

**Polyvocal Portolans:
Nautical Charts and Hybrid
Maritime Cultures
In Early Modern East Asia***

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Scholarship on cartographical and other forms of technological exchange in Japanese studies is beset by a continuum of dangers ranging from simply describing it as adoption to reifying the essentialist *Nihonjinron* shibboleth that characterizes Japan as an isolated island-nation that when necessary borrows from abroad and perfects others' technologies. In large part, these problems are the result of two pernicious narratives. The first centers on the nation—here understood as a modern conception of a people tied to a geography projected backwards in time¹—as the proper object of historical inquiry. The second narrative tells the history of that nation's science and technology teleologically,² a historical trajectory that from premodern beginnings culminates in modern western science.

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¹This idea is drawn from Benedict Anderson's notion of nationality as partly being the perception of a shared history. See Benedict Anderson, *Imagined Communities*, Rev. ed. (London; New York: Verso, 1992).

²The classic exposition that science does not progress as a teleological narrative—the incremental accretion of discoveries—can be found in Thomas Kuhn, *The Structure of Scientific Revolutions*, 2nd ed. (Chicago: University of Chicago Press, 1970).

This paper offers an alternative to these narratives by de-centering the state and by exploring cultural exchange as a non-linear series of translations. To do so, I focus on a series of exchanges that occurred among individuals whose decisions to adapt a particular technology were not necessarily connected to the interests of a state—the participation of individuals from Japan in the development of cartography and other nautical technologies in the sixteenth- and seventeenth-century maritime world. The increased interaction and growth of commercial networks throughout maritime Eurasia in the early modern period stimulated innovation and borrowing in fields such as navigation, cartography, and ship design among seafarers from both Europe and Asia. However, the lack of a universally recognized hegemonic paradigm³ for navigation and other nautical matters in early modern maritime East Asia rendered technological exchange in these areas idiosyncratic and pragmatic. Seafarers from both Europe and Asia seem to have been particularly eclectic, sampling nautical practices from around the world and trying anything that might ensure a safe passage.

In this environment, seafarers developed hybrid,⁴ cosmopolitan sea-based cultures and identities. There was a significant cartographical component of this maritime culture as evidenced by a group of maps commonly labeled Japanese portolan⁵ charts, of which **Figure 1**, a chart held by the

³I am using paradigm in the sense suggested by Thomas Kuhn—that which forms the corpus of acceptable scientific practice and provides the models for legitimate research, the “normal science” of the day (Kuhn, 10-13). For the state of science without a paradigm, see Kuhn, 4.

⁴For the purposes of this paper, hybridity is defined as: elements that work together in a unified whole greater than the constituent parts originating in disparate reaches of the globe.

⁵See for example, Nakamura Hiroshi, “The Japanese Portolanos of Portuguese Origin of the XVIth and XVIIth Centuries,” *Imago Mundi*, 18: (1964), 24-44.

The word portolan itself is not found in premodern sources, but is instead a label applied by later scholars. It is derived from the Italian word “*portolano*” meaning a “collection of written

Hayashibara Museum is one of four extant originals.

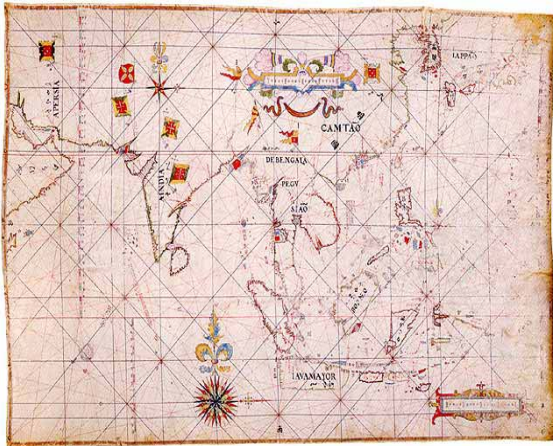


Figure 1: *Aija kōkaizu* (Navigational Chart of Asia) in the holdings of the Hayashibara Museum⁶

Portolans, including those made in East Asia, are palimpsests containing infinite maritime itineraries. To make them, heterogeneous forms of local navigational knowledge—often coastlines of basins charted with compasses and calculations of speed and distance—were collected, synthesized and inscribed atop a grid of blossoming compass vectors (rhumb lines).⁷ This design enabled navigators to trace almost limitless trajectories using portolans in conjunction with written in-

sailing directions.” Tony Campbell, “Portolan Charts from the Late Thirteenth Century to 1500,” *History of Cartography*, vol. 1, *Cartography in Prehistoric, Ancient, and Medieval Europe*, ed. J.B. Harley et al. (Chicago: University of Chicago Press, 1987), 375.

⁶ I am grateful to the Hayashibara Museum, Okayama, Japan for permission to reproduce this image here. The map was originally part of the holdings of the Ikeda family, daimyo of Okayama domain.

⁷ Campbell, 390. Mollat du Jourdin and others tie the appearance of the chart in Europe directly to the almost contemporaneous appearance of the receptacle used to hold the lodestone. Michel Mollat du Jourdin et al., *Sea Charts of the Early Explorers*, trans. L. le R. Dethan (London: Thames and Hudson, 1984), 12.

structions (i.e., pilots’ books, rutters, etc.), compasses, and other instruments. Portolans originated in the medieval Mediterranean world, were brought to East Asia by Portuguese mariners in the sixteenth century (along with other navigational technologies), and underwent extensive processes of adaptation and translation before emerging as charts like the Hayashibara.

The Hayashibara chart measures approximately 52 cm by 76 cm and is drawn in ink on vellum. It depicts a region extending from Japan in the east to the eastern coast of the Arabian Peninsula and Africa in the west. Its size is consistent with other extant contemporary portolans of similar design.⁸ The styles of the equator, tropics lines, latitude bars, scale of miles, fleur-de-lis, compass rose, decorative motifs like Christian flags that embellish the empty inland areas on the map, and other iconography indicate Portuguese influence.⁹ The compass vectors are divided by color into black for the eight primary compass points, gold for the half-winds and red for the quarter-winds. Befitting a nautical chart, the Hayashibara portolan also has helpful descriptive devices such as red and black dots lining the coasts pointing out shoals, shallows, and rocks. The coastlines are shaded to exaggerate their size, providing additional detail. Place names are (for the most part) inscribed perpendicular to the coasts in Chinese characters, Japanese phonetic scripts, and Roman letters. Labels identify not just ports and anchorages, but also larger territorial units such as countries, islands, and regions. It is thought that the Hayashibara chart dates from the 1590’s due to the absence of Edo (capital of Japan from 1600) and the presence of Osaka—Toyotomi Hideyoshi’s capital from 1583-1598—on the

⁸ One previously owned by the vermilion-seal merchant Sueyoshi Magozaemon measures 51.5 cm x 77.3 cm. An 1833 copy of a map owned by the *shuinsen* merchant Itoya Zuiemon of a similar geography is 56 x 80 cm.

⁹ For a useful summary of portolan iconography, see Heinrich Winter, “A Late Portolan Chart at Madrid and Late Portolan Charts in General,” *Imago Mundi* 7 (1950), 38.

map.¹⁰

Definitive analyses of the Hayashibara and other East Asian portolans have been hindered by a dearth of reliable information. Drafters, dates, and places of production for these charts all remain unknown. However, scholars are relatively certain about one aspect of these maps' provenance. Charts such as the Hayashibara were extensively adapted and adopted for use by the pilots and shipmasters who conned the hundreds of *shuinsen*, cosmopolitan trading vessels licensed with passes stamped with vermilion seals for trade in East and Southeast Asia. These licenses were issued by both the Toyotomi and Tokugawa regimes from the 1590's¹¹ until the Tokugawa Bakufu abrogated the *shuinsen* system in the late 1630's.¹² The Hayashibara and other similar portolans all depict potential itineraries from major ports in Japan to East and Southeast Asian entrepôts frequented by *shuinsen*. Many of the surviving charts are known to have belonged to prominent vermilion-seal merchants such as Itoya Zueimon (1585-1650), Kadoya Shichirō Hyōei Eikichi (1610-1672), Sueyoshi Magozaemon Yoshiyasu (1570-1617), and William Adams, an English pilot who sailed variously for Dutch, English, and Japanese sponsors. Itoya Zueimon made twenty-four licensed voyages to Southeast Asia between 1601 and 1632 and the Itoya family seems to have been prominent in Japanese diasporas in Cochin China and Siam.¹³ Kadoya Eikichi

¹⁰ Unno Kazutaka, "Waga kuni ni okeru porutorāno kaizu no juyō," in *Tōzai chizu bunka kōshōshi kenkyū* (Osaka: Seibundō, 2003), 217.

¹¹ For a review of the state of the debate over the beginning of the *Shuinsen* trade, see Nagazumi Yōko, *Shuinsen* (Yoshikawa Kōbunkan, 2001), 2-5.

¹² To give a sense of the scale of this trade, in the 30-odd years in which *shuin* were issued, Iwao has calculated that upwards of 130 people received licenses for 370 ships (Iwao Seiichi, *Shinpen shuinsen bōekishi no kenkyū* (Yoshikawa Kōbunkan 1985, 220)), over half in the first 12 years.

¹³ Nakamura Hiroshi, *Goshuinsen kōkaizu* (Nihon Gakujutsu Shinkōkai, 1965), 71; Unno,

married a Siamese noblewoman and became head of the Japanese community there.¹⁴

The toponymy of these marine maps also suggests a *shuinsen* context. For example, although the Hayashibara chart has labels for important Japanese ports like Sotogahama, Sakai, Shimonoseki, Nagasaki, and Hirado and larger seaboard regions like Shikoku, Hizen, Hyūga, Satsuma, Kii, and the Gotō islands, most of the map is dedicated to depicting the destinations of the vermilion-seal ships: Ryūkyū, Korea, and, on the Ming Chinese coast, Takasago [Taiwan], Nanjing, Fujian, Chinzhou [Zhangzhou], and Macao. Inscriptions of major Southeast Asian ports frequented by trading vessels listed on the chart include Tonkin, Champa, Cochin, Siam, Borneo, Melaka, Patani, and Luzon.¹⁵

Otherwise, the small number of surviving examples has made typological analysis difficult—only four original vellum charts survive, along with several eighteenth and nineteenth-century paper copies.¹⁶ By comparing shapes and iconography of surviving vermilion-seal portolans, Unno Kazutaka has concluded that a single Portuguese progenitor map is the most likely source for these portolans.¹⁷ Indeed, the Hayashibara Museum

"Waga kuni ni okeru portorāno kaizu no juyō," 217.

¹⁴ Nakamura Hiroshi, *Goshuinsen kōkaizu*, 72; Unno, "Waga kuni ni okeru portorāno kaizu no juyō," 220.

¹⁵ Nakamura Hiroshi, *Goshuinsen kōkaizu*, 539. For a list and description of the ports visited by the vermilion-seal ships, see Iwao, *Shinpen shuinsen bōekishi no kenkyū*, 149-176; Nagazumi, 48-54.

¹⁶ Nakamura Hiroshi's extensive research only uncovered four original and ten copies of East Asian charts and another 5 charts of Japan alone. See his comprehensive opus *Goshuinsen kōkaizu*; Unno Kazutaka, "Waga kuni ni okeru portorāno kaizu no juyō." For portolan technology being used to create domestic charts of Japan alone see Unno Kazutaka, "'Nihon karuta' no shutsugen to teitai," in *Tōzai chizu bunka kōshōshi kenkyū*, 271-304.

¹⁷ Unno Kazutaka, "Cartography in Japan," 382.

chart closely resembles the 1833 copy of a chart owned by the Itoya family whose Portuguese inscription along one edge, “SEBASTIO AFEZ [created by Sebástio],” may indicate one Portuguese mapmaker who influenced the development of vermilion-seal portolans.¹⁸ Surviving designs also suggest that at least two varieties of vermilion-seal portolans were drafted: a) from charts like the Hayashibara map that depicts a broad swathe from Japan in the East to Africa in the west, and b) others that only include East and Southeast Asia.¹⁹ The scope of maps in the first group like the Hayashibara extends to India, Africa, and Arabia, regions where no Japanese ships are recorded as having visited. This geographic scope has puzzled cartographic historians, some of whom have speculated that such inclusions may be a result of latent Portuguese influence.²⁰ It is also possible that vermilion-seal seafarers of the early 1600’s did not foresee a contraction in overseas trade and instead envisioned a time when they might travel as far as Africa. I suggest that the inclusion of geographies of no immediate concern to Japanese becomes much easier to comprehend if we view the Hayashibara-type portolans as less a product of Japan and more a creation of the cosmopolitan hybrid nautical cultures of ships and ports of East Asian seafaring. In contrast, the design of the second variety seems directly related to the *shuin-sen* trade as its scope is limited to the range of the vermilion-seal ships—it is bordered on the East by Japan and on the west by the straits of Melaka.

In any case, the relative paucity of extant examples does not negate the historical significance of these charts. Such maps were among the dominant navigational cartographical forms in sixteenth- and seventeenth-century East Asia as

¹⁸ The Portuguese phrase “Sebástio Afez” is also found on a chart from Lisbon dated 1618 (Unno, “Cartography in Japan,” 382).

¹⁹ Unno Kazutaka includes a helpful table of possible families of vermilion-seal portolans in “Waga kuni ni okeru portorāno kaizu no juyō,” 240.

²⁰ Unno, “Waga kuni ni okeru portorāno kaizu no juyō,” 233.

well as in Europe and the Middle East²¹—part of many a pilot’s navigational toolbox. As utilitarian devices, maps may have simply been discarded when they deteriorated or became obsolete,²² especially after the Tokugawa Bakufu’s interdiction of Japanese traveling overseas in 1635. That said, in order to demonstrate the significance of these charts for seafarers in the vermilion-seal trade, it is necessary to overcome the limitations in historical evidence by exploring the charts in wider contexts.

While acknowledging the maritime usage of these portolans, most scholars have tended to employ classical cartographical and nation-centered contexts. Some have performed exhaustive toponymic and comparative analyses to create a genealogy of these nautical charts as an isolated entity.²³ Others situate vermilion-seal portolans within the context of a linear, teleological genealogy of Japanese mapping.²⁴ To some extent, this school of thought is characteristic of the larger historiographical traditions that focus on the state as the fundamental historical subject and the primary interlocutors in overseas relations. Many historians of East Asia have focused on the diplomatic and commercial relations conducted under the rubric of a tribute system adopted by China, Korea, or Japan for example.²⁵ From this per-

²¹ The Ottoman admiral Piri Reis is known to have incorporated European information into portolans that he drafted (Gregory C. McIntosh, *The Piri Reis Map of 1513* (Athens, GA: University of Georgia Press, 2000)).

²² Tony Campbell has argued that the majority of extant Mediterranean portolans survived because they were also considered works of art. More utilitarian charts would have been discarded once obliterated by constant use and seawater (Campbell, 436).

²³ Nakamura Hiroshi, *Goshuinsen kōkaizu*; “The Japanese Portolanos of Portuguese Origin of the XVIth and XVIIth Centuries.”

²⁴ Unno Kazutaka, “Cartography in Japan,” in *History of Cartography*, vol. 2: *Cartography in the Traditional East and Southeast Asian Societies*, ed. J.B. Harley et al (Chicago: University of Chicago Press, 1987), 346-467.

²⁵ The classical exposition of the tribute trade is John K. Fairbank, “A Preliminary Framework,”

spective, the vermilion-seal trade and its nautical culture become subsumed within Japan's overseas relations.

Yet, portolans are representations of sea-based worlds without a landed center. In both their European and Asian contexts, portolans contain detailed depictions of seas, coasts, bays, and shoals that leave the land as largely empty space to be filled with decorative ornamentation. These maps invert the terra-centric cartographical convention that abandons the sea to the imagination of the mapmaker.

Here I embrace the sea-centered nature of portolans as a means of escaping the national history of maps, a method that has fed myths of progressive evolution towards ever more scientific and objectively accurate maps determined by perceptions of the 'western' experience.²⁶ Instead, I seek to understand these maritime charts as representations of and metaphors²⁷ for collected multitudes of exchanges at the individual level that occurred in portside hostels and taverns, the cabins of ships, coastal offices, and other nautical spaces Mary

Pratt has called "contact zones."²⁸ The mixing of heterogeneous navigational lore in the charts epitomizes the "copresence, interaction, interlocking understandings and practices" that occurred in these spaces.²⁹ I conceptualize these processes of information exchange broadly, encompassing piracy and other forms of violence as well as trade and more peaceful forms of exchange.

Exploring the Hayashibara and other portolans born out of the maritime culture of the *shuinsen* trade in this manner reveals that despite the Japanese scripts that dominate their toponomy, these are not Japanese maps. Instead, they constitute particular endpoints of extensive translations and adaptations of nautical information by individuals from different lands whose cooperation produced a nautical culture.

The vermilion-seal trade contributed to such a hybrid nautical culture because seafaring in East Asia in this period tended to be cosmopolitan, as it was in many parts of the early modern world. Regardless of whether they were sponsored by institutions based in Europe, East Asia, or Southeast Asia, ships often carried multiethnic crews that found ways to communicate, work, and otherwise interact together aboard ships and in entrepôts. In particular, ships often carried local pilots and mercenary navigators-for-hire for their expert knowledge of particular maritime regions and their mastery of the haven-finding arts. These pilots played key roles in the development of portolans and the larger hybrid nautical culture. On European ships—and this custom seems to have been present on some East Asian ships in this period as well—pilots bore sole responsibility for ships' safe arrivals.³⁰ As such, they needed to effectively communicate with people from different linguistic and cultural groups and to master an array of different forms of navigational lore.

I conceptualize navigational technology broadly in order to encompass whatever practices

The Chinese World Order, ed. John K. Fairbank (Cambridge, MA: Harvard University Press, 1968), 1-14. Japanese and Korean states often sought to replicate the Chinese-world order model with themselves at the center. See for example, Ronald Toby, *State and Diplomacy in Early Modern Japan* (Princeton: Princeton University Press, 1984); Kenneth Robinson, "Centering the King of Chosŏn: Aspects of Korean Maritime Diplomacy," *Journal of Asian Studies*, 59:1 (2000), 109-125.

²⁶ For a critique of the teleological narrative in historical cartography, see J.B. Harley, "Deconstructing the Map," *Cartographica*, 26:2 (1989), 1-20.

²⁷ Thinking of maps as metaphors for different types of maritime interaction was partly inspired by Kären Wigen, "Cartographies of Connection: Ocean Maps as Metaphors for Interarea History," in *Interactions: Transregional Perspectives on World History*, ed. Jerry H. Bentley et al. (Honolulu: University of Hawai'i Press, 2005), 150-166.

²⁸ Mary Louise Pratt, *Imperial Eyes* (New York: Routledge, 1992), 6.

²⁹ Pratt, 7. However, Pratt is focused solely on colonial "asymmetrical relations of power" that often did not exist in East Asia in this period.

³⁰ Iwao, *Shinpen shuinsen bōekishi no kenkyū*, 243.

and tools mariners of the time may have considered necessary for ensuring safe passage. It is not my intention to trace a teleology of nautical techniques that engages in a debate over the superiority of one technology over another. In sixteenth and seventeenth-century East Asia, navigation was often an idiosyncratic hybrid system of apparatuses, rituals, and experiential knowledge derived from practices that originated in China, Japan, Korea, Southeast Asia, the Arab world, and Europe. Yin-Yang theory, prayers and rituals for safe passage, watching the color of the water, astronomical observations made using astrolabes and cross-staves, incense sticks for measuring time, sounding leads to dredge the bottom and determine position by the color and type of sediment, and the use of compasses and maps all mixed with equal potentialities of use. These devices and practices were then melded with infinite varieties of local navigational lore including landmarks, the locations of shoals and havens, storm seasons, tides, and currents. Designed to be both repositories of this lore and used in conjunction with other technologies, portolans epitomize the hybrid nature of this nautical culture.

Studying these maps as part of a hybrid nautical culture developed by mariners in East Asia in this period also highlights the common fallacy of state-centered histories that identify a seafarer's primary identity by his or her³¹ land of origin.

³¹ Although commonly assumed to be primarily a man's world, the histories of women like Cornelia von Nijenroode (a half-Dutch, half-Japanese wealthy merchant of Batavia in the mid-seventeenth century), families of boat-people in premodern East Asia, and the nineteenth-century pirate admiral Zheng Yi Sao demonstrate that maritime enterprises were not completely closed to women. For Nijenroode, see Leonard Blussé, "Butterfly or Mantis," in *Strange Company* (Dordrecht, Holland; Riverton, N.J.: Foris Publications, 1986), 179-253. For an account of women among boat-people pirates, see *Chungjong taewang sillok*, (Chungjong 5) 1510 8.24 (丁未), ed. Kuksa P'yŏnch'an Wiwŏnhoe (Seoul: T'amgudang 1986); For Zheng Yi Sao, see Dian Murray, "One Woman's Rise to Power: Cheng I's

Seafarers whose livelihoods required them to spend months and years at sea developed identities and cultures as seafarers that set them apart from what land-based populations often considered normal. According to Greg Denning, distinctive shipboard social worlds emerged out of necessity as crews banded together against the deadly world outside the ship's vulnerable, wooden shell in order to survive the sea voyage.³²

For example, Murai Shōsuke argues that we should understand the seafarers who lived on Tsushima, Iki, and the Kyushu and Korean littorals in the premodern period as "people of the margins" whose maritime livelihoods took them between Korea and Japan and caused them to develop a distinctive culture that included language and styles of dress.³³ Seafarers such as these also played roles similar to communities called "trade diasporas" by Philip Curtin, "cross-cultural brokers" who facilitated "trade between the host society and people of their own origin who moved along the trade routes."³⁴ Seafarers and mapmakers who lived and worked in such environments were responsible for the development of portolans like the Hayashibara.

I contextualize the Hayashibara and other vermilion-seal portolans in the seafarers' culture of early modern East Asia in four settings. First, I compare the Hayashibara to Mediterranean portolans created in the cross-cultural traditions of European seafaring and to other forms of East Asian maritime itinerary cartography. Second I highlight the agency of individual pilots and navigators-for-hire such as William Adams and Ikeda Kōun in directing the creation of vermilion-seal charts and the wider nautical culture. Third, I examine the wider environment in which the Hayashibara chart would have been created and used—

Wife and the Pirates," *Historical Reflections* 8:3 (1981): 147-161.

³² Greg Denning, *Islands and Beaches* (Honolulu: University of Hawaii Press, 1980), 157-158.

³³ Murai Shōsuke, *Chūsei Wajinden* (Iwanami Shoten, 1993), 34-58.

³⁴ Philip Curtin, *Cross-Cultural Trade in World History* (Cambridge: Cambridge University Press, 1984), 6.

the hybrid nautical culture of sixteenth- and seventeenth-century East Asian seafarers. In addition to mapping and navigational practices, mariners developed distinctive hybrid argots, ship-designs, and religious rituals. By way of conclusion, I meditate on the study of cultural exchange with a short examination of how, in the Edo period, the polyvocal vermilion-seal charts were domesticated and transformed into ‘Japanese’ portolans.

The Hayashibara Chart as a Portolan Chart

Placing the Hayashibara chart within the larger category of portolan charts deepens our understanding of it in two ways. First, Japanese portolans closely resembled their European cousins. In particular, in both European and East Asian contexts, portolans were hybrid creations designed to be used in conjunction with other technologies. Second, upon their arrival in East Asia, portolans represented not an unprecedented genre of cartography, but simply a new way to depict maritime itineraries, a style of mapping long present in East Asia. As **Figure 2**, a typical sixteenth-century Mediterranean portolan, illustrates, these charts have no objective top or bottom. Instead, orientation is determined by the course a pilot chooses to trace following particular rhumb lines to particular coasts.³⁵ Names of ports line the inland sides of coastlines in marching ranks of perpendicular inscriptions, defining land by its relationship to maritime functions. Sanctuaries and other important nautical reference points such as islands, bays, coves, and estuaries are depicted in a number of standardized designs such as half-moon wedges—often exaggerated in size, emphasizing their importance to navigators. Black and red dots mark shoals, shallows, and rocks. Latitude lines and scales of miles began appearing on charts in the sixteenth century.³⁶ Decorative motifs fill the otherwise meaningless inland spaces.

³⁵ Campbell, 376-377.

³⁶ Ibid.



Figure 2: Portolan Map of the Mediterranean by Mateo Prunes (1559)³⁷

Portolans were originally designed for ship-board use. They were often made of vellum to better survive potential encounters with seawater, attached to rollers, bound into atlases, or—to prevent their shrinking after a dousing—glued to boards.³⁸ Similarly, the Hayashibara chart and other vermilion-seal portolans can also be tied directly to use at sea. Extant originals were inscribed on vellum and some maps received coats of waterproof lacquer.³⁹ Mounting practices ranged from placing the charts in wooden rollers (as is thought with the Hayashibara chart⁴⁰) to affixing them to two pine boards hinged together on one side to fold together like a book.⁴¹

Although the origins of portolans are unknown, it seems clear that they were not the creation of one culture, state, or school. Present scholarly

³⁷ Map on vellum in the holdings of the Library of Congress. Mateo Prunes was a Majorcan mapmaker.

³⁸ Campbell, 376.

³⁹ Unno, “Waga kuni ni okeru portorāno kaizu no juyō,” 214-215, 220. This lacquer was so effective that one survived a flooding from a typhoon in 1953. Unno also cites an accounting page from the expedition to Ezo sponsored by Tokugawa Mitsukuni in 1672 that contains a requisition for money to pay for charts (*karuta*), mounting boards, and lacquer.

⁴⁰ Unno, “Waga kuni ni okeru portorāno kaizu no juyō,” 236.

⁴¹ Nakamura Hiroshi, *Goshuinsen kōkaizu*, 63; Unno, “Cartography in Japan,” 382.

consensus argues that portolans were piecemeal assemblages—first of various collections of local knowledge of Mediterranean coastlines, and later the North Atlantic, Red Sea, Indian Ocean, China Sea, and other basins.⁴² According to the cartographic historian David Turnbull, portolans are “a mosaic of elements loosely assembled from separate but related navigational traditions.”⁴³ He argues that the charts were not composed using any form of coordinate geometry or other quantifiable, mathematically rational system, but instead were conglomerations of linear notations of distance and wind and compass directions.⁴⁴ Often there was no standard scale of distances, even within a single chart, and rhumb lines were not aligned between charts, even those assembled together.

These European patchworks were produced in the maritime world. Prominent drafters of portolans emerged in shipping hubs and entrepôts like Majorca, Genoa, and Venice.⁴⁵ Mapmakers in these centers collected charts and information from the navigators and seafarers that gravitated to these ports from around the Mediterranean and Atlantic worlds. Some pilots also drafted portolan charts while on their travels.⁴⁶

⁴² Campbell, 383-391.

⁴³ David Turnbull, “Cartography and Science in Early Modern Europe: Mapping the Construction of Knowledge Spaces,” *Imago Mundi*, 48: (1996), 9. Turnbull further points out that because they were such agglomerations of local knowledge, portolans proved incapable of providing the rational, universal geographical representation needed to geographically catalog an empire Turnbull (esp. 8-14). Although the Mercator projection was invented in 1569 and provided a feasible mathematical-cartographic rubric for regularizing an imperial cartographic catalog, it would be another century before even single European states underwent comprehensive coordinate mapping, let alone far-flung reaches of the ocean (Turnbull, 14).

⁴⁴ Turnbull, 9-10.

⁴⁵ Campbell, 389-398.

⁴⁶ Among portolan draftsmen of the Mediterranean, Grazioso Benincasa also sailed as captain of a ship and Andrea Bianco self-identified on one of his charts as a senior officer

The hybrid origins of European portolans are mirrored by the processes of exchange that led to the development of vermilion-seal portolans. Analyses of place names as well as the shape of landmasses on the Hayashibara reveal that these marine charts were not the result of Japanese cartographers simply copying European maps. Instead, the maps resulted from diverse and compound influences. First, the European charts that constituted the base maps for vermilion-seal portolans were also derived from local Chinese, Korean, and Japanese knowledge. Second, East Asian mapmakers corrected those regions found to be in error with their own geographical or cosmographical world-views. For instance, Unno Kazutaka has demonstrated possible Korean influence in the depiction of the Korean peninsula in some portolans.⁴⁷ In addition, some Portuguese imaginary geographies popular on European charts of Asia are left off of the vermilion-seal charts. For example, the Hayashibara chart lacks Portuguese favorites such as “the pirate islands (*ilhas dos ladrones*)” and “island of gold (*ilha de Ouro*),” although it does have a notation for the “island of silver (*ilha de prata*).”⁴⁸

A wide variety of writing systems was used to inscribe place-names on the Hayashibara and other vermilion-seal charts, raising the possibility that pilots of several different reading backgrounds may have read the maps as well as the possibility that there may have been a permeable argot of commonly understood words and place names from several linguistic traditions. On the Hayashibara portolan, most place names are written in Japanese *kana* scripts, but these toponyms are mixed with Portuguese names in Roman letters, Chinese character transliterations of Iberian place-names, and the use of original Chinese and Japanese place-names. For example, the Hayashibara’s drafter used Roman and Chinese characters for the

on a galley (Campbell, 432-433). Piri Reis was an Ottoman admiral as well as cartographer (see McIntosh, Chapters 1-2). As will be seen below, this tradition carried over into East Asian seas.

⁴⁷ Unno, “Waga kuni ni okeru portorāno kaizu no juyō,” 247.

⁴⁸ Nakamura Hiroshi, *Goshuinsen kōkaizu*, 539.

name Nihon; Roman letters and Japanese *kana* for Pegu; and in Roman letters, Camtão (the Portuguese name for the region of Canton—Guangdong), Java, Borneo, and Siam, all important toponyms in Southeast Asia for the *shuinsen* trade.⁴⁹ In contrast, the place-names on the chart that belonged to the Kadoya family of *shuinsen* merchants (another original on vellum) are almost entirely written in *katakana*.⁵⁰

The extensive use of Japanese *kana* scripts suggests that these maps represent Japanese end-points of processes of translation that occurred in the maritime world of the vermilion-seal voyages. In some cases *kana* transliterate Chinese names into Japanese pronunciation as in Nankin (Nanjing) or Chinjo (Chinzhou) in China or Gian in today's Vietnam. In other cases, the mapmaker used *kana* to sound out local pronunciations, as in the case of Champa, Patan, or Maraka.⁵¹ Although we cannot know how these choices were made, it seems probable that the mapmaker would have used names and pronunciations most in vogue in the environment in which he worked, suggesting connections to a polyvocal mélange of place-names used on the ships and in the trading ports of the vermilion-seal trade.

The hybrid nature of portolans was compounded by the ways in which they were used—in conjunction with other navigational technologies. To use these maps, sixteenth-century pilots and navigators needed tools such as compasses, astrolabes, quadrants, tables of declinations⁵² and tides,

⁴⁹ Nakamura Hiroshi, *Goshuinsen kōkaizu*, 539-540.

⁵⁰ Nakamura Hiroshi, *Goshuinsen kōkaizu*, 550-551.

⁵¹ For a comprehensive list of the toponyms found on vermilion-seal portolan charts, see Nakamura Hiroshi, *Goshuinsen kōkaizu*, 539-582.

⁵² Declination here means the position of the sun as its ecliptic course intersects the zodiacal ring. The sun's position differed everyday in a four-year cycle and the navigator found his latitude by performing various calculations with the observed altitude of the sun, the declination number, and 90 degrees that differed depending on the ship's position with regard to the equator and the season.

sounding leads, and compendia of navigational instructions and sailing instructions (known in Europe as rutters). Some mapmakers even included rutters in their atlases. For example, the Venetian cartographer Antonio Millo (fl. 1580s-1590s) inserted a rutter and pilot's manual in his 1598 portolan atlas. In it, Millo insisted that pilots needed to understand the compass, wind-directions, sounding lead, how to take the requisite readings with the astrolabe to determine one's position in relation to the sun and the equator, how to navigate south of the equator, and how to read and interpret maps and charts. The pilot needed to be familiar with coastlines, ports, shoals, sand banks, and other experiential knowledge. But Millo also stipulated that pilots master the Ptolemaic cosmography; they had to know:

that the world is round. Within this round shape are four elements...and beyond these four elements are nine heavens....Above the heaven of Saturn lies the starry heaven, called the firmament, and above that is the further-most heaven, called the First Mover (*primum mobile*).⁵³

Experiential data of the coastlines, navigational devices, and spiritual technologies all fused into a hybrid amalgam that contained within it a cartographic form that was itself a hodgepodge of different sources of information.

Vermilion-seal portolans were also used together with other technologies. The chart of the Kadoya family actually contains needle holes from what is thought to be actual use by dividers (compasses) marking a course from Nagasaki to Cochin China.⁵⁴ On the open seas, pilots might use dividers to inscribe arcs on the portolan to chart a

⁵³ Antonio Millo, *World Atlas of Antonio Millo*, ed. Lothar Zögner, trans. Peter Hogg (Berlin: VCH Acta humanoria, 1988), 38. For an overview of Ptolemaic geography as pertaining to navigation: David W. Waters, *The Art of Navigation in England in Elizabethan and Early Stuart Times* (London: Hollis and Carter, 1958), 41-58, plate 12).

⁵⁴ Nakamura Hiroshi, *Goshuinsen kōkaizu*, 75.

course.⁵⁵ Navigators in East Asia also profited from rutters. Chinese pilot manuals like the Ming-period *Shunfeng xiansong* and *Zhinan zhengfa* that predate the Portuguese arrival contain detailed compass headings and textual directions for sailing between ports in East and Southeast Asia like Nagasaki, Hyōgo, Ryūkyū, Fujian, Guangzhou, Cochin China, and Patani. These directions include textual descriptions of shoals and other dangers, instructions on how to use the compass, tables of tides, star charts, and descriptions of proper rituals used to appease ancestors and gods.⁵⁶ And as will be explored later, an early seventeenth-century navigational treatise by the Japanese pilot Ikeda Kōun based on Portuguese pilot books mixes European and East Asian navigational knowledge, including rutters.

Furthermore, portolans were not a radically unprecedented technology in East Asia. Itinerary-style maritime maps were common in the China Sea region for centuries before and after the arrival of the portolans. And although they were usually dedicated to tracing single trajectories, such cartographical practices probably facilitated the development of the vermilion-seal portolans. Maritime itineraries can be found in such diverse sources as the remnants of charts collected from Zheng He's voyages,⁵⁷ a 1776 Thai map narrating

a ship journey from Japan to Arabia,⁵⁸ Korean and Chinese compendia of intelligence about Japan and Ryūkyū,⁵⁹ a screen-painting map of Japan held by the Jōtokuji temple complex,⁶⁰ and a seventeenth-century map of Ryūkyū.⁶¹

Furthermore, just as the European portolan was born out of the cultural interactions of the Mediterranean and Atlantic maritime worlds, so too in East Asia, itinerary-style nautical charts emerged out of the cosmopolitan exchange that flourished in the zones of intercultural interaction found along the East Asian maritime trade routes. The Zheng He maps mix text and graphics to illustrate maritime itineraries from China through Southeast Asia to Arabia and Africa. Among the textual portions are navigational instructions for calculating the altitude of stars (in order to determine latitude) by using one's arm and fingers as a cross staff, a method thought to be derived from

⁵⁵ Campbell, 441-444.

⁵⁶ The Chinese pilot manuals *Zhinan zhengfa* (指南正法) and *Shunfeng xiangsong* (順風相送) were acquired by the Jesuits in China, given to the English Archbishop Laud in 1639, and stored in the Bodleian Library in Oxford. They are available in Xiang Da ed., *Xiyang fanguozhi, Zheng He hanghaitu, Liangzhong haidao zhenjing* (Beijing: Zhonghua Shu Ju, 2000).

⁵⁷ Rather than the charts actually used by Zheng He, the extant 21 foot-long chart seems to be compilations of the sailing knowledge and experience gathered by Zheng He and his admirals and collated by later cartographers concerned with the *wakō* and other coastal issues. See Ma Huan, *Ying-Yai Sheng-Lan, The Overall Survey of the Ocean's Shores 1433*, ed. J.V.G. Mills, trans. Feng Ch'eng-Chün (Cambridge: Published for the Hakluyt Society at the University Press, 1970), 238-241. The map itself is found in the late

Ming compendium *Wubeizhi*, chapter (*juan*) 240. It has also been published in Xiang Da ed., *Xiyang fanguozhi, Zheng He hanghaitu, Liangzhong haidao zhenjing*.

⁵⁸ Thongchai Winichakul, *Siam Mapped* (Honolulu: University of Hawaii Press, 1994), 29-30, Figure 4.

⁵⁹ For Korea, see Shin Sukchu, *Haedong chegukki (Kaitō shokokuki: Chōsenjin no mita chūsei no Nihon to Ryūkyū)*, ed. Tanaka Takeo (Iwanami Shoten, 1991); For China, see Zheng Shun'gong, "Miandao xinbian [絕島新編]," *Riben yijian* (Beijing: Republic of China, 1939), 1B-2A, 12A.

⁶⁰ The presence of red-lines inscribing an itinerary from Nagoya in Kyushu to Tsushima and Korea has caused some to suggest a connection to Hideyoshi's invasion of Korea and date it to the 1590's, but there is not a consensus on the issue (See for example the discussion by Miyoshi Tadayoshi in *Tokubetsuten Nanban kenbunroku* (Kōbe: Kōbe Shiritsu Hakubutsukan, 1992), 107.

⁶¹ Uezato Takashi, Fukase Kōichirō, Watanabe Miki, "Okinawa Kenritsu Hakubutsukanzō *Ryūkyū kokuzu*—Sono shiryōteki kachi to *Haedong chegukki* to no kanrensei ni tsuite," *Komonjo kenkyū*, 60 (2005: 7), 24-45.

Arab seafarers in the Indian Ocean.⁶² Another lineage of maritime itinerary maps with inscriptions of shipping lanes seems to have resulted from the exchange linking the Japanese port of Hakata with Ryūkyū and Korea in the fifteenth century. Both the collection of itinerary maps found in a 1471 Korean handbook on Japan and Ryūkyū, *Haedong chegukki*,⁶³ and a 1696 Japanese map of Ryūkyū⁶⁴ are thought to be derived from a base map associated with the mid fifteenth-century Hakata monk-merchant Dōan who was active in trade and diplomacy connecting Japan, Ryūkyū, and Korea.⁶⁵

Thus, the portolan was probably an attractive tool for East Asian seafarers, once improved in light of East Asian local knowledge. It provided navigators in East Asia a cartographical form that was both familiar in its itinerary design and an improvement upon earlier itinerary-map models because it was designed for use in combination with other navigational technologies in order to depict infinite itineraries instead of just one. Because of their adaptability, portolans in combination with texts such as rutters provided a perfect receptacle for the largely experiential forms of knowledge that characterized navigational practice in the vermilion-seal trade.

⁶² Zheng He *hanghaitu*, 63-66 in Xiang Da ed., *Xiyang fanguozhi, Zheng He hanghaitu, Liangzhong haidao zhenjing*; Iida, 51. I am grateful to Tom Nelson for helping with this information.

⁶³ Shin Sukchu, *Haedong chegukki (Kaitō shokokuki: Chōsenjin no mita chūsei no Nihon to Ryūkyū)*, ed. Tanaka Takeo (Iwanami Shoten, 1991).

⁶⁴ The map was drafted by the Chikuzen domain scholar Takemori Dōetsu. See Uezato Takashi, Fukase Kōichirō, Watanabe Miki, "Okinawa Kenritsu Hakubutsukan shozō Ryūkyū kokuzu."

⁶⁵ Nakamura Hidetaka, 1: 361-362; Kenneth Robinson, "The *Haedong chegukki* (1471) and Korean-Ryūkyūan Relations (1389-1471): Part I," *Acta Koreana*, 2 (2000), 94-97; Saeki Kōji, "Muromachi kōki no Hakata shōnin Dōan to Higashi Ajia," *Shien* 140 (2003): 31-49.

Pilots' Roles in the Development of Hybrid Nautical Cultures and Portolan Charts

Pilots played crucial roles in the development of navigational practice, the larger nautical culture, and nautical charts like the Hayashibara in large part because, like their European counterparts, they bore sole responsibility for the safe passage of many of the vermilion-seal ships. Pilots were at the center of many types of exchange that led to the development of the portolans and were also the primary users of the sea charts. Some drafted charts on their voyages, while others created many of the written sources that remain from the vermilion-seal trade—rutters, sailing manuals, logbooks, etc. On *shuinsen*, chief pilots might be Chinese, Portuguese, Dutch, English, Scottish, as well as Japanese.⁶⁶ Local pilots were often hired to navigate unfamiliar waterways on these trading ventures as well. Pilots originating in different linguistic, cultural, and navigational traditions mixed in trading ports and ships to exchange knowledge, and portolans were among the media used to document the results of those encounters.

To demonstrate the important role of pilots in the processes of exchange that led to the development of a distinctive nautical culture in the *shuinsen* trade, we next examine the histories of two pilots: William Adams (1564-1620) and Ikeda Yōemon Nyūdō Kōun (1st half of 17th c.). The case of William Adams illustrates how cartographical innovation might occur in the hybrid nautical culture of the vermilion-seal ships. Ikeda Kōun wrote a pilot book entitled *Genna kōkaisho* [*Genna-era Navigational Treatise*] that demonstrates how the interchange of the vermilion-seal trade enabled the creation of idiosyncratic, hybrid nautical cultures.

William Adams. As is well known, William Adams was an Englishman who arrived in Japan in 1600 as pilot of the Dutch vessel, *Liefde*.⁶⁷ He

⁶⁶ Iwao, *Shinpen shuinsen bōekishi no kenkyū*, 243-261.

⁶⁷ Anthony Farrington, *The English Factory in Japan 1613-1623*, 2 vols. (London: The British Library, 1991), p. 1542-1546. For convenience, documents from this collection will be cited by the

settled in Japan for the rest of his life, became a trusted advisor to Tokugawa Ieyasu, made a living as a one-man trade diaspora,⁶⁸ and was a pilot active in the vermilion-seal trade. Among other projects, Adams seems to have been involved in collecting and synthesizing cartographical and navigational information about Japan and East Asia. On behalf of patrons such as Tokugawa Ieyasu, the English East India Company, and Chinese merchants,⁶⁹ Adams piloted ships across East and Southeast Asia that all carried diverse crews, providing Adams the opportunity to participate in exchanges of nautical lore with many different groups of seafarers. Adams piloted vessels to Cochin China, Tonkin, and two other voyages that ended prematurely in the Ryūkyūs. These ships carried English, Chinese, and Japanese crewmembers.⁷⁰ Dealing with multiethnic crews required

number Farrington assigned documents and the page number

⁶⁸ Curtin, chapter 1.

⁶⁹ See Farrington, p. 1544-1545 for a summary of Adams' voyages on behalf of various patrons.

⁷⁰ See for example, a ledger listing money lent to members of the crew in *William Adams' journal of his voyage to the Ryukyu Islands in the Sea Adventure, with related accounts and notes, and miscellaneous accounts, November 1614-1616*, in Farrington no. 409, p. 1067. Names include Englishmen such as Edward Sarris and Richard Wickham, Japanese such as Shinsemon, Shingero, and Yakeo, and perhaps a Chinese man known as "Chinna Tiquan." Several Chinese involved in the vermilion-seal trade were known with the appellation Iquan (一官), Niqan (二官), Sanquan (三官), etc. (see Iwao, *Shinpen shuinsen bōekishi no kenkyū*, table 7). The head of the Chinese community in Hirado had sons known as both Iquan and Niqan and Cheng Zhilong was known for a time as Iquan (See Iwao Seiichi, "Li Tan 李旦, Chief of the Chinese Residents at Hirado, Japan in the Last Days of the Ming Dynasty," *Memoirs of the Tōyō Bunko*, 17 (1958), 38-39, 73). During the 1616 Ryūkyū voyage, the *Sea Adventure* carried "58 Japones marines," ("Richard Wickham at Edo to Sir Thomas Smythe in London, 23 October 1615," in Farrington no.

that Adams have methods by which he and his crew could communicate, and in his journals for these voyages, Adams habitually appended lists of useful foreign words he picked up on the trip in addition to entries about sailing directions, weather, and daily events. Phrases included numbers, salutations, and terms related to navigation and sailing.⁷¹ Such entries conjure images of Adams conversing and trading information and tales with a diverse array of seafarers.

For Adams, a pilot and mapmaker, portolan charts constituted one chief receptacle for the navigational lore he acquired sailing for Japanese, Chinese, English, and other sponsors. Among the navigational instruments thought to have been brought by Adams to Japan are two portolan charts by the Dutch cartographer Cornelis Doedtsz. One map has survived unchanged since its original drafting and depicts a standard "bent pin" representation of Japan (**Figure 3**). However, a close look at the northeast corner of the second map (**Figure 4**) reveals drastic emendations to the eastern half of the Japanese archipelago and the Korean peninsula.⁷²

125, p. 326; Iwao, *Shinpen shuinsen bōekishi no kenkyū*, 275).

⁷¹ *William Adams' journal of his voyage to the Ryukyu Islands in the Sea Adventure, with related accounts and notes, and miscellaneous accounts, November 1614-1616*, in Farrington no. 409, p. 1071; *William Adams' journal of his voyage to Cochin China in the Gift of God, with related accounts and notes, 17 March-6 August 1617*, in Farrington no. 411, p. 1126; *William Adams' journal of his voyage to the Ryukyu Islands, 9 March-6 May 1618*, in Farrington no. 413, p. 1171.

⁷² C.R. Boxer was the first to speculate that Adams made these changes. C.R. Boxer, "Some Aspects of Portuguese Influence in Japan, 1542-1640," reprinted in *Papers on Portuguese, Dutch, and Jesuit Influences in Sixteenth- and Seventeenth-Century Japan* (Washington, D.C.: University Publications of America, Inc., 1979), 105. Unno, "Waga kuni ni okeru portorāno kaizu no juyō," 257-259 has an overview of the scholarship on these two charts.

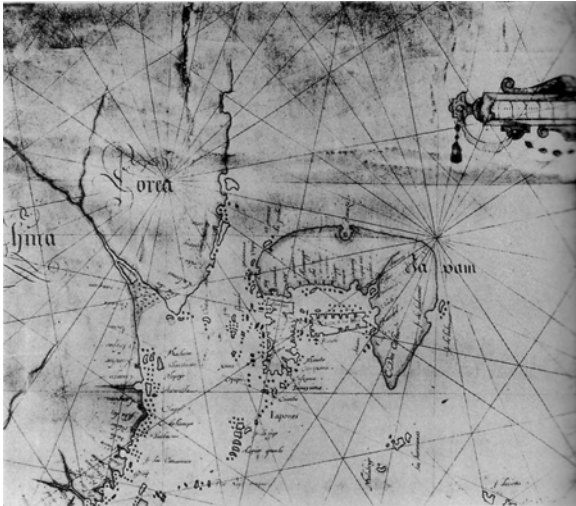


Figure 3: Detail of Unaltered map of Cornelis Doedtsz⁷³

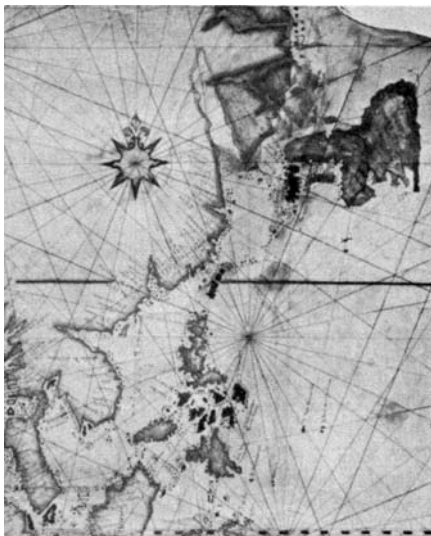


Figure 4: Detail of Doedtsz map after Adams' corrections⁷⁴

⁷³ Unno, "Waga kuni ni okeru portorāno kaizu no juyō," 247. This map is known as *Nanyōshinrozu*. It is in the collection of the Tokyo National Museum and is reproduced here with their permission.

⁷⁴ Boxer, "Some Aspects of Portuguese Influence in Japan, 1542-1640," opposite p. 106. This map is known as *Seiyōshinrozu Indoyō*. It is also in the collection of the Tokyo National Museum and used with their permission.

Adams himself admitted that his original navigational and cartographic information regarding the Japanese archipelago was erroneous. In a letter he stated that, "we proceeded on our former intention for Japan and in the haight of 30 degrees souht the northermost cape of the forenamed island but fownde it not, by reason that it lieth faulce in all cardes and mappes and globes; for the cape lieth in 35 1/2 degrees w'ch was a great difference...."⁷⁵ Figure 4 reflects later corrections based on local East Asian seafaring knowledge that Adams would have acquired as a pilot in the vermilion-seal trade and on other ventures. It is one example of the way European portolans would be translated and adapted in creating vermilion-seal portolans.

In addition to correcting his old charts, Adams also drafted new charts based on his experiences and exchanges. For example, in 1613, he penned a letter to the English East India Company in 1613 saying, "I have sent a pateron of Japan for w'ch myself I hav been...alongs the cost in the shipping that I have made for the Emperour [Tokugawa Ieyasu]."⁷⁶ Also in 1613 Richard Cocks, the head of the English Factory in Japan, described a map drafted by Adams in preparation for a proposed voyage to Ezo to search out the Northwest passage as "the plot of Japan, w'th p'te of that iland [Ezo] & Corea & other bordering places...."⁷⁷ Although we do not know what types of maps Adams drafted, the dominance and adaptability of the portolan form in the period and the fact that the Doedtsz maps were portolans mean that Adams probably utilized portolan technology. For Adams and others like him, cartographical and navigational innovations were significantly facilitated by the intercultural exchanges made possible by the *shuinsen* trade. Adams' modification of

⁷⁵ William Adams at Hirado to his 'unknown friends and countrymen, at Bantam, 23 October 1611," in Farrington, no. 6, p. 68.

⁷⁶ "William Adams at Hirado to Augustine Spalding at Bantam, 12 January 1613," in Farrington, no. 8, p. 78. Ieyasu was of course retired shogun at this time.

⁷⁷ "Richard Cocks at Hirado to Sir Thomas Smythe and the East India Company in London, 30 November 1613," in Farrington, no. 18, p. 99.

Doedtsz's chart epitomizes how portolans both represent and were a product of the cross-cultural translation and adaptation of navigational information in the maritime world of the vermilion-seal trade.

Ikeda Yōemon Nyūdō Kōun. Little is known about Ikeda Yōemon Nyūdō Kōun outside of what he tells readers in his *Genna-era Navigational Treatise*. There is some evidence that he was in Siam in 1604;⁷⁸ in 1636, he is thought to have helped design a way to raise silver bullion from a sunken Portuguese ship in Nagasaki harbor.⁷⁹ At any rate, in 1616 he sailed as part of a vermilion-seal crew and apprenticed himself to a Portuguese as a pilot for two years. Upon returning, he wrote Japan's earliest extant pilot's manual, the *Genna kōkaisho*.⁸⁰ This work demonstrates how the intercultural mixing of the vermilion-seal trade

gave birth to new hybrid navigational practices and helped to create the wider nautical culture in which the Hayashibara and other charts were made and used.

Those Japanese who participated in the *shuinsen* trade and other ventures seem to have been actively seeking to improve navigational and shipbuilding techniques and technologies through commercial exchange, piracy, and cross-cultural apprenticeships. From the late sixteenth century, European, Chinese, and Korean observers characterized Japanese navigation as generally less advanced than their own.⁸¹ Contemporaneous Japanese navigational practices are unclear, but seem to have blended astronomical observation, experiential knowledge (such as reading information from landmarks, the color of water, and types of sediments from the sea bottom), and religious rites for trans-regional Buddhist deities and Japanese *kami*. A sixteenth-century Chinese compendium of intelligence on Japan and Japanese pirates, the *Chouhai tubian*, notes that "normally, Japanese ships only sail with a fair wind. If there is no wind or an adverse wind, they all take down their masts and row. They are unable to tack."⁸² Similarly, in 1613, William Adams suggests that, although Japanese sailors were skilled, the islands lacked sufficiently advanced shipbuilding and navigational technologies: "the peopell of this land ar verry stout seamen...the wantes be coordesh, pouldaves [canvas sailcloth], and tarr, pich or rossen, and coumpasses, rounninglasses, a payr of globes for demonstracion, and cardes or mapes,"⁸³ A Korean man named Cho Wanbyōk who accompanied several vermilion-seal voyages records that "Japanese possess only small ships incapable of

⁷⁸ The *Tsūkō ichiran* (comp. by the Tokugawa Bakufu in 1853) lists a Yōemon resident in Siam in 1604. (Saigusa Hiroto, "*Genna kōkaisho kaisetsu*," 6.

⁷⁹ Saigusa, 6.

⁸⁰ Ikeda Yōemon Nyūdō Kōun, *Genna kōkaisho*, ed. Saigusa Hiroto *Nihon kagaku koten zensho*, vol. 12 (Asahi Shimbunsha, 1943). Ikeda Kōun's preface claims 1618 as the date of writing, but Saigusa argues from the contents of the declination section that parts of the text at least date from 1629 or 1630 (5, 8-10). The original is an untitled manuscript in the collection of the Kyoto University Library, and is known as both the *Genna kōkaiki* and *Genna kōkaisho*. It is published in several printed editions including the series *Kaiji shiryō sōsho*, but I have found the annotated version in *Nihon kagaku koten zensho* to be the most useful.

It is important to note that the *Genna kōkaisho* was not unique. Iwao Seiichi cites several examples of similar works in *Shinpen shuinsen bōekishi no kenkyū* (180-181). Japanese authors such as the Tokugawa Confucian and expert in overseas affairs, Fujiwara Seika (1561-1619), describe encountering Japanese with knowledge of Portuguese nautical sciences and devices. Saigusa also notes the existence of several similar texts written later in the Edo period, but their relationship to *Genna kōkaisho* is unclear.

⁸¹ For a history of Japanese navigation, see Iida Yoshirō, *Nihon kōkaijutsushi* (Hara Shobō, 1980).

⁸² See the chapter on Japanese ships [倭船] in Zheng Ruozeng et al. comp., *Chouhai tubian* [籌海圖編] vol. 1, chapter (*juan*) 2 (Taipei: Shang Wu, 1974), 50-51.

⁸³ "William Adams at Hirado to Augustine Spalding at Bantam, 12 January 1613," Farrington no. 8, p. 78.

traversing the great ocean. So, with 80 pieces of silver, they purchase passage on Chinese ships.”⁸⁴

To offset these navigational limitations, Japanese ship owners—especially in the vermilion-seal trade—regularly hired Chinese, Spanish, Portuguese, Dutch, English, and Scottish pilots.⁸⁵ The commander of a fleet of Dutch ships in 1609, Francois Wittert, wrote of encountering a Japanese ship near Luzon carrying a Spanish pilot. Upon interviewing the captain, Wittert wrote, “Knowing that Japanese navigation is not advanced and that as a result many ships were being lost, the Japanese court [Bakufu] ordered [the employ of foreign pilots]. According to the captain, this ship carried a crew of 200, 20 being Spanish....”⁸⁶ The *Chouhai tubian* also records that Japanese hired Chinese pilots and bought deep-keeled boats that could travel in the deep ocean and tack into the wind.⁸⁷ Alternately, by taking passage on Chinese ships, Japanese could watch Chinese shipmasters “who used the compass to determine east and west and who used large ropes to drop a hook [sounding lead] down to dredge the bottom and determine distance and direction by the color [of the sediment].”⁸⁸ Japanese seafarers who sailed as part of these heterogeneous crews could master and help spread different navigational techniques and technologies.

Ikeda Kōun fit this mold. In the introduction to *Genna kōkaisho*, Ikeda writes, “This is the way of the navigator. In the second year of the Genna era [1616], I apprenticed myself to Manuel Gonzalo and for two years accompanied him on

his crossings to Luzon. During that time, I mastered those aspects of the arts that he knew.”⁸⁹ Gonzalo was a Portuguese navigator who is known to have received trading licenses for Siam, Cochin China, and the Philippines in 1613, 1614, and 1618 respectively.⁹⁰ Despite stringent statutes issued by the Iberian crowns against the sharing of navigational intelligence and charts,⁹¹ Gonzalo willingly imparted all he knew to Ikeda.

By labeling these techniques and technologies as a “way” [J. *michi*], Ikeda sought to demonstrate their significance, identifying them as a skill that when mastered could lead one to universal knowledge.⁹² Ikeda also emphasized the importance of these navigational ideas by exalting their widespread adoption: “[t]oday, what country’s mariners do not know these ideas?”⁹³ At the same time, Ikeda did not hesitate to highlight their weak points. He describes how,

Once, I put to him [Gonzalo] three questions. The first was how to measure the sun before and after midday; the second was how to know one’s degree of latitude when the Southern Cross was to the right or left and one lay to the East or West. The third concerned one’s position in relation to the North Star. Although the ancient treatises diagramed eight methods [for the third issue]—four pertaining to the day, one to morning and evening, and the remaining three to darkness—when clouds cover the sky, they are meaningless even if one knows the time. For this third problem, I wondered if, when I want to accurately gauge altitude and distance, there was perhaps a method not dependent upon time.

My teacher answered, “in all likelihood, you will find no other teachings on these

⁸⁴ See the text by Cho Wanbyōk printed in full in Iwao Seiichi, “Annankoku tokō Chōsenjin Cho Wanbyōk den ni tsuite,” *Chōsen gakuhō*, 6 (1954), 12. Cho Wanbyōk was captured in the Japanese invasion of Korea in 1597 and was brought to live in Kyōto for a time. In order to buy his release, he sought a position on a ship trading with Southeast Asia (Cho, 10-12, as well as Iwao’s analysis on 2).

⁸⁵ Iwao, *Shinpen shuinsen bōekishi no kenkyū*, 243-261.

⁸⁶ Quoted in Iwao, *Shinpen shuinsen bōekishi no kenkyū*, 247.

⁸⁷ *Chouhai tubian*, 51.

⁸⁸ Cho, 12.

⁸⁹ Ikeda, 21.

⁹⁰ Iwao, *Shinpen shuinsen bōekishi no kenkyū*, 231-232.

⁹¹ Nakamura Hiroshi, *Goshuinsen kōkaizu*, 159.

⁹² Jin’ichi Konishi, *A History of Japanese Literature*, vol. 3, *The High Middle Ages*, trans. Aileen Gatten and Mark Harbison, ed. Earl Miner (Princeton University Press, 1991), 146-157.

⁹³ Ikeda, 21, 24.

three issues. Regarding your first question about measuring the sun: even though it is said that there is only the one time during the day—the moment the sun reaches its zenith between East and West—if during this time of measurement, [the sun] cannot be measured, that day is wasted. So there really is no method for measuring the sun before or after noon. As for your second query, the star at the base of the Southern Cross resides thirty degrees away from the South Pole. When the star is straightly aligned with the pole, measurements can be taken. If it is even slightly askew, it is difficult to measure. You can do nothing if the star is at an angle or off to one side. As for the third issue—whether I think there are methods for measuring the North Star other than those recorded in the classic texts—if you want to calculate down to the minute, then, most assuredly, there is not. Though you can pose these three questions to a navigator anywhere, I doubt you will come to any greater understanding of them.”⁹⁴

However, for Ikeda, these limitations were not overly disheartening; they meant only that there was more to learn. He advised those who came after him to “forget the ignorant sections and throw away the mistakes to await the emendations of those who follow.”⁹⁵ From Ikeda’s perspective, mariners in East Asia left room to adapt and improve technologies and techniques through interpersonal interactions in the maritime world, a mind-set clearly at work in the cartographical and navigational practice of William Adams as well. In fact, Saigusa Hiroto argues that because the dates of the declination table that Ikeda included in the treatise range from 1629-1685, Ikeda may have added this information at a later date in order to mitigate some of the difficulties.⁹⁶ Ikeda’s declination tables show the altitude of the sun at noon for everyday of every year in that period, allowing one to estimate one’s position even if the sun were

obscured.

Ikeda devoted much of the remainder of the work to explicating some of the mechanics of navigation. In addition to the declination chart with instructions on its use, the *Genna kōkaisho* contains translations and explanations of conversions between Iberian and Japanese distances and calendars, including astronomical derivation of the European calendars and the mathematics behind leap years. Using both diagrams and text, Ikeda described the use of navigational devices such as the compass, astrolabe, quadrant, and sounding lead. As with any good pilot’s manual, *Genna kōkaisho* also includes rutters—in this case directions for sailing between Nagasaki and ports in East and Southeast Asia such as Macao and Siam—that contain compass directions and depth-measures as well as experiential elements such as landmarks and the meanings of the colors and forms of sediments from the seafloor.

Although usually understood as a translation of Portuguese knowledge,⁹⁷ *Genna kōkaisho* is actually a representation of how Ikeda assimilated the diverse array of hybrid practices that characterized navigation aboard the vermilion-seal trade ships, creating a new, idiosyncratic totality. Scholars’ over-emphasis on the ‘western science’ portions of the text mirrors the traditional focus on portolans as part of a national teleology of evermore scientific mapping. However there are significant portions of the *Genna kōkaisho* that are representations of, if not Chinese, then broader East Asian nautical practice.

Ikeda included mnemonic songs for the four seasons and the four directions that are almost character for character the same as those in the Ming pilot book, *Shunfeng xiangsong*.⁹⁸ And, just as in the *Shunfeng xiangsong* and the *Zhinan zhengfa*, Ikeda provided a table instructing the reader in the identification of those days on which setting sail was inauspicious and inadvisable due

⁹⁴ Ikeda, 21.

⁹⁵ Ikeda, 21-24.

⁹⁶ Saigusa, 8-10.

⁹⁷ Scholars including Saigusa Hiroto, Nakamura Hiroshi, Iwao Seiichi, and Unno Kazutaka concentrate on those sections of the text that deal with European navigation.

⁹⁸ Ikeda 101; *Shunfeng xiangsong*, 28.

to the presence of evil winds.⁹⁹ In addition, Nakamura Hiroshi notes that Ikeda's measurement of the degree comes from Chinese sources.¹⁰⁰ Lastly, navigational devices such as sounding leads and compasses and the experiential knowledge included in Ikeda's rutters can be found in both Portuguese and Chinese sources. However, it is also possible that the information found in Ming sources had by the early seventeenth century been adopted as common sense by Japanese mariners, especially given the extensive maritime exchange among seafarers from across East Asia who sailed with cosmopolitan pirate crews in the fifteenth and sixteenth centuries. The hybrid character of Ikeda's navigational methodology is most visible in a series of maritime maxims (of which only a few are here translated):

- When choosing sailors, old, middle-aged, and young, it is good to intermix them.
- In one day it is easy to find 1,000 ignoramuses, but in 1,000 days, you may never get one wise person.
- With those navigators who are able to study, it is like being in a room with four solid walls. Sailing with ignorant navigators is like sitting on a lake covered by thin ice.
- Traveling from desire makes it hard to go 1 mile, but traveling righteously makes it easy to go 1,000 miles.
- Waves and billows do not destroy a ship, carelessness causes ships to be lost.
- Tie up ships during a typhoon, but do not depend on the anchor cables to save you.
- High and low tides occur differently because of the proximity of the moon in its movements.
- The needle points north the same way in 10,000 countries.

⁹⁹ Ikeda, 102; *Shunfeng xiangsong*, 26; *Zhinan zhengfa*, 112. The dates identified by Ikeda and in the Ming manuals do not always correspond. However, there is at least a century separating the works, suggesting that the idea retained currency and that the calendar may have required updating.

¹⁰⁰ Nakamura Hiroshi, "The Japanese Portolanos of Portuguese Origin of the XVIth and XVIIth Centuries," 41.

- Do not place iron next to the needle. Do not use iron nails to make the compass box. Use wood or copper.
- Do not place garlic, onions, leeks, and other types of strong-smelling things by the needle. If they are placed by the compass, it will not register properly.
- When there are red clouds during a Yang month, there will be no rain for three days (Yang months last from the 3rd to the 8th months).
- When red clouds mount during a Yin month, there will be 3 days of misfortune (From the ninth month to the next second month is known as the Yin months).¹⁰¹

If *Genna kōkaisho* had been a simple translation of a European pilot book, Yin-Yang cosmology and Confucian rhetoric presumably would have been replaced by the Ptolemaic cosmology that we saw in Millo's account. Had it been a purely Chinese text, there would have been descriptions of the proper rites necessary to propitiate ancestors, the Yellow Emperor, and other deities.¹⁰² Instead, Ikeda seems to have compiled the types of knowledge most useful to him, suggesting the testing of different types of knowledge based on experiences gained sailing on vermilion-seal vessels. These nautical aphorisms mix navigational aids with Confucian maxims, Yin-Yang science, and experience-based advice. Like Antonio Millo, Ikeda seems to insist that a true mariner should master a wide array of knowledge-forms extending from what we would label the experiential, to the scientific, to the spiritual. When Ikeda wrote, "[t]oday, what country's mariners do not know these ideas,"¹⁰³ he referred not only to Portuguese devices and technology, but the hybrid, multiform practices of navigation common across East Asia in this period. These navigational gestalts might also be idiosyncratic as individual mariners decided what mix of spiritual technologies, astronomical science, and locally determined experience worked best for them.

¹⁰¹ Ikeda, 113-118.

¹⁰² See for example the *Shunfeng xiangsong*, 26.

¹⁰³ Ikeda, 21, 24.

Although Ikeda does not mention maps in the *Genna kōkaisho*, the processes of interpersonal exchange, learning, and testing of knowledge clearly at work in the text's production provide us a possible model with which to understand the processes by which the Hayashibara and other charts were created in the hybrid cultures of the sixteenth and seventeenth-century East Asian maritime world. Furthermore, C.R. Boxer has argued that the style of this text resembles European pilot-manuals and rutters that were meant to be used in conjunction with charts.¹⁰⁴ In fact, there are labels on the Hayashibara and other charts for places like Gotō and Meshima in the Japanese archipelago or Lamao off the coast of China that were not ports, but instead appear as landmarks in rutters such as are found in *Genna Kōkaisho*.¹⁰⁵ Another surviving chart actually contains a written description of the sites listed on the chart,¹⁰⁶ further indicating that Japanese portolans may have been used together with written accounts such as rutters.

Examination of Adams' cartography and Ikeda's navigational treatise thus reveal how the practical desire to maximize the variety and efficacy of navigational technologies as well as the personalities and idiosyncrasies of individual pilots stimulated adaptation of portolan maps and profoundly shaped the development of the hybrid nautical culture in sixteenth and seventeenth-century East Asia.

The Hayashibara Chart and the Broader Hybrid Nautical Cultures of the Vermilion-Seal Trade

In this section, we expand our perspective from the pilots who exemplify the individual agency involved in the creation of the portolans to the wider nautical cultures that gave birth to the vermilion-seal portolans, in particular its seafaring

argots, belief systems, ships, and ports. These examples further demonstrate how portolans like the Hayashibara are best understood as part of a hybrid seafaring culture that existed between land-based states and not as part of a national tradition of mapping.

Language. In the vermilion-seal trade, a single ship's crew could be composed of mariners of many lands and languages. Mary Louise Pratt argues that this type of multicultural situation often led to the development of "contact languages"—"improvised languages that develop among speakers of different native languages."¹⁰⁷ On vermilion-seal ships, this diversity began at the top of the ship's hierarchy and extended through the ranks of the mariners. Recipients of *goshuinsen* licenses included one Ryūkyūan, eleven Chinese, and twelve Europeans in addition to Japanese.¹⁰⁸ Mercenary pilots like William Adams and Ikeda's teacher Manuel Gonzalo swarmed the trading ports of East Asia, feeding a market for experienced navigators whatever their homeland. Sponsors of vermilion-seal ships usually hired Chinese or European pilots,¹⁰⁹ and European ships as a matter of practice used local pilots in foreign waters.¹¹⁰ Sailors from China, Japan, Southeast Asia, and Europe, not to mention countless mariners of mixed heritage, congregated in entrepôts from Nagasaki to Melaka and constituted crews for ships from many lands.¹¹¹ Portuguese vessels especially seem to have been undermanned and so augmented their crews with local sailors from across Asia.¹¹² The need to

¹⁰⁴ Boxer, "Some Aspects of Portuguese Influence in Japan, 1542-1640," 107.

¹⁰⁵ Nakamura Hiroshi, *Goshuinsen kōkaizu*, 539; Ikeda, 100-101.

¹⁰⁶ Nakamura Hiroshi, *Goshuinsen kōkaizu*, 39.

¹⁰⁷ Pratt, 6.

¹⁰⁸ Iwao, *Shinpen shuinsen bōekishi no kenkyū*, 224.

¹⁰⁹ See Iwao's chart of known pilots for Japanese vermilion-seal voyages in *Shuinsen bōekishi no kenkyū*, 256-257.

¹¹⁰ Nakamura Hiroshi, "The Japanese Portolans of Portuguese Origin of the XVIth and XVIIth Centuries," 34; C.R. Boxer, *The Christian Century in Japan* (Berkeley: University of California Press, 1967), 410.

¹¹¹ Iwao, *Shinpen shuinsen bōekishi no kenkyū*, 278-279.

¹¹² C.R. Boxer, *The Portuguese Seaborne Empire* (New York: Alfred A. Knopf, 1969), 52-53.

form a cohesive crew among disparate linguistic groups stimulated development of a seafaring lingua franca and distinctive nautical culture in sixteenth- and seventeenth-century East Asia.

Nagazumi Yōko has speculated that the Chinese, Japanese, Koreans, Portuguese, and others who crewed the *wakō* ships in the sixteenth century coupled with the spread of Chinese, European, and Japanese diasporas throughout East and Southeast Asia encouraged the development of a maritime lingua franca, possibly some hybrid form of Fujianese mixed with Portuguese and Malay.¹¹³ Her theory about the importance of southern Chinese dialects in at least parts of this trade is given further credence by the “book of Rememberance” William Adams appended to his journal to Cochin China. Adams recorded Cantonese equivalents for thirty words including the ordinal numbers one through ten, north, south, east, west, northeast, and southwest [inclusion of these last two may reflect an awareness of the directions of the monsoons], compass, boatswain, captain, and “a bare wind.”¹¹⁴ Although the fact that Adams felt it necessary to record these terms indicates that he was not familiar with them prior to traveling to the South China seas, there may have been regional differences in languages used in the trade and the large percentage of maritime terms in his list implies that he recognized the importance of that dialect in the maritime world.

Much textual evidence suggests that a mixture of Japanese, Portuguese, and Chinese was used on vermilion-seal ships, matching the multi-lingual textuality of the Hayashibara and other charts. *Tokubei Tenjiku monogatari* (1707) purports to contain the reminiscences of journeys made by a monk named Sōshin to Southeast Asia on *shuinsen* sponsored by the Dutchman Jan Joosten and the

wealthy merchant Suminokura Yoichi.¹¹⁵ At the end of the narrative Sōshin listed the words used for numbers and measures one through ten, hundred, thousand, and ten thousand: “inya, arasu, teresu, kuwatro, shinku, se’in, seiku, wobira, nobi, ten, tehen,¹¹⁶ raki, han.”¹¹⁷ The numbers one through ten seem to be Japanese transliterations of Portuguese numerals, but the word for thousand, *raki*, may derive from the Sanskrit *lacasa* widely used in Southeast Asia, including by Malay speakers for either 10,000 or 100,000.¹¹⁸ The word *han* for ten-thousand is clearly derived from the Chinese or Japanese. *Tokubei Tenjiku monogatari* and similar texts also allow us to compile a list of some of the terms used to refer to jobs on a ship. The original languages for these terms seem to have been Portuguese, Chinese, and Japanese (see **Table 1**).

Religion. In addition to language, religious traditions held in common helped unite crews. Throughout the premodern period, rituals performed to ensure safe passage formed one part of the continuum of navigational practices in East Asia. Many sea travelers commonly worshipped trans-East Asian Buddhist deities, especially Avalokitesvara (C. Guanyin, J. Kannon).¹¹⁹ In the sixteenth century, the popularity of Christianity and the worship of Tianhou (also called Mazu, the

¹¹³ Nagazumi, 24. Nagazumi’s speculation derives in part from Murai Shōsuke’s argument about *wajin* and *wakō* as “*mājinaru man*” (Nagazumi, 22-23); Murai, *Chūsei Wajinden*, 34-58.

¹¹⁴ William Adams’ *journal of his voyage to Cochin China in the Gift of God, with related accounts and notes, 17 March-6 August 1617*, in Farrington, no. 411, p. 1126.

¹¹⁵ See Sōshin, *Tokubei Tenjiku monogatari*, in *Edo hyōrūkyō sōshū*, vol. 1 ed. Yamashita Tsuneo (Heibunsha, 1992), 488-504, hereafter TTM.

¹¹⁶ As yet unknown.

¹¹⁷ TTM, 503.

¹¹⁸ For an explanation of *lacasa*, see Glossary 1 at the end of Fernão Mendes Pinto, *The Travels of Mendes Pinto*, ed. trans. Rebecca D. Catz (Chicago: University of Chicago Press, 1989), 644.

¹¹⁹ The Korean official Ch’oe Pu depicted an interesting twist to this religiosity in his diary when, after being shipwrecked off the coast of China in 1487, he describes an encounter with a pirate who claimed “I am the Buddha Kuan-yin.” Ch’oe Pu, *Ch’oe Pu’s Diary*, ed., trans. John Meskill (Tucson: University of Arizona Press, 1965), 41. See also Ennin, *Ennin’s Diary*, ed., trans. E.O. Reischauer (The Ronald Press Co., 1955), 2, 6, 94, 125 for shipboard Buddhism.

Chinese goddess of the sea) among seafarers from different lands also created cross-cultural bonds based on belief that may have increased crew cohesion. Both religions found believers among seafarers from Japan, China, and Ryūkyū in the sixteenth and seventeenth centuries. Catholic seafarers believed in the efficacy of prayer, giving alms, and hanging relics over the side to quell rough seas,¹²⁰ whereas worshippers of Tianhou prayed to and performed rituals for her for aid in determining correct courses of action in a given situation.¹²¹ Extant records of the practices of Mazu worship include the sacrifice of animals as well as ritual mutilation by sailors.¹²² In the vermilion-seal trade, multiple religious traditions often co-existed on the same vessel and worked synergistically towards the same purpose: ensuring the safe arrival of the vessel. For example, Edmund Sayers noted in a journal entry on his return from Siam to Hirado in a Chinese junk how:

This night the captane mayed a sackaryfyes to his god for a fare wind and promised hime to geve him his jounce [junk] whene hee came to Langasacka [Nagasaki]. Theine all of ofeceres and mareneres that ware Chresyanes [Christians] mayed a seremony and bought the roudere [rudder] of the jounce [junk] and promised to geive it, or the worth of it, to the Mesery Cordeye when they came to Langasacka.¹²³

¹²⁰ See for example, C.R. Boxer trans., “A Voyage from Macao to Japan in 1564,” *The Great Ship from Amacon* (Lisbon: Centro de Estudos Históricos Ultramarinos, 1959), 309-312.

¹²¹ Tsu Yun Hui, “Between Heaven and the Deep Sea: The Religious Practice of Chinese Seafarers from the Eleventh to the Mid-Nineteenth Century,” *East Asian History* 23 (2002), 78. For Mazu worship in Japan specifically, see Kubo Noritada, “Nishi Nihon no Maso shinkō,” *Ajia yūgaku*, 41 (2002, 7): 134-144; Kubo Noritada, “Higashi Nihon no Maso shinkō,” *Ajia yūgaku* 42 (2002, 8): 146-157.

¹²² Tsu Yun Hui, 77-82.

¹²³ Edmund Sayers, *Journal of his voyage from Hirado to Siam in the Sea Adventure and of his return in a chartered junk, with accounts of*

Both Chinese seafarers and Christians performed rituals in their own traditions together to help succor the vessel. Although it is unclear if he is describing Mazu worship or not, Sayers’ use of the male pronoun may represent a simple lack of familiarity with Chinese religious traditions.

Ship Design. The very ships upon which the Hayashibara and other portolans were employed epitomize the hybrid character of this maritime world. For most of the vermilion-seal period, mariners from several different lands—including European countries—sailed Chinese-style junks.¹²⁴ These junks might hail from shipyards in China, Japan, or various parts of Southeast Asia. Many junks were constructed in Siam where timber and other naval stores were inexpensive.¹²⁵ However, there is also evidence that, beginning in the 1620s, shipwrights in Nagasaki took advantage of the variety of foreign vessels moored there and integrated European, Chinese, and Japanese ship designs into a hybrid vessel (**Figure 5**).



Figure 5: Image of a Hybrid Vermilion-Seal Ship from 1622¹²⁶

presents and goods in Siam, 7 December 1615—22 Nov 1616, in Farrington, entry for Thursday 12 [August], p. 1093.

¹²⁴ Iwao, *Shinpen shuinsen bōekishi no kenkyū*, 150-151, 136.

¹²⁵ Nagazumi, 65.

¹²⁶ “Araki-sen,” Ishii Kenji, *Zusetsu Wasen shiwa* (Shiseidō, 1983), frontisplate 12. The

In the ship depicted in **Figure 5**, the designs for the rear portion of the ships including the rudder, aft cabins, and aftcastles were derived from European galleons and galiots. In contrast, the prow's shape and its stations for rowers closely resemble the front ends of late sixteenth-century Japanese warships known as *atakebune*. The foremast and mainmast carry Chinese junk-style ribbed sails whereas the design of the bowsprit, cloth spritsail, topsails, and mizzen all suggest European influence.¹²⁷ Textual evidence for these ships is scarce, but Willem Jansz, a member of the Dutch East India Company, wrote in his record of a sojourn in Nagasaki in 1630 that,

“in the shallow sea in front of the town, two new ships rode at anchor built in the galiot style with pennants flying at the stern. One was bought by a Chinese merchant hoping to sail for Cochin China and another is owned by a Japanese, but chartered to a Chinese setting sail for Tonkin. Sailing as pilot is Vicent Romeijn, a Dutch resident of Nagasaki.”¹²⁸

Viewed from the rear, these new hybrid ships would have resembled a galiot, suggesting that at the very least, Japanese shipwrights were incorporating European hull designs into their ships. Furthermore, the passage suggests that ship designs were not necessarily tied to particular lands.

Entrepôts. The hybrid character of the ships used in the trade also marked the major trading ports. Many of the entrepôts labeled on the Japanese portolans were cosmopolitan centers of exchange where mariners and merchants from

image is known as “Araki Sōtarō ikokusen tokaisen no zu” and is in the holdings of the Nagasaki City Museum. Similar hybridity of ship design can also be seen in *shuinsen ema* held by the Kiyomizu Temple.

¹²⁷ Ishii, 70-71; Nagazumi, 58-60.

¹²⁸ Quoted in Iwao, *Shinpen shuinsen bōekishi no kenkyū*, 250. We should also notice the combination of a Dutch pilot, a Japanese shipowner, and a Chinese merchant all involved with this vessel.

many different countries gathered and exchanged information, the perfect place to acquire new cartographic knowledge. Because sailing in this period was dictated by the seasonal monsoon winds, sailors might have to wait several months in port for winds to change, providing ample opportunities for rich intercultural exchange. In the Japanese archipelago, ports like Nagasaki and Hirado were home to Portuguese, Spanish, English, Dutch, and Chinese. In Hirado for example, the English rented their quarters from the “China Captain,” a Chinese merchant-pirate and vermilion-seal recipient named Li Tan.¹²⁹

This cosmopolitanism is even more evident in the ports visited by vermilion-seal ships. For example, in addition to being a major center of ship-construction, Ayutthya—the capital of Siam—was a bustling trading center conveniently located at the junction of rivers tying together oceanic basins and overland trade routes connecting the Indian Ocean and the Gulf of Siam.¹³⁰ Between 1604 and 1635, fifty-six *shuin* were issued for Siam,¹³¹ recipients of which included William Adams.¹³² In addition, Ayutthya contained separate wards for peoples from Japan, China, Pegu, Laos, Makassar, Tonkin, Cochin China, Cambodia, and Malaya.¹³³ A permanent population of approximately 1500 Japanese merchants and mercenaries inhabited the Japanese ward. These wards were not isolated ghettos; opportunities abounded for cross-cultural interaction: battalions of Japanese and Chinese served the Siamese King and Japanese sailors and merchants sailed on Dutch,

¹²⁹ Iwao, “Li Tan 李旦, Chief of the Chinese residents at Hirado,” 32-45.

¹³⁰ Nagazumi, 99. Nagazumi notes that due to the necessity of waiting for the monsoon, it was sometimes faster to portage overland across the short isthmus between the Gulf of Siam and the Indian Ocean on the roads from the coastal towns of Phetburi, Tenasserim, and Mergui.

¹³¹ See Iwao Seiichi's chart breaking down extant references to licenses by year and destination on p. 127 of *Shinpen shuinsen bōekishi no kenkyū*.

¹³² Nagazumi, 106.

¹³³ Nagazumi, 112-113.

Portuguese, and Chinese ships.¹³⁴ Mapmakers in these cosmopolitan entrepôts could draw on the navigational knowledge of mariners from many lands.

Thus, in maritime East Asia, ships and ports constituted spaces of cross-cultural interaction, translation, and innovation, especially of new navigational techniques and knowledge. Records of hybrid linguistic and religious practices in these spaces give further credence to the idea that cartography and other navigational technologies were developed to be usable by pilots from disparate regions of the world. Portolans like the Hayashibara provide records of the processes of translation and adaptation and epitomize the hybrid maritime cultural forms that evolved in these nautical spaces.

Conclusion: Beaching the Portolan

The weight of evidence from varied cultural artifacts such as portolans and other forms of maritime itinerary mapping, the *Genna kōkaisho*, terminology, belief systems, ship design, ports, and other elements of the nautical culture of late sixteenth and early seventeenth-century mariners in East Asia all suggest that vermilion-seal portolan charts like the Hayashibara should not be seen as belonging to one particular land-based national history. Instead, they were products and tools of individual seafarers living and working in a common hybrid, polyvocal maritime culture born out of the vermilion-seal trade.

The Hayashibara and other charts designed for use on vermilion-seal licensed merchant ships exemplify the hybrid nature of these cultures. Not merely transplanted and copied, these marine charts depict improved coastlines, different writing systems, different measuring systems, and perhaps even different motives all successfully melded into a single cartographic form. Through the idiosyncratic agencies of individual pilots and mapmakers, these former amalgams of Mediterranean and Atlantic navigational processes were absorbed and filtered through a larger East Asian collection of navigational ideas to form new hy-

brid unities.

Study of these charts demonstrates that—especially for the premodern period—it is necessary to transcend national paradigms of interaction and focus on regional and interpersonal levels of exchange to understand the dynamics of intercultural exchange in East Asia in this period. At the same time, it is also important not lose one's self in binaries of East and West, Europe and Asia. From the maps, texts, and histories of figures like Antonio Millo and Mateo Prunes in the Mediterranean to the anonymous authors of *Shunfeng xiangsong* and *Zhinan zhengfa*; from the globe-trotting William Adams, to the student of navigation Ikeda Yōemon Nyūdō Kōun, to the unnamed draftsmen of the vermilion-seal portolans, commonalities deriving from shared maritime livelihoods transcended differences in cultures of the lands of origin. Furthermore, a universally accepted definitively hegemonic paradigm for navigation had yet to be established. Instead, experimentation, holistic methodologies, and hybridity characterized seafaring across cultures and oceans in the time of the vermilion-seal trade.

Last, by focusing on hybrid communities of seafarers instead of their lands of origin, an examination of these portolans pushes us to consider intercultural exchange as idiosyncratic, non-linear processes. Pilots and maritime mapmakers participated as individuals in the creation of portolans and hybrid nautical cultures during the vermilion-seal trade. However, after the Tokugawa Bakufu's abrogation of that program, the hybrid character of the maps and the maritime world largely lost its utility.

After the 1630's, Japanese could only legally participate in overseas relations via the 'four gates' (Satsuma, Nagasaki, Tsushima, and Matsumae),¹³⁵ through observation, consumption, imitation, and imagination,¹³⁶ and by extra-legal means such as

¹³⁴ Nagazumi, 24, 37-44, 114.

¹³⁵ For the four gates in English see Tsuruta Kei, "The Establishment and Characteristics of the 'Tsushima Gate,'" *Acta Asiatica* 67 (1994) 30-48; Bruce L. Batten, *To the Ends of Japan* (Honolulu: University of Hawaii Press, 2003), 44-45.

¹³⁶ See for example Ronald Toby, "Carnival of the Aliens," *Monumenta Nipponica* 41:4 (1986),

smuggling or being castaway.¹³⁷ During this period, portolan charts were not considered to have much value as nautical devices. By the end of the seventeenth century, the Nagasaki resident and scholar Nishikawa Jōken could describe portolan charts in his *Ka'i tsūshō kō* as “maps used aboard ship, not commodities.”¹³⁸

Instead, as Unno Kazutaka has elaborated, there seems to have been a sea-change in perception of the charts in the Edo period that shifted from understanding them as part of the maritime world to associating them with the land of Japan. Portolan technology was used by Bakufu-sponsored cartographers to draft maps of Japan based on detailed soundings of the coastline from Northern Honshu to Kyushu to the Bonin Islands.¹³⁹ At the same time, charts of East and Southeast Asia continued to be copied as evidence of draftsmen's skill, but were given as certifications of land surveyors' skills. There were some who even equated being a pilot (*pirōto*) with being a land surveyor, not a seafarer.¹⁴⁰ Charts of sea routes tended to be confined to coastal regions defined by ‘land-marks’ and reproducing the style of land-itinerary maps. The archipelago's coastal reaches and nearby seas became incorporated into the early modern terra-centric order and the outer ocean became a place where the imagination held sway.¹⁴¹ Japanese portolans only became Japa-

nese after they were dragged ashore and domesticated.

However, use of portolans in East Asia did not die out with the cessation of the vermilion-seal trade. Vermilion-seal portolans sometimes underwent re-adoption by European cartographers who recognized the improved Japanese depictions of East Asia over European ones.¹⁴² Furthermore, there is some evidence that Chinese merchant mariners traversing seas between China, Southeast Asia, and Japan also carried portolan charts of similar design into the eighteenth century.¹⁴³

415-56; Marcia Yonemoto, *Mapping Early Modern Japan* (Berkeley: University of California Press, 2003).

¹³⁷ Michael Wood, "Literary Subjects Adrift: A Cultural History of Japanese Castaway Narratives in Edo and Early Meiji (ca. 1633-1880) Japan," Ph.D. Dissertation, University of Oregon, 2006.

¹³⁸ Quoted in Unno, "Waga kuni ni okeru portorāno kaizu no juyō," 212. Nishikawa used the Japanese pronunciation of the Portuguese word *carta* (*karuta-zu*) to identify these charts.

¹³⁹ Unno, "Cartography in Japan," 384-386.

¹⁴⁰ Unno, "Cartography in Japan," 393-394. The equation of pilots with surveyors comes from Hosoi Kōtaku's *Hiden chiiki zuhō daizensho*.

¹⁴¹ Marcia Yonemoto, "Maps and Metaphors of the 'Small Eastern Sea' in Tokugawa Japan

(1603-1868)," *The Geographical Review*, 89:2 (1999:4): 169-187.

¹⁴² Nakamura Hiroshi, "The Japanese Portolans of Portuguese Origin of the XVIth and XVIIth Centuries," 44. João Teixeira in 1649 and Capt. John Kempthorne in 1680 used copies of Japanese portolans as the basis for their designs of East Asia in their own charts

¹⁴³ Unno, "Waga kuni ni okeru portorāno kaizu no juyō," 213. The information comes from an eighteenth-century work by Nishikawa Jōken, but, as Unno relates, none of the Chinese portolans are extant, perhaps indicating that they may have used vermilion-seal charts.