Sino-Japanese Relations in the Edo Period

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Part Ten. On the Matter of Vessels Sailing to Japan¹

Precious Vessels. While gazing at a painting—in the foyer of my home—of a vessel belonging to the Dutch East Indies Company returning to port in Amsterdam, Eguchi Jirô $\Xi \square$ 治郎 stated: "Business is really good for paintings of ships!" Mr. Eguchi is a businessman, but he is also a collector and scholar of Chinese bronzes and jade, as well as a lover of art. In addition, he is a tea ceremony master, a veritable jack of all trades.

Research into Chinese ceramics tends nowadays to concentrate on materials unearthed in China and those loaded on cargo vessels in the Yuan dynasty which have been salvaged in Sin'an 新安Bay, Korea. The sunken vessels in Sin'an Bay were said to have been trading ships en route from China to Japan. Had they arrived in a Japanese port, perhaps they would have been precious vessels, but they sank and at present, now many years removed from that time, they have become precious in another sense.

The image of numerous small vessels gathering like arrows toward the two large ships with their mainsails unfurled at the port of Amsterdam even now teems with a sense of gravity for these truly precious vessels. I carried this back with great care, a duplicate of the original item stored in the Maritime Museum in Greenwich outside London.

Be they Dutch ships or Chinese, for the people of Nagasaki both were undoubtedly precious. When ships arrived in port, the city was all astir, for the profits to be made enriched the entire town.

In a painting of Nagasaki in the Edo period, the upper portion—up faced west was the sea, and the ships were necessarily drawn here. Just to the west of Dejima, a Dutch vessel with its sail furled is at anchor, and it carries the explanation: "Dutch ship at anchor" (Oranda kakari fune オランダ かかり舟). From its left another Dutch ship is being drawn into port by about a dozen small vessels lined up in two rows. Beside the small vessels is written "tugboats" (*hikibune* 引舟), and beside the Dutch ship is written "arrival of a Dutch vessel" (Oranda irifune おらんだ入舟). At the site of a military salute for the arriving vessel, one cannot see the ship's stern in the gunpowder smoke. In front of it is a sailboat next to which is written "intelligence boat" (*chûshinshû* 注進舟) and to its right at various points are "guard boats" (*banshû* 番舟). There is another vessel of a different sort to the left of Dejima at anchor in the open sea, and it is labeled "Chinese ship" (*Tôshû* 唐舟). At a right-angle from Dejima is the site at which Chinese

^{*}Unless otherwise noted, all notes are the translator's.

¹ Edo jidai no Nit-Chû hiwa 江戸時代の日中秘話(Tokyo: Tôhô shoten, 1980), pp. 206-23.

ships unloaded their cargo and the Chinese Compound. The Chinese ship appears to be stuck in the open sea.

Illustrations of the Port of Nagasaki. Illustrations of the port of Nagasaki, be they woodblock prints from Nagasaki or drawings, are frequently depicted at an angle which surveys from a distance the waterway which runs from on top of Mt. Inasa 稻住 to Nomozaki 野母崎 promontory. The upper portion of the drawings depicts the outlet of the waterway, from the middle and into the lower portion one finds Dejima. Offshore, in the center of the painting, is a Dutch vessel at anchor; a tugboat is pulling it into the entrance to the waterway, as the Dutch vessel is entering the harbor.

In depictions of Nagasaki harbor and of Canton, there appears to be much more of the West than of either Japan or China. This was due perhaps to the fact that the harbor which was the object of their travels belonged to the country with which they were dealing and to that extent only it was a foreign land for which they longed. Among Chinese exportware which I touched on earlier, there are punchbowls decorated with the Canton Factory and plates on which any number of Dutch ships are anchored in the port of Capetown. Memories of ocean voyages are coupled with recollections of foreign scenery. In a letter to his superior from Saisho Chôzaemon 稅所長左衛門, a retainer from the domain of Satsuma who was shipwrecked at Huizhou in Guangdong province, he notes that at Canton "numerous foreign vessels arrived in an extraordinarily prosperous mood. Over twenty vessels came from the West. Among them were Dutch and Russian ships. Japan cannot compare to this." Westerners were surely no different, returning home with a drawing for a memento.

I remember seeing depictions of the port of Nagasaki at the Amsterdam National Museum, the Maritime Museum in Antwerp, and elsewhere, but I wanted to try to make an enlarged photograph of the central portion of the painting in the Amsterdam National Museum. There was a Dutch ship in Dejima Bay, and just to its left was a Chinese ship at anchor. To a certain extent one can see the site where Chinese ships docked and the terraced fields behind it. Of course, Glover's mansion had not yet been built.

What sort of vessels, I wondered, were bringing all manner of Chinese cargo books foremost among it—indeed, bringing Chinese culture itself to Japan. I had come across depictions which made this all clear to me. These were two scrolls—"Tôsen no zu" 唐船之圖 (Drawings of Chinese vessels) and "Gaikoku sengu no zu" 外國船具之 圖 (Rigging of a foreign vessel)—held in the Matsura 松浦 Documents Museum in Hirado, Nagasaki prefecture.



Illustration of the Port of Nagasaki (Amsterdam National Museum)

The "Tôsen no zu" in Hirado. The Hirado area is well known as the base of operations of Wang Zhi 王直 [d. 1560], the Ming-era pirate active during the Jiajing years [1522-66], and as the base for successive Japanese trade with Portugal, England, and Holland in the sixteenth century. Zheng Chenggong 鄭成功 [Koxinga, 1624-62] was said to have been born there. I still have a fond feeling about the time I first visited Hirado to examine documents involving the books transported from China, at that time, I hired a young woman from "Maruya" 丸屋, a dormitory for high school students, to copy documents for me.

The Matsura Documents Museum holds the art objects and historical materials collected by successive daimyôs of the Matsura house. Among them, the collected items resulting from the extensive knowledge of Matsura Iki no kami Kiyoshi 松浦壱岐守清 (Seizan 静山 [1760-1841]), author of the Kasshi yawa 甲子夜話 (Evening Chats from the Kasshi Day [of the Eleventh Month of 1821]), discussed in an earlier chapter of this work, who was daimyô from An'ei 4 [1775] to Bunka 3 [1805], forms the core of the museum's collection.

The "Tôsen no zu" is one of the more famous items in this museum. There is a copy of it from the Meiji era in the Nagasaki Municipal Museum with which many scholars are familiar. When I was studying this illustration, though, I had an interesting experience which I would like to relate. In July and August of 1971, Professor Joseph Needham, the great scholar of the history of Chinese science from Cambridge University, was in Kyoto. I invited him to my home on August 25 and showed him a photograph of this painting. He had just published volume four, part three of his magisterial Science and Civilization in China and was extremely interested because it contained research on Chinese ships² He said he was disappointed, for had he known earlier of this painting, we could have introduced it together in his work. Umbrella in hand, Professor set off for Taiwan. Then, seven months later I was doing some research in Cambridge. I had just arrived at Clare Hall, my college at Cambridge University, sometime after April 20, 1972 when I learned that two letters from Professor Needham were waiting for me. They were actually the same latter. One had been sent to Japan and forwarded to me in Cambridge. The content was that he had seen a similar illustration in Melbourne to the one I had shown him, and he wanted me to contact him as soon as I arrived in Cambridge.

The Same Illustration in Melbourne In the master's reception room at Gonville and Caius College, where Dr. Needham served as master, I met with Commander D. W. Waters of the Greenwich Maritime Museum, and he was comparing slides shown on two projectors simultaneously. The slides had been sent to Cdr. Waters from retired Captain McRobert who lived in Melbourne, Australia. As a result we were able to determine that the two illustrations were the same. The problem remained as to which was the original, but this could not be determined on the basis of slides. Looking at me, Dr. Needham said: "This won't be resolved until someone can inspect both." I concluded that "there was no other way. I am familiar with one of them, and I'll just have to inspect the other." I returned home, and after a visit to the United States, I took a flight from Hawaii to Melbourne. When we set off, I felt it was going take about as long to fly to Japan. In any event, Mr. McRobert was waiting for me at the Melbourne Airport. We proceeded together immediately to the National Gallery of Victoria to see

² Volume eight in the Japanese editions of this immense work.

the painting. When I saw the painting itself, I at once realized that this one was the copy. What could not be seen in the slides was that there were numerous sail cables (*hozuna* 帆 河) in each of the drawings of ships and innumerable thin lines ran back and forth. These lines were drawn weakly, and this was a weakness resulting from an effort to copy the original. Nonetheless, it was clear that this copy dated from the Edo period. There was no record as to when it became part of the museum's collection. Thus, I am able to report that a copy of this painting exists in Australia.

The "Tôsen no zu". The "Tôsen no zu" in Hirado measures 57 centimeters in height and 982 centimeters in overall length; it has a navy blue mounting on which twelve vessels are painted; eleven of the ships are Chinese, and the last one is Dutch.

It remains unclear just when this painting was executed and who the artist was. It was once believed at the Matsura Documents Museum that Matsura Seizan had had it painted, but when I examined the explanatory listings of the holdings of this museum, the Gakusaidô zôshomoku 樂歲堂藏書目 (Listing of Works Held at the Gakusaidô), at the museum-this was the listing prepared primarily by Lord Seizan himself-I discovered a note which read: "This illustration was originally held in the collection. I believe it was painted by a Nagasaki artist who personally witnessed the scene, possibly working for either Lord Shôei 松英 or Lord Ansei 安靖." I reported this find to the museum office. Lord Shôei was Matsura Atsunobu 篤信, the daimyô two generations before Seizan; he held office from Shôtoku 3 (1713) until Kyôhô 12 (1727). Lord Ansei refers to [Matsura] Sanenobu 誠信 who assumed his position in Kyôhô 13 [1728], Seizan's immediate predecessor, and relinquished his post to Seizan in An'ei 4 (1775). I am certain about this because Lord Seizan indicated that it had been in the collection from earlier. In any event, it is possible to make the vague statement that this is a work of the eighteenth century According to the Kansei chôshô shokafu 寬政重修諸家譜 (Geneologies [of the Retainers] of the Kansei Era, Revised [1812]), however, there is a note indicating that some time after the tenth month of Kyôhô 3 [1718], Sanenobu, having received an inquiry from Shôgun Yoshimune, described the advantages and disadvantages of "Japanese ships and Chinese vessels", he then reported on how to "defend against vessels from foreign lands." As a reaction to the New Shôtoku Laws, discussed earlier, we can see here an opportunity for secret trade as Chinese ships were anchored in Okura and Izumo Bay. On orders from the shogunate, Okura domain fired cannons at these ships.

This "Tôsen no zu" is not a painting in which one finds vessels floating in the water, but on a precise reduced scale great detail has been taken into consideration in depicting all the way to the ship's bottom, namely to a portion of the vessel below the water line which could not ordinarily be seen. Thus, this is not just a painting of a ship scene, but a painting drawn to indicate clearly the ship's structure. Furthermore, the coloring used in the painting is extraordinarily realistic and beautiful, and the pigments used which can be plainly seen in the gold portion of the work are of extremely high quality. From all of this, it is my supposition that the objective in compositing this work of art was Atsunobu's way of responding to Shôgun Yoshimune's inquiry. There is, of course, the other copy of this painting which was presented to the shôgun, but I believe that Atsunobu kept one of them for himself. If this is the case, the composition of this painting took place around 1720. Hearing my thoughts on this matter, Cdr. Waters of the Maritime Museum expressed the view that that estimate was correct from the shape of the Dutch ship.

The "Gaikoku sengu zukan"³ 外国船县図巻 is 27.8 centimeters in height and 650 centimeters long. A note in the Gakusaidô zôshomoku reads: "As an appendix to the previous scroll [i.e., the "Tôsen no zu"], they have been kept together in the collection. It demonstrates that all the apparatus on board the ships is as in the former painting." It was thus appended to the "Tôsen no zu" and was not to be found in Melbourne.



"Chinese ship" honpo本帆(mainsail) 1 yaho 彌帆 (headsail) 2 takahan 高帆 (topsail)

- 6 honpochû 本帆柱 (mainmast)
- yahochû 彌帆柱(headmast) 7
- 8 rokichû 艫旗柱(stern mast)
- 9

3

4

5

10 (Herein lies the

Chart One Government ship (fengzhou)⁴ dapeng 大篷 (mainsail) toupeng 頭篷(foremast mat-and-batten sail) gaojinding 高巾頂 (topsail) yitiaolong — 條龍 (dragon ensign) shengi 神旗 ("spirit flag")

Flat-bottomed vessel dapeng toupeng

Mazuqi 媽祖旗(Mazu banner) dawei 大桅 (mainmast)

Mazuqigan 媽祖旂杆(Mazu banner)

shentou 神燈(spirit light) jiangtai 將台(poop)

³ This is simply an alternate name for what is referred to above as "Gaikoku sengu no zu."

⁴ These translations for the terms in this column follow Joseph Needham, Science and Civilization in China, Volume IV: Physics and Physical Technology, Part III: Civil Engineering and Nautics (Cambridge, Eng.: Cambridge University Press, 1971), p. 405.

11 ship's deity)

shentang 神堂(chapel); zhenfang 針房(compass cabin) tielituo 鐵力柁(ironwood rudder)

13 kagami ita 鏡板(panel)

tuo 柁(rudder) tu'er 兎耳(long-ears), tuolangban 托浪板 (wave panel)

14 tentative name: zendô 前胴(front body)

15 tentative name: *chûdô* 中胴(middle body)

- 16 tentative name: kôdô 後胴(end body)
- 17 magirikawara まぎり瓦(tacking tiles)

longgu 龍骨("dragon spine"5)

18

12

19 20 longmu 龍目 (portal) shuixianmen 水仙門(daffodil gate) dingfengqi 定風旂(wind directional banner)

Chart Two⁶

| | | Ships' body | | | Ships' underside | | | |
|----------------|----------------------|-------------|----------|--------|------------------|-------|----------|----------|
| Kind of Vessel | | Length | Exterior | Stern | Front body | Front | Mid-body | Mid-body |
| | | | Height | Height | width | depth | width | depth |
| А. | Nanjing | 18.4.5 | 1.3.0 | 3.4.5 | 1.5.1 | 1.0.4 | 2.3.0 | 1.0.4 |
| Β. | Ningbo | 16.1.3 | 3.5.7 | 3.5.7 | 2.3.3 | 1.1.8 | 3.2.2 | 1.2.0 |
| С. | Ningbo (at anchor) | 17.1.5 | 4.2.0 | 4.2.0 | 2.2.3 | 2.1.8 | 3.3.7 | 2.2.0 |
| D. | Built in Fuzhou, | 16.0.7 | 2.5.5 | 2.5.5 | 2.1.4 | 1.3.2 | 3.1.3 | 1.3.5 |
| | sailed From Nanjing | | | | | | | |
| E. | Taiwan | 16.2.1 | 4.3.2 | 3.4.8 | 2.4.6 | 1.3.5 | 3.6.0 | 1.3.5 |
| F. | Guangdong | 16.2.0 | 3.4.8 | 3.4.8 | 2.4.6 | 1.4.7 | 3.2.0 | 1.5.0 |
| G. | Built in Fuzhou, | 16.1.9 | 3.4.3 | 3.4.3 | 2.?.0 | 1.4.0 | 3.1.3 | 1.4.0 |
| | sailed From Guangdor | ng | | | | | | |
| H. | Guangnan | 16.3.0 | 3.3.8 | 3.3.8 | 2.3.5 | 1.4.3 | 3.4.2 | 1.4.3 |
| I. | Xiamen | 17.3.8 | 4.0.4 | 4.0.4 | 2.1.7 | 1.3.9 | 4.0.1 | 1.4.0 |
| J. | Siam | 23.1.8 | 4.6.0 | 4.6.0 | 3.2.0 | 2.5.0 | 4.4.5 | 2.5.2 |
| Κ. | Kalapa [Batavia] | 16.1.2 | 3.0.0 | 3.0.0 | 2.2.0 | 1.3.5 | 3.1.5 | 1.3.5 |

| | Ships' underside | | Bow | | Stern | | Mainmast | | |
|----|------------------|----------|--------|-------|-------|--------|--------------|------------|---------------|
| | End body | End body | Panel | Panel | Width | Height | Overall Cire | cumference | Circumference |
| | width | depth | height | width | | | height | at base | at top |
| Α. | 2.6.0 | 1.2.0 | 1.5.8 | 1.2.0 | 2.2.5 | 5.0.6 | 12.2.4 | 0.5.8 | 0.2.6 |
| Β. | 2.5.3 | 1.2.1 | 2.3.0 | 1.2.2 | 2.2.5 | 3.4.8 | 13.3.5 | 0.8.6 | 0.3.5 |
| С. | 3.2.1 | 2.6.2 | 2.3.0 | 1.2.2 | 3.0.0 | 4.3.2 | 14.2.5 | 0.7.5 | 0.2.9 |
| D. | 2.3.3 | 2.1.2 | 1.6.3 | 1.0.5 | 2.2.8 | 1.6.3 | 15.0.2 | 0.8.5 | 0.3.7 |
| Ε. | 3.2.2 | 2.1.0 | 2.1.4 | 1.1.3 | 2.1.5 | 3.2.1 | 14.3.0 | 0.7.1 | 0.2.9 |
| F. | 2.6.2 | 2.4.0 | 2.1.5 | 1.1.3 | 2.4.0 | 3.2.5 | 16.0.5 | 0.8.9 | 0.3.6 |
| G. | 2.4.2 | 2.1.5 | 2.0.4 | 1.0.8 | 2.2.0 | 3.2.0 | 17.0.5 | 0.7.0 | 0.2.9 |
| H. | 3.1.2 | 2.1.8 | 2.2.0 | 1.1.5 | 2.2.9 | 3.2.3 | 17.3.5 | 0.6.7 | 0.2.7 |
| I. | 3.3.2 | 2.1.5 | 2.2.3 | 1.1.6 | 2.5.0 | 4.2.0 | 14.0.8 | 0.7.2 | 0.2.8 |
| J. | 4.0.0 | 3.4.7 | 2.6.0 | 1.4.9 | 3.1.7 | 3.5.2 | 19.6.3 | 0.9.5 | 0.3.5 |
| К. | 3.2.0 | 2.1.1 | 2.1.4 | 1.7.3 | 2.1.0 | 2.4.0 | 16.4.4 | 0.8.7 | 0.3.2 |

⁵ According to Needham, p. 405, this was the "central longitudinal strengthening member of hull."

⁶ Measurements are given in ken 間, shaku 尺, and sun 寸. One ken is roughly 1.82 meters or two years; six shaku make up one ken, and there are ten sun in a shaku.

| | Headmast | | | Stern mast Mainsail | | | Headsail | |
|----|----------|---------------|---------------|---------------------|--------|-------|----------|-------|
| | Overall | Circumference | Circumference | Height | Height | Width | Height | Width |
| | height | at base | at top | | | | | |
| А. | 9.4.2 | 0.4.5 | 0.1.8 | 5.6.0 | 9.0.5 | 6.4.3 | 5.4.9 | 3.3.0 |
| Β. | 9.3.8 | 0.4.2 | 0.1.8 | 5.1.5 | 8.1.0 | 7.1.5 | 4.3.8 | 3.4.0 |
| С. | 10.4.4 | 0.4.4 | 0.1.7 | 4.5.0 | 8.2.0 | 7.5.5 | 4.1.5 | 3.1.5 |
| D. | 8.4.0 | 0.4.0 | 0.1.7 | 4.1.3 | 7.6.2 | 6.6.4 | 4.6.0 | 3 0.5 |
| E. | 10.0.2 | 0.4.3 | 0.1.8 | 4.1.5 | 8.1.5 | 6.6.0 | 4.4.9 | 3.1.3 |
| F. | 10.0.0 | 0.4.6 | 0.2.0 | 4.1.0 | 7.3.0 | 6.5.5 | 4.2.5 | 3.2.0 |
| G. | 9.2.5 | 0.3.7 | 0.1.6 | 4.1.5 | 8.0.0 | 7.0.8 | 4.3.0 | 3.1.5 |
| H. | 10.1.3 | 0.3.8 | 0.1.6 | 4.1.5 | 8.6.3 | 7.2.0 | 4.3.2 | 3.3.1 |
| I. | 17.3.8 | 0.4.0 | 0.1.5 | 5.2.5 | 8.0.7 | 6.5.5 | 5.5.5 | 3.3.5 |
| J. | 12.3.0 | 0.6.0 | 0.2.5 | 10.0.9 | 10.0.0 | 9.0.5 | 6.0.5 | 3.2.5 |
| К. | 10.5.6 | 0.4.6 | 0.1.8 | 4.1.5 | 7.5.5 | 6.4.5 | 6.0.2 | 4.0.0 |

| | Tacking Tiles | Topsail (cotton) | | Bowsprit | | |
|----|------------------|---------------------|-------|----------|--|--|
| | Height | Length | Width | Height | | |
| А. | 13.3.9 | base length | | | | |
| Β. | 12.4.3 | 3.5.3 | 2.1.9 | | | |
| С. | ? | | | | | |
| D. | 12.1.3 | | | | | |
| E. | 10.6.2 | | | | | |
| F. | 11.3.8 | 4.1.0 | 3.0.5 | | | |
| G. | 11.4.8 | 4.6.2 | 3.1.8 | | | |
| H. | 11.5.7 | 4.2.0 | 3.1.3 | | | |
| I. | 11.5.1 | | | | | |
| J. | 20.4.5 | 5.0.8 | 3.1.5 | 8.5.0 | | |
| K. | 11.5.2 | | | | | |

A Precise Reduced Scale. There are twelve leaves in the "Tôsen no zu" and they follow in this order: Nanjing vessel, Ningbo vessel (with sail unfurled), Ningbo vessel (at anchor with sail lowered), vessel built in Fuzhou departing from Nanjing (at anchor with sail lowered), Taiwan vessel, Guangdong vessel, vessel built in Fuzhou departing from Guangdong, Guangnan vessel, Xiamen vessel, Siam vessel, Kalapa vessel, and Dutch vessel.

Each illustration begins by naming the ship, and below each there is a note indicating the scale of reduction, such as "one *sun* corresponds to one *ken*." The Siam vessel has eight *sun* for each *ken*, while the Dutch vessel has seven *sun* for each *ken*; aside from these two, all scales are the same—thus, the ordinary Chinese ship was drawn on a scale of 1:600.

Then, each of the parts of the ships are written down. As for the Chinese names of these parts of the ship, Dr. Needham used the "Illustration of a Government Ship" (*fengzhou tu* 封舟圖) which appears in the *Liuqiu guo zhi lüe* 琉球國志略 (Brief Treatise on the Kingdom of Liuqiu)⁷ and those of a flat-bottomed ship which appear in *Minsheng shuishi, gebiao zhen xie ying, zhan xiao chuan ji tushuo* 閩省水師各標鎭協 營戰哨船隻圖說 (Illustrated Explanation of the [Construction of the Vessels of the]

⁷ By Zhou Huang 周煌, 1757.

Coast Defense Fleet [Units] of Fujian Province Stationed at Each of the Headquarters of the Several Grades) which can be found in the Marburg Library. These are probably the only scholarly documents that can be used to understand them. I have arranged, for comparative purposes, the Chinese and Japanese names side-by-side for the corresponding parts of the ships (see chart 1).

Next, the dimensions of the important parts of the ships—overall length, exterior height, stern height, mainmast height, and the like—are recorded. The parts for which dimensions are given were common to Chinese vessels. Thus, I have presented them in a chart to enable comparative analysis (see chart 2).

One of the most striking things in chart 2 is the enomity of the Siam vessels. While more Chinese ships were sixteen or seventeen *ken* in length, the Siam vessels were 23, and in overall length even larger than the Dutch vessels. As I shall discuss below, they also had crews in excess of 100 men.

In the latter half of the Edo period, the Chinese imposed restrictions on trade, and only the official merchants (guanshang 官 商) and the fixed number of private merchants (eshang 額 商) could accompany the vessels to Japan. The number of ships allowed to engage in trade was also restricted, and thus larger vessels-even among the Nanjing and Ningbo ships-naturally began arriving. For example, in the twelfth lunar month of Hôreki 3 (1753), a Nanjing vessel under Gao Shanhui 高山輝 and Cheng Jiannan 程劔 南 was shipwrecked at Hachijôjima 八丈島, it measured 3 jô in breadth, 12 jô in length, and 3 (perhaps 5 was intended here) jô in width—making it 20 ken long.⁸ In the fifth month of An'ei 9 (1780), a Nanjing vessel under Shen Jingdan 沈敬 膽 was shipwrecked at Chikura Bay 千倉浦 in Awa 安房; it measured 30 ken in length, 10 ken for the breadth of the hold of the ship, and 8 $j\hat{o}$, 3 shaku for the height of the mast. In Bunka 12 (1815) a Nanjing vessel belonging to Yang Qiutang 楊秋棠 was shipwrecked at Shimoda 下田 in Izu 伊豆; it was a huge ship with three masts, measuring 38 ken in length, 18 ken in width, and 5 jô in breadth. By comparison, with the exception of the 23-ken Sian vessel, the ships in the "Tôsen no zu" were all less than 20 ken, a fact which substantiates the understanding that the ships represented there correspond to the first half of the Edo period.

"Sand Ships"—Nanjing Vessels. The second thing which strikes one is the difference in the external height—the height of the bow—and the height of the stern of Nanjing ships. Only Nanjing vessels had this extraordinary distinction between a bow at 1 ken and 3 shaku and a stern at 3 ken, 4 shaku, and 5 sun. On other ships they were the same height. Furthermore, at over 18 ken the overall length of the Nanjing vessels made them longer than all other ships save the Siam ships. In other words, Nanjing vessels were long and slender. We find the same shape indicated for Nanjing vessels in the Zôho Ka'i tsûshô kô 增補華夷通商考 (Examination of Commercial Exchanges between China and the Barbarians, Revised Edition) of Nishikawa Joken 西川如見 (1648-1724). In the entry for Nanjing in the first fascicle of this work, we find the following explanation:

It lies at a distance of 340 $ri \equiv$ by sea from Japan,⁹ at a direction due west from Kyûshû in Japan. Going by land from Nanjing to Beijing takes roughly 40 days. One may also

⁸ One $j\hat{o}$ is just over 3 meters.

⁹ One *ri* is roughly equivalent to 2.44 miles or 3.93 miles.

make the trip by boat on river. The Nanjing vessels which make the voyage these days to Nagasaki set sail directly as these riverine vessels, and thus in their construction they have flat bottoms and are long. They sail with great ease in the wind and are unstoppable. The ships that come to Japan do so at all times of the year.

This would indicate that they were long ships with flat bottoms, and, most important, were riverine. Ships of this shape were dubbed *shachuan* 沙船 or "sand ships" and were said to be especially useful in the shall waters of the north. However, they were weak when hit by transverse waves. At the center of the ship, to the left and right of the gunwale at the mainmast, "flank panels" (*wakiita* 脇板 in contemporary Japanese) were attached which could be raised and lowered. Lowering the panel on the leeward side provided resistance, making it impossible to drift in a leeward direction. These planks were called *wakikaji* 脇楫 in the Zôho Ka'i tsûshô kô, and an explanation is given by an illustration of a Nanjing ship. However, in the illustration the panel is in a lowered position, and therefore the *wakikaji* is submerged in the water and cannot be made out in full. In this regard the "Tôsen no zu" offers an illustration right down to the ship's bottom, with the form of the "flank panels" wholly visible. What we have called "flank panels" are known as "leeboards." They correspond to what are called *chuang* 戧 in the *Wubei zhi* 武 備 志 (Treatise on Military Preparedness) of Mao Yuanyi 茅 元 儀 of the Ming.



Nanjing Vessel (Sand Ship) (Matsura Documents Museum, Hirado)

In the West the smaller Dutch ships had something attached to the leeboard, and these can be seen on the canals of Amsterdam even today. On a visit to the Summer Palace in St. Petersburg, I noted that a ship in a picture dating to the era of Peter the Great also had a leeboard. I was surprised and asked our guide if Russian ships had always been built with leeboards. He explained that Peter the Great had learned ship-building techniques in Holland, and then it all made sense to me.

Sasaho and Kataho. The sails of Chinese vessels had distinctive characteristics. Using bamboo and squared timber, the Chinese fashioned them in a wickerwork style. In the "Tôsen no zu," they are known as sasaho 笹帆. The sasaho is described in the Wa-Kan sen 'yô shû 和漢船用集 (Collected Studies on Ships Used by the Japanese and the Chinese)¹⁰ as follows: "They are known as sasaho and as ajiroho 網代帆. In the Wubei

¹⁰ By Kanazama Kanemitsu 金澤兼光, author's preface dated 1761.

zhi they are called fangu 帆罟 Lord Mei's 眉公 Zazi fengpeng pin zi jian 雜字風篷品 字箋(Comments on the Names of Different Kinds of Sails) notes: 'They are often made by weaving bamboo and are called *fengpeng*.' These are *ajiroho*. This [term] can also be read as *tomaho*."¹¹ Only the topsail of the Nanjing vessels were made of cotton cloth, and this appears to be a trait of the Nanjing ships.



Chinese ship at anchor (Matsura Documents Museum, Hirado)

Be they sasaho or ajiroho, numerous lateral planks were attached to them. At one end a mast was affixed, and at the other end a towline was tied to each plank. The towlines were brought together into a bundle, attached to a pulley, and then tied on board ship. This was altogether different in form from the Japanese sailing ship which affixed its mast at the center of the sail. While the form of the Japanese sailing ship was one of a spread-out sail, the form of the sail on the Chinese ships was *kataho* $\exists t \notin t_{i}$ or half-sail. It had the capacity to manipulate the wind pressure by one's constricting and releasing the towlines, and even when sailing into the wind, it could advance by means of navigational tacking.

The Ningbo, Guangdong, Guangnan, Siam, and Kalapa vessels all had *takahan* or topsails made of cotton cloth which rose over the mainmast. These were known as *gaojinding* on the Chinese "Illustration of a Government Ship."

Niaochuan. Aside from the Nanjing vessels, all the others were zheyangqian 遮 洋淺 (shallow-draft ocean-going) ships with pointed bottoms [i.e., not flat-bottomed] and keels; stem and stern were the same height. These were known in China at the time as niaochuan 鳥船 or "bird ships." My colleague Matsuura Akira has written a detailed study of these niaochuan.¹² According to Matsuura's work, the famous text Nagasaki jitsuroku taisei 長崎寶錄大成 (Compendium of the Nagasaki Veritable Records) notes that the niaochuan were so named because their shape resembled a bird: "Because the form of these ships appeared similar to that of a bird, they were dubbed niaochuan." The

¹¹ The text gives only a *kana* reading for this last term, but *tomaho* may also be written with the characters: 苫帆

¹² Matsuura Akira 松浦章, "Nis-Shin bôeki ni okeru Nagasaki raikô Tôsen ni tsuite: Shindai chôsen o chûshin ni"日清貿易における長崎来航唐船について、清代鳥船を中心に (On Chinese vessels that sailed to Nagasaki to trade in the Ming-Qing era, especially the *niaochuan* of the Qing period), *Shisen* 史泉47 (September 1973), pp. 1-16, 48 (March 1974), pp. 1-14, 49 (September 1974), pp. 29-42.

name acquired its meaning from the fact that, when one looked directly at the ship, from the sides of the ship to the left and right were projected the mainsail and headsail, and it appeared as if a bird were spreading out its wings. Furthermore, by the sides of the ship near the bow, there was the appearance of an eyeball, and the Chinese interpreters explained it as "a bird ship with eyes." In the aforementioned well-known text, this seemed to give the ship a certain power. The *niaochuan* were developed in Fujian, and they could reach great speeds with the winds and waves. Thus, on the *Tôsen no zu*, they are pictured as Fuzhou-built Nanjing ships and Fuzhou-built Guangdong vessels. In the *Zôho Ka'i tsûshô kô*, the illustration of a *niaochuan*, as opposed to the *shachuan* Nanjing ships, were said to be primarily Fuzhou ships. As we read in this text, vessels of various sizes are described as follows:

All Nanjing and Fuzhou ships were small, with none bigger than Japanese ships of sixteen or seventeen tan.¹³ Ships out of Zhangzhou and Guangdong are the size of Japanese ships of twenty tan. In China they refer to the size of the vessel by the amount of *jin* ff (catties) [it could carry]. Large ships could carry a load of 500,000-600,000 catties, mid-sized ships 200,000-300,000 catties, and small ships 100,000 catties. Chinese now travel to such countries as India (Tenjiku ff from) and Siam (Shamu a a), and vessels that arrive in Nagasaki from those places are constructed differently still; they are large vessel that carry loads of 1,000,000-2,000,000 catties.



Niaochuan, Kalapa Vessel (Matsura Documents Museum, Hirado)

Siam Vessels with Bowsprit-Sail. As for Chinese vessels coming from such countries as India and Siam which are mentioned for the latter half of the Edo period, there are descriptions under "Gaikoku dashi no fune" 外國出しの船(Vessels departing from foreign lands) in the fourth fascicle of the same work.

In the construction of [these] ships they had deep bottoms, and in several places the rudder bumped into a large metal arm at a large metal socket where the arm rested and held the rudder. In addition, ships from Fuzhou and Zhangzhou are more or less the same. In the past, ships that sailed from Nagasaki to India were of this construction. These ships were said to be built in the Misweiss style.¹⁴ Large ones weighed

¹³ One tan # is a square measure equal to 5 $j\hat{o}$ and 2 shaku by 2 shaku and 4 sun. See notes 5 and 7 for further information.

¹⁴ I am uncertain of this spelling. Oba has $\leq \mathcal{P} \mathcal{P} \mathcal{A}$ and, in a private communication, informs me that it appears as such in the *Zôho Ka'i tsûshô kô* of Nishikawa Joken. Although the

2,000,000 catties, mid-sized ones 1,500,000-1,600,000 catties, and small ones carried some 1,200,000-1,300,000 catties. There was a mast at the bow known as a bowsprit. Chinese vessels that travel long distances at sea to foreign lands all have this bowsprit attached to a sail.

This explanation was affixed to the illustration of a Siam vessel. Thus, there were two differences with other ships: they were distinguished by strengthening the weak spots in the rudder's construction with metal and the manner in which it was affixed; and there was a bowsprit at the bow of the ship attached to the mast. This was the bowsprit-sail or *yaridashiho* やり出し帆. In the "Illustration of a Government Ship," they are referred to it as *touji* 頭楫; in English they are known as water-sails or bowsprit-sails. Through the end of the sixteenth century in the West, this sort of sail was not generally in use, but later Siam vessels were influenced by the construction of Western ships. Compared to other *niaochuan*, the sterns of these ships were straighter, and rudders were attached to the outside of the ship. Thus, in general outlines, Chinese ships that traveled to Japan can be divided into *shachuan* and *niaochuan*; among *niaochuan* the Siam vessels were built on a large scale for use in long overseas trips. When we understand this, we can see those vessels with bowsprit-sails and those without them among the Chinese ships portrayed in the Nagasaki woodblock prints, and the illustrations of Chinese vessels in dock in Nagasaki clearly are drawings of Siam vessels.



Siam Vessel (Matsura Documents Museum, Hirado)

We must not assume that all Nanjing vessels were *shachuan*. There were also *niaochuan* which we should corroborate. There is a record for Meiwa 6 (1769) of a *shachuan* coming to Japan, but thereafter there were scarcely any that came as trading vessels. In addition, large *niaochuan* started coming to Japan. The reason for this is that Chinese merchants who traveled overseas to Japan were limited to the official merchants, those twelve merchant houses, and the number of vessels was severely restricted.

Shipbuilding Sites. In the "Tôsen no zu" the bodies of the Nanjing vessels are yellow, and the draft broadsides of the Siam vessels are russet. Concerning the Siam vessels, Nishikawa Joken explained: "Overall the ships are painted in a reddish color. Also, oil has been applied to the unfinished woodwork." The other *niaochuan* vessels

provenance of this terms remains unclear, it may be of Dutch origin. Anyone who may know this term or how to trace iit is encouraged to communicate with the translator.

were painted in a deep India-ink color, and from the draft down they were pure white. As Joken put it, "The bottom of the vessels are coated with an oil lime, and thus they are white."

Just as we know that *niaochuan* were developed by men from Fujian, in the Ming era it was Fujian that thrived as a site of Chinese shipbuilding, and this tradition continued on into the Qing. Among the reports concerning the Chinese in the Ka'i hentai 華夷變態(Transformation from Civilized [i.e., Ming] to Barbarian [i.e., Manchu Qing]), however, there are on occasion mentions of where ships were being built. One such written account tells of Number Six Wenzhou vessel from Genroku 11 (1698):

Wenzhou has a small harbor, and there are not many ships calling from there. However, large amounts of lumber and the like are produced there, and conditions are thus good for the building of ships. Merchant vessels from Ningbo, too, are constructed there. Of course, we have had our ship repaired at Wenzhou and will soon be coming to you.

Thus, we learned that Ningbo vessels were built in Wenzhou. According to the aforementioned study by Matsuura Akira, Fujian ships in the Ming era were constructed of pine and cedar, and thus after eight or nine ocean voyages they had to be treated by burning off the barnacles and insects attached to the ship's body. Guangdong vessels had exceptional durability because they used a hard word as the term *tielimu* 鐵力木 (lit., iron-strength wood) indicates. This did, though, double the expense.

Wenzhou Vessel Number Eighty-Five for Genroku 4 (1691) was also built in In addition, vessel number sixty-two for Genroku 9 (1696) was built in Wenzhou Danshan, vessel number forty-one for Genroku 10 in Suzhou, and vessel number nine for Jôkyô 4 (1679) in Xiamen. In a description given by one Matagorô 又五郎 and five others from Kamaishi 釜石 in Mutsu 陸奥 who were shipwrecked in China in the first year of Hôreki (1751) of Chinese shipbuilding which they witnessed, we read: "At the port of Xiamen over 1000 large vessels pass through engaged in overseas trade with Japan. There is also a site on land where ships are built." While ships were built in places from which ships departed for Japan-such as Shanghai, Guangdong, and, of course, Fuzhou-the most surprising note is that mentioned concerning Nanjing Vessel Number Eighty-Three for Jôkyô 4: "As for the ship upon which we sailed, it was vessel number twenty-eight of last year. It was a new ship built in this place." We thus learn that on occasion ships were also built in Nagasaki. Naturally, Chinese ships underwent repairs while in dock in Nagasaki, and this was handled at Umegazaki 梅 が 崎, south of the Chinese Compound. Chinese ships were moored there, and on occasion, if necessary, Japanese ship carpenters and lime workers assisted them for which the Chinese side paid. Ordinarily, the crew members did it themselves. The "lime workers" fortified the ship's bottom against leaks by applying lime.

Years of Durability. The "reports on the Chinese" collected in the Ka'i hentai of course discuss what ports Chinese vessels that came to Japan departed from and what route they followed, when the shipmasters had most recently come to Japan, and when the ship itself had most recently made the voyage. We can now examine how over a period of years men and ships changed. I shall introduce several model cases, and I would like to probe just how long ships could be used. This may be impossible to do because the "reports" remain uneven and incomplete. Nanjing Vessel Number One for

Hôei 2 (1705) was probably a *shachuan*, and this was its fourteenth voyage in eleven years by that time. By contrast, Taiwan Vessel Number Fifty-Four for Hôei 1 (1704) entered the port of Nagasaki as vessel number forty-one in Genroku 10 (1697) and was a new ship at that time, having been built in Suzhou; thereafter, it made its tenth voyage in eight years by Hôei 1. This is a calculation based on the fact that it came twice each in Genroku 12 (1699), 13, and 14 and did not make the trip in Genroku 16 (1703) altogether ten voyages. When it came to Japan in Hôei 1, it had left Taiwan and developed a leak in its bottom into which bilge had seaped, docked at Shanghai for repairs, and then left Shanghai only to sustain damage to its rudder. It returned to Shanghai, changed rudders, and set sail once again. However, "although repairs were carried out on the ship's bottom in Shanghai, it was already an old ship, and in the rough waves encountered at sea, it experienced leaks." Eight years after being built, it was leaking and "was already an old ship." This seems to be somewhat quick for wear and tare to have taken its toll, but it is but one example.

As noted earlier, in the latter half of the Edo period, ships grew in size and those that made the trip to Japan appear to have been fixed in size. The proper names of these ships have also been chronicled. Matsuura Akira has examined these in painstaking detail from documents and illustrations. Among the 34 vessels that came from China between Meiwa 4 (1767) and Man'ei 1 (1860), there was a ship known as the *Jinquansheng* $\pm \pm \mathbb{B}$ which arrived Japan in Kyôwa 2 (1802), and it is the oldest such name we can ascertain. It was a large vessel 24 kan long, 7 kan wide, and 5 kan broad, it had three masts and carried a crew of 111 men. When the British navy attacked Zhapu on the fourtheenth day of the fourth month of Tenpô 13 (1842), during the Opium War, it was destroyed at that port city. It thus had a life of some forty years. Matsuura's research also demonstrates that, in cases in which the vessel bore the Chinese character "quan" \pm (all, altogether) in its name, like the *Jinquansheng*, it meant that the ship was built with money proffered jointly by more than one person.