *Belitung*, *Intan*, *Pulau Buaya*, *Java Sea*, *Turiang*, *Bakau*, *Binh Thuan*, *Phu Quoc*, *Wanli*, *Vung Tau*, *Ca Mau*, and the *Tek Seng* wrecks. Some of these and a larger number of other wrecks were excavated with inadequate or incomplete reporting. This was preferable to the alternative which, in most cases, would have been the loss of the wreck and its contents through looting or inadvertent damage by more intensive trawling for a diminishing stock of fish.<sup>10</sup> This would have meant a complete absence of any reporting which would have rendered interpretation of the context and significance of any artefact recovered extremely difficult, if not impossible.

## WRECKS OF THE SOUTH CHINA SEA

Our reconstruction of the beginnings of the Nanhai trade was undertaken by Wang Gungwu<sup>11</sup> and continued in the work of Paul Wheatley at the old University of Malaya in Singapore in the 1950s.<sup>12</sup> Joining Wheatley was G. R. Tibbetts reworking the Arabic texts<sup>13</sup> studied by Gabriel Ferrand in the 1920s. In the early 1960s, Oliver W. Wolters<sup>14</sup> elaborated on the beginnings of Srivijaya as a major emporium in the South China Sea which an earlier generation of historians led by Georges Cœdès speculatively reconstructed the existence of on the basis of the texts. It was only in 1975 that a series of four SPAFA Workshops initiated

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<sup>9</sup> Roxanna M. Brown, *The Ming Gap and shipwreck ceramics in Southeast Asia; Towards a chronology of Thai trade ware* (Bangkok: River Books for Siam Society, 2009), pp. 161-182 is a comprehensive listing of recorded Asian shipwrecks by geography and chronology. See also the online database of shipwrecks and ship remains classified by the geographical regions where they have been found at <http://www.shipwreckasia.org/about/>.

<sup>10</sup> Michael Flecker deals with some of "The ethics, politics and realities of maritime archaeology in Southeast Asia," in *International Journal of Nautical Archaeology* 31/1 (2002), pp. 12-24.

<sup>11</sup> In his benchmark 1954 "The Nanhai Trade: A study of the early history of Chinese trade in the South China Sea," *Journal of the Malayan Branch of the Royal Asiatic Society* 31/2 (1958), reprinted in Geoff Wade, ed., *Southeast Asia-China interactions; Reprint of articles from the Journal of the Malaysian Branch, Royal Asiatic Society* (Kuala Lumpur: Malaysian Branch of the Royal Asiatic Society, 2007), pp. 51-166.

<sup>12</sup> Wheatley's work is summarised in his *The Golden Khersonese; Studies in the historical geography of the Malay peninsula before A.D. 1500* (Kuala Lumpur: University of Malaya Press, 1961 and reprints).

<sup>13</sup> Published in 1979 as *A study of the Arabic texts containing material on South-East Asia*, Oriental Translation Fund., N.S. 44 (Leiden/London: E J Brill for Royal Asiatic Society, 1979).

<sup>14</sup> See Wolter's rethinking of how the archaeological and other evidence is revising our understanding of what Srivijaya was about in "Studying Srivijaya," *JMBRAS* 52/2 (1979), 1-33 and reprinted in his *Early Southeast Asia: Selected essays*, Southeast Asia Program Publications, edited by Craig J. Reynolds (Ithaca, New York: Cornell University SEAP, 2008), pp.77-108.



### **Tanjung Simpang Wreck, c. 960-1127**

The wreck was found at Tanjung Simpang Mangayau, off the northwest coast of Sabah in a shallow 12 metres of waters in April 2003. Despite having been looted, 303 ceramic artefacts and some 250 kg of shards, together with 61 bronze gongs were recovered by Sten Sjostrand.<sup>17</sup> The ceramics have been dated to the Northern Song dynasty (960-1126), making it the earliest wreck found in Malaysian waters. Nothing of the hull remained and the fragments of timber recovered have been identified as a temperate climate timber, suggesting a Chinese constructed ship.

### **Pulau Buaya Wreck, late 12th-early 13th century**

This wreck was located by fishermen off the coast of Pulau Buaya in the Riau Archipelago and was commercially excavated in 1989.<sup>18</sup> It carried more than 32,000 Chinese stoneware ceramics, along with small quantities of fine-paste Southeast Asian earthenware, a number of pieces of glassware, and a number of metal items, including copper-slab ingots, bronze gongs and large copper rings, tin pyramidal ingots, rectangular slab ingots (tin, lead or zinc), two Chinese copper coins, and iron bars and woks. There may well have been a surviving hull, but none of it was recorded.

Ceramics formed the largest group of trade products in the ship's cargo. The largest group of ceramics found in the wreck comprises bowls and dishes, the majority of which were of *qingbai*-type, followed by those with green glazes. Almost all the dishes and bowls were from Guangdong and South Fujian kilns, with a very small number of the *qingbai*-type bowls possibly from Jingdezhen.<sup>19</sup> Vases and ewers constitute the next largest group of ceramics.

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<sup>17</sup> Sten Sjostrand, Adi Haji Taha and Samsol Sahar, *Mysteries of Malaysian shipwrecks* (Kuala Lumpur: Dept of Museums, Malaysia in collaboration with Nanhai Marine Archaeology Sdn. Bhd. 2006) briefly describes this and ten other historic and six other contemporary wrecks recovered by Sten Sjostrand. The Tanjung Simpang Wreck site is described on pp. 108-11. Sjostrand's Nanhai Maritime Archaeology Sdn. Bhd. website also refers to three of the wrecks he recovered and describes other sites exhibited in a "Maritime Archaeology of Malaysia" exhibition at the Muzium Negara, Kuala Lumpur, Malaysia. The *Tanjung Simpang Wreck* is described at <http://www.maritimeasia.ws/tsimpang/index.html>.

<sup>18</sup> Abu Ridho and E. Edwards McKinnon, *The Pulau Buaya Wreck: Finds from the Song Period* (Jakarta: Himpunan Keramik Indonesia, 1998) is an analysis of the cargo, with nothing on the shipwreck.

<sup>19</sup> *Ibid*, pp. 6-35.

The storage jars recovered exhibit forms and decorative motifs that were commonly used by the Guangdong kilns.<sup>20</sup>

Stylistically, the wares have been dated to the late 11<sup>th</sup>-early 12<sup>th</sup> century. The trade ceramics carried by the ship was confined to the exports from Guangdong and South Fujian, rather than from a wider catchment area of the South Chinese ceramics industry. The absence of Longquan celadons in the wreck suggests that it could not have been dated much later than the beginning of the Southern Song period, from which time Longquan celadon ware began to be mass-produced and exported from Zhejiang.<sup>21</sup>

Two groups of earthenware were recovered from the wreck. The first group comprises 17 examples of high-fired fine-paste kendis, which were most likely of Mon or Cham origin, and were probably trade items.<sup>22</sup> The second group of earthenware comprises coarse earthenware pots with paddle-marks and simple incised decoration. These included a bottle-like vessel, a squat open-mouthed cooking vessel, four wide-mouthed cooking pots, a pot cover with a flattened knob and a stove of archaic form.<sup>23</sup> These were probably made in the Malacca Straits region, and were apparently part of the crew's equipment.

Metal items form the next most significant component of the ship's cargo. A number of pure copper ingots, weighing 4.6 kg each, were recovered,<sup>24</sup> a rim fragment of a large bronze basin (1.5 to 2 cm thick),<sup>25</sup> a foliated bronze mirror<sup>26</sup> and eight bronze gongs,<sup>27</sup> each with a

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<sup>20</sup> *Ibid.*, pp. 52–57.

<sup>21</sup> John N. Miksic, "Before and After Zheng He: Comparing some Archaeological Sites of the 14<sup>th</sup> and 15<sup>th</sup> Centuries", in Geoff Wade and Sun Laichen, eds., *Southeast Asia in the fifteenth century; The China factor* (Singapore: NUS Press / Hong Kong: Hong Kong University Press, 2010), pp. 384-408.

<sup>22</sup> This classification of the kendis was undertaken by Derek Heng who co-authored the earlier version of this chapter (see initial footnote above). Also see to Abu Ridho and McKinnon, *The Pulau Buaya wreck*, p. 64.

<sup>23</sup> *Ibid.* p. 70-74.

<sup>24</sup> *Ibid.*, p. 76.

<sup>25</sup> *Ibid.*, p. 85.

<sup>26</sup> *Ibid.*, p. 82.

<sup>27</sup> The mirror's style is reminiscent of the Chinese tradition, while a gong of similar form with punched Chinese characters has been recovered from Candi Kembar Batu (Muara Jambi), with a Song reign date equivalent to 1231 inscribed on it. See Claudine Salmon, "A Tentative Interpretation of the Chinese Inscription (1231) Engraved on a Bronze Gong Recovered in Muara Jambi (Central Sumatra)", *Archipel*, 66, pp. 91-112.

central protuberance,<sup>28</sup> were recovered. While the origin of the ingots and basin fragment is uncertain, the gongs and mirror were most likely of Chinese origin.

The other substantial group of copper finds comprised 129 ring-shaped copper ingots of 6- to 8-cm diameter, which are 0.5 to 1.2 cm thick.<sup>29</sup> These were most likely of Southeast Asian origin. The ship's cargo of fine-paste kendis, possibly from central or southern Thailand, suggests either that the ship had called at least one port in that region. It is possible that the ship picked up its cargo of ring-shaped copper ingots from a port on the coast of Thailand. Some of Island Southeast Asia's demand for copper appears to have been met by Mainland Southeast Asian sources, as is evident from the copper finds in the *Intan* wreck. Thailand, in particular, is known to have been an important source of copper for the Maritime Southeast Asian market for much of the first and second millennia.

Other metal ingots were also recovered from the wreck. Eighteen rectangular slab ingots of Chinese origin, with moulded or incised Chinese characters were recovered, of which the metallic content has not been ascertained.<sup>30</sup> Forty-eight unevenly cast semi-circular bars (length 15 to 25 cm; width 2 to 2.5 cm; thickness 0.7 to 1 cm), similar to bars of tin solder used in present-day Indonesian workshops, were also recovered.<sup>31</sup> Forty-five truncated pyramidal ingots of two distinct varieties, probably of tin and similar to those excavated from Malacca Straits sites,<sup>32</sup> and a cylindrical ingot (diameter 6 cm; height 3.5 cm),<sup>33</sup> were also recovered. These were of Southeast Asian origin.

The ship also carried a number of pieces of ironware. A number of stacks of woks, and one bundle of iron bars with trapezoidal cross-section,<sup>34</sup> have been identified at the wreck site. The actual quantity of iron products that was carried by the vessel, however, has not been ascertained, as these had become concretions covered with coral. An iron lamp standard

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<sup>28</sup> Abu Ridho and McKinnon, *The Pulau Buaya Wreck: Finds from the Song Period*, p. 78.

<sup>29</sup> *Ibid*, p. 78.

<sup>30</sup> *Ibid*, p. 80.

<sup>31</sup> *Ibid*, p. 82.

<sup>32</sup> B. A. V. Peacock, "Recent Archaeological Discoveries in Malaya (1957)", *JMBRAS*, 31, 1, pp. 180-187; G. De G. Sieveking, "Recent Archaeological Discoveries in Malaya (1955)", *JMBRAS*, 29, 1, pp. 200-211.

<sup>33</sup> Abu Ridho and E. Edwards McKinnon, *The Pulau Buaya Wreck: Finds from the Song Period*, p. 82.

<sup>34</sup> *Ibid*, p. 84.

that was also recovered, possibly of Indian origin,<sup>35</sup> was most likely part of the crew's property.

### **Turiang Wreck, 14<sup>th</sup> century**

This wreck, recovered east of the Singapore Straits in 1998,<sup>36</sup> has been carbon-14 dated to 1305–70 CE. A wood sample from the hull has been identified as pine, a temperate species, and there is evidence of diagonally driven iron nails being used to edge-join bulkhead planks, suggesting that it was a Chinese junk.

The *Turiang* wreck was carrying a mixed cargo of Southeast Asian foodstuffs, three or four elephant tusks, as well as sphalerite (a substance containing zinc sulfide, which may have been used as a cosmetic), lumps of oxidised iron and more than six thousand ceramic vessels<sup>37</sup>.

Of the ceramic cargo, which dates to the late fourteenth or early fifteenth century, 46% were products of the Sukothai kilns, 11% were from Sawankhalok, 8% consisted of Vietnamese underglaze decorated bowls, and the remaining 35% consisted of Chinese ceramics, almost all of which were from Guangdong.<sup>38</sup> This mix of Thai and Chinese ceramics is intriguing, suggesting that the Sukhothai kilns were producing earlier for export than assumed and surpassing the older Sawankhalok kilns. The Chinese ceramic cargo, approximately 91% of which comprised low-value Guangdong ceramics and 9% of which consisted of celadon pieces probably of Longquan type, suggests that the export trade in ceramics carried out by the owners of the ship consisted primarily of low-value pieces obtained from the immediate hinterland area of the port of Guangzhou.

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<sup>35</sup> *Ibid*, p. 86.

<sup>36</sup> Roxanna Brown and Sten Sjostrand, *Turiang: A Fourteenth Century Shipwreck in Southeast Asian Waters* (Los Angeles: Pacific Asia Museum, 2000). Sten Sjostrand and Claire Barnes, "The *Turiang*; A fourteenth century Chinese shipwreck upsetting Southeast Asian ceramic history," *JMBRAS*, 74/1 (2001), 74-109 and reprinted in Wade, ed., *Southeast Asia-China interactions* (fn 21 above), pp. 50-544.

<sup>37</sup> Brown and Sjostrand, *Turiang: A Fourteenth Century Shipwreck in Southeast Asian Waters*, pp. 17, 18, 39, and Sjostrand's online summary at <http://www.maritimeasia.ws/turiang/index.html>. Also refer to <http://www.maritimeasia.ws/exhib01/pages/p012.html> for the exhibits on the Turiang Wreck in the Maritime Archaeology of Malaysia exhibition at the Muzium Negara.

<sup>38</sup> Brown and Sjostrand, *Turiang*, pp. 32-34.

Significant quantities of lumps of oxidised iron were recovered from the wreck site, indicating that Maritime Southeast Asia's import of iron continued into the late 14<sup>th</sup> and early 15<sup>th</sup> centuries. However, the iron, which is in the form of granules, is in a different form from the iron recovered from the *Java Sea* and *Intan* wrecks, suggesting that Maritime Southeast Asia's import of cheap workable iron may have diversified beyond China to include sources in Southeast Asia by the late fourteenth and early fifteenth centuries.

The presence of fish bones and eggshells in a number of large Thai storage jars of 75-litre capacity, which were originally loaded beneath other trade ceramics<sup>39</sup>, and therefore formed part of the ship's commercial cargo rather than the food supply of the ship's crew, indicates that foodstuffs were by this time an important trade product category. The cargo also included such traditional products as ivory, as well as such minerals as zinc sulfide, which was transported in ten storage jars of Suphanburi (Thailand) origin.<sup>40</sup> The *Turiang* and the Bakau wrecks are two wrecks of what has come to be labelled South China Sea Tradition shipwrecks. The *Turiang* and other ship sites together suggest that the early dominance of Chinese ceramics in export markets during the Song and early Yuan dynasties was threatened by vigorous competition from Vietnamese and Thai producers from the 14th century onwards. Chinese involvement dwindled further in the late 14th and early 15th century, following the 'Ming ban'.

### ***Nanyang Wreck, c.1380***

Located northeast of Desaru, Johor, the wreck is a small 18-metre hybrid vessel with a 5-metre beam with its hull planks joined by wooden dowels. The cargo of some 10,000 pieces of Sisatchanalai celadons suggests a growing market for Thai celadons in the Malacca Straits ports. The cargo stacked in compartments separated by transverse bulkheads is the earliest

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<sup>39</sup> *Ibid*, pp. 18.

<sup>40</sup> *Ibid*, p. 39.

export of Sisatchanalai celadons. The wreck was recovered by Sten Sjostrand in collaboration with the Dept of Museums Malaysia.<sup>41</sup>

### **Ko Si Chang Three Wrecks, c.1410**

The wreck was probably a small coastal trading vessel whose hull was edge-joined with dowels and was compartmentalised. It was excavated as part of a Thai-Australian Underwater Archaeological Research project started in 1982. The wreck was one of three discovered in the vicinity of Ko Si Chang, northwest of Pattaya. The variety and volume of foodstuff and other agricultural products (eggs, resins, ivory, nuts) suggest that the vessel may have been a floating market. The Wreck has been radiocarbon dated to 1410 +/-70

Two other wrecks were also located in the vicinity and coded Ko Si Chang One and Ko Si Chang Two Sites. These two wrecks have also been excavated by the Thai-Australian project and appear to have been hybrid Southeast Asian vessels. The Ko Si Chang One ship has been radiocarbon dated to 1570+/-90 and carried a cargo of Thai and Chinese ceramics, some of which carries a Wanli mark (1573-1619).<sup>42</sup>

### **Bakau Wreck, early 15<sup>th</sup> century**

The 22.7 long and 6.5 m wide wreck lies in 24 metres of waters parallel to a coral outcrop (on which it ran aground) off the small island off Bakau on the western side of the Karimata Straits, Indonesia. This wreck, which was visited by Michael Flecker in May 1999,<sup>43</sup> has been dated to the early 15<sup>th</sup> century through carbon dating and Yongle (1403-1424) coins found onboard. The vessel had a flat-bottomed hull without a substantial keel structure, as well as

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<sup>41</sup> Sten Sjostrand and others, *Mysteries of Malaysian shipwrecks*, pp. 74-76 and <http://www.maritimeasia.ws/exhib01/pages/p013.html> for the exhibits on the Nanyang in the "Maritime Archaeology Malaysia" exhibition at the Muzium Negara Malaysia.

<sup>42</sup> Jeremy Green and Rosemary Harper, "The maritime archaeology of shipwrecks and ceramics in Southeast Asia, The maritime connection," and Green, Harper and Vidya Intakosi, "The Ko Si Chang Three Shipwreck excavation 1986," in: *Australian Institute for Maritime Archaeology Special Publication No. 4* (Albert Park, Victoria: Australian Institute for Maritime Archaeology, 1987).

<sup>43</sup> Flecker, "The Bakau wreck: an early example of Chinese shipping in Southeast Asia," *International Journal of Nautical Archaeology*, 30/2 (2001), 221-30 and summary at Flecker's <http://www.maritime-explorations.com/bakau.htm>.

bulkheads, adjacent frames, iron nail edge-joining, wood stiffeners, *chunam* caulking, and hull timbers of pine. These features identify the vessel as a South China vessel, similar to the *Turiang*. The wreck The final destination was probably a port in Java, such as Tuban, where the ceramics would have been exchanged for spices and other natural products for the direct voyage back to China during the southwest monsoon.

Like the *Turiang*, the *Bakau* wreck was carrying a mixed cargo of largely Sukhothai wares with some Sawankhalok wares and Vietnamese wares. The Chinese ceramics in the cargo comprised Longquan celadons, brown-wares and some white/*qingbai* wares. Other products, almost certainly of Southeast Asian origin, were carried in large jars similar to those recovered in the *Ko Si Chang Site Two* wreck, the *Turiang* and *Longquan* wrecks. Both the *Bakau* and *Turiang* Wrecks are contemporaneous with the early voyages of Admiral Zheng He. With their diverse cargo origins, both these wrecks imply that Chinese ships were journeying throughout Southeast Asia in much the same way as tramp steamers of the early 20<sup>th</sup> century, stopping to trade at the various ports along their route.

### ***Longquan Wreck, c. 1400***

This wreck comprises the remnants of a large hybrid vessel measuring some 30 metres in length, and is located some 20 miles off the Trengganu coast of Malaysia at 63 metres depth. The ship was carrying a large cargo of Thai and Chinese celadons from Longquan, leading Sten Sjostrand who located the vessel, to name it the *Longquan* wreck for the Chinese celadons which comprised an estimated 40% of the cargo, with another 40% being Sisatchanalai wares and the remaining 20% were underglazed Sukhotai wares. The site was destroyed by deep trawling by fishermen before it could be excavated in April 2001.<sup>44</sup>

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<sup>44</sup> Sjostrand et al., *Mysteries of Malaysian shipwrecks*, pp. 82-85 and Sjostrand's <http://www.maritimeasia.ws/exhib01/pages/p014.html> for the *Longquan* exhibits exhibited in the "Maritime Archaeology of Malaysia" exhibition at Muzium Negara, Malaysia.

### **Royal Nanhai Wreck, c. 1460**

A hybrid vessel built of Southeast Asian hardwood of the *Hopei* species, combining Chinese transverse bulkheads joined by Southeast Asian wooden dowels and frames fastened to the hull planks with bolts and nails. Some 20,000 pieces of Sisatchanalai celadons and Chinese and Vietnamese underglaze blue ceramics were recovered and dated to 1450-1464 CE. A further 11 tons of shards were also recovered.<sup>45</sup>

### **Phu Quoc Wreck, late 14<sup>th</sup> / early 15<sup>th</sup> century**

This wreck of a Thai ship was partially looted by fishermen before the Vietnamese Salvage Corporation Visal called in Michael Flecker and Warren Blake to survey it.<sup>46</sup> Flecker and Blake managed to recover some 1,100 intact Swankhalok ceramic artefacts from the well-preserved compartmentalized hull. The Vietnamese subsequently recovered several thousand other pieces of ceramics.

### **Brunei Wreck c. late 15-16 century**

The wreck was located 32 nautical miles off the Brunei coast and was found in the course of surveying to lay an oil pipeline in May 1997. The wreck was a hybrid vessel from which some 13,500 artefacts, comprising underglaze blue ceramics, Chinese white wares, Thai celadons and some 2,300 stoneware jars, were recovered. Metal artefacts including iron bars and bronze-copper bracelets were also found in the wreck.<sup>47</sup>

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<sup>45</sup> Sjostrand et al., *Mysteries of Malaysian shipwrecks*, pp. 68-73 and Sjostrand's <http://www.maritimeasia.ws/exhib01/pages/p015.html> for a description of the exhibits on the wreck in the "Maritime Archaeology of Malaysia" exhibition at the Muzium Negara, Malaysia.

<sup>46</sup> W. Blake and M. Flecker, "A preliminary survey of a Southeast Asian wreck, Phu Quoc Island, Vietnam," *International Journal of Nautical Archaeology*, 23/2 (1994), 73-91.

<sup>47</sup> Elf Petroleum Asia BV discovered the wreck and sponsored the excavation of the wreck and conservation of its cargo under the direction of Michel l'Hour, who has edited a three volume report of the excavation, *La mémoire engloutie de Brunei 1: Cahier de fouille; 2; Précis scientifique; 3; Carnet de dessins* (Paris: Éditions Textuel, 2001).

### ***Xuande Wreck, c. 1540***

A 16<sup>th</sup> century wreck located 39 nautical miles from Pulau Tioman, Pahang. S. Sjostrand located the wreck and named it in honour of the Ming emperor Xuande (1426-1435) whose reign mark was copied on several porcelains recovered from the wreck. Two Portuguese style breech-loading cannons were also found. The artefacts recovered from the wreck included a range of Chinese underglazed blue and white, and white wares, suggesting the re-emergence of Chinese kilns in the export market. A new range of Sisatchanalai underglazed black wares were also recovered. Unfortunately, none of the hull had survived.<sup>48</sup>

### ***Singtai Wreck, c.1550***

This is the wreck of a Chinese vessel which sank some 12 nautical miles from Pulau Redang off the Trengganu coast of Malaysia and was discovered in April 2001. The vessel was loaded with a cargo of largely Thai storage jars from Singburi and other Thai ceramics.<sup>49</sup>

### ***Binh Thuan Wreck, 1608***

A classic Chinese junk dated to 1608 which was found in early 2001 by fishermen.<sup>50</sup> The wreck was found in 39 metres of water 40 nautical miles east of the fishing port of Phan Thiet, in Binh Thuan province, Vietnam. Twenty-four bulkheads divide her into 25 narrow compartments. She has frames adjacent to every bulkhead, a transom bow, two mast steps with tabernacle partners, multiple hull planking, hull and bulkhead planks edge-joined with iron nails, and an axial rudder. The lower part of almost every compartment was loaded with cast iron pans. Above those were stacked up to 100,000 pieces of Zhangzhou porcelain,

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<sup>48</sup> Sjostrand et al., *Mysteries of Malaysian shipwrecks*, pp. 78-81 and <http://www.maritimeasia.ws/exhib01/pages/p016.html> describing the exhibits on display at the Muzium Negara Malaysia.

<sup>49</sup> Sjostrand et al., *Mysteries of Malaysian shipwrecks*, pp. 96-99 and <http://www.maritimeasia.ws/exhib01/pages/p017.html> on the exhibits of the *Singtai* in the exhibition Maritime Archaeology of Malaysia in the Muzium Negara, Malaysia.

<sup>50</sup> See Michael Flecker's report of his excavation of the wreck which is incorporated in the Christie's Australia catalogue *The Binh Thuan shipwreck* (Melbourne, Auction catalogue, Christie's Australia, 2004), pp. 2-15 and summarised at <http://www.maritime-explorations.com/binhthuan.htm>.

the first dedicated shipment to ever be found. From historical documentation, the *Binh Thuan Wreck* may well be a junk of the Chinese merchant I Sin Ho, which was on her way to Johor with “silks and other Chinese goods.”

### **Wanli Wreck, c. 1625**

A European-design vessel built around a ribbed framework, rather than transverse bulkheads, the wreck was excavated in 2004 in 40 metres water, 6 nautical miles off Tanjong Jara, while lies on the coast of Trengganu, Malaysia.<sup>51</sup> The 17-metre vessel was apparently built in Southeast Asia or India from timber that has been identified to be of either European or Chinese origins, and then repaired with tropical wood from the Philippines or India. The vessel was named after the large cargo of kraak wares produced at the Jingdezhen kilns during the reign of the Emperor Wanli (1573-1620).

Some 80% of the cargo of kraak wares was found shattered and pulverised in a pattern that suggested an explosion which sank the vessel. The 9,000 kg of fragments and remaining 20% of the cargo recovered could be classified into 65 different shapes and forms. The inference is that this may have been a vessel belonging to a Portuguese private trader plying the Macao – Malacca – Goa trade route when it may have been raided and sunk by a Dutch vessel. The two cannons recovered from the wreck suggests an under-armed vessel. The wreck would thus have been a consequence of Luso-Dutch rivalry for control of the Macao – Malacca trade route at the beginning of the 17<sup>th</sup> century.

### **Vung Tau Wreck, c. 1690**

The Vung Tau Wreck, found off Con Dao Island, Vietnam was excavated by Michael Flecker in 1991. It was a *lorcha*, a vessel that combined the best shipbuilding features of both China and Europe. However, this was built in China and the Chinese features dominate. The nine compartments were mostly filled with Kangxi era blue-and-white Jingdezhen porcelain in

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<sup>51</sup> Sten Sjostrand and Sharipah Lok Lok bt. Syed Idrus, *The Wanli shipwreck and its ceramic cargo* (Kuala Lumpur: Dept of Museums & Nanhak Marine Archaeology Sdn. Bhd., 2007) is a detailed inventory of the 65 types of ceramic forms recovered and identification of their marks and inscriptions.

European shapes which was bound for transshipment onto a Dutch vessel at Batavia for the onward voyage to Holland. Ceramics from Dehua and provincial kilns were more likely to have been for the Southeast Asian market, as were the floor tiles and cast-iron pans and cauldrons that were stowed beneath the ceramics.<sup>52</sup>

### ***Fluit Risdam Wreck, 1727***

The Risdam is the only known example of an 18<sup>th</sup>-century *fluit* vessel. It was run aground 500 metres north of Pulau Batu Gajah, south of Mersing, Malaysia, on 1 Jan 1727 to save the crew after it developed a serious leak. It was carrying a cargo of tin ingots, sappanwood, elephant tusks, and 150 empty glazed pots.

The wreck was located through a search in the VOC archives by H C Besancon from the Dutch East India Wreck Foundation and surveyed by independent shipwreck hunter Michael Hatcher in 1980. Their plans to negotiate with the Malaysian authorities for a joint Malaysian-Dutch excavation of the wreck was undermined by a member of Hatcher's crew leaking the location of the wreck to a Singapore-based company which then attempted to loot the wreck. They were intercepted and recovery of what they had looted was successfully pursued in a Singapore law court. In 1984, the Malaysian government entered into an agreement with the Dutch and Australian governments to jointly salvage the wreck. The latter requested Jeremy Green to join the project.<sup>53</sup> The looting and excavation of the *Fluit Risdam* aroused Malaysian interest in their maritime heritage, evidenced by a 1984 University of Malaya colloquium on ships and sunken treasures.<sup>54</sup>

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<sup>52</sup> See Flecker's report in "Excavation of an Oriental vessel of c. 1690 off Con Dao, Vietnam," *International Journal of Nautical Archaeology*, 21.3 (1992), 221-244 and summarised at Flecker's <http://www.maritime-explorations.com/vung%20tau.htm>. See also Christiaan Jörg and Michael Flecker, *Porcelain from the Vung Tau Wreck, the Hallstrom Excavation* (UK: Suntree Publishing Ltd, 2001) and Christie's 1992 auction catalogue *The Vung Tau cargo: Chinese export porcelain*.

<sup>53</sup> J. N. Green and E. V. Gangadharam, *The survey of the V.O.C. Fluit Risdam, 1727, Malaysia*, Report Dept Maritime Archaeology, No. 25 (Fremantle: Western Australian Maritime Museum, 1985).

<sup>54</sup> Mohd Yusoff Hashim, et al. (eds.), *Kapal dan harta karam, Ships and sunken treasure* (Kuala Lumpur: Persatuan Muzium Malaysia, Muzium Negara, 1986). See particularly E. V. Gangadharam's "The sunken Dutch trading vessel off Mersing coast, Johor – A preliminary study of the geological environment of the shipwreck, its artefacts and their initial field preservation" at pp. 159-67.

### **Ca Mau Wreck, c. 1730**

The *Ca Mau* Wreck,<sup>55</sup> located 90 nautical miles south of Cape Ca Mau, Binh Thuan province, Vietnam, was discovered and partially looted by fishermen in 1998 before the Vietnamese authorities stepped in and undertook the recovery of what was left of the wreck. The large shipment of Jingdezhen porcelain the ship was carrying has been dated to between 1723 and 1735 and was probably bound for transshipment at Batavia or another Dutch-controlled port. The range of wares was largely similar to those in the *Vung Tau* wreck, with some of the dishes decorated with Dutch rural scenes, indicating a Dutch market for the cargo. There were also a large number of zoomorphic figures, suggesting a growing interest in curios. The Vietnamese authorities successfully negotiated with Sotheby's to auction the multi-duplicate items in January 2007.<sup>56</sup>

It appears that the hull was not archeologically surveyed, perhaps a consequence of lack of time and funds, and also that the excavation was not directed by marine archaeologists. But the limited descriptions given by the divers, of bulkhead construction, iron pans in the cargo, and the complete absence of cannons, suggests it may have been a Chinese vessel similar to the *Bakau* and *Turiang* wrecks. However, fragments of the wooden hull recovered have been identified as a Southeast Asian *Diptoerocarpus*, suggesting that the vessel was more probably a late South China Sea hybrid vessel.

### **Geldermalsen, 1752**

This VOC East Indiaman ran aground on the Admiral Stellingwerf Reef to the southeast of Singapore Straits in 1752 while enroute to Holland from Guangdong. The wreck was located by treasure hunter Michael Hatcher who salvaged some 180,000 pieces of mainly underglaze blue porcelains in a variety of shapes intended for the European market. The May 1986 auction of the *Geldermalsen's* cargo at Christie's in Amsterdam fetched an

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<sup>55</sup> Refer to Nguyen Dinh Chien, *The Ca Mau Shipwreck, 1723-1735* (Ha Noi, National Museum of Vietnamese History, 2002). The porcelains which found their way into the collection of István Zelnik are catalogued in Gyorgyi Fajcsak, Nguyen Dinh Chien and Janos Jelen, *The Ca Mau shipwreck porcelain [1723-1735]* (Budapest: JelNet Ltd., 2009).

<sup>56</sup> Sotheby's, *Made in Imperial China, 76,000 pieces of Chinese export porcelain from the Ca Mau Shipwreck, circa 1725* (Amsterdam: Sotheby's, 2007).

unexpected US\$20 million and drew worldwide attention to the “treasures” in Southeast Asian waters and controversy over Hatcher’s salvage of the wreck.<sup>57</sup>

### ***Diana, 1817***

The *Diana* was an English country trader built in India for trade between China and India. The vessel was lost on a rock north of Malacca with a cargo of some 18 tonnes of mainly utilitarian porcelains with some finer wares for the Indian and English markets. Other items in the cargo would have included sugar, textiles and tea.<sup>58</sup>

### ***Tek Sing, 1822***

The *Tek Sing*<sup>59</sup> was a massive Chinese junk bound for Batavia with 2,000 Chinese immigrants on board, as well as over 300,000 pieces of utilitarian Dehua porcelain for the Indonesian market. She was wrecked on Belvedere Reef, near to the entrance to Gelasa Straits, Indonesia in 1822 with a huge loss of life. The wreck was salvaged by Michael Hatcher in May 1999 and the cargo auctioned in Stuttgart in November 2000.<sup>60</sup>

### ***Desaru c. 1830***

This wreck was named after the Malaysian east coast bay of Desaru, near which it sank in the 1840s, according to a date on the cannon recovered. It was a Chinese junk, 30 metres long and 8 metres wide, constructed with a pinewood hull and cedar wood transverse bulkheads, similar to the considerably earlier *Binh Thuan* wreck, but different from it in having a substantial keel. It was carrying a cargo of provincial Chinese wares similar to the *Diana* and the *Tek Sing* for Southeast Asian markets. Some 70,000 pieces of the cargo were

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<sup>57</sup> See C. J. A. Jörg, *The Geldermalsen; History and porcelain* (Groningen: Kemper Publishers, 1986); and C. Sheaf and R. Kilburn, *The Hatcher porcelain cargoes; The complete record* (London: Phaidon, 1988) for documentation of what was salvaged. Hatcher’s story is retold in Hugh Edwards, *Treasures of the deep: The extraordinary life and times of Captain Mike Hatcher* (Sydney: HarperCollins, 2000).

<sup>58</sup> D. Ball, *The Diana adventure* (Kuala Lumpur: Malaysian Historical Salvors, 1995).

<sup>59</sup> Refer to Nigel Pickford and Michael Hatcher, *The Legacy of the Tek Sing* (UK: Granta Editions, 2000).

<sup>60</sup> Nagal Auctions, *Tek Sing treasures*.

recovered in October-November 2001, with much of the wreck subsequently being destroyed by trawlers ignoring warning buoys around the site.<sup>61</sup>

The many large and crudely-potted storage jars suggest that cheap practical objects were in higher demand than decorative objects or wares for fine dining -- although the discovery of over 50,000 soup spoons unmatched with bowls also demonstrates the scale of contemporary trade (the bowls may have been on another ship?) and the danger of extrapolating too much from a single cargo.

The *Desaru* ship was divided into lateral wooden compartments, between which the cargo was stacked with no trace of boxes or other packing material surviving, except that some of the storage jars contained smaller ceramics. The wreck lay almost flat on the seabed, with the lower part of the hull, the compartments, and some 90 cm of cargo (the height of two layers of storage jars) well-preserved.

The ship is estimated to have been around 30 metres long and 8 metres wide -- which is narrow for a cargo vessel -- and it appeared to carry no ballast other than the ceramic cargo, so it may have been somewhat unstable. Some aspects of construction, particularly the lack of large bolts and of support for the ceiling boards, appeared slipshod. The square bow and the mast step for the main mast are structurally unusual.

## **JAVA SEA WRECKS**

The massive cargoes of Chinese ceramics and iron bars and wares from the *Belitung*, *Intan*, *Cirebon* and *Java Sea* wrecks raises complex questions of to where these cargoes were destined and for whom they were intended? Our understanding of Javanese history is that the central and east Javanese inland kingdoms which constructed the Borobudur and other temple complexes of Central and East Java were fairly self-contained agrarian entities capable of producing a surplus to support the labour that constructed the monuments that

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<sup>61</sup> Sjostrand, *Mysteries of Malaysian shipwrecks*, pp. 100-108. <http://www.maritimeasia.ws/desaru/index.html> and <http://www.maritimeasia.ws/exhib01/pages/p018.html>.

define these kingdoms.<sup>62</sup> The assumption that the ruling elites and their self-supporting villages would not have much need for these vast amounts of ceramics and iron through trade will now have to be reviewed.

### **Belitung Wreck, c. 826**

The wreck was located by fishermen in 1998 and excavated over two seasons of work in late 1998 and early 1999.<sup>63</sup> Some 60,000 bowls, ewers and other Chinese ceramics were recovered. Many of these bowls were helically stacked inside large green glazed jars, with up to 140 bowls in a jar. Other plates and bowls would have been wrapped in straw and were stacked longitudinally, and sometimes transversely in the hull. The sheer numbers of these ceramics is evidence that the Nanhai trade from the ninth century was not a high value–low volume trade in silks, spices and aromatics as an earlier generation of historians had reconstructed. The *Belitung* wreck is evidence that the Chinese kilns were mass producing for an export market at both the low and high ends of the market.

The bulk of the glazed ceramics recovered from the wreck, some 55,000 pieces, are iron-decorated stonewares from the Changsha kilns of Hunan province, similar to what have been found in a number of central Javanese sites, thus suggesting a Javanese destination for the cargo. Next were nearly 200 pieces of white-glazed earthenware with green-splashed décor recovered from the stern of the wreck. These green splashed earthenwares came in a variety of vessel types, including ewers, lidded boxes, cups, dishes, bowls and basins. More unusual and interesting items in the cargo of the wreck include a number of what a later Song text describes as a “nose-drinking cup” (*biyin bei*) in which a tube is affixed within the

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<sup>62</sup> See Jan Wisseman-Christie’s critique of these reconstructions of early Java which downplays the functions and significance of trade in “Negara, mandala, and despotic state: Images of early Java,” in D. G. Marr and A. C. Milner, eds., *Southeast Asia in the 9<sup>th</sup> to 14<sup>th</sup> centuries* (Singapore: Institute of Southeast Asian Studies & Canberra: Research School of Pacific Studies, Australian National University, 1986), pp. 65-94.

<sup>63</sup> Initial reports on the wreck are by Michael Flecker, “A 9<sup>th</sup> century Arab or Indian shipwreck in Indonesian waters,” *International Journal of Nautical Archaeology*, 29/2 (2000), 199-217, and Flecker, “A ninth-century AD Arab or Indian shipwreck in Indonesia: First evidence for direct trade with China,” *World Archaeology* 32/3 (2001), 335-54 and on Flecker’s web at <http://www.maritime-explorations.com/belitung.htm>. Regina Krahl, et al., eds., *Shipwrecked; Tang treasures and monsoon winds* (Washington, D.C.: Arthur M. Sackler Gallery, Smithsonian Institution; Singapore: National Heritage Board; Singapore: Singapore Tourism Board, 2010) is the catalogue of the public exhibition of the Belitung Wreck cargo in Singapore by the Sackler-Freer Gallery and the National Heritage Board with the support of the Singapore Tourism Board.

bottom of the cup, enabling the user to pour the contents of the cup into his nose. More likely this green splashed glazed cup was destined for a South Asian market for use as a nasal pot to pour water into one's nasal passages to cleanse it in as recommended in Ayurvedic practice.

The unusual one-meter high ewer in a West Asian design which has become the highlight and symbol of the wreck's magnificence is in this category of green-splashed wares. The décor of these green-splashed wares suggest a West Asian destination for these wares, where shards of similar wares have been found at the Abbasid city of Samarra, and Persian Gulf port of Siraf. The find of three pieces of blue-and-white porcelain among the cargo of the wreck raises anew the complex question of when cobalt (possibly from Iran) was first used in manufacturing underglaze blue and white porcelains in China.

The most valuable component of the cargo was probably a consignment of about 300 pieces of white wares of Hebei and Henan. Most of the 300 pieces are various tableware forms. These north Chinese white wares evidence that the Chinese potters were also producing items for the high end of the export market.

Metal objects recovered included 30 bronze mirrors and 30 gold and silver cups, boxes and 18 silver ingots. These objects raise complex questions of where in China they were made and where they were destined for when they were found in this *Belitung* wreck. Were they high value objects for sale? Or were they intended as gifts for a foreign dignitary?

The *Belitung* wreck is especially significant for its structure which remained remarkably intact and identifiable as a fully stitched Arab *dhow* similar to vessels still found in Oman and known as *baitl qarib*. Measuring some 60 feet long with a raked prow and stern, it was built of African and Indian wood. The textual records report the presence of Arab traders at Southern Chinese ports and this *dhow* is confirming evidence of an Arab presence in the *Nanhai*. But was the *dhow* making a return journey to the Persian Gulf after loading its cargo at Guangzhou? Its location well south of the route through the Malacca Straits suggests that it may have been on its way to a Javanese port instead.

### **Cirebon Wreck, end 10<sup>th</sup> century**

This wreck was discovered fairly intact some 90 nautical miles north of the Javanese northern coast port town of Cirebon, in 57 metres of water and excavated between April 2004 and October 2005.<sup>64</sup> The wreck sank flat, without breaking up and was rapidly covered to form an undisturbed tumulus. The ship structure, some 32-35 metres in length, with its hull planking preserved to a height of 1.5 metres, is thus fairly intact and may prove to be the best preserved example of a lashed-lug vessel, similar to the *Intan*.

The ship may have sunk because it was overloaded with an estimated 150 tonnes of iron cargo and over 250,000 pieces of Chinese wares, mainly from Zhejiang (an estimated 100,000 of which are of Yue wares with some Longquan wares) and smaller numbers of Hebei white wares. A number of bronze Vajrayana Buddhist objects similar to what have been recovered from sites in East Java were also found among the cargo.

### **Intan Wreck, 10<sup>th</sup> century**

The *Intan Wreck*,<sup>65</sup> was a 10<sup>th</sup>-century vessel that foundered in the north western part of the Java Sea near the Intan Oil Field while carrying a wide range of Southeast Asian and foreign products. Artefacts include such bronze ritual articles as figurines, vessels, sceptres, bells and moulds, some at least of which appear to have been of Indian origin. Finds of Chinese origin include ceramics, copper coins, bronze mirrors and iron articles. Other artefacts include Middle Eastern glassware, Southeast Asian ingots of lead, silver, tin and bronze, foodstuffs such as candle-nuts, and other organic material including tiger bones, sambar antlers, an elephant tooth and tusk, worked ivory pieces and pieces of benzoin.

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<sup>64</sup> <http://cirebon.mariemont.museum/home-6.htm?lng=en> for the website on the wreck hosted by the Musée royal de Mariemont, which is supporting Cosmix Archaeological Underwater Excavation and Recovery in their excavation of the wreck.

<sup>65</sup> Michael Flecker's *The Archaeological Recovery of the 10<sup>th</sup> Century Intan Shipwreck*, BAR International Series 1047 (Oxford: Archeopress, 2002) is based on his PhD Dissertation submitted to the National University of Singapore, 2001. See also Flecker's report of his excavation of the *Intan* at <http://www.maritime-explorations.com/intan.htm>

The bulk of the Chinese products carried by the ship comprised fine and coarse stoneware ceramics. The fine stoneware ceramics included Yue and Yue-type wares, white ware, *qingbai* ware, brown ware and green ware. The 190 white ware ceramics, 648 *qingbai* ceramics and 1,079 Yue and Yue-type ceramics were all fine or small pieces.<sup>66</sup> The coarse stoneware ceramics comprised 4,936 green and brown ceramics.<sup>67</sup> The storage jars were used to transport the foodstuffs and resins such as the candlenuts and benzoin recovered from the wreck, while the pots were most likely trade items.

Chinese metal objects recovered from the site were of three types—iron, silver and bronze. Aside from a small number of coins, the only Chinese bronze items were mirrors, of which 95 fragments and 21 intact examples were recovered. These were of higher quality than the 200 mirrors of Malacca Straits region origin that were also recovered.<sup>68</sup> No Chinese bronze as raw material was found amongst the large quantities of ingots and scrap metal recovered from the wreck, which was most likely of Southeast Asia origin.

Other metal items of Chinese origin found in the wreck included 94 silver ingots.<sup>69</sup> A small number of Chinese cast-iron articles, identified from the presence of sulphur in the iron, were also recovered. Ten iron concretions were identified at the wreck site. These included blades of about 30 centimetres in length and rods of about 40 centimetres in length.<sup>70</sup> The amount of iron found in the *Intan* wreck is significantly less than that recovered from wrecks assigned a later date. The little that remained of the hull suggests that it was a lashed-lug vessel.

It is interesting to note that only two groups of Chinese products —ceramics and metals — were recovered from the *Intan* wreck. While it is likely that most perishable products would not have survived, the Chinese products present in the wreck, with the exception of ceramics, suggest that the 10<sup>th</sup>-century trade between China and Maritime Southeast Asia,

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<sup>66</sup> Flecker, *ibid*, pp. 248–280.

<sup>67</sup> *The Archaeological Recovery of the 10<sup>th</sup> Century Intan Shipwreck*, pp. 281–284.

<sup>68</sup> *Ibid*, pp. 135–141.

<sup>69</sup> *Ibid*, pp. 202–206.

<sup>70</sup> *Ibid*, pp. 207–211.

or at least that transhipped to Java from the Malacca Straits region, focused upon relatively high-unit value products.

### **Java Sea Wreck, 13<sup>th</sup> century**

The *Java Sea Wreck*, dated to the 13<sup>th</sup> century, was archaeologically rescued after fishermen and a commercial company had tried their best to ransack it.<sup>71</sup> It lies in the Java Sea, between Jakarta and Bangka Island. It is estimated that the original cargo consisted of some 100,000 pieces of high-fired stoneware from the kilns of southern China and approximately 200 tonnes of iron, both cast and wrought. While only fragments of the hull survived, it has been possible to conclude that it was an Indonesian vessel of lashed-lug construction. Dowels of Borneo ironwood were found in fragmentary hull planks. From the location and cargo, the ship was voyaging from China to a port in metal-deficient Java.

The cargo of the *Java Sea* wreck consisted predominantly of Chinese products, namely ceramics, iron articles and two bronze gongs. A small number of Southeast Asian products, including eight pieces of resin, three copper ingots, 16 elephant tusks and 31 kendis made in Peninsular Thailand, which appear to have been picked up by the ship's crew when the vessel called somewhere along the Gulf of Siam, were also recovered. In addition, two bronze figures and two finials of maritime Southeast Asian origin, a set of copper alloy weights, two balance bars, six copper alloy items and five glass fragments were recovered from the wreck site. These appear to have been the crew's possessions.

The Chinese ceramics recovered from the wreck consist of both fine and coarse category wares, and comprise 95 painted wares, 46 black-glazed bowls, 1,839 white wares, 13 *qingbai* wares probably of Jingdezhen origin, 32 Fujian *qingbai* wares, 135 celadon wares, 8,019 green-glazed wares and 472 brown-glazed wares.<sup>72</sup> With the exception of the brown-

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<sup>71</sup> See William Mathers and Michael Flecker, *Archaeological Report: Archaeological Recovery of the Java Sea Wreck* (Maryland, Pacific Sea Resources, 1997), and Flecker's summary at his <http://www.maritime-explorations.com/java%20sea.htm>. See also Flecker, "The thirteenth century Java sea wreck: A Chinese cargo in an Indonesian ship," *Mariner's Mirror* 89/4 (2003), pp. 388-404.

<sup>72</sup> Mathers and Flecker, *Archaeological Report: Archaeological Recovery of the Java Sea Wreck*, pp. 77-94 and 116-171.

glazed wares, the majority of which were containers, the ceramic assemblage consisted predominantly of tableware, followed by lidded-boxes and vases.

The predominance of low-value products in this ship's cargo is emphasised by the more than 190 tons of iron products found at the wreck site. These include stacks of iron woks of various sizes, and rectangular and trapezoidal iron bars, which form the majority of the iron cargo.<sup>73</sup>

The only other products possibly of Chinese origin were the two bronze gongs. This negligible Chinese bronze cargo suggests that the Chinese bronze trade carried on by Southeast Asian traders was, by this time, incidental. The gongs in the Java Sea wreck were undoubtedly to be used for ceremonial purposes rather than melted down for their metal content.

### **SHIPS AND SHIPBUILDING ON THE NANHAI SECTOR OF THE MARITIME SILK ROAD**

A major lacuna in our knowledge of the Maritime Silk Road is the nature of the ships employed on this route and how they were built. Indian historians have assumed that the Indian traders, craftsmen and monks or priests who sailed east to Survanadvipa did so in Indian vessels. They turned to the Sanskrit text on shipbuilding, the *Yuktikalpataru*, or representations of ships in paintings at Ajanta caves or on coins and bas-reliefs for evidence of Indian voyaging across the Indian Ocean. But no traditional sewn-plank vessels seen in art and parts of India up until today have been found in an archaeological context.<sup>74</sup> Similarly, Chinese historians have taken for granted that Chinese ships must have sailed the Nanhai, given China's long and well documented history of building inland and coastal vessels. But the evidence from the shipwrecks indicates that this trade was carried not on Chinese vessels, but on Southeast Asian and Indian Ocean ships. Why Chinese shipping emerged to

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<sup>73</sup> *Ibid*, pp. 77-80.

<sup>74</sup> This is a noticeable gap in Himanshu Prabha Ray's comprehensive survey of *The archaeology of seafaring in ancient South Asia* (Cambridge: University Press, 2003).

significance only from the Song continues to be a puzzle for Chinese historians.<sup>75</sup> The *Turiang* and the *Bakau* wrecks are currently our earliest evidence of Chinese vessels trading in the Nanhai.

The Southeast Asian vessels that would have sailed the South China Sea and the Indian Ocean are widely assumed to be best represented in three reliefs on the Borobudur. The fragmentary classical Chinese textual references<sup>76</sup> to *kun-lun bo* can be interpreted to be references to these large Southeast Asian vessels that were up to 50 metres in length and may have weighed some 600 tons. More significantly, the Chinese texts note that the components of the vessel were fastened with palm fibres, not iron nails as in Chinese vessels, and rigged with several masts and sails. A number of the vessels were constructed with more than one layer of planks. An obscure passage from the *Periplus of the Erythrean Sea* §60 has a reference to *kolandio phonta* (κολανδιο φωνυ), which maybe a corrupted Greek transcription of *kun-lun bo*<sup>77</sup> and if so, this would be a corroboration of large Southeast Asian ocean-going vessels in the first half of the current era.

Archaeological excavations of coastal and port sites confirm these textual references to Southeast Asian sewn-plank and lash-lugged ships in which the planks of the hulls are built up and held together by stitched palm fibre passed through holes drilled near the edges of the planks. The earliest fragments of these crafts with stitched planking are some fragments found at Pontian, Malaysia, which have been dated to 293 CD+/- 60. Remains of other stitched plank crafts from Jenderam Hilir, Malaysia and from Kolam Pinisi and Sambirejo in South Sumatra and the Philippines have been dated to the period from the 5<sup>th</sup> to the 13<sup>th</sup> century.<sup>78</sup> The Cirebon wreck as documented by Horst Liebner may provide us evidence of a fairly complete lashed-lug vessel.

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<sup>75</sup> See for example, Gang Deng, *Chinese maritime activities and socioeconomic development, c. 2100 B.C. -1900 A.D.* (Westport, Conn.: Greenwood Press, 1997), whose argument is that China's maritime development was dependent upon, and restrained by other socio-economic factors.

<sup>76</sup> Gabriel Ferrand was the first to attempt a correlation of the Chinese references with the Arab and Persian references in "Le K'ouen-louen et les anciennes navigations interocéaniques dans les mers du sud," *Journal asiatique*, 2nd series 13 (1919), 239-33, 431-92 and 14 (1919), 6-68, and 201-41.

<sup>77</sup> A. Christie, An obscure passage from the *Periplus*: Kolandiophonta ta Megista, *Bulletin of the School of Oriental and African Studies*, 29/2 (1957), pp. 345-53.

<sup>78</sup> P.-Y. Manguin, "Sewn-Plank Craft of South-East Asia: A preliminary survey," in S. McGrail and E. Kentley, eds., *Sewn Planked Boats: Archaeological and Ethnographic papers based on those presented to a conference*

However, the early Portuguese reports of Southeast Asian vessels they were encountering were not these large stitched-plank and lash-lugged vessels. Instead, they were describing a rather different type of large vessel they termed “*junco*” transliterating the Malay or Javanese name *jong* for these large ocean going vessels.<sup>79</sup> The Portuguese reports were clear that these *juncos* were very much larger than their own vessels and may have weighed from 85 tons for the smaller *juncos* to 500 or 700 tons for the largest vessels. Secondly, the Portuguese noted that these *juncos* were built without the use of iron nails. Instead the planks of the hull were edge-fastened with dowels inserted into the seams of the planks. As can still be observed today, the hull of the vessel was formed by edge-to-edge fastening of the planks and then the frames were cut to fit and reinforce the hull once it was completed. The frames were probably also fitted to the hull with dowels. The third feature of these *juncos* the Portuguese observed was the multiple sheathing of the hull, with some hulls made of three layers of planks. The fourth feature of these vessels which impressed the Portuguese were their multiple masts, up to four plus a bowsprit. Finally, the Portuguese found the use of two quarter-rudders (instead of the single axial stern-post rudder on their ships) unique. Unfortunately no example of these *juncos* has been located in an archaeological context.

Instead marine archaeology is recovering evidence of another category of ships built from the early late 14<sup>th</sup> century to the beginning of the 17<sup>th</sup> century. These ships combined structural features of the Southeast Asian stitched-plank and lashed-lug vessel with some of the traditional Chinese ship features. These hybrid ships, to which Pierre-Yves Manguin has given the name “South China Sea Tradition” vessel, are defined by having a V-shaped hull with a keel, unlike the flat-bottomed, keel-less Chinese vessels. The planks forming the hull may be either nailed to the frame, as in Chinese ships, or dowelled together with wooden pegs as in the later *jongs*. However unlike the *jong*, which are reported to have had an open hold, these hybrid ships had bulkheads, separating the ships into compartments, as in

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at *Greenwich in November 1984*, British Archaeological Report (BAR) International Series 276 (Oxford: Archaeo Press, 1985), pp. 319-43.

<sup>79</sup> P.-Y. Manguin collates and analyses these Portuguese reports in “The Southeast Asian ship: An historical approach,” *Journal of Southeast Asian Studies* 11/ii (1980), pp. 266-76.

Chinese vessels. But these bulkheads were not watertight as in Chinese ships,<sup>80</sup> instead having limber holes to allow the bilge water to flow to the lowest bulkhead for pumping out. The vessel may have had a Chinese-style single axial rudder or Southeast Asian quarter rudders. The wreck excavated by P.-Y. Manguin in the swamp around Bukit Jakas on Pulau Bintan, Riau, Indonesia is a well-preserved wreck of this category of hybrid ship.

Michael Flecker<sup>81</sup> has investigated three of these hybrid ships. The first was the *Phu Quoc I* wreck surveyed near the island of Phu Quoc on the west coast of Vietnam. It had been heavily looted by fishermen divers, but much of the hull survived. A single disarticulated plank was found with both dowel edge-joining and diagonal iron nail edge-joining, the first time both techniques have been observed on the one vessel. The nail joining is very much a Chinese feature and lends weight to the argument that Chinese shipwrights migrated to Thailand where they heavily influenced local shipbuilding. The wreck has been dated to c. 1400. The second vessel, a sixteenth century vessel of the South China Sea Tradition was found just south of Phu Quoc Island, Vietnam.<sup>82</sup> It was partially looted, but the hull from the waterline down was fairly well preserved. The third, a 16<sup>th</sup>-century vessel, found at a depth of 60 metres in the central Gulf of Thailand, is perhaps the best-preserved ancient wreck in Asia.<sup>83</sup>

The development of these hybrid ships indicates that there must have been Chinese vessels in the Nanhai from at least the 13<sup>th</sup> century. From the time of the Song, China was developing a maritime capability, and by the Yuan period, was able to despatch naval expeditions against Japan in 1281, Annam and Champa in 1283-8 and Java in 1292. Zheng He / Cheng-ho's seven voyages between 1403 and 1423 were a manifestation of the culmination of China's maritime capabilities. But the *Turiang* and the *Bakau* Wrecks,

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<sup>80</sup> On the watertight bulkhead as a defining feature of Chinese shipbuilding, see Cai Wei and others, "Watertight bulkheads and limber holds in ancient Chinese boats," and Jun Kimura, "Historical developments of shipbuilding technologies in East Asia," in Jun Kimura, ed., *Shipwreck ASIA: Thematic studies in East Asian maritime archaeology* (Adelaide: Maritime Archaeology Program, Flinders University, 2010), pp. 26-31 and 1-26 available online at [www.shipwreckasia.org](http://www.shipwreckasia.org).

<sup>81</sup> Flecker, "The South-China-Sea Tradition: The hybrid hulls of South-East Asia," *International Journal of Nautical Archaeology*, 36/1 (2007), pp. 75-90.

<sup>82</sup> Refer to Blake and Flecker, "A Preliminary Survey of a Southeast Asian Wreck, Phu Quoc Island, Vietnam". <http://www.maritime-explorations.com/phu%20quoc.htm>.

<sup>83</sup> Michael Flecker, "The Excavation of the 16<sup>th</sup> Century Central Gulf of Thailand Wreck" (unpublished report).

contemporaneous with Zheng He's voyages, are the earliest *in situ* Chinese wrecks we have recovered. Their diverse cargos of Southeast Asian origin suggests they were plying the local Nanhai routes, rather than shipping mass cargos of Chinese ceramics. This has led Professor Wang Gungwu to ask in his preface to the Smithsonian catalogue, "where are the Chinese ships that sailed the Nanhai?" The evidence of the *Belitung*, the *Intan* and *Java Sea* wrecks, and now the *Cirebon* wreck indicates that China was exporting on the Southeast Asian *kunlun bo*, not their own ships.

However, many of the wrecks found from the 17<sup>th</sup> to the 19<sup>th</sup> century, some of which have been detailed above, are Chinese junks, suggesting a resurgence of Chinese shipping which, as the European records documented, dominated the shipping of the Nanhai. The size of the Tek Sing wreck equals, if not surpasses, contemporary European merchantmen, confirming Chinese domination of shipping in the South China Sea from the 17<sup>th</sup> to the 19<sup>th</sup> centuries.

### **CHANGES IN THE NATURE OF THE PRODUCTS SHIPPED DURING THE 10<sup>TH</sup> TO EARLY 19<sup>TH</sup> CENTURIES**

Two sets of products may be noted from the cargo of the shipwrecks -- those of Chinese origin, and those of Southeast Asian origin. While the trade in the various products from China and Southeast Asia were largely similar during the 10<sup>th</sup> to 18<sup>th</sup> centuries, the specific nature of this trade appears to have evolved significantly during the second millennium CE.

#### **Metals**

Both China and Southeast Asia were important sources of workable metal and metal articles demanded in the Malacca Straits region. China's international trade of metals, both as workable materials and finished articles, had become well-established by the late Tang period. This practice continued through the Song and Yuan periods. Following the establishment of the Mercantile Shipping Superintendencies in the first decades of Song rule (960 onwards), metals such as gold, silver, lead, tin and iron were used by the Chinese to

barter for foreign products.<sup>84</sup> The range of value of these metals allowed the Chinese to meet the changing nature of trade, in particular with Maritime Southeast Asia, as it developed from a select trade based predominantly on the import of luxury products, to one that was dominated by lower-value Maritime Southeast Asian products. Certain metal objects also played a role in diplomatic exchanges between China and her foreign trading partners. Use of these precious objects was thus confined to high-level ceremonial exchanges, while other utilitarian items were used in the general maritime trade.

Within Southeast Asia itself, Sumatra and the Malay Peninsula were important sources of gold, while West Sumatra, Timor, Thailand, the Philippines and Burma were sources of copper.<sup>85</sup> The availability of such metals closer at hand to the Malacca Straits region suggests that Chinese metals would have generally been more expensive to import than Southeast Asian metals. As trade between China and Southeast Asia evolved from being conducted at the state-to-state level involving predominantly high-value Indian Ocean and Middle Eastern products, to one that was conducted largely by private traders and involving low-value Southeast Asian products, the Malacca Straits region's trade in metals also gravitated away from the high-value items from China to the lower-value equivalent from Southeast Asian sources.

The only exception was Chinese iron. Throughout the Song, Yuan and even into the Ming periods, the Chinese iron industry enjoyed tremendous economies of scale, particularly in the production of low-quality cast-iron objects.<sup>86</sup> What surprises is the sheer quantity and weight of iron being traded which the Chinese gazetteers mention without any indication of the volume of this trade in iron.

## Iron

Information from shipwrecks in the region datable to between the 10<sup>th</sup> and 14<sup>th</sup> centuries indicates that iron was consistently imported into Southeast Asia, in large quantities

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<sup>84</sup> *Songhuiyao jigao*, 宋會要輯稿 *zhiguan* 職官 (henceforth SHY ZG) (Beijing: Zhonghua shuju, 1957), 44:1a.

<sup>85</sup> Bennet Bronson, "The Iron Industry and Trade" in M. Flecker and William M. Mathers (eds.) *Archaeological Recovery of the Java Sea Wreck* (Maryland: Pacific Sea Resources, 1997), pp. 95-102.

<sup>86</sup> Bronson, "The Iron Industry and Trade", pp. 101-02.

throughout this period. Both finished iron products in the form of cast-iron pans and other pots and workable forms of wrought iron bars were imported from China. Two main developments in the iron trade with China may be noted. Firstly, China from the Tang was estimated to be smelting more iron than Britain in the midst of its industrial revolution in the 19<sup>th</sup> century. Economies of scale and efficiencies of technology enabled the Chinese to dominate the iron market in Southeast Asia. An estimated 150 tonnes of iron was found in the *Cirebon Wreck* cargo. The *Intan*, *Pulau Buaya* and *Java Sea* wrecks all carried stacks of cast-iron pans and wrought iron bars. The *Java Sea* wreck carried some 200 tonnes of iron bars and manufactured iron products, probably the heaviest part of its cargo.

Secondly is the continuity of the trade in iron from the 9<sup>th</sup>-century *Cirebon* wreck to the 17<sup>th</sup>-century *Binh Thuan* wreck carrying a large cargo of cast-iron pans in addition to Zhangzhou porcelains. There was however a hiatus during the 14<sup>th</sup> to 17<sup>th</sup> century, with the decline in China's export trade following the advent of Ming rule in China in 1368 and the banning of private maritime trade by the Ming court shortly thereafter. Mainland Southeast Asia appears to have been an alternative source of iron for iron deficient maritime Southeast Asia during this period, with iron in an unprocessed form, such as the iron granules that were carried by Southeast Asian vessels like the *Turiang*. By the mid-sixteenth century, however, the Chinese iron trade appears to have recovered dramatically, evident from the large cargo of iron pans found at the *Binh Thuan* wreck site, which were stored in every cargo hold of the vessel. Iron pans and cauldrons were also recovered from the *Vung Tau* wreck, suggesting that, at last up until the late 17<sup>th</sup> century, Chinese iron continued to be in high demand in Maritime Southeast Asia.

## Copper

During the 10<sup>th</sup> to 12<sup>th</sup> centuries, Chinese copper, largely in the form of finished articles such as mirrors and gongs, was exported in very small quantities to the Malacca Straits region. These were apparently prestige items from China. By the 13<sup>th</sup> century, however, China's export of copper items to the Malacca Straits region, or to Southeast Asia, for that matter, was negligible. The high value of Chinese copper and the repeated bans on its export from China by the Song court from 1163 onwards would have made the trade in Chinese bronze

articles both expensive and difficult to conduct. Chinese textual and archaeological information, including that obtained from Southeast Asian land and maritime sites, does not reveal any significant import of Chinese copper or copper items between the 12<sup>th</sup> and 14<sup>th</sup> centuries.

Southeast Asia remained the main source of the Malacca Straits region's copper needs throughout the 10<sup>th</sup> to 14<sup>th</sup> centuries, providing the region with usable copper in the form of copper scrap as well as ingots. This is evident from the *Intan*, *Pulau Buaya* and *Turiang* wrecks. The latter occurred in several forms, including bars, ingots of pyramidal shape, and large rings. Excavations around Fort Canning in Singapore suggest that there may have been a local demand for Southeast Asian copper.

### Precious Metals

In terms of precious metals, silver bullion flowed out of China, to the Nanhai, but also to the steppes, where the price of silver against gold was low in China compared to the Indo-Muslim world.<sup>87</sup> The monetisation of the economy under the Song changed this, when the traditional strings of copper coins could not cope with more than everyday purchases and silver moved in as the new form of currency. By 1436, the Yuan started to selectively convert some of its levies into payments in silver.<sup>88</sup> The entry of the Spanish into Manila, with silver from their Mexican and Bolivia mines enabled the Spanish to buy their way into the South China Sea trading networks, but also propelled the Ming economy to new levels of consumerism and development. It also enriched Southeast Asian elites enabling them to also move up the ladder of consumerism; all of which underpinned an Age of Commerce in Southeast Asia. It was Spanish silver that in large part underpinned this Age of Commerce in Southeast Asia and integrated the Ming economy into a global trading system.

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<sup>87</sup> R. von Glahn, *Fountains of fortune: Money and monetary policy in China 1000-1700* (Berkeley: University of California Press, 1996), p. 54.

<sup>88</sup> Von Glahn reviews Ming monetary policies and the issue of a silver versus copper currency in *Fountains of Fortune*, pp. 157-160, 187-197.

## CERAMICS

The trade in ceramics loomed large in the Malacca Straits region. Chinese ceramics dominated the region's import trade. This was followed by Southeast Asian ceramics, initially comprising earthenware, and between the 15<sup>th</sup> and 16<sup>th</sup> centuries, with high-fired stoneware from Mainland Southeast Asian kilns, particularly those in Vietnam and Thailand. By the seventeenth century, however, the Chinese ceramics trade with Southeast Asia witnessed resurgence, and Chinese ceramics continued to dominate this aspect of Southeast Asian trade up until the 19<sup>th</sup> century.

### Chinese Ceramics

Between the 10<sup>th</sup> and 14<sup>th</sup> centuries, ceramics constituted the largest group of non-perishable products imported by the South China Sea ports from China. This is indicated by the ceramics cargos recovered from the shipwrecks listed above, but also by the vast quantity of Chinese ceramic shards found at port settlement sites of this period. Despite the relatively low unit value of ceramics, the total value of the ceramics trade was significant.

During the 10<sup>th</sup> and 11<sup>th</sup> centuries, Yue-type ware, along with white and *qingbai* wares, were the key types of export ceramics produced by the kilns in South China. Yue-type ware was produced mainly in Zhejiang province, while white and *qingbai* wares were produced by kilns in Jingdezhen as well as in Guangdong.<sup>89</sup> That these were exported to the Malacca Straits region is indicated both by finds at early port-cities within the region and by the ceramic cargo of the *Belitung*, *Intan* and now *Cirebon* wrecks, which comprised substantial quantities of white, *qingbai* and Yue-type fine ceramics, as well as brown and green-glazed coarse ceramics. The Malacca Straits region's ceramics import trade thus mirrored the general production of South China's ceramics industry.

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<sup>89</sup> Zeng Guangyi, "A Study of the Characteristics of Tang and Song Ceramics of Guangdong" in Fung Ping Shan Museum, *Ceramic Finds from Tang and Song Kilns in Guangdong* (Hong Kong: University of Hong Kong, 1985), pp. 63-80; and Peter Y. K. Lam, "Northern Song Guangdong Wares" in Southeast Asian Ceramics Society, *A Ceramic Legacy of Asia's Maritime Trade; Song Dynasty Guangdong Wares and other 11<sup>th</sup> to 19<sup>th</sup> century Trade Ceramics found on Tioman Island, Malaysia* (Selangor: Southeast Asian Ceramics Society, 1985), pp. 1-30.

By the late 11<sup>th</sup> and early 12<sup>th</sup> centuries, ceramics had clearly become the dominant product exported by China to the Malacca Straits region in terms of the volume of trade. Ceramics accounted for the largest group of Chinese products recovered from the *Pulau Buaya* wreck, far exceeding the proportion represented in the *Intan* wreck cargo. In terms of value, the ceramics trade continued to represent the largest component of China's export trade, even though low-value ceramics continued to account for almost all of the ceramics imported by the region.

The late 11<sup>th</sup> and early 12<sup>th</sup> centuries also appear to have been a period of high activity in the ceramics trade. This is confirmed by information from the *Pingzhou ketan*, which states that the cargo holds of the trading vessels leaving Guangzhou were mainly loaded with large and small ceramics of matching sets prior to their departure to Southeast Asia during this period.<sup>90</sup> This surge in ceramics exports thus clearly began even before a ban was placed on the export of copper cash by the Song court in China in 1175, an act that has been cited as the major impetus for the boom in the export trade in Chinese ceramics during the Song period.<sup>91</sup>

The ban on the export of Chinese copper cash in 1175, along with the 1219 ban on the use of gold and silver in official trade transactions, provided a further boost to the ceramics export trade. The 1219 ban listed stoneware ceramics as one of the export products to be used in place of gold and silver.<sup>92</sup> The resulting need for larger volumes of products permitted to be exported in order to make up for the high unit-value and low volume of gold and silver must have led to a corresponding increase in the volume of the ceramics trade in the 13<sup>th</sup> century.

During this time, there was a shift in emphasis from white wares to green wares in the ceramics export trade to Maritime Southeast Asia. This is evident from the differences in the cargoes of the *Pulau Buaya* and *Java Sea* wrecks. Unlike the 10<sup>th</sup>-century *Intan* wreck, which

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<sup>90</sup> Zhu Yu, *Pingzhou ketan* (AD 1116; henceforth PZKT), 2:3a, in Zhu Jianmin 朱建民 et. al., *Yinjing wenyuange siku quanshu* 印景文淵閣四庫全書 (Taipei: Taiwan shangwu yinshuguan gongsi, 1984), 1038: 273 - 312.

<sup>91</sup> Kerry Nguyen Long, "History Behind the Jar" in Cynthia Valdes, Kerry Nguyen Long and Artemio C. Barbosa (eds.), *A Thousand Years of Stoneware Jars in the Philippines* (Manila: Jar Collectors, 1992), p. 30.

<sup>92</sup> Tou Tou et al., *Songshi* (AD 1345; henceforth SS), 185:32b. Zhu, *Yinjing wenyuange siku quanshu*, 280: 1 – 288: 912.

carried only Guangdong wares, the late 11<sup>th</sup>- to early 12<sup>th</sup>-century *Pulau Buaya* wreck carried a cargo of ceramics of more mixed origin. The green ware recovered from the wreck site appears to have been of South Fujian origin, while a number of the white ware ceramics may be products of the Zhangpu kilns in South Fujian and Jingdezhen in Jiangxi.

By the 13<sup>th</sup> century, green ware had become the main type of ceramic produced in South China. At the same time, the importance of Quanzhou, as a rising centre of China's trade with Maritime Southeast Asia, had an impact on the types of ceramics exported to the region.<sup>93</sup> While celadon-glazed ceramics, most of which were from Longquan, were exported to the region by the 13<sup>th</sup> century, the majority of the green ware recovered from settlement sites as well as ship-wreck sites of this period continued to be South Fujian products. Guangzhou continued to be an important export gateway for the ceramics export trade, although the gradual shift of the centre of this trade from Guangzhou to Quanzhou during the 12<sup>th</sup> and 13<sup>th</sup> centuries clearly led to a corresponding northward shift in the catchment area of the ceramics exported to Maritime Southeast Asia.<sup>94</sup> This shift is evident from the cargo of the *Java Sea* wreck, which comprised largely South Fujian green ware and a small quantity of South Fujian white ware.

After Quanzhou was designated as the chief international port of Yuan China at the end of the 13<sup>th</sup> century,<sup>95</sup> China's ceramics trade with the Malacca Straits region was almost entirely centred at that port. South Fujian and its neighbouring provinces to the north, such as Jiangxi, Jiangsu and Zhejiang, became established as the ceramics industry centres catering for the demands of the Malacca Straits region. The proliferation of kiln areas in Zhejiang, the consolidation of the South Fujian ceramics industry centred at Dehua, Anxi and Jinjiang, and the rising importance of both Dehua and Jingdezhen as national centres of ceramics production, meant that the main ceramic wares exported to the Malacca Straits

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<sup>93</sup> So Kee Long, "The Trade Ceramics Industry in Southern Fukien during the Sung", *Journal of Sung-Yuan Studies*, 24, pp. 1-19.

<sup>94</sup> Ho Chuimei, "The Ceramic Boom in Minnan during Song and Yuan Times" in Angela Schottenhammer (ed). *The Emporium of the World: Maritime Quanzhou, 1000-1400* (Leiden: Brill, 2001), pp. 237-82.

<sup>95</sup> *Yuanshi* (AD 1370; henceforth YS), 94: 25a – 26b. Zhu, *Yingjing wenyuange siku quanshu*, 292: 1 - 295: 739.

region during the late 13<sup>th</sup> and early 14<sup>th</sup> centuries were green, Dehua, *shufu*, *qingbai* and blue and white wares.<sup>96</sup>

This late 13<sup>th</sup> and 14<sup>th</sup> century developments are evident from the ceramics recovered from sites in Singapore. Green wares form the majority, followed by *dehua* and *shufu* wares, and lastly by *qingbai* and blue and white wares. The importance of Quanzhou as the gateway of South China's ceramics export trade at this time is evident from the presence of South Fujian green ware, Longquan celadon ware, and *shufu*, *qingbai* and blue and white ware from Jingdezhen, which together form the bulk of the fine stoneware assemblages.<sup>97</sup>

After the early 15<sup>th</sup> century, there appears to have been a lapse in the trade in Chinese ceramics until the early 17<sup>th</sup> century. There appears to have been a surge in the supply of Chinese ceramics at this time, evident from the large ceramics cargo of the *Binh Thuan* wreck. This state of affairs appears to have continued through the course of the 17<sup>th</sup> to early 19<sup>th</sup> centuries.

Southeast Asian demand for ceramics during this period, as in the 10<sup>th</sup> to 15<sup>th</sup> centuries, was dependent on developments in the ceramics industry in South China. The rise of Jingdezhen and Dehua during the Ming and early Qing periods as the national kiln centres of Southern China led to the production of large quantities of ceramics, both by these kilns districts, as well as those in their vicinity. The result was that the export ceramics trade was dominated by blue and white ceramics, the signature ware of the Jingdezhen kilns, and Dehua-type ware. The *Vung Tau* and *Ca Mau* wrecks carried massive cargoes of blue-and-white porcelain from Jingdezhen, while the *Tek Sing* wreck carried a large cargo of Dehua-type ceramics.

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<sup>96</sup> See Liu Liangyu, *A Survey of Chinese Ceramics (2); Sung Wares* (Taipei: Aries Gemini Publishing, 1991), p. 167; S. J. Vainker, *Chinese Pottery and Porcelain* (New York: George Braziller, 1991), p. 138; Liu Liangyu, *A Survey of Chinese Ceramics (3); Liao, Hsi-Hsia, Chin and Yuan Wares* (Taipei: Aries Gemini Publishing, 1992), p. 168; and Ho, "The Ceramic Boom in Minnan during Song and Yuan Times".

<sup>97</sup> Refer to John N. Miksic, *Archaeological Research on the "Forbidden Hill" of Singapore: Excavations at Fort Canning* (Singapore: National Heritage Board, 1985); John N. Miksic, "Beyond the Grave: Excavations North of the Kramat Iskandar Shah, 1988" *Heritage*, 10, pp. 34-56; and Derek Thiam Soon Heng, *Economic Interaction between China and the Malacca Straits Region, Tenth to Fourteenth Centuries A.D.* (Unpublished PhD Thesis, University of Hull, 2005), tables 4.3 & 4.4.

## Southeast Asian Ceramics

Up until the 14<sup>th</sup> century, the maritime trade in Southeast Asian ceramics was limited compared to the trade in Chinese ceramics. Nonetheless, a consistent trade in fine-paste earthenware ceramics from Mainland Southeast Asia appears to have been maintained in the Malacca Straits region throughout the 10<sup>th</sup> to 14<sup>th</sup> centuries. Data from the shipwrecks indicate that fine-paste earthenware kendis from Thai kilns were consistently shipped to the Malacca Straits region and other Maritime Southeast Asian ports. This demand for fine-paste kendis is evident from archaeological data from land-based excavations at settlement sites in the Malacca Straits region.

At land-settlement archaeological sites in Singapore dated to the 14<sup>th</sup> century, a small but consistent proportion of the ceramics recovered from the archaeological sites comprises fine-paste ceramic shards. Currently, it is not known whether these shards are similar in origin to those recovered from such wrecks as the *Pulau Buaya* or *Turiang*. However, the presence of such shards at sites in Singapore suggests that fine-paste wares were in demand in the Malacca Straits region port-settlements up until at least the 14<sup>th</sup> and early 15<sup>th</sup> centuries.

Towards the end of the 14<sup>th</sup> century, the region's source of stoneware ceramics began to shift from South China to Mainland Southeast Asia. While the curtailing of Chinese maritime trade by the Ming court in China in the early 15<sup>th</sup> century resulted in a dramatic decline in the availability of Chinese ceramics to Southeast Asia, the shift in Maritime Southeast Asia and the Malacca Straits region's import of stoneware ceramics from Chinese sources to Mainland Southeast Asian sources appears to have begun at least 50 years prior to this "Ming gap".<sup>98</sup> Data from the *Turiang* wreck suggests that by the late 14<sup>th</sup> century, Chinese ceramics accounted for only one-third of the stoneware ceramics that were being shipped by Chinese vessels to Maritime Southeast Asia. Thai kilns, along with Vietnamese kilns playing a small but complementary role, were beginning to become the major suppliers of

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<sup>98</sup> For a detailed discussion of this issue, refer to Roxanna Brown, *The Ming Gap and shipwreck Ceramics in Southeast Asia: Towards a chronology of Thai trade ware* (Bangkok: River Books Co. for the Siam Society, 2009).

high-fired ceramics to Maritime Southeast Asia and the Straits region, usurping China's long-held position in this trade. The value of the Chinese ceramics trade had also declined significantly.

Mainland Southeast Asian kilns catered for the same ceramics demand maintained by the Maritime Southeast Asian and Malacca Straits region markets. Dishes and bowls were the main ceramic forms exported by Mainland Southeast Asian kilns to these markets, following in the steps of their Chinese predecessors. The green-glazed and underglaze-painted wares produced by these Mainland Southeast Asian kilns were also in line with the types of glazes and decorations produced by the South Chinese kilns up until the late 14<sup>th</sup> and early 15<sup>th</sup> centuries.<sup>99</sup> The transition from Chinese to Southeast Asian ceramic products was thus most likely to have been fairly smooth.

This shift to Mainland Southeast Asian ceramics is evident at late 14<sup>th</sup> and early 15<sup>th</sup>-century Malacca Straits regional settlement sites such as Temasek in Singapore. A total of 16 Sawankalok and Sukhothai ware shards, similar to the Thai ceramics recovered from the *Turiang* wreck and datable to the early 15<sup>th</sup> century, were recovered from the Empress Place Site (excavated in 1998) in Singapore.<sup>100</sup> In relative terms, the quantity is small compared to that of Chinese ceramic shards. Nonetheless, the shift from importing Chinese stoneware to importing Mainland Southeast Asian stoneware appears to have been a discernible late 14<sup>th</sup>-century trend seen in Maritime Southeast Asian settlements, including Singapore.

## CONCLUSION

Archaeological excavations on Fort Canning and its environs in Singapore since 1984 have enabled the positing of the existence of a thriving trade port over a century from the

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<sup>99</sup> For more detailed discussions on the interactions between South Chinese and Mainland Southeast Asian kilns in the 14<sup>th</sup> and 15<sup>th</sup> centuries, refer to Marie-France Dupoizat: "The Ceramic Cargo of a Song Dynasty Junk found in the Philippines and its Significance in the China-Southeast Asia Trade" in Rosemary Scott and John Guy (eds.), *South East Asia and China: Art, Interaction and Commerce*, Colloquies in Art and Archaeology in Asia No. 17, School of Oriental and African Studies, London, 1995, pp. 205-24.

<sup>100</sup> Cheryl-Ann Low, "Sawankoloke-Sukhothai Wares from the Empress Place Site, Singapore", *The Heritage Journal*, vol. 1, no. 1, pp. 21-37.

beginning of the 14th century.<sup>101</sup> The ceramic sherds recovered indicate a thriving port aware of and importing the latest underglaze blue wares from Jingdezhen. The Yuan author Wang Dayuan recorded in his travelogue *Daoyi zhilue*, comprising his impressions of the 100 trade ports he visited in the Nanhai and the Western (Indian) ocean, that the region's ports, including Temasek, imported iron wares, woks, cauldrons and rods.<sup>102</sup> Paul Wheatley notes that "iron and ironmongery were among the commonest commodities shipped from China to the South Seas, but Chao Ju-kua mentioned them on only five occasions, so we may safely regard his account as incomplete."<sup>103</sup> Wheatley may have been prescient in noting that these brief references to trade in iron does not provide an insight into the scale and continuity of this trade in iron which maritime archaeology is now providing us.

The volume of iron bars and ceramics recovered from the *Belitung*, *Intan*, *Java Sea* and now the *Cirebon* Wrecks indicates that Chinese furnaces and kilns were capable of producing massive quantities of iron<sup>104</sup> and ceramics<sup>105</sup> for export at a much earlier date than we thought. This is not an imperial court's attempt to conduct its foreign relations and regulate foreign trade through a "tributary system" as reconstructed in mainstream historiography, with private enterprise playing a minor and insignificant role. The evidence of the *Belitung* shipwreck points to private enterprise significantly investing in trade from a very early date. More significant is that this was not small-scale peddling trade, but merchant capitalism with investments and funds to underwrite the production and export of tens of thousands of pieces of ceramics and tons of iron bars.

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<sup>101</sup> Derek Heng, "Temasek as an international and regional trading port in the thirteenth and fourteenth centuries; A reconstruction based on recent archaeological data," *JMBRAS* 72/1 (1999), 113-24 reprinted in Wade, ed., *Southeast Asia-China interactions*, pp. 296-308. Also Kwa Chong Guan, "From Temasek to Singapore: Locating a global city-state in the cycles of Melaka Straits History," in J. N. Miksic and C.-A. Low Mei Gek, eds., *Early Singapore 1300s-1819: Evidence in maps, texts and artefacts* (Singapore: Singapore History Museum, 2004), pp. 124-46.

<sup>102</sup> Su Jiqing 蘇繼慶, ed., Wang Dayuan's *Daoyi zhilue jiaoshi* 島夷志略校釋 (Beijing: Zhonghua shuju, 1981), pp. 19 and 213.

<sup>103</sup> In "Geographical notes on some commodities involved in Sung maritime trade," *JMBRAS* 32/2 (1959), sub voce "Iron."

<sup>104</sup> Robert Hartwell, "A cycle of economic change in imperial China: Coal and iron in Northeast China, 750-1350," *JESHO* 10/1 (1967), 102-159 estimates that by 1078 the northern Sung mines and smelters were producing at least 125,000 tons of iron annually.

<sup>105</sup> See Lothar Ledderose on how Chinese craftsmen developed complex modular systems to mass produce several thousand terra-cotta warriors for the First Emperor or printing systems centuries later, and ceramics by the millions of pieces for the domestic and export market in his *Ten thousand things: Modular and mass production in Chinese art*, A. W. Mellon Lecture, 1998, Bollingen Ser. XXXV:46 (Princeton: University Press, 2000).

These large cargoes of ceramics and iron bars are also revising our understanding of the role of maritime trade in the development of early Southeast Asian kingdoms. The Java Sea wrecks challenge our understanding of the nature of traditional Asian trade reconstructed by an earlier generation of Dutch socio-economic historians to be a peddling trade involving traders moving their goods from one village fair to another, as the Dutch observed in the Javanese landscape they were colonising. Dutch historians looking at the inland kingdoms' involution to agriculture in response to the loss to the Dutch of their northern coastal ports from the 17<sup>th</sup> century postulated a structural divide between the inland agrarian kingdoms and the coastal *pasisir* trading ports which declined in the 17<sup>th</sup> century.<sup>106</sup> Schrieke's study of "Ruler and Realm in Early Java" is an example of Max Weber's ideal-type of patrimonial regime applied to the institutions of trade and state in Java. J. C. van Leur's doctoral dissertation "On Early Asian Trade" drew on these insights to argue that early Asian trade was essentially a peddling trade, similar to medieval Europe where change came with the industrial revolution, and in the case of Asia, with European colonialisation from the late 18<sup>th</sup> century. M. A. P. Meilink-Roelofs<sup>107</sup> extended van Leur's thesis to argue that Malaccan trade on the eve of the Portuguese conquest was peddling trade.

But the Java sea wrecks suggest that the Javanese economy had the capacity to distribute and consume much larger numbers of Chinese ceramics and forge more iron imported than we previously thought. This suggests a far more complex and developed economy than we have reconstructed.<sup>108</sup> Recent studies of the epigraphic evidence by Jan Wisseman

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<sup>106</sup> B. Schrieke, "Prolegomena tot eene sociologische studie over de volken van Sumatra", deel I (A. Historisch gedeelte), Schets van de politieke en economische machtsverschuivingen in den Indischen Archipel in de 17de eeuw," *Tijdschrift Taal- Land- en Volkenkunde* 65 (1925), 90-207, was intended to be part of a larger study of Sumatra which included a study of Javanese expansion into the archipelago and its decline into an agrarian realm in the 17<sup>th</sup> century.

<sup>107</sup> M. A. P. Meilink-Roelofs, *Asian trade and European influence in the Indonesian archipelago between 1500 and about 1630* (Hague: M Nijhoff, 1962).

<sup>108</sup> See W. F. Wertheim's summary of this essentially Weberian approach to Javanese economic history in his "The sociological approach to Indonesian history," in *East-West parallels: Sociological approaches to modern Asia* ('s-Gravenhage: W. van Hoeve, 1964), pp. 239-258. This Weberian paradigm of regimes with patrimonially organised villages in which trade was peripheral continued into the 1980s in Dutch scholarship, e.g. C. J. G. Holtzappel's 1986 doctoral thesis *Het verband tussen desa en rijksorganisatie in prekoloniaal Java; Een ontwikkelings-sociologische studie in historische perspectief* which included among its promoters W. F. Wertheim.

Christie<sup>109</sup> and Kenneth Hall<sup>110</sup> suggest a far more complex interrelationship between the inland kingdoms and their coastal settlements. The evidence of the shipwrecks in the Java Sea supports Christie's and Hall's reconstruction of the profound impact of maritime trade upon the Javanese domestic economy and state building from the 10<sup>th</sup> to the 13<sup>th</sup> centuries.

The evidence of the shipwrecks also provides a belated reply to Raffles Professor Wong Lin Ken's query "why no historian has yet adequately explained why Singapore failed to be a major trading centre before the nineteenth century." The underlying theme of this essay is that the shipwrecks we have, and are still recovering from the South China Sea and the Java Sea are time capsules which document the evolution of trade along the Maritime Silk Road. They provide the material evidence for the narrative of the cycles of trade we are reconstructing from the textual records and Singapore's fortunes within these cycles of expansion and contractions of maritime trade which the textual records only elliptically refer to.

The cargos of the *Belitung* and *Cirebon* wrecks indicate an expanding Tang dynasty market reaching not only westwards along the overland Silk Road, but also turning to the Maritime Silk Road for its supply of exotica. It was to service this growing Tang market for exotica from the Nanhai and the "Western Ocean" as the Chinese knew the Indian Ocean, that a group of Malay chieftains moved to make their base at the confluence of the Musi and Upang Rivers, which became the preferred emporium in the Nanhai sector of the Maritime Silk Road. Srivijaya, as these Malay chieftains named their emporium in their epigraphy, rose to dominate the trade of the Malacca Straits and the trade transiting it between Southern China and South and West Asia. The Chinese recognised Srivijaya, or San-fo-qi as they transcribed it, "at the centre of the southern ocean" where merchants congregate, making it "the most prosperous" country in the southern ocean. The inference from the cargo of the 10<sup>th</sup>-century *Intan* Wreck is that despite the economic downturn as a consequence of

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<sup>109</sup> Note especially Christie, "Javanese markets and the Asian sea trade boom of the tenth to thirteenth centuries A.D." *Journal of the Economic and Social history of the Orient*, 41/iii (1998), pp. 344-381, and her "Asian sea trade between the tenth and thirteenth centuries and its impact on the states of Java and Bali," in H. P Ray, ed., *Archaeology of seafaring; The Indian Ocean in the ancient period* (Delhi: Pragati Publishers, 1999), 221-270.

<sup>110</sup> Kenneth R. Hall, *A history of early Southeast Asia, Maritime trade and societal development, 100-1500* (Lanham, Maryland: Rowman & Littlefield, 2011).

political upheavals accompanying the end of the Tang and the restructuring of power during the ensuing Five Dynasties, China continued to export significantly to the Nanhai on Southeast Asian vessels.

A new economic cycle succeeding the old northern Tang cycle was inaugurated by the Song at Kaifeng.<sup>111</sup> The socio-economic transformation of China under the Song underpinned a vibrant market for overseas trade. The 12<sup>th</sup>/13<sup>th</sup>-century *Pulau Buaya* wreck and the 13<sup>th</sup> - century *Java Sea* wreck are indicators of a new cycle of Chinese export trade in Chinese vessels. Coinciding with this southern Chinese economic cycle initiated by the Song was a resurgence of Indo-Islamic trade into the Indian Ocean and the South China Sea. The old Persian and Arab trade networks centred on Baghdad were challenged by the rise of Cairo under the Fatimids as the new centre of West Asian trade into the Indian Ocean and further. A series of Tamil inscriptions in the Malacca Straits attest to the influence of Tamil merchant guilds in Indian trade to China. The emerging narrative is that these developments reflect a trade boom<sup>112</sup> that has been termed an “Age of Commerce” in Southeast Asia from the 10<sup>th</sup> century.<sup>113</sup>

This trade boom started to decline in the 14<sup>th</sup> century when a series of environmental crises in both China and West Asia turned these two regions inwards. Episodes of climate change wrought drought and famine accompanied by locusts on Yuan China from 1324 to 1330 and again, from 1339 when according to Chinese records, a series of “dragons” brought floods, then drought and famine accompanied by extremely cold winters amounting to a Minor Ice Age and a plague pandemic which finally brought an end to the Yuan Dynasty in 1367.<sup>114</sup> Concurrently, another plague pandemic which killed an estimated 30 or more percent of Europe’s population in a “Black Death” and spread to West Asia appears to have

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<sup>111</sup> Robert Hartwell, “Demographic, political, and social transformations of China, 750-1550,” *Harvard Journal of Asiatic Studies*, 42/2 (1982), 365-442.

<sup>112</sup> Christie in her work (fn. 107) uses the term “trade boom” to describe maritime trade between the 10<sup>th</sup>-13<sup>th</sup> century. See also Jacq-Hergoualc’h, *The Malay peninsula* (fn 8 above) who writes of a “commercial boom” in the 12<sup>th</sup> and 13<sup>th</sup> centuries.

<sup>113</sup> Geoff Wade, “An Early Age of Commerce in Southeast Asia, 900-1300,” *JSEAS* 40/2 (2009), 22—65, and comment by V. Lieberman, “Maritime influences in Southeast Asia, c. 900-1300: Some further thoughts,” *idem* 41/3 (2010), 529-539.

<sup>114</sup> Tim Brook, *The troubled empire; China in the Yuan and Ming dynasties* (Cambridge, Mass.: Belknap Press of Harvard University, 2010), pp. 6-23, 50-78.

undermined Indian Ocean trade. Srivijaya, which had managed to maintain its dominance of the Nanhai trade through the Song, went into decline.

The Ming, more than the Yuan and perhaps even the Song, were locked into the trade. The Ming were inexorably drawn into a South China Sea world economy to finance its demand for what the Ming connoisseurs described as “superfluous things.”<sup>115</sup> However, after a brief outburst of maritime expeditions under Admiral Zheng He, the Ming turned inwards to deal with strategic threats on its continental frontiers. This inward turn of the Ming created a brief hiatus in the export of ceramics and Chinese shipping in the Nanhai creating what has become known as a “Ming Gap” from c. 1368 to c. 1487 in the provision of provision of Chinese ceramics to the South China Sea.<sup>116</sup> This “gap” provided the opportunity for Thai kilns to move to supply this demand for ceramics, and ship their production of ceramics in a new generation of Southeast Asian hybrid ships.

It was in these times that a new series of port of trade, including Temasek, rose to service a new pattern of intra-Asian trade represented by the *Turiang*, and other Chinese vessels whose Southeast Asian cargoes suggest they were plying the Nanhai ports, rather than the long-distance Maritime Silk road trade. Malacca, founded by Iskander Shah/Parameswara in around 1403 was more fortunate than the Singapura/Temasek he abandoned, for by the mid-15<sup>th</sup> century, Southeast Asian trade was experiencing a new upward cycle driven by new demands for spices and aromatics and the emergence of a new series of port cities and mercantile elites to create what Anthony Reid has termed an “Age of Commerce”<sup>117</sup> which the Portuguese and Dutch were drawn into in the 16<sup>th</sup> and 17<sup>th</sup> centuries. Wealth from international trade enabled the establishment and development of a new generation of polities with more resources, and therefore more power and authority, at their command than the old *mandalas*. Their capitals and ports with populations of 50,000 to 100,000 made

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<sup>115</sup> Craig Clunas, *Superfluous things: Material culture and social status in early modern China* (Cambridge: Polity Press/Blackwell, 1991) and more recently, Timothy Brook, *The confusions of pleasure: Commerce and culture in Ming China* (Berkeley: Univ. California Press, 1998) on how commercialisation and commerce transformed Ming China from an centrally-administered agrarian realm into a market for conspicuous consumption and competition for status.

<sup>116</sup> Roxanna M Brown, “A Ming Gap? Data from Southeast Asian shipwreck cargoes,” Wade and Sun, eds., *Southeast Asia in the fifteenth century: The China factor*, pp. 359-383.

<sup>117</sup> Reid, *Southeast Asia in the Age of Commerce, 1450-1680*; Vol. Two: *Expansion and crisis* (New Haven: Yale University Press, 1993).

them larger than most contemporary European cities (except for perhaps Naples) and many Chinese port cities. These polities -- Malacca, Ayudhya, Mataram, among others -- challenged the European merchant empires expanding into the region, and made their last stand against these merchant empires in the mid-18<sup>th</sup> century.

The advent of the European merchant empires created new markets for Chinese porcelains and opened up to the Ming new pleasures of consumerism. The cargoes of the wrecks of the 17<sup>th</sup>-century inventories noted above are evidence of a major surge in the production of Chinese porcelains for export to not only the Nanhai ports, but also to European markets. The *Binh Thuan* wreck which was reported to be en route to Johor, the *Wanli* wreck, and the *Kok Si Chang One* wreck provide the context for the wide range of blue-and-white wares with reign marks ranging from Xuande (1425-35 CE) to Wanli (1572-1620) recovered from Johor Lama and other Johor River sites.<sup>118</sup> These wrecks also provide the corroborative evidence that there was a possibly large Ming trade into the Kallang Estuary in Singapore and accounts for the series of underglaze blue-and-white porcelain sherds that were recovered in the course of dredging of the Kallang River estuary in the late 1960s and early 1970s.<sup>119</sup> These sherds in the context of the Wanli era wrecks suggests that there was a thriving port in the Kallang estuary which the Flemish merchant from Bruges Jacques de Coutre,<sup>120</sup> who was also a Portuguese agent, may have been referring to as “one of the best in all of the East Indies” on the *Isla de la Sabandaria Vieja*. This Persian office of the *Shabandar* or “Lord of the Haven/Port” was adopted in a number of archipelago ports of trade to refer to the local ruler’s official regulating trade. De Coutre’s reference to Singapore as the compound of the *Sabandaria*, is confirmed in a the maps of Singapore by the Luso-Malayan *descobridor*, mathematician and explorer Manuel Godinho d’Erédia and later Dutch map by André Pereira dos Reis. The VOC Admiral Cornelis Matelieff de Jonge refers in his *Journael* of his voyage to the East Indies meeting the *sabander* of Singapore, called Seri Raya Nugara, as a representative of the sultan of Johor on 5 May 1606, to plan for a siege of

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<sup>118</sup> Colin Jack-Hinton, “A note on a Ch’eng Hua *nien hao* from Kampong Makam, Kota Tinggi, and some remarks on the Johore River trade in the fifteenth century, *Federation Museums Journal*, n.s. 8 (1963), 33-34.

<sup>119</sup> Kwa Chong Guan, “16<sup>th</sup> century underglazed blue porcelain sherds from the Kallang estuary,” in J. N. Miksic and Cheryl-Ann Low Mei Gek, *Early Singapore 1300s-1819, Evidence in Maps, texts and artefacts* (Singapore: Singapore History Museum, 2004), pp. 88-94.

<sup>120</sup> Peter Borschberg, “Jacques de Coutre as a source for the early seventeenth-century history of Singapore, the Johor River, and the Straits,” *JMBRAS*. 81/2 (2008), 86.

Malacca.<sup>121</sup> The range of Wanli blue-and-white porcelain sherds recovered from the Kallang Estuary may not signify much on their own, but in the context of the Wanli era shipwrecks in the South China Sea suggests a thriving trade, some of which passed through the Kallang Estuary, which the Portuguese and Dutch records indicate was under the control of a Shabandar of the Johor sultan. The Kallang Estuary may have been as de Coutre describes, “one of the best [ports] in all of the East Indies” in the 16<sup>th</sup> and early 17<sup>th</sup> century.

Ming China, by the time of the Wan-li emperor, was firmly locked into a global economy underpinned by foreign silver introduced by the Spanish and the Portuguese. Whether this influx of silver, which the Ming could not cope with and which may have precipitated a “monetary crisis” when silver undermined China’s traditional copper coinage, eventually led to the collapse of the Ming continues to be an issue of debate. From the mid-17<sup>th</sup> century, the Age of Commerce as described by Reid<sup>122</sup> started to decline. In Europe, a series of civil wars and revolutions that witnessed the execution of Charles I in England and political upheavals in France, Germany and Spain, where Philip IV lost Portugal, created what the French philosopher Voltaire described as a “general crisis” of the 17<sup>th</sup> century that spilled over into a slump of European trade with Southeast Asia and a consequent setback for the region. The thriving port on Singapore which De Coutre described “one of the best in all of the East Indies” appeared to have been a casualty of this general crisis of the 17<sup>th</sup> century which vanished with other urban centres in the region.

Singapore, according to its second Resident Dr John Crawfurd, “with the exception of a single village of poor and predatory Malay fishermen, and that only formed in 1811, was covered with a primeval forest down to the 6<sup>th</sup> day of February, 1819”<sup>123</sup> when Sir Stamford Raffles arrived to establish an English East India Company settlement on the island. In contrast to 14<sup>th</sup>-century Temasek and the 17<sup>th</sup>-century port, which did not survive the regional economic crisis it found itself in, the 19<sup>th</sup>-century East India Company settlement on

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<sup>121</sup>Isaak Commelin, *Begin ende voortgang vande Vereenigde Neerlandsche Geoctroyeerde Oost-Indische Copmanie* from translation by Corinna Vermeulen and Peter Borschberg, forthcoming as *The memoirs, memorials and letters of Cornelis Matelieff de Jonge* (Singapore: National University of Singapore Press).

<sup>122</sup> Reid, *Southeast Asia in the Age of Commerce, 1450-1680*; Vol. Two: *Expansion and crisis*, pp. 285-311. See also G. Parker and L. M. Smith, eds., *The general crisis of the seventeenth century* (London/New York: Routledge, 2<sup>nd</sup> edn., 1997).

<sup>123</sup> John Crawfurd, *A descriptive dictionary of the Indian islands and adjacent countries* (Kuala Lumpur: Oxford University Press 1971 reprint of 1856 edn.), *sub voce* Singapore, p. 395.

Singapore was more fortunate. It was established at a start of a new cycle of trade and globalisation which inaugurated the modern world<sup>124</sup> and has prospered.

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<sup>124</sup> C. A. Bayly, *The birth of the modern world, 1780-1914; global connections and comparisons* (Oxford: Blackwell, 2004) on the rewriting of local or regional histories as global histories.