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**MISUNDERSTOOD JUNKS: THE WESTERN VIEW
OF CHINESE MARITIME TECHNOLOGY**

**A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAI'I IN PARTIAL FULFILLMENT OF THE
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HISTORY

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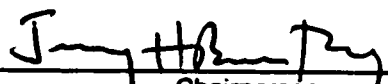
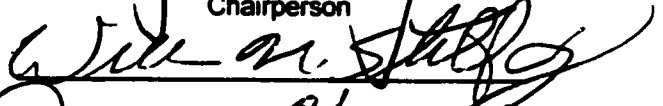
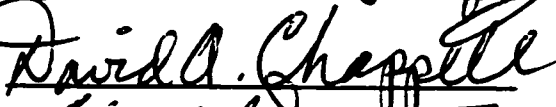

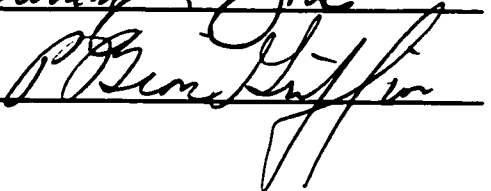
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We certify that we have read this dissertation and that, in our opinion, it is satisfactory in scope and quality as a dissertation for the degree of Doctor of Philosophy in History.

DISSERTATION COMMITTEE


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This work is dedicated to my father, Richard Lee Van Tilburg, who introduced me to the maritime field in general, and to the sloop *Brunhilde* in particular.

ABSTRACT

This dissertation examines the history of western and particularly American cultural perceptions of Chinese nautical technology. Ten Chinese-built junks and their journeys across the Pacific in the 20th century serve as the primary resource for the investigation. This is not a comprehensive sample of all junks which crossed the ocean, but reflects the selection of non-mass produced craft, those more representative of traditional working vessels. Details of these voyages have been pieced together from a wide variety of sources. In order to interpret the junks of this select sample, a brief survey of the appropriate nautical literature is followed by the detailed analysis of each individual vessel. This analysis relies heavily on eastern and western sources, as well as the fields of anthropology, archaeology, and the history of technology. The physical form of the vessel possesses more than just technical information, and so an appreciation of cultural features and practices for junks is also provided. Having come as close as possible to understanding these junks as complex technical and cultural artifacts, a comparison can then be made to American perceptions. The description of public reaction to the journeys and to the junks is drawn mainly from newspaper and journal articles. Such craft were immediately seen by the public as unchanged artifacts from ancient times, as representations of sea monsters, as barbaric crazy oddities, as almost anything except what they really were, relatively efficient sailing craft. Often the entrepreneur who sold tickets for admission encouraged the belief that these vessels were pirate ships stocked with torture devices and beheading swords. Only those few nautical specialists and the crews of the junks themselves seemed capable of a more pragmatic appreciation. The reasons for popular misperceptions of these junks include broader issues of museums and display and infatuation with exotic objects from far away. Unfortunately, such misperceptions precluded most serious evaluation of these historic vessels, and none of these junks, some of the oldest wooden sailing craft in the world, benefited from any efforts at effective preservation. They have now almost completely vanished.

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CHAPTER 1 INTRODUCTION

Beginning in 1905, a handful of traditional Chinese sailing vessels, known commonly as "junks," sailed from China to North America. For the most part, these were not the modern "export market" Chinese-built vessels seen so commonly today, craft specifically made in Hong Kong and Taiwan for West Coast yachting consumers and live-on boards; nor were most of them representative of modern hybrid wooden boat construction in China, including European-derived rudders and diesel engines and other conveniences. These junks were not built for modern yachtsmen. The craft in this sample were generally representative of commonplace historical working vessels from the China coast. The arrival of these vessels allowed observers to gain a feeling for the nautical technology and culture of the Chinese people. Or it should have, if contemporary viewers back then had realized what they suddenly had in their possession. For a host of reasons, though, American observers almost totally misunderstood the many features of these Asian vessels and tended to misplace their historical significance. This was true 100 years ago, and to a surprising extent still true today.

European travelers to East Asia had long observed that China possessed more ships than any other country in the world. China is now noted by many scholars as having had a significant maritime influence over the regions of East and Southeast Asia, and contacts as far west as Africa and the Red Sea. Yet, if a survey of maritime history texts is any indication, details of Chinese maritime history seem almost nonexistent. This contradiction has always disturbed me. What do we really know of Chinese sailing vessels anyway? Such knowledge has been limited in the past to a very small group of nautical specialists. I sometimes like to think I have the blood, as very dilute as it may be at this point, of two great seafaring people, the Dutch and the Chinese. Maritime historians are fairly familiar with the history of the Dutch at sea, the economic construction of their commercial vessels, the design of English East Indiamen, etc. The art of the Chinese shipwrights remains more

hidden. Some of my Chinese-American acquaintances have expressed surprise at this line of study. "What?" they say, "the Chinese seafarers?...but the Chinese didn't sail anywhere..." is their reply. Most assuredly, they did. In short, a large gap exists between public perceptions of Chinese maritime activities, particularly the junks, and the scholarly appreciation of Asian vessels and seafaring. European and American nautical experts found Chinese ship design to be highly advanced, but technical treatise had little effect on public opinion. Both scholarly and public perspectives play a role in this study. The Chinese were very involved in seafaring, though it is often not as apparent in the west.

Early 20th century observers in America typically regarded Chinese sailing junks as quaint unwieldy creations constructed in the fashion of sea monsters, their appraisals coming with a mixture of surprise and contempt. Their views were recorded in articles and brochures published during the arrivals of the junks, an interesting genre of tourist literature. Sailing junks were generally assigned by the public to the vague time frame of "ancient," no matter when they were built. There existed a feeling that such sailing ships had changed little over the centuries, even the millennia, and while these craft may have once succeeded in distant voyages, those that built them had little knowledge of the art of ship construction, hence the stagnation of the design of these "ancient" junks. The term "junk" itself is obviously not one well designed to win high praise in the west. But what did these junks represent? What can we now say of some of the last remaining Chinese sailing vessels? Were they really representative of centuries of unchanging design? Or did the human tendency to contrast "our" progress against "their" backwardness obscure the dynamic nature of their evolution?

In order to answer these questions, this study focuses on a selection of ten Chinese junks which crossed the Pacific Ocean and were displayed and documented, to greater or lesser degrees, in North America. As it turns out, the vessels featured here represent some of the last commercial sailing junks of China, and certain elements of their construction represent the technological culmination of centuries of development. There are presently

very few shipwrights in China who still possess the knowledge of how to construct a sailing junk with Chinese-style rudder and masts stepped in Chinese fashion. Modern travelers rarely see any true sailing junks at all. While wooden boat construction still continues, most if not all are fitted with diesel engines and modified rudders. Inclusion of such relatively recent features radically changes the overall design of the vessel, not to mention the associated loss of junk sailing skills. These transpacific junks incorporate certain features no longer seen anywhere. These junks which found their way to scattered ports in North America were complex craft, representing successful regional designs of boats tried and proven on long sailing voyages. They seemed to have very little trouble crossing the thousands of miles of ocean on their way to American ports, where sometimes shocked spectators stood amazed at their arrival. Their reactions provide an important source of information on these junks, for in some cases reliable documentation of the junks and their voyages proves very poor. Some of these Chinese ships, though, achieved a certain amount of local fame. Crowds welcomed them in ports like Victoria, San Francisco, Los Angeles, Portland and San Diego, often more as bizarre objects of fancy than as vessels of any overt historical or anthropological interest. Some of them served as public floating museums, displaying a variety of gruesome weaponry and other artifacts.

The majority of these ten junks eventually rotted, sank, or were scrapped. Only two remain relatively intact. There has been no systematic study of these ships nor of their transpacific journeys. No effort was made to preserve the vessels which have vanished from the record as significant technical or cultural objects, and currently no effort is being made to preserve or protect the two remaining junks. This is perhaps symptomatic of the American public perception of Chinese vessels in general.

This dissertation examines these junks and voyages with two basic tasks in mind: 1) ascertain the historical significance of the vessels themselves by placing them within the known typology of Chinese ship construction for seagoing junks, in other words the physical analysis, and 2) interpret the historical contexts of their overseas journeys. In other words,

what were they and what happened to them? The answer to these broad questions involves an interdisciplinary approach, borrowing tools from such related academic disciplines as history, cultural anthropology, ethnographic studies, and maritime archaeology.

The physical analysis of these junks obviously involves the technical description of Chinese ship construction. Changes in junk construction over time must first be understood in the context of nautical technology. There is more to the physical analysis of ships, though, than simply the dry inventory of ship parts, or the unending repetition of length, beam, and draft measurements. Considering the complex nature of ship construction, the vessel as a *cultural artifact* can be read as a kind of text containing historical information. Yes, there is valuable technical information, but there is social and economic and even political information as well. The physical artifact of the sailing ship represents an expression of the seafaring culture, for its construction encompasses numerous modifications and concessions to social and economic and political realities. Here is a major hypothesis which serves as a foundation for this study: Chinese junks, and wooden sailing vessels in general, are more than merely machines for transportation; they are complex technological and cultural (and even political and economic) artifacts. As such, their form and use can be read as a kind of document of the past. Interpretation of the physical features of a ship allows a glimpse into the maritime lifestyle, a realm with no counterpart on land. This particular approach is borrowed from the field of material culture studies. Interpreting objects as documents provides one way of revealing meaning in material culture which might otherwise be lost in the trivialization of display.¹ Thus the physical analysis of these selected ships may be significant in two ways: 1) as specific technical examples of historical ship types, in other words technological machines, and 2) as cultural artifacts in and of themselves, symbols of more than just machines.

A selection of ten junks does not provide a large enough sample for the

¹ Barbara Kirshenblatt-Gimblett, *Destination Culture: Tourism, Museums, and Heritage* (Berkeley: University of California Press, 1998), 23.

development of a distinct typology of Chinese seagoing vessels. The technical analysis, therefore, must rely on available information. This involves a great deal of piecing together scattered references and heavy reliance on a few certain documents, for unfortunately the most detailed sources available feature riverine junks and not coastal and ocean types. One specific text by G.R.G. Worcester, *A Classification of the Principle Chinese Sea-going Junks South of the Yangtze*, stands out in this respect. It is the only known detailed attempt to categorize ocean sailing junks. Worcester's classification provides the technical framework for understanding these ten vessels.

The second broad task of this investigation involves understanding the particular historical circumstances of the transpacific voyages. These selected vessels were not the first craft to have made the voyage from Asia across the Pacific, nor were they the only Chinese-built vessels on the West Coast. There is a larger history of Chinese maritime activity in the Americas. Where do the recorded transpacific voyages fall within this context? and what forces color the contemporary interpretation of these "exotic" arrivals? Much of the primary information recorded about these distant arrivals naturally reflects the specific historical context of the times. Western attitudes towards their Asian neighbors were strained by a number of cultural and political forces. The newspaper and journal articles that commented on the successful crossings contain a great deal of cultural baggage concerning how certain observers on the American West coast viewed the maritime history and technological achievements of the Chinese. As this second line of investigation involves changing perceptions between differing cultures, the methodology employed here involves more ethnohistorical interpretation. Do descriptions of these vessels tell us more about Chinese maritime history, or more about American perceptions of a distant Asian Other? Understanding the historical setting for these voyages may make it easier to see why American public perceptions of Chinese ships differ so widely from that of maritime historians.

The format for this dissertation progresses through differing perspectives surrounding these junks. Following an introduction to the topic, chapter two is devoted to as much of a description of the individual voyages as is possible from the existing sources. These narratives include the often peculiar circumstances which surrounded the junks' arrivals from East Asia. A survey of the literature then supplies what we think we know about 19th century Chinese ship construction in chapter three, and this information is then used as technical data in the fourth chapter to analyze these specific vessels. Chapter five carries this process from the realm of nautical technology into the field of cultural history and seafaring folklore, or maritime popular religion, focusing on the "non-operational" features of the junks. Chapter six then examines the historical settings of these junks in China, the Pacific, and the American West Coast, and now historical context has made the clear understanding of these vessels more difficult. The analysis of public perceptions of these foreign cultural artifacts via published articles and newspaper stories, and the complications of perception and display, follows in chapter seven. Chapter eight offers more general conclusions on the dissertation's subject and methods. A glossary assists in the technical discussions within the study, and hints at the possibilities for further Chinese and English comparative analysis of nautical terms. As a whole, this study involves three basic players: the junks themselves as a resource, the few nautical experts who have interpreted such vessels, and the general public.

Obviously, an ability to remain intellectually flexible when working between the related but separate academic disciplines of history, anthropology, and archaeology is crucial to this dissertation. In this sense, this study tests the "cooperative waters" between these areas. Primary and secondary written materials are juxtaposed with construction details and site investigations. Flexibility is most necessary simply because there are very few real treatments of the subject, and sources of many varied types must be considered. So in a way the dissertation may shed some light on the general question "how might history and

anthropology be combined in the investigation of the human past?" The field of maritime history is a prime candidate for this hybrid approach.

It is tempting to label these transpacific junks as examples of "traditional" Chinese ship construction, but this is unsatisfactory in a study which overtly examines the concept of traditional Chinese ship design itself. The term "traditional" proves problematic at best and must be replaced here with a different measure. Wooden sailing vessels, composed of many different individual features, fall into a broad continuum between extremes of very established "old" and very introductory "new" features. Innovations in ship design emerge locally, or are adopted from foreign sources, or spring from a combination of the two. Instead of simply claiming that some junks are traditional while others are not, junk construction must be broken down into component features. Some features reflect common Chinese usage over a long period of time, others are relatively new. For instance, hull shape and the use of internal partitions known as bulkheads extends far into the Chinese past, but features like diesel engines and European style rudders begin to appear in junks during the late 19th and early 20th centuries. The nature of construction features, and the combination of these features themselves, changes over time. The idea of individual construction features, spread over a chronological continuum, may help to clarify and way Chinese sailing junks both change and remain the same. Terms like "traditional" prove too simplistic in this analysis.

The main hypothesis here is that these ships are representative of historic and significant Chinese sailing designs, and that by examining these ships and these voyages in a careful manner, it is possible to contribute to our knowledge of Asian maritime history in the Pacific, to gain an insight into the much larger picture of Chinese nautical technology and its evolution, and to begin to understand how it is that we know so little about Chinese ships. The ten junks which sailed into western awareness serve as the primary "documents." The task ahead is to explore how such documents can be "read," and following that, to reveal

what they have to say. As G.R.G. Worcester points out, such material has become exceedingly rare.

Although I have sometimes written in the present tense, it must be understood that everything in these pages concerns the Old China, the China that has gone for ever, also that practically all the craft represented by the models in the Maze collection have passed from the nautical scene and many of the others I have written about in these pages are following them into the limbo of forgotten things.²

² George R.G. Worcester, *Sail and Sweep in China* (London: HMSO, 1966), xiv.

CHAPTER 2

THE JOURNEYS ACROSS THE PACIFIC

The Pacific Ocean encompasses over 69 million square miles. It is the largest, deepest ocean in the world, fringed by at least 11 separate seas.¹ It stretches 9,300 nautical miles from Panama to Mindanao. Of course, these are only oceanographic parameters. Any attempt to so clearly define the Pacific in purely physical terms suffers from oversimplification, but such strict parameters do serve to introduce the sheer size of the ocean. For this dissertation, the Pacific region is important not so much for its oceanic cultural aspects, but for its size and the inherent difficulties involved in crossing it. The Pacific serves as the region which brings into contact many different cultural zones. East Asia and America, of course, are the two of consequence in this study. And the ships, the tools of contact within this region, are of specific interest. Maritime activity is not equally distributed throughout the ocean, but might be viewed as falling into stratified zones within the Pacific. Chinese junks representing coastal and deep water areas in the western Pacific, in this case, voyaged to the nearshore waters of Washington, Oregon, and California. The technology of the sailing junks serves as the bridge between the shores. The ocean is at once the highway for this encounter and a kind of barrier or filter, removing the vessels which fail to complete the crossing.²

For any mariner attempting to sail eastwards across, the route will include weeks of possibly variable weather and long stretches of isolation. Some routes are better than others. The route across the north Pacific pioneered by Spanish mariners in 1564 proved useful for hundreds of years. This path involved running northwards up past Japan and turning east near latitude 40 degrees north, taking advantage of the prevailing westerlies and

¹ Bering, Okhotsk, Japan, Yellow, East China, Philippine, South China, Coral, Tasman, Bismarck, and Solomon. Of course, the number of seas depends on exactly how one defines them; Rhodes W. Fairbridge (editor), *The Encyclopedia of Oceanography* (New York: Reinhold Publishing, 1967), 653.

² Martin W. Lewis and Karen Wigen provide an overview of the Pacific basin in contemporary area studies. Oddly, the Pacific as a region is left out of official academic foci, a "most conspicuous gap..;" "A Maritime Response to the Crisis in Area Studies," *The Geographical Review* 89, no.2 (1999): 167.

currents in the North Pacific. For many modern sailors it is still the most dependable and fastest crossing available.³

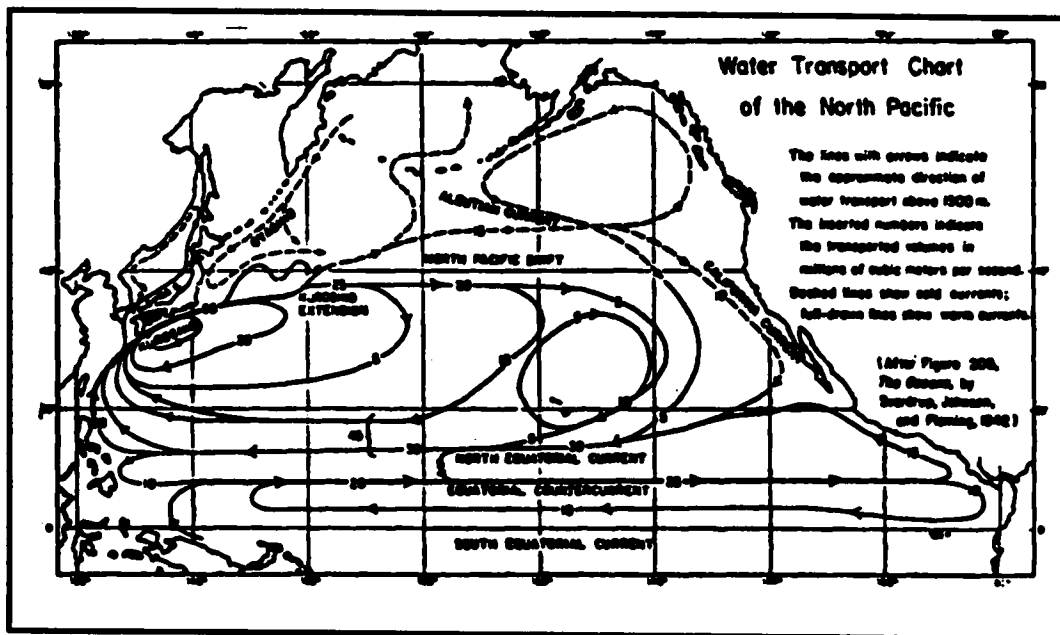


Figure 1: Kuroshio current and westerlies at latitude 40 degrees north.
(Fairbridge, Encyclopedia of Oceanography, 660)

When viewed properly with a globe, the great circle course from southern China to the west coast of North America appears much more of a straight and direct route than the inherently distorted spherical projections on flat surfaces such as the common Mercator representations. The great circle route swings northwards in close contact with the east coast of Japan.

For Europeans, successful Pacific crossings began in 1521, when Magellan's small Spanish fleet staggered northwestward from the Strait of Magellan and, via Guam, into Portuguese territory in the East Indies. Magellan's circumnavigation did not represent a reliable economic achievement, though, but a story of chance survival. Storms, disease,

³ Even after the advent of steam-powered vessels in the Pacific, 35 degrees north provided the smoothest passage in both directions. See E. Mowbray Tate, *Transpacific Steam* (New York: Cornwallis Books, 1986), 25. This explains the popularity among junks and all other sailing vessels to call at Yokohama, and to typically set out for the west coast from Japan rather than directly from Chinese ports.

and starvation would continue to make such epic voyages a real hazard for a long time to come. Then the Spanish navigator Urdaneta discovered his way back to New Spain by sailing eastwards across the Pacific in 1564. This made the complete circumnavigation of the globe unnecessary, and avoided transgressing into Portuguese territory. Urdaneta sailed with the clockwise rotation of the prevailing north Pacific high pressure system, running up the western Pacific past Japan, across at about 40 degree north latitude, and south along the American coastline. He discovered the north Pacific "express," highlighted by the convergence of the southern currents off the East China Sea and the eastern coasts of Japan (see figure). In short order the Manila Galleon route was established as a fairly regular trade for more than 200 years. The Chinese may have already been aware of this current, now called the Kuroshio current, as early as the 4th century B.C. during the Warring States period.⁴

Specialists in Pacific history are of course well aware that indigenous voyagers in the Pacific had already blazed long nautical trails between landfalls. Pacific Islander migration as outlined in current Lapita pottery theory occurred much earlier and over a much longer expanse of time than the relatively ephemeral galleon trade.⁵ It is postulated that much of the journey followed a route eastwards along the equatorial latitudes, or in other words *into* the prevailing winds. Focusing on navigating between groups of islands, these voyages fought their way windward during specific winter weather conditions. This series of migrations from Southeast Asia eastward utilizing Pacific voyaging canoes are among the boldest examples of seafaring in human history. These oral and archaeological histories of indigenous Pacific crossings match, if not exceed, the scale of western voyages of Pacific exploration, such as those conducted by Bougainville, Kruzenstern, Vancouver, and Cook.

Compared to our perspectives of great "events" such as these, very little is said concerning incidental Chinese junk voyages into or across the Pacific. Regional histories

⁴ Joseph Needham states that the current was then called *Wei Lu*: information cited in Kuno Knobl, *Tai Ki: to the Point of no Return* (Boston: Little, Brown and Company, 1975), 46.

consistently place China's maritime sphere of influence in East and Southeast Asia, and from there westwards across the Indian Ocean. This is as it should be. The Pacific seemed to be the edge of the world, from which voyagers could not return. But some Chinese Pacific voyages did take place. The Chinese, it turns out, were also involved in making Pacific passages.

Circumstantial evidence suggesting Chinese maritime activity in the Pacific exists as early as the Shang dynasty in 1200 B.C. Other clues point to the possibility of other early Pacific voyages (covered in chapter six), but such material is very rare and tenuous at best. Historic examples of ten Chinese junks crossing the ocean beginning in 1905 provide a much more solid foundation for research and are certainly easier to investigate than distant dynastic legends. So why have these more recent passages not been investigated? There seem to be myriad reasons why these historic crossings have gone basically unnoticed: sailing passages in a time when steam ships were the preferred mode of transportation, anti-Chinese fervor on the West Coast of North America, chaotic social conditions in China, as well as the underlying fact that the Chinese Imperial government was often less than enthusiastic about overseas maritime conditions. This last attitude was in distinct contrast to the way that some European nations, particularly the island nation of England, evolved to dominate maritime trade. In China most of the voyaging contacts overseas were matters for private merchants, not concerns for state-supported missions. Most of the Pacific junks represent vessels built by families or small groups of private merchants investing in their own livelihoods. The kind of coastal trade they were engaged in, dominated by coastal Chinese far from the capital, had little of official nature about it. Gang Deng, a modern scholar working on maritime history of China, points out that few details are known about any aspect of overseas private trade, this being "largely a result of a long denial by the elite class

⁵ Patrick Kirch's latest summation of this migration is *On the Road of the Winds: an Archaeological History of the Pacific Islands before European Contact* (Berkeley: University of California Press, 2000).

in China of private overseas trade activities.”⁶ Wang Gungwu, a well-noted scholar on Chinese in Southeast Asia, cites the same reasons.⁷

If records on overseas voyages from China seem scarce, the subset of records on Pacific junk crossings is smaller still. The documentation that exists about Chinese junks crossing the Pacific comes mainly in the form of popular media notices upon their arrivals on the west coast. There is little of scientific or official flavor about it. Records regarding the voyages of these transpacific vessels are unevenly distributed. They mainly consist of widely scattered newspaper articles and brief secondary sources. Only ten junks of the following list, marked by asterisks, provide adequate information for inclusion in this study. Not all ten of the selected vessels succeeded in making it to the far shore:

Table 1: Junks Voyaging in Pacific

Name:	Arrival:	Date:	Disposition:
Unknown	San Francisco	1849	unknown
5 unknown	Baja Mexico	1850	wrecked
8 unknown	Mendocino	1852	unknown
two unknown	Monterey&Mendocino	1854	unknown
<i>Whang Ho*</i>	San Francisco	1905	unknown
<i>Ning Po*</i>	San Diego	1912	abandoned
<i>Amoy*</i>	Victoria	1922	New York
<i>Hummel Hummel*</i>	San Pedro	1938	unknown
<i>Fou Po II*</i>	Molokai	1935	wrecked
<i>Sea Dragon*</i>	lost	1939	lost at sea
<i>Tai Ping</i>	Vancouver Island	1939	unknown
<i>Cheng Ho*</i>	mid Pacific	1939	Tahiti
<i>Mon Lei*</i>	unknown	1947	unknown
<i>Free China*</i>	San Francisco	1955	Delta
<i>High Tea</i>	San Francisco	1959	unknown
<i>Golden Lotus</i>	Auckland	1961	unknown
<i>One Step</i>	Sydney	1964	sunk NSW
Unnamed Beihai junk*	Portland	1989	Delta Park

Assuredly, crossing the Pacific was no small task, and a successful crossing must have been a real cause for celebration. Typhoons, or tropical storms at or near hurricane strength, threaten the north Pacific from June to November, most frequently during August

⁶ Gang Deng, *Chinese Maritime Activities and Socioeconomic Development, c. 2100 B.C. – 1900 A.D.* (London: Greenwood Press, 1997), 144. Among other things, such contrast serves to make Admiral Zheng He’s early Ming dynasty voyages even more exceptional.

and September. Conditions on board wooden sailing vessels can be appalling, especially if those vessels are (or are at least said to be) among the oldest ships left afloat in the world. Sometimes realities like these are reflected in the historical record, but not very often. In general, we need to peer between the lines and imagine life on board these groaning wooden ships and creaking snapping sails. But what exactly will this tell us?

Perspectives on Ship Histories

Commercial maritime histories, it seems, frequently rely solely on individual ship histories. Dates for building, launching, statistics and plans, years served, the tragic end on a distant reef...these things are repeated in a number of various formats. There are endless "biographies" of what is, after all, an inanimate object. There is little in the way of larger historical treatment to them. As one historian has put it, such works risk being categorized as "popular history, in which complex processes are ignored in favor of antiquarianism—amassing facts without significant interpretation—or reduced to single dramatic moments."⁸ Of course, nautical "converts," of which I am admittedly one, relish in the volumes of purely technical data. Nonetheless, I have to agree with the impression that they lack significant historical involvement.

There is no need to restrict ourselves to the ship as a sterile technological artifact here though. The matter-of-fact pages of carefully measured drawings in archaeological reports have their place, and an important one, in the study of the past. But they are too often devoid of all context, vacant of occupants. In short, there's nobody on board. The human element is missing. Yet it is exactly that human element which infuses ships with history, with meaning. A dinghy is a dinghy. But Bligh's open boat voyage of some 3600 miles to salvation in the Dutch East Indies is a story. Rusting metal is not very interesting to most, until the name *Titanic* is emblazoned on the stern. The *Mayflower*, the *Golden Hind*, the USS *Arizona*, these are the ships that stand as cultural symbols, generally interpreted within the nation-building context. We package our history in them.

⁷ Wang Gungwu, *Zhongguo Guchuan* (Beijing: Maritime Press, 1991), 23.

Here then, to begin the study, are the packages of the junk stories. Unlike the above-named vessels, these packages are not amenable to American or European history. They were Chinese artifacts. As will quickly become apparent in the following narratives, though, the majority of the crews which transported these junks were American.⁹ It's probably no coincidence that the junks best represented in western records were manned by westerners themselves. Were Americans sailing Chinese junks more newsworthy, while Chinese arriving on junks merely a problem for the immigration authorities? Perhaps. Even when crews were mixed, Americans were usually in charge. Their stories, then, are not purely Chinese. Perhaps it's best to relegate them to the Pacific Basin, to a dynamic multicultural region. These junks function as transnational and transcultural tools, freely purchased, traded, or stolen by seafaring people between China and America. In a sense, this is part of the nature of the maritime world. For these artifacts, borders have little meaning. They have significance for both Chinese and American people.

Overall, it is how these junks were used which imparts the most obvious meanings for the public which received them. That they attempted to cross the Pacific stands out as the predominant feature of their narrative histories. Their previous incarnations were often of less importance. A machine for sustenance will be appraised with respect, often being granted anthropological or technological importance; a carnival ride will be an object of no serious consequence. What happened to the vessels' significance in the journey across the Pacific? What then to make of these Chinese junks from across the seas?

⁸ Steven Biel, *Down with the Old Canoe: a Cultural History of the Titanic Disaster* (New York: W.W. Norton and Co., 1996), 7.

⁹ The sole exception is the voyage of the *Free China*.

Stories of the Voyages



**Figure 2: Entrepreneur W.M. Milne on board a junk on the rocks.
(Los Angeles Maritime Museum)**

the Whang Ho

The story of the *Whang Ho*, though light on details about the ship itself, gives us a strange and amusing tale about the way Chinese junks were used by western businessmen. Reports vary as to the exact origins of the *Whang Ho*. Some say that the junk was built new in Shanghai by an American citizen W.M. Milne, an entrepreneur from Southern California who knew a good entertainment scheme when he saw one. With his ties to the movie productions, Milne was in the business of promoting these kinds of vessels as tourist attractions.¹⁰ He brought the junk over to America for exhibition purposes, wanting an exact replica of an authentic Chinese war junk. Other reports state that Milne purchased the quite used 100-plus year old *Whang Ho* directly from the Viceroy of Nanjing himself, and then ran into trouble when the Chinese government refused to allow the *Whang Ho* to depart native

¹⁰ Anon. "Heavy Tax for the *Whang Ho*," *San Francisco Chronicle*, 8 December 1906, 15. Several of the postcards which were produced of various Chinese junks are copyright W.M. Milne. See also the story of the *Ning Po*.

waters.¹¹ The price for war junks of this period, including their complete outfit of cannon and rifles, was estimated at 8,000 Mexican dollars.¹²

Questions revolved in the U.S. around whether the "war junk" was truly an official vessel of the Imperial government and would be vouched for by same. Should the *Whang Ho* receive honors the same way any vessel representing a sovereign nation should? Or was the junk officially registered by no one, a foreign maverick threatened by detention, confiscation, and destruction? Quite obviously, American authorities were on the lookout for Chinese vessels coming into American waters, and all needed to be clearly identified. The history of anti-Chinese agitation on the west coast in the years surrounding the turn of the century is well known. Chinese immigration, for a host of reasons, was not welcome by Americans at the turn of the century.

However the dilemma was settled, the vessel set out in 1906 under the command of Captain Mark Allen Graham, formerly an officer of the steamship *Roanoke*. Not much is known about the crossing itself, except that it was "an adventure quite as thrilling as some of the cruises of the adventurous Sir Francis Drake," and that W.M. Milne (who was on board) was able to bring it to a successful conclusion, but "not without suffering imminent perils almost every hour of the trip."¹³ The *Whang Ho* arrived at San Pedro in October. She made the port of San Francisco under sail on December 8, 1906, and was taken under tow by the steam schooner *Aurelia* at least as far north as Portland Oregon for an extended stay of approximately one year.¹⁴

¹¹ Anon. "Curious Vessel Bought of Viceroy of Nankin Comes Into this Port," *San Francisco Chronicle*, 9 December 1906, 51. E.K. Chatterton, in *Sailing Ships and Their Story* (Argosy-Antiquarian, 1968), 313 adds "This craft, which was over a hundred years old...was previously a pirate ship."

¹² Anon. *China: Catalogue of the Collection of Chinese Exhibits at the Louisiana Purchase Exposition, St. Louis 1904* (St. Louis: Shallcross Print, 1904), 300. "Mexican" or Spanish dollars had a long history of common currency in the Pacific.

¹³ Ibid.

¹⁴ Anon, "Junk's Long Trip [*Whang Ho*]," *Victoria Daily Times*, 4 January 1908, 8. This puts the junk sailing north along California's coast in the wintertime, into the waves, wind and current along a treacherous foggy coast...a sure testament to the soundness of the vessel and the skills of the crew.

Milne obviously planned to exploit the exotic nature of such a vessel to its fullest, but apparently the public were not as enthusiastic about the venture, and "as such [the *Whang Ho*] did not realize the expectations of her managers."¹⁵ Plans were then laid for the *Whang Ho* to continue on to Coney Island New York by way of the Strait of Magellan, in search of more profitable pastures. The *Whang Ho* Company, founded in San Francisco, obtained sufficient financial backing, and Captain Graham was given charge of the trip around the Horn. The junk set out from Portland on January 4th 1908, arriving to provision for the long voyage in San Francisco later that same month. Here begin the details of the strange demise of the rare Chinese war junk.

Allegedly Captain Graham, after having passed the entrance to the harbor, slipped over the side and made his escape from the *Whang Ho* by small boat. A warrant was later issued for his arrest, brought by one of the stockholders of the *Whang Ho* Company. He was eventually placed on trial for felony embezzlement. Exactly why he abandoned the junk may never be known. There was some speculation at the time, though, that old vessels like the *Whang Ho*, especially when tremendously over-insured, had a nasty habit of disappearing without a trace. Indeed, that would be one method of making the ship pay, a method not at all unknown to many ship owners past and present. The *Whang Ho* though, continuing onwards, encountered heavy seas near Cape Horn and, the huge rudder damaged, turned back for repairs at Papeete, Tahiti.¹⁶ The crew immediately deserted and returned to America on the steamer *Mariposa*.¹⁷ A new crew assembled for the *Whang Ho*, and Captain Helms signed on for \$2,000 to complete the journey, and once again the junk set out for New York in May of 1908.¹⁸

¹⁵ Anon, "Chinese Junk *Whang Ho*, on Overdue List, Picked up in Dismantled Condition," *San Francisco Chronicle*, 19 November 1908, 17.

¹⁶ Anon, "The *Whang Ho*'s Captain Wanted," *San Francisco Chronicle*, 7 June 1908, 52; and Charles A. Borden, *Sea Quest: Global Blue-Water Adventuring in Small Craft* (Philadelphia: Macrae Smith Company, 1967), 225.

¹⁷ "Chinese Junk *Whang Ho*, on Overdue List," 17.

¹⁸ "The *Whang Ho*'s Captain Wanted," 52.

For several months there were no reports of any sightings of the *Whang Ho*, and the junk was placed on the "overdue list" in a number of locations. It was not until November, when the British steamer *Moana* arrived in Victoria, that news surfaced. *Whang Ho* had been "picked up" by a cutter and towed to Thursday Island, the junk itself in a "dismantled condition."¹⁹ One source reports that, from there, the *Whang Ho* made passage to Sydney, Australia, arriving at the end of 1908 and again causing a stir amidst shipping circles.²⁰ The final disposition for this wayward ship remains unknown.



Figure 3: Three of the original crewmen or chuanfu who shipped on board the Ning Po at Shanghai, 1912. The two men on the left were soon taken off by river police as wanted pirates. (Los Angeles Maritime Museum)

the Ning Po

Though not many maritime specialists are aware of the existence of the rotting timbers on Catalina Island, the remains of one of the most historic transpacific Chinese vessels rest some few miles off the Los Angeles coastline. The *Ning Po* was a 138 foot long

¹⁹ "Chinese Junk *Whang Ho*, on Overdue List," 17. Here a cutter could mean either a 2000 ton navy patrol vessel or a small gaff-rigged sloop.

500 ton Fuzhou style coastal Chinese cargo vessel. When the *Ning Po* arrived on the West Coast in 1913 she became *the* exotic vessel from the East serving as a floating museum for a while; what sold the most tickets were stories of bizarre tortures, blood flowing in the scuppers, rebel heads bouncing across the decks, etc. A local celebrity, the *Ning Po* is still the subject of museum displays and short articles. The story of this junk has been told continuously for almost 100 years. Yet, not unusually for objects which are the subject of such fame, it becomes difficult to separate fact from fiction through the veil of attention. The balance between the two remains an unknown ratio. Journalists Everett Hager and Anna Marie wrote in 1978, "garbled and ludicrous stories...have so taxed the credibility of readers that her true history has been as much obscured as are her splintery remains..."²¹ Repetition of rumor is not equal to confirmation of fact.

There is little enough certainty about the origins of this particular vessel. G.R.G. Worcester, customs inspector for the maritime service in Shanghai, recorded several large Fujian craft, similar pole-junks, in the early decades of the 20th century as having been more than 150 years old, a testimony to their extremely heavy overbuilt construction. It is not too incredible, therefore, to suggest that the junk was indeed built in the 18th century. If western secondary historical sources apparently quoting oral testimony at the time can be believed, the *Ning Po* was built either in 1753 or 1806, under the "name" *Kin Tai Fong*.²² Most sources report the 1753 date, stating that she was built in Fuzhou, China.²³ The junk was described as being the fastest, best-equipped Chinese vessel on the coast. Apparently, soon after

²⁰ Borden, *Sea Quest*, 226.

²¹ Everett Hager and Anna Marie, "The *Ning Po*, a Fabled Chinese Junk in Southern California Waters," in *Brand Book XV: The Westerners* (Glendale, California, 1978), 193. Numerous anonymous articles have expanded on the shaky foundation of facts: "Junk Attracts Crowds," *San Francisco Chronicle*, 18 May 1913, 49; "Chinese Junk *Ning Po* Doomed to Junk Pile," *Catalina Islander*, 10 October 1923, 1; "Novel Cafe Projected," *Catalina Wireless* 6 June 1914, 1.

²² Della Phillips, "A Peaceful Pirate," *Overland Monthly* 19, no.4 (1917): 327-31. Wooden vessels of any design more than 100 years old are an extreme rarity, and much of the comment on the *Ning Po* has focused on the nature of the large junk's construction, and the hardwoods employed by the Chinese shipwrights.

²³ H.K. Raymenton, "The Venerable *Ning Po*," *San Diego Historical Society Quarterly* 4, no.4 (n.d.):52.

being launched, the *Kin Tai Fong* soon turned smuggler and slaver, allegedly taking part in a rebellion against the government in 1796, a time when pirates were particularly active in Southern China. Next, she was seized for smuggling (silk and opium and slave-girls) and piracy in 1806, and again seized in 1814, and again in 1823. It's said that 960 slave-girls could be fitted below decks for the trip to Canton.²⁴ In 1834, the *Kin Tai Fong* was reportedly confiscated by Lord Napier for smuggling and carrying slave girls to Canton. In 1841, she began her seven year stint of serving the imperial government as a prison ship. Reportedly, 158 rebels, whom the Imperial government found too expensive to feed, were summarily executed during this time, hence the grisly tales of blood running in the scuppers and heads bouncing across the decks. In 1861 she was seized by *Taiping* rebels and converted into a fast transport. Retaken by English forces, her name was changed (reportedly by General Charles George 'Chinese' Gordon) to *Ning Po*, after the major coastal city in China. In 1864 she fought in the battle of Nanjing.²⁵

The well-told story continues, holding that for some years after 1884 the *Ning Po* made a pretty good living preying on wealthy European tourists in and around Hong Kong. Lured by fine cuisine and an enchanting moonlight tour of the local islands around the harbor, unsuspecting passengers would soon find themselves robbed of all personal belongings (including clothing) by the junk's crew, and quickly set ashore on some out-of-the-way spot. British authorities soon sent the Royal Navy after the literal tourist trap. A sister-ship, the *Kwang Su*, was sunk by the HMS *Challenger*, and this apparently was enough to convince the *Ning Po*'s crew that further resistance was futile when overhauled by the HMS *Westgate*.²⁶ The crew was imprisoned, the hapless tourists rescued, and the vessel, again confiscated, was sold in Hong Kong. Exactly how many owners the *Ning Po* had is hard to

²⁴ Richard Hampton, "Saga of the *Ning Po*," *Sea Classics*, n.d., 23.

²⁵ Phillips, "A Peaceful Pirate," 327-8. Biographies of "Chinese" Gordon fail to record this minor incident, though.

²⁶ C.A. Hoyle, "*Ning Po* in Avalon Bay: the Celebrated Chinese Pirate Ship now on Exhibition," *The Catalina Islander* July (1916): 1. Mr. Hoyle spent years as guide and caretaker on board the *Ning Po*. The British warship is often cited erroneously as the HMS *Calliope*.

say. The amount of truth of the above story, well-worn and uncited, is also difficult to ascertain.

In 1911 she was captured by Chinese revolutionaries in Hankow, and the following year sold to a group of American tourists for \$50,000.²⁷ The express purpose was to sail her to America and place her on exhibit at various ports.²⁸ Two attempts were made to cross the Pacific. After having been damaged in a couple typhoons, abandoned by a mutinous crew, and towed back to port after yet another storm, the *Ning Po* finally succeeded in crossing the Pacific under the command of German Captain Yes (Jes) Toft and a 14-man crew of Scandinavians and Chinese. The Captain received his orders from none other than William M. Milne of Pasadena, who had found himself another junk after the demise of the *Whang Ho*. The intention was to bring the vessel over in good time for the Panama-California Exposition in San Francisco, 1915.

The junk made the run from Yokohama Japan to San Pedro California, along the north Pacific "express" route, in a relatively fast 58 days, December 12th 1912 to February 19th 1913. The passage, though, was not easy. Storms broke the main boom, cracked water casks, and opened seams in the aging hull. Spotted off the coast by a passing steamer, the *Honolulu*, crowds in southern California prepared themselves for her arrival. In response to a hail from the steamer offering to transfer food, Captain Toft reportedly answered "send us a keg of beer!"²⁹ Hundreds of curious onlookers met the Chinese ship, yet the junk did not stay long. The *Ning Po* left the Port of San Pedro on February 22nd for a more picturesque and publicly accessible setting moored off Venice, California, open to the public for 25 cents per person. She was towed to San Diego briefly, to test the tourist waters there. Later she

²⁷ Hampton, "Saga..." 23.

²⁸ Hager and Marie, "The *Ning Po*," 195.

²⁹ Anon, "Ancient War Junk Spoken by Liner," *San Francisco Chronicle*, 12 February 1913, 10; Anon. "Down to the Sea in Junks," article uncited in Reno Chen's collection.

returned to San Pedro, after supposedly putting out under tow from the steamer *Shoshone* bound for San Francisco, a voyage she never completed.³⁰

Thus she began her career as floating attraction and museum of bizarre torture implements in Los Angeles, Long Beach, and San Diego. The junk arrived well stocked on the west coast for such a role, boasting beheading swords, starvation cages, rusting ancient cannon, pikes, spears, a beheading block, and even a makeshift "dungeon" at the stern. It seems that the show, though, was not as successful as wished. Faced initially with a tonnage tax on the order of \$600-800 dollars, and then with a civil court claim for back wages of \$450 dollars due the crew, the trickle of two-bit customers proved inadequate. Milne expressed his intentions of voyaging through the Panama Canal and on to better venues on the eastern seaboard, much like the plans for the *Whang Ho* years earlier. From there it would be onward to all the principal ports of Europe.³¹ These plans were laid before November 18th, when the junk *Ning Po* parted her anchor chains and went onto the rocks in a storm off Dead Man Island.

Following the grounding, Milne soon arrived from Pasadena. Together with First Officer Albert Wiborg, who narrowly escaped the shipwreck itself, they managed to haul ashore as many curios and relics as possible.³² The junk sank in shallow water, the upper decks still exposed. Hardhat divers and the salvage tug *Crescent* managed, after four days of work, to refloat the vessel, and she was taken to the Fulton and Woodley Shipbuilding Yard at Mormon Island, and then hauled out at Craig Shipbuilding Company in Long Beach for completion of the extensive repairs.

By this point Milne had had enough of the *Ning Po* and the related expenses, and in 1914 he sold her to the Meteor Boat Company of Los Angeles. The Meteor Company was run by Walter Hubbard, a Los Angeles auto dealer, and Charles Lochard, later manager of

³⁰ Don H. Kennedy, "The Infamous *Ning Po*," *The American Neptune* (1969): 266. Several sources record that the junk traveled the west coast as far north as Washington and Oregon, but these are not corroborated by any other documents at the northern ports.

³¹ Hager and Marie, "The *Ning Po*," 197.

³² *Ibid*, 198.

the Los Angeles Angels baseball team.³³ She re-entered her career in the entertainment business when the Meteor Company opened her for visitors at the municipal dock in Long Beach. "Outside of its very great age and interesting points of construction, the ship's contents, though gruesome, would have a great educational value to the ordinary person."³⁴ An even larger collection of destructive implements, many of dubious antiquity and authenticity, came on board from various collections.

The *Ning Po* briefly appeared moored at Catalina Island, 26 miles off the Los Angeles coastline. Her first port of call on Catalina was Avalon Harbor itself, where a Mr. Knowles put on "special dinners and novelty entertainment."³⁵ These included an appetizing combination of chop suey, noodles, and Knowles' own special tamales. It's not clear exactly what constituted the entertainment on board, but complaints about the noise soon forced the junk to be moved to nearby Lover's Cove. Pre-Prohibition days in Catalina saw the social struggle between the "wets" and the "drys." And the old junk *Ning Po* was not "dry." In 1915 the *Ning Po* was towed south again to San Diego, where numerous visitors again dropped two-bits and paid their respects.

Following World War I, the junk again made the trip to Catalina Island. This time tourists had to make the trek from Avalon to the harbor at the Isthmus, where the *Ning Po* served as an exotic backdrop for a number of Hollywood movies filmed in the Channel Islands.³⁶ Going back into the floating bar and restaurant business was out, however. The passage of the Prohibition amendment in 1919 doomed that entertainment opportunity for the *Ning Po*. She became a backdrop for Hollywood movies. Her superstructure was rebuilt a number of times, offering a changing set for many a swashbuckling epic.

³³ William F. Brown, "Ningpo: Chinese Pirate Junk," *Mains'l Haul* 29, no.4 (1993): 22. Meteor Company ran the fleet of glass-bottom boats at Catalina.

³⁴ Hager and Marie, "The *Ning Po*," 202.

³⁵ Brown, "Ning Po," 22.

³⁶ Ibid, 274. Movies filmed at Catalina in the 1920s and 1930s include *King of Kings*, *Old Ironsides*, *Treasure Island*, *Hurricane*, *Sadie Thompson*, and *Mutiny on the Bounty*. One movie featured the junk more directly, focusing on the US Coast Guard chasing Chinese aliens being smuggled on junks into California from Mexico, an historic fact except for the specific identity of the vessel.

As of 1919, the island of Catalina itself had become the property of William Wrigley Jr., of Wrigley chewing gum fame. This competition doomed the Meteor Company and the fate of the *Ning Po*. William Wrigley later did look into the cost for saving the old junk, but the \$9,000 dollar price tag was considered too costly.³⁷

The old junk, at this point, begins to literally sink into oblivion. Moved to Cat Harbor on the far side of the island, a protected bay with other relics from the age of sail settling quietly into the mud, the *Ning Po* had come to rest at last. Abandoned, deck and hull timbers were scavenged by curiosity-seekers and yachtsmen looking for a supply of tropical woods. For years the *Ning Po* furnished the Boy Scouts of America with camphorwood material for all kinds of carving projects, such as bowls, boxes, and napkin rings. Some of these carvings were later exhibited at the Chicago World's Fair in 1934.³⁸ During one last Hollywood production in 1935, featuring fire ships drifting in the not-so-predictable breezes, a replica fire ship prop drifted out of control and ran into the slumbering hulk of the *Ning Po*, burning the topsides to the waterline. Not a group to give up lightly, the Boy Scouts continued hauling chunks of wood off the wreck well into the 1950s. Pieces of the mainmast were distributed to every scout at the 1953 Jamboree in Newport Beach.³⁹ What is left of the ship is covered with mud off Ballast point at Cat Harbor, along with an assortment of artifacts on display at the maritime museum/casino in Avalon, Catalina Island. The *Ning Po* was probably, at one time, the oldest vessel in the world. The remains of the lower hull are covered by two feet of mud, the site being exposed at low tide.

³⁷ David Gibson, correspondence with Catalina Island Museum regarding Wang-ye cult statue and *Ning Po*, n.d., Catalina Island Museum archives.

³⁸ Hampton, "Saga...", 25.

³⁹ Stephen Lawson, "Catalina's Pirate Ship: the *Ning Po*," *Discover Diving* July/August (1988): 27. Such pilfering would today be considered a violation of cultural resource preservation law.



Figure 4: Captain Waard, wife, son, and three crew members of the junk Amoy. (Borden, *Sea Quest*, 225)

the Amoy

The *Amoy* provides us with another junk brought to the west coast by enterprising Americans and Chinese. This time the West Coast received an authentic Amoy fishing vessel. Dutch sea captain George Waard, who reportedly had come to have a great respect for the construction and seaworthiness of Chinese junks, had the 23 ton three-masted 65 foot long vessel built at Amoy China in 1921.⁴⁰ Waard, a Canadian naturalized citizen of Dutch origin, had served on a variety of vessels, both steam and sail. He had, as well, spent years in show business, going back to about 1913 in China.⁴¹ It took three months to build the junk by hand, no power tools being used in the construction. After the junk was completed in Amoy, the junk was sailed to Shanghai. A course was mapped out northward to Hakodate Japan, and then across the Pacific at about the 42nd or 43rd parallel. Captain Waard set out on from Shanghai at 5:00 PM on June 21st 1921 with his Chinese wife, son Robert (Bobbie),

⁴⁰ Borden, *Sea Quest*, 226. Though only a few years since the *Ning Po* and the *Whang Ho* had made it to the west coast, the *Amoy* was mistakenly reported as the first Chinese vessel to cross the Pacific, as she was also mistakenly reported later to be the first Chinese vessel on the east coast.

and a three person crew. *Amoy's* crew consisted of George Kavalchuck (former Shanghai River policeman), Chan Tai, Loo Fook, and Wong Fook.⁴²

Contrary weather forced the vessel into ports several times on the run to Japan, and repairs were made at Hakodate, including the purchasing of two new anchors. Leaving Japan on July 18th, the junk was forced to the southeast to dodge another typhoon.⁴³ On July 30th the freighter *Ben Avos* was sighted and positions compared. Then a series of gales forced the junk up to 54 degrees north, finally fetching up at Atu Island. The large passenger steamer *Empress of Canada* was sighted and Captain Waard attempted to contact her via semaphore, but the small wooden craft had no luck trying to gain the larger vessel's attention. On August 6th a gale carried away the rudder, and the crew jury-rigged a temporary replacement.⁴⁴ On the 9th the *Amoy* reached English Bay on Atka Island, where the crew were soon advised by an East Indian-registered schooner to find another harbor.⁴⁵ The *Amoy* was then advised by a U.S. Revenue cutter to make for Dutch Harbor, where the Captain managed to obtain bolts for further repair of the rudder. These bolts soon snapped in a gale the junk encountered near Unimak Pass, and yet another makeshift repair job managed to carry the vessel all the way to her final destination.

The *Amoy* could make good between six and seven knots (seven and eight miles per hour) with a good breeze. *Amoy's* peak run was recorded at 180 miles in a single day, but usually the averages were well below that figure. Often the junk would proceed 25 miles to the east, only to drift back 50 miles during the night's calms. On August 29th the junk put in to Unalaska for repairs to the rudder, and here George Kavalchuck left the vessel for

⁴¹ Anon, "Rivals Viking Voyages of Old," *Daily Colonist*, 20 September 1922, 12. It's not clear exactly what Captain Waard did in terms of show business.

⁴² Ibid.

⁴³ Anon, "Romantic Craft Ends Thrilling Trip from China," *Victoria Daily Times* 19 September 1922, 15.

⁴⁴ "Jury" is a temporary makeshift to bring a vessel back to harbor, as in "jury mast," "jury rudder," and "jury rig." Peter Kemp, *The Oxford Companion to Ships and the Sea* (London: Oxford University Press, 1978), 438.

⁴⁵ "Romantic Craft..." 15.

reasons not well explained.⁴⁶ From there the *Amoy* had a relatively uneventful passage to her destination, except for a near collision with the Japanese steamer *Taketoyo Maru* in the fog while only hours outside the safety of the harbor.

Captain Waard and his crew arrived in Victoria Harbor from Shanghai on September 20th 1922, after a passage of three months, "as dry as on the day of her launching, with not a drop of water in her."⁴⁷ In a sense it was a return to Captain Waard's home, as he had been brought to British Columbia by his Dutch parents when only a child, first going to sea at the age of 12 on board a sealing ship out of Victoria.

The tale of the passage is recounted in rather bold terms by the papers of the times. The fantastic journey "matched in thrills the highest flights of the imagination... misfortune was close in the wake of the sturdy craft."⁴⁸ Apparently the rudder broke three times, typhoons pushed the vessel to the north, where the *Amoy* alternately labored heavily or was becalmed in the Bering Sea. High latitudes and contrary weather in the north Pacific challenged the *Amoy*, stretching the passage out by as much as an additional month.

The *Amoy* received a huge reception as hundreds lined the causeway at her arrival and visited the junk. Seven hundred in the first day alone queued up to see the ship. The overseas Chinese in British Columbia came in great numbers as well, all being allowed access. Visitors were entertained with stories of the passage, and shown the huge snakeskin leftover from a struggle with an unwanted stowaway.⁴⁹ Captain Waard remained on board and gladly recounted the tales for the (typical) nominal fee of 25 cents, collected by his wife. "Through the livelong day naught came from his lips but a continual stream of tales of the transpacific trip, praise of his sturdy craft, anecdotes of his long sea experiences and interesting sketches of life in the Far East."⁵⁰

⁴⁶ "Rivals Viking Voyages of Old," 12.

⁴⁷ Ibid. This figure would seem to be clear from the reported dates, though the passage elsewhere is stated as being 66 days, 67 days, 89 days, and 91 days; three months is close enough.

⁴⁸ Ibid.

⁴⁹ Anon, "Snake Attacked Chinese Craft [*Amoy*]" *Daily Colonist*, 20 September 1922, 1.

⁵⁰ Anon, "Crowds Throng to See Chinese Junk," *Daily Colonist*, 21 September 1922, 12.

It was the roughest trip I have ever made. We should have started two months earlier. I planned to get away in April, but one thing and another delayed me. Then there was nothing but a succession of calms and typhoons. The calms were the most annoying, tearing, smashing everything to pieces, making absolutely no headway. Then another storm would come along. We had a gale every Sunday. Our rudder would smash and we would have to go out of our way to fix it. For half the distance we steered with a jury rudder dragging behind us, cutting down our speed to practically nothing.⁵¹

Much of the amazement expressed by the media of the day revolved around comparisons of the junk's voyage with the accomplishments of the Vikings and/or Christopher Columbus.⁵²

The *Amoy* proceeded south, eventually making San Francisco Bay. It's likely that the junk called at additional ports like Nanaimo and Bellingham and Eureka along the way. It's recorded that the *Amoy* called at Vancouver, Seattle, and Portland on her way to California. Much of what seemed to drive the itinerary was the profitability of the various stops. Papers had previously noted that "should cruising of this nature prove profitable it is probable that it will be prolonged indefinitely, to extend to Portland, San Francisco, the Panama Canal and up the Atlantic Coast."⁵³ And this is exactly what the *Amoy* seemed to be doing. Following a long stay at San Francisco Bay near Vallejo, the junk continued to Los Angeles, and then through the Panama Canal to the West Indies, spending months among the islands and South American ports.⁵⁴ Finally Captain Waard took the *Amoy* up the east coast to Bridgeport Connecticut, where he sold her to Alfred Nilson, who had come on board in San Francisco as part of the crew. Alfred Nilson and his wife then raised a family of three boys on board the *Amoy*, sailing her for 20 more years on the East Coast.⁵⁵ Alternatively, depending on which accounts can be most trusted, he sold her to Leroy Lewis, head of the H.J. Lewis Oyster Company.⁵⁶ Some sources report Leroy Lewis being the actual owner, yet at the same time mention Alfred Nilson as captain. All could be correct with Lewis being the

⁵¹ "Rivals Viking Voyages of Old," 12.

⁵² Ibid.

⁵³ Anon, "Chinese Junk Sails for Nanaimo; Final Destination New York," *Daily Colonist*, 29 September 1922, 12.

⁵⁴ Borden, *Sea Quest*, 226; Anon, "Chinese Junk *Amoy* Now at Los Angeles," *Daily Colonist*, 5 May 1923, 19.

⁵⁵ Ibid.

financial backer and Nilson being master of the vessel. One way or another, though, George Waard had ended his time with the *Amoy*. Had its profitability run out? Had he finally grown tired of talking? Or had he grown weary of life at sea itself? Captain Waard is reported as having traveled back to Vancouver Island, where he spent the rest of his days on a ranch.⁵⁷

In 1926 the *Amoy* was still in show business, so to speak. Owner Leroy Lewis, along with Captain Nilson and his wife, and Benjamin Whiting, a native of the Panama Canal zone, set out on a three-year round-the-world touring cruise from Stratford Connecticut in May of that year.⁵⁸ Whether this tour was successful is unknown. Several months later, on August 10th, the *Amoy* was detained by the U.S. Coast Guard in New York. Captain Nilson had flown the Chinese flag to "dress the boat up," though the U.S. flag remained aloft as well. The Chinese students on board were held on suspicion until they were able to produce passports.⁵⁹ The final chapter of the *Amoy* remains unknown. It seems she may have become a family fixture in the Long Island Sound area. One source places the *Amoy* on display at New York harbor in 1938, immediately before the New York World's Fair.⁶⁰

⁵⁶ Anon, "Buys Chinese Junk *Amoy* for Pleasure Yacht," *Daily Colonist*, 31 August 1924, 1.

⁵⁷ Ibid. *Shades of Odysseus*.

⁵⁸ Anon, "Junk *Amoy* will Tour the Globe," *Daily Colonist*, 23 May 1926, 17.

⁵⁹ Anon, "Junk *Amoy* Held 'On Suspicion'." *Daily Colonist*, 11 August 1926, 15.

⁶⁰ Richard Halliburton, *Richard Halliburton: His Story of His Life's Adventures, as Told in Letters to his Mother and Father* (New York: Bobbs-Merrill Company, 1940), 405.



**Figure 5: Captain Eric De Bisschop, maritime ethnographer.
(Borden, *Sea Quest*, 312)**

the *Fou Po II*

The French enterprise of sailing on board Chinese junks (*Fou Po I* and *Fou Po II*) involves deliberate investigations into migration routes in the Pacific. The central figure in this enterprise was Eric De Bisschop, whose experience included several experimental voyages throughout the Pacific.⁶¹ Following his travels on the *Fou Po II*, De Bisschop built a double-hulled voyaging canoe in Hawai'i, the *Kaimiloa*, and sailed to France. He is sometimes regarded as the father of the modern sailing catamarans.⁶² In 1956, with the intentions of proving Thor Heyerdahl's theories westward Pacific migration incorrect, De Bisschop attempted an eastward and upwind passage from Tahiti to South America on a voyaging raft, the *Tahiti Nui*. But before these adventures, he sailed on board Chinese-built junks.

In 1935, the maritime ethnographer and former French navy officer Captain De Bisschop, following the loss of the junk *Fou Po I* on a reef off Taiwan in a typhoon, had a

⁶¹ Eric De Bisschop, *Tahiti Nui* (New York: McDowell, Obolensky, 1959).

second junk built in Amoy. The *Fou Po II* was a 40-foot long three-masted Amoy fishing vessel design. De Bisschop had sailed for several years out of Ningpo and Amoy in the early 1930s. As an accomplished mariner, he felt that the junk design was extremely seaworthy, the design an "embodiment of the knowledge of the ages."⁶³ With the backing of the Societe Francaise de Geographie, De Bisschop and his crewmate Joseph Tatiboet set out to sail along the migration route, as it was understood then, of the Polynesians, tracing their route from the Philippines to the Dutch East Indies, north and northwest coasts of Australia, shores of Papua, and the Solomon, Santa Cruz, Gilbert, and Marshall archipelagos.⁶⁴

The junk and her crew cruised along the projected Polynesian routes for months. The *Fou Po II*, intending to put in to Jaluit in the Marshall Islands for careening and (typically?) repairs to the rudder, was detained by Japanese officials on suspicion of being a spy. Tension surrounding Japanese military installations in the Pacific was high. Convincing the local governor of the innocent nature of their investigations (De Bisschop included hydrographic observations and multiple navigational fixes in order to study the equatorial counter-currents) took some doing, but the *Fou Po II* was finally released to go on her way. After 25 days of cruising about in the Western Pacific, the two men decided on making their way to Hawai'i. This lay in the opposite direction reported by the two men to the Japanese officials. On this leg of the voyage, the *Fou Po II* averaged 110 miles per day.

As an aside, concerning their detention in the Marshall islands, the story of the two French navigators and the mystery of the disappearance of Amelia Earhart cross paths. This dissertation is not the place to go into details regarding the many theories of what exactly happened to aviatrix Amelia Earhart, but one of those theories involves a bottle and cryptic

⁶² This indicates a direct link between all modern catamarans and Polynesian voyaging canoes.

⁶³ Borden, *Sea Quest*, 229. Borden includes a large passage selected from De Bisschop's journal itself.

⁶⁴ Ibid, 230. Haddon and Hornell's *Canoes of Oceania* offers the most concise summary of Polynesian migration theories popular among the academic community in the early decades of the 20th century.

message, supposedly cast into the ocean from the tiny atoll of Mili, where De Bisschop accidentally landed. The unsigned note, alluding to Earhart's captivity by Japanese, was reportedly accompanied by a lock of chestnut hair. Did Eric De Bisschop send the message? Such theories ignore the apparent fact that the Frenchmen and the Chinese junk passed through the Marshalls years before Earhart's final flight.

Whatever the fate of Amelia Earhart, the small crew of the *Fou Po II* were eventually released and headed north. This change in plans added hundreds of miles to their passage, but De Bisschop carried extra provisions. Unfortunately, officials on Jaluit during their search of the vessel, had broken open the sealed emergency rations carried deep in the bilges of the junk. The rotten food was discovered at sea, with 2000 miles left to go for Hawai'i, and all of it had to be jettisoned. De Bisschop and Tatiboet were soon reduced to the very meager rations of curry powder and tallow. Some of their last energy reserves were used up, again, hauling the large rudder on board and making repairs on it at sea. The discovery of half a cracker made for quite an event, a noted celebration of De Bisschop's birthday during the passage.

Eventually, the junk made it into the steamer lanes some 100 miles northeast of Moloka'i. The two had barely enough strength to wave and shout weakly for help, but these gestures were interpreted by those on board the steamer as friendly greetings, and were reported as such upon the steamer's arrival at Honolulu.⁶⁵ The following day the two voyagers finally sighted Moloka'i Island. Veering trade winds and currents kept the weakened men in position off Kalaupapa, rather than forwarding the junk on with all speed to Honolulu. With no charts or knowledge of the reefs offshore, De Bisschop took a bearing on what he believed to be a ship riding at anchor and attempted to make his entrance to the safety of the harbor. Rather than a ship at anchor, though, the vessel sighted was the historic 19th century wreck of the supply schooner which had for years serviced the leper

⁶⁵ Ibid, 232.

settlement at Kalaupapa, only to have been run upon the reef years earlier.⁶⁶ By luck, the *Fou Po II* made it past the reef and dropped anchor, and a canoe of four Hawaiians later arrived and brought the nearly unconscious men ashore.

The *Fou Po II*, at anchor and unmanned, later blew onto the nearby reef and broke apart. All the papers, records, and photographs of three years' work were completely lost. The site of the Amoy-style sailing junk in Hawai'i has never been located. De Bisschop, though, would continue his connection with Chinese vessels (see *Cheng Ho* below).



**Figure 6: Dr. Allen Petersen and Tani Petersen, ready for more distant passages.
(Petersen, Hummel Hummel, facing page)**

the Hummel Hummel

The voyage of the *Hummel Hummel* differs as well from the several earlier examples of floating museums. The small junk engaged in its Pacific voyaging under private ownership with the sole intent of pleasure cruising. Dr. Allen Petersen, an osteopath from Los Angeles, and his Japanese American wife discovered the well-used vessel on the Whangpoo river, tied up to the French Bund, and purchased her for \$250. The *Hummel*

⁶⁶ The remains of this wreck were visible above the water until the 1990s, and the shipwreck site is still marked on modern charts. The waters off the reef at Kalaupapa have been noted by National Park Service personnel as notoriously "sharky;" Hans Van Tilburg, "Relative

Hummel was a small 36-foot long two-masted Ningpo style fishing junk.⁶⁷ Responding to his boyhood dream, the Petersens cleaned and provisioned the vessel for the first leg of the voyage to Japan, and took on board as crew two "white" Russians, 25-year-old Nick Perminoff and 21-year-old Victor Ermoloff, who had escaped the revolution in their home country. On April 28th, 1938, the junk, blending in with many local craft, slipped past American and Japanese warships and made way down the Yangzi River towards the sea.

The small vessel took over a month to make the trip to Japan, experiencing rain, fog, storms, head winds, and calms continuously. "Every Sunday we had stormy weather, ending in a calm and thick fog."⁶⁸ On their way to an extended stay in Japan, the crew of the *Hummel Hummel* witnessed an apparently abandoned dismasted Japanese fishing junk drift by. Following landfall at the Island of Oshima, the junk hugged the coast on its way towards Yokohama. Dr. Petersen had received warnings from Japanese fishermen about inadvertently being carried out to sea by the strong Japanese current.⁶⁹

The junk went into drydock for thorough repairs in Japan. The *Hummel Hummel* was recaulked, repainted, ballasted with three tons of iron and sand, and outfitted with additional water tanks for the long passage. On July 12th vessel and crew set out for San Pedro, California. For the remainder of that month the junk averaged 58 miles per day, reaching as far north as within 300 miles of the Aleutian Islands.⁷⁰ On the 54th day from Japan, the junk caught sight of the Swedish tanker *Sveaborg*, and Dr. Petersen was able to check his position. Newspapers and sacks containing fresh fruit, vegetables, and two legs of pork were

Positions of Historic Shipwrecks (Hawaiian Islands)," report on file with Marine Option Program, University of Hawai'i, 1998.

⁶⁷ Anon, "Adventurous Quartet Reaches Port after 85 Days Under Sail," *Daily Sun Long Beach* 4 October 1938, 1. Dr. Petersen had served as a physician during the bombing of Shanghai in the summer of 1937. He had previously made two voyages from San Francisco to Australia and Manila on the bark *Moshulu* in 1919.

⁶⁸ Allen Petersen, "We Crossed the Pacific in a 36-foot Junk!" Misc. document, J. Porter Shaw library, San Francisco Maritime NHP.

⁶⁹ It's common knowledge that Japanese sailing junks had, for centuries, been carried all the way across the Pacific by this very current. Charles Walcott Brooks, "Report of Japanese Vessels Wrecked in the North Pacific Ocean," in *Proceedings of the California Academy of Sciences* (1875): 50-66.

⁷⁰ Borden, *Sea Quest*, 235.

passed down to the small wooden craft. Twenty days later one of the Russian crewmen reported hearing a cow to Dr. Petersen, and when the fog lifted Fort Bragg on the Northern Californian coast became suddenly visible. Passing the Golden Gate on the swift voyage south along the coast, the *Hummel Hummel* made it into San Pedro on October 3rd after voyaging 85 days from Shanghai.

The layover in Southern California was only temporary, though, and after more ballast and provisions were put on board, the junk once again set out for Callao, Peru. The Russian passengers, without passports or visas, were detained by immigration officials, while claiming that Dr. Petersen reneged on his promise of wages earned.⁷¹ The Petersens (alone on board now) encountered 90 days of squalls and headwinds before crossing the equator, during which the copper bottom paint wore off and teredo worms began to decimate the wooden keel and hull.⁷² Repairs at Pimentel, Peru, included replacing most of the keel, the whole rudder, and a number of bottom hull planks.⁷³

At this point the decision was made to cancel plans for continuing to push into the Humboldt current and change course for the South Pacific islands. Soon the junk made Fatu Hiva in the Marquesas, followed by a 21-day passage to Pago Pago. The Petersens continued to voyage among the islands until word of the attack on Pearl Harbor reached them. At Samarai Island, the entry point for southeastern Papua, they left the junk under a canopy of palm fronds.⁷⁴ Dr. Petersen enlisted with Australia's New Guinea Volunteers for the duration of World War II. The final disposition of the Ningpo-type junk *Hummel Hummel* is unknown.

⁷¹ "Down to the Sea in Junks," Reno Chen's collection.

⁷² The teredo worm, *Teredo navalis*, more commonly known as the ship worm, is a bi-valve mollusk of the family Teredinidae, notorious for damaging wooden ships by boring long cylindrical holes in keels and hull planks. For shipwreck enthusiasts, these worms are responsible for the general lack of exposed wooden remains in warm water marine environments. (They are most prevalent in warmer waters.)

⁷³ Borden, *Sea Quest*, 237.



Figure 7: Richard Halliburton and an oversized dragon on the stern quarter of his junk. (Root, *Halliburton: the Magnificent Myth*, 144)

the Sea Dragon

Richard Halliburton was once a well known adventurer/author/lecturer, becoming famous for his daring travels and self-promoting style. He had swum the Hellespont, been imprisoned on Devil's Island, trekked through Egypt and Siberia, and (most importantly) never seemed to grow weary of telling people all about it. His final exploit involved attempting to cross the Pacific on a Chinese junk, one he had custom built for the project in late 1938. It would be his last adventure.

The origins for this particular voyage go back to the planning for the World Fair in San Francisco, 1939. Halliburton was contacted by the promoters to hire a junk and bring it across for exhibition, Chinese crew and all.⁷⁴ To Halliburton's mind, such a stunt would emulate the alleged outraged Chinese warlord, who in 1875 sent a small fleet of war junks to avenge the wrongs done to Chinese laborers overseas. The seven war junks reportedly made landfall at Monterey, instead of San Francisco, and the town proved so hospitable to the sailors that the vessels were sunk or broken up, the surprise migrants joining with

⁷⁴ Ibid, 238.

⁷⁵ Halliburton, *Richard Halliburton*, 381.

Monterey's early Chinese community.⁷⁶ This story seems to be a fanciful myth concocted by the premier showman himself, but the voyage of Halliburton's *Sea Dragon* was very real. The Halliburton Trans-Pacific Chinese Junk Expedition Incorporated of San Francisco sold shares, principally to four wealthy New England families, and the junk was launched from Wharf No. 2 in Hong Kong, January 1939.⁷⁷

The Corporation had searched for a used junk to purchase, inspecting the aging fleets in Ningpo, Shanghai, Wenchow, Fochow and Amoy, but many of those places were dead harbors, all junks having fled the very real threat of the Japanese invading forces.⁷⁸ Junks were already being sunk by the thousands in the Asian Pacific war. Having a new vessel built was the last option for the project.

The tall, 75-foot long Wenchow-style three-masted junk, quickly built at Fat Kau's shipyard in Kowloon, featured basic western alterations, such as shrouds to support the masts, modern steel rudder, and diesel engine. Her design was criticized by both Asians and Europeans. Chinese mariners warned against the breaching of the familiar watertight bulkheads, necessary to accommodate engine and propeller shaft. Western nautical experts found the tall top-heavy craft too unstable. Halliburton, though, eternally pressed for money, had a strict schedule to meet in order not to lose his berth at the upcoming World Fair. Having insured the vessel with Lloyd's of London, and gained a letter from the Japanese navy which would *in theory* allow the junk safe passage beyond blockading ships, the junk and Halliburton's crew set out across the Pacific on February 4th, 1939. Against the pirates, who operated off the Chinese coast in the complete absence of any coast guard, the crew armed itself as best they could. Shotguns were easily accessible and American flags

⁷⁶ Jonathon Root, *Halliburton: the Magnificent Myth* (New York: Coward-McCann, Inc., 1965), 19. Sandy Lydon, in his book on Chinese in the Monterey region, *Chinese Gold: the Chinese in the Monterey Bay Region* (Capitola, California: Capitola Book Company, 1985), 164-5, cites the legend as basically unsubstantiated. Only the *Monterey Gazette* of February 19th, 1864, makes passing mention of a similar "rumored approach of a hostile fleet from China."

⁷⁷ *Ibid*, 22. These shareholding families also initially supplied inexperienced upper-middle class crew: Gordon Torrey of Bar Harbor, John Potter of Southeast Harbor, George Barstow III from Connecticut, and Robert Chase from Massachusetts. The Corporation hoped for proceeds from ticket sales, souvenirs, radio spots, stamps, merchandise, letters to school children, and movies.

decorated both sides of the hull. The crew consisted of Halliburton, Captain John Welch, Engineer Henry von Fehren, an assortment of six Americans (either hitch-hikers in East Asia or seamen set ashore), a cook, two kittens, two puppies, and a Portuguese cabin boy. The departure was accompanied by fireworks, gongs, and cheers from the wharf and the American liner *President Coolidge*.

Three days later the *Sea Dragon* was back at Hong Kong. One crew member was put ashore and hospitalized, another suffered an appendicitis, and a third had a broken ankle. The cabin boy resigned. Even the kittens got off the boat.⁷⁹ A professional mate was hired, likewise an assistant engineer and a Chinese crew, and on March 3rd the junk set out again. To make up for lost time, a course was laid in for a brief call at Midway Island, skipping any lengthy stopover among the main islands of Hawai'i.

What happened to the *Sea Dragon* has been a mystery for 60 years. One of the final radio messages was received on March 24th, 1939, hinting at the poor conditions in the north Pacific.

CAPTAIN JOHN WELCH OF THE SEADRAGON TO LINER PRESIDENT
COOLIDGE...SOUTHERLY GALES RAIN SQUALLS LEE RAIL UNDER
WATER...WET BUNKS HARD TACK BULLY BEEF...HAVING
WONDERFUL TIME WISH YOU WERE HERE INSTEAD OF ME.⁸⁰

Many doubted at first that this disappearance was anything more than another publicity stunt, and that Halliburton would come sailing triumphantly into San Francisco Bay with yet more harrowing tales to tell. The US Coast Guard refused to conduct a search over what was, from the evidence, simply radio failure. Eleven days later, on April 4th, Halliburton's parents petitioned the Secretary of the Navy to begin operations. After a month, the USS *Astoria*, on its way back from Yokohama, combed 108,000 square miles without a trace of the *Sea Dragon*.⁸¹ Captain Charles Jokstad of the liner *President Pierce*, Halliburton's old friend, was

⁷⁸ Halliburton, *Halliburton*, 409.

⁷⁹ Ibid, 430.

⁸⁰ Ibid, 433.

⁸¹ Root, *The Magnificent Myth*, 268.

the first to file a sighting of probable wreckage. He reported the splintered remains of the rudder 2000 miles out at sea, a year after the loss.⁸² Five years later a wooden keel and attached frames drifted ashore at Pacific Beach, California. No one knew if it came from the *Sea Dragon*. Some speculated (once again?) that Halliburton was cast onto a coral beach with Amelia Earhart, who had vanished in 1938.



Figure 8: Watercolor rendition of the junk *Mon Lei* hauled out at New York boatyard, 1957.

(© Mystic Seaport, Mystic)

the *Mon Lei*

There is very little available information on the junk *Mon Lei*. One secondary source suggests that this vessel was one of the oldest ever to visit the port of New York. The 50-foot long Swatow-type junk was believed to have been built in 1850 in Central China. In 1938 the *Mon Lei* completed the passage from Hong Kong to San Francisco in 83 days with a crew of eight.⁸³ According to another secondary source, the *Mon Lei*, sponsored by Robert

⁸² Ibid, 274.

⁸³ Borden, *Sea Quest*, 233.

Ripley (of "Ripley's Believe-It-Or-Not" fame), made the voyage in 1942.⁸⁴ Newspaper accounts state that Ripley purchased the junk, which had been built for a Chinese warlord, in Florida. This was following the junk's own escape from China to America shortly after Pearl Harbor.⁸⁵ Maritime enthusiasts remember the ornate interior decorated with dragon carvings, ornate teak sculpture, and oriental rugs.⁸⁶ Fittings for a warlord?

The *Mon Lei* was given to Mystic Seaport Museum in Connecticut in the mid 1950s, but was never officially owned by that institution.⁸⁷ The junk was said to have been taken out of their collection when all non-New England vessels were purged. Following this, the vessel appeared on tour advertising "*Mon Lei Beer*," in the 1960s. The vessel was last heard of based at a marina in Manhattan in the 1970s.⁸⁸



**Figure 9: Mrs. Ann Archbold (center), sponsor of the Fairchild Tropical Garden Expedition, and colleagues.
(Degener, "Last Cruise of the Cheng Ho," 204)**

⁸⁴ "Down to the Sea in Junks," Reno Chen's collection.

⁸⁵ Anon, "Planes and Yachts Greet Ripley Today as City Siren's Herald Welcome," *Times Union* (Albany, New York), 8 August 1947, 1.

⁸⁶ Frank Pierce Young, personal communication with author, 3 October 2000.

⁸⁷ Philip Budlong, Mystic Seaport Museum, personal communication with the author, 6 October 2000.

⁸⁸ Norman Brouwer, personal communication with author, 3 October 2000.

the *Cheng Ho*

In the vessel of the *Cheng Ho* the floating amusement/museum/restaurant theme is finally left behind. Here we have an example of a large junk being built for scientific use in the Pacific and around the world. Here also is an updated, modern version of something which should more rightly be called a junk-yacht. It's difficult to say now how much of the *Cheng Ho*'s construction reflected long-standing Chinese designs, taking into consideration the numerous modifications to the Chinese design. The completed *Cheng Ho* would feature refrigeration, air conditioning, luxury salon, a botanist's laboratory, twin diesel 200-hp engines, electricity and plumbing.⁸⁹

The first attempt to build what was called at the time "the queen of junks" was a collaborative affair. In order to undertake a voyage from Hong Kong to the Paris Fair of 1937, by way of the Suez, a large Chinese junk was needed. Apparently a number of international sportsmen, including Count Ilya Tolstoy (grandson of the Russian novelist), supported the project under the title "Ning Po Junk Expedition."⁹⁰ Thomas Kilkenny traveled to Hong Kong to oversee the construction of the project's vessel in the 1930s. Exactly why this project failed is unclear, but financial backing failed to materialize. Kilkenny eventually went into teak ship construction in China, building pleasure yachts for American buyers.

By 1939 Kilkenny did find a solid backer for the Chinese junk project, when Mrs. Ann Archbold of New York, daughter of the late John D. Archbold and aunt to Richard Archbold, who had explored New Guinea by plane, commissioned Kilkenny to build a "deluxe" junk for scientific expeditions. The vessel was built to Lloyd's specifications at the well-known shipyard of Ah King in Hong Kong. The overall shape or lines were taken from a 100-year old salt junk.⁹¹ It was thought the design of the junk *Cheng Ho* reflected the mighty treasure

⁸⁹ David Fairchild, *Garden Isles of the Great East: Collecting Seeds from the Philippines and Netherlands India in the Junk Cheng Ho* (New York: Charles Scribner's Sons, 1943), 14-15.

⁹⁰ Borden, *Sea Quest*, 238. An intentional allusion to the earlier vessel?

⁹¹ *Ibid.*

ships or *baochuan* of the early Ming dynasty.⁹² (As no plans or examples of these vessels have ever been discovered, it's hard to take this claim very seriously.) Shrouds were added to the masts, a modern western rudder took the place of the Chinese design, and twin 110 HP diesel engines dominated the holds. The 106-foot long 154-ton Ning Po style junk was, therefore, a hybrid design. The modern "junk" had an eight-knot cruising speed, and a range of 5,000 nautical miles.⁹³ Named after the famous 15th century Ming dynasty admiral Cheng Ho (Zheng He), the Fairchild Tropical Garden Expedition's junk got underway late in 1939. Rumors of a Pacific war buzzing in the air, the expedition was seen as the last chance to gather flora and fauna among the islands in Southeast Asia.⁹⁴ It was surely one of the last great colonial scientific expeditions to a pre-war Pacific, featuring as well a flare for the historic and exotic. On board were Captain Kilkenney, aristocrats Mrs. Archbold and her personal nurse Marian, botanist David Fairchild and assistants, photographers, and a Chinese crew (known now only as engineer Mo So, boatswain Ah Gunn, Ah Fook, Fo Tai, Kai, Han, Sin, Sing, and cabin boys Jack and Sam).⁹⁵

The vessel first rendezvoused in Manila Harbor to meet the arriving scientists, following the junk's ceremonial launching on October 15th. From there leisurely months were spent cruising among Southeast Asia and the little visited ports scattered among the many islands. The *Cheng Ho* headed south by way of Zamboanga to the eastern Celebes. On February 25th an engine fire broke out, and the junk was temporarily disabled. From there she cruised to Soembawa, Lombok, Bali, and west to Soerabaya in Java, where a month of refit completed the repairs to the vessel. Turning east to Makassar, the route then led across the Banda Sea to Ceranam, and Amboina.

⁹² Otto Degener, "The Last Cruise of the *Cheng Ho*," *Journal of the New York Botanical Garden* 44, no.525 (1943): 197.

⁹³ Fairchild, *Garden Isles of the Great East*, 15. Old Admiral Zheng He never had it so good.

⁹⁴ At the end of the voyage the project had collected over 500 plant species, specifically for unregulated transportation to foreign lands, "plant immigrants on the stage of American horticulture." *Ibid*, 227. Such a biological invasion would be considered a crime in most places today.

⁹⁵ *Ibid*, 71; Ah Fook as any relation to the Shanghai river policemen, surname Fook, unknown (see page 26).

The scientific venture officially ended when the junk was forcibly detained in Amboina when it was learned that Germany had invaded Holland. All entry permits to Indonesian ports were summarily cancelled, and cablegrams arrived from the Philippines ordering the *Cheng Ho* to return to the Philippines. The scientist crew, of course, continued their collecting work as they headed north via Ternate and Zamboanga, where the expedition finally disbanded June 16th 1940, five months after departing same.

Marian and I shall long remember that rainy afternoon when we pushed off for the last time from the beautiful Junk in which we had visited so many strange harbors, and to which we had come back so often laden with seeds and shells. We bade the loyal Chinese crew farewell, and as their kindly faces smiled down on us for the last time we wondered what would become of them when they got back to Hong Kong.⁹⁶

The junk continued on to Cebu where, after an overhaul, Mrs. Archbold arranged for a new captain and crew. Captain Ellis Skofield then turned eastward to Fiji, arriving later that year.⁹⁷

Another biological sampling expedition, this time to the islands of the central Pacific, was sponsored by Mrs. Archbold and Harvard University. Otto Degener, having enjoyed semi-retirement on a coral beach on O'ahu, traveled to meet the vessel in Suva. The botanist and his Hawaiian-born Filipino assistant Emilio Ordonez, boarded in November 1940.⁹⁸ The crew consisted of "two white boys, a Samoan chief who had performed the intricate sword dance in a well known motion picture, and a fine group of better-class Filipinos."⁹⁹ All was not harmony, though, on board the Chinese-built vessel. Stories of tension and mutiny on the passage from Cebu to Suva were rife. Captain Skofield, formerly a master of missionary vessels in the Philippines, apparently had no great love for non-Caucasian crews. "Labor trouble" jeopardized the cruise, and by Christmas 1940 the cruise was over. Otto Degener stayed on in Vanua Levu, while Mrs. Archbold made for Hawai'i, suffering further from various "thefts, mutinies, and desertions."¹⁰⁰ She made the decision,

⁹⁶ Ibid, 226.

⁹⁷ Borden, *Sea Quest*, 239.

⁹⁸ Degener, "The Last Cruise of the *Cheng Ho*," 197.

⁹⁹ Ibid, 198.

¹⁰⁰ Ibid, 199.

in the months before the Japanese attack on O'ahu in December 1941, to sell the *Cheng Ho* to the US Navy for one dollar. The stately *Cheng Ho* became inshore patrol vessel 1X-52 for the duration of the conflict.¹⁰¹ Such quickly requisitioned irregular craft in the Hawaiian islands (chiefly Japanese-built fishing sampans) were operated by the US Coast Guard as yard vessels and anti-submarine warfare boats.¹⁰² There are no reports of these units ever engaging the enemy, but the servicemen did manage to make an extra buck from the excellent island fishing during the war years.¹⁰³

The Chinese junk was taken into the American military service on July 23rd 1941 under its original name and outfitted with one 3-inch 23-caliber gun on deck.¹⁰⁴ The *Cheng Ho* became a station ship of the 14th naval district at Pearl Harbor. She was taken out of service on January 18th, 1946, and stricken from the navy register on February 25th of that same year. The navy's intentions at the time they originally purchased the junk from Mrs. Ann Archbold were to turn her over to the naval academy at Annapolis..."in compliance with the wishes of the President [Franklin Delano Roosevelt] the *Cheng Ho* will be restored to her original condition as opportunity permits, and the vessel sent to the Naval Academy...when conditions warrant."¹⁰⁵ This never happened for lack of immediate need and lack of available tugs. The proposed transfer to Annapolis was "indefinitely deferred" in June 1945. Similarly, a plan to load the junk on a landing ship for transport in December fell through. The junk was transferred instead to the War Shipping Administration for disposal. There is no obvious explanation as to why the Naval Academy or FDR were involved with the history of the *Cheng Ho*.

¹⁰¹ Borden, *Sea Quest*, 239.

¹⁰² Hans Van Tilburg, "Maritime Asia Pacific: the Hawaiian Sampan," unpublished report, Marine Option Program, University of Hawai'i at Mānoa, Honolulu, 1997.

¹⁰³ Rob Tomasetti, "Final Report: a Survey of a Wrecked Vessel at Kona Coast State Park," unpublished report, Marine Option Program University of Hawai'i, 1997, 2.

¹⁰⁴ The following details were provided by Naval Historical Center archaeologist/historian Wendy Coble in communication with author, 12 October 2000. Further records for patrol vessel 1X-52 still pending.

¹⁰⁵ Ibid.

Following the war, the junk was brought back to commercial use as part of the "Cheng Ho Trading and Exploring Company," operated by Eric De Bisschop, the French scientist who had arrived emaciated at Moloka'i on board the junk *Fou Po II*, and Otto Degener. She sailed between Tahiti and Hawaii carrying passengers and cargo. Eventually the *Cheng Ho*, with new engines and renamed the *Hiro*, settled permanently in the interisland trade in French Polynesia. The *Hiro* had become a copra trader. As of 1955 she was still sailing between the Leeward Islands, Tahiti, and the Tuamotus.¹⁰⁶



**Figure 10: The transpacific crew of the Free China, only hours away from stepping ashore at San Francisco.
(San Francisco Maritime NHP)**

the Free China

Here is the best recorded example of a Chinese commercial sailing vessel crossing the Pacific to the west coast. A Fujian cargo vessel was entered in a European yacht race, and crossed the Pacific from Taiwan to San Francisco in 1955. Although the story was an international feature, and numerous newspaper and magazine articles and spots on televised adventure programs covered the arrival for a brief time, it is a story which has not been well

¹⁰⁶ Borden, *Sea Quest*, 240.

disseminated, and never published in extensive detail. The event quickly receded into obscurity. There was no *place* in the American landscape for the *Free China*.

Fortunately, the original crew of Taiwanese fishermen who brought the old junk renamed the *Free China* across the Pacific are still available for interview, and their photo albums and even 16 mm film footage intact.¹⁰⁷ In fact, even though the craft has been somewhat altered since arriving on the west coast, the junk *Free China* herself is still in existence. She is likely the oldest Chinese built sailing junk still in relatively seaworthy condition.

The story really begins with Paul Chow's decision to join in a transatlantic yacht race and leave the island of Taiwan. Paul Chow, originally from a high-ranking mandarin family in northern China, had been forced to leave the mainland following the Communist victory over Republican forces. He had, with the help of some training in America, courtesy of the United Nations Rehabilitation and Relief Administration (UNRRA), been trained in modern fisheries and hired by the Fisheries Rehabilitation Administration.¹⁰⁸ Many of his friends in the Fisheries Administration in Taiwan were in similar circumstances, newly trained exiles from the Chinese mainland.

The attitude of the United Nations, though ultimately one of philanthropy and goodwill, was somewhat narrow. In assessing a country which had been possibly responsible for more technological invention than any other in the field of fishing, having been fishing for literally thousands of years, the UNRRA found that "the Chinese paid little or no attention to the importance of fishing [meaning undoubtedly *modern* fishing], which was carried out by the inhabitants of the various islands and provinces along the coast in small wooden craft...there were no big capital combines to handle the trade."¹⁰⁹ The United Nations proposed the construction of a fleet of 200 modern diesel-driven fishing trawlers, complete with radar. In 1946 six of these fishing vessels crossed the Pacific under their own power

¹⁰⁷ Much of the following information comes from a series of interviews conducted by the author with crew members now in California in August, 2000.

¹⁰⁸ Calvin Mehlert, interview with former vice-consul of Taiwan/US passenger of junk *Free China* by author, Palo Alto, 14 August 2000.

and arrived in Shanghai. The fishermen who took up the UN call would, incidentally, send one of their own older fishing vessels back the other way, the *Free China*.

The long ranging effect of this postwar benevolence, in spite of the culturally arrogant overtones, cannot be overemphasized. Not only are new technologies and methods imported to China, but ultimately the old traditions and wooden sailing junks will disappear. It's fortunate that the new literate recruits in this cultural exchange happened to be dedicated to saving a bit of the old maritime traditions in the form of a sailing junk. Paul Chow describes himself and his friends at this time "the first generation of Chinese fishermen who could read and write."¹¹⁰ It was this group of Taiwanese seamen (though not sailors) who would procure and outfit the junk *Free China*, and bring her to the United States during the years immediately following the Communist establishment of the People's Republic of China.

In September of 1954, between long fishing trips out to the Philippine islands or far into the South China Sea, Paul Chow sent a letter to the New York Yacht Club race committee, suggesting that they accept a Chinese junk into the transatlantic race to Sweden scheduled for June of 1955. Surprisingly enough, they accepted, and Taiwanese Fisheries officials and local politicians were supportive enough to offer 45,000 yuen in support of the project.¹¹¹ Yet everything hinged on actually finding a sailing junk.

Tension at this time between Taiwan and the mainland was extreme, and there were few places they could actually look for a possible candidate. One trip in January 1955 was attempted on board a navy LCM to the small island of Tachen, immediately off the coast of the Chinese mainland. Seeking a junk was one thing, but risking life and limb in dangerous territory in 1955 quite another. The effort failed due to continued fierce fighting between

¹⁰⁹ Worcester, citing the American-sponsored *Shanghai Evening Post*, in *Sail and Sweep*, 85.

¹¹⁰ Paul Chow, interview with the Taiwanese fisherman/navigator of the junk *Free China* by author, Los Angeles, 7 August 2000. They operated wooden motorized trawlers on long range purse seining trips. Paul Chow was known as the best navigator amongst the fleet.

¹¹¹ One condition of the support was that the junk be named after "Keelung," or "Free China," for the propaganda value. Paul Chow readily agreed to this, scrapping his plan of naming her "Dragon Seed," a reference to the novel *The Good Earth*; Paul Chow, *The Junk Story*, unpublished manuscript, Los Angeles 2000, 132.

Taiwanese and Communist forces. Upon eventual return to the dock at Keelung, however, the raked masts of a transient sailing junk were observed nearby.

The owner of the junk, a salt fish trader from Fujian Province by the name of Lian Yi-Kwai, was eventually located. The junk had arrived from Matsu Island, and the load of salted ribbon fish in the holds was collateral for the owner's gambling habits while in Taiwan. The 80-foot long two-masted *Sheng Xiao Li* (the junk's registered name "Victory, Piety, Profit") was locally known as a Fuzhou Flathead junk, called a pole junk by some.¹¹² She was of indeterminate age, having been apprehended numerous times for smuggling on the Chinese coast...each time being outfitted with a new set of registration papers, new name, and auctioned off to a new owner.¹¹³ Her current documents reported her being built in 1948, though by all other accounts (and by the appearance of the junk herself) she was at least half a century old, if not older. Lian Yi-Kwai, having become aware of the news coverage of the group of Chinese adventurers fervently seeking a junk for an upcoming overseas race, was in an excellent bargaining position, and never flinched from his price of 46,000 yuen (about \$1,150 US at the time).¹¹⁴ Paul Chow and his immediate partner Loo-Chi Hu purchased the junk on February 17th 1955, and work began to refit the vessel for the Pacific journey.

The story of the race and the project of launching a sailing junk on a worldwide tour became a well known cause for an island nation in the throes of an all-out struggle against the Communist mainland. Donations from the army, navy, governor, Rotary club, Fisheries Administration, etc., brought needed supplies to the effort. Rotten planking was replaced, decks recaulked, sails refashioned, all ropes and lines refurbished, and provisions and spare

¹¹² Ibid, 66. Vessel names like this in China reflect characters carved onto the vessel for luck, rather than individual labels. It seems that before western style registration, Chinese junks did not have names; Rudolf P. Hommel, *China at Work: an Illustrated Record of the Primitive Industries of China's Masses, whose Life is Toil, and Thus an Account of Chinese Civilization* (New York: John Day Company, 1937), 337.

¹¹³ Ibid, 54.

¹¹⁴ One source records the approximate cost of Fuzhou coastal trading junks, those 90 feet long, as 1,000 Mexican dollars in 1904; *China: Catalogue of the Collection of Chinese Exhibits.*, 255-6.

equipment gathered. The traditional "Eight Fairies Crossing the Sea" and the Phoenix and Sea Serpents were repainted on the hull. Chiang Kai-Shek's son, Chiang Ching-Kuo, arranged a photo session with the crew. The Ministry of Communication even appointed a committee to do a feasibility study on sailing a Chinese junk across the Pacific. In Paul Chow's words, "They devoted half of their time in arguing how [we] should cook. Then for the rest of the evening, they took turns reminiscing old sea stories one after the other."¹¹⁵ The committee eventually split on the opinion of whether or not the junk would make it across the Pacific. Bets were taken, and no final decision reached.

Meanwhile Paul Chow and his friends of the Fisheries Rehabilitation Administration (FRA) fishing fleet continued their work. The most difficult barrier to overcome proved to be obtaining exit passes from Taiwan and visas for America. At this point the American vice-consul in Taiwan, Calvin Mehlert, became connected to the project. He would eventually replace one of the members and travel across the Pacific with the *Free China*, acting as American liaison and also capturing the voyage on 16mm film. Reno Chia-Lin Chen, originally from Nanjing, sailed as purser; Benny Chia-Cheng Hsu of Swamei served as coxswain; Marco Yu-Lin Chung from Beijing was elected skipper; "Huloo" Loo-Chi Hu from Yangzhou was the rigging master and doctor, and of course Paul Chuan-Chun Chow was navigator/radio-operator and owner. All had joined the FRA as deckhands and quickly become captains. The fact that none of them had any real experience on sailing vessels of any type did not seem to strike them as a particular obstacle.¹¹⁶

On March 8th, 1955, the junk was launched under her new name *Free China*. The mayor's wife, unused to western launching ceremonies, pitched a bottle of French champagne at the junk as if it were a baseball. The bottle bounced off the hull and smashed on the ground. This was the first western launching anyone had ever seen, and considered the normal way of doing things. In response to the Chinese tradition of firecrackers, which

¹¹⁵ Ibid, 101. One wonders whether they were aware of the junks which had already successfully crossed.

¹¹⁶ Ibid, 125. Benny Hsu's great grandfather had owned over 300 fishing junks in Swamei near Swatow...that seems to be the closest sailing connection any of the crew could produce.

followed immediately, the junk moved down the launching ways and into the water. After a short shakedown cruise in the harbor, in which the original captain or *Lao Da* ("Big One") manned the helm exclusively, the crew felt ready. The *Free China* slipped her lines and departed Keelung Taiwan on April 4th, 1955.

The consequences of lack of experience appeared with the first hoisting of the mainsail. The six-man crew, considerably reduced from the normal complement of 15, had difficulties handling the heavy batten lug mainsail, which swept out of control over the cabin, breaking lashings and bolts and knocking the ship's compass over the side. Communication broke down as to how to handle the rigging.

Actually the Big One had told us the name of each line. They were in Foochow dialect. None of us could comprehend what he was saying. Huloo insisted to stick to the names he had learned from the junk sailors from Ningpo which was a different dialect; Hsu Chia-Cheng went by his Swatow names which he could not even pronounce, let alone adopting (*sic*); and I had dugged up some names in English from a sailing magazine without knowing how to pronounce them. Since every decision was supposed to be ruled from the deck by a democratic process, we each picked our own choice and ended up in this noncommunicative disaster.¹¹⁷

This one incident highlights the difficulties involved in a seemingly simple exercise, as well as the specialized nature of sailing skills in any culture. Lack of proper spares, jammed halyards, dead radio and broken lines combined to force the junk back to Keelung after only a few days.

On April 16th the junk left the dock again, this time accompanied temporarily by the *M/V Yu Hsiang* and with a guest junk captain and official observers on board as far as nearby *Wu Ren Dao* (No Man's Island). Taiwanese officials were clearly worried over the safety of the fishermen, as well as the potential of a public relations disaster. After minor repairs there, the observers were transferred back to the escort vessel, and the *Free China* set course for Okinawa in the face of approaching Hurricane Annie. In deteriorating weather

¹¹⁷ Ibid, 162.

the tiller and all spares soon snapped. The disabled junk radioed for tow to Okinawa.¹¹⁸ Officials from Taiwan ordered the junk abandoned when the rescue vessel *Chungking Victory* arrived on scene, but the crew refused. Upon reaching Naha, officials again ordered the junk confiscated and the crew repatriated back to Taiwan. Yet, according to Calvin Mehlert, a properly registered Chinese vessel which had never been abandoned, now in refuge at an American military base, comes under only the jurisdiction of the immediate captain. Mehlert, the American vice-consul, proved quite helpful in freeing the junk from the legal morass. The crew again refused to obey instruction from Taiwan and stuck with the junk.¹¹⁹

After six days in Naha, the *Free China* set out for Japan. The Kuroshio Current assisted this passage, adding some 40-50 miles per day to the log. On May 13th they arrived in Yokohama harbor. A parade of vessels, quarantine, immigration, customs, newspapers, soon made their way to the anchored junk. Ambassadors, Chinese organizations of Yokohama, and cheering schoolchildren met the vessel at the dock. Further repairs to various things were made in Japan. A steel gallows frame was constructed for the heavy mainsail. Shrouds were added to the rig design after much debate. One month later, the crew and vessel were ready for the Pacific, and the vessel again departed on June 17th. During this time any real expectations of making the July deadline for the transatlantic race came and went. The race itself ceased being the incentive for the journey.¹²⁰

The passage from Yokohama to San Francisco lasted 54 days, and was relatively uneventful. Two Pacific storms were encountered; Marco Chung was briefly knocked overboard by the tiller, and one of the two chickens was sacrificed for Paul Chow's

¹¹⁸ Ibid, 193. Tillers were broken due to undue strain caused by failure to lower the mainsail, rather than any design flaw; Chow interview 7 August 2000.

¹¹⁹ Vice-Consul Mehlert was instrumental at persuading the Port Authority at Naha to support the crew. Incidentally, Calvin Mehlert's friends at Naha included Captain Kilkenny, formerly of the luxury junk-yacht *Cheng Ho*, who advised the *Free China's* crew to make for Hong Kong and have the interior of the vessel decorated with expensive oriental carvings. This was not done.

¹²⁰ There may be some question as to just how seriously Paul Chow, Reno Chen, and the rest of the crew really were in attending the race, compared to how seriously they were interested in getting visas to America.

birthday.¹²¹ Passing whales also caused some anxiety to the small wooden craft, but the ship emerged unscathed from the curious pods. The junk averaged a steady five to seven knots on this last leg of the voyage.¹²² The whole voyage from Taiwan lasted 112 days. Reported by American vessels outside the San Francisco Bay, the *Free China* received a Coast Guard Cutter escort from the Farallon islands and through the Golden Gate Bridge. Hundreds of local San Franciscans and other spectators, including of course T.K. Chang, the Consul General to Nationalist China, met the successful *Free China* with a bouquet of yellow chrysanthemums as she docked at Pier 43 on August 8th, 1955.

"The first Chinese junk to enter San Francisco Bay in a century—or, maybe ever—did so yesterday..." read the local papers.¹²³ The usual parade of customs, chamber of commerce, immigration, and quarantine officials made their appearances. Celebrations in Taiwan mirrored those across the Pacific. Almost 12,000 Chinese had joined a contest to guess the exact arrival time of the junk, and 27 winners had to participate in a separate drawing for their prizes of pen and pencil sets.¹²⁴ Meanwhile the *Free China*'s crew met with officials from the Six Companies of San Francisco's Chinatown. And although Paul Chow and the others still expressed their desires to continue what was now seen as a round-the-world cruise, they had run out of funds. What exactly to do with the wooden junk, badly in need of serious overhaul, became the immediate question.

At first the old vessel was sailed over to China Camp in Marin County, where a feisty pistol-wielding Chinese expletive-spewing local character known as Mrs. Quan, who lived at the historic site of the 19th century Chinese fishing village, promised to look out for the craft.¹²⁵ Unable to find funds to overhaul the junk, Paul Chow had title transferred to the

¹²¹ Marco Ch'ung and Charles Bell, "The Four Seas are One Family," *Motor Boating* 96, no.6 (1955): 32.

¹²² Cliff Bond, "Dragon Eyes for Freedom," *California Monthly* October (1955), 24.

¹²³ Kevin Wallace, "Chinese Junk Finally Docks in San Francisco," *San Francisco Chronicle*, 9 August 1955, 1. T.K. Chang alludes to a much bigger commercial junk arriving in the Bay Area in the 1850s (lyman's citation in 1849?), but no known records explain this.

¹²⁴ Anon, "Taipei Hails *Free China* Daring Crossing; Nation Cheers," *China News*, 10 August 1955.

¹²⁵ Chow interview, 7 August 2000.

Chinese Consolidated Benevolent Association, the Six Companies, in November of 1955.¹²⁶ The *Free China*, meanwhile, ended up abandoned and on the rocks at China Camp. Inquiries were made into the possibility of the National Maritime Museum in San Francisco accepting responsibility for the *Free China*. The Maritime Museum at first tentatively accepted the gift, agreeing to preserve the historic vessel.¹²⁷ But, not wanting to burden itself with another expensive task, in the end declined full responsibility and transferred legal ownership to a small group of volunteers. This group, associated with the museum, undertook to care for the foreign vessel out of sheer love of maritime tradition. In 1956 the junk was rescued from 17 months of abandonment at China Camp and towed to the Alameda shipyard in the East Bay. There it was hauled out of the water. America's National Maritime Museum had passed the torch.

Although our group has kept the vessel out of the water and under partial surveillance, the junk has deteriorated and her condition is not good. Like you, we are interested in seeing the *Free China* eventually restored to good condition, even though we ourselves may not be in a position to do so. To this end, and in your absence, we have consulted with officials at the Chinese Consulate here, who have suggested that we prepare the enclosed transfer of ownership document for your signature...¹²⁸

The next four years were spent at the Alameda shipyard. Following a period of being abandoned there for firewood, the vessel was put back into shape. After much work the junk was refloated and taken to the Oakland Dock and Warehouse Company, where she remained for three years.¹²⁹ A number of local maritime notables, such as Harry Dring, maritime museum supervisor, Max Lemke, San Francisco insurance agent, and Henry Rusk, naval architect, assisted Reno Chen and Paul Chow in making the junk seaworthy again, and then in keeping the aging

¹²⁶ Mark S. Hamilton, correspondence between legal counsel of the San Francisco Maritime Museum Association and Mr. Paul Chow, navigator of junk *Free China*, 26 October 1960. The junk became the Six Companies' "white elephant."

¹²⁷ Anon, "China Crew's 2-mast Junk Given to S.F.," *San Francisco Examiner*, 22 July 1956, 14.

¹²⁸ Ibid.

¹²⁹ Anon, "Chinese Junk at Oyster Point," *The Post* 20, no.23 (1966).

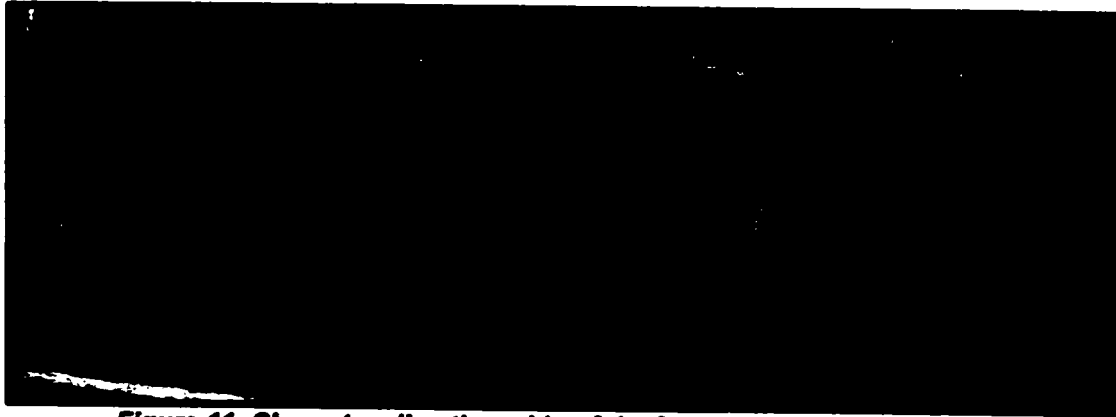
wooden artifact afloat.¹³⁰ In this way the *Free China* was transferred from the crew to private ownership by Californians, and she remained in the Bay Area.

The *Free China* underwent considerable renovation over a period of many years in the San Francisco Bay. A keel was added, a modern steel rudder replaced the larger Chinese version, bulkheads were removed so that a Volvo diesel engine could be fitted into the hull. Moved down to Oyster Point marina in 1966, the old smuggling vessel finally found herself surrounded by modern facilities and behind locked gates. When Harry Dring became too old to care for the junk, she was sold in 1989 to Govinda Dalton. Without financial support from any institution, nor any suggestions on the significance of historic preservation, Govinda Dalton continued the alterations of the privately owned vessel. The foremast was removed and the high oval stern with its ornate designs was cut away with a chainsaw. At least pilfering by the Boy Scouts of America was not involved. The *Free China* (now renamed *Golden Dragon*) remains in this condition, hauled out of the water and up on blocks at the Bethel Island Boatyard near Sacramento, California.

But what of the crew? Marco Chung, after returning to Taiwan, has retired from a career in business and now lives in Hacienda Heights, California. Paul Chow recently retired as professor emeritus of physics at California State University Northridge (and he is currently writing a book about the junk voyage). Loo-Chi Hu ended up working for the UN Food and Agriculture Organization, becoming an advisor to New Zealand Fisheries. He now lives in Christchurch New Zealand and teaches Tai Chi Chuan (and constructs models of the *Free China*). Benny Hsu studied marine biology at the University of Washington. Unfortunately he was killed in an automobile accident in 1969. Reno Chen, after working in the electronics industry in the Bay Area, has retired and lives in Palo Alto, California. Calvin Mehlert continued his career in the foreign service, serving in Taiwan, Bangkok, London, Warsaw,

¹³⁰ Al Dring, Harry Dring's son, personal interview with the author, 10 April 1996. Al Dring refers to the *Free China* as "my Dad's boat." Harry Dring's plan, never realized, was to sail the *Free China* to Tasmania.

Monrovia, Liberia, and Washington D.C. He currently lives in Camp Connell, California (and is editing the 16mm footage from the Pacific crossing).¹³¹ In 1995 they met in San Francisco for the 50th anniversary of their voyage. And they will not be forgotten.¹³²



**Figure 11: Characters line the cabin of the forgotten junk in Portland.
(author's photo)**

the Beihai junk

Although this excellent example of Chinese ship construction did not cross the Pacific under her own power, but was shipped on board a modern container vessel, this last example of a Chinese working junk, and particularly the events which followed her arrival, highlights the pattern of neglect and disuse seen in other voyages. The Beihai junk was encountered by the author during a research trip to the west coast in August 2000. Though it is representative of commercial sailing junks, it was never intended to fulfill its traditional role, being built purposefully for an American museum. Today it is falling apart amidst Oregon's blackberry bushes.

In 1989, Guy Lasalle Jr., an Oregon native who worked in southern China, was commissioned by the Portland Children's Museum to find a sailing junk for a planned

¹³¹ Mehler interview, 14 August 2000.

¹³² Other articles include: "China Junk at anchor here, Crossing Told," *San Francisco Call-Bulletin*, 9 August 1955; "Junk Free China Welcomed by Cheering Crowd at SF Pier," *China Post*, 12 August 1955; "Six Chinese to Sail Across Pacific, Atlantic," *China News*, 14 January 1955; "Seeking New Life (Free China)," *Times-Star*, 7 March 1960; "Chinese Junk Sails across Bay to Shipyard," *San Francisco News*, 17 January 1957, 21; "Bay Voyage for Junk Free China," *Independent Journal*, 17 January 1957, 3.

exhibition on "Homes on the Move."¹³³ With his connections to a fishing village at Beihai, Guy Lasalle located the last remaining shipwrights who still remembered how to construct such things, and in three months the hand-built sailing junk was launched. No plans were used in the construction, the junk masters, in response to questions, merely sketching shapes temporarily in the sand.¹³⁴ The shipwrights themselves were Chinese previously exiled from their homes in Vietnam during the border wars between the two countries, and had been resettled in a permanent UN-created refugee camp at Beihai. There the Chinese government had supplied the infrastructure for the community to continue fishing and building wooden vessels, mainly motorized trawlers. There was a deal of pride in being asked to construct an old-style fishing junk for an American museum.

Guy Lasalle himself became interested in junks while a student at Lewis and Clark College. With his partner, Michelle Loh, Lasalle formed Dragon Junks Ltd. With the aim of importing junks to the west. The Beihai junk was the first vessel brought over.¹³⁵

The junk from Beihai (no name was ever associated with it) is an eight-ton two-masted sailing vessel about 35 feet long, built of local hardwoods. In style it is mostly closely associated with types like the Kotak Chuan, a common type of fishing boat in the local district near Beihai, though it combines elements of other vessels in the region.¹³⁶ It is, according to Guy Lasalle, one of the very last sailing junks built in the area.

In Portland the rare vessel went on display at the Children's Museum, a ladder installed for visitors to climb up onto the deck and a railing for safety's sake encircling the topsides. The exhibit lasted between March and July, 1991. After five months in the yard of the museum, beside a Mongolian yurt and an American Airstream trailer, the Museum transported the wooden boat to a storage yard belonging to Portland's Urban Forestry

¹³³ Guy Lasalle Jr., interview with Beihai junk donor by author, 25 August 2000, Portland. Mr. Lasalle now manages a Nike factory in Guangzhou. Lasalle Jr.'s interest in junks predates the museum commission, though. Guy Lasalle Sr. served in the merchant marine in China.

¹³⁴ Ibid.

¹³⁵ Robert G. Bridgeford, "Acquiring a Junk," *Portland Children's Museum*, (1991).

Division. There, at Delta Park East, the Beihai junk has been sitting unattended and open to the weather for nine years.

The Sample of Ten Junks

These vessels, a portion of the very minor junk traffic between Asian and American coastlines, are united by a common thread. They are samples, in one way or another, of the traditions of junk construction in China. Some are representative of long-standing traditions and designs, others are a mixed bag of fanciful creation, combining elements from various regions. All represent a kind of bridge between our western understanding of the Chinese past and the mostly unwritten history of the coastal Chinese shipwrights and sailors. Each junk is an opportunity for us to glimpse a part of that past.

Most of these vessels were brought across the Pacific under the auspices of American or European control. Even the *Free China* voyage, with vice-consul Calvin Mehlert on board, benefited from westerners associated with the project from the early stages. As noted previously, this may also serve as partial explanation as to why these and not other voyages have been documented and remembered. The nature of the event itself, the arrival on foreign shores of Chinese sailing vessels, lends a bias towards the sample. For about a century between the gold rush in California and the conclusion of World War II in the Pacific, Chinese immigration to America was discouraged, if not outright banned. Anti-Chinese sentiment ran high in the western states. Any Chinese migrants arriving on the coast in their own junks (chapter six) would have had little incentive to make official entry or otherwise record their journey. Concerning the selected vessels in this study, American involvement sets these junks apart from other purely Chinese voyages which may or may not have contacted the Americas in the past.

Given the general lack of distribution of knowledge on Chinese wooden ship construction, it can be difficult to accurately describe the junks themselves. The first step in

¹³⁶ G.R.G. Worcester, *A Classification of the Principle Chinese Sea-going Junks South of the Yangtze* (Shanghai: Statistical Department of the Inspectorate General of Customs, 1948), 170.

the evaluation of these vessels is to examine the appropriate literature. How do we know what little we do about Chinese junks to even begin taking a serious look at these voyagers?

CHAPTER 3

THE EXISTING RECORD ON CHINESE SHIP CONSTRUCTION

As noted in chapter two, sources for these selected junk voyages are scattered and sometimes unreliable. The situation for sources on junks in general is somewhat similar. Though there is some limited work available on the maritime scene in China, as in the overall context of coastal trade and even specific contacts overseas to Japan and Southeast Asia, it does not begin to address the types of vessels used in those connections. It does not incorporate the technology which made such overseas connections possible. At best there is a small section in such works devoted to a very general description of Chinese ships, but insufficient to place those in a larger context. Descriptions of the ships involved constitute narrow windows into individual types, usually void of any larger contextual setting in which to make sense of the object. Historian Lincoln Paine, in "Aspects of a Global Maritime History," states:

Regardless of the period in question, the importance of a ship lies in the historical milieu in which she lived and worked. The disappointing thing about so many ship books is that they tend to separate specifications or the most basic movements of a ship from the reality of the world in which she sailed. Even books on broader aspects of maritime history tend to be highly specialized.¹

Occasionally, among these technical descriptions, there are also some short pieces which focus on descriptions of singular Chinese junk types. As with the previous sources, these articles are nearly void of all historical context. Furthermore, most of the descriptive sources deal with coastal and riverine vessels. There is simply nowhere to go for a truly accurate and contextualized view of Chinese *oceangoing* junks. This includes Chinese and Western sources; thus the importance of working with more contemporary examples and looking backward into the past, assessing their significance.

¹ Lincoln Paine, "Aspects of a Global Maritime History," *Nautical Research Journal* 43, no.3 (1998): 131.

Certainly there are not many pages devoted to junks in standard western works on ships. The volumes which have been produced, each proclaiming to be the world history of ships of one sort or another, is beyond count. Earlier versions of these texts often feature exclusively the specific development of western vessels, while later versions stand a better chance at including at least one or two pages devoted to non-western coverage.² Invariably these inclusions fall under the heading "Far East," to which one possible reply is "far from what?" The answer is "far from everything more familiar to us." Thousands of years of maritime activity in Arabia and South Asia are often condensed into a one-page treatment of the ubiquitous dhow, itself a type of misnomer. And the millennia of maritime history in East and Southeast Asia, likewise, appear often as a single treatment of the junk, another misnomer.³ Major topics, such as Pacific voyaging, continue to be excluded completely.⁴ Richard Woodman's recent generously titled *History of the Ship*, itself a summation of the Conway Maritime's 12 volume series of the same title, allows exactly seven paragraphs and a single picture in its 352 pages to stand for all of Asia's nautical contributions, which are after all, considerable.⁵ Chinese shipwrights were the first to develop the axial rudder, the balanced rudder, and watertight interior bulkheads. Chinese mariners were the first to use the compass for navigation. Chinese vessels, as will be shown in chapter four, featured some very advanced hydrodynamic designs and efficient air foil sails. What excludes them from the general maritime texts which pretend to comprehensive coverage?

² Some examples which come immediately to mind are: Bjorn Landstrom, *Sailing Ships* (New York: Doubleday and Company, Inc., 1969); G.S. Laird Clowes, *The Story of Sail* (London: Eyre and Spottiswoode Publishers, 1936); Duncan Haws, *Ships and the Sea: a Chronological Review* (New York: Thomas Y. Crowell Company Inc., 1975); William C. Heine, *Historic Ships of the World* (New York: G.P. Putnam's Sons, 1977); Peter Kemp ed. *The Oxford Companion to Ships and the Sea* (London: Oxford University Press, 1978); Clarence Winchester ed. *Shipping Wonders of the World* (London: Fleetway House, 1936). These all claim comprehensive world coverage, yet fall far short of the realization.

³ Symptomatically perhaps, neither "dhow" nor "junk" are terms truly native to the appropriate region. Dhow is a Swahili term for local vessels, from the mixture of Bantu and Arabic; junk comes from Southeast Asia via Portugal, a term for local Southeast Asian vessels.

⁴ According to some scholars, this is due in part to the fact that perceptions of the Pacific have only recently come to include its global significance, recent meaning since the mid-19th century. George H. Danton, in *The Cultural Contacts between the United States and China* (New York: Columbia University Press, 1931), 99, states that it was left to Seward to formulate the significance of the Pacific and Roosevelt to popularize the idea of the Pacific.

Critique of Standard Maritime Histories

The problem of representation for non-European topics like Chinese ships involves the very general bias in history and historiography. What appears in these allegedly comprehensive works on maritime history is the maritime version of a historical modernist tradition. Nineteenth century historians, such as Leopold von Ranke, played a large role in defining the "modern" science of history, at the same time crafting a script of a kind of "Great Nation" theory of history, one that simply wrote many other cultures into oblivion. In such a "modern" view, China was a civilization which belonged to the past, while the emerging nations of Europe were the real elements of history. The maritime equivalent to von Ranke was Alfred Thayer Mahan who, with his *The Influence of Seapower upon History, 1660-1783* published in 1890, began the script of "Great Navy" theory in maritime history.⁶ According to Mahan, to build a great nation, one needed to possess a great navy. Navies with modern battleships could dominate the seas, controlling sea lanes and commerce between colonies and the motherland. Europe's own history of internecine warfare and powerful navies exemplified this pursuit of greatness.

In such a narrow view, only the branches of nautical evolution which led, in hindsight, to the achievement of the modern warship were worth studying. Non-European maritime histories, though they had carried the bulk of world trade for many centuries prior to the breakout of Western Civilization, are not part of that developmental timeline, and thus not represented. Since Mahan's time, all general "history of the ship" type books feature a standardized plot of Egyptian—Greek/Roman—northern European background, leading to the European ships of discovery, the Royal Navy, the invention of steam, and ending up somewhere around the era of the aircraft carrier. It is an argument buttressed by an almost Wallersteinian focus on the pivotal period of European voyages of discovery, and the origins

⁵ Richard Woodman, *The History of the Ship* (London: Lyons Press, 1997), 51.

⁶ Alfred Thayer Mahan, *The Influence of Seapower upon History, 1660-1783* (Boston: Little and Brown Company, 1890). Mahan, naval officer and historian, taught at the naval war college, and his book had a profound effect on national leaders then, as it still does today.

of global capitalism. The evolution of western ship construction is a story chosen in hindsight. And these steps are granted, probably falsely, the status of inevitability.

This is the maritime version of what has been referred to by modern scholars, such as J.M. Blaut and Marshall Hodgson and Andre Gunder Frank, as "tunnel history."

If they gave credit to anyone else, it was only grudgingly with a "history" that, like the Orient Express on the westward bound tracks only, ran through a sort of tunnel of time from the ancient Egyptians and Mesopotamians, to the classical Greeks and Romans, through medieval (western) Europe, to modern times. Persians, Turks, Arabs, Indians, and Chinese received at best polite, and often not so polite, bows. Other peoples like Africans, Japanese, Southeast Asians, and Central Asians received no mention as contributors to or even participants in history at all...⁷

This critique does not, of course, negate the unquestionable importance of Mediterranean seafaring, or the fact that voyaging traditions in the Mediterranean, in terms of exploration, colonization, and commercial trade, obviously existed thousands of years before the current era. These were unquestionably absolutely crucial developments, but on the world stage it is only a partial story. As Frank and others have pointed out, trade between large regional economies extends further back in time than the 16th century, much further in some cases.

The re-visioning effort of post-modernism and post-colonialism, however, has not made much of a dent yet in the literature of the sea. There is nothing new about the concept of Eurocentrism in historical analysis, nor has the concept vanished; it still applies in full strength to maritime subjects. A recent review of a collection of essays entitled *Maritime History, volume 1: the Age of Discovery* finds the situation little-changed, though the intention of this series, as editor John Hattendorf put it, is to announce the need for a broad and inclusive outline of maritime history.

Given the burgeoning literature on maritime anthropology...it seems clear that Hattendorf's multidisciplinary goals are stated rather than realized. Likewise, his denunciations of Eurocentricity and his call for a multicultural

⁷ Andre Gunder Frank, *Reorient: Global Economy in the Asian Age* (Berkeley: University of California Press, 1998), 3.

maritime history rarely finds expression in the essays...the essays in volume II, introduced by strong claims about the interaction of maritime cultures in the eighteenth century, rarely acknowledge the existence of non-European seafaring. Recent work on Indian Ocean maritime networks, for example, seems to have made no impression on the authors and editor...The verdict must be that these essays, although beautifully written by the biggest names in the field, do not constitute the new maritime history which Hattendorf sought.⁸

The same can be said for nautical archaeologists as well. For those focusing on the physical remains of the ships, most previous efforts have been along the lines of the script set forth in the 19th century. Tunnel history defines the resource base for the shipwreck hunters. The coverage of everything from Viking long boats to Columbus' caravel to the *Titanic* looms overwhelmingly large over any exceedingly rare excavation of dhows or junks. This has been noted and described at international conferences by scholars such as professor Fred McGhee, one of the few advocates of a more inclusive position, as a field which "does not adequately place its inquiries into a well-rounded contemporary context, practicing a limp, lifeless historicity that for various reasons is a by-product of a colonial mindset."⁹ Incorporating Said, Gilroy, Obeyesekere, Chomsky, and others, McGhee confronts the maritime archaeology field with its own "lack of engagement with postcolonial anthropology".¹⁰

The implication is clear: 'seafaring' means primarily *European* maritime endeavor, the only seagoing tradition considered appropriate for serious nautical archaeological inquiry due to its perceived pre-eminence. The only real exceptions to this rule of thumb, ironically, are the treasure hunters, who operate under a similar set of Eurocentric assumptions, but are simply more brazen in their opportunistically enraptured quests for fame and fortune (not too unlike their colonial predecessors).¹¹

As McGhee notes, most excavations in East Asia are conducted by salvage firms, not archaeologists. These are noted principally for the amount of porcelain cargo that will be

⁸ Jane Samson, review of *Maritime History volume I: the Age of Discovery*, in *Bulletin of the Pacific Circle* no.5 (June, 2000): 24-5.

⁹ Fred McGhee, "Towards a Postcolonial Nautical Archaeology," Texas A&M paper delivered at the Society for Historical Archaeology conference, Corpus Christi, Texas, 1997, 1.

¹⁰ Society for Historical Archaeology *Abstracts*, Shawn Carlson and Denise Lakey (ed.), 1997, 110.

¹¹ *Ibid*, 3.

sold at Christie's in London, and not for any archaeological information produced from the site. Most recently the salvage of the junk *Tek Sing*, by treasure hunters Mike Hatcher and Nigel Pickford, has elicited criticism from the academic community. The commercial junk, sunk in the early 19th century with great loss of life, represents the largest haul of porcelain yet placed for sale at Sotheby's auction house. There is no archaeological information about the ship structure or the personal artifacts of the passengers, crew, etc. Regarding a recent article on the project, "Hatcher's colourful career as a marine treasure salvor is described, but sadly there is nothing at all about the missed opportunities to do some serious underwater archaeology..."¹² Hatcher's organization likewise sold the cargo of the *Nanking* years ago, a commercial excavation widely regarded by archaeologists and preservationists alike as the classic example of the wanton destruction of submerged cultural heritage. The issues of commercial salvage versus archaeological study continue to divide the new field of nautical archaeology.

There is simply no question that, in the field of nautical archaeology, as well as maritime history, the overwhelming coverage is biased towards American and European. This is reflected in the specializations of the few major institutions which maintain degree programs in the field: St. Andrews in Scotland features Northern European studies, Texas A&M has a reputation in classical shipwreck archaeology in the Mediterranean Basin and the Black Sea, and East Carolina University focuses on colonial and Civil War era shipwrecks in the Americas. The small graduate certificate in maritime archaeology and history, at the University of Hawai'i, is the only program to intentionally address both Pacific and Asian maritime activity.

This narrowness in the maritime field, thankfully, is beginning to change, with the publication of specialized literature from individual regions such as the Indian Ocean,

¹² Martin K. Evans, UK Maritime Museum, communication with author 29 October 2000. The *Tek Sing*, from the brief historical documents available, most likely resembled the *Ning Po* which later crossed the Pacific.

featuring both West and South Asia.¹³ There are some newer works available on the maritime history of China, and studies such as this dissertation can hopefully add a little to this new direction. The National Museum in Beijing's underwater archaeology lab has, on a limited basis, begun investigations of submerged Chinese shipwrecks. No one, though, has really attempted a comprehensive and comparative true world history of ships, and it remains to be seen if such a thing is, in fact, possible at all.

Status of Asian/Pacific Maritime Literature

In terms of exploration and discovery, the Pacific Ocean remained one of the last areas on the globe to open itself to the Europeans. It's not surprising, then, that Pacific Ocean regional studies, let alone the subset of maritime transpacific voyages, have less of a background than other topics. Scholars such as Epeli Hau'ofa, Kerry Howe, David Chappell, and Nicholas Thomas have all taken notice of and expanded on the set of intellectual obstacles to Pacific studies, some of which first mentioned by J.W. Davidson in 1966. J. Arthur Lower, in *Ocean of Destiny: a Concise History of the North Pacific, 1500-1978*, recognizes certain psychological barriers to the field.

Although admitting that the world was round, Europeans found it difficult to conceive of it as a circle without ends. From the centre, the explorers and traders moved either towards the Far East or the Far West. The Pacific coasts of Asia and North America seemed to be the ultimate ends of long journeys. Even today the International Date Line is more than a place where a day is gained or lost; it indicates the mental limits of European expansion and the dividing line between two cultures.¹⁴

What has and has not been written about any given topic, such as Chinese maritime history in the Pacific, is a telling statement in its own right. Researchers such as Leonard Blussé, Jennifer Cushman, Gang Deng, and Sarasin Viraphol have all contributed to our general understanding of the Chinese maritime realm, but frankly a detailed treatment based

¹³ Refer to Anne Bulley, *The Bombay Country Ships* (Richmond, England: Curzon Press, 2000); David Parkin and Ruth Barnes, *Ships and the Development of Maritime Technology on the Indian Ocean* (Richmond, England: Curzon Press, 2000).

¹⁴ J. Arthur Lower, *Ocean of Destiny: a Concise History of the North Pacific, 1500-1978* (Vancouver: University of British Columbia Press, 1978), 2.

on Chinese maritime technology, on the kind of technological evolution so well represented for the west in the progression from ancient Mediterranean vessels to Viking long ships to Galleons, does not exist for the Asian world. The Pacific region is not much different. For a long time the reigning paradigm simply refused to acknowledge such things as the accomplishments of Polynesian seafarers. Captain De Bisschop (see voyages of *Cheng Ho* and *Fou Po II*) recognized this half a century ago, turning the current criticism specifically on the situation in the Pacific.

For a long time we have been given to understand (though in certain scientific circles it is now believed otherwise) that we owe not only our own civilization, but Civilization itself, and hence all the knowledge of which man can boast, to one or other of the peoples scattered around the Biblical cradle of mankind. Consequently our maritime knowledge is assumed to have come down to us from the prehistoric sailors who acquired the first elements of navigation along the shores of the Mediterranean and the Persian Gulf. Cretans, Phoenicians, Phocaeans, Sumerians, Sabaeans, Dravidians, and many others besides, have at various times been credited with the honor of being the possible fathers of the maritime civilization of the rest of the world, including Polynesia.

Numerous writers in many countries have written histories of navigation "from ancient times to the present day." They all have two points in common. First, it is always the Mediterranean Sea in which prehistoric man learned his first lessons in the art of navigation, where he took, one might say, his first steps on the water; to the Mediterranean is thus reserved the honor of having produced the ancestors of all the sailors of the world.¹⁵

Other maritime cultures, in De Bisschop's view, are either ignored, or treated as if from another planet. This situation highlights the significance of any non-European maritime works along these lines.

Only a rare few sources attempt to make a detailed study of Chinese ship construction available to anyone, let alone westerners. The pickings are, indeed, scarce. But where does one begin to investigate the evolution of Chinese junks? Very quickly the study risks being lost in the immense regional variations of designs. The sheer scope of the project is incredibly daunting. It is necessary to have limiting criteria which have relevance to the topic of the dissertation here. So, while not taking on the much larger task of general

¹⁵ De Bisschop, *Tahiti Nui*, 8-9.

vessel evolution, this dissertation investigates Chinese ship construction as represented in selected documented examples from the late 19th and early 20th century. What has been written about junks?

In general, documentary sources on Chinese junks can be divided into several basic categories, each of which to be examined in turn: 1) rare individual articles in western nautically oriented journals, chiefly from the 1920s and 1930s, focusing on ship construction; 2) a few chapters included in larger works by modern historians of maritime China, featuring information on the economic role in overseas trade; 3) brief first hand descriptions by westerners who encountered or traveled on Chinese junks in the 19th and early 20th centuries; 4) the very rare monographs produced by scholars specializing in Asia and nautical technology, such as G.R.G. Worcester and Joseph Needham; 5) Chinese language secondary sources, for there are a few, and 6) miscellaneous works. Interestingly, in all of these categories, photographs of vessels and shipyards in China are very rare. Some scholars have raised the issue of the reluctance of the Chinese themselves to be photographed.¹⁶ Newspaper articles are not included in the categories here, being more a matter for the historical ethnographers than for the historians of maritime technology.

What seems to be missing here are primary documents recorded by maritime Chinese themselves, regarding traditional coastal commercial sailing junks. The reason Chinese records on private commercial vessels are so scarce is a matter of some speculation. Merchants, fishermen, and sailors who went overseas and had contact with foreign cultures never formed the most respectable class of Chinese elite. As previously mentioned, private shipping was often not a higher priority to the official chroniclers of the Chinese empire. And sailors in not just the Chinese culture but in many cultures the world over are not noted as being among the first ranks of the literate. In Paul Chow's words (navigator of the junk *Free China*), "we're the first generation of fishermen to read and

¹⁶ Hommel, *China at Work*, vii.

write."¹⁷ Most researchers who have taken on the junk as a topic have noted the lack of primary information.

Notwithstanding the great antiquity and wide scope of Chinese literature, it remains a curious fact that little has been written concerning one of China's most important industries, shipping; and the national libraries of the world add little to general knowledge in this connection.¹⁸

Such is the more general situation regarding the more fundamental history of technology in general. Robert Gordon, author of "The Interpretation of Artifacts in the History of Technology," states:

...with few exceptions, practitioners of technology in historic times did not leave written records of their experiences. They usually had neither leisure or incentive to write because literary skills did not lead to advancement...Writing about one's own work has rarely been a part of the culture of artificer or mechanician [or shipwright].¹⁹

Individual Articles by Westerners

These articles range from the mid-19th century to the late 20th century. Most of them, though, originate from the 1920s and 30s. In the 19th century not only coastal China, but some interior areas as well, were carved into spheres of foreign influence. Major political structures, such as the Imperial Chinese Maritime Customs Service, were placed under foreign control.²⁰ It might be viewed as natural, then, that this period and the decades which followed feature many of the rare first-hand articles on Chinese junks. Illustrations in these articles range from none to fair, though some venture measured plans. There are no photographs.

¹⁷ Chow interview, 7 August 2000.

¹⁸ Worcester, *Sail and Sweep in China*, xiii.

¹⁹ Robert B. Gordon, "The Interpretation of Artifacts in the History of Technology," in *History from Things: Essays on Material Culture*, ed. Steven Lubar and W. David Kingery (Washington and London: Smithsonian Institution Press, 1993), 75.

²⁰ See Stanley F. Wright, *Hart and the Chinese Customs* (Belfast: Queen's University, 1950), 400. Of course, the Maritime Service dealt mainly with foreign trade...." Of native trade in the interior, and the movement of native produce and foreign goods along the coast in Chinese junks, we know nothing." Sir Robert Hart, 1873.

There is no need to annotate each individual article here. They are cited elsewhere, and appear again in the references. But what can be said about this type of source in general? It is interesting to note the fact that 15 of the 20 articles in question are from the nautical journal *Mariner's Mirror*.²¹ The *Mariner's Mirror* was and still is the literary organ of the Society for Nautical Research, established in London in 1910. Its mission was to encourage research into matters relating to seafaring and shipbuilding in all ages and among all nations, into the language and customs of the sea, and into other subjects of nautical interest. The Society played an early role in preserving Nelson's flagship *Victory*, and in founding the National Maritime Museum at Greenwich, the largest maritime museum in the world. Of the some 38 contemporary maritime journals today, the *Mariner's Mirror*, then, reflects the western and particularly British involvement with overseas nautical affairs. The quarterly journal was and is the logical channel for a great maritime power like Britain to present its findings from the field. If there is to be any bias inherent in the journal's contributions, it's clear from which side it comes. Taking all this into account, it's not surprising that the prominent authors represented by these selected articles are products of official British activities abroad. Lieutenant D.W. Waters, Lieutenant H. Lovegrove, and Imperial Maritime Service River Inspector G.R.G. Worcester combined account for almost half of the articles, all published in the *Mariner's Mirror*.

Another characteristic of this particular source is that most articles deal with individual examples of Chinese junks. Each is a separate sample of an unmentioned larger tradition. Perhaps this is the limitation of the venue. Articles in journals rarely are allowed enough room to expand into comprehensive studies. Perhaps, as well, this format reflects a very foreign and superficial approach to Chinese nautical affairs, each type of junk essentially a moment frozen in ethnographic time, an idealized form taken out of context. There is no selection by historical significance. The smallest river punt is equated with the

²¹ The full title from the first volume was "The *Mariner's Mirror*: wherein may be discovered his art, craft, and mystery after the manner of their use in all ages and among all nations..." The cover plate depicts English Mariners in 16th century Elizabethan dress, surrounded by the European instruments of navigation.

largest coastal trader. Such studies do not represent any systematic effort to record the maritime history of Chinese ships, but appear at random, when and where the authors happen to be able to conduct their research.

Chapters in Larger Works

Included as a side note in larger histories of maritime China, several modern scholars feature information on ship construction. The intention of these works is not to inspect individual examples of junks, nor to lay bare the technological evolution which created the complex artifact of the vessel, but to shed light on the maritime relationships and realities of the social and economic and political past in Asia. That is no small task, and such efforts are opening a large and relatively new area for research.²² Discussion of the types of ships involved, while not extensive, is therefore well fixed in historical context. It might be said here that familiarity with nautical technology might require a somewhat specialized background.

Jennifer Wayne Cushman, in her *Fields from the Sea: Chinese Junk Trade with Siam during the Late Eighteenth and early Nineteenth Centuries* (New York: SEAP, 1993), deals directly with the long distance coastal merchant vessels involved in the junk trade to Southeast Asia. She devotes a chapter, entitled "Chinese Maritime Sailing Vessels," to the broad discussion of junk classification. The nature of her sources is of the most interest here. Regarding these, Cushman finds that the situation in China is not clear, for vessels were not uniformly classified in official documents.²³ The *Hsia-men chih*, or Amoy Gazetteer, places all ships under the categories of merchant, ocean, and foreign, often confusing cargo and fishing junks. All similar designations, Cushman finds, could only be applied locally; all descriptions suffered from extensive regional variation. The general designation of ocean junks, though, stands out as a description of the larger vessels, whether fishing or merchant, capable of making longer passages from the Amoy region to destinations in Southeast Asia.

²² Hence the focus on summation and envisioning continuing directions of research at the Chinese Maritime History conference at the University of California at Berkeley, 1996.

²³ Jennifer Wayne Cushman, *Fields from the Sea: Chinese Junk Trade with Siam during the Late Eighteenth and early Nineteenth Centuries* (New York: SEAP, 1993), 45.

Like others, Cushman agrees that "present-day writings in western languages make more readily accessible data about the kinds of junks commonly used in China's native foreign trade, and the structural variations among them."²⁴ While providing the context, the Chinese sources do not describe the native vessels engaged in overseas trade. It is the foreign observers who go into the most detail in describing Chinese sailing junks. Cushman's own work draws what little there is from the Chinese sources such as the *Hsia-men chih*. Only a few pages deal with the actual description of the ocean-going junk, a few sketches, and no photographs. She does not rely on the primary and secondary western citations.

Sarasin Viraphol, in *Tribute and Profit: Sino-Siamese Trade, 1652-1853* (Cambridge: Harvard University Press, 1977), describes Chinese ship building activity in Siam. These were, of course, built as closely to Chinese traditional specifications as possible, for they were bound for trade at Chinese ports and hoped to be subject only to internal, not foreign taxes. There is no intention to include any description beyond tonnage, or the fact that Chinese junks from Siam included a great amount of the abundant teak from the area.

Richard James Aston, in "The Merchant Shipping Activity of South China, 1644-1860." (M.A. thesis, University of Hawai'i, 1967), also offers a glimpse of some detail. He includes a chapter called "Merchant Ships of the Ch'ing Dynasty." Aston finds same state of confusion and lack of any terms to even begin describing types of junks beyond individual localities, and goes on to state "few paintings, western or Chinese, show a junk with any semblance of reality."²⁵ Aston does an excellent job in laying out the difficulties of describing junks, recognizing the subjectivity of sailing qualities, the lack of any professional attention (meaning marine architects, draftsmen, etc.), and the bias of the colonizing culture against native industry. In fact, there is more description of the difficulties of description than there is the description of junks. He is forced to go all the way back to Marco Polo for a "good," and no doubt well worn description of the Chinese vessels. This is a difficult position. Such

²⁴ Ibid, 51.

a span across time leads to more generalities, and not a representation of the richness and variation in design. Aston includes only two line drawings.

Ng Chin-Keong, in *Trade and Society: the Amoy Network on the China Coast 1683-1735* (Singapore: Singapore University Press, 1983) devotes seven pages to a discussion labeled "ships and shipbuilding." Again, the author focuses on the significance of the Fujian region, and the predominance of the Fujian ship types.

Clearly, the expansion of the coastal shipping network had inspired the Fukienese to invent all these different models to suit the various navigational conditions on the coast. With these ships, they were able to penetrate into the remote areas on the coast of Taiwan, where they navigated in the shallow waters to collect native products from the village wharfs, or to undertake long-range voyages to Tientsin or Manchuria to transport bulky cargoes. Their expertise in navigation also enabled them to surpass natives of other provinces in the shipping industry. Their ship models were popular along the coast; even the government warships were modeled after them.²⁵

This is excellent information for the prioritization of certain regions over others. But what did they look like? What were these popular and efficient designs? Ng Chin-Keong's aim is not to indulge in junk description, but to review the relative numbers of large versus small junks operating in the region, many of them carrying sugar or rice from Taiwan. These junks are described in terms of tonnage, width, and number of masts. Such general information does not capture the significance of the junk design itself; it does not "read" the physical record to anything near its fullest potential.

Leonard Blussé, in *Strange Company: Chinese Settlers, Mestizo Women, and the Dutch in VOC Batavia* (Dordrecht: Foris Publications, 1986), devotes three pages to a general description of Chinese junks which would have been found in Batavia. These were likely built in Siam by Chinese shipwrights. Like others, he also notes that Chinese works

²⁵ Richard James Aston, "The Merchant Shipping Activity of South China, 1644-1860" (M.A. thesis, University of Hawai'i, 1967), 28.

²⁶ Ng Chin-Keong, *Trade and Society: the Amoy Network on the China Coast, 1683-1735* (Singapore: Singapore University Press, 1983), 147.

"give scant information about ships that sailed to [in this case] Southeast Asia."²⁷ He does, though, cite the *Hsia-men chih* as the best local source for descriptions of active junks on the coast. Little else is available for hard description, from Blusse's point of view: "faithfully drawn pictures of the Nanyang traders by contemporary artists are scarce and hard to come by."²⁸ Regarding one of the more complete efforts on describing junks, Audemard's *Les Jonques Chinoises*, Blusse states that the author "had to settle for crude woodblock prints borrowed from Chinese encyclopedic works."²⁹ Blusse's work includes several prints of historic junks.

Gang Deng has recently made much of the historical and economic background to Chinese maritime activities available to the West in his *Chinese Maritime Activities and Socioeconomic Development, c. 2100 B.C. – 1900 A.D.* (London: Greenwood Press, 1997). Several pages are spent summarizing various references to the Fuchuan, or Fuzhou ship, the dominant type of cargo carrier beginning as early as Song times.³⁰ A diagram from 1682, one often seen in other works such as Needham and Worcester, accompanies the rough description. As can be seen in the title, though, his aim is quite broad, and chiefly concerned with the summation of long term economic factors.

These sources go far in emphasizing the significance of the tools of transportation along the Chinese coast, in surrounding those tools in historical context. Most make mention of the difficulties involved in seeking an accurate description of the junks themselves; none really attempt a long treatment of it, for that is not the central purpose of any of these works. The maritime activity, the type of trade, the large scale operations and fluctuations of overseas activity, these are the major themes. Mention is made only in passing of the single object, the one crucial artifact, without which the topic itself would cease to exist.

²⁷ Leonard Blusse, *Strange Company: Chinese Settlers, Mestizo Women, and the Dutch in VOC Batavia* (Dordrecht: Foris Publications, 1986), 105.

²⁸ Ibid, 107.

²⁹ Ibid, 108.

³⁰ Gang Deng, *Chinese Maritime Activity*, 27-29.

Material culture studies would refer to this focus as downstream phenomena, as "forward linkage" in reference to the ships themselves. Such contextual analysis is one step removed from the physical artifact. Following the actual construction, it is the story of how the Chinese junks were used. Such focus may or may not (and in these cases, usually not) include much information about the central object itself.³¹ It is excellent for historical significance and context, but where are the vessels?

19th Century Observations

Primary impressions make up another type of source, western observers in China who witnessed, recorded, and sometimes traveled on Chinese ships. Western missionaries, diplomats, and merchant adventurers found themselves very early on in close contact with coastal populations. Their journals and reports reveal much that has not yet come to light in any other form. Their observations provide important clues to what life was like within the junk trade, and their descriptions of the vessels add to the small body of data. This remains true no matter that some of their observations were more influenced by cultural bias than others.

It is often the case that initial impressions of the totally unfamiliar tell us as much about the observer (if not more) than of the observed. Chinese sailing vessels and sailors must have appeared to some of them as a totally alien system of transportation. Some observers, such as Robert Fortune in the mid-19th century, would have preferred to avoid familiarity with Chinese vessels altogether.

On making inquiries as to vessels for the northern ports, I found there was nothing of the kind in port except the native craft--boats and wood junks--which were very unsafe...it would have been an act of madness to have trusted myself in any of these vessels, unless I had been tired of my life, or had had all inclination to spend some months as a prisoner on some piratical island. As I was not weary of life, and had no fancy for the alternative of

³¹ Forward linkages really include not just those who used (sailed) the junks, but others who later observe the artifacts. The concept of forward linkage thus encompasses the reactions of western visitors on board Chinese transpacific junks, a large part of this study; see Gordon, "The Interpretation of Artifacts in the History of Technology," 81.

being imprisoned with thieves and robbers for my Companions, I determined not to go to sea on a native vessel.³²

Evidence from what is, unfortunately, a somewhat limited resource can never be considered to be conclusive in any sense. This is especially true concerning observations by western foreigners in China. Considering how much is not known about the trade and its vessels, though, even somewhat inconclusive impressions might serve to shed some light on the topic. Before discarding observations by outsiders due to their more distant and often biased nature, it might prove useful to know what is contained in those observations.

From these initial impressions, many by these 19th century travelers who were not professional seamen, a general negative sense of the capabilities of Chinese junks is apparent. Junks are unwieldy, illogically conceived, and unsafe.

In sea-going craft the Chinaman does not shine, although there are few better sailors in the world than are to be found amongst the population of the seaboard provinces, and the courage and skill which they exhibit in handling their clumsy crazy vessels is something that needs to be seen to be believed.³³

No one embarks in this perilous enterprise without taking a solemn farewell of his family and friends; and should it be his fate to return, his restoration is joyfully celebrated as a resurrection from the dead. It would, perhaps, be impossible to discover a man, who, like Sinbad, had made a seventh voyage.³⁴

On the other hand, professional mariners, both in the 19th century and later, almost all have positive impressions of junks, particularly regarding the ease of managing batten lug sails and the sea-keeping qualities of the hull design. They are fast, seaworthy vessels, suited to safe and easy operation.

³²Robert Fortune, *A Residence among the Chinese: Inland, on the Coast, and at Sea* (London: John Murray Publishers, 1857), 225.

³³W.H. Medhurst, *The Foreigner in Far Cathay* (Edward Stanford: London, 1872), 152.

³⁴Note on 1810 etching, Hong Kong. Cited in Aston, "Merchant Shipping Activity," 30. Such dire consequences are hard to seriously entertain, given the frequency and sheer volume of Chinese junk traffic to Southeast Asia over the centuries. European vessels themselves did not capture the bulk of the trade from Chinese carriers until the mid-19th century; Anthony Reid, "The Unthreatening Alternative: Chinese Shipping in Southeast Asia, 1567-1842," in *Review of Indian and Malaysian Affairs* 27(1993), 13-32.

Sir Frederick Maze, then Inspector General of Customs, pointed out that the Chinese have probably shown more originality than any other people in the art of shipbuilding, and commented on their ingenuity in designing vessels to suit special requirements and different conditions...Within these broad categories—from the humble and ubiquitous sampan to the great three-masted junks of Foochow—there are hundreds of different types, each designed for efficient and economical use.³⁵

These contrasting opinions have led to a decided split in western perceptions of junks, with very few falling into the middle.³⁶ Chinese vessels fall into either one or the other extreme category, either very unwieldy or quite seaworthy. This is a phenomenon which extends well into the 20th century. It is a mixed reaction that is to be expected given the lack of in-depth understanding of the subject. In short, contemporary impressions from the 19th century are helpful, but must be used with extreme caution given the tendency to mix what appears to be healthy doses of cultural bias with plain observation. Some of the most detailed treatment of conditions on board junks in China comes from Karl Gutzlaff, the aggressive German missionary who devoted much time to condemning ships, crews, and China's general coastal culture alike.

Rare Monographs

There are a number of specialized monographs which focus on the nautical technology of Chinese vessels, though not many are truly substantial works which deal systematically with the topic. The majority are sketch books, notes on vessels casually observed and equally casually commented upon, for quick consumption in the west. Only a few works truly delve into the subject with a passion. Ivon Donnelly, author of a number of individual articles in the *Mariner's Mirror*, also produced some of the early collections of junk sketches and brief descriptions.³⁷ These are a random selection of picturesque craft drawn from an artist's perspective. Likewise, Valentin A. Sokoloff, in *Ships of China* (San Bruno,

³⁵ L.K. Little, retired Inspector General Chinese Customs Service, in prefatory note, G.R.G. Worcester, *The Junks and Sampans of the Yangtze* (Annapolis: Naval Institute Press, 1971).

³⁶ Modern scholars make particular note of this oddly mixed situation. See Aston, "Merchant Shipping Activity," 28-32; Blusse, *Strange Company*, 108-9.

California, 1982), contains some descriptions, but features color sketches of randomly selected vessels from an artist's point of view. Both are wonderful works, but limit their focus to superficial depictions of a narrow selection of junks.

One of the three best known monumental works on the subject of ancient Chinese vessels is Joseph's Needham's *Nautics* volume in his immense *Science and Civilization in China*. This is one of the only two works to include any photographs of historic Chinese junks in serious analysis. Needham's scope begins with the very origins of seafaring in Asia and stretches all the way to the 20th century. Within this broad spectrum, sailing junks within the past several hundred years occupy only a minor segment. The theoretical treatment of elements of nautical technology, however, is solidly laid forth, and his contributions have yet to be paralleled.

Les Jonques Chinoises (Rotterdam: Museum Voorland, 1962), by L. Audemard, serves to juxtapose many different regional designs, highlighting the immense variety of Chinese junks from the Yangzi River basin. Commander Audemard served on the Yangzi River between 1902-1910, publishing his six separate monographs in 1948. His sketches include junk types from the delta to western Sichuan. Importantly, his sketches and text provide a detailed look at some of the features associated with true oceangoing junks from southern China.

George Raleigh Gray Worcester, a sailor by profession (midshipman in the royal Navy), served for 30 years as the River Inspector at Shanghai for the Chinese Maritime Customs Service. The Inspector General at the time, Sir Frederick Maze, released him to survey Chinese maritime technology inland up the Yangzi River. Eight years of fieldwork culminated in three years detention in a Japanese interment camp for both the River Inspector and his wife. He later published five definitive works on Chinese junks of the Yangzi Basin, supervised the construction of the Maze collection of junk models, and served

³⁷ Ivon A. Donnelly, *Chinese Junks: a book of drawings in black and white* (Kelly and Walsh, n.d.); *Chinese Junks and Other Native Craft* (Singapore: Graham Brash, 1924).

for seven years as the editor for, yes, the *Mariner's Mirror*.³⁸ He is generally recognized as the single authority on traditional Chinese sailing vessels of the early 20th century, with one important restriction. His work attempts to be comprehensive for a single region, focusing, as it states, on the junks and sampans of the Yangzi river, not seagoing coastal junks (though fortunately he includes the Fuzhou pole junk in this riverine category as a vessel frequenting the lower reaches of the waterway).

Worcester's *A Classification of the Principle Chinese Sea-going Junks South of the Yangtze* (Shanghai: Statistical Department of the Inspectorate General of Customs, 1948) is a unique work, a beginning of the classification of seagoing junks along the Southern Chinese coastline. It consists, though, only of a single very rough side-view drawing of each junk, and a few very brief notes on length, beam, etc. As cursory as this work may be, there is no other that attempts such a truly systematic regional treatment of oceangoing vessels. This single source is featured throughout the following chapter not solely on its infallibility, but on the fact that there is nothing else of even similar intent.

The same author, Worcester, also completed *The Floating Population of China* (Hong Kong: Vetch and Lee, 1970), which features a narrative of some of the social customs of the seafaring population. Worcester's *Sail and Sweep in China* (London: Her Majesty's Stationary Office, 1966) summarizes his earlier material, including notes and pictures of most of the items in the Chinese watercraft exhibit in the British Science Museum. This is his best work in terms of classifying general regional design features, though it deals only with a few actual junk types by way of example.

The main limiting factor regarding most of these important references is the fact that they focus on inland river basin junk types, vessels moving in the domestic trade between controlled accessible ports, and therefore much more available for study than coastal itinerants.

³⁸ Back leaf, Worcester, *Junks and Sampans*.

Chinese Sources

Here, oddly enough, there are only a few scarce sources that describe in detail the types of traditional sailing junks in China in the 19th century. It becomes quickly obvious, though, when searching for specific material on the 19th century junks, that "ship construction" in China during this period meant, for all concerned, the construction of a modern steam navy, under the direction of Li Hongzhang and other modernizers in the late 19th century. Chinese ship construction was a critical topic, and was wholly involved with getting beyond the limitations of wind and wooden vessels. The Fujian shipyard, purchased from the French, stands out as the premier experiment along these lines. Examples of this are the *Fujian Chuan Zheng Ju Shi Gao*, by Lin Ch'ing-Yuan (Fuzhou, 1986). The design of wooden sailing vessels at this time, long taken for granted, is completely overshadowed. In a similar vein, older texts often do address shipyard activities and such things as the amount of wood necessary to build junks of a certain type. The *Nan Chuan Ji* (*Notes on Ships of the South*), the *Long Jiang Chuan Chang Zhi* (*Records of the Dragon River Shipyard*), and the *Cao Chuan Zhi* (*Record of Grain Carriers*) all give some accounts of the manpower and material required for construction of ships, but there is absolutely no mention made of vessel design.³⁹ In the words of Joseph Needham, "systematic nautical treatises did not arise in Chinese culture, or at least did not get into print."⁴⁰

The *Hsia-men chih*, or Amoy Gazetteer records some general descriptions of 19th century vessels at anchor in the commercial harbor. This is probably the best known primary source for contemporary junk types, though the construction details, measured drawings, or any solid representations, are notably lacking. It does not provide enough information to differentiate between closely related types.

The Sun Yat-sen Institute for Social Sciences and Philosophy, within the Academia

³⁹ Zhou Shide. "Shipbuilding," in *Ancient China's Technology and Science* (Beijing: Foreign Language Press, 1983), 484.

⁴⁰ Joseph Needham, *A History of Science and Civilization in China*, vol.4 (London: Cambridge University Press, 1971), 3, 380.

Sinica in Taipei, Taiwan, has compiled a series of maritime history essays under the general title of *Zhongguo Haiyang Fazhan Shilun Wenji*, or *Essays on Chinese Maritime Development* (six volumes). These pay some attention to basic junk designs, but are more wholly devoted to maritime activities, and more useful for understanding the historical context and economic significance of Chinese junks, than in investigating the ships themselves.

One volume deals specifically with Fujian junks, *Zhongguo Fanchuan yu Haiwai Maoyi*, yet this is a volume only a few of the roughest sketches in an appendices, as well as an oft-repeated 1682 diagram. Other works include *Zao Chuan Shi Hua* from Shanghai's Jiaotong University, and *Zhongguo Gudai de Zao Chuan he Hanghai*, but these are only general works addressing the whole of Chinese maritime history in a single source. They address only very general classifications of historic junks, such as Fujian style ships and shallow-bottom style ships, without providing details on any specific types.

For historical significance and information on activities and setting for these Chinese vessels, the above sources come in handy. They contribute little, though, by way of real information on the actual object itself.⁴¹ The basic reasons for this are common to cultures far beyond China's borders: traditional vessels of seafaring people were typically never built by plans or documents, but by "eye," the knowledge being passed from person to person within a closed guild or community of shipwrights. China is not the only case. For western vessels, this situation only began to change in the 18th century, when a conscious effort was made to inject scientific construction techniques into the previously closed and closely guarded art of the shipwrights. This situation changed much later for China, an empire that had not seen any need for such an effort until the attempt was made to establish a modern steamship yard at Fuzhou in the mid-19th century. Consequently, in European maritime history there is much speculation but very little agreement as to what Greek or Roman

⁴¹ Wu Chu Pang, Director of the Maritime Museum at Macao, cites G.R.G. Worcester and Luis Audemard as some of the best primary information available in their archives; personal communication with author, March 29, 2001.

triremes once looked like, as to the true nature of Christopher Columbus's small ships, and even as to the appearance of the huge Manila Galleons which crossed the Pacific ocean annually for hundreds of years. Likewise, no one is absolutely sure how historic Fuchuan junks in China were really built, before such things began to be intentionally and carefully recorded.

Miscellaneous Sources

Some works simply refuse to be easily categorized. What do we do with the world famous collection of Chinese maritime paintings held at the Kelton Foundation in Marina Del Rey, California? Or what, for instance, does the historian do with model collections? A model of a junk is not something that can be easily cited or reproduced. It does not lend itself to photocopying. Yet, over the centuries, for many shipwrights not just in China but around the world, the physical model was the only "document" necessary for the construction of the full scale ship. Though models cannot be copied, photographs portraying these collections do exist. What type of document is that? Are these primary documents? Do such questions about vessels even make sense?

There are several major collections of Chinese junk models around the world. None feature any given emphasis on one time period or region, but include ship designs in a somewhat haphazard manner. The Maritime Museum at Macao maintains a collection, as does the National Science Museum in London and the Maritime Museum in Venice, Italy. Texas A&M University in College Station has a small collection of river junk models, and the National Maritime Museum of Antwerp has junks as well. In Fujian Province, the Museum of Chinese Overseas Communication History has information of earlier vessels, and the Watercraft collection in the United States National Museum, Washington D.C. has some models. These may contribute in a small way to the analysis of the selected junks, but a full investigation of all these collections would result in a study of model collections, and not the ten vessels that crossed the Pacific.

Equally difficult to categorize are the scattered bits and pieces of the ships themselves. Material remains cannot by any stretch be included in a survey of literature available for Chinese junks, but the small group of archaeological reports featuring the remains of Chinese junks does fall under this heading. Most of these focus on the cargo, often the ceramics, being hastily excavated for sale at Christie's auction house in London by joint Chinese-foreign salvage expeditions. Information on the structure of the ship itself is quite limited from these types of projects. Chinese nautical archaeologists have, in the past, been focused on the expansive period in Chinese history between the Song dynasty (960 A.D.) and the early Ming dynasty (1368 A.D.).⁴²

A few expeditions, though, feature a greater emphasis on the "non-profitable" aspects of the wreck site. The Australian Institute for Maritime Archaeology, in cooperation with the Beijing National Museum Underwater Archaeology laboratory, worked for several seasons on the coast of China. Shipwrecks of coastal traders were discovered at various locations such as Ningpo, South Korea, Guangzhou, etc. Reports were issued concerning these wrecks, but generally the information on ship structure was limited to approximate width and length only. A few details, such as fastener technology, or details of a mast step, have occasionally surfaced. This is difficult work, and such sites often feature strong currents, low or zero visibility, and otherwise quite dangerous conditions. Increasingly, Chinese and non-Chinese nautical archaeologists are becoming more interested in the ship construction features as can be determined from the physical record. The lack of serious historical documents is only one of the reasons for such emphasis.

Random Glimpses of Random Vessels

What can be said in summation of the state of scholarship on Chinese junks? It seems incomplete at best. There are certainly highlights: the distant origins of the Chinese junk and ancient developments is nowhere better captured than in Joseph Needham's monumental work. And the vast variety of riverine craft from the *Chang Jiang* (Yangzi) river

⁴² Ben An Liu, nautical archaeologist Beijing National Museum Underwater Archaeology Lab, personal communication with author, 20 February 1997.

are lovingly described in Worcester's single volume. Beyond these, a few random articles include some details, but the general state of literary resources does not go much further. Regarding the detailed description of traditional seagoing junks such as would be found in the 19th century, there are only a few pieces that take on this work. Photographs of these same junks are exceedingly rare, drawings are suspect, and written descriptions are often unsound.

Western paintings and etchings of the nineteenth century depicting junks are quite valueless, as they are too unconvincing and inaccurately portrayed to facilitate any recognition of definite types. An exception to this must be made in favour of William Alexander of the Macartney Mission in 1792.

It is greatly to be regretted that so many erroneous and misleading statements about, and drawings of junks have crept into the pages of modern books by well known and respected writers on nautical subjects. Doubtless in the absence of first-hand knowledge they were obliged to tap such sources as were available to them, notably the Far Eastern models in various museums, which models, alas, are sometimes far from being correct.⁴³

From the point of view of larger regional histories and even world histories, it would seem that the long distance 19th century commercial Chinese sailing vessels stand out as particularly significant. These were the vessels that carried the bulk of Asian trade throughout East and Southeast Asia. These were the vessels that maintained communication between scattered overseas Chinese communities.⁴⁴ Yet there is no particularly detailed treatment of this group of junks.

Is the physical description of the Chinese junks even a topic for historians to which to turn their attentions? Absolutely. Junk construction is at heart a statement of culture, the best "real" document of the past practice of the Chinese seafaring population. The study of material culture has been summarized as the object-based branch of both cultural anthropology and cultural history.⁴⁵ As a topic for material culture, the object of the Chinese

⁴³ Worcester, *Junks and Sampans*, 19.

⁴⁴ More on the significance of this class of vessel in chapter four.

⁴⁵ Jules David Prown, "The Truth of Material Culture: History or Fiction?" *History from Things*, 1.

junk represents a highly significant unit of transportation, a "machine" created within the context of social and economic and political realities. It is a technical artifact and more. It is not a single field solely for anthropologists, or archaeologists, or museum specialists; in order to gain a coherent glimpse from the scattered sources of this topic, it is time to take more of an interdisciplinary approach to the topic of Chinese junks, and find what history can be gleaned from written documents, photographs, models, and the material culture itself. Perhaps it is time to attempt to rescue the maritime history of these junks from what might be termed the "popular" histories, the daring sea stories of adventurers and showmen and Pacific exploits, into which they have fallen in the past.

CHAPTER 4

THE JUNKS THEMSELVES

Besides simply labeling these vessels "junks," what really are they? By combining the sample of Chinese junks that crossed the Pacific with what is currently known about Chinese junk construction, we can finally evaluate these vessels properly. The question of "what do these selected junks represent from the technical standpoint?" involves, naturally, issues of classification and significance. What do they convey to us besides stories of adventures on the high seas? In order to answer this question, we must analyze each in terms of the information available. We need to open the historical resources to include photographs and artifacts. The material record, though more difficult to cite, has, from the perspective of technology, the advantage of tangibility, a certain physical permanence not afforded to documents. Whatever may be written about any given vessel, the physical reality remains. And the fact of their physical existence demonstrates, in ways no document can quite capture, the deep differences between European and Asian vessel technologies. If there is one rule of thumb when it comes to assessing Chinese junks, it is that they are quite unlike Western vessels in many different ways. Most of these differences center around hull construction, sail rig, and rudder design. This would have a profound effect on the Western perceptions of these transpacific junks.

To begin with, and though it is used throughout this study for convenience, the term "junk" itself proves to be ultimately unsatisfactory. What can be said about a basically derogatory term applied to the multitude of Chinese vessels, many of which predate all the ships European seafarers later built? That we lack the language, or even the desire for the language, capable of discriminating among the varieties of junks has not helped matters. "Junk" is a word like "piracy," which in the western languages finds frequent use yet remains fairly undefined. No one is even sure of the origins of the term "junk," though it is suspected that Portuguese voyagers, encountering Javanese mariners in Southeast Asia, were informed that local boats were called "djonq" or in Portuguese "junco," and, hence, adopted

the word generally for any Asian vessel, no matter the size or design.¹ It is a term, then, more associated with the East India Trading Companies than it is directly with Chinese sailing vessels. What, for example, is the difference between a junk and a sampan?

The English word "junk" also referred in the historic sailing world to over ripe pieces of salt beef, as well as the most obvious reference denoting useless scrap of any type. A term more apt to specifically denote nothing is hard to imagine. As standardized for the West, a junk is "a native sailing vessel common to Far Eastern seas, especially used by the Chinese and Javanese."² Soon enough the dictionary ends its brief paragraph on the junk, and moves on to the definition of "ship," meaning the western ship, stretching out to nine pages. Naturally, the Chinese have always been much more precise in their terminology compared to this, at the very least attaching a regional marker to "chuan" or boat, as in for instance *fuchuan* or Fujian boat, and *guangchuan* or Guangzhou boat.

Inadequate language marks the whole investigation of Chinese junks. It is, in fact, a more general phenomenon applicable to the whole maritime field. For English nautical words and expressions, many of the terms owe their origins to a multiplicity of Greek, Spanish, French, Dutch, Scandinavian, and East Indian words. This is a reflection of the fluid and far spanning nature of the maritime experience. The extensive maritime terminology alone sometimes seems a separate language in and of itself, and is therefore the proper subject for separate specialized dictionaries.³ This has particularly baffled researchers in Chinese nautical history, for the abundance of terms used in the technical description of Chinese junks often existed only in spoken dialects, not written form.

So far as is known there is nothing in Chinese literature that sets out such terms; practical men did not commit themselves to writing, and literary men

¹ Kemp, *Oxford Companion*, 437.

² Ibid.

³ Such as William P. Mack and Royal W. Connell, *Naval Ceremonies, Customs, and Traditions* (Annapolis: Naval Institute Press, 1980); A.C. Brown and J.N. Daniel, *Sea-Lingo: Notes on the Language of Mariners and Some Suggestions for Its Proper Use* (Newport News VA: Mariner's Museum, 1980); C. Ozaki, *Japanese-English Dictionary of Sea Terms* (Berkeley: University of California Press, 1943); and the *Yinghan hanghai cidian* (English Chinese maritime dictionary).

had little or no knowledge of the building and handling of ships. At best scholars could only make commentaries on technical terms which even their predecessors had perhaps only half understood. So although Chinese encyclopaedias from the third century B.C. onwards, generally contain sections devoted to shipping terms, it is noticeable that the majority of these concern types of boats and ships long obsolete...⁴

Even Worcester's decades of extensive research met with such difficulties, since:

...even the finest shipwrights and sea-captains with whom he worked, could not write, nor could any members of their crews or families. It is clear, then, that there are certainly many spoken craft terms for which no written forms exist at all. Indeed, an official eighteenth-century Chinese scribe had to invent characters for certain words used by his informants...And lastly terms vary from port to port.⁵

The Chinese nautical lexicons which do exist, such as the *Yinghan hanghai cidian*, feature modern sea terminology and have little or nothing to do with the sailing of wooden junks.

There is no need here to attempt the immense task of an analysis of all Chinese ship construction, which might not even be possible. That junks are complex and have undergone a variety of evolutions and regional variations is the perspective here, specifically that one cannot pigeonhole junks into any simple one-word definition. For certain types of vessels, a detailed analysis, though rare, is available, and there is no need to repeat that work here. What we do need to do, though, is engage in enough analysis of Chinese junk features to be able to analyze these ten examples within this dissertation. Junk construction and design must be understood enough to be able to place these examples within the larger Chinese maritime context. Are they what we say they are? Are they vessels which represent long established Chinese features? Are they "traditional?" Where do they fall in that continuum between unchanging designs and dynamic change? And having classified them, what does such knowledge have to do with their historical significance?

⁴ Colin A. Ronan, *The Shorter Science and Civilization in China*, vol.3 (London: Cambridge University Press, 1986), 75.

⁵ Ibid, 76.

Remembering Features in Junk Construction

In assessing the technical nature of these junks, certain specific elements of Chinese ship construction must first be examined. What are the long established Chinese construction features, and what are the more recently introduced changes? Here we are forced to draw principally from the junks themselves, as well as commentary from the scattered secondary sources, for a glimpse of what was after all never recorded by the builders in any form other than the actual creation.

For illiterate but intelligent shipwrights who never had time to take the imperial examinations, these features are the "documents," so to speak, of the skills of coastal Chinese craftsmen. Design features unique to the China coast and common to many different styles can be found in junk hulls and fasteners, masts and sails, and rudder systems. It seems probable that such statements from the Song dynasty as "Fujian is unsurpassed in the building of sea-going vessels," refer not to specific craft but to a body of knowledge applicable to multiple designs.⁶ Thus features outlined here are general rules and for the most part avoid going into complete detail. Stylistic variations by region will always introduce changes to junk designs, but an attempt must be made to understand the more universal elements of Chinese ship construction.

In terms of material culture, curator Steven Lubar suggests approaching variations in technical styles in terms of a "pattern language." This approach "suggests something of the thought patterns of the practitioner [shipwright]...they provide a grammar not of the finished products but of cognitive strategies, a series of mental templates to guide the work of design."⁷ Adhesion to established patterns in the construction of artifacts made it possible for craftsmen to measure their product, to define and judge their artifacts. It has been noted in the past by others in the maritime field that ship designs and shipwrights themselves tend

⁶ Zhou Shide, "Shipbuilding," 481.

⁷ Steven Lubar, "Machine Politics: the Political Construction of Technological Artifacts," in *History from Things: Essays on Material Culture*, ed. Steven Lubar and W. David Kingery (Washington and London: Smithsonian Institution Press, 1993), 209.

to remain very conservative for most of history. The cost for failure, for experimentation with radical and nonfunctioning designs at sea, was high indeed. Vessels vanished with their crews. Mediterranean galleys existed into the 16th century; the basic design of the full-rigged western sailing ship remained essentially unchanged for hundreds of years; the introduction of steam power itself was a slow process unwelcome by many and marred by sometimes spectacular failures. Once shipwrights developed a toolkit of successful strategies, these tended to remain fixed.

Others more recently have challenged this generality, this type of received wisdom of maritime theory. Vessel design obviously does change through time, and at certain periods may prove quite dynamic relative to other eras. Placing the Chinese sailing junk into a continuum of change, and viewing individual features as pieces of a language which make up the patterned whole, may be a better perspective with which to understand the behavior of the ships, the sailors, and the Chinese shipwrights.

Pattern languages exist within the realm of material culture studies for such things as precision measuring machines and architecture. What is the basis for understanding Chinese ship construction? What are the parts of the language, the constructional features, and how do they fit together?

Hull and Structure

This section encompasses the basic shape and construction features of the Chinese junk hull. Overall, the Chinese junk hull is quite different from anything known in the West. Influential nautical scholars, such as Basil Greenhill, J. Hornell, and Joseph Needham, have postulated that the design of vessels, from the very beginning of shipbuilding in China, have been along totally different lines compared to Western vessels. In approaching these early variations, nautical researchers have divided ship construction into several divergent directions. Four basic "roots" of shipbuilding are recognized by maritime ethnographers: 1) rafts, 2) skin boats, 3) bark boats, and 4) log boats. While western vessels are considered

descendants of log boats such as dug-out canoes, Chinese junks are, in the general assessment, seen to have developed from bamboo raft traditions.⁸ Even details such as the internal bulkheads of Chinese junks are seen as possible representations of the internal dividing septum of bamboo, the material used for many ocean-going rafts in China up until recent years. Others still maintain the possibility of the junk design coming from the dug-out boat tradition.⁹ Some even hold out the theory that junks and sampans are the offspring of an as-yet-undiscovered twin-hulled log catamaran.¹⁰ In short, an accurate picture of the origins of junk design is less understood than the evolution of western boats, but the final form has been strongly associated with the very building material for the ancient sailing rafts, "a natural model ubiquitous in East Asia, the longitudinally split bamboo."¹¹ This issue has particular significance not only regarding the shape of the vessel, but over the internal structure as well. The rounded form of the hull reflects the curved bamboo stem, and the solid interior bulkheads the bamboo's dividing septa.

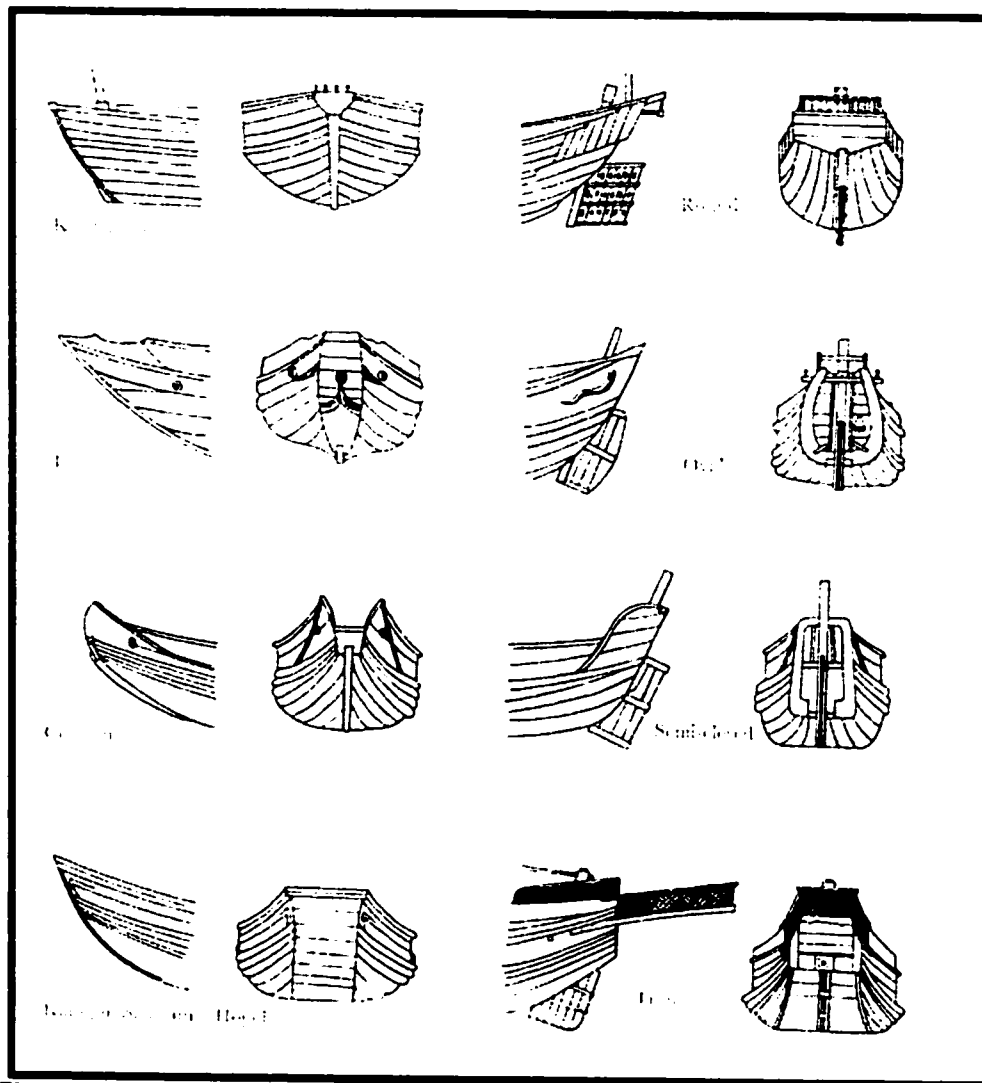
Since these early beginnings, the Chinese hull and its general pattern remain constant, and yet the particular designs of the bows and stems have proliferated into a great variety of regional distinctions. Although not always 100% accurate for identification purposes, these designs can be generalized along northern and southern influences.

⁸ Basil Greenhill and John Morrison, *The Archaeology of Boats and Ships, an Introduction* (Annapolis: Naval Institute Press, 1995), 78; J. Hornell, *Water Transport: Origins and Early Evolution* (Cambridge: Cambridge University Press, 1946), 90; Ronan, *The Shorter Science and Civilization*, 69.

⁹ Possible exceptions to the raft origins of the junk are noted in Paul Johnstone, *The Sea-Craft of Prehistory* (Cambridge: Harvard University Press, 1980), 186-7.

¹⁰ Hornell, *Water Transport*, 88.

¹¹ Ronan, *Shorter Science*, n65.



**Figure 12: General regional distinctions in bow designs on left half of figure and stern designs on right half of figure.
(Worcester, Sail and Sweep, 17)**

Returning to more universal elements of hull construction, the general shape of the hull of a Chinese junk is traditionally quite different from that of "modern" European vessels. The classic form of the wooden European sailing ship, at least from the time of the 16th century onwards, has been very bluff at the bow...in other words, the widest point of the hull was forward of the midsection of the vessel. In 16th century documents this shape was sometimes compared to that of a fish swimming through the water, a hybrid fanciful creature of a thick-headed cod with a long trailing mackerel tail. Chinese junks, by comparison,

feature the widest point aft of the midsection of the hull. The form to be emulated is not the fish, but the duck, which floats on the water and not in it.¹² Modern racing yachts are now built along the latter design, the Chinese hull shape in plan view (top down) with the widest beam aft of midships. The most advanced hull shapes today emulate long-established Chinese designs, not European models.

The use of watertight bulkheads, which in China extends as far back as the late Han dynasty, is one of the most significant contributions to the field of nautical design.¹³ Bulkheads, and the inherent increase in safety, were not adopted by the West until the creation of large iron hulled steam ships such as the *Great Eastern* in the 19th century. The junk's hull gains its strength through the combination of multiple interior bulkheads and thick wales, or stout planks along the side of the hull. Cargo spaces are thus watertight and individual, all potential flooding being isolated to the immediately affected hold. The spacing of bulkheads was not uniform, but determined by the need to separate functional areas: living quarters, fish holds, cargo holds, etc.¹⁴ Hull planks were edge-joined to each other using vertically angled nails, as well as attached to the edges of the transverse bulkheads.

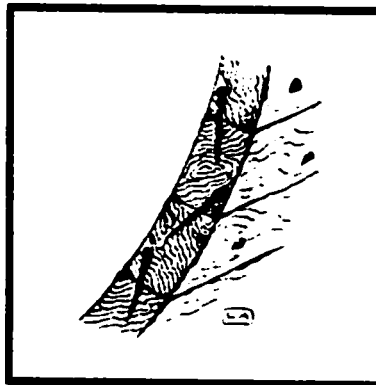


Figure 13: Diagonal edge nailing.
(Johnson, *Shaky Ships*, 21)

¹² *Ibid*, 85-6.

¹³ Gang Deng, *Chinese Maritime Activities*, 24.

¹⁴ Albert S. Gould and Gerald J. Foster, *Junks—Construction and Regional Characteristics* (China Lake: US Naval Ordnance Test Station, 1965), 10.

The main visual evidence of edge nailing in photographs of junks are rows of triangular notches, usually filled with Chinese caulking compound. The continuing use of this fastening method is well-described in John Muir's recent thesis, *One Old Junk is Everyone's Treasure: the Excavation, Analysis, and Interpretation of a Chinese Shrimp Junk at China Camp State Park*.¹⁵

In contrast to this tradition, the general European experience dictated ships to be built essentially as strong hollow shells, void of internal structure which would interfere with cargo space or the operation of ordnance on long open gun decks. Hull planks were attached to a previously assembled skeleton of narrowly spaced frames or ribs, and seams along the planks were caulked. Longitudinal timbers ran the length of the western hull, particularly along the lower areas of the bilges and keel.

In the western vessel, strengthening longitudinals are widely distributed around the entire hull surface, but are concentrated at the keel, the deck line, and the bilges. The deck is devoid of longitudinals. The longitudinals and frames form a "cage" which determines and maintains the shape of the vessel. The "cage" is anchored to the keel and deck-edge strength members.

In the junk, the arrangement is almost reversed. Most of the heavy fore-and-aft timbers are in the sides, often at the deck line, and in the deck and upperworks themselves. The relatively thin bottom planking is analogous to the equally thin deck planking of the western craft. Unlike the western craft which is "built up" from its keel, the junk is "hung" from its deck.¹⁶

There is a fairly clear understanding of the stresses involved in building wooden sailing vessels of the western design, and these stresses ultimately limit the size of western vessels to a little over 300 feet long, the size of the largest sailing cargo schooners ever built in the late 19th and early 20th centuries. The precise knowledge of the stresses involved in the designs of junks, so unlike western vessels, is not as clear.

¹⁵ John C. Muir, *One Old Junk is Everyone's Treasure: the Excavation, Analysis, and Interpretation of a Chinese Shrimp Junk at China Camp State Park* (MA Thesis, Sonoma State University cultural resources management department, 1999), 92.

¹⁶ Ibid, 18.

Almost all of the specific structural members found in conventional wooden vessels are absent in the Chinese junk. Although the stresses to which the junk is subjected are necessarily similar to those affecting the ordinary craft, the timbers provided to resist these stresses are placed differently and form a different structural assembly.

As in conventional craft, the shell of the junk has the dual purpose of providing a watertight enclosure and acting as the main strength member. The usual strength-contributing longitudinal timbers are lacking; keels, keelsons, clamps, or shelves are rarely used. In their place, the upper planks of the sides are enormously thickened. Generally described as wales, these thick upper planks may be single or multiple, full vessel-length or partial, and are commonly tree trunks squared off on the inside.¹⁷

These partially finished planks/logs can be seen along the upper hull sides of many different junk styles.

Such different engineering principles place the Chinese hull design outside the common field of familiar wooden ship construction. In regards to overall size, the common assumptions involving wooden ships may not apply to Chinese junks. Western skepticism regarding the true sizes of Zheng He's treasure ships of the early Ming dynasty, reported in the Chinese historical record as well over 400 feet in length, must therefore be regarded with some skepticism itself.¹⁸

Caulking technologies, methods of sealing the narrow gaps between hull planks, have long been an important feature for successful navigation. Such things as sap and tar and hot pitch have been used by a variety of seafaring cultures worldwide. The Chinese caulking material of choice has in the past been made up of a mixture of lime (from calcinated oyster shells), tree resin such as tung oil, and a fiber medium such as copra or cotton or pounded hemp. This mixture, known as *chunam*, has been recorded at least as early as the 13th century by observers such as Marco Polo, and it shows up in the

¹⁷ Ibid, 8. Note that western vessels are here defined as "ordinary craft."

¹⁸ Richard Barker, in "The Size of the 'Treasure Ships' and Other Chinese Vessels," *Mariner's Mirror* 75, no. 1(1989): 273-5, estimates vessel length at 200+ feet.

archaeological context as well.¹⁹ Missionaries in the mid-18th century remarked on the material.

This caulking is a kind of composition of lime, oil, or rather rosin, which distils from a tree called *Tong Yeou*, and ockam of bamboo. The lime is the basis, and when it is dry one would think it was nothing but lime without any mixture: this renders the vessel much neater, and frees it from that nauseous smell of tar, which is intolerable to those who are not accustomed to it; but this is not all, for there is no danger of fire, as there is in our vessels wherein so much pitch and tar are used...Tho' the sea run very high, and the vessel was deeply laden, yet by the strength of its planks, and goodness of its caulking, it made very little water.²⁰

This same type of caulking was used on the *Free China*, built sometime in the late 19th century. Scraps of fishing net had been used as the binder.²¹ Chunam was still in use in the 1980s, as depicted by the Beihai junk built for the Portland Museum.²² It has often been described as cement-like, and its rigidity and inability to flex, according to some sources, leads to increased leakage.²³ It is essentially the same compound used by the brine-works engineers of Sichuan for piping and other containers.²⁴ In fact, chunam is still in use today, being applied to modern fishing trawlers. Currently it is generally composed of elements like crushed shell, lime, linseed or tung oil, and a variety of thickening agents, such as crushed bamboo, sand, or asphalt.²⁵ Several species, such as *paulownia* and *firmiana* have been described as wood oil, or *tong* trees.²⁶

Much discussion surrounding Chinese hulls has in the past centered around the question of the absence or presence of a keel. The keel, and consequent relatively V-

¹⁹ Li Guo-Qing, "Archaeological Evidence for the Use of 'chu-nam' on the 13th Century Quanzhou Ship, Fujian Province, China," *International Journal of Nautical Archaeology* 18, no.4 (1989): 277-283; Ronan, *Shorter Science and Civilization*, 115.

²⁰ P. Du Halde, *The General History of China* (London: John Watts, 1753), 284-5.

²¹ Chow interview 7 August 2000.

²² Guy Lasalle, Jr. interview with Beihai junk donor by author, Portland, 25 August 2000.

²³ Gould and Foster, *Junks*, 19.

²⁴ Needham, *Science and Civilization*, 664.

²⁵ Muir, *One Old Junk is Everyone's Treasure*, 104.

²⁶ Wolfram Eberhard, *A Dictionary of Chinese Symbols: Hidden Symbols in Chinese Life and Thought* (London: Routledge, 1983), 316.

shaped hull, are generally interpreted as suited for deepwater or oceanic voyaging; and the more rounded and flat bottomed "keel-less" hull shape more suited to coastal and riverine navigation. The first stabilizes vessels in the open sea, minimizing leeward drift, and the second allows operations over shallow shoals and tidal mudflats. The description in *Science and Civilization*, with its heavy reliance on contemporary forms and extrapolation into the past, features flat bottomed vessels (and thus the raft root origin theory for all junks). Needham's classic interpretation of "the oldest and least modified types," deals only with junk design lacking any structures similar to stern post, keel, and stern post.

In a junk the bottom may be flat or slightly rounded, and the planking does not close in towards the stern, but ends abruptly, giving a space which would remain open if it were not filled by a solid crosspiece or transom of straight planks. In the most classical types there is no stern either, but a rectangular transom bow. The hull may be compared to the half of a hollow cylinder bent upwards towards each end, and there terminated by final partitions—like nothing so much as a piece of bamboo slit along its length.²⁷

Needham, however meticulous he was in collecting documentary and archaeological evidence for his work, completed *Science and Civilization in China* before more recent discoveries, namely Song dynasty vessels excavated during the 1980s in joint cooperation between the Australian Institute for Maritime Archaeology and the Beijing National Museum. These projects discovered the remains of substantial sea-going vessels with V-shaped hulls and keels, and it is now not so clear exactly when Chinese vessels began to feature such construction, so much better adapted to true ocean sailing.²⁸

Furthermore, Chinese keels on southern coast seagoing junks were often made up of three distinctive sections, a fore, middle, and aft keel piece.²⁹ The relationship between

²⁷ Ronan, *Shorter Science*, 66.

²⁸ Jeremy Green, "Eastern Shipbuilding Traditions: a review of the evidence." *Bulletin of the Australian Institute for Maritime Archaeology* 10, no.2 (1986): 1-6; and "The Song Dynasty shipwreck at Quanzhou, Fujian Province, People's Republic of China," *International Journal of Nautical Archaeology* 12, no.3 (1983), 253-261; and "The Shinan Excavation, Korea: an interim report on the hull structure." *International Journal of Nautical Archaeology*, 12 (1983), 293-301.

²⁹ *Zhongguo Gudai de Zaochuan he Hanghai*, 77.

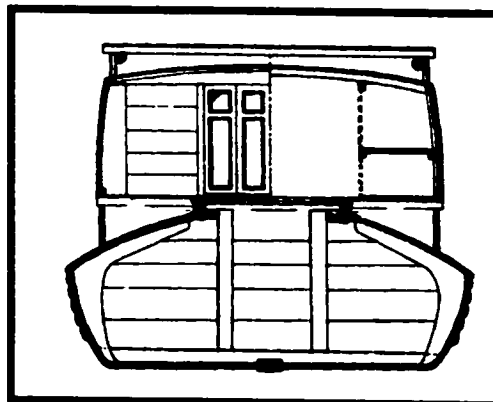
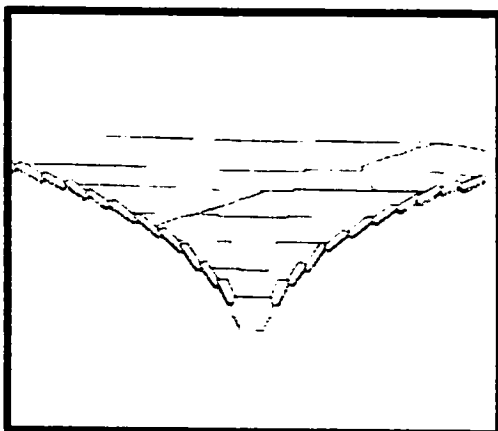
the length of these sections was a major factor in the overall shape of the hull. Chen Xiyu, in *Zhongguo Fanchuan yu Haiwai Maoyi* (*Chinese Sailing Junks and Overseas Trade*), multiplies descriptions of Chinese junks based on various ratios of keel section length to hull width, length, mast diameter, etc.³⁰ Unfortunately, information on the selected junks in this study usually does not provide dimensions of any types of keels.

Nor is it clear what exactly the acceptable definition of keel is for western nautical specialists. While relatively flat-bottomed junks do not feature the deep western keel design, the center plank is often up to 50% thicker than surrounding hull strakes, and is often labeled a keel, in Chinese the *longgu* or Dragon Spine. In the terms of *The Oxford Companion to Ships and the Sea*, it is "the lowest and principal timber of a wooden ship...which extends the whole length of the vessel," but is not necessarily the timber "to which the stem, sternpost, and ribs or timbers of the vessel are attached."³¹ Nonetheless, western specialists expect keels to connect familiar features. Keels run flat from the stem to stern posts, they are straight pieces of timber. Chinese junks with endemic rudders and transom bows have no stem or stern posts. This causes confusion. The same individual junk, with its reduced keel relative to the west, might thus be classified by western and eastern observers alike as with or without a keel. In short, whether any given observer chooses to label a particular junk as either having or not having a keel depends more on that observer's definition of "keel" than it does on the junk itself. Historically, the Chinese have built both V-shaped hulls with keels and flat bottomed vessels with (relatively speaking) no keels, each for its own purpose.

The Chinese Overseas Museum of Communication History in Fujian now displays a reconstructed sea-going ship of 1277 A.D., excavated in 1974, and this is only one of several discovered in more recent years. Gang Deng ascribes the V-shaped hull and keel to the long range *fuzhou* or *fuchuan* type vessel which dominated the coastal areas beginning in the late Tang dynasty.

³⁰ Chen Xiyu, *Zhongguo Fanchuan yu Haiwai Maoyi* (Xiamen University, 1991), 148.

³¹ Kemp, *Ships and the Sea*, 443.



Figures 14 and 15: Midsection hull profile from 13th century fuchuan Chinese shipwreck; half cross section flat bottomed shachuan hull profile.
(Green, "The Shinan Excavation," 296; Worcester Junks and Sampans, 164)

This ocean going Fujian vessel was distinctly different from shallow water or "sand" ships (*shachuan*) built without V-shaped hulls and distinct keels.³² Though the design of the sand ships may be as old as the Warring States period, the name *shachuan* comes from the Ming dynasty. They became more popular following the development of the *fuchuan* junk, for the 'keel-less' junk was cheaper to build and better suited for operations in shallow waters, such as river-sea deltas and trading areas predominant in the Northern China coast.³³ Worcester also makes a division between northern and southern types of junks, and points out that all the more specific regional varieties may be placed within this more general outline, though he discusses types representative only of the *shachuan* keel-less design.

The Northern types have bluff bows and flat bottoms, because the ports to which they trade are situated on rivers where grounding is not infrequent. In South China, where deep water prevails, the junks have sharper bows and somewhat deeper draughts...It must be remembered that such a classification, although useful in grouping the various types, is not always completely accurate.³⁴

Additionally, Albert Gould and Gerard Foster, in *Junks—Construction and Regional Characteristics*, take into account western influence in more contemporary designs.

³² Gang Deng, *Chinese Maritime Activities*, 27-8.

³³ Ibid, 28-9; Zhou Shide, "Shipbuilding," 480-2.

The coast of Kwangtung—and to a lesser degree, Fukien—has been a zone of contact between Chinese and Indonesian shipbuilding techniques for at least 2000 years. There has been contact with Arabian Sea (Arab) techniques for perhaps 1000 years, and with European techniques for some 400 years. In general, the more northerly types preserve older and more traditional characteristics, whereas those of the South show many introductions from foreign boatbuilding techniques. There is a general and transitional change in coastal junks from north to south along the China coast.³⁵

Gould and Foster indicate that the use of internal frames, or ribs, alongside and in between the bulkheads as of western influence. Such frames are more frequent in southern China, where the number of bulkheads tends to decline.

It would seem that, at least for one thousand years, the Chinese built ships both with and without *what the west would recognize* as authentic keels, depending on their usage. This major design distinction has led to broad classification of junk types, and associated with particular periods of history. *Fuchuan* obviously had recognizable keels; *shachuan*, a general category which includes most post-medieval junk designs, are not always recognized as having a keel, though the junks may have to speak for themselves on this matter.³⁶

Rig

The historical evidence of the use of sails is more difficult to assess than the features of the hull. Physical remains of masts and sails, unlike hull structure, almost never survive the elements of biological and mechanical deterioration in the archaeological context. There is some indication that the Chinese did not begin to use sails for propulsion until the Sui dynasty in the 6th century A.D., though such a delay is hard to imagine given the obvious advantages and early use in all other seafaring cultures.³⁷ Later, however, Chinese mast and sail clearly underwent technological evolution. By the Song dynasty, masts were

³⁴ Worcester, *Sail and Sweep*, 16.

³⁵ Gould and Foster, *Junks*, 22-3.

³⁶ Gang Deng, *Chinese Maritime Activities*, 27-8.

³⁷ Gang Deng, *Maritime Sector, Institutions, and Seapower of of Premodern China* (Westport: Greenwood Press, 1999), 12.

stepped in pivoting tabernacles, allowing the rig to be lowered when needed. Maritime transportation upriver necessitated passage under numerous bridges. At least as early as the Ming dynasty, and probably much earlier, rigid style batten sails flattened the overall shape, making for a very efficient air foil.³⁸ Long strips of bamboo were attached horizontally to the sail material itself. Battens allowed the sail to retain its foil shape, maintaining a flatter surface to the wind, even when patches of the actual sail material were torn or missing (see figure 17). It is an advanced and advantageous feature. Reminiscent of the advances in the shape of the Chinese hull, batten sails have only very recently been adopted by racing yachts and catamarans.

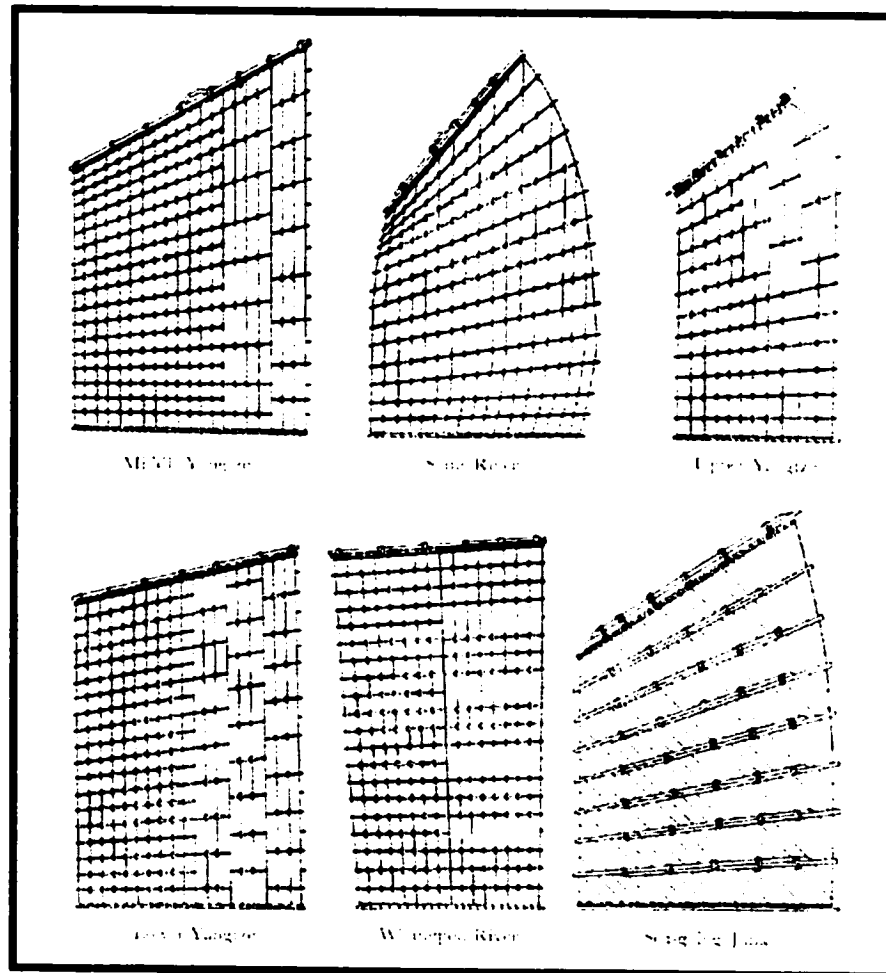
The most immediately distinctive feature of Chinese junks has been the balanced lug-sail rig. Here again Chinese vessels are distinctly different from western sailing ships. There are three basic differences between Chinese and European sailing rigs (all the gear above decks used for propulsion of the vessel): 1) Chinese junks historically had no standing or permanent rigging; 2) junk masts were not set into the keel of the hull; and 3) masts were not necessarily all set along the centerline of the vessel. There were a large variety of sail shapes, most again being classified along the lines of northern and southern types. All, though, were fore-and-aft rigs, and combined with the efficiency of the batten-reinforced air foil, allowed Chinese vessels to sail very close to the wind, an ability which never failed to surprise the western mariners.³⁹ The windward ability of traditional junks far exceeded that of European square-rigged ships. The junks which crossed the Pacific portray the first two of the three distinctively Chinese rig characteristics.

The final feature of these sails was that they were self-reefing. The heavy fore-and-aft batten lug sail, upon being lowered, tended to fold itself onto the junk. No Chinese sailors

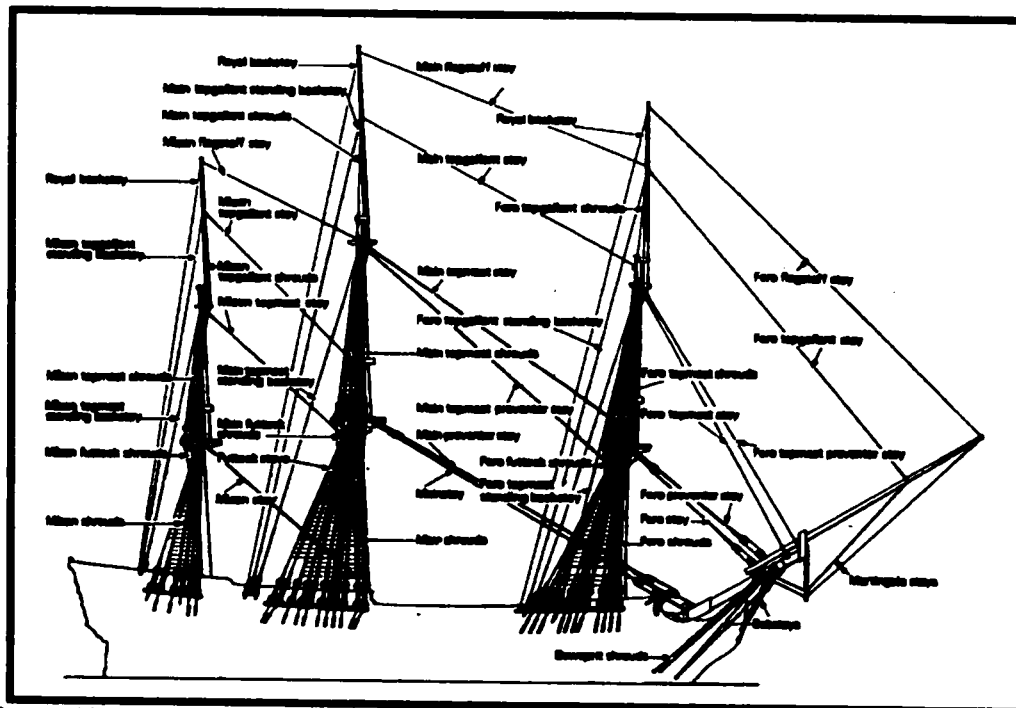
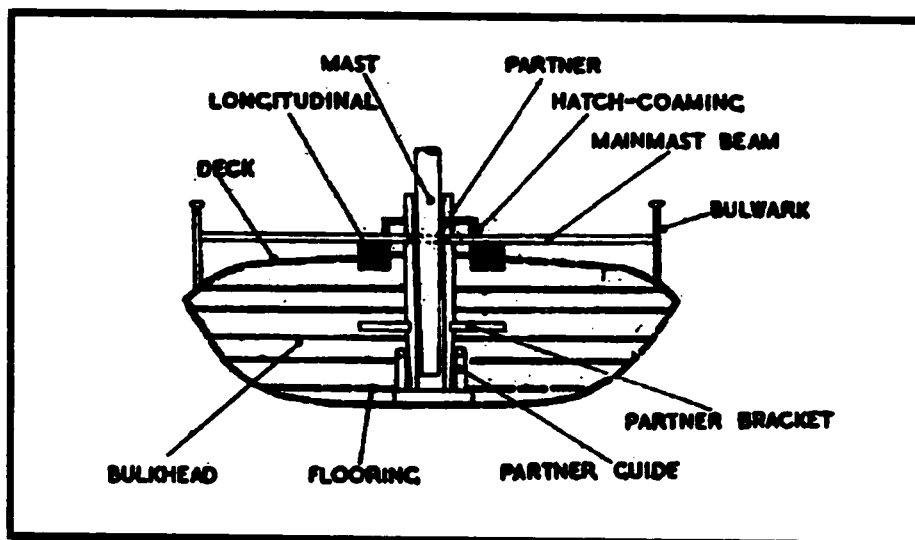
³⁸ Ibid.

³⁹ Woodman, *The History of the Ship*, 51; Needham, *Science and Civilization*, 594. See also the remarks of Jack London, who served as a fisheries officer in the San Francisco Bay area and patrolled the junks of the Chinese shrimp fishery there; *Tales of the Fish Patrol* (Gainesville: Blue Unicorn Editions, 1997 reprint).

had to climb the rigging, or "go aloft" in order to reduce sail when the winds increased, as was the case with square-rigged European ships. This obviated the need to maintain a large crew to manhandle multiple square sails in a storm, as well as alleviating the danger involved in such an activity. The Chinese sail was economical to operate.



**Figure 16: Worcester's regional sail types, da peng.
(Worcester, Sail and Sweep, 18)**



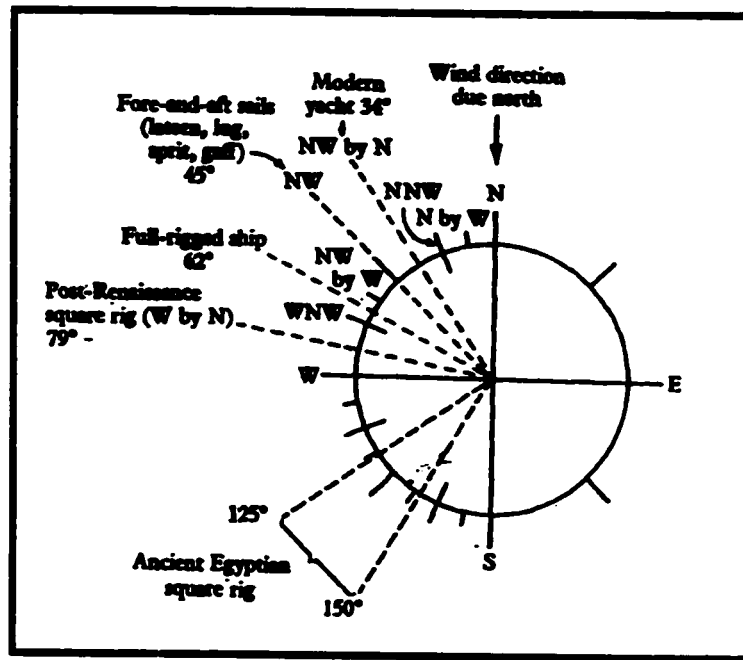


Figure 19: Windward ability of various sail rigs. Chinese junk "lug" sails were capable of operating at 45 degrees into the prevailing wind. Angles represent course made good. (Needham, *Science and Civilization*, 594)

Rudder

Perhaps the most diagnostic feature defining junk sailing vessels, upon close inspection, is the distinctly Asian style rudder. There has not been, and is not, anything like it in the European experience. Whereas European rudders progressed from fixed single or double steering oars to fixed and permanent rudders attached directly to a stern post via strong iron pintle and gudgeon hardware, Chinese rudders evolved very early on into a centerline rudder in roughly the same position, but not attached permanently to the transom at all. Instead, Chinese rudders could be raised and lowered, and were held in position with a system of cables and wooden gudgeons or notches. This allowed the rudder to be adjustable, and in fact easily removable. The Chinese rudder is the earliest example of center or axial rudder designs in the world.⁴⁰

⁴⁰ *Zhongguo Gudai de Zaochuan he Hanghai*, 52.

Many different designs proliferated throughout China, but the rudders of coastal seagoing junks are of particular interest here. These tended to be narrower and capable of extending deeper into the water, well below the bottom of the vessel, thus serving as a stabilizing keel and reducing leeway (leeward drift), especially for relatively flat bottomed vessels.⁴¹ Centerboards, or more specifically dagger boards, served the same function of creating a deep keel which could greatly reduce leeward drift and aid the junk in staying on course.

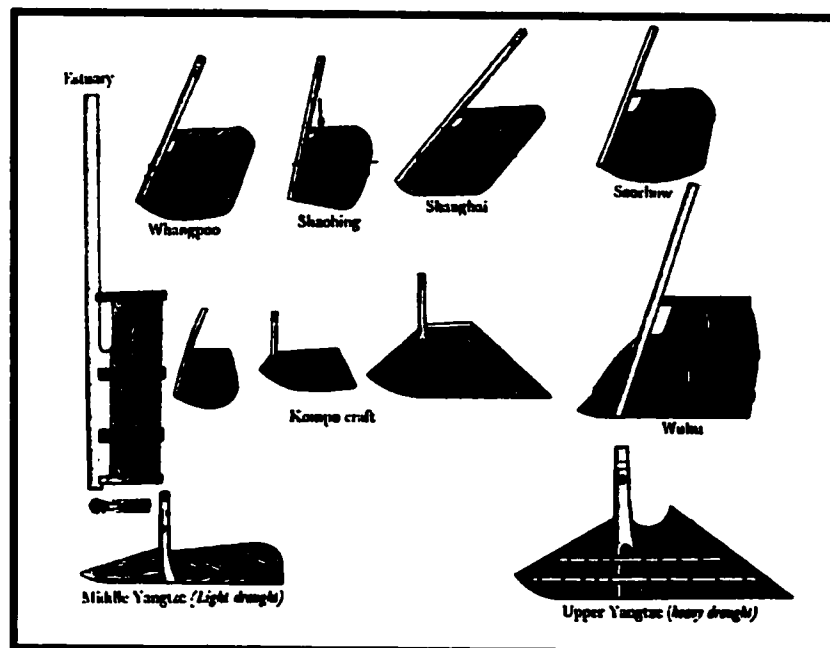


Figure 20: Rudder or duo designs chiefly from the Yangzi river. Ocean going junks most closely approximate Worcester's "estuary" example. (Worcester, Sail and Sweep, 23)

⁴¹ Worcester, *Sail and Sweep*, 24.

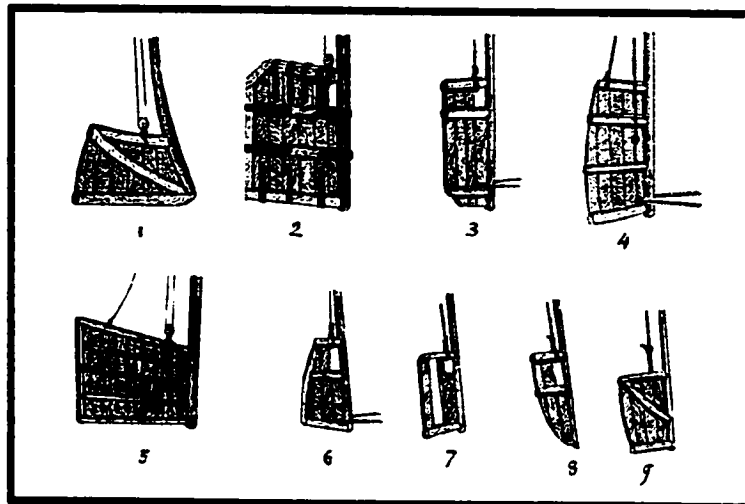


Figure 21: Audemard is more details in his description of seagoing rudders, styles 6-9 representing rudders from the central Chinese coastline. (Audemard, *Les Jonques Chinoises*, 22)

One theory holds that the Chinese rudder developed from the combination of the Chinese steering oar, or *yuloh*, and the high stern constructions of the sampan. The sculling oar, loosely connected at the stern of the boat, supposedly evolved into the suspended median rudder of all later junks.⁴² This design has also been termed the vertical axial rudder. Whereas northern European vessels moved directly from the steering oars to rudders fixed to stern posts with large iron pintles and gudgeons sometime in the 13th century, Chinese ships have always relied on setting the rudder post itself in wooden jaws or wooden gudgeons. The gudgeons themselves can be open, semi-open, or closed. The rudder, if large, must be kept in place with the appropriate cable and tackle.⁴³ The large iron hinges of western designs were absent. The Chinese design featured basic wooden construction, cheaper and perhaps more easily available to local shipwrights.

Archaeological evidence from a late Han dynasty tomb attests to the Chinese use of this kind of rudder approximately 1000 years before such a thing as a center hung rudder makes its appearance in the West.⁴⁴ Worcester speculates that such an early appearance of so important a nautical feature was, in part, due to the general shape of the Chinese vessel.

⁴² Hornell, *Water Transport*, 88.

⁴³ Needham, *Science and Civilization*, 632-3.

⁴⁴ Johnstone, *Sea-Craft of Prehistory*, 190-1.

Median rudders were much more compatible with flat transoms, compared to the early European design of sterns which narrowed to a single curving post.⁴⁵ Early European designs, such as Greek round vessels and Viking long ships, were double-ended in design and sailed with steering oars, not rudders.

Chinese rudders, for as long as they have existed, and for all the possibilities of their having been transmitted to the Mediterranean, nonetheless are not mentioned in a recent publication claiming comprehensive description of "the rudder."⁴⁶ The mechanism for transmission certainly existed in the form of Crusade-era Arab ship captains, and there are some indications that Arab ships, between 1000-1200 A.D., featured median rudders, but the question is still open.⁴⁷

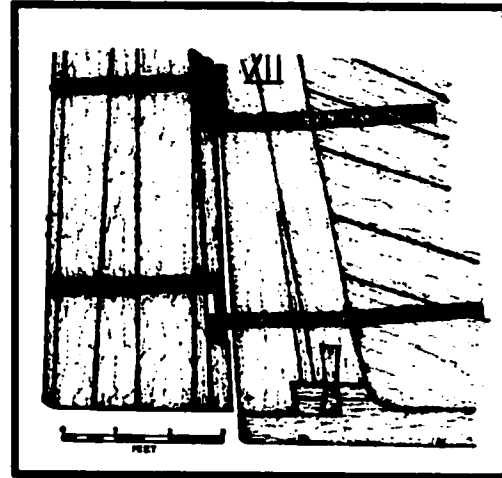
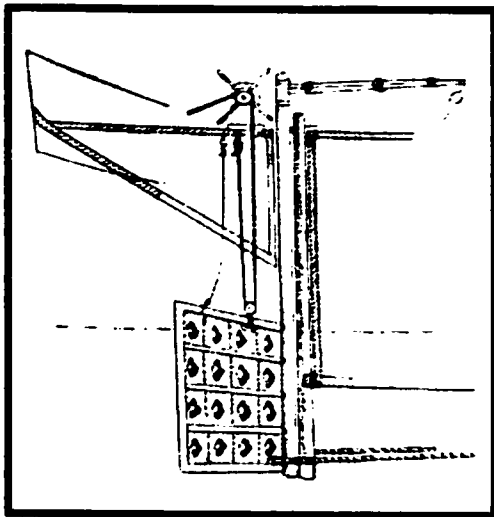
For as unwieldy and heavy as these Chinese rudders appeared to be, it should be noted that they were capable of responding much more to the immediate environment, of being manipulated more actively, than the fixed European rudder. Chinese sailors could adjust the depth and even replace these suspended rudders while at sea. The rudder blade itself could often be enlarged or diminished by adding or removing additional boards into preset holes in the rudder post. Such holes are still in evidence in more modern junks.⁴⁸ In short, Chinese rudders contributed to the sailing characteristics of the vessel in several different ways, acting both to maneuver the vessels and to stabilize it at sea, whereas European rudders were used only to maneuver.

⁴⁵ Worcester, *Sail and Sweep*, 22.

⁴⁶ Lawrence W. Mott, *The Development of the Rudder: a Technological Tale* (College Station: Texas A&M University Press, 1997). Mott examines exclusively the Mediterranean World between the Roman period and the Age of Discovery.

⁴⁷ Johnstone, *Sea-Craft of Prehistory*, 191. See also Vassilios Christides, "The Transmission of Chinese Maritime Technology by the Arabs to Europe," *The American Neptune* 52 no.1(1992), 38-45.

⁴⁸ The original rudder post from the junk *Free China* remains in storage at the National Park Service warehouse in San Francisco.



Figures 22 and 23: Chinese adjustable rudder arrangement in open sockets; lower detail of western rudder fixed to stern post with pintles and gudgeons. (Johnson, Shaky Ships, 23; Steffy, Wooden Shipbuilding, 179)

Essential to the handling of all large rudders, as well as the hoisting of batten-heavy sails and anchors, was the horizontal windlass, or the *liao* or winders in Chinese. The design of these common labor saving machines remains fairly constant through time.

The Language and Pattern of 19th Century Seagoing Junks

Distinctive criteria fall into three basic categories for Chinese junks: hull, rig, and rudder. Here is the pattern language for Chinese ship construction. Variations may not always abide strictly by these guidelines, but in the general sense these are the distinctive elements which appear over and over again in Chinese junks. Just as categories of "ceiling height" and "wall thickness" and "southern exposure" can be described as the language patterns of architectural styles, "bulkhead number" and "rudder depth" and "batten sails" are the language patterns of the Chinese shipwright.

Table 2: Junk Construction "Language"

Hull:	<ol style="list-style-type: none">1. greatest beam aft of the midship section2. regionally distinctive bow and stern construction3. features edge nailing4. multiple rounded longitudinal wales5. multiple interior watertight transverse bulkheads6. caulked with chunam mixture7. flat or rounded bottom (<i>shachuan</i>) with shallow keel8. proliferation of transom bows and sterns
Rig:	<ol style="list-style-type: none">1. batten lug sail fore-and-aft designs2. regionally distinctive sail shapes3. no standing or permanent fixed rigging4. masts not stepped to bottom of vessel5. used in conjunction with horizontal windlass
Rudder:	<ol style="list-style-type: none">1. suspended adjustable median design2. regionally distinctive rudder shapes3. positioned in wooden notches with cables4. relatively narrow deep forms (acts as keel)5. used in conjunction with horizontal windlass6. possible centerboard or leeboards

Making the case for such a thing as this language pattern serves to emphasize the intentional design process of the craftsmen involved. Ships do not just "happen;" styles of vessels do not simply blossom organically from the environment, but they are the result of human choices made over an extended period of time. Obviously, for the Chinese who built the sailing junks, certain features such as those listed above were a continuation of well established traditions, proven successful for centuries and accepted. Other types of features, other portions of the language pattern, may represent influences more contemporary to the shipwright. With a baseline pattern understood for the general description of "traditional" junks, relatively modern changes in ship design, choices perhaps made in response to the dynamic social and economic situation in the 19th and early 20th centuries, will stand out all more clearly.

Within the comparative framework of eastern and western sailing vessels, certain Chinese construction techniques which feature local capabilities, low cost, and efficiency in operation...such as the sailing rig and the rudder design, seem to reflect the small scale, village level, and for lack of a better word "democratic" nature of private junk construction in

China. Anthropologist Lewis Mumford, in "Authoritarian and Democratic Technics," bisects technological artifacts into two types of political realities: authoritarian-styled objects or system-centered immensely powerful tools; and democratic-styled objects, man-centered relatively weak tools but resourceful and durable.⁴⁹ The solid European state-supported armed trade galleons might be seen as falling into the first category, those that are reflective of expansive civilization-building technologies; the locally-built relatively unarmed simple Chinese junks, more along the lines of technologies of the small farmer, into the second. After all, in the large sweep of history, China did not use the seas as civilization-building frontiers as did the island nation of England, as did other nations in the West.

Armed Versus Unarmed Trade Ships

These comparative observations on the technology of ships lead to both certain assumptions and related questions. If one accepts that the construction and overall shape of vessels express, somehow, the nature of the culture, then in what ways do European vessels manifest the nature of armed trade? How do Chinese vessels reveal the character of unarmed trade? And if they do, on what basis can comparisons be made between them? Treatises on European ship construction are too numerous to list, and nautical scholars remain familiar with the thickened oak hulls and closely-spaced frames, the large hanging "knees" to support the weight of ordnance, and gun ports framed between stout wales, of ship designs borne from a history of armed conflict. All obstructions along weather (upper) decks and gun decks could be cleared away, making space for gun crews to work the cannon. Many of the same features of constructing a floating gun platform remained similar between European navy and European commercial vessels. Between the 12th and 16th centuries, the two were often one and the same. Cannon and gun crews and the vessels designed to house them remained an important part of the European maritime ventures in Asia, such as the British East India Company (EIC) and the Dutch Vereenigde Oost-Indische

⁴⁹ Lewis Mumford, "Authoritarian and Democratic Technics," *Technology and Culture* 5 (1964): 2.

Companie (VOC). These institutions operated as informal navies in their trade to maritime Asia for hundreds of years.

What of the Chinese vessels? If their design reflected unarmed trade, then commercial carriers would have been incapable of being turned into an instant navy in the European sense. Additional timbers and costs would not have been provided to support cannon, and material features on deck would have been permanent. Hulls would not be pierced by gun ports which require more time and material to construct. Chinese junk design, centered completely around the transportation of cargo, may have gained an added measure of efficiency due to this freedom. Anthony Reid, in "The Unthreatening Alternative: Chinese Shipping in Southeast Asia, 1567-1842," makes the case that junk traffic was certainly more welcome in many ports for similar reasons.⁵⁰ Their presence did not represent an armed threat to established institutions.

The junks sailing to or from China with government approval (the great majority after 1684) were limited in the armaments they could carry to two cannon and eight rifles, because of Chinese official fears that they might otherwise engage in piracy. Even when Chinese numbers reached dozens of junks and thousands of men in ports such as Bangkok, Hoi An, Pnompenh, Riau and Sulu they presented little threat to the local regime, whereas the lesson was not lost of what happened to indigenous rulers in Melaka, Ternate, Jakarta, Makassar or Banten at European hands. Hence many Southeast Asian rulers also raised tariffs and other obstacles to European shipping which did not apply to the Chinese.⁵¹

Juxtaposing the vessels which originated with the design of floating gun platforms to those of a less war-like nature, due to these various aspects of construction time and costs and operating efficiency, seems precarious from several aspects. Kenneth Pomeranz, in *The Great Divergence: China, Europe, and the Making of the Modern World Economy*, attempts an economic comparison of Chinese and European trading vessels.⁵² Though he asserts that the method of armed trade granted European nations a decided advantage over

⁵⁰ Anthony Reid, "The Unthreatening Alternative: Chinese Shipping in Southeast Asia, 1567-1842" *Review of Indian and Malaysian Affairs* 27 (1993): 13-32.

⁵¹ Ibid, 14.

others, Pomeranz states that there is not much difference in long distance transportation technology in Europe, China, or Japan before the coming of the steamship in the mid-19th century.⁵³ The only true difference in ship design appears towards the end of his analysis, when "over time soldiers and sailors became more effective per capita thanks to technological change (e.g. better guns and ships)."⁵⁴ This change refers to the truly large rifled cannon and iron hulls and steam engines of a major transition on the maritime scene. But, regarding the sailing vessels, all European and Chinese designs seem to have existed in an undifferentiated and generalized state of equilibrium, a level playing field. Is this true, or does it represent an oversimplification?

Carlo M. Cipolla, in *Guns, Sails, and Empires: Technological Innovation and the Early Phase of European Expansion 1400-1700*, places the same faith in the clear advantages of armed trade and European ships over other forms of transportation.⁵⁵ "Thanks to the revolutionary characteristics of their man-of-war, it took only a few decades for the Europeans to establish their absolute predominance over the Oceans."⁵⁶ Predominance? Reid points out that as late as the 1820's, Chinese total shipping tonnage, with a carrying capacity of approximately 85,000 tons, still outranked European shipping in the South China Sea.⁵⁷ Again, the problem of comparing apples and oranges, or war ships and commercial carriers, raises difficulties.

Is it really possible to separate aspects of armed trade from nautical technology? Is it possible to separate the cannon from the wooden sailing vessels which were designed (or not designed) specifically around them? Armed trade did provide a successful strategy for aggressive and expansive nations, but beyond that acknowledgement the study of the differences between vessels is often glossed over. For many scholars, ships with guns

⁵² Kenneth Pomeranz, *The Great Divergence: China, Europe, and the Making of the Modern World Economy* (Princeton: Princeton University Press, 2000).

⁵³ Ibid, 112.

⁵⁴ Ibid, 287.

⁵⁵ (New York: Pantheon Books, 1965).

⁵⁶ Ibid, 140.

⁵⁷ Reid, "Unthreatening Alternative..," 13. The EIC, or British East India Company, capacity before 1833 was less than 30,000 tons.

represent the only viable ships, period. Armed trade provides the only recognized model, the standard against which all else is compared. Empires which did not follow this model, as China did not continue overseas expeditions but instituted a maritime ban in the 15th century, are sometimes mistakenly assessed as abandoning the ocean altogether. Thus, as Jared Diamond in *Guns, Germs, and Steel: the Fates of Human Societies* states, "China's abandonment of oceangoing ships (as well as of mechanical clocks and water-driven spinning machines) are well-known historical instances of technological reversals in isolated or semi-isolated societies."⁵⁸ China abandoned large ship construction, and support for private overseas expansion, but oceangoing ships? This question of armed trade is almost inextricably bound up with nautical technology itself. Taking a closer look at the field of nautical technology, in this case adding Chinese junk design to what is already known about European vessels, may provide a clearer understanding of the advantages and disadvantages of armed and unarmed trade.

Classification of Selected Vessels

With photographs and sketches from a variety of different locations, we can attempt to identify the selection of transpacific junks. How well do they describe the patterns of Chinese ship construction? What else do they reveal? It proves necessary to rely on images here as a way of reaching out to the actual physical artifact, for textual analysis alone often proves inadequate in the description of technological artifacts. And, though they are more things as well, Chinese junks certainly do represent technological artifacts, machines built for efficient and safe transportation.

In some cases there is a good deal of certainty in the identity of the vessels; in others, especially when there are very few documents and photographs to deal with, the association is less certain. Worcester's *Classification of Seagoing Junks* figures heavily in the following analysis due to its unique nature, but this does not imply any real assurance

⁵⁸ Jared Diamond, *Guns, Germs, and Steel: the Fates of Human Societies* (New York: W.W. Norton and Company, 1997), 258.

that his terminology, based on an ethnographic snapshot of junk types in the early 20th century, was or is the final word in classification.

the *Whang Ho*: a retired policeman

Judging from the rare pictures of the junk *Whang Ho*, and the brief history, the vessel owned by W.M. Milne was, indeed, a classic example of what Worcester calls a Large Soldier Boat (*Dabingchuan*).⁵⁹ This type of vessel is not recorded in his *Classification of the Principle Chinese Sea-going Junks*, which focuses on the boats and ships of private trade, but it does appear in *Junks and Sampans of the Yangtze*, which would make sense as Milne claimed to have obtained the *Whang Ho* in Nanjing. The *Whang Ho* is the one exception in this study to the general “democratic small farmer” style vessel sample, for she carried a few cannon. Though there are no references to any one specific locality associated with the war junk, there are certain design elements which associate the vessel with Southern Chinese vessel types in Guangdong.

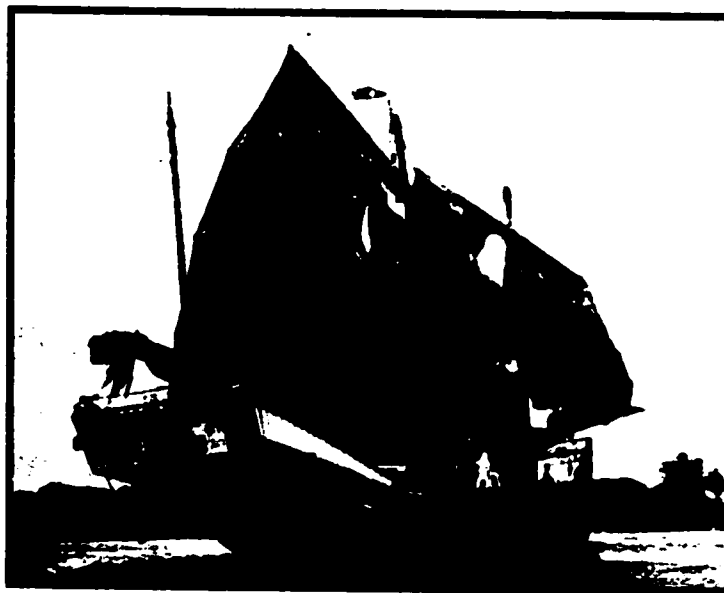
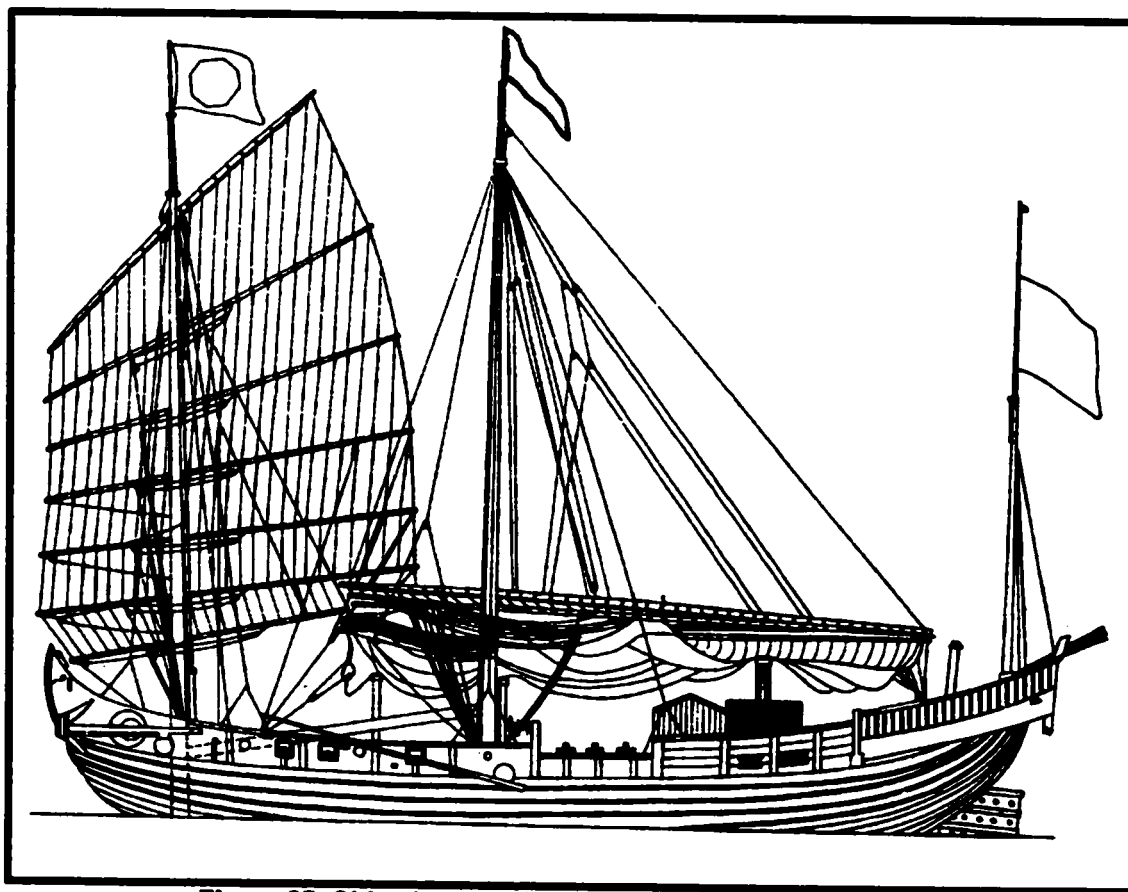


Figure 24: Junk Whang Ho, a Guangchuan, underway circa 1908. (W.M. Milne postcard, image from San Francisco National Maritime Historic Park)

⁵⁹ Worcester, *Junks and Sampans*, 342.

The W.M. Milne postcard, a rare image, depicts the rounded stern and large overhanging galley of Southern Chinese origin. The large, three-masted junk also features the high, upturned wings at the bow, and large forward windlass machinery, typical of Southern-style trawlers. The junk cruises along despite its batten sails appearing in tatters, testimony to the Chinese rig style. The shrouds, permanent standing rigging running from the masts to the sides of the hull, are evidence of European design influence, indicative of Southern styles in Guangdong and greater foreign contact.⁶⁰ Unfortunately, from this stern angle, many features, such as gun ports, are not visible.



**Figure 25: Side elevation from 1842, by Lieutenant Paris.
(Worcester, Junks and Sampans, 343)**

⁶⁰ Worcester, *Sail and Sweep*, 27.

Worcester includes a unique drawing of a typical ocean-going war junk from the mid-19th century, showing the same rounded stern arrangement and overhanging gallery. The masts and sails appear similar to the *Whang Ho*, as well as the high wings or upward projections of the bulwarks (sides) at the bow. The square fenestrated Guangdong rudder is also visible beneath the stern. The small lookout houses on deck are mentioned in 19th century accounts, which generally found war junks to be "large, unwieldy-looking masses of timber of shallow draught."⁶¹

Other notable features were the flat upright stems and considerable sheer of the hull; the wooden anchors, rattan cables, and mat sails. There were flush decks and large quarter-galleries and lookout houses on deck. The whole was painted black and red and adorned with large goggle eyes in the bows. They usually carried from 2 to 14 guns, some of foreign manufacture, mounted on wooden carriages. The guns varied considerably in caliber.⁶²

First-hand estimates place the size of these large junks in the neighborhood of 800 tons. Lieutenant Paris' sketch depicts a junk 120 feet long, 25 feet in beam, and with a 12 foot draft. The crew for such a vessel is estimated to have been between 40 to 60 men.⁶³ This would have included soldiers tasked with boarding, capturing, and sailing confiscated vessels back to port. The average size of war junks in the early 19th century was between 250 and 300 tons, a little over 100 feet in length.⁶⁴ Smaller war junks, possessing six cannon (three per side) ranged around 150 tons.⁶⁵

Judging solely from the number of cannon carried on board, this particular *Dabingchuan* seems, then, to be in the larger class. There are not enough details available to be able to assess how being outfitted with a few cannon affected the design elements of the junk's construction.

⁶¹ Worcester, *Junks and Sampans*, 342.

⁶² Ibid, 344.

⁶³ G.R.G. Worcester, "The Chinese War Junk," *Mariner's Mirror* 34 (1948), 22-4.

⁶⁴ John L. Rawlinson, *China's Struggle for Naval Development, 1839-1895* (Cambridge: Harvard University Press, 1967), 3.

⁶⁵ Anon, *China: Catalogue of the Collection of Chinese Exhibits at the Louisiana Purchase Exposition, St. Louis 1904* (St. Louis: Shallcross Print, 1904), 300.

These are the types of junks which met the British Expeditionary forces in what we now refer to as the Opium Wars. Fleets of war junks in the Chinese army had previously been composed of "inner and outer water squadrons" and had traditionally been used in anti-pirate operations, as well as patrols to prevent uncontrolled immigration to the mainland.⁶⁶ Basically an anti-piratical organization, the war junks had no other long-range mission familiar to western navies. Most of the "navy" was actually part of the Green Banner land force, established by the Manchus as a kind of provincial constabulary.⁶⁷

The ocean-going vessels like the *Dabingchuan* were not, of course, the only type of Chinese war junks prevalent. Water forces were divided into different categories. Other designs, known as Chasers (*cang cang chuan*), Flat Bottomed (*sha chuan*), Quick Leaping (*kuai duan*), and Fast Horse (*kuai ma*) were in use where appropriate to the seascape. Suppression of salt smuggling and protection of small fishing vessels were also tasks for the war junks. The *Dabingchuan*, though, most closely resembles the transpacific junk *Whang Ho*. And if W.M. Milne's junk was, indeed, more than 100 years old in 1908, it would have been one of the lucky war junks to have survived the wars with foreigners and various assorted actions, not all of them successful, against pirates of all sorts.

In the Lt. Paris drawing, cannon are visible above the gunwale at the waist of the junk, as well as behind the gun ports of the forward deck. Chinese crews had access to weapons such as spears, pikes, matchlock muskets, and larger gingalls, which were mounted on the bulwarks. Closely woven and relatively elastic large rattan shields, some two to three feet in diameter, were mounted on the upper gunwale. These offered protection not only against swords, but were also effective against long range musket shot as well.⁶⁸

⁶⁶ Worcester, *Junks and Sampans*, 342.

⁶⁷ Rawlinson, *China's Struggle*, 6.

⁶⁸ *Ibid*, 344.



***Figure 26: Hand weapons and war shield from Chinese junk.
(Catalina Island Museum, photo by author).***

The trend for war junks over time, particularly in response to the noted lack of effectiveness against British ships during the Opium Wars 1839-60, was for vessels to become larger and mount more guns. Some authorities record cannon the size of the western 32-pound caliber on Chinese war junks.⁶⁹ The use of gun ports increased.

After the Taiping Rebellion a new naval force was instituted to guard river and sea navigation and placed under an 'Admiral of the Yangtze' whose jurisdiction extended over the five provinces of Kiangsu, Anhwei, Kiangsi, Hupeh and Hunnan. The fleet was more in the nature of a large constabulary force and was highly organized and efficiently run, with a strict code of honour and regulations for all contingencies.⁷⁰

⁶⁹ Worcester, "Chinese War Junk..." 24.

⁷⁰ Ibid.



Figure 27: Deck of the war junk Whang Ho, circa 1908, looking forward towards bow. (San Francisco Maritime NHP)

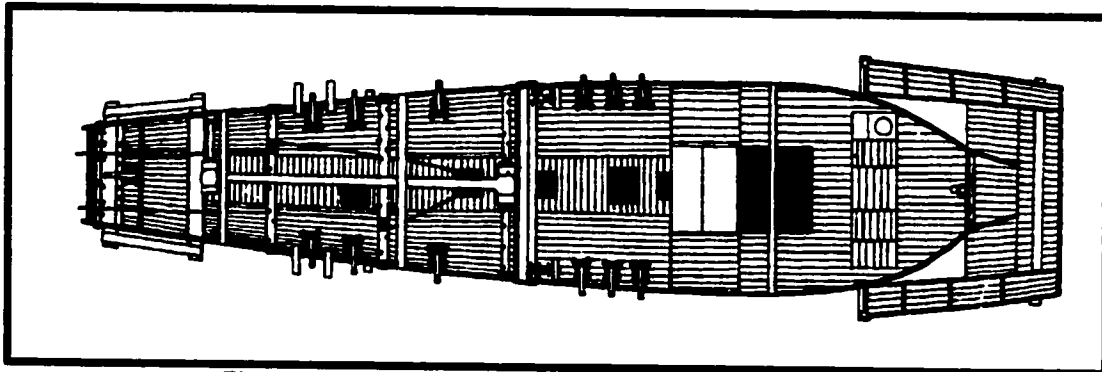
Four cannon can clearly be seen in another Milne postcard of the *Whang Ho*, as the gun crews stand at the ready. With eight guns on the main deck, this junk may be a slightly smaller version than the Lt. Paris sketch from 1842. The cannon appear to be late 18th or early 19th century Armstrong pattern British pieces, of 18 or 24 pound caliber. The breach rings at the rear of each gun just above the knobs, or cascabels, identify the pieces as post 1780 designs.⁷¹ Also visible in the photo is the elevated port wing at the bow (upper right). Cannon continued to be used on junks up to at least 1946. Following World War II such old pieces were replaced with submachine guns and bazookas.⁷² These old cannon, though, were not only pieces for display, but continued to find use. Not just cannon balls, but almost anything could be used for projectiles...from broken ceramics to scraps of iron and nails. It would be difficult to equate their effectiveness with European standards, though, for even

⁷¹ Robert Gardiner (ed.), *The Line of Battle: the Sailing Warship 1650-1840* (London: Conway's Maritime Press, 1992), 151.

⁷² G.R.G. Worcester, *The Floating Population of China* (Hong Kong: Vetch and Lee, 1970), 8.

local authorities noted their antiquated nature. "The bow and spear, small guns, and native-made cannon which have hitherto been used by China cannot resist their [European] rifles, which have their bullets fed from the rear opening...Therefore, we are controlled by the Westerners."⁷³

Even the most decrepit, down-and-out looking junk often carried several of these ancient muzzle-loading cannon of our great-grandfather's day. Although some of the guns were of Chinese manufacture, many of them—to judge by their markings—were survivals of the armaments of long bygone and now almost forgotten warships. Among them I have seen guns of British make marked with a crown and dated 1812, and another, of undoubted French origin, dated 1798.⁷⁴



**Figure 28: Plan view of Dabingchuan war junk, 1842.
(Worcester, Junks and Sampans, 343)**

Paris' plan view shows the layout of the main deck. Dark rectangles mark the hatches leading into the lower holds, and the large quarter galleries at the stern to the left hand side of the figure are immediately apparent. As in all Chinese vessel designs, the maximum width, or beam, of the vessel is aft, rather than forward.

The *Whang Ho*, then, appears to have been either the real and considerably aged war junk from the China coast, or a replica, a purpose-built vessel, one which as far as can

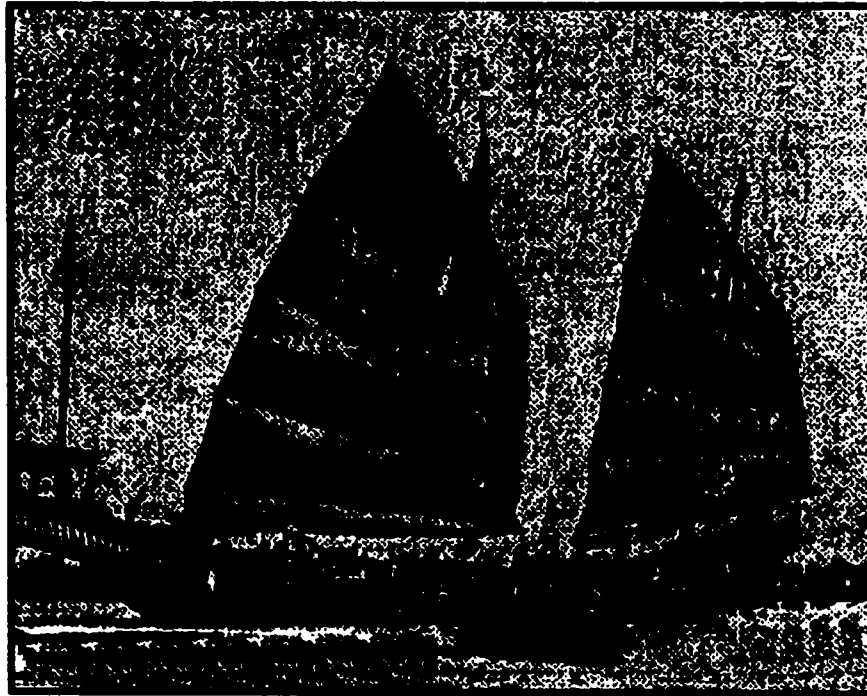
⁷³ Ssu-yu Teng and John K. Fairbank, *China's Response to the West: a Documentary Survey, 1839-1923* (Cambridge: Harvard University Press, 1954), 109. The rear-opening rifles here refer to breach-loading cannon.

⁷⁴ Robert Cardwell, "Pirate Fighters of the South China Sea," *National Geographic* 89 (May 1946): 787-792.

be determined accurately portrayed the basic features described as a Large Soldier Boat. Its significance is tied to the historic prevalence of piracy in Asian waters, battles fought during the Taiping Rebellion, and its encounter with the West during the Opium Wars. With China's first serious encounter with a modern navy during the Opium Wars, it was obvious that wooden war junks no longer controlled the seas. Even so, Guangdong style vessels, or *guangchuan*, are, in general, considered one of the several major junk types within the overall history of the China.⁷⁵ Such was the era of the *Dabingchuan*. The establishment of the modern naval arsenals and shipyards, and the adoption of steel and steam technology, and particularly the purchase of a flotilla of modern western style iron hulled gunboats in 1880, would render these older wooden sailing war junks quickly obsolete.

The fact that western style cannon were carried on the upper deck of the Chinese war junk adds a touch of irony to the more general phenomenon of technological assimilation on the Chinese coast. Furthermore, these few cannon do not really challenge the assumption that Chinese junks were not designed along the lines of a European armed fleet. A ship with so few cannon would not have even achieved the basic naval ratings of the smallest European military vessel. That does not, however, invalidate the long history of the war fleets, nor dampen interest in what was, for so long, the Chinese law at sea. Chinese war junks, with their large crews and incendiary weapons, operated under their own paradigms, and only suffer in comparison to non-Asian technologies.

⁷⁵ Zhou Shide, "Shipbuilding," 479.



**Figure 29: Whang Ho entering port of San Francisco, 1906.
(San Francisco Chronicle, December 9th, 1906)**

the *Ning Po*: ponderous, magnificent buttocks

All the sources and all available images identify the junk *Ning Po* as representative of the classic Fuzhou pole-junk of China's Southern coast. Worcester assigns the name *Hua Pigu*, or Flowery Buttocks, to this design, without explanation. Apparently this is an allusion to the decorated stern transom. According to Paul Chow, navigator of the junk *Free China*, *Hua Pigu* is not odd at all for the name of a style of junk. The *Pigu*, the buttocks or stern of the vessel, was adorned with an abundance of flowery designs. And furthermore the opening for the "head," or toilet, on Chinese junks was at the stern. "From a certain angle, you can look in and see a real *pigu*!"⁷⁶

This particular type of vessel has received, relatively speaking, a much greater amount of attention than others. Pole-junks, apparently so named due to their massive

⁷⁶ Paul Chow, personal communication with author, 13 November 2000. This is in distinct contrast to the western tradition of placing the "head" at the bow of the sailing vessel (hence the term "head" for marine toilet). Chinese sailors would not think of desecrating the junk by forcing it to sail through their own waste.

cargoes of logs or poles hauled up and down the China coast, were some of the largest and most conspicuous vessels in Asian waters. They were truly massive and heavily built for their rough trade. Rafts of lumber, especially Fujian pine (*Pinus massoniana*) used for furniture-making and junk construction, were often floated down the Min river of Fujian province. Upon arrival at Fuzhou, the rafts would be disassembled and the logs stacked to await shipment by sailing junk to Shanghai and other parts of China.⁷⁷ These would be attached both on deck and outboard of the pole-junk by cables and overhanging beams. These junks generally made only five or six trips per year in this fashion, between June and September, taking advantage of the monsoon winds.⁷⁸ The large vessel itself would almost disappear behind its enormous cargo.

Chinese sailing ships usually were constructed of three different types of wood: the Fujian pine mentioned above, known to the Chinese as *mawaisong*; fir (*Cunninghamia lanceolata*), known as *shan*; and camphor (*Cinnamomum camphora*), or *xiangzhang*.⁷⁹ Typically camphor wood would be used for structural members such as frames, as well as windlasses. Fir would be employed as hull strakes and bulkheads; and pine used for the keel.

In contrast to the forward linkage concept of material culture mentioned in Chapter 3, such an investigation of the construction elements of Chinese junks is an example of backward linkages. This direction would lead to not just the raw material, but the artisans who crafted the vessel, and the social systems which allowed the artifact to be created in the first place.⁸⁰ Pole junks, in this backward linkage, sometimes then carried the very material of their own construction, distributing limber along the Chinese coast.

⁷⁷ Worcester, *Junks and Sampans*, 187.

⁷⁸ Wim Johnson, *Shaky Ships: the Formal Richness of Chinese Shipbuilding* (Antwerp: National Maritime Museum of Antwerp, 1994), 82.

⁷⁹ Gang Deng, *Maritime Sector*, 44.

⁸⁰ Gordon, "The Interpretation of Artifacts...", 80.

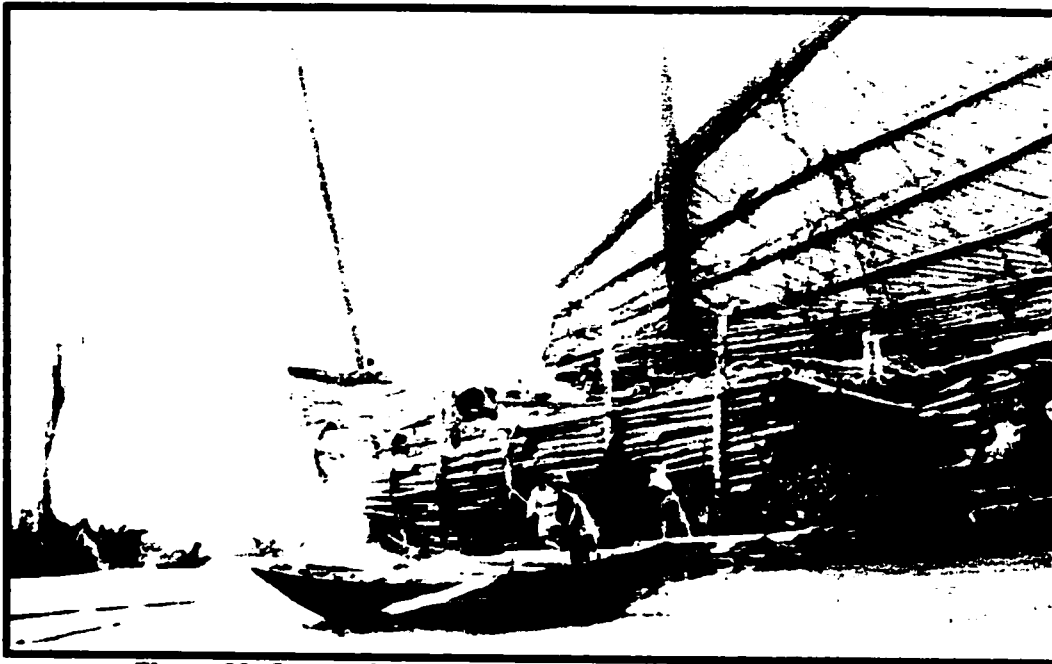


Figure 30: Cargo of poles loaded on Fuzhou pole-junk, almost invisible behind the timber. (Worcester, Junks and Sampans, 194)

The *Ningpo*, 138 feet in length and 31 feet in beam, was a medium-sized (300 ton) three-masted Fujian-style ocean-going trade ship. Pole-junks ranged between 120 and 180 feet long, and between 200 and 400 tons. These dimensions encompass the size of another famous Chinese junk which arrived in London in 1848, the *Keying*. The complement for Fujian vessels of this size was some 25 or 30 crewmen.⁸¹ Fifteen internal bulkheads, and over thirty frames or ribs arranged between these divisions, gave the craft great strength.⁸² The use of a higher number of frames indicate a greater foreign (western) influence relative to junks further north.⁸³ These junks are alternately described as having no keel, or having a very shallow keel. In all instances, though, their hull shape is rounded and generally flat-bottomed.

The division of the interior of junks into so many compartments not only served to protect the vessel from sinking (in case one of the sections was flooded or compromised in

⁸¹ Sir Frederick Maze, *The Maze Collection of Chinese Junk Models in the Science Museum, London* (London, 1938).

⁸² This is approximately the same number of internal water tight divisions featured in the *Titanic*. No direct connection is implied.

⁸³ Gould and Foster, *Junks*, 34.

some way), but also functioned as a convenient device to manage the leasing of space on board the craft. The master of the junk would lease each compartment individually to merchants, rather than divide shares by tonnage in the European fashion.⁸⁴ Pomeranz, in *The Great Divergence*, examines the nature of the monsoon trading pattern in relation to this compartmentalized design. He finds watertight bulkhead compartments for the cargo of individual merchants an appropriate system for the slower-paced monsoon trading pattern in Southeast Asia. This is in comparison to the different system of European trade in the Atlantic.⁸⁵ He makes an interesting point in tying the technology of the Chinese bulkhead to the behavior of merchants overseas, yet on closer examination questions arise. Weren't European merchants active within the same monsoon trade patterns in Asia? And did the adoption of watertight bulkheads by European shipwrights then alter merchant behavior? Needless to say, permanent bulkheads precluded open gun decks within the pole-junks, and large timber cargoes mounted out board of the hull blocked any potential for gun ports on the upper deck.

Returning to the technical design of the *Hua Pigu*, upright capstans, a western invention, were also observed on pole-junks in the 19th century. Large capstans and winches dominated the work on deck of hoisting heavy sails, mooring cables, and cargo. Adjustable rudders, typically very large compared to western designs, could weigh several tons on the big Fujian coastal traders. These, too, were raised and lowered with winches, by hand. As usual, several thick rounded wales stretched along each side of the hull, giving the vessel longitudinal rigidity. The sizeable dimensions of all scantlings (all structural ship timbers) was the primary reason for the longevity of these big junks. They were simply heavily overbuilt for their cumbersome trade. Worcester records several examples as being more than 150 years old.⁸⁶

⁸⁴ Ivon A. Donnelly, "Foochow Pole Junks," *Mariner's Mirror* 9, no.8 (1923): 226.

⁸⁵ Pomeranz, *The Great Divergence*, 171.

⁸⁶ Worcester, *Junks and Sampans*, 191.

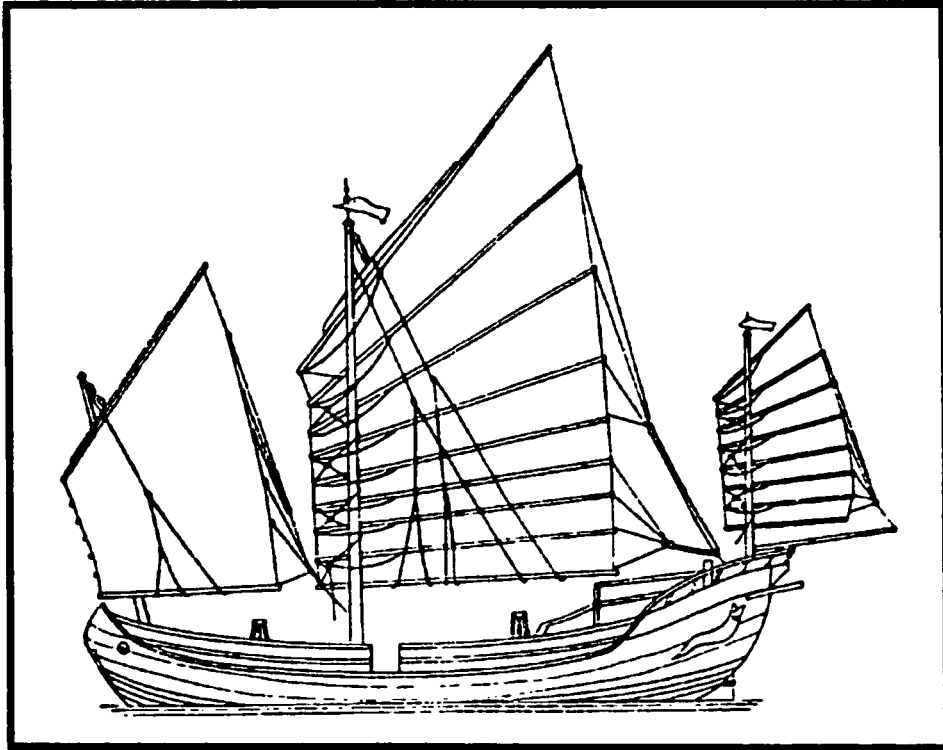


Figure 31: Pole-junk, idealized sketch.
(Worcester, Classification, 64)

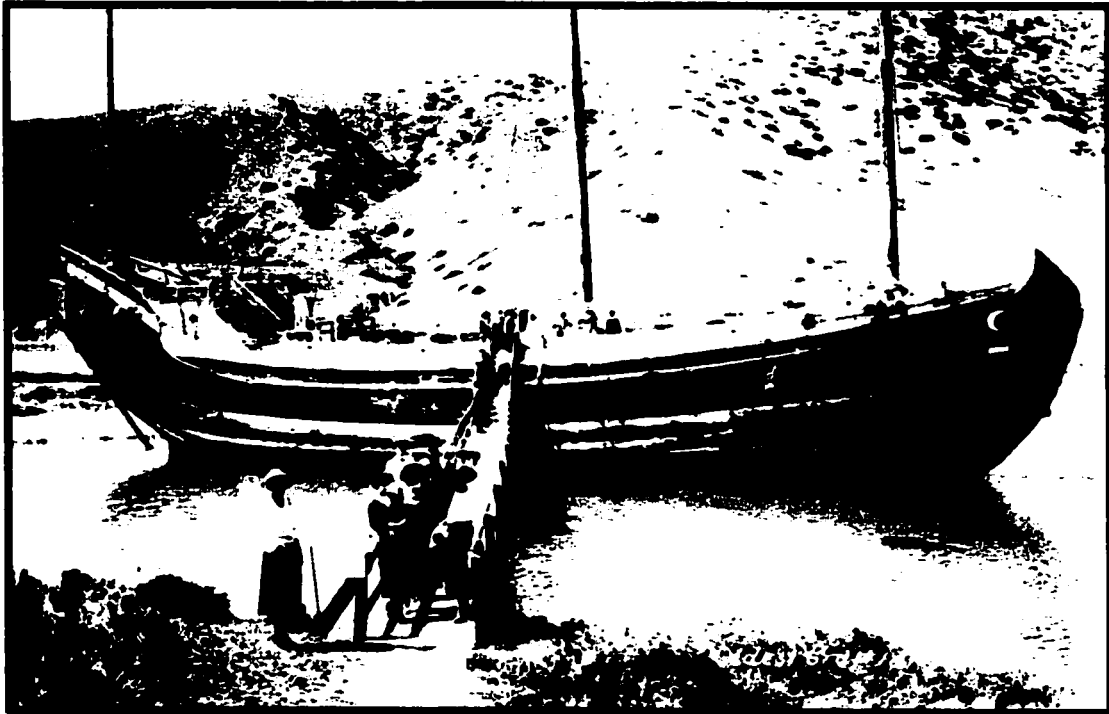


Figure 32: Ning Po at Catalina, available for tour groups in 1913.
(San Francisco Maritime NHP)

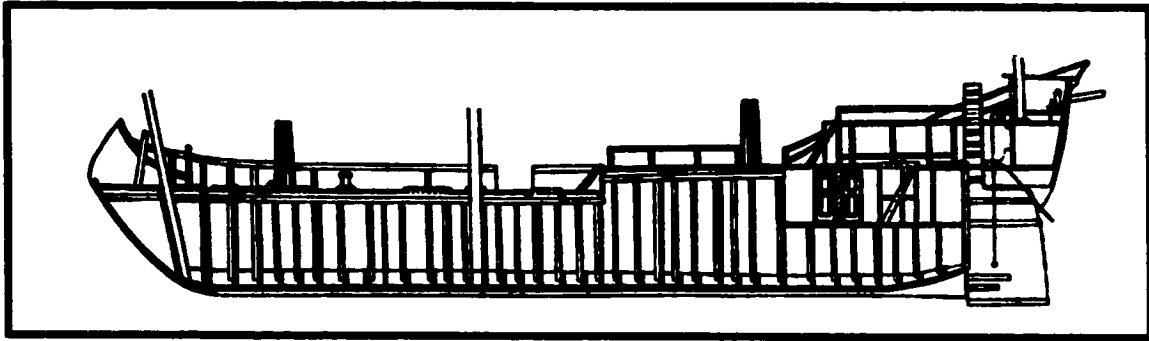


Figure 33: Cut-away elevation view of a pole-junk; note the very large rudder raised within the transom. (Worcester, Junks and Sampans, 188-9)

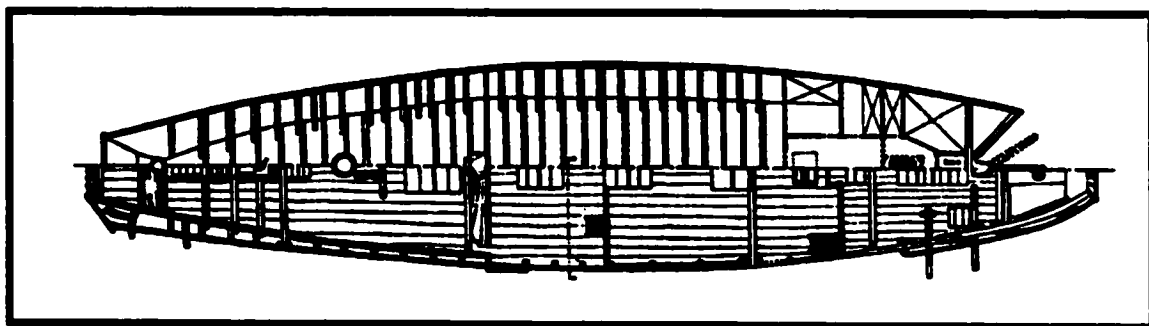


Figure 34: Half-cutaway plan view of a pole-junk, bulkheads interspersed with frames. (Worcester, Junks and Sampans, 188-9)

Though Chinese pole-junks constructed in Fujian province were made of local fir and more resinous pine, the *Ning Po* was slightly different. Her upper works were teak, with teak and camphor wood used throughout interior bulkheads and hull planks. Interestingly the size, time period built, and use of teak on the *Ning Po* are all indicators suggesting that this vessel may have been built in Siam, Chinese ship construction being fairly common there at the time due to cheap labor and higher quality materials.⁸⁷ Deforestation on the Chinese mainland made sources of lumber from overseas more and more significant. Such deforestation also drove up the price of ship construction in China. Average costs rose some 700% between 1550 and 1820.⁸⁸

⁸⁷ See John Crawford, *Journal of an Embassy from the Governor General of India to the Courts of Siam and Cochin China* (London: Henry Colburn, 1828).

⁸⁸ Pomeranz, *The Great Divergence*, 226.

The stern transoms and copious decorations were among the most distinguishable features of these craft. The ornately carved oval stern, complete with *Yen* or swallow bird motif, images of the immortals, and serpent depictions on the quarters, was typically Fujianese in character. Such stylized decorations were conservative and very standardized. Only minor variations have ever been encountered.⁸⁹ They appear here similar to examples from the preceding centuries.

As the stern transom itself is pierced to receive the adjustable rudder, the entire compartment is not watertight. Thus, the actual transom is often called a false transom, and the "real" transom of the vessel is the first watertight bulkhead in the interior of the craft. Such an arrangement served to offer a measure of protection from the sea to the critical rudder.

⁸⁹ Worcester, *Junks and Sampans*, 190.

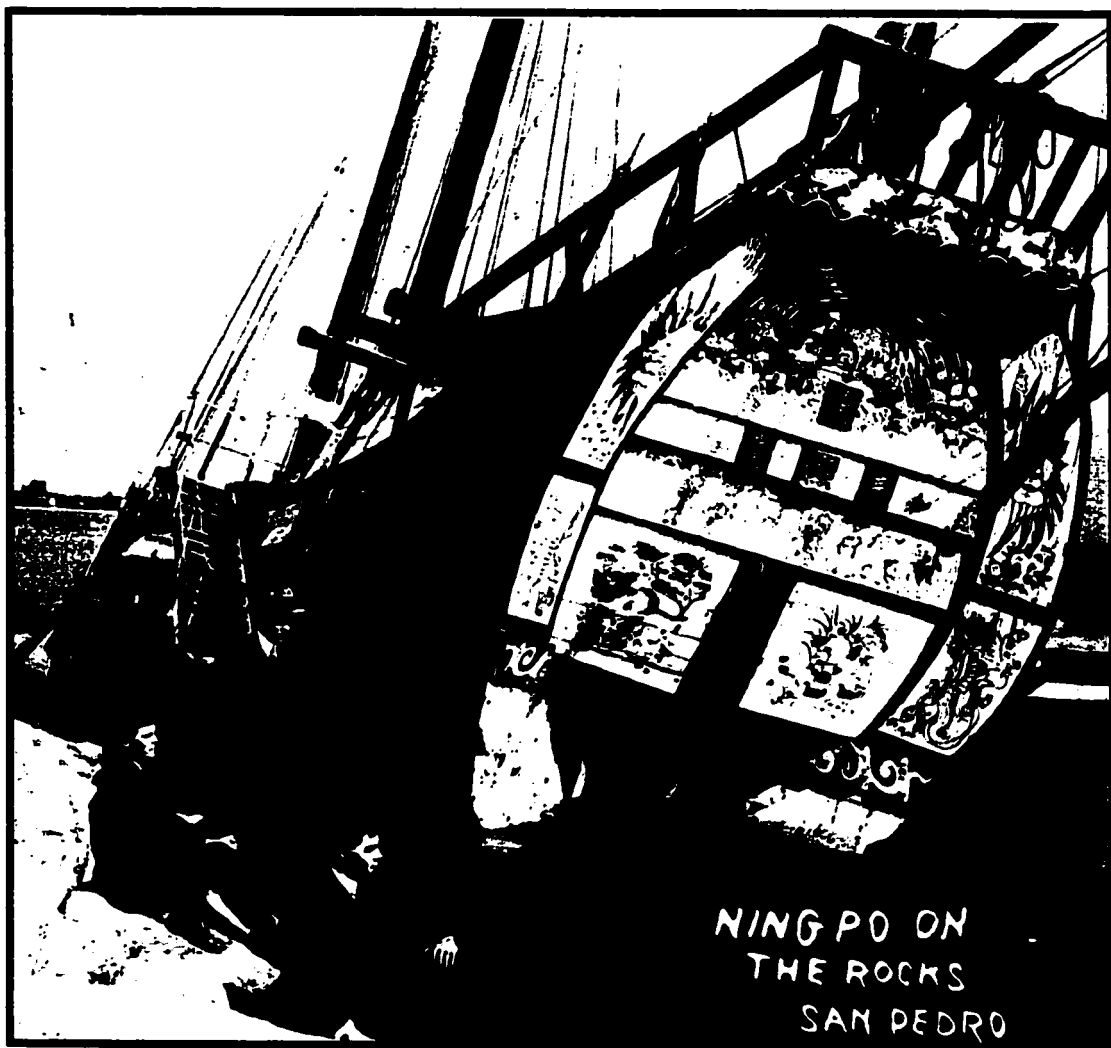
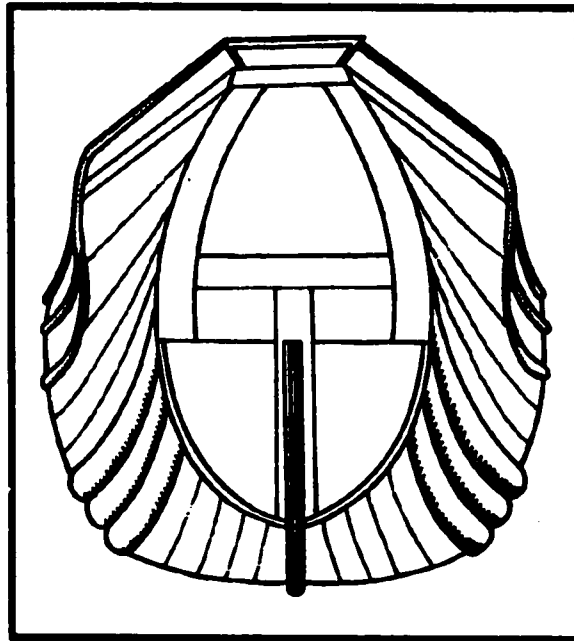


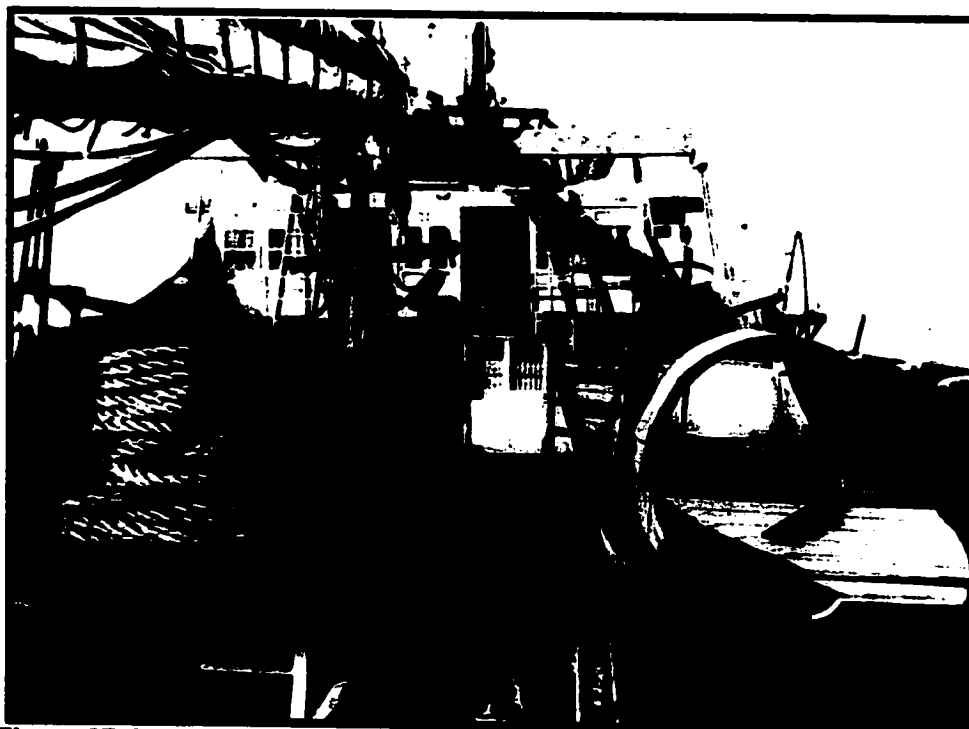
Figure 35: Ning Po aground at Dead Man Island. Trunk for rudder and false transom of the oval stern, as well as decorative motifs of yan bird and the eight immortals, are visible. (San Francisco Maritime NHP)

In the above figure, though the aging wooden *Ning Po* was aground for days, the massively built vessel was patched and refloated following the storm. The visible shrouds supporting the masts were a western addition to the vessel. The *Ning Po*, before completing the Pacific crossing to California, was also re-rigged with western gaff-style sails.



**Figures 36: The Pigu— Worcester's idealized oval Fujian stern design.
(Worcester, Junks and Sampans, 188)**

A spacious cabin was built on the quarter or aft deck of the larger vessels, though smaller pole-junks had no stern accommodations or raised quarter deck. Such raised quarters at the stern of large vessels invariably recall, for western observers, the towering galleries of medieval western galleons. The owner or captain of the vessel, the *laoda*, had his quarters at the stern, and the shrine to *Tianfei* or *Guanyin* or both was located far aft as well.



**Figure 37: Looking aft on the cluttered Ning Po; sanban, cables, cargo hatches, and frame for supporting the lowered sail, pengjia, take up the deck.
(Catalina Island Museum)**

The wide and high wings at the bow, allegedly built to give the junk its fish-like appearance, were also features of some interest. Such flaring freeboard to each side of the transom bow served to divert quartering waves, and also usually supported the horizontal windlass used to lower and raise the large anchor, or to haul the foresail.⁹⁰ The adoption of western capstans on the foredeck did away with the horizontal windlass forward, but the flaring wings to port and starboard remained. Often the Chinese windlass, located elsewhere in the deck, remained side-by-side with the newer western labor-saving device. The use of the newer technology became part of the language of the pole-junk pattern.

Transom bows, as cumbersome as they were to western eyes, functioned quite well for Chinese junks. In order to reduce the vessel's pitching motion, frequently the first previously water tight compartment forward would have holes drilled through the hull, below

⁹⁰ Donnelly, "Foochow Pole Junks," 227. The same Chinese style windlass can be seen on the *guangchuan* style war junk, typified by the *Whang Ho*.

the waterline, allowing water to enter when the vessel dipped its head under the ocean surface, and then drain when the bow rode free above the waves.⁹¹ The first bulkhead forward, then, was the true water tight transom. The bow also may have featured another odd element of eastern/western hybridity.

The stern head is invariably a solid piece of wood covered with an iron plate. On this iron plate will more often than not be seen a familiar home advertisement such as "Fry's Cocoa," or "Colman's Mustard." This curious feature is explained by the fact that a considerable quantity of old iron is imported into China from the United Kingdom amongst which will be found some of the large iron-enameled advertisements to be seen on the hoardings and at railway stations at home.⁹²



Figures 38 and 39: Western upright capstan on board the Ning Po, older horizontal design immediately behind it. (Catalina Island Museum); Pole junk in China with flaring wings at bow, loaded with cargo. (Donnelly, "Foochow Pole-junks," 229)

Large Fuzhou pole junks no longer exist.⁹³ Their demise was recorded by Worcester himself, during his duty in China in the 1920s.

⁹¹ Worcester, *Sail and Sweep*, 43.

⁹² Donnelly, "Foochow Pole Junks," 227.

⁹³ Gould and Foster, *Junks*, 32.

For ponderous dignity the Foochow pole-junks are unsurpassed, yet their maneuverability is such that they need no outside assistance when entering and leaving Shanghai. The Chinese inventiveness and originality have reached their highest point in these craft, in which may be seen epitomized their ingenuity of ship design and the unique skill in seamanship of their crews.

The larger types are, unhappily, rapidly dying out. Indeed, it is said by the junkmen that there are only ten of these magnificent vessels afloat today, and that of this number four are almost falling to pieces, while the remaining six are sadly in need of repair.⁹⁴

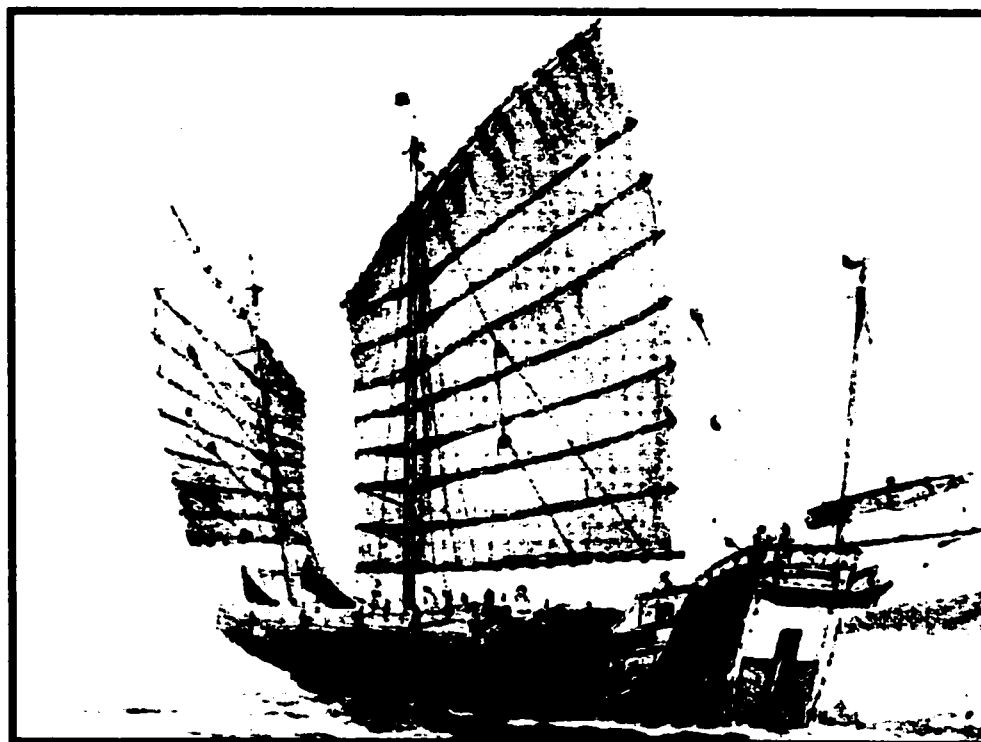


Figure 40: Pole-junk described as “shachuan” or sand boat. Note windlass between forward wings. (Johnson, Shaky Ships, 25)

At one time there were hundreds of Fuzhou pole-junks operating all along the coasts of China. At upwards of 180 feet long, these were some of the largest junks built in the late 19th century. Shanghai-built *shachuan*, or sand boats (meaning flat-bottomed boats), were of similar dimensions, and shared many of the same design features.⁹⁵ The general *shachuan*

⁹⁴ Worcester, *Junks and Sampans*, 194.

⁹⁵ Johnson, *Shaky Ships*, 28.

vessel designs represent one of the important major classifications of Chinese junks, the basic shape first becoming predominant in the Song dynasty.⁹⁶

Even more intriguing are the design similarities between 19th century *shachuan* and *fuchuan* such as the pole-junks to historic images of the vessels engaged in the sailing junk trade to Southeast Asia. "These vessels, unlike the junks of Southern China, show few signs of European influence, and appear to have remained practically unchanged for at least 500 years."⁹⁷



Figure 41: a multitude of large Fujian coastal traders, pole junk type, at anchor and awaiting cargoes. (Worcester, Sail and Sweep, 1)

⁹⁶ Gang Deng, *Maritime Sector*, 7; Zhou Shide, "Shipbuilding," 479.

⁹⁷ Maze, *The Maze Collection*. Such statements are relative, and didn't include here the very late additions of capstans, shrouds, or gaff-rigged sails.



**Figure 42: One of if not the last of the pole-junks, Ning Po, resting quietly at Ballast Point, Catalina Island.
(Catalina Island Museum)**

the Amoy: the real unsinkable vessel

Unlike the government war junk and the large ubiquitous Fujian coastal traders, the smaller Amoy junk designs reflected a specialized and regionally endemic fishing and local trade craft, smaller vessels completely devoted to non-military uses. Local Amoy fishing boats were seldom seen north of Shanghai or south of Swatow.⁹⁸ The area around what is known today as *Xiamen* has been known historically for the rough weather of the stormy Formosa channel. Junks from Amoy were famous for their sea-keeping abilities in all such weather, and have therefore been the subject of some research into their design. Amoy, or *Xiamen*, is a port with a long history of activity, known for its communication with coastal and overseas trade. To be a Chinese sailor from Amoy might not be completely unlike being a sailor from Liverpool, or Nantucket, or Lisbon.

⁹⁸ G.R.G. Worcester, "The Amoy Fishing Boat." *Mariner's Mirror* 40, no.4 (1954), 304.

These small but handy Amoy fishing junks varied in size from 55 to 70 feet in length, and from 17 to 20 feet in beam, with a depth of five or six feet. They were handy, well-balanced, and comparatively fast craft which were once quite numerous.⁹⁹ There were several reasons why they kept the sea so well, bobbing about like corks without shipping any water over the sides. Their small size relative to the ocean swells allowed them to ride over each wave and not plunge into the surface; the construction features of their rudder and bow added to their stability; and the unique Chinese sail rig, and particularly the forward rake of the foremast, served to help lift the craft out of the waves.

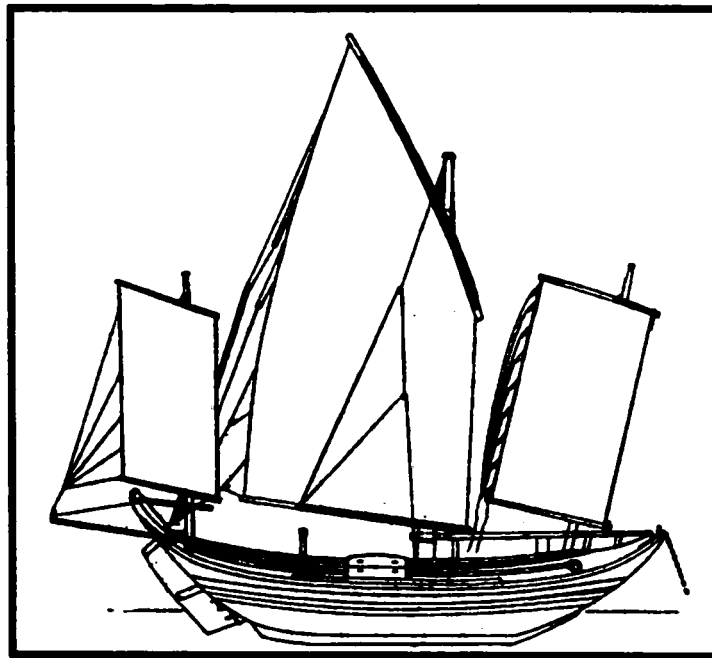


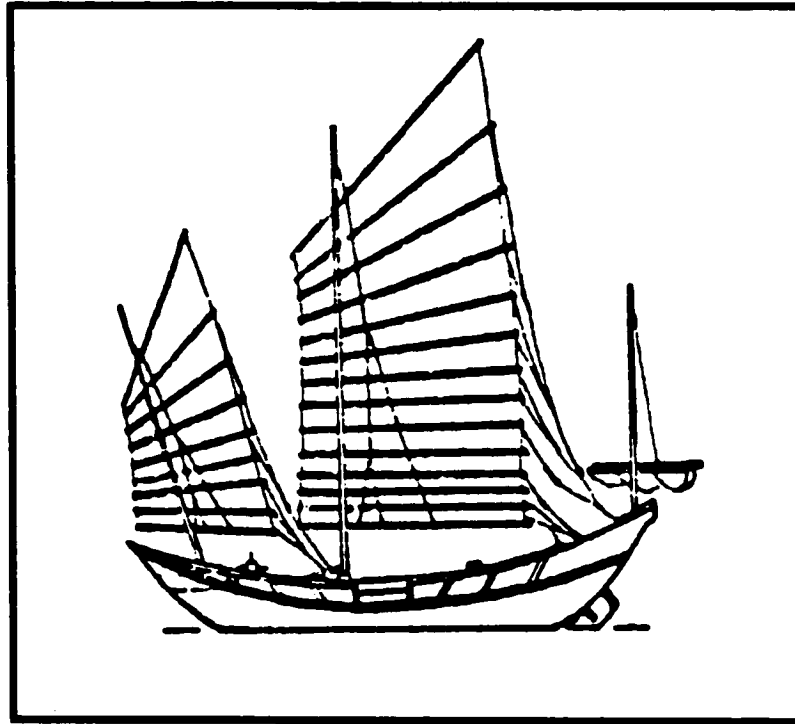
Figure 43: Elevation and sail plan of a small Amoy fishing junk; rudder in raised position.
(Worcester, "The Amoy Fishing Boat," 305)

Amoy trade junks, at 70 feet in length and 16 feet in beam, were at the higher end of the size scale for local designs, being longer and narrower than many comparable fishing vessels.¹⁰⁰ The graceful curves and gentle sheer lines of the two types, though, the fishing junk and local trading junk of Amoy, seem quite similar. The trade junks traditionally

⁹⁹ Ibid.

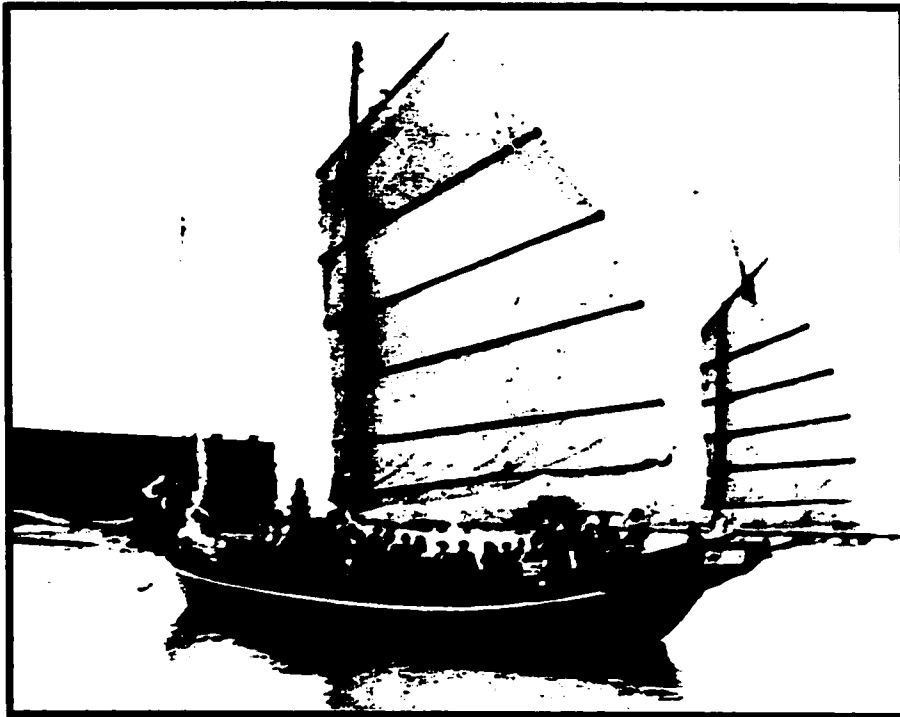
¹⁰⁰ Worcester, *Classification*, 95.

operated between Amoy and Fuzhou. The transpacific junk *Amoy*, a 23 ton three-masted 65 foot long vessel built in 1921, most closely resembles an Amoy trading junk.



***Figure 44: Worcester's sketch of an Amoy trader.
(Worcester, Classification, 96)***

The gentle sheer, or curve, from fore and aft, as well as the considerable rake towards the bow of the foremast, are apparent in this sketch. The acute angle and large overhang of the bow is also notable. The sail of the mizzen mast at the stern, typical of many three-masted designs, remains furled. These small sails were only used infrequently, during the fairest weather. Certain junks simply removed the mizzen mast when not in use. The forward horizontal windlass can be seen between the fore and main masts, sticking up above gunwale.



**Figure 45: Junk Amoy and numerous passengers, on its west coast tour, at Eureka California 1922.
(San Francisco Maritime NHP)**

The deep, narrow rudder of the Amoy junk, though completely hidden in the above figure, was characteristic of many similar designs. One cable attached to the shoulder or upper portion of the rudder blade to raise and lower the rudder, and one or two cables attached to the heel or lower portion of the rudder blade pulled the rudder forward against the stern of the junk, holding it in place against the flow of the water. Thus, the suspended median rudder was held in place without permanent attachments such as iron pintles and gudgeons. The rudder post usually rode in a wooden groove or loose socket. One possible drawback of this design is the subsequent vibration of the deep rudder blade and the underwater cables, making it somewhat more difficult to maintain a true course. P. Du Halde, in the 18th century, noted:

This rudder hung by two cables, the two ends of which were wound about a capstan [windlass] placed on the highest part of the stern, that by this means it might be raised or lowered at pleasure; two other cables, after passing under the vessel, were brought up on the forepart of the prow, where they

were kept tight by the help of a capstan [windlass], and when they were relaxed were in the room of the hinges by which ours are fastened to the sternpost; there was a tiller seven or eight feet long without a handle, and without a pulley; to increase the strength of the steersman four tacklings were fastened, two to each side of the vessel, one of which was turned several times over the end of the tiller that the steersman might be able to keep it in its proper place.

A rudder made in this manner can scarcely be felt by a large vessel, not only because the ropes, by means of which they communicate their motion, easily stretch and grow longer, but chiefly because of the continual yawing that gives it a trembling motion without ceasing, from whence arises another inconvenience, which is that there is all the difficulty in the world to keep a vessel steady on the same rumb.¹⁰¹

Nonetheless, there is much testimony to the handiness and maneuverability of Chinese junks by other sources. The type of junk that Du Halde journeyed on remains unclear, but the Amoy junk designs are the case in point.

The Amoy fishing-boat is designed for bad weather, and is an unusually seaworthy craft. Groups of them may be seen occasionally standing out boldly to sea in the northern end of the Formosa Channel, when a moderate gale is blowing and a high, steep sea is running, tending their "anchored" fishing-lines and showing their fine weatherly and maneuvering qualities, and rarely shipping any water.¹⁰²

¹⁰¹ Du Halde, *The General History of China*, 283.

¹⁰² Maze, *The Maze Collection*, 1938.

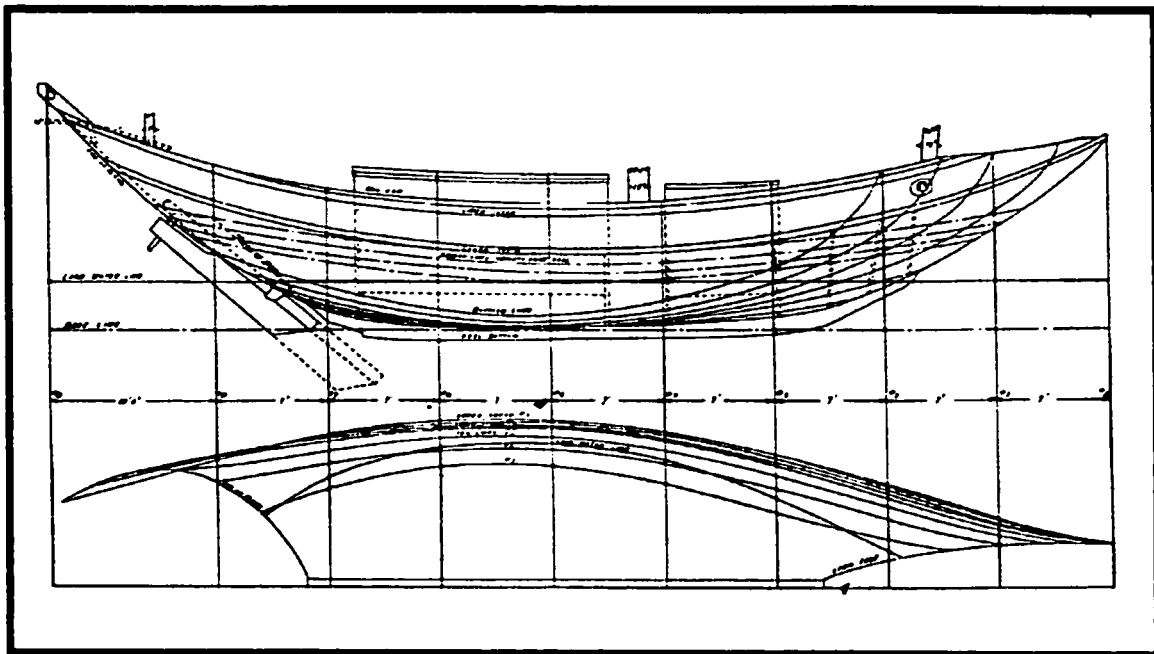


Figure 46: Elevation and waterlines of the Amoy, noting the range of rudder adjustment (partially lowered). (Gould and Foster, Junks, 38)

A document on junk construction from the U.S. Navy's weapons development department, *Junks—Construction and Regional Characteristics*, gives the actual hull lines for the junk *Amoy*.¹⁰³ Wales, interior bulkhead, and keel are all delineated in the document. The long narrow rudder was characteristic of Chinese sea-going junks. Perhaps it was not the maneuverability that was the weak point of the suspended median rudder, but the vulnerability to damage. The transpacific junk *Amoy* was disabled several times by storms and rudder damage in its Pacific crossing. This may have not been the rudder design of choice for deep ocean crossings, but one more suited to coastal trade and fishing.

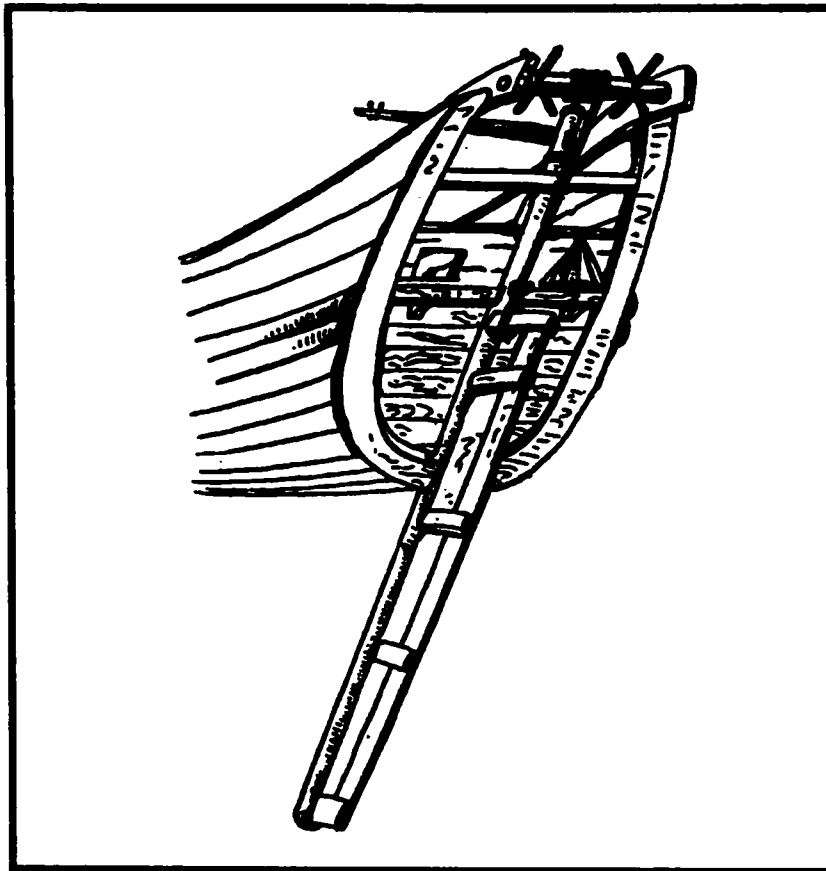
¹⁰³ Gould and Foster, (China Lake: US Naval Ordnance Test Station, 1965).



Figure 47: Rudder post head and tiller (lowered), barely visible behind steering tackle in transom slot, junk Amoy. Horizontal windlass for adjusting rudder appears as uppermost crosspiece, integral to transom design. (British Columbia Archives)

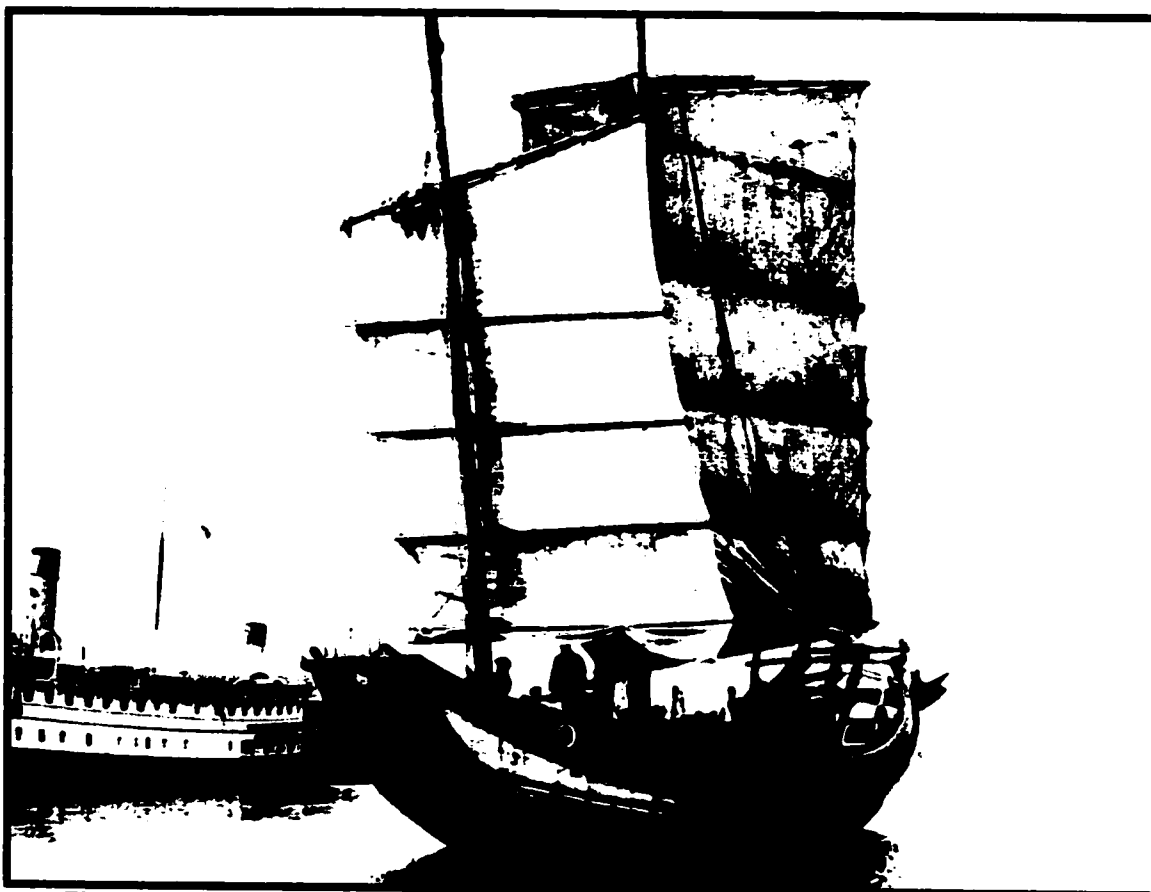
The above figure gives some idea of the steering arrangements of the Amoy trader. The large vertical timbers which bracket the adjustable rudder post, the "hard muscles," lend strength to the split stern transom.¹⁰⁴ A *yuloh*, or feathered sculling oar, can be seen resting along the bulkwarks (right side of frame). Many small junks such as these Amoy vessels could be propelled in and out of the harbor by hand-power alone.

¹⁰⁴ The terminology here comes from a mid-19th century shipbuilding document; see chapter five.



**Figure 48: Stern diagram of deep rudder and windlass similar to Amoy arrangement. Opening for sculling oar to port (left) of rudder post, "tout-a-l'egout" evacuation opening to starboard side.
(Audemard, Les Jonques Chinoises, 27)**

As noted previously, the deep rudder, besides steering the junk, operated as a keel, reducing drift to leeward and stabilizing the vessel in rough seas. The shape of the bow, as well, kept the junk dry in rough seas. Bow compartments in junks with water tight compartments were frequently free flooding, as in the case with the pole-junk. Yet the flat surface of the sharply overhanging transom bow itself, when thrust into an oncoming swell, served to provide lift to the vessel and keep the junk from burying its head.



**Figure 49: Amoy entering Victoria Harbor, following its Pacific crossing, 1922.
(San Francisco Maritime NHP)**

In this figure, the longitudinal strength members, or rounded and partially finished "log" planks, are visible. The oculus, as befitting merchant vessels, peers straight ahead (the eyes of fishing junks look down).¹⁰⁵ The first scans for dangerous rocks and shoals, the second for schools of fish.

So the size, shape, and keel-like rudder and angled bow transom all help the Amoy junk to ride over the waves, what about the sail rig? The particular manner in which the bamboo batten sails are rigged, or attached, to the masts provide lift during gusts or high seas.

It will probably be noticed that the sail is not secured at the foot by a tack tackle. As a matter of fact a Chinese lug sail seldom is, and any such

¹⁰⁵ Worcester, "Amoy Fishing Junk," 306.

arrangement is quite a temporary affair, no permanent fittings are ever supplied for tacking the foot of the sail. The only means by which the sail is stopped from riding up the mast is by the fore topping lift and the panels. In smaller junks and sampans the sail can be seen sliding up the mast in hard puffs. It is precisely this effect which gives such great lifting power to the sail, and that is why, in spite of the low bow and the forward rake of the mast, the junk always lifts so easily to a wave and keeps dry.¹⁰⁶

No individual rigging held the bottom of the sail down on Chinese junks. This was in distinct opposition to the western tradition. It was one of those surprising secrets within Chinese ship design, responsible for the almost universal observation of this type of vessel remaining "as dry as on the day of her launching, with not a drop of water in her."¹⁰⁷ It has been a given, in the western historical experience, that all vessels work, or flex, in a seaway; that all wooden vessels leak, and thus it is no surprise that the technology of ships' pumps found its greatest expression in the west. Ships' pumps represent one of the nautical technologies that, in all probability, was not originally transmitted from China. There, junk construction was such that "a well or two made in the bottom of the hold of the vessel is sufficient to keep it dry; hitherto they have had no knowledge of a pump."¹⁰⁸

Amoy is a region with long ties to the sea. The area's geographical situation alone, along with coastal Fujian Province, with its steep mountains adjacent to an extensive and indented coastline, attests to the natural reliance on marine resources. It is only fitting that one of the best examples of the Chinese shipwright's skill and art, the efficient and seaworthy fishing and trading junks, comes from Amoy. The *Amoy*, which crossed the Pacific in 1922, demonstrated several basic design features, which record that skill and art. The fact that the Amoy junk was a graceful and elegant object, something seemingly almost alive, is beside the point.

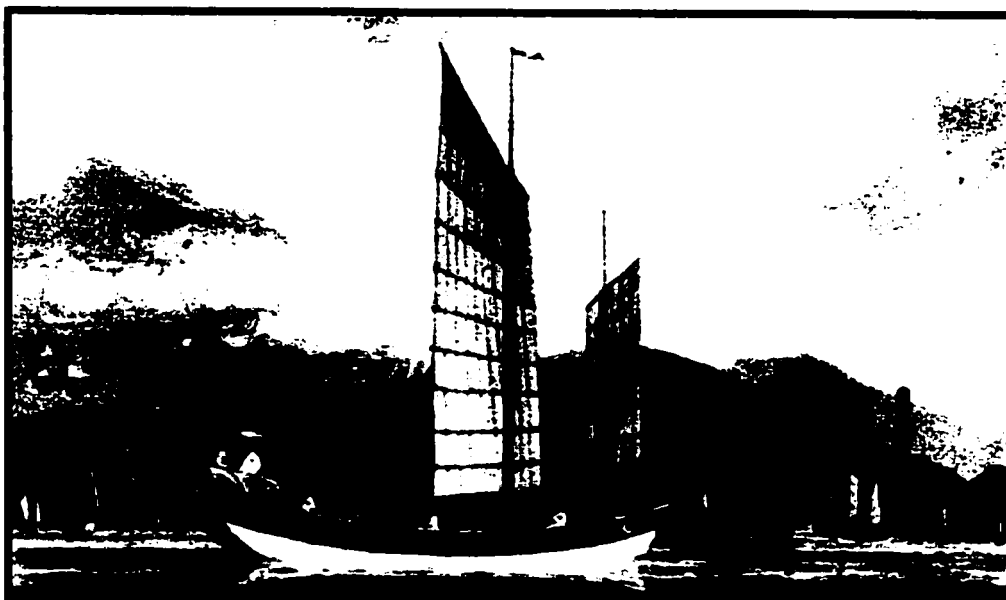
¹⁰⁶ Charles Jarrett, "The Chinese Junk." *For an' Aft*, (vol. and year unknown): 28.

¹⁰⁷ Captain Waard of the junk *Amoy*, upon his arrival in British Columbia, in "Rivals Viking Voyages of Old," 12.

¹⁰⁸ Du Halde, *General History of China*, 279. The tongue-in-cheek point here is simply to emphasize the seaworthiness of Amoy junks. No doubt many a Chinese vessel, like others, eventually leaked like a sieve.



**Figure 50: Junk Amoy in the quiet confines of Victoria's inner harbor.
(British Columbia Archives)**



**Figure 51: The long lines and gentle sheer of an Amoy sailing junk, 1810; similar
To the transpacific example. Sketch by Thomas Daniell.
(National Maritime Museum Greenwich)**

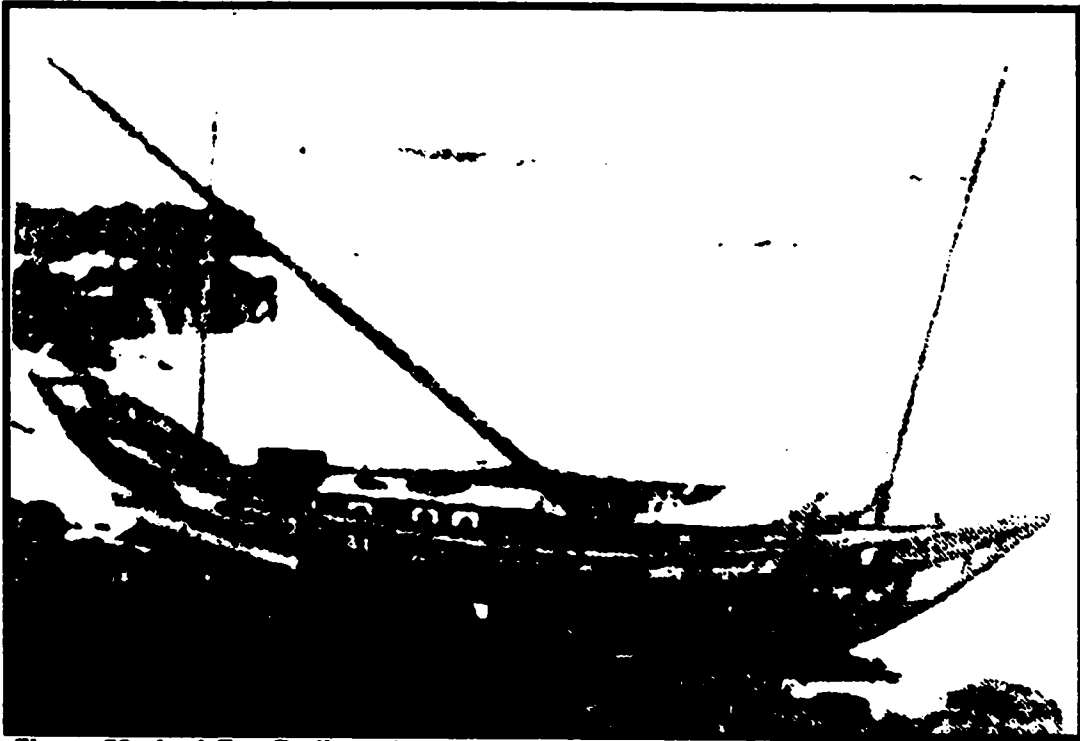
the *Fou Po II*: but lost in an instant

It is indeed unfortunate that the junk *Fou Po II*, while its crew lay convalescing at the hospital in Kalaupapa, was swept onto the rock and totally demolished. All plans and documents, all papers and photographs of the junk and the three year voyage were lost in that wreck. Though the single available photograph of the junk which wrecked on Moloka'i in the 1930s is of very poor quality, the vessel seems to most closely resemble an Amoy Trader, the same type as the junk *Amoy*. The three-masted shapely design, the acute overhanging bow, the raked forward mast, and the fact that the vessel was built at Amoy, serve to help identify the junk. All previous remarks apply to this case.

Her maritime ethnographer Captain, Eric De Bisschop, having spent years sailing around Ningbo and Amoy, was aware of the many qualities of the junk design, and the Amoy type in particular.

My reason for building another junk was that such a vessel embodies the knowledge of the ages, is extremely seaworthy, shipping practically no water, is roomy, easy to handle, and inexpensive to build. The length of the *Fou Po II* was forty feet, beam seventeen feet, draft three feet, or five feet, with the rudder which acts as a centerboard. Her ample breadth and high poop gave room for a large and comfortable cabin. Three huge bamboo poles were her masts and she carried lug sails with bamboo battens running entirely across. With her hull painted in red and gold Chinese designs from her bows to her overhanging stern, with two big eyes like Spanish onions on her square bow, she was reminiscent of the Middle Ages.¹⁰⁹

¹⁰⁹ Borden, *Sea Quest*, 229



**Figure 52: Junk Fou Po II on the rocks at Kalaupapa, mainmast going by the boards, falling over the side.
(Honolulu Star Bulletin)**

the *Hummel Hummel*: a small piece of various regions

Though Dr. Allen Petersen, who purchased the *Hummel Hummel* in China in the 1930s, reported that the small junk was a Ningbo style fishing vessel, the junk doesn't seem to fit very well with Worcester's descriptions of vessels in that area. The *Hummel Hummel* had only two masts, and stern quarters that don't exactly appear to have the same lines and construction as the documented description. Given the variety of different designs, and the capacity to build variations on any of them, this is not surprising. The junk was probably a small variation on the local Ningbo styles. All classifications, as Worcester himself has noted, are approximations. Most of the other features agree with the Ningpo designation. Construction at the bow appears very similar, and the long low cabin with railing is common to both images.

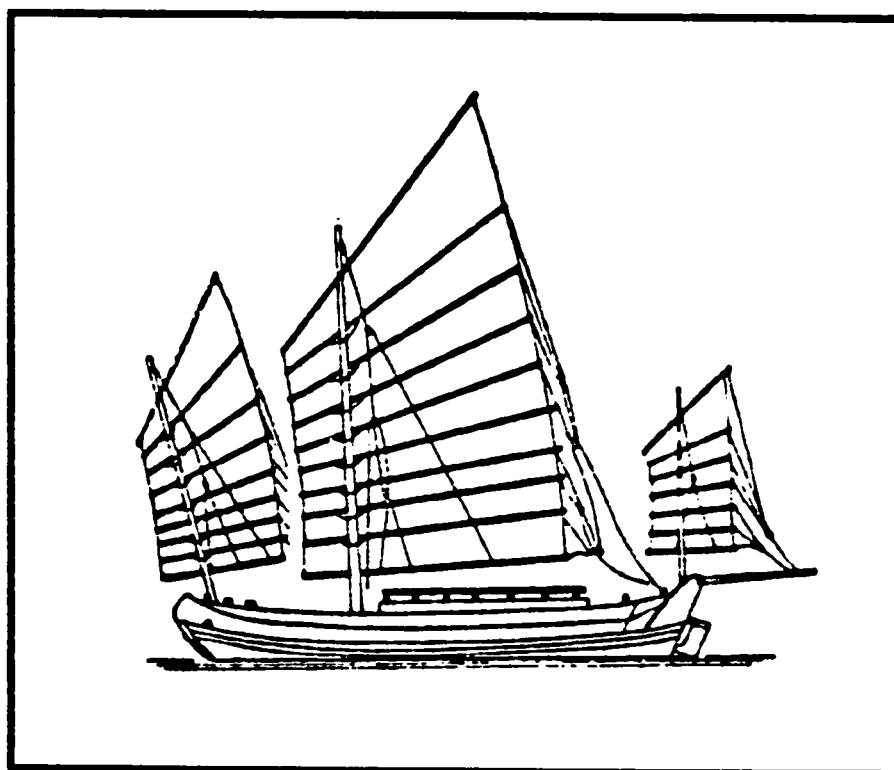
The *Lu Meimao*, or Green Eyebrow junk, as Worcester designates the design closest to the *Hummel Hummel*, operated chiefly in the Shanghai, Dinghai and Ningbo area, a regional unarmed fishing and trading vessel. The name came from a patch of green color behind the oculus, the eyes, of the junk. "Sometimes, however, black is used in lieu, in which case it is known as the 'black eyebrow'."¹¹⁰ Typically, these types were approximately 66 feet in length and 13 feet in beam, much larger than the tiny 36-foot long and nine foot beam vessel that Dr. Petersen brought across the Pacific.

This type is sometimes known as the big bird boat. This variety, which today is a trader, was formerly used exclusively as an ice boat. Larger than the fishing-boats; it differs very little from the former in internal arrangements.¹¹¹

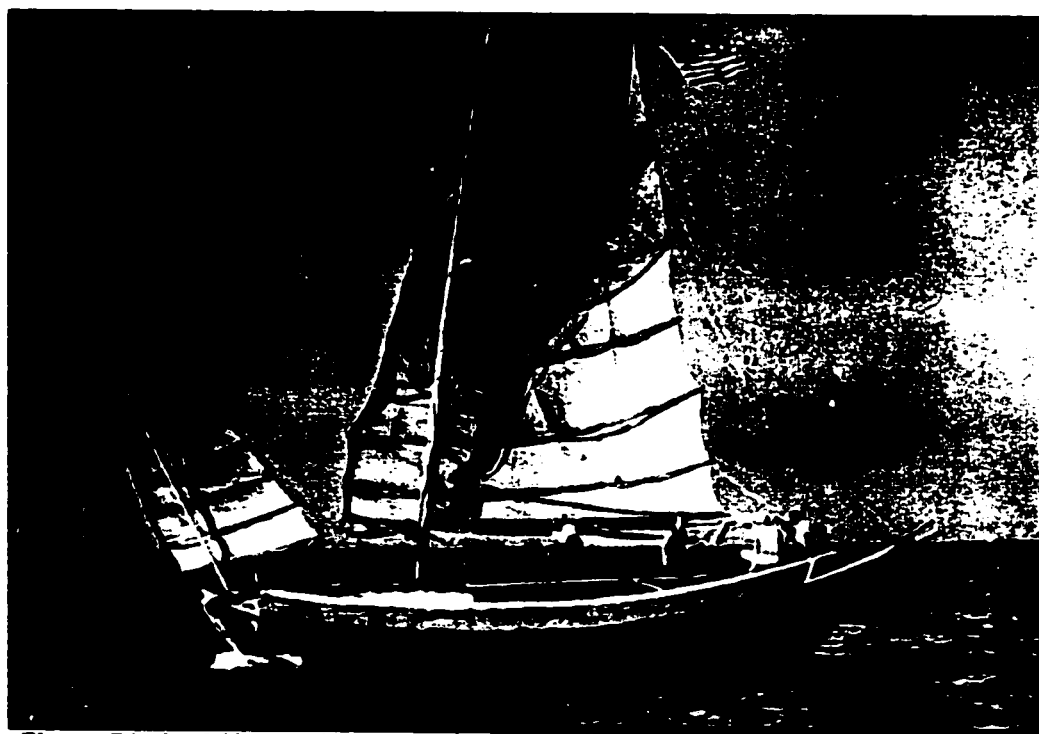
Petersen does not record what specific type the junk was in these terms, but simply that, since it was built in Ningpo, it was a Ningpo junk. By comparison, Worcester divides the Ningpo and Chusan area coastal junks into 17 different styles in his *Classification of the Principle Chinese Sea-going Junks*.

¹¹⁰ Worcester, *Classification*, 17. Such examples should highlight the flexible and uncertain nature junk designations.

¹¹¹ Ibid.



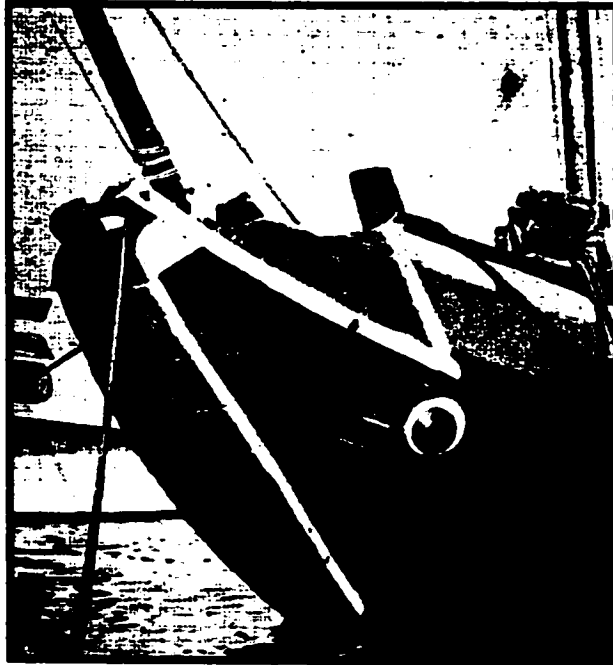
**Figure 53: Worcester's sketch of the Lu Meimao (Green Eyebrow) junk.
(Worcester, Classification, 16)**



**Figure 54: Junk Hummel Hummel underway, minus the mizzen mast at the stern.
(Petersen, Hummel Hummel, 65)**

The small eight-ton camphor wood craft *Hummel Hummel* was constructed in Ningpo, and used locally mainly for fishing and as a cargo carrier to Shanghai. The mainmast was of iron wood, while the foremast was a flexible bamboo pole. The bow featured the narrow transom style, which tends to prevent head seas from breaking over the forward deck and cabin, and it seems to have worked.¹¹² Much like the Amoy style junks, the *Hummel Hummel* remained dry in the roughest of seas, but the motion was not at all a pleasant one for its sometimes unhappy occupants.

Before midnight we were in a roaring southwest gale. The waves came up quickly so that by one a.m. we could not make headway. We took in the remaining bit of sail and tossed out our sea anchor which we had all prepared for such an emergency. That was a night we won't soon forget! The old *Hummel Hummel* bobbed, pitched, and rolled and went through motions you wouldn't believe a boat could go through. But no waves broke over her. Huge white crested devils rushed at us from the darkness, but none could catch her unaware.¹¹³



**Figure 55: Though narrow, the planks and wales still meet at a transom at the bow.
(Petersen, *Hummel Hummel*, 17)**

¹¹² Allen Petersen, "We Crossed the Pacific in a 36-foot Junk!" Misc. document, J. Porter Shaw library, San Francisco Maritime NHP.

¹¹³ Ibid.



Figure 56: Dr. and Mrs. Petersen, and the oval, semi-closed stern and sea-going rudder of the Hummel Hummel; hauled out in San Pedro for repairs. (Petersen, Hummel Hummel, 71)

Compared to the more solid enclosed stern transoms of the Amoy junks to the south, the *Hummel Hummel*'s stern clearly represented (from the photograph) the semi-closed variety, as recorded by Worcester, of Zhejiang junks further to the north. This is part of the general southern-northern transition from rounded and oval shapes to square sterns, itself a reflection of the deep water to shallow water design transition.¹¹⁴ The bow of the junk, on the other hand, appears to have been modeled on classic Fujian province design lines. This small junk may have been, then, a hybrid between regional styles, an example of the Chinese shipwright's ability to mix and match stylistic variations of the elements of the "pattern language."

The sketches in Worcester's *Classification* do not reveal anything beneath the waterline, and there are no other available plans for small local vessels like the *Hummel*

¹¹⁴ Worcester, *Sail and Sweep*, 17.

Hummel, but one photograph records either a false keel (a keel extending only under the forepart of the vessel) or a full keel on the junk. Either would provide additional stability underway, as well as greater longitudinal strength to the small vessel.

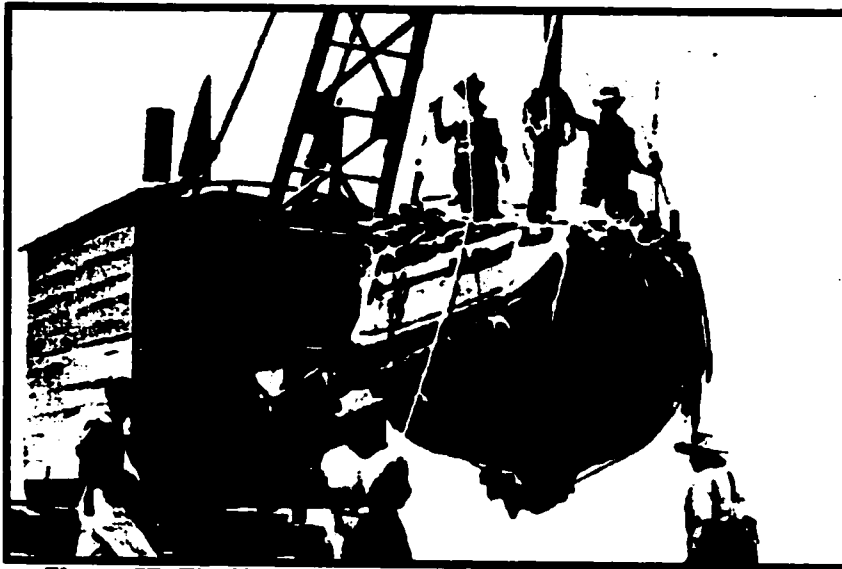


Figure 57: The Hummel Hummel hauled out by crane in Peru, forward keel or qian longgu almost visible. (Petersen, Hummel Hummel, 149)

The small *Hummel Hummel*, while obviously not representative of large long distance carriers of a more high profile variety in China's seafaring history, still portrays many of the classic constructional features of Chinese junks. The multiple thick and rounded wales, interior bulkheads, chunam caulking (replaced by her new owners with zinc strips while in Yokohama), and batten lug sail rig, combined to form a simple yet seaworthy vessel. The interesting combination of bow and stern designs representative of different regions highlights the innovative ability of junk masters.

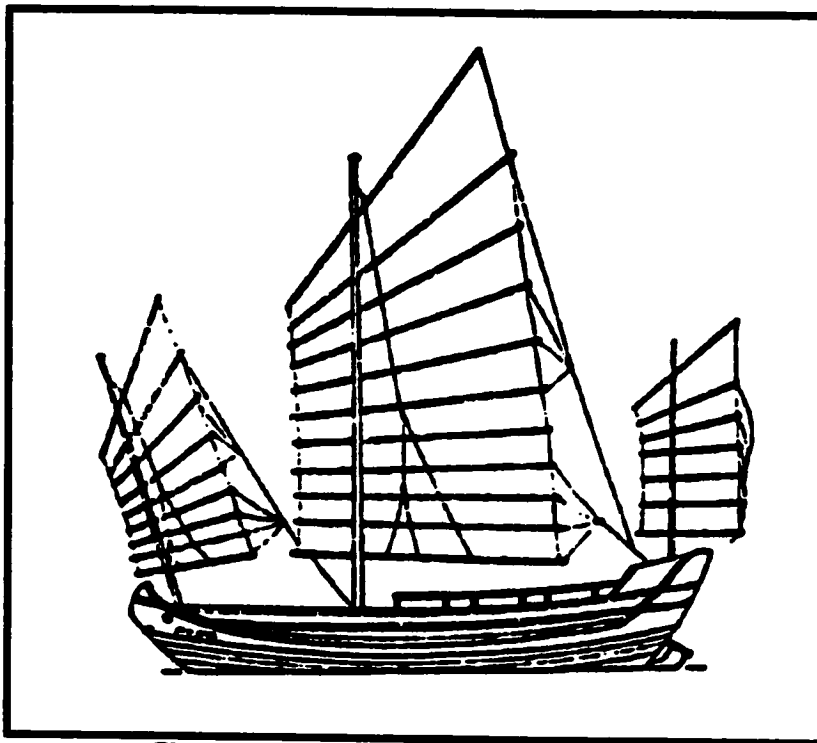
the *Sea Dragon*: “and neither the twain shall meet”

Richard Halliburton, after an extensive search, finally claimed to have located a shipwright who subsequently built a Wenzhou-style ocean-going junk in a shipyard in Kowloon. By all accounts, the vessel which was built proved to be a hybrid design, though not of Chinese coastal styles, but of eastern and western technologies. From the Chinese perspective, both the *Sea Dragon*'s symbolic and physical integrity had been breached by the inclusion of an engine and propeller shaft; the inclusion of which necessitated the removal of watertight bulkheads and a redesign of the hull and keel. From the Western perspective, the exceedingly lofty design appeared top-heavy and unstable, liable to capsize at the first strong gust of wind.

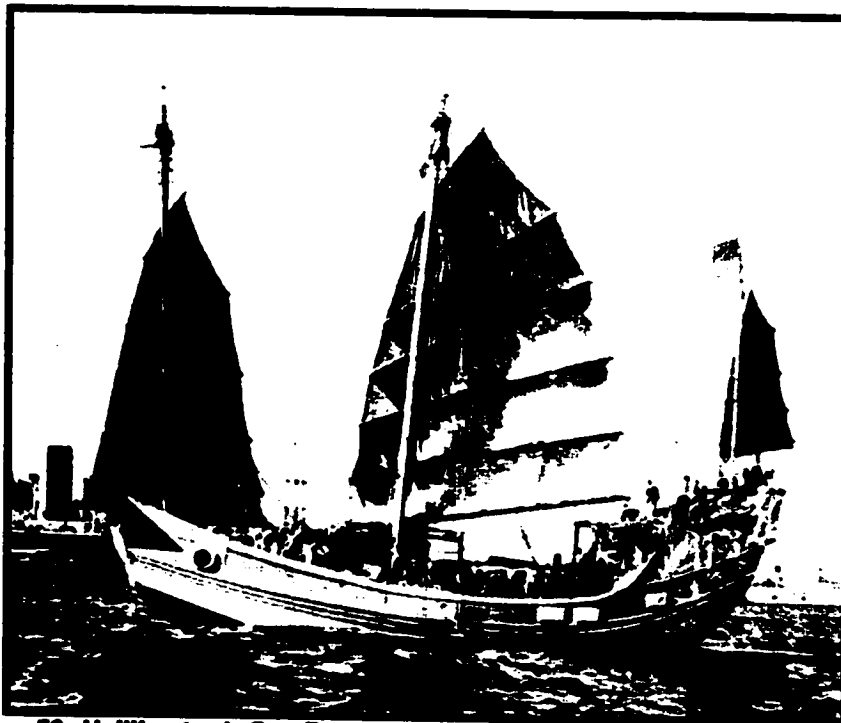
Worcester describes six coastal junks of the Wenzhou region, but, perhaps not surprisingly, none of his examples truly coincide with the appearance of the *Sea Dragon*. The only three-masted Wenzhou junk which was of comparable size and vaguely resembled the Eastern-Western hybrid was the *Wusha Chuan*, or Black Sand junk.¹¹⁵ These craft were typically 67 feet in length and 17 feet in beam. They were strongly-built sea-going traders with square bows and transom sterns. Worcester made no mention of any special decorative motifs, though another Wenzhou junk known as the *Shan Chuan*, or Eel Boat, featured enough of the typical Fujian stern decoration that Fujian junkmen had their own name for the style, *Malan* or Blue Horse junks.¹¹⁶ Here again the overlap between regional styles is apparent from the scattered documents. Precedence existed for the mixing of Zhejiang and Fujian junk styles. Halliburton and his *Sea Dragon*, would take this combination one step further, introducing a western engine into a style so long influenced by *and designed for* sail alone.

¹¹⁵ Worcester, *Classification*, 50.

¹¹⁶ *Ibid*, 59.



**Figure 58: The Wusha or Black Sand Junk.
(Worcester, Classification, 52)**



**Figure 59: Halliburton's Sea Dragon under sail. The square objects attached
To the side of the hull are unknown additions.
(Halliburton, Halliburton, 410)**

The amount of sheer, or curvature of the longitudinal lines, appears obvious from the comparison of the two examples, as well as an easily identifiable difference in the sail pattern. The more rounded and scalloped sails of southern waters, evident in the *Sea Dragon*, is more indicative of the Guangdong and Pearl River region where the junk was built, than of the more rectangular sail styles of the Wenzhou district. The general geographical pattern associated with sail shape assigns the more flat-headed and rectangular sails to the north; the more hump-backed leech (or trailing edge of the fore-and-aft sails) is representative of the south in general and Guangdong in particular.¹¹⁷ The number of battens within the sail also provides clues to the regional identification of junk construction. More battens per sail represent northern designs, while rigs with between four to six battens per sail are characteristic of Guangdong.¹¹⁸



Figure 60: Decorative and incredibly lofty transom of the Sea Dragon, but no sign of the rudder trunk. (Halliburton, Halliburton, 411)

¹¹⁷ Worcester, *Sail and Sweep*, 17.

¹¹⁸ *Ibid*, 18.

The exceedingly tall stern of Halliburton's junk would appear to be an homage of sorts to the very standardized forms of decorative motifs from Fujian province. Was it an intentional exaggeration on the part of its builders? The inscribed characters announce the junk's name and home port, something not typically done by Chinese junks, which traditionally relied on masthead devices and paint schemes for identification, and often did not possess individual names. Though there are no images of the junk's hull below the waterline available, the lack of any rudder trunk, so obvious in Chinese junks with adjustable suspended median rudders, denotes a lower western style rudder blade, firmly affixed with steel hardware behind the submerged propeller. This negative evidence alone, the suggestion of this type of rudder, encompasses a radically different nautical design in the stern of the vessel.

The most significant changes in its construction don't even appear in any of the photographs. Placing an engine in wooden sailing junks demanded a large amount of redesign. Chinese bulkheads and structural timbers would have to be moved or eliminated, and large supporting beams and blocks would be added to serve as the engine bed. The loads and stresses on the entire wooden structure were vastly different from those of purely sail-driven craft. Not only did the weight of the engine need to be considered, but the transfer of thrust to the entire structure along a single line, something previously unknown, had to be taken into account. This was not a problem in details only, but a basic mismatch between the machine and the overall shape of the sailing junk, between two differing technologies. Gould and Foster discuss this very issue in their study of junk construction.

One of the more serious problems facing the junk builder today, and one for which no precedence exists to guide him, is the seating and support for motors. The engine bed in the Hong Kong junk...illustrates the problem. The propeller shaft, and consequently the engine bed, dips downward aft while the bottom planking drops away forward. The engine beds are so deeply notched over the last frame that their [sic] cross sectional area is reduced to almost nothing. For all practical purposes, the bed does not bear on this frame. The bed is notched adequately into the second frame, rests on top of the third frame, and is blocked up on the forth and forward frames. Sway braces are two-by-six inch timbers raised on blocks on each side of the bed.

The length of the engine bed is little more than that of the engine itself. It extends between the two bulkheads which delimit the engine-room and this compartment is no longer than is needed to house the engine itself. The junk builders admit to worry over the adequacy of engine support. In the absence of other information, they provide a bed which experience indicates would be adequate to support a load of this magnitude. No consideration is given to the distribution of thrust strains. Perhaps the clearest indication of a failure to appreciate the consequences of their actions is seen in the cutting of the aft frame to provide clearance for the shaft. This frame, virtually the only place where the notched engine bed permits some transfer of thrust to the hull, is not even fastened to the keel.¹¹⁹

As western ship architects were well aware, the amount of vibration involved in powered propulsion literally could shake apart wooden vessels. Thrust needed to be transferred at points along the propeller shaft, to strongly supported thrust-blocks, kept perfectly in line with the rigid machinery, not placed solely on an inadequate engine bed. Such a situation could lead to leaks anywhere along the shaft fittings and an engine that literally pushes itself out of the engine room.

From a broad perspective, the true revolution in motor power over sail came about with the dual combination of steam engines and iron hulls, not just with a change in the propulsion system, the addition of the marine power plant, alone. Wooden vessels of many cultures, made up of hundreds if not thousands of individual components, are flexible craft, usually ill-suited to the more demanding tolerances of the internal combustion engine. It is interesting to note that the marine power plant, rather than a singular piece of advanced technology, was really tied to the much larger economic culture of foundries, iron plate rollers, coal and then petrochemical fuel sources etc., and to adopt the one was to really initiate a change for the rest. Such was the lesson that the Chinese government learned with the creation of the modern Fuzhou shipyard in the 19th century. Steam technology and iron ship construction necessitated western mathematics and engineering classes and instruction in French language and more. Only with great difficulty were internal combustion engines adopted to wooden sailing junk designs. In general, the resulting product was very unlike the original form. Halliburton wanted both the engine and the original form.

¹¹⁹ Gould and Foster, *Junks*, 63-4.

Of course, engine technology was not the only area influencing design changes in junks. As western contact increased dramatically during the late 19th and early 20th centuries, some junk builders in Hong Kong adopted further alterations.

There seems to be a tendency among junk builders, at least in Hong Kong, to use thinner planking than formerly. The trend is a part of a general lightening of the whole vessel structure. Frames are more numerous and are made of thinner material. A comparison...will indicate the difference between the older bulkheaded vessel with frames placed haphazardly in between the bulkheads to the newer framed craft with bulkheads placed on selected frames. There is evident a change in construction philosophy and an attempt to copy western techniques. It is not meant to imply that this change is widespread in China, at least not at the present time. It is believed, though, that what is occurring in Hong Kong junk yards forecasts what will happen shortly in Chinese yards in the larger ports where western influence has a chance to penetrate.¹²⁰

Gould and Foster, in *Junks—Construction and regional Characteristics*, do not necessarily attach all the structural benefits of adopting western wooden ship construction techniques to these modified junks. In other words, adopting piecemeal certain elements did not insure the advantages of the whole.

...the continuity is more apparent than real. Chinese junk carpenters do not have the skill (or see no reason to apply the skill if they have it) to create matching bearing surfaces where parts of a frame are joined. The two parts of the frame are pinned together with some of the smallest spikes used on the vessel and in only one or two places. As has always been the case, stresses are transmitted from one part of the frame to another through the planking.¹²¹

Without an entire restructuring of the junk, early inclusions of some western techniques would seem to have made the general construction situation, if anything, worse rather than better.

¹²⁰ Ibid.

¹²¹ Ibid.



Figure 61: Numerous frames or chuanlei gu extended beyond the deck level in this image of the Sea Dragon under construction, Kowloon, China. (Halliburton, Halliburton, 386)

Combining design elements from at least three regions on the Chinese coast (Guangzhou, Fujian, and Zhejiang), along with drastic structural changes in the adaptation of western propulsion, the *Sea Dragon* was indeed an uncharacteristic and dangerously hybridized vessel, mixing technologies which were compatible only with the greatest care and attention. It was an unhappy marriage of East and West and, although there is no certainty that such a dubious combination of designs led directly to the demise of the junk and its crew, vanishing in the mid-Pacific cannot instill a great deal of confidence in this experiment. The final significance of the *Sea Dragon* stems less from any elements of recognizable language in regional sailing junk design and more from the category of "what-not-to-do" in the conversion of modern junks.

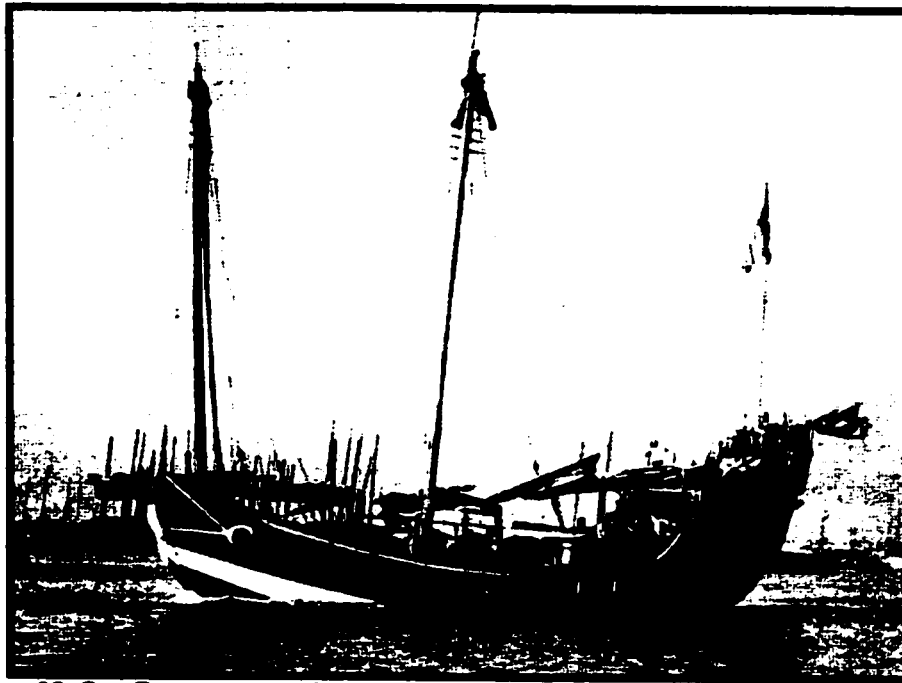


Figure 62: Sea Dragon motoring along (note bow wave and lowered sails); telltale engine cooling water can be seen streaming outboard at the junk's midsection. (Halliburton, Halliburton, 410)

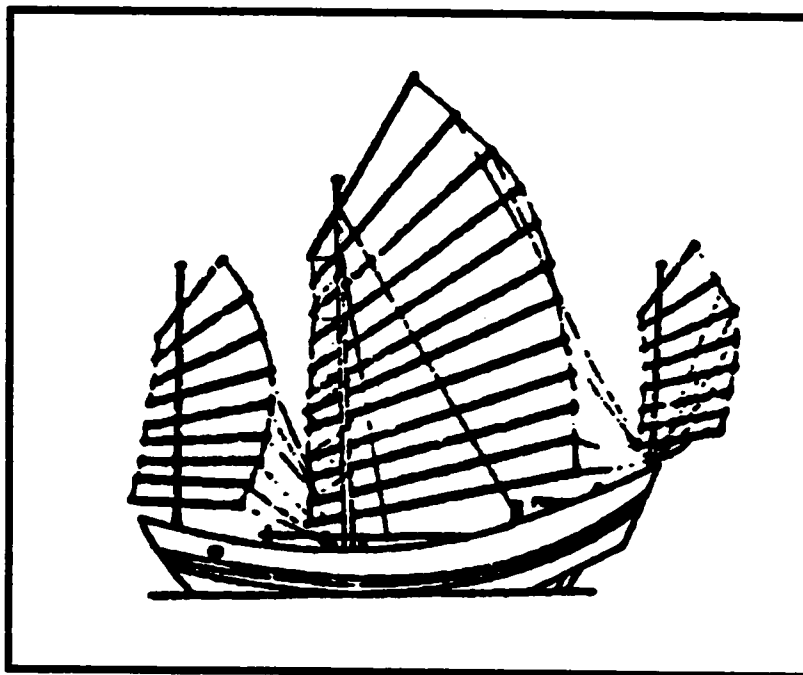
the *Mon Lei*: an orphan of uncertain origin

Borden, in *Sea Quest*, refers to the junk *Mon Lei* as a 50 foot-long Swatow-type carvel-built short-keeled junk, one of the oldest boats to have ever visited New York, believed to have been built somewhere in central China in 1850.¹²² Again, though Worcester in his *Classification* identifies ten different ocean going junks in the Swatow area, associating a single type with the images of the *Mon Lei* proves difficult. The most likely model in this case is the *Hengtuo*, or Flat Haul junk trawler.¹²³ If it was a vessel belonging to a Chinese warlord, as stated in one story, it certainly does not seem to bear any trace of ordnance. The continuous smooth sheer lines, prominent wales, and vertical parallel masts are all similar. The overall size of the *Hengtuo* is slightly larger than the reported size of the *Mon Lei*, but

¹²² Borden, *Sea Quest*, 233.

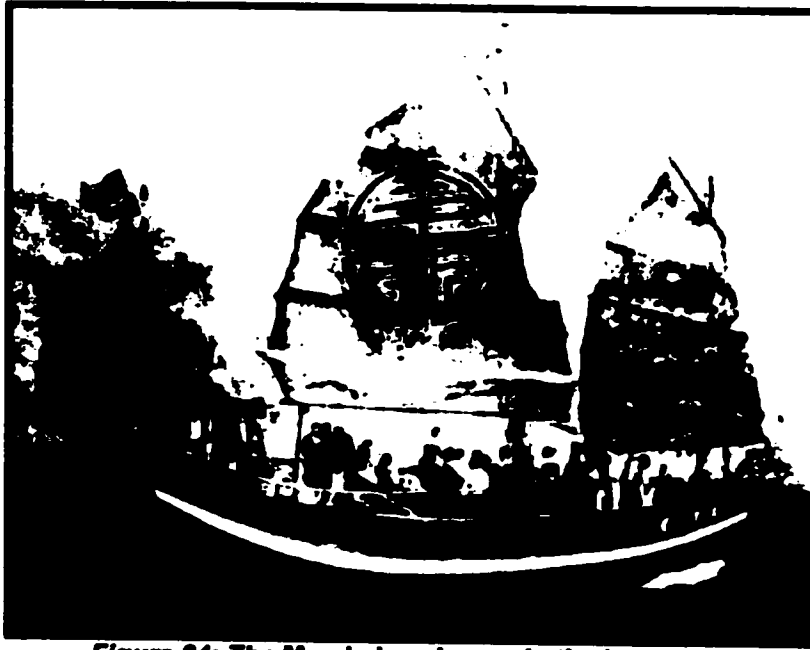
¹²³ Worcester, *Classification*, 109.

variations are almost to be expected. The rudder post and tiller of the established Chinese design can be seen emerging just above the sweep of the stern gunwale.



**Figure 63: *The Hengtuo, Flat Haul Chinese trawler from Swatow.*
(Worcester, Classification, 108)**

The rounded leech of a southern junk sail appears both in the idealized image (figure 66) and in a rare photo of the *Mon Lei* arriving in New York on August 8th, 1947 (figure 67). The *Mon Lei's* sails seem even more "southern" with comparatively fewer battens in evidence.



**Figure 64: The Mon Lei underway in the late 1940s.
(© Mystic Seaport, Mystic)**

Later images of the *Mon Lei* record a small wheelhouse constructed on the stern deck, and the absence of sails. Apparently the junk had been modified to carry an engine, with all the attendant problems previously mentioned. And where there is a wheelhouse, there can be no free-swinging tiller, as is apparent in Worcester's drawing, meaning no characteristic Chinese rudder. Unfortunately, no dates are associated with these images, but it is most likely at least a decade later than the junk's east coast arrival.

The major difference between Worcester's idealized design and the *Mon Lei* is in the critical rudder arrangement. Although Worcester reports that Swatow junks had "non-hoisting rudders," their position relative to the transom still appears typically Chinese. Exactly what he means by "non-hoisting" is unclear, but Worcester does state that, when not in use, the rudders were "streamed," detached and floating astern.¹²⁴ This eliminated the wear and tear of the rudder knocking about as the vessel worked at her moorings. Fittings, then, would therefore most likely have included the Chinese loose wooden gudgeon mount with cables

¹²⁴ Ibid. This type of junk also featured the free flooding forward compartment for stability in a seaway.

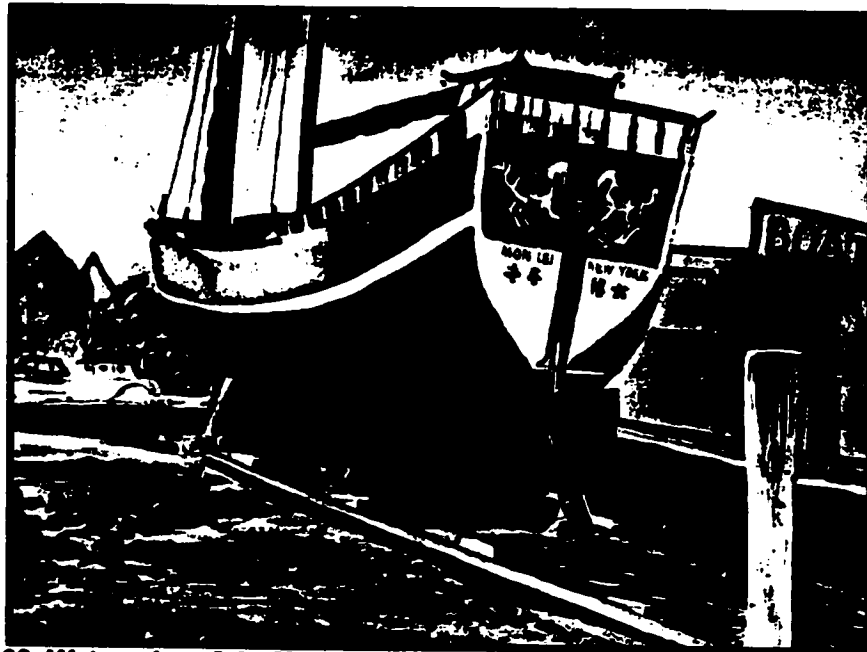
holding the rudders in place. Images of the stern of the *Mon Lei* do not depict anything like that, rather what seems to be a much more westernized rudder, complete with vertical rudder post. Such a feature is more reminiscent of a lorch, a hybrid Euro-Asian vessel combining a western hull with a Chinese sailing rig. Lorchas were first built in the 16th century in the Portuguese colonies of East Asia, and features decks laid out in typical European fashion, with stern and fore castles, deck houses, and bowsprits, as well as western styled fixed rudders.¹²⁵

Even more perplexing, an image of the *Mon Lei* in San Francisco shows the stern rudder trunk and the rudder post high in the air, minus the detachable tiller, in an apparently hoisted position. There is no evidence of a wheel house, nor could there be for this type of rudder to operate. For half of the ten junks that Worcester lists in the Swatow area, and this includes all of the examples bearing any resemblance to the *Mon Lei*, the rudder is listed as the non-hoisting type. It's unclear, though, from these few images if this is a further example of adaptation of western technology, or simply an example of a different and unrecorded Chinese tradition in junk construction. There is always the possibility that these images are the sporadic record of changes made to the style of rudder, alteration being possible anywhere. Perhaps, upon arrival on the West Coast, the non-standard junk *Mon Lei*, with its adjustable Chinese rudder, was converted to a motorized vessel with modern wheel and fixed rudder. The vessel then continued on to the East Coast for her gala arrival under the Ripley flag in New York, 1947. The following images also record the changing homeport and Chinese characters on the junk's transom.

¹²⁵ Worcester, *Junks and Sampans*...365.



**Figure 65: The Mon Lei of Aberdeen, with Chinese rudder, on a stop over at San Francisco before proceeding to the East Coast.
(San Francisco Maritime NHP)**



**Figure 66: Watercolor of the Mon Lei of New York hauled out on the marine railway, New York 1957. Is this rudder a western alteration?
(© Mystic Seaport, Mystic)**

The watercolor image might not capture all of the minutia of the photograph, but it does include obvious changes in the junk's rig. The mizzen mast is gone, and what appears to be a foresail furled around the stay (a stay on a Chinese junk?) rises from the bow. Jib-type foresails, attached to mast stays, are western features.

The question of the changing rudder, the changes in the sail rig, the loss of the third mast, the wheelhouse, and the incomplete association with the *Hengtuo* design...these things speak of an original Swatow junk being altered by the technological changes during its voyage to New York, altered to nearly (or perhaps beyond) the point of non-identification. Perhaps the ultimate loss of historically established features, in junks and in other aspects, was and is simply inevitable. Perhaps "language" elements of Chinese junk patterns remain dynamic. Even if an effort had been made to preserve specific types of, in this instance sailing vessels, they might only remain preserved as static and displays in museums.

the *Cheng Ho*: Columbus' canal barge

There has been much speculation over the question of the large treasure junks, the *baochuan*, which carried Ming dynasty Admiral Zheng He overseas in such regal splendor in the early 15th century. For numerous reasons, including the power struggle between Confucian bureaucrats and imperial eunuchs, as well as the classic continentalism or landward orientation of the entrenched government, all reliable knowledge of the *baochuan* designs have been lost.¹²⁶ Were they really large enough to carry hundreds of Chinese marines in each ship on hundreds of vessels as far as East Africa, on journeys lasting more than two years? Could wooden sailing ships over 400 feet long (as recorded in the dynastic histories) even maintain themselves structurally in a marine environment? Do we even know what they really looked like? What, if anything familiar, does a junk 440 feet in length and 160 feet in beam even resemble? One fact, amongst a sea of speculation, remains perfectly clear: Zheng He's *baochuan* did *not* have twin 110 horsepower diesel engines.

¹²⁶ For details, see Phillip Snow, *The Star Raft, China's Encounter with Africa* (New York: Weidenfeld and Nicholson, 1988).

The junk *Cheng Ho*, named after the famous admiral, did have twin 110 horsepower diesel engines, as well as air conditioning and a host of other concessions to comfort. Although the vessel, which might more properly be called a yacht-junk for its origins as a specially built scientific cruising craft, was said to represent the imperial junks of the early Ming navy, such a claim couldn't have been taken very seriously. What kind of junk was it then? Certainly it was another East-West hybrid, combining different technologies usually at odds with each other. The lines, though, were reportedly taken from a 100-year old salt junk.¹²⁷

Salt junks, or *yan chuan*, occupied a critical position in the transportation of one of China's major domestic commodities. Illustrations of *yan chuan* feature exclusively riverine craft, as the bulk of the trade seems to have been between the major resource producing areas at the coasts and interior, particularly the Yangzi river valley. As a measure of the size and importance of this trade, in 1867 alone the Yangzi river salt trade employed approximately 1,800 junks and 30,000 sailors.¹²⁸ Associated almost exclusively to the vitally important commodity, salt junks were associated with some of the oldest designs of Chinese vessels. Such craft would, in theory, be candidates for any proposed replicas seeking to recreate designs centuries old, at least, replicas seeking to duplicate patterns of salt junks. Unfortunately, by the early 20th century when Worcester conducted his research in Chinese junks, many large salt junks were becoming a thing of the past. Steamships were taking over the trade.¹²⁹ Most illustrations of the remaining examples typically display the strong, low straight box-like lines and balanced rudder designs of Chinese river junks. They do not appear at first to resemble the images of the *Cheng Ho*. Closer inspection of the yacht junk, disregarding additional superstructure, reveals the straight sheer lines of the *yan chuan*. It does seem possible that someone took the lines of the salt junk and built a yacht, claiming

¹²⁷ Borden, *Sea Quest*, 238.

¹²⁸ Worcester, *Junks and Sampans*, 312.

¹²⁹ Worcester, *Junks and Sampans*, 310.

(apparently inexplicably) that the vessel represented an early Ming seagoing *baochuan*. This single association between riverine salt junks and the *Cheng Ho* is very basic, and fails to convey a great amount of information on possible regional influences. It does not apply to other design features.

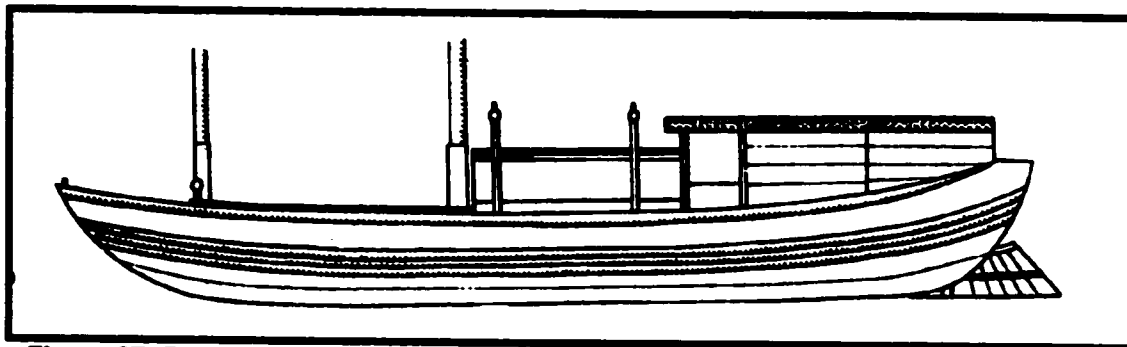


Figure 67: Balanced rudder design and straight lines of the lower Yangtze salt junk.
(Worcester, Junks and Sampans, 310)

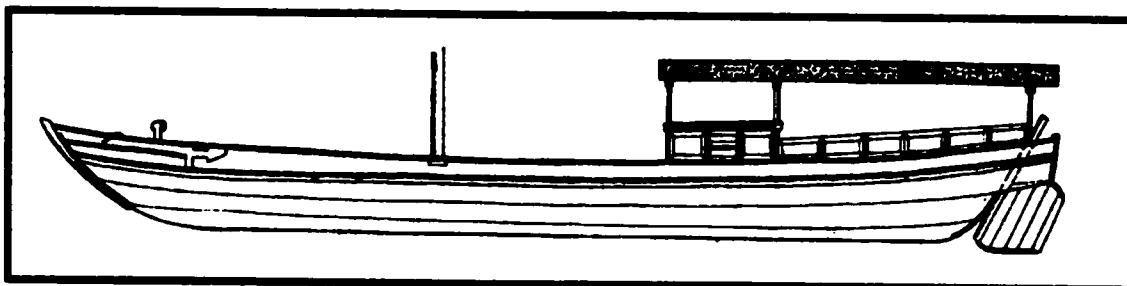


Figure 68: Low freeboard and straight sheer lines of other riverine craft; a Jiangsu riverine junk.
(Worcester, Junks and Sampans, 286)

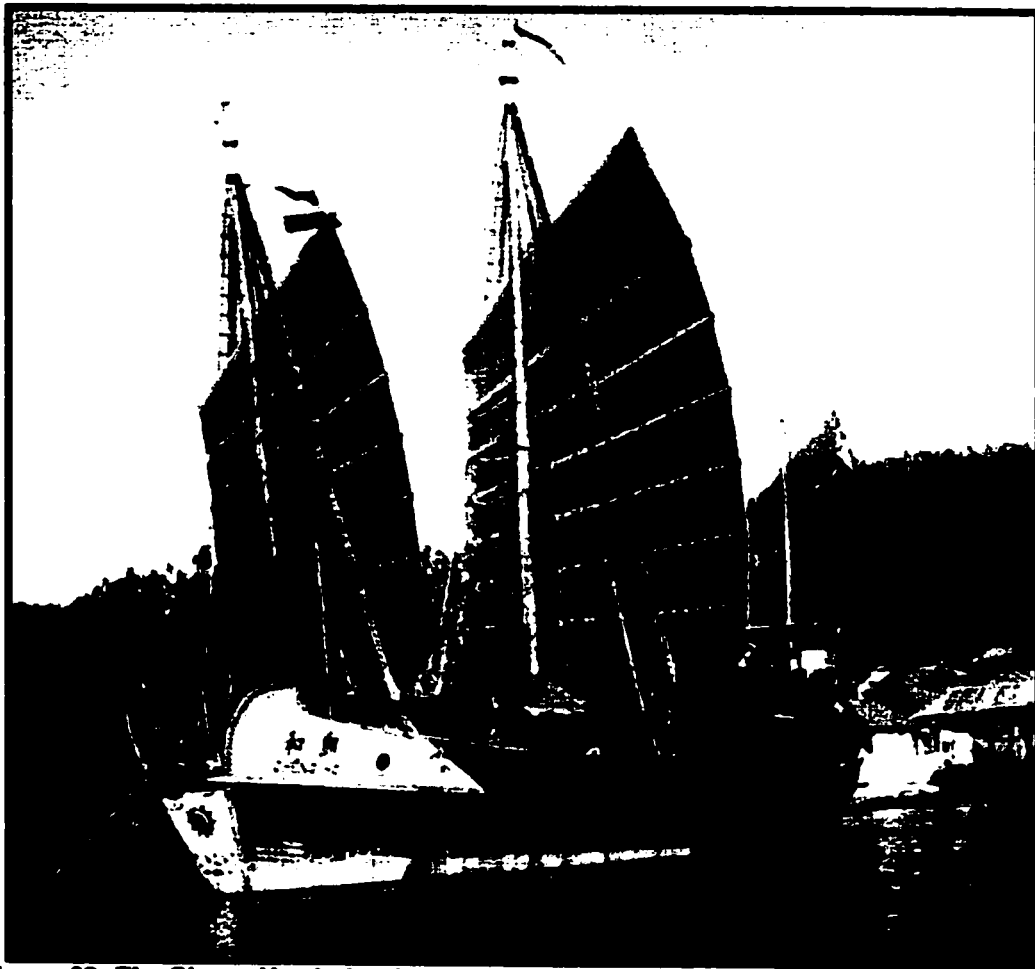


Figure 69: The Cheng Ho drying her sails in the South Pacific. The line of the main rub rail, beneath the bow wings and upper bulwarks, appears quite flat compared to other Chinese oceangoing junk designs; salt junk lines? (Fairchild, Garden Isles of the Great East, 72b)

The oculus, additional hull strakes, and the forward wings so familiar to certain coastal trade vessels have been added on top of this salt junk box-like hull. In other words, oceangoing patterns unassociated with riverine junks have been placed, almost in a random fashion, on top of an unsuitable foundation. Furthermore, European style shrouds and stays support the three masts, and European davits hold a small shore boat outboard the stern quarter. Such changes supposedly adapted the riverine hull to the open ocean environment. Herein lies a problem with the claim to Zheng He and Ming dynasty representation.

While the large *baochuan* are not well understood, enough has been recorded about a variety of other historic designs to be reasonably sure that oceangoing junks in the Ming

dynasty were purposefully built for the open ocean. This includes many basic elements such as the high bows and sterns of sweeping longitudinal sheer, as seen and commented on so often by European observers. Making river junks into units of the huge Ming navy by the practice of tacking on added lumber in a kind of afterthought manner is a questionable proposal at best. Besides pursuing the alleged antiquity of certain hull designs, it seems silly to think that salt junks could have provided anything like the huge *baochuan* built by expert junk masters at the government shipyards in Nanjing. One might as well add some makeshift structures to a Thames river barge and claim to be crossing the Atlantic on a replica of one of Columbus' caravels. Many of the elements of the *Cheng Ho* appear to be Chinese, but were juxtaposed with no apparent thought to regional compatibility, or even the very basic difference between river and ocean vessels.

And this is still leaving out the electric lighting and air conditioning and diesel engines placed on board. The junk had refrigeration and adequate fans. Essentially the *Cheng Ho* was a luxury vessel for adventurous scientists, complete with a self-contained botany lab, built in Hong Kong under the direction of an American architect, and not "partly copied...from a famous junk used during the 15th century."¹³⁰ The true Hong Kong origins of the alleged Ming dynasty vessel do appear in the images of the *Cheng Ho*, as they continue to appear in more modern Hong Kong built yacht-junks exported for sail to the West.

¹³⁰ Degener, "The Last Cruise....," 197.



Figure 70: Luxurious interior of the master cabin on board the Cheng Ho, well adorned with modern conveniences. (Degener, "The Last Cruise..." 199)

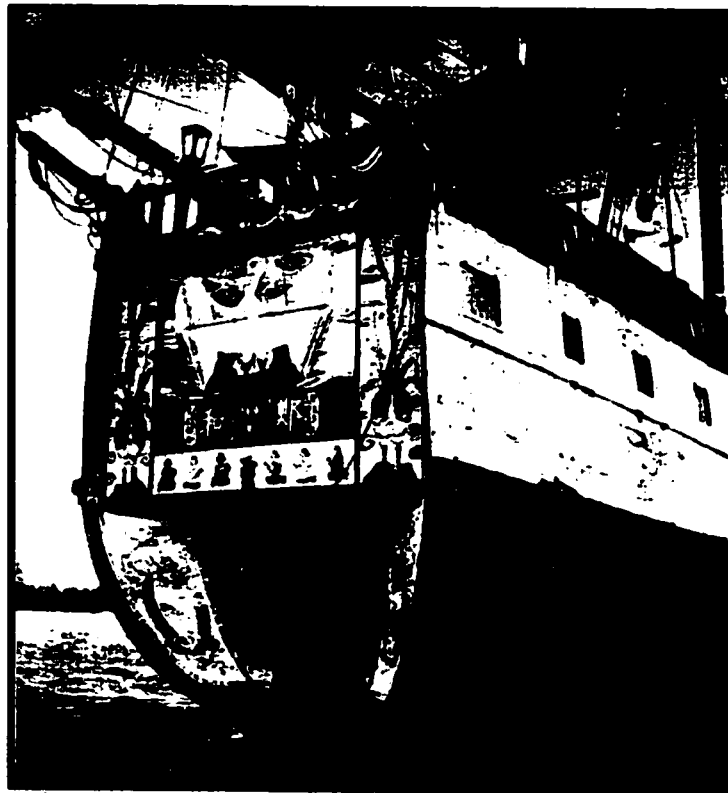


Figure 71: Box-shaped stern of the Cheng Ho. The decorative motifs recall traditional Chinese patterns, but the rudder trunk is fake. (Fairchild, Garden Isles of the Great East, 72a)

The shape of the transom vaguely recalls the semi-oval variety of Chinese junks, but where there should be a suspended rudder appears a very solid-looking square stern post. The true "false" transom, which would have housed the rudder, is itself a fake. Ports pierce the hull planks, indicating that these areas are living quarters rather than watertight cargo holds. A wheel on deck, rather than a tiller, controlled the western rudder. The rounded wales along the strakes have, in this case, become a single clean cut rub rail. Ratlines, rope ladders for climbing the shrouds, appear above the decks, a European innovation. The overall effect is one of which Walt Disney could have been proud. Some of the patterns of Chinese ship construction were there, but the language seems to be wrong.

The real origins of the *Cheng Ho* lie in Hong Kong, where the vessel was built, and not in the early Ming period. Like many Hong Kong junks, the scientific yacht featured a very square stern shape, maximizing interior cabin space. Boxy Hong Kong junks have proved very popular with the overseas yachting society as a design which provides ample interior space for live-on boards.



Figure 72: Modern built-for-export Hong Kong junk with box stern, Oyster Point marina, California. (Author's photo)

What the junk *Cheng Ho* really signifies on a symbolic level, besides another hybridized bastard vessel of certain selected decorative Asian construction features glossed

over a technologically western functioning craft, is the continuing fascination with the voyages of Zheng He of the 15th century. This fascination easily incorporates romantic images of grand junks anchored at exotic locations, and with certain concessions to comfort and science, the traveling scientists on the *Cheng Ho* in Southeast Asia did experience just that. They were, after all, sailing in their "junk" some of the very same waters as the famous Ming admiral. Mere curiosity and romanticism, though, did not drive the search for a reasonable facsimile of any possible early Ming dynasty vessel very far.

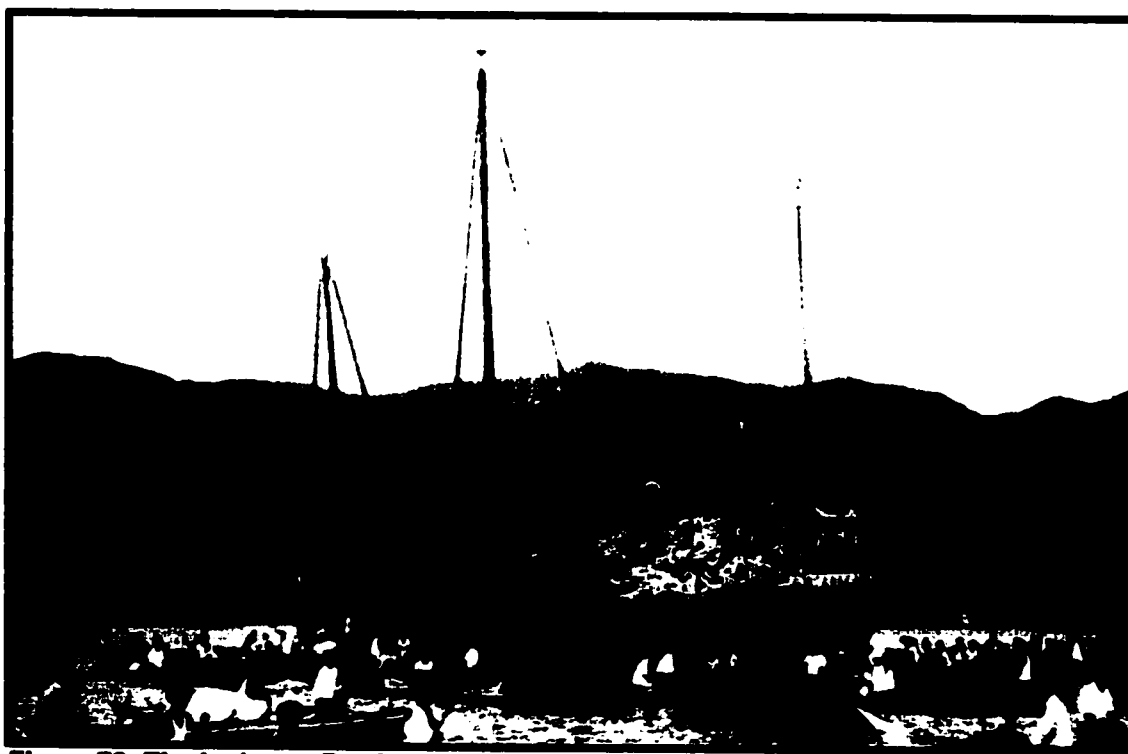


Figure 73: The junk as a floating market; an assortment of trinkets had been stowed on board to be exchanged for biological specimens. (Fairchild, Garden Isles of the Great East, 80d)

the *Free China*: the cure worse than the disease

The junk *Free China* provides the best opportunity to study the historically established patterns of Chinese sailing vessels. The most obvious reason is simply that the vessel is still around. The crew that brought the junk across the Pacific are still available for interview. Their stories, along with photographs and film footage, are firsthand resources and contributed greatly to this study. The story of the junk that crossed the Pacific was a well known feature news item in 1955, particularly in Taiwan and San Francisco. Several decades later it has almost vanished from popular memory.

In many ways the *Free China* resembles nothing so much as a smaller version of the Fujian-style coastal merchant, the pole junk. The distinctive features of junks from that region, the high oval stern and long lines with prominent wales, are consistent between Fujian vessels. The patterned language is similar. This general type can be broken down into specific variations. Worcester provides a variation of the Fujian junks known as the *malan* or blue horse junk. These vessels operated most frequently between Fuzhou, Ningbo, Taiwan, and Shanghai.¹³¹ With fine graceful lines, profuse decorations on square bow and oval stern, a well-raked foremast, and deck cabin, the *malan* is a very close model for the *Free China*. The figure below displays the conspicuous gallows frame (for sail support) on the foredeck and *malan* style seven batten mainsail.

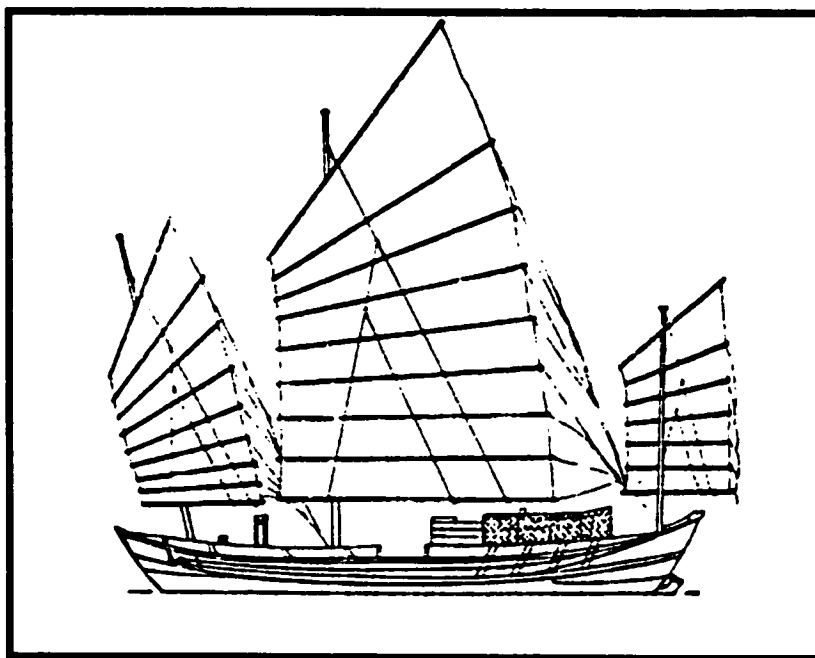
The transpacific crew knew the type of vessel as a "flat head" junk.¹³² Though there is no specific vessel designated as such by Worcester, the generic class of square transom bowed junks from the surrounding region might be known as such. A number of other designs have names such as "square head" and "flat head," so the designation was not uncommon. The junk type was also referred to locally as a *danjiqi*, a "single tiny body."¹³³ Whether known as a *hua pigu* or a *ping tou* or a *malan* or a *danjiqi*, the junk's features speak

¹³¹ Worcester, *Classification*, 69.

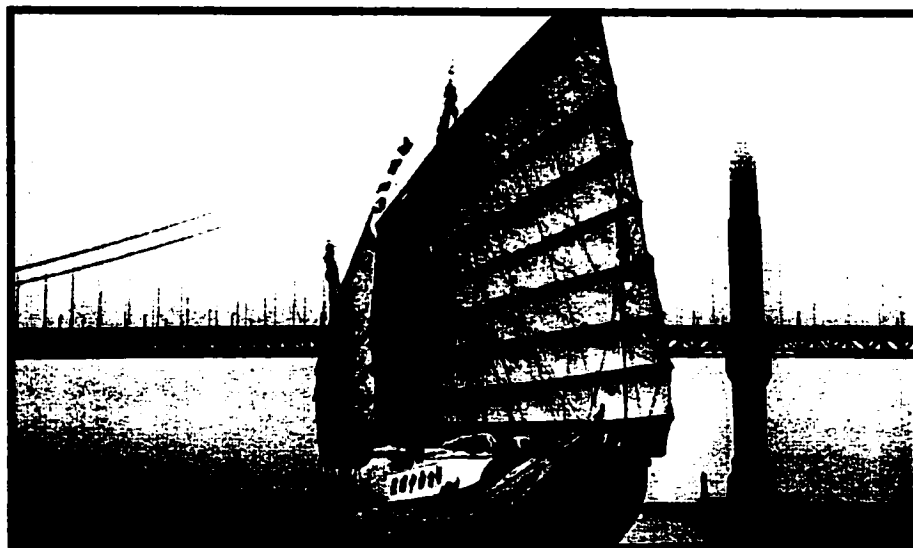
¹³² Paul Chow, interview, 7 August 2000.

¹³³ Chow, *The Junk Story*, 66.

for themselves. This uncertainty simply highlights the inherent problems in sorting out nautical terminology. Most of Worcester's designations, therefore, can be assumed to possess a certain arbitrary nature to them.



**Figure 74: The malan or bluehorse junk.
(Worcester, Classification, 68)**



**Figure 75: The junk Free China coming in under a low fog bank at the Golden Gate, San Francisco 1955. Vessel lines, battens, stern motifs, deck windlass, and cabin all recall the malan design. Mizzen mast has been removed.
(Chen collection)**



Figure 76: Harry Dring and associates on board the Free China at Alameda. Square bow, deck windlass, and gallows frame are obvious, rudder raised.
(San Francisco Maritime NHP)

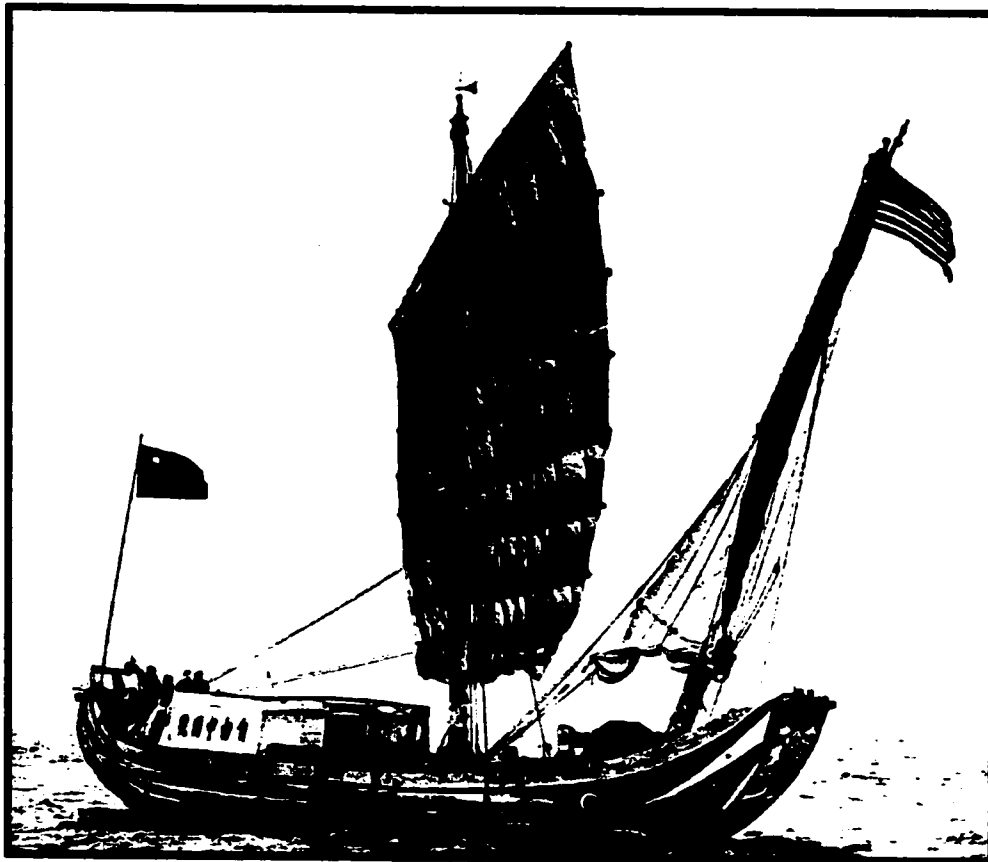


Figure 77: Free China running downwind to America.
(Chow collection)

The *Free China*, when she arrived in California, was in very intact and unmodified condition. No engine, no shrouds or stays, no modern rudder had been fitted on board. No air conditioning cooled visiting scientists, no wheel house emerged from the stern deck. After purchasing the craft from her previous owner, Paul Chow and his crew worked with a traditional Chinese shipwright to make repairs and ready the vessel for the passage. Sails were mended, paint applied, and spares located, but no radical design changes were made. The only concession to modernization, in terms of safety, took the form of a 5 horsepower winch to assist the reduced crew with handling the heavy sails.¹³⁴ The junk sailed with only 1/3 the normal complement on board. A curved steel tube gallows frame, manufactured in Japan, was also added for the heavy mainsail for the same reasons.

Though not large enough to carry huge poles up and down the Chinese coast, the *ping tou* or *malan* junk served as a general cargo carrier. At the time she was purchased, the vessel was in the business of ferrying loads of salted ribbon fish back and forth between Mazu and Taiwan. She had allegedly been caught smuggling contraband more than a few times in her career, and so speed was the quality most emphasized by the previous owner. The junk had to have been able to out sail any old style patrol vessel. Though any amount of speed under sail would probably have been ineffective against modern patrol vessels, the ability to make fast passages would have minimized the time the contraband was in transit, thus reducing the risk of being apprehended.

Marine architect Henry Rusk, along with Harry Dring and the other professionals who eventually adopted the vessel from the National Maritime Museum, worked to record the lines of the junk before any major alterations were made. A series of drawings were produced, and the aging blueprints stored for decades in the attic of the Dring family home in Vallejo California. Harry's son Al turned these over to the author in 1996, who redrew the lines from the original plans.

¹³⁴ 80 foot junks of this design traditionally had a complement of around 15 crewmen. The *Free China* crossed the Pacific with six. The small motor was also used to generate electricity to operate the side-band radio.

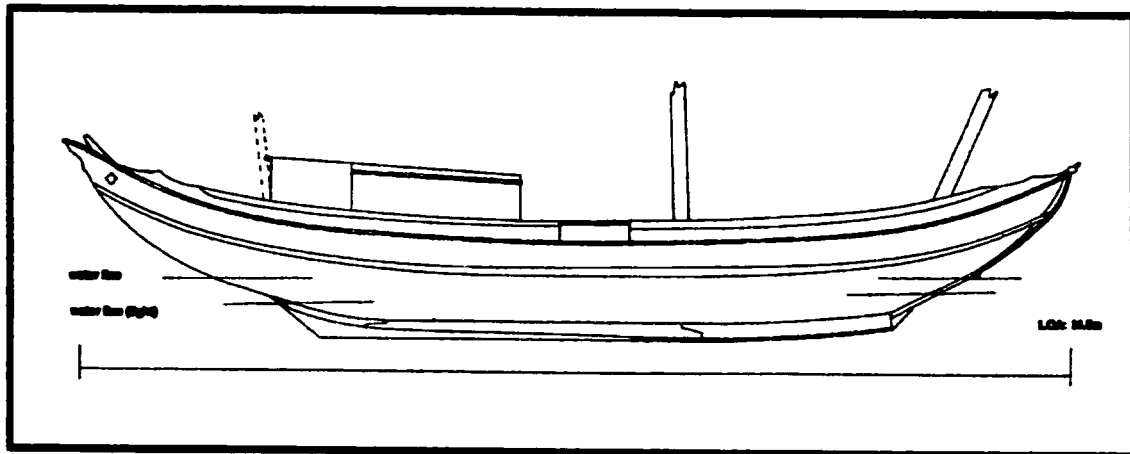


Figure 78: Elevation drawing from Henry Rusk's plans of the Free China, showing segmented keel. (Dring collection)

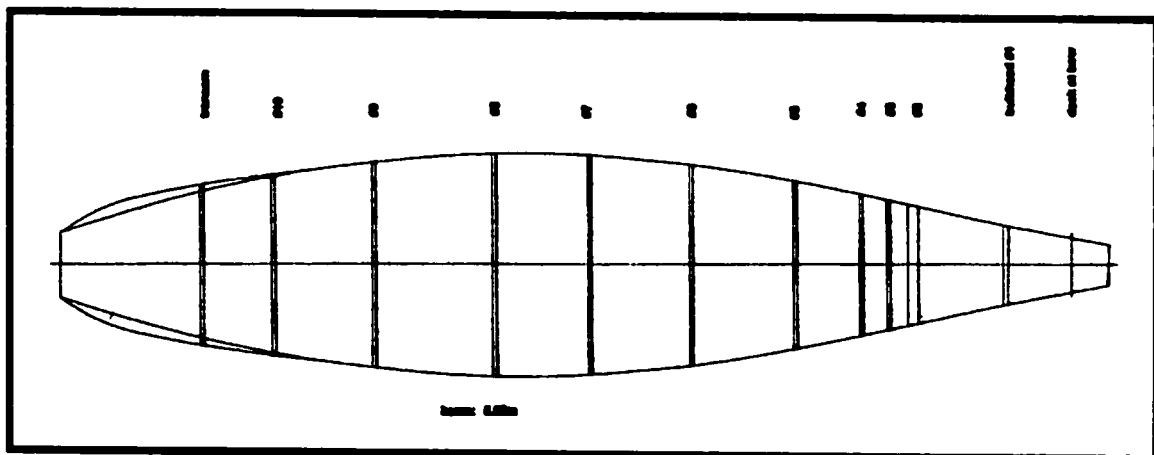


Figure 79: Plan view and bulkhead positions from Henry Rusk, and the graceful lines of the junk design. (Dring collection)

The 80 foot vessel featured ten interior watertight bulkheads, and ten (not eleven) interior watertight compartments. The forward compartment, with two holes drilled through the submerged hull planks, was the free flooding anti-pitching compartment, common to Fujian junk types.¹³⁵

The considerable keel built into the junk is quite apparent from these drawings, even though, according to Paul Chow, the *Free China* did not have a keel.¹³⁶ Here we run into the problem of the definition of the keel again. Fuzhou pole junks, described by several sources

¹³⁵ Chow, interview, 7 August 2000.

¹³⁶ Ibid.

as being flat bottomed and keel-less, appears in Worcester's drawings to have the same structural timber extending well below the center line strakes.

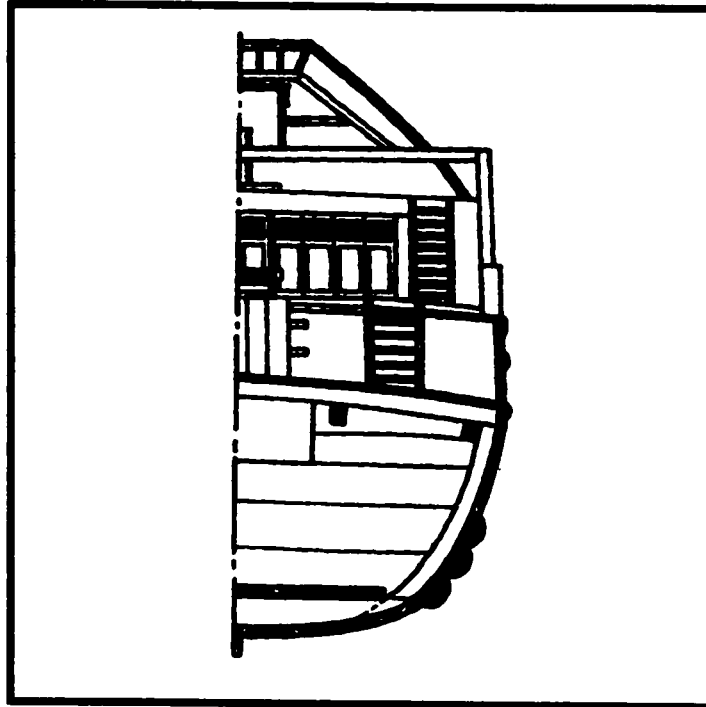


Figure 80: Half cross section of the Fuzhou pole junk, or Hua Pigu, showing keel timber on the centerline. (Worcester, Junks and Sampans, 188)

Not all of Worcester's drawings show the keel timber, and the *Free China*, according to several sources, had a keel extension applied later, during the many years spent sailing around the San Francisco Bay area.¹³⁷ Exactly when this keel extension was added, and when Henry Rusk's plans were produced, is not clear. Photographs show what may be the original keel, with the much deeper keel extension attached, on the *Free China* as she exists today. Either way, the questionable assertion that Chinese vessels did not have keels seems to carry so much theoretical weight that confusion continues to exist in the face of the physical evidence.

¹³⁷ Ibid; Al Dring, interview by author, 10 April 1996.



Figure 81: Keel of the Free China, vessel up on blocks at a boatyard in the Sacramento Delta; a keel addition? (Author's photo)

The turret-built hull design, readily seen in the figure of the *Free China's* cross sections, is another very language element of Chinese ship construction. For many junk models, access to the watertight holds exists only through relatively narrow hatches in the center of the deck. The hull strakes literally curve over the tops of the holds, the slant of the strakes then readily shedding any water which might break over the decks. Often another more level platform is built above the hull strakes which serves as the false deck.

The flat-bottomed Jiangsu traders, which are no longer built, are Worcester's best examples of the classic turret-built Chinese vessel.¹³⁸ The particular design feature here seems to date far back in time, and can be found on many other designs such as the Hangzhou Bay trader.¹³⁹ "Indeed, it is believed by some good authorities that these were the ships which originally traded to the Red Sea and East African ports before the Middle Ages."¹⁴⁰ The turret type construction led to great strength in the hull, and the protected

¹³⁸ Worcester, *Junks and Sampans*, 162.

¹³⁹ D.W. Waters, "Chinese Junks: the Hangchow Bay Trader and Fisher," *Mariner's Mirror* 33 no.1 (1947), 29.

¹⁴⁰ *Ibid*, 167.

compartments, especially where they curved inward to meet the more narrow bow and stern, were "masterpieces of ship construction."¹⁴¹

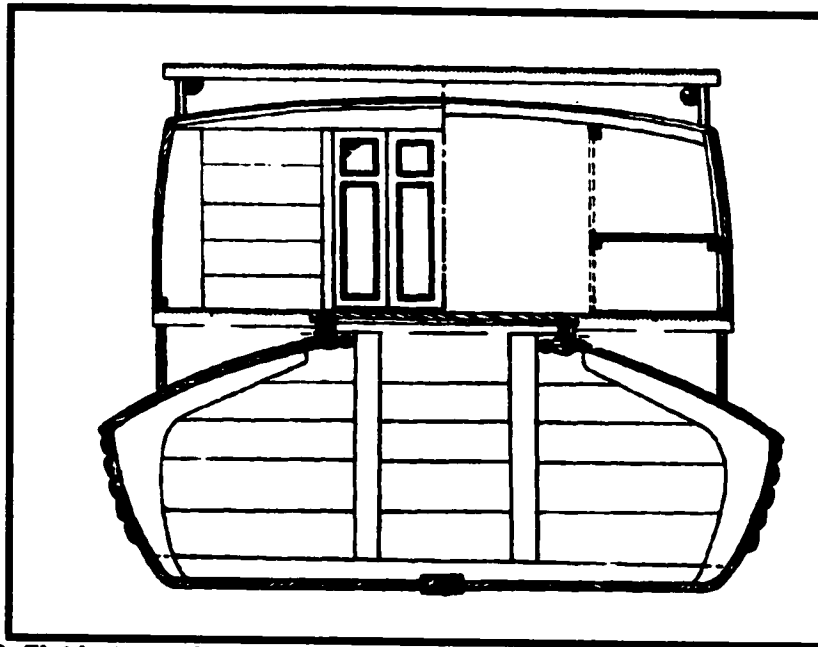


Figure 82: Flat bottomed turret built Jiangsu trader, with false deck placed on top of structure. Narrow hatch is in the center. (Worcester, Junks and Sampans, 164)

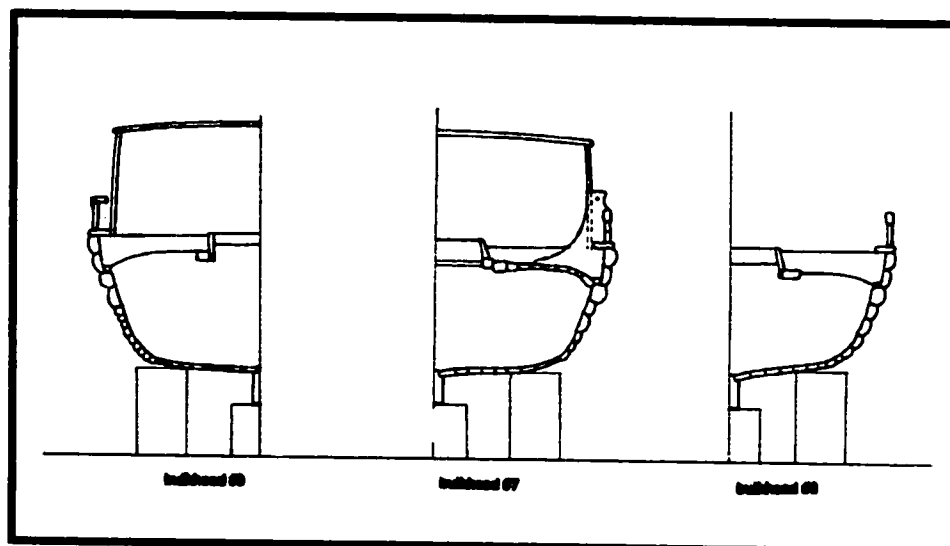


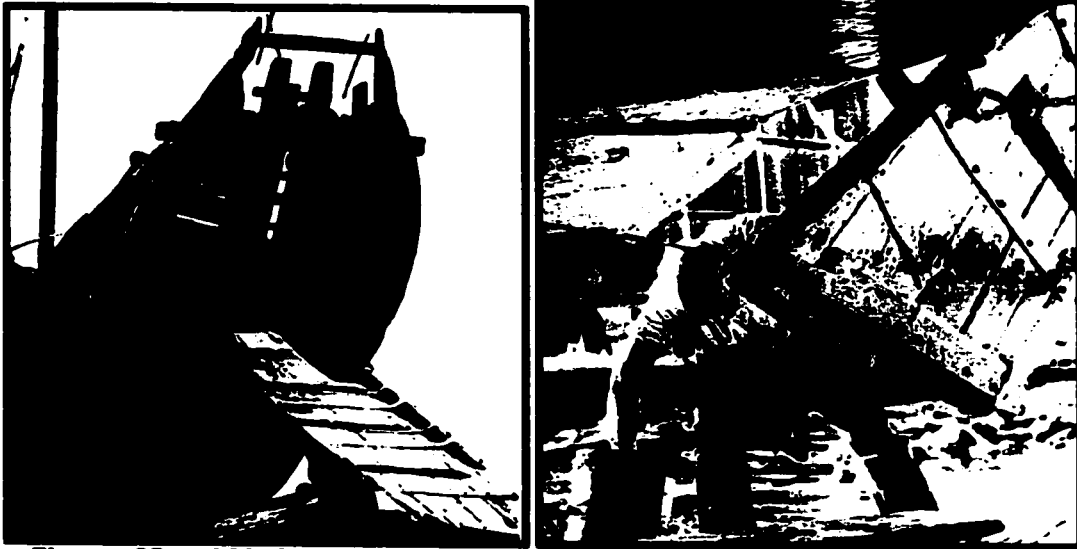
Figure 83: Henry Rusk's cross sections as selected stations. Keel and turret style construction are most obvious here. (Dring, personal collection)

¹⁴¹ Ibid, 164.

The rudder was, of course, the typical Chinese deep ocean going rudder, suspended by a windlass high on the oval stern, and held in place by cables running underwater to another device on the bow. Though the tillers which attached to the rudder post were broken when the crew failed to reduce sail in strong weather, the *Free China's* rudder itself suffered no mishaps. The rudder post, slotted between two massive vertical timbers in the stern transom, the "hard muscles," is reminiscent of the Amoy junk designs.



**Figure 84: Rudder in lowered position, windlass at the top of the stern transom.
(Chen collection)**



Figures 85 and 86: Seagoing rudder streamed in dry dock; marine architect Henry Rusk painting foot of hoisted rudder, cable or dule running forward and safety chain attached. (Chow collection)

Though the *Free China* was quite representative of Chinese working vessels when she arrived in San Francisco, she did not remain that way. There have been drastic alterations to almost every aspect of the Chinese junk. The interior bulkheads have been removed, the high oval stern has been chopped off, foremast cut down, rigging added to the mainmast, a diesel engine installed, and a western style steel rudder attached. Except for the distinctive bow and overall lines of what's left of the hull, there is very little left of the original Chinese Fujianese craft. These changes, despite previously noted efforts to preserve the junk and its original pattern, have come as quite a shock to the original crew, witnessing them for the first time at their 50-year reunion in 1995.

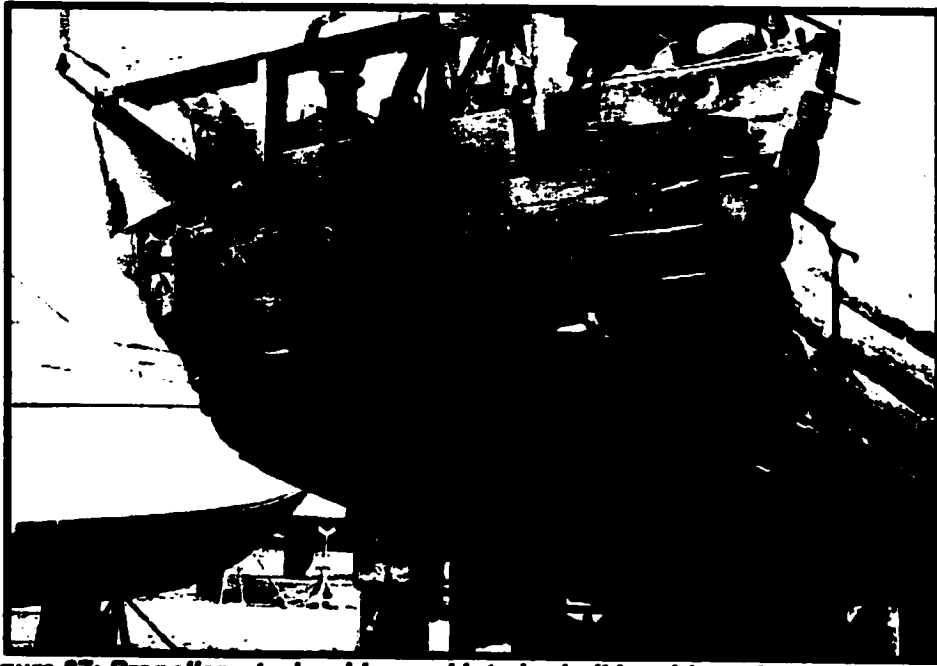
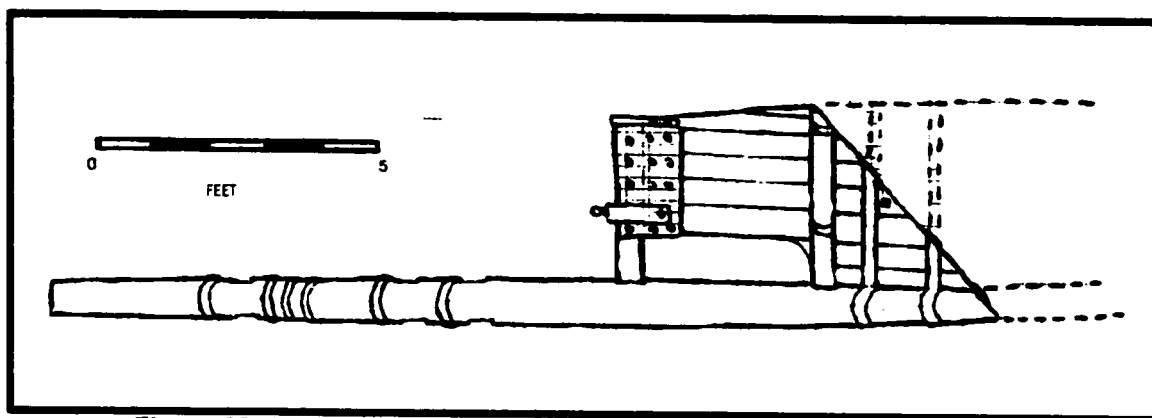


Figure 87: Propeller, steel rudder, and interior bulkhead (now become the stern transom) were revealed when some 10-13 feet of the junk's original traditional stern was cut away with a chainsaw. (author)

It's unfortunate that the junk was so radically altered, but there is no legal protection for historic objects such as this in private ownership. Though Harry Dring installed the diesel engine, he did keep the junk sailing on the Bay for years in somewhat its original form. Govinda Dalton, who purchased the junk in 1989, did the most to alter the vessel's shape when he removed the entire stern compartment. Parts of the junk are scattered around California. The original rudder, cut in half and headed for the dumpster, was saved by John Muir of the San Francisco National Maritime Museum. The heavy ironwood foremast resides in the National Park warehouse as well.

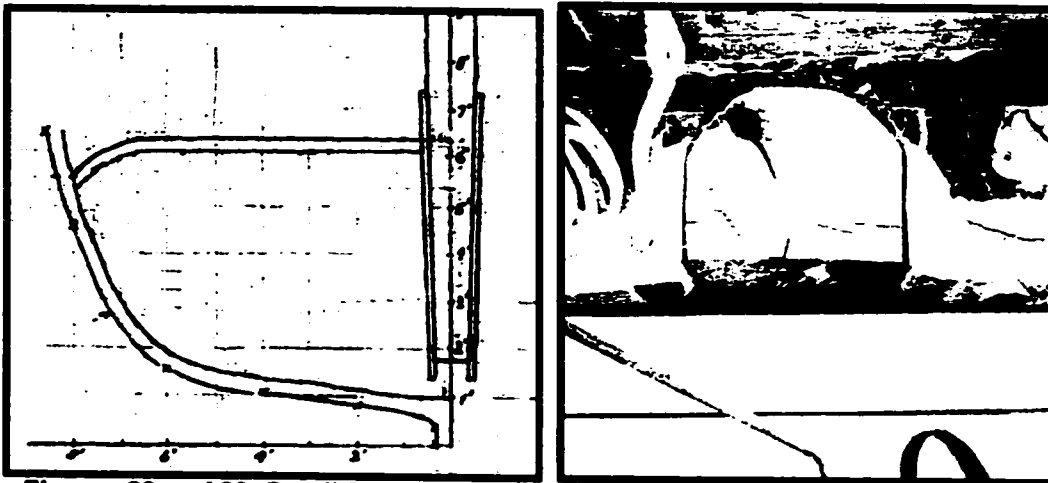


**Figure 88: Half of the *Free China*'s rudder left in the SF warehouse.
Rudder post reinforced by iron hoops.
(Author's drawing)**

Though the methods were drastic, the destruction of the *Free China*'s Fujianese stern does give a clear picture of the hull profile, including the individual planks and wales and turret build of the original junk. The strong longitudinal deck members above and the relatively thin hull planks at the bottom give an accurate illustration of the way the junk structure "is hung from its deck."¹⁴² In a similar fashion, the removal of the foremast reveals clearly the mast partners, long vertical boards which sandwich the mast and hold it locked in place above (not touching) the keel. The addition of "standing rigging" of shrouds and stays, commonly used on western vessels as an integral part of the whole rig, would pull the Chinese mast downward, forcing the mast partners apart and placing undue stress on a keel not built for it.¹⁴³

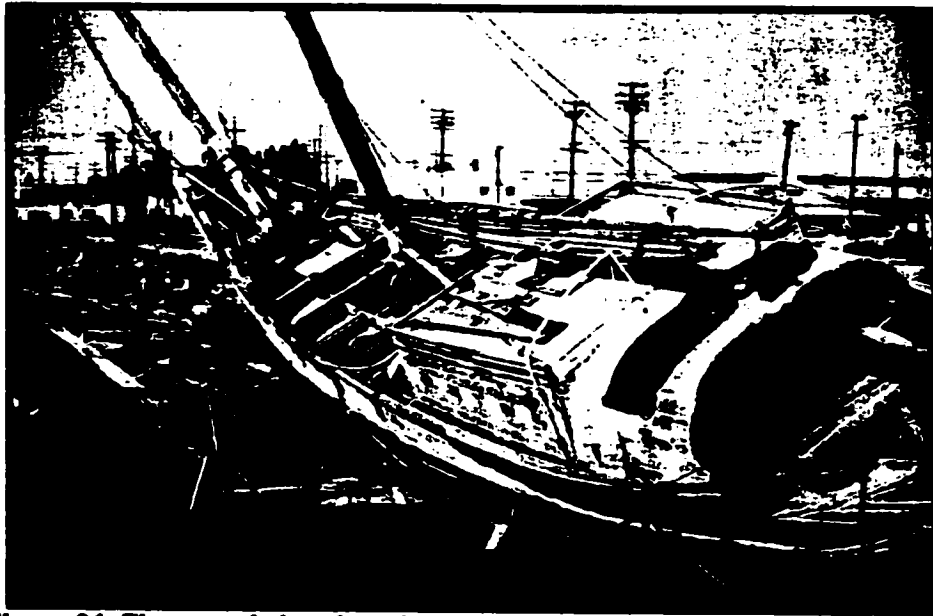
¹⁴² Gould and Foster, *Junks*, 18.

¹⁴³ Chow, interview, 7 August 2000.

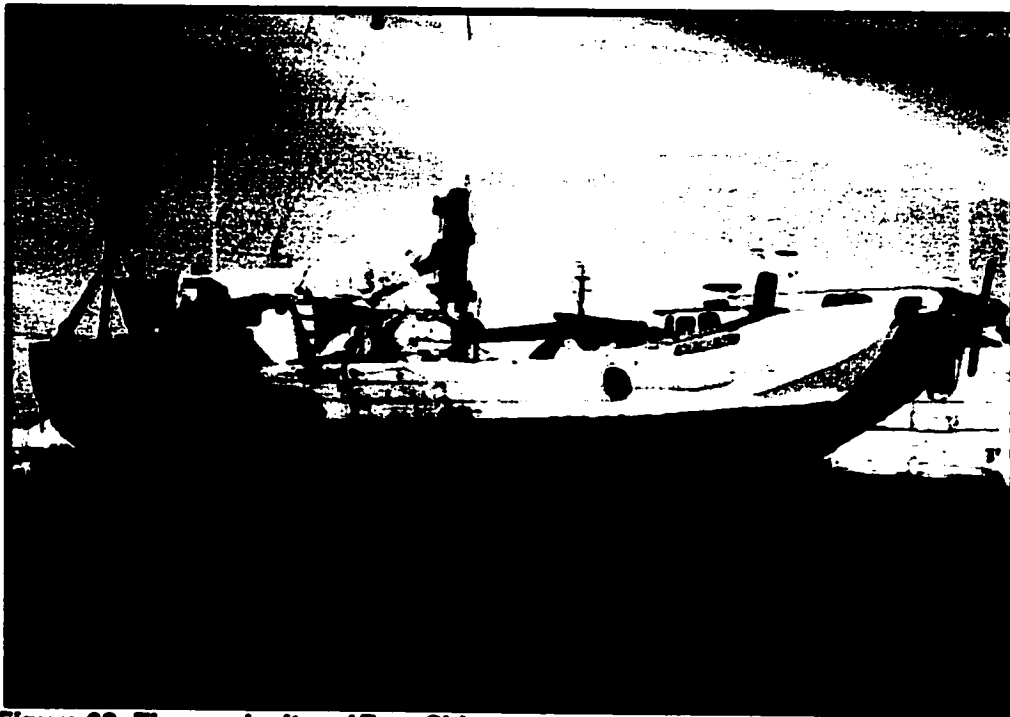


**Figures 89 and 90: Detail from sketch of mast partners on junk *Free China*; foremast stump and mast partners or wei jiazi against bulkhead.
(Chow collection)**

Electrical wiring, bilge pumps, a bathtub, and numerous clotheslines have so altered the original vessel that its current significance comes not from the many features which it still might have displayed, but from the mere fact that it has, even in this altered form, survived. The technical details of Chinese ship construction have been captured in photographs and a few plans only, the junk these days is an historic survivor, representative more of Chinese junks in name than in physical fact. Nonetheless, the author has questioned numerous nautical historians and archaeologists both in the west and in China, and has yet to find evidence of an older Chinese wooden sailing vessel still, tenuously, in operating condition. One hundred years, if that indeed is the age of the ex-smuggling junk *Free China*, is an incredibly long lifespan for a wooden vessel of any type, let alone one that never received any official status or protection as an historical object worthy of preservation.



***Figure 91: The vessel abandoned at Alameda shipyard, turning into firewood.
(Chow collection)***



***Figure 92: The much altered Free China today; saved from the firewood pile, true,
but at what a cost. (Author's photo)***

the Beihai junk: hidden treasure from the *shuiren*

In this last example of Chinese nautical technology, the junk in question was neither used in a traditional setting, nor built by enterprising westerners, nor ever even sailed across or in the Pacific. The nameless Beihai junk is the only known example of a Chinese vessel built by the Chinese for preservation in a western institution. Its construction was a deliberate attempt to capture all the authentic details of a single design. Guy Lasalle, on assignment for a Portland museum, had great difficulty locating two shipwrights in China. They built the junk from memory only, specifically for the American museum.

There is no real representation in *Classification of Seagoing Junks* which looks like the vessel built in 1989. Only models with the most general similarities, such as relative position of the mast and daggerboard and windlass, exist. The patterns are there, but none of the language specific to this particular Beihai junk. Worcester's closest model approximating the design of this small two-masted fishing junk is the *gaode chuan*, named after the construction location in Guangxi province on the Gulf of Tonkin. Cabin, mast, daggerboard, and windlass are depicted in appropriate positions, and the size is approximately the same, though the bulwarks at the stern are considerably simplified compared to the vessel in question. The sailing rig of the Beihai junk, however, most closely resembles the two-masted *danzhou chuan*, including a forestay, shrouds, and small jib sail. It's likely that the rig is a western adaptation. These were the most common type of fishing boats in the district, their slight drafts allowing them to cross the shallow waters of the bay.¹⁴⁴

It shouldn't be surprising that, while certain elements remain recognizable in the seven or eight decades since Worcester collected information on junk designs in Guangxi province, some features have drastically changed. Not every feature of junk construction is ironbound in tradition and stability. Also, the Chinese workers who built the junk had resided in Vietnam for a considerable length of time, if not their entire lives. Though most features of

¹⁴⁴ Worcester, *Classification*, 171.

the Beihai craft appear common to the Chinese junks of the area, the very long overhanging bulwarks at the stern do not appear frequently on Chinese vessels. They are indicative of Vietnamese junks, as recorded (in silhouette only) by J.B. Pietri, *Voiliers D'Indochine*.¹⁴⁵

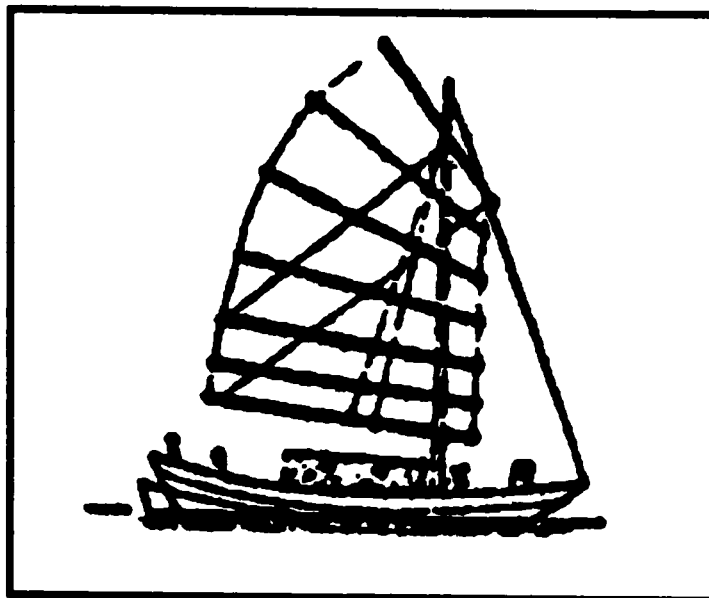


Figure 93: The bay fishing Gaode junk; only certain features of which are carried to the modern example. (Worcester, Classification, 170)

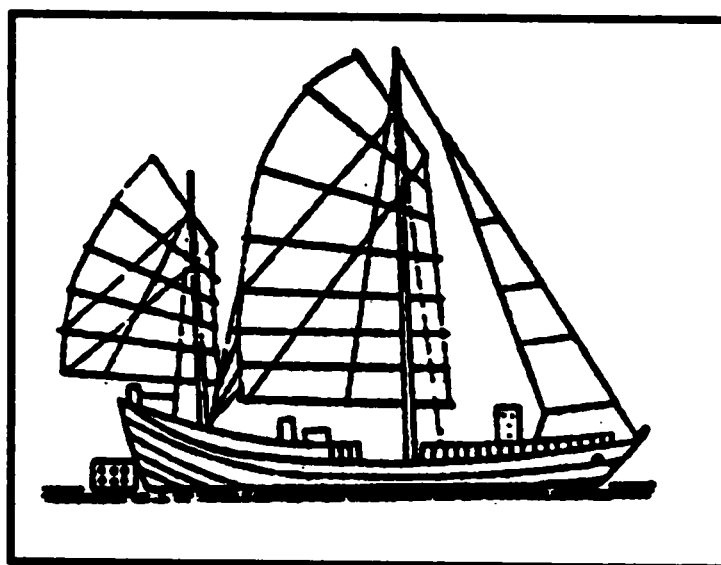
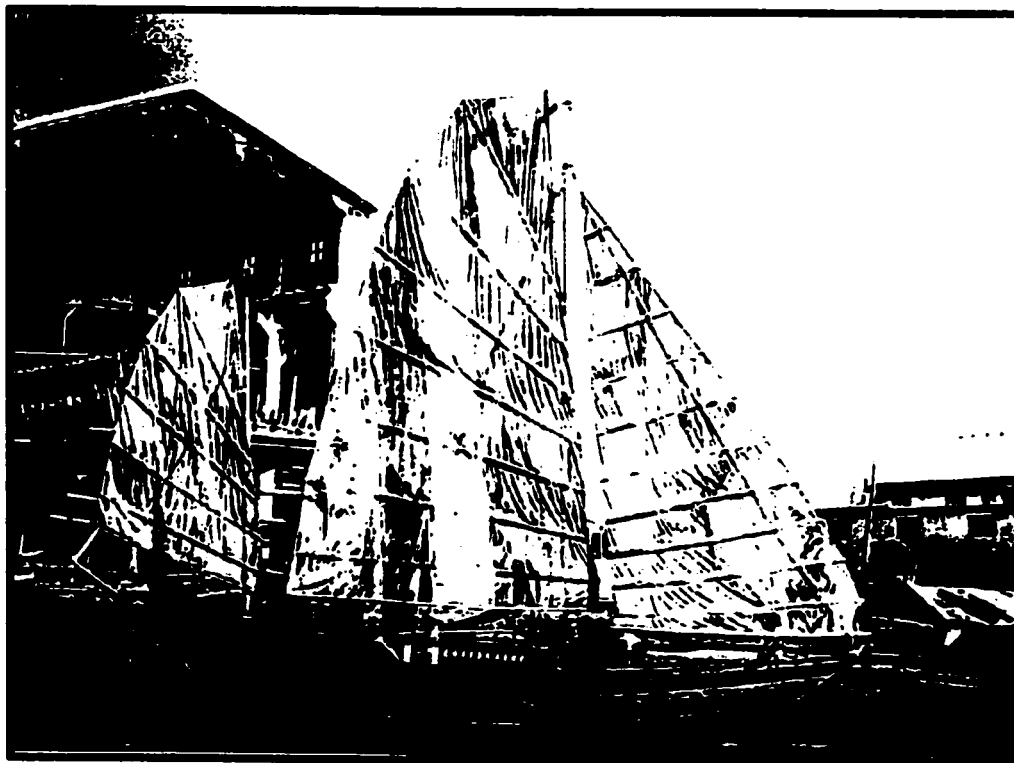


Figure 94: The Danzhou junk, showing two-masted rig with flying foresail. The daggerboard is in its upright position. (Worcester, Classification, 190)

¹⁴⁵ J.B. Pietri, *Voiliers D'Indochine* (Saigon: S.I.L.I., 1949).

The low square cabin and prominent drop keel (raised rectangle) on the foredeck are captured in the image of the *gaode* junk. Even though this idealized version has a single mast, a forestay runs from the bow to the masthead, similar to half of the recorded Chinese designs for Tonkin waters. Such triangular sails, long associated with western rigs, may possibly represent a further transfer of technology so prevalent in Southern China. The forward adjustable drop keel, or daggerboard, set vertically in a watertight trunk, appears in 13 of Worcester's selection for the area; and the sharply pointed bow is noted in 16 of the 18 documented examples.¹⁴⁶ Such features seem to have been the most common diagnostic indicators for Chinese junks of the extreme southern waters.



***Figure 95: The Belhai junk briefly under sail in Oregon. This is the same sail plan as the Danzhou junk.
(Portland Children's Museum)***

¹⁴⁶ Worcester, *Classification*, 170-204.

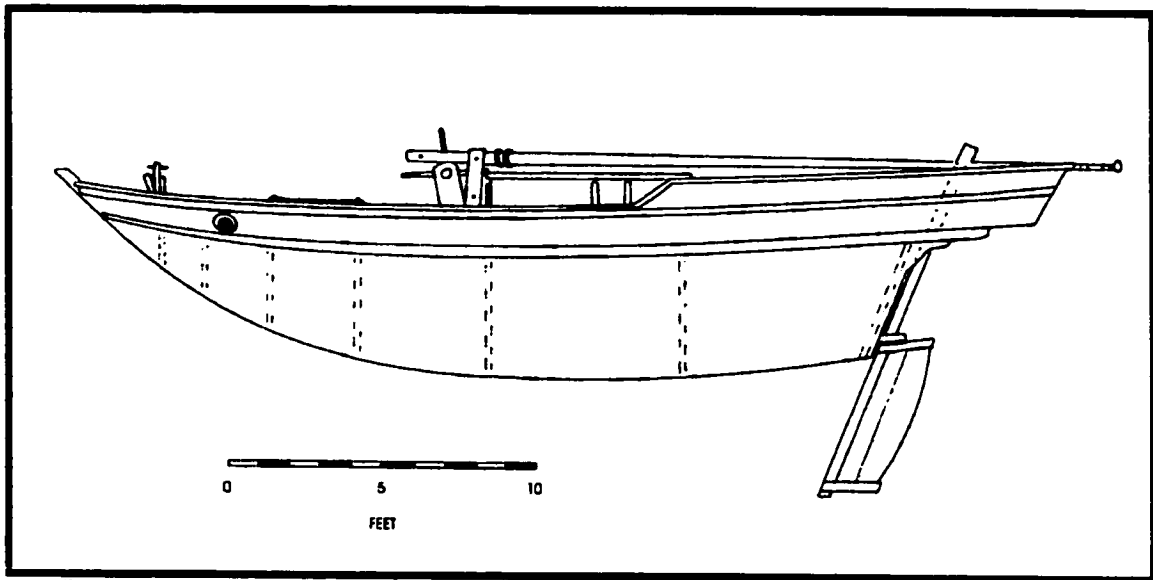


Figure 96: Elevation of the Beihai junk in Portland; interior bulkhead positions depicted. (Author's sketch)

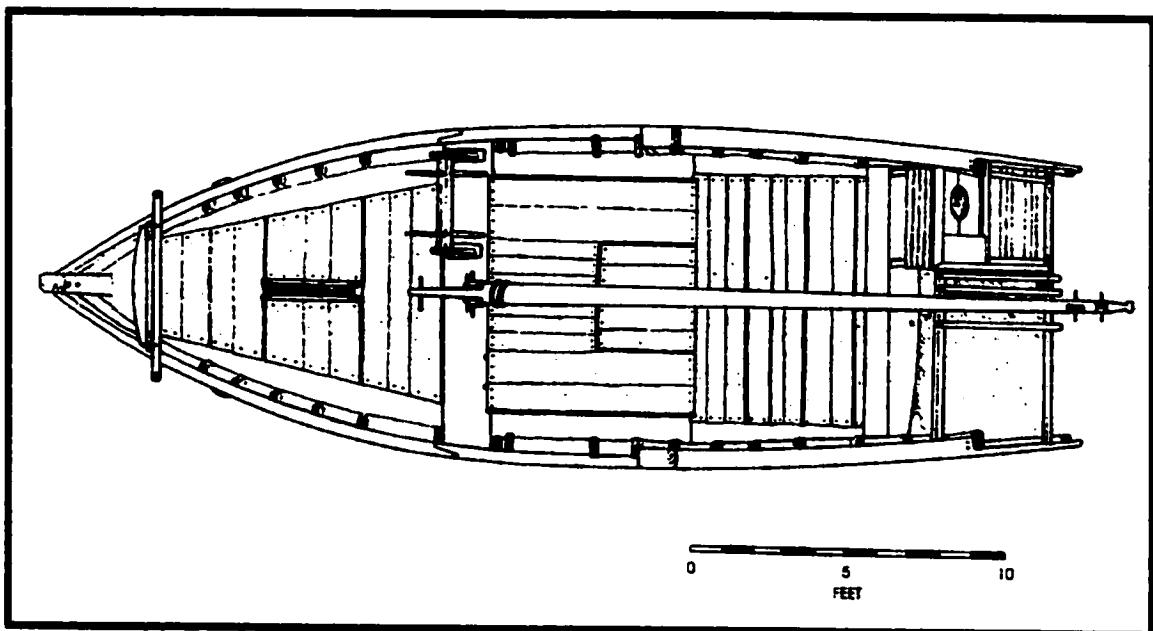


Figure 97: Plan view of the Beihai junk. (Author's sketch)

The elevation and plan view drawings show the trunk for the daggerboard on the foredeck, as well as the position of the windlass and mast partners just forward of the low cabin. Eleven separate hatches give access to the interior holds. The companionway hatch

leading into the living area rests in the center of the cabin roof. A box for privacy surrounds the toilet, or marine head, on the starboard stern overhang. The open overhang and long strakes extending aft are not typical of any Chinese designs, but the same type of feature can be seen in images of the Vietnamese *Ghe manh du song ca* and the *Jonque de Pakhoi*.¹⁴⁷

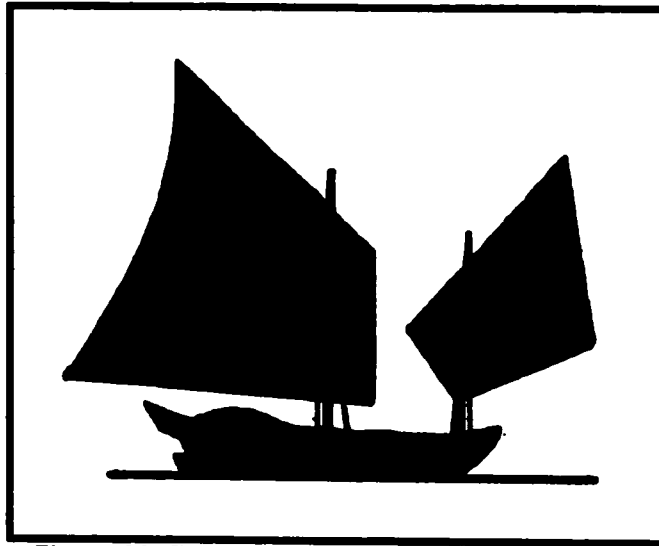


Figure 98: The bulwarks extend to the left of this image of a Vietnamese junk. (Pietri, *Voiliers D'Indochine*, plate V)

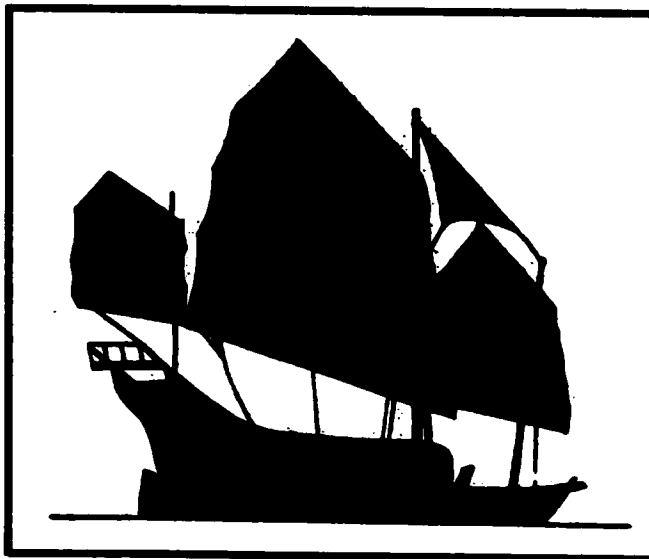


Figure 99: The same sweeping lines extend aft from this example. (Pietri, *Voiliers D'Indochine*, plate VII)

¹⁴⁷ Ibid, plate V and VII.

Daggerboards, and related leeboards, have been in use in China for a very long time, and there are reasons to believe that the devices were originally developed there.¹⁴⁸ These boards proved handy in stabilizing relatively flat bottomed vessels and preventing leeward drift. Certainly they were common in the late Ming era. Called broad water boards (*pian pi shui ban*) or waist rudders (*yao tuo*), references appear from the 16th century, particularly in southern China and Annam.¹⁴⁹

Similar in many ways to the most common sailing junks which once inhabited the Gulf of Tonkin, the Beihai craft is an accurate representation of a vanished art. In addition to being a "document" of Guangxi and Vietnamese vessels, it also encapsulates many of the more general Chinese junk construction attributes. Since this junk still exists intact, these can finally be documented here in more detail than previous vessels.

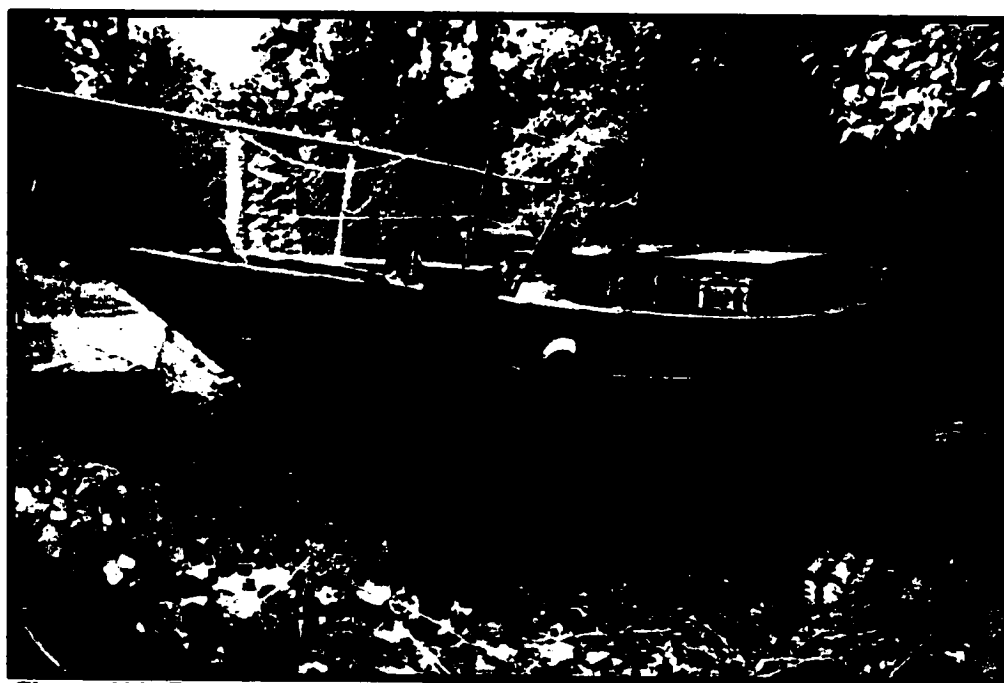
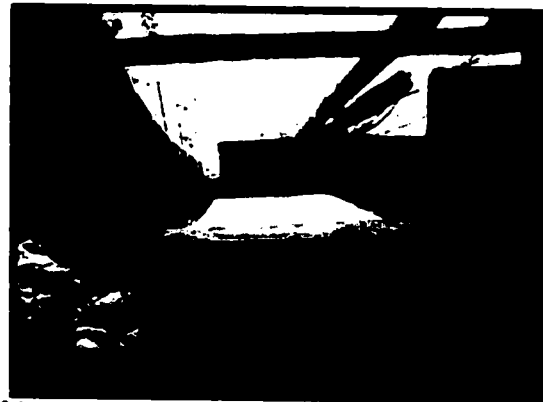


Figure 100: The Beihai junk in the Portland Urban Forestry storage yard today; a sharp-bowed fishing junk. The safety railing was added by museum staff during display. (Author's photo)

¹⁴⁸ Needham, *Science and Civilization*, 618. Ancient Formosan sailing rafts featured dagger boards for navigational control.

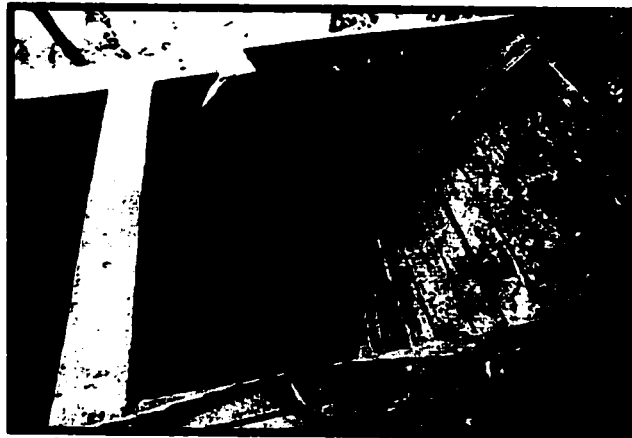
¹⁴⁹ Ibid, 620.

A bamboo skiff, the rudder, a two-piece *yuloh* sculling oar, and the daggerboard, along with dirt and debris, have been cleaned off the decks of the junk in the above picture. The vessel sits amidst broken roof tiles and cement blocks. Rigging and batten sails and tiller, as well as cooking utensils, storage jars, and a selection of personal effects, are all in storage at the Children's Museum in Portland. The junk and its artifact assembly are relatively complete.



***Figures 101 and 102: Semi-open rounded transom stern; curve of the bilge and flat bottom of the hull, and looking forward through open stern toward the bow.
(Author's photos)***

The stern transom features wooden gudgeons for the large 12-foot-long rudder (not pictured here). Watertight bulkheads separate storage holds. Interspersed between the bulkheads are sets of frames, attached only lightly to each other at the turn of the bilge. There is no keelson. As with other junks, a series of flush level hatches give access to the storage holds, and when closed, constitute the major portion of the deck. Raised hatch comings keep most of any water on deck from entering the hold. The 33-foot junk contains seven watertight compartments, dividing the hull of the vessel at convenient intervals into storage and living spaces.



Figures 103 and 104: Upper rudder gudgeon, and step for light mizzen mast extended outboard; the marine head at the stern overhang. (Author's photos)



Figure 105: Bowshot of the Beihai junk. (Author's photo)

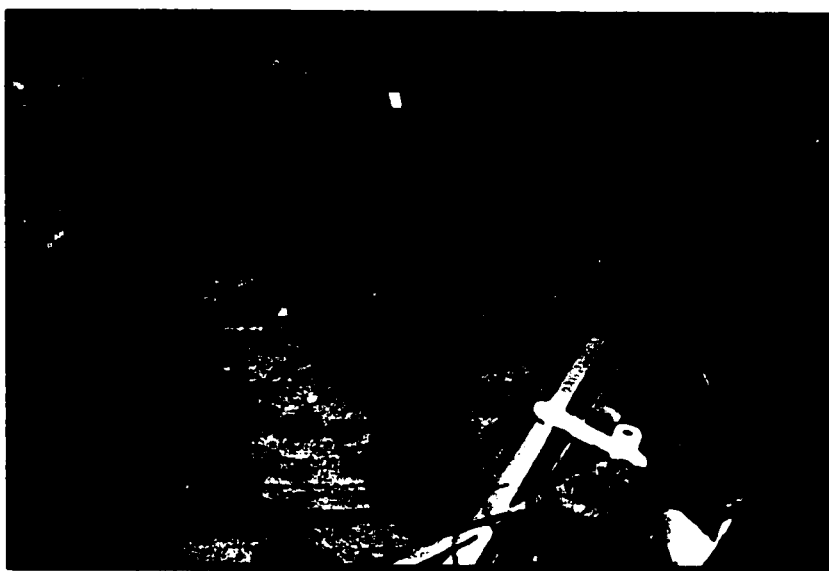
A shallow keel runs the full length of the hull, the keel timber being 50% thicker than hull planks. The mast partner, a single rounded timber notched at the top to accommodate the pivot slot, extends into the junk and onto a block resting on top of the floors (frames). The mast does not make contact with the keel. The sharpness of the bow is obvious, as well as the downward-looking eyes which typify Chinese fishing vessels. The bow crosspiece which extends beyond the sides of the vessel, though, is not a feature usually found on Chinese

junks. Lines were typically secured over the forward rail of the transom bow, something that is impractical with a sharp stern post. The crosspiece here is another Vietnamese feature, known as an anchor tumbler or *nga*.¹⁵⁰ The stern resembles a semi-open rounded style, but one which is entirely open above the deck line.



Figures 106 and 107: Mast step just forward of bulkhead #5, does not extend below plank, but sits on top of the frames. Note edge-joined bulkhead planks; futtock and frames joined with three small spikes. (Author's photos)

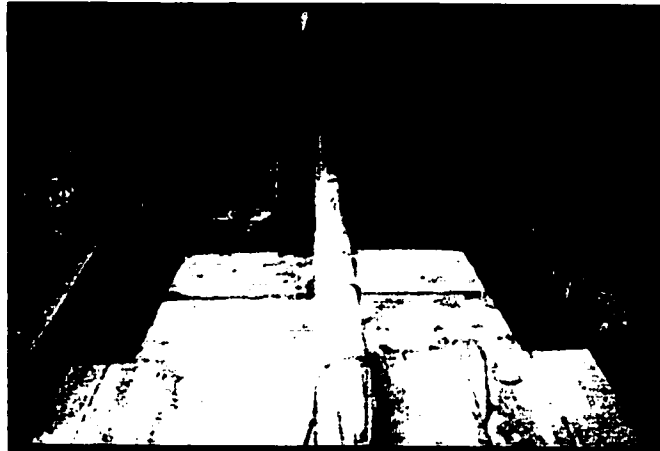
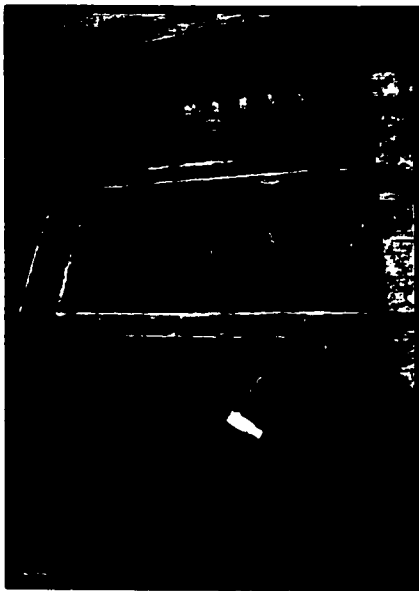
¹⁵⁰ Soan Thao Hon-Hop Boi, *Hai Thuyen Thanh Thu...Junk Blue Book* (South Vietnam: Combat Development and Test Center, 1962).



Figures 108 and 109: Watertight holds or shuimi cecang with forward hatches open, looking towards bow; closed, looking towards stern. (Author's photos)

The daggerboard or *zhongcha ban* trunk is set in the middle of the forward hatches. Providing stability in much the same manner as a deep keel or rudder, the daggerboard trunk

extends straight through the vessel. A simple peg or bolt through holes in the daggerboard allow it to be set to any depth.



Figures 110 and 111: Stern hatches starboard side open and all closed. Mast lies prone in cradle. (Author's photos)

All construction details are similar to established Chinese techniques. Chunam caulking material fills all the seams and fastener holes. Triangular notches have been chiseled into all surfaces where boards are edge-joined, and these indentations are then filled. Tung oil had been applied to all surfaces, though after eleven years of weather in its unprotected state, the protective coating has worn from exposed surfaces. Some of the seams have opened as the wooden planks, after being out of the water for such an extended period of time, have shrunk. Dry rot has begun in a few spots, but in general the hardwood used to build the junk has held up fairly well over the years.

Certainly the Beihai junk, a wonderful representation of Gulf of Tonkin styles, possesses a wealth of information on construction techniques. This small one-family fishing vessel, however, has social significance as well. Guy Lasalle was commissioned to find a junk representative of the types used by families as permanent homes. The exhibit at the Portland Children's Museum, "Homes On the Go," tapped into the history of the *shuiren* or

tanjia, the subaltern boat dwellers once prevalent in great numbers all over East and Southeast Asia.

There has been very little documentation on this marginalized group, for good reason. Research into transient maritime illiterate subaltern groups is difficult. This merely highlights what little work has been done. There is an historical record of discrimination against this roving, mobile group of local maritime laborers and fishermen. Owners of such vessels and their families were traditionally labeled *danhu*, or ship households, and systematically discriminated against by the government. These ship dwellers, or *danmin*, were not allowed to own or to reside on land.¹⁵¹ Hiroaki Kani, in *A General Survey of the Boat People in Hong Kong*, provides a brief history of the people, religion, and vessels of the floating population. In Hong Kong alone there were 136,000 boat people as of 1961.¹⁵² Ho Ke-en, in "The Tanka or Boat People of South China," traces references of boat people under various names through 2000 years of history, seeking the origins of the water people (*shuiren*) and offering a survey of Chinese primary sources (though without references).¹⁵³ An oppressed pariah people without social status, some see them as aboriginal southern 'barbarians' (related to the Yueh) seeking refuge from the Han by leaving the land entirely. Eugene N. Anderson, in "The Boat People of South China," emphasizes the economic niche of suppliers of high-grade protein for land dwellers.¹⁵⁴ Yet the boat dwellers have spent most of their generations avoiding those who made the distinct effort to record their own history. European missionaries who had contact with sailors and boat dwellers seemed to enter a different world, and failed to record very much about the maritime lifestyle. Missionary intentions were obviously to change the culture, not save it.

¹⁵¹ Gang Deng, *Maritime Sector*, 52.

¹⁵² Hiroaki Kani, *A General Survey of the Boat People of Hong Kong* (Hong Kong: Dai Nippon, 1967).

¹⁵³ Ho Ke-en, "The Tanka or Boat People of South China," in *Symposium of Historical Archaeological and Linguistic Studies on Southern China, South-east Asia and the Hong Kong Region*, ed. F.S. Drake (Hong Kong: Hong Kong University Press, 1967), 120-124.

¹⁵⁴ Eugene N. Anderson, "The Boat People of South China," in *Asian Folklore and Social Life Monographs*, ed. Lou Tsu-k'uang (Taiwan: Orient Cultural Service, 1972), 1-10.

The actual processes employed by the devoted missionaries were, as per their instructions, a free mingling with the people and the wide distribution of tracts. The reports of Abeel show clearly how this activity was carried on; there is no way of checking up its results, since the population involved was a fugitive one, being largely of the sailor class. The long voyages in small, dirty, and uncomfortable junks or "country ships" could not have resulted in close friendships or lasting connections. What little record there is left of the Chinese reaction to this activity is mainly in the expressed hopes of the foreigners for converts. The boat people were naturally not interested in the cultural or missionary efforts of their passengers.¹⁵⁵

Only in the 20th century did large populations of fisher families, the target of dedicated government campaigns to settle junk dwellers ashore and provide hospital and educational facilities (and collect taxes), begin to vanish. The transition from foreign sailing ships needing a variety of services and products, to steam ships necessitating coal bunkering laborers, to huge inaccessible steel behemoths, has reduced many of the available nautical niches. Containerization and economic development have gone a long way in eradicating the boat people of Asia. Settled civilized modern societies do not seem to abide many floating and transient populations, those who have no permanent address beyond the location of their own boat.

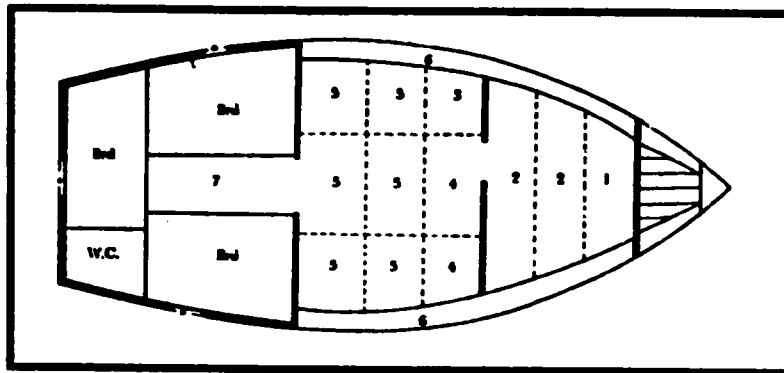
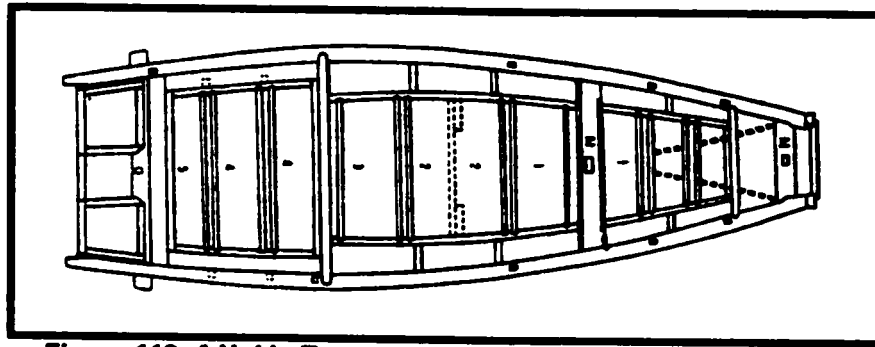


Figure 112: Vessels of the shuiren; an eight-ton 27-foot fishing trawler. Note the location of the marine head, or "W.C.," on the starboard side of the junk.
(Kani, *A General Survey*, 18)

¹⁵⁵ Danton, *Culture Contacts of the United States and China*, 41.



**Figure 113: A Hoklo Teng, accommodations aft in the overhang.
(Kani, A General Survey, 26)**

It is no surprise, then, that a vessel, from the same regions of the historic boat dwellers, designed for the same purposes, should exhibit such an advanced functionality in such a simple form. The Beihai junk, except for a few iron hoops, spikes and bolts, was built completely from wood by hand in just a few months.¹⁵⁶ Its separate holds provide structural integrity and storage for fish or cargo. Its small size means that it can be handled easily by one person. If the wind drops, it can be propelled by the sculling oar. It will house and feed one family, as it provides shelter and is a major piece of capital equipment at the same time, a very handy vessel. Such is the pattern language of the *shui ren*. The design seems perfectly adapted to its total maritime environment. In Mumford's terms, here is the democratic "small farmer" durability and economy of the Chinese water world. It's a shame, then, that its story has been relegated, through neglect, to the blackberry bushes of Oregon.

Significance of Selected Junks

Having classified these junks as representing a variety of junk types and multiple aspects of Chinese vessel construction, the issue of this group of junks' significance becomes more clear. These vessels contribute in a concrete and specific manner to our understanding of seagoing junks. Not every craft is an ideal example of Chinese sailing vessels, but as a whole the technical features or language of common Chinese ocean junks predominate. Certain features or patterns repeat themselves throughout the sample of these ten vessels, combined in varying ways.

¹⁵⁶ Lasalle, Jr., interview, 25 August 2000.

As indicated, these junks are significant in their own right as examples of Chinese nautical technology. But what really lends them an additional historical significance is the fact that these junks represent design patterns of an earlier period, a time when sailing junks in East and Southeast Asia played a larger economic and social role. For hundreds of years, such vessels carried cargo and people overseas, to and from the Chinese mainland. These transpacific junks represent the last of the vessels from the Junk Trade. There are two reasons for this statement: 1) comparison of the selected vessels with historic images of Junk Trade ships, and 2) the premise that junk design did not change significantly during the several hundred years in which the Junk Trade dominated commercial activities in Southeast Asia. The first reason is a relatively straightforward comparison of available evidence. Depictions of Junk Trade era vessels match closely with the dominant Fujian style coastal traders of the 19th century. This is most noticeable in Fujian designs like the *Hua Pigu*. The second demands a little more care in examination. It is addressed further within chapter seven.

The larger cargo vessels, such as the *Ning Po* and the *Free China*, deserve closer attention. Perhaps not surprisingly for vessels portrayed as the epitome of Chinese ingenuity in ship design by Worcester, Fujian three-masted coastal traders correspond to the general descriptions of junks in the important trade to Southeast Asia.¹⁵⁷ J.C. van Leur estimates size of Chinese ships in the 15th and 16th century trade to Southeast Asia at between 200 to 400 tons.¹⁵⁸ John Crawford, British diplomat, found the average size of vessels of the early 19th century to be a little smaller, between the 150 to 200 ton range.¹⁵⁹ Herold Wiens estimates that, for the 1920s, the average capacity of coastal trading junks at a selection of 31 coastal

¹⁵⁷ Ta Chen, *Chinese Migrations, with Special Reference to Labor Conditions* (Washington: Government Printing Office, 1923), 13; Crawford, *Journal of an Embassy*, 49.

¹⁵⁸ J.C. van Leur, *Indonesian Trade and Society: Essays in Asian Social and Economic History* (the Hague: W. van Hoeve, 1955), 126.

¹⁵⁹ Crawford, *Embassy*, 415.

ports had fallen to around 60 tons, and that encounters with junks able to carry more than 100 tons had become very rare.¹⁶⁰

...with regard to steamers and barges, there had been a great falling off in junks. Practically no new junks were being built, and, although some had been incorporated into the towing fleet, great numbers of them had been broken up or lost...Spencer gave what is probably a fairly accurate summary of the situation existing in 1938. "Old native style shipping," he wrote, "has not been totally eliminated, but its volume has decreased tremendously, and much of it has been relegated either to small unit movement between ports not connected directly by steam or to those waters totally or seasonally out of reach of steam launches."¹⁶¹

These size estimates overlap with the range of the more contemporary vessels, from the 700-ton junk *Keying* to the 300-ton *Ning Po* to the 50-ton *Free China*. The trend seems to have been, over time, for decreasing size in junk construction.

Rare images of vessels in the junk trade can be compared to the more modern documents. Yoneo Ishii, in *The Junk Trade from Southeast Asia*, makes use of Japanese silk scrolls from the 17th and 18th century which depict Chinese vessel designs. The Tokugawa shogunate, wary of any foreign vessels whether they were Dutch or Chinese or otherwise, kept careful records of all such foreign visits at Nagasaki. Short range and smaller Chinese vessels, known as *kuchi-bune*, came to Japan from the nearest Chinese provinces of Jiangsu and Zhejiang. *Naka-bune*, or middle-distance ships, came from Fujian and Guangdong provinces. And the long-distance larger Chinese junks from remote countries, the *okubune*, originated from places in Southeast Asia such as Champa, Tonkin, Malacca, and Batavia.¹⁶² Images were included with the written reports, and these show the overall shape and construction features, and even the decorative motifs at the stern transom, to be very similar in style to the transpacific *Ning Po*, indeed to several Fujian Province designs. High wings at the bow, horizontal windlasses, stepped quarter decks at the stern, large oval transoms complete with standardized motifs of the bird and immortals...all are similar to the

¹⁶⁰ Herold J. Wiens, "Riverine and Coastal Junks in China's Commerce," *Economic Geography* (1955), 257.

¹⁶¹ Ibid, 250-1.

¹⁶² Yoneo Ishii (editor), *The Junk Trade from Southeast Asia: Translations from the Tosen Fusetsu-gaki, 1674-1723* (Singapore: Institute of Southeast Asian Studies, 1998), 2-3.

last of the pole-junks in the early 20th century. Such a comparison is strong testimony to the existence of a stable and well-known design tradition. It really would appear that certain Chinese junks, which have only very recently vanished from existence, were fairly accurate physical records of hundreds of years of nautical history.

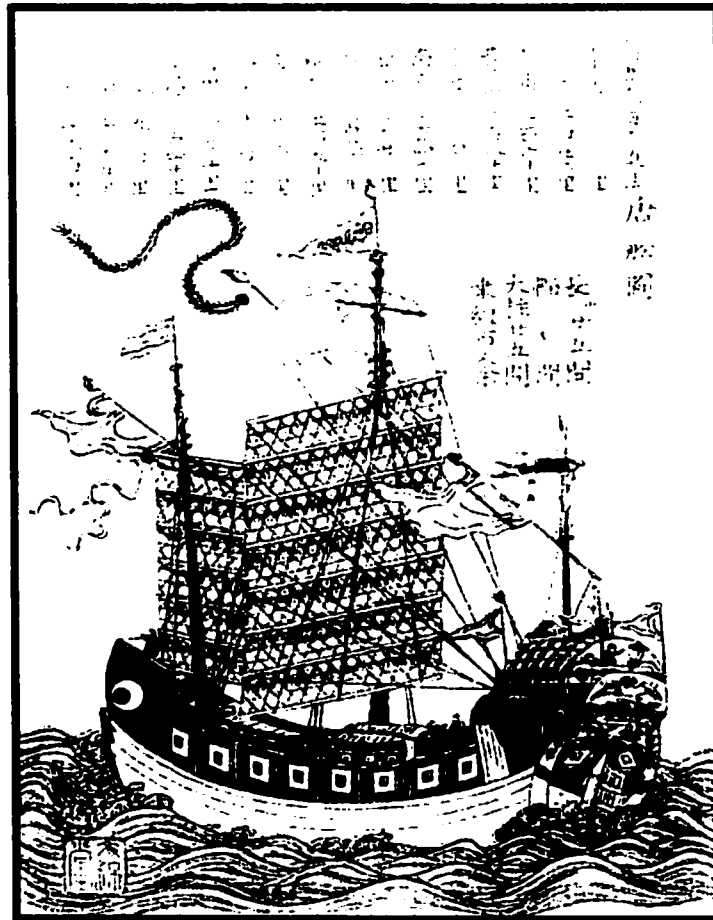


Figure 114: A tosen, or Chinese junk, depicted in an 18th century Japanese scroll. (Ishii, *The Junk Trade*, 14)

The same style of vessels appear recorded by various artists in the environs of the foreign factories at Canton over an equally long period of time. The traveling art collection entitled "Views of the Pearl River Delta," exhibited at the Hong Kong Museum of Art and the Peabody Essex Museum and, in 1998, at the Honolulu Academy of Arts, depicts a multitude of Chinese junks. The collection of paintings at Greenwich Maritime Museum also features

similar styles of vessels. Again, we find the familiar style encompassed by the Fujian pole-junks.

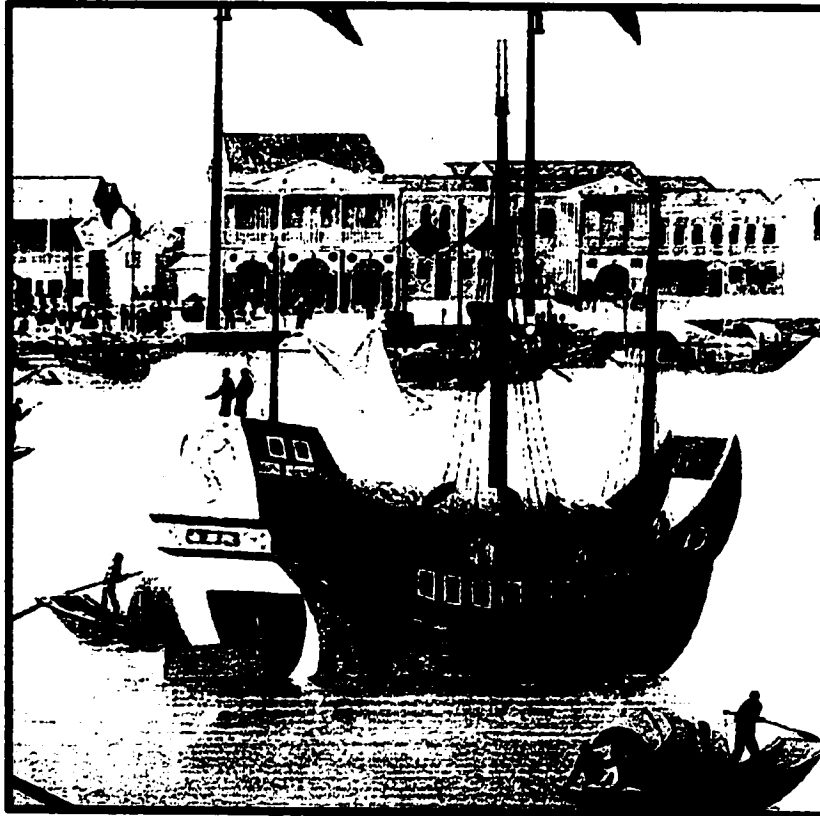
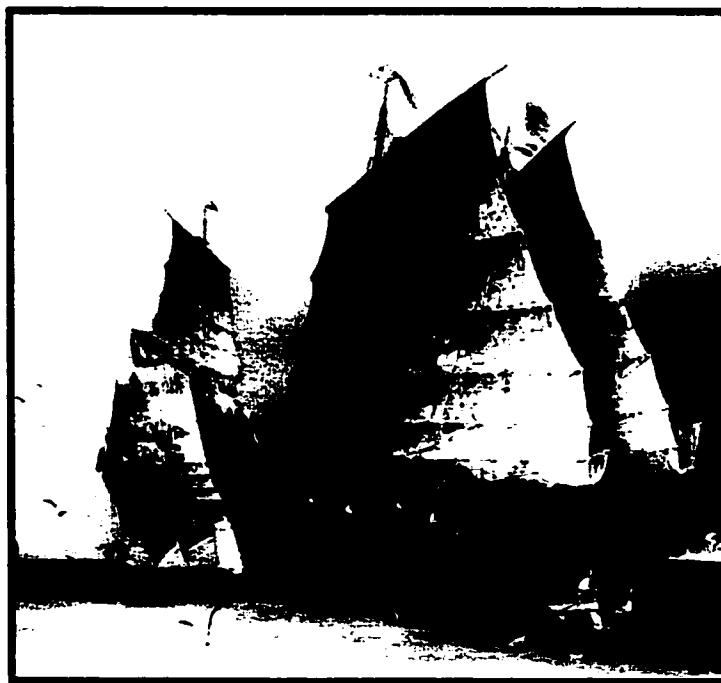


Figure 115: Detail from late 18th century watercolor, "View of the Hoppo Returning," unknown artist. Even this simplified example portrays the winged bow and oval stern and overall construction design and decorative motifs of the Chinese pole-junk. (Hong Kong Museum of Art Collection)



**Figure 116: Fuchuan trading junk, drawn by Captain J.H. Drummond.
(© National Maritime Museum, London)**



**Figure 117: Fuchuan trading junk, early 19th century.
(© National Maritime Museum, London)**

These images, figures 120-123, show some basic similarities to a photograph taken in 1884 of the junk *Keying*, before it was broken up for scrap. The *Keying* completed a voyage to London in 1848, via the Indian Ocean, and was displayed at the Great Exposition of 1851.

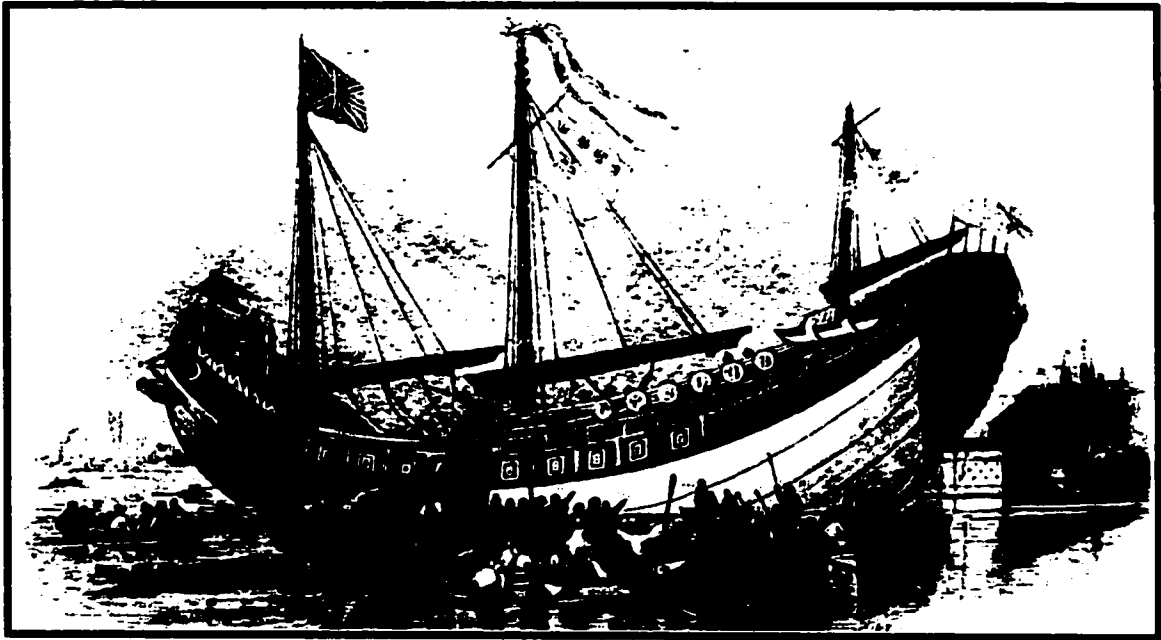


Figure 118: Junk Keying, 160 feet long, 700 tons, described as a Fuzhou pole-junk with modified elements in the stern. (Altick, Shows of London, 295)

These same design elements can be seen in a Qing dynasty sketch of a sea-going junk, from the *Liu Qiu Guo Zhi Lue*, an account of the Liu Qiu islands from 1757.¹⁶³ Though in this depiction the sailing rig is shown with numerous alterations which may be due to the western influence of sprit-sails and top sails, the construction features are typical of the large Fujian coastal traders. High wings at the transom bow, in this case spanned by a decorative cross piece, the cabin and raised deck at the stern, several horizontal windlasses, and even the cables which serve to restrain the adjustable rudder of this three-masted vessel are clearly visible. It is very similar in form and equipment to the Fujianese junks and serves to

¹⁶³ Needham, *Science and Civilization*, 405. Needham refers to this single image as one of the best pictures of a Chinese ship in the Chinese style to be found.

anchor these vessels to patterns of construction features several centuries old, to make the connection between certain of the transpacific junks and the vessels of the historic Junk Trade to Southeast Asia.

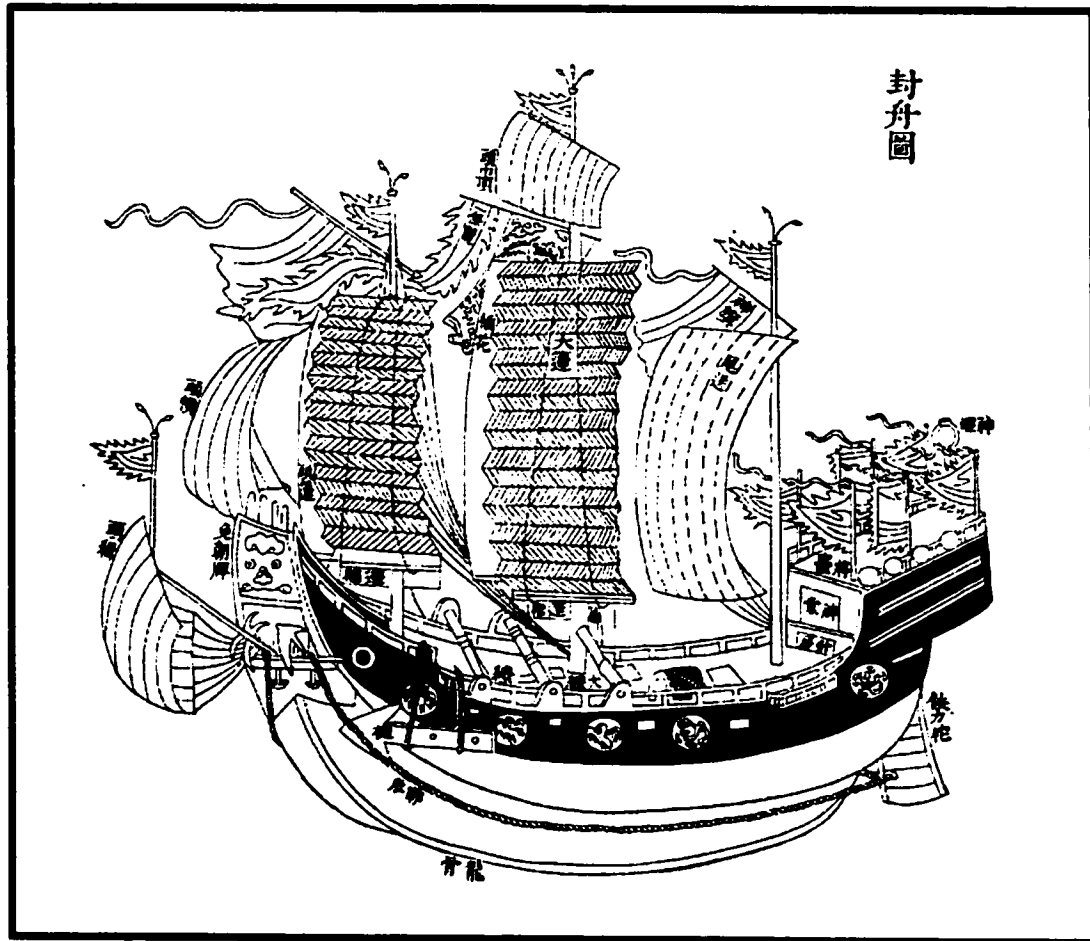


Figure 119: Qing dynasty sea-going vessel, attributed to an account of the Liu Qiu Islands, 1757. (Ronan, Shorter Science and Civilization, 78)

It is surprising, then, that what once were such recognized and well-used craft should have dwindled to near non-existence in the last century. Over time certain minor elements were changed. Some technologies were introduced from the west, particularly the labor-saving device of the capstan and specific sail rig arrangements. The basic elements, though, the hull and rudder and overall shape, along with certain cultural/decorative features,

remained the same until the design disappeared. Maritime historian William Still, director of East Carolina University's Program in Maritime Studies, has remarked on the tendency of shipwrights of all cultures to remain conservative towards radical changes. Certain design changes can only be approached very carefully, given the dire consequences for the failure of experimental designs.¹⁶⁴ This may indeed be true for certain patterns, though language elements in construction do obviously evolve within this context.

Wooden Chinese designed sailing craft carried a large percentage of trade goods and passengers to and from many of the ports in the South and East Asian world over a period of hundreds of years. The significance of the vessels representative of this trade goes beyond mere obsessions with traditions in design. The functions of these junks, their seaworthiness and sailing abilities, made the trade economically feasible. And the East and Southeast Asian trade, especially for the expansive period between around 1450 to 1650, played a central role in the regional (and some would say even world) economy.¹⁶⁵ The domination of these monsoon trade routes by junks from China or Chinese junks constructed in places like Siam and Batavia continued into the 19th century. The bulk of the trade did not fully shift to western vessels until sometime around 1820.¹⁶⁶ Cargoes of spices and scented woods, rice and sugar, metal ores and silk and cotton and ceramics, more things than can be named here, cannot be understood as mere luxury items, but must be evaluated, as Jennifer Cushman has shown, as staple products.¹⁶⁷ Chinese merchants and their ships, particularly during the Song and Yuan dynasties, became one of the dominant foreign mercantile groups operating east of the Strait of Malacca.¹⁶⁸ Given some of the newer historical directions in the field of world history, meaning investigations of regional or world economies before 1500 A.D. by such scholars as Andre Gunder Frank and Janet Abu-Lughod and Christopher Chase-

¹⁶⁴ William J. Still, communication with author, 10-15-99.

¹⁶⁵ Frank, *Reorient*, 96.

¹⁶⁶ Reid, "The Unthreatening Alternative....," 13; and Gang Deng, "What did Seas and Oceans Mean to the Chinese in the Past Millennia?" paper presented at the second annual conference of the World History Association, Honolulu, June, 1993.

¹⁶⁷ Cushman, *Fields from the Sea*, 78.

¹⁶⁸ Kenneth McPherson, "China's Trade with the Indian Ocean to the 19th century: a Study in Cyclical Relationships," in *China and the Maritime Silk Route* (Fujian: UNESCO, 1991), 57.

Dunn and Thomas Hall, it would be hard to overestimate the significance of Asian maritime trade routes. These junks, what little we know of them, represent the tools of those trade routes, the units by which those merchants measured their operations.

Fuchuan and Shachuan

Stepping back further in time, the significance of the nautical innovations, which produced both the *fuchuan* and the *shachuan* junk patterns, can and should be set in the context of the larger scale operations. Tang dynasty records indicate Chinese junks venturing as far as the Euphrates river. *Fuchuan* junk styles, dominant between the Tang and the Song dynasties, have also been associated with the large overseas expeditions of Zheng He in the early Ming period, fleets traveling as far as East Africa. The large *baochuan* or treasure galleons, though, have been referred to as *shachuan* flat bottomed vessels. The rise in popularity of the more economical *shachuan* junk styles coincides with the technical innovations and period of economic prosperity of the Song dynasty. During that period, as evidenced in Marco Polo's travels, Chinese junks voyaged to the west coast of India. *Fuzhou* ships were considered unsuitable for the shallow waters of the Arabian coastline. *Fuchuan* and *shachuan* vessels, in other words, functioned through and far beyond the Southeast Asian Junk Trade. From this perspective of world history, Janet Abu-Lughod, in *Before European Hegemony*, describes major related and inter-locked subsystems of the 13th century world economy. In one of these, the Indian Ocean-East Asian subsystem connecting India and Southeast Asia and China, Chinese junks often played crucial roles.

It is not clear what the exact differences are between the two styles of junks. Ultimately, it seems that both contributed to the form of 19th century examples here. Though Gang Deng writes "the *fuzhou* ship became the prototype of all Chinese sea-going vessels after the tenth century."¹⁶⁹ The general development indicates that elements of the *fuchuan* were carried into the *shachuan* pattern.

¹⁶⁹ Gang Deng, *Maritime Sector*, 9-10.

The shallow water ship was designed for both river and sea traffic. It retained some features of the fuzhou ship such as multi-holds, multi-sails, stern rudder, and a low deck length-beam ratio. The main change was the disuse of a keel and thus the ship bottom became U-shaped. With it, the ratio between the deck length and the deck-bottom depth was increased to 7.8:1 from its fuzhou ship counterpart. Indeed, this high deck length and the deck-bottom depth ratio was adopted by the fuzhou ship as well. Zheng He's ships had the deck length and the deck-bottom depth of 10:1. The shallow water ship was thus far more flexible in traveling and saving the trouble of changing vessels between river and sea waters... This design was so popular that it has created the illusion that all the traditional Chinese ships were the shallow water ships...¹⁷⁰

The above reference to "the disuse of a keel" must be read with the narrow western definition of keel in mind. The chronological transition from one type to another is only an approximation reflecting the popularity of different styles. The origins of V-shaped and flat bottomed vessels are murky, and both seem to have been in existence at least as early as the late Tang period.¹⁷¹

Peaceful Patterns?

Almost without exception, these Chinese junks represent designs associated with peaceful operations. Except for the *Whang Ho*, there are no traces of cannon or other ordnance in real use on the junks. Bulkheads interrupt the interior decks, longitudinal hull planks remain free of gun ports, and cargo or living spaces or provisions occupy the entire form of the vessel. Unfortunately, existing records lack the kind of detail which would allow for an analysis of the scantlings, the sizes of the structural timbers, which would lead to estimates of the potential for military use. The fact remains that, in the 17th century, Zheng Chenggong did defeat the Dutch naval forces at Taiwan, and Pomeranz maintains that this reveals the potential China possessed for the same type of armed trade carried out by Europeans.¹⁷² Perhaps, but is the establishment of several decades of maritime operations between Southeast Asia and the South China coast by a local "navy" and local sailors really the same as the Dutch extending themselves from Europe to the Moluccas, or the

¹⁷⁰ Ibid. Zhou Shide states that Zheng He's vessels, at over 450 feet in length, were the largest of the *shachuan*. He goes on to say, however, that most of Ming navy's fleet were *fuchuan*. The exact distinctions between the two remain blurred; "Shipbuilding," 480-1.

¹⁷¹ Gang Deng, *Chinese Maritime Activities*, 28.

Portuguese Estate of the Indies controlling distant Melaka? Is the defeat of Zeelandia in 1661 really comparable to the capabilities of the European East India companies? An examination of ten Chinese vessels suggests not.

Clearly, Chinese junks were capable of acting as a type of navy, and of carrying weapons. Ming Dynasty military vessels possessed an array of weaponry. A military treatise of 1576 states that each Ming combat vessel, as of 1393, was required to carry four guns with bore "the size of rice bowls," twenty guns of smaller character, ten bombs, twenty rockets, and a thousand rounds of shot.¹⁷³ The Qing Emperor Qianlong, in 1721, clearly stated his position on the necessity of Chinese merchant junks maintaining some kind of arsenal at sea.

Fu-k'ang-an and others memorialized that new legislation concerning the examination of Chinese trading vessels going abroad carrying arms should be enacted. They reported that the merchant ships of various nations which traded annually at Kwangtung were customarily permitted to carry cannons and swords after the superintendent of the Kwangtung maritime customs had inspected them and registered them both on the occasion of their entering and of their leaving the port of Bogue. When merchant ships from Kwangtung leave the port after they have obtained a trading license, no matter whether their destinations are distant regions of barbarian countries or various provinces of China, the civilian and military officers who guard the port should inspect them and not permit them to carry cannon.

We have written our comment on their memorial saying that such a prohibition would not be workable. Now We would like to explain further Our opinion: When Our trading vessels go abroad they have to carry cannon to defend themselves from the pirates—not only would We have difficulty in prohibiting the merchant ships of various nations trading at Kwangtung from carrying cannon, but also We would have difficulty in prohibiting merchant ships of Our interior from doing likewise. If We prohibit them from carrying arms absolutely, then if they met pirates on the high seas, they would have difficulty in resisting the pirates. How can We drive them into such a helpless condition? Moreover, it perhaps may be that not only the pirates of the interior engage in piracy, but also bandits of various other nations carry cannon and guns on the high seas in order to plunder passengers and merchants. If the ocean going ships of the interior are not permitted to carry cannon for their protection—then even though they might take the risk of being unable to protect their goods, their lives surely deserve to be

¹⁷² A specific examination of the armed nature of Zheng's vessels would prove most interesting, ut in this study leads further away from the Pacific junks.

¹⁷³ G. Schlegel, "On the Invention and Use of Firearms and Gunpowder in China, Prior to the Arrival of the Europeans," *T'oung Pao* 3 (1902): 9.

safeguarded and protected! If We strictly prohibit them from carrying cannon, how can Our merchants and passengers protect themselves from the plundering of the pirates?...In short, if We are afraid of having sore throats when We swallow food, We might as well not eat at all...¹⁷⁴

Nonetheless, all the documents related to nine of the ten junks in this study remain void of any evidence of weapons. Even though rare diagrams of late-imperial era junks depict gun ports cut into the hulls of vessels, no such features are in evidence in this sample. The Qianlong Emperor did not specify how many of what type of cannon were to be allowed on board, or where they were to be placed. In the 19th century, the armament for junks on the South China Sea was strictly regulated. Port officials allowed only "two cannon, eight fowling-pieces, ten swords, ten sets of bows and arrows and thirty catties of gunpowder" to be carried on board merchant vessels.¹⁷⁵

Cannon, as had been developed in China before the Jesuit introduction of European innovations in ordnance, were not equal in effectiveness to the long-barreled solid-shot weapons as we have come to know them today. Qing Emperors were, no doubt, familiar with European cannon, but the effectiveness of local versions of these weapons, as well as the often questionable nature of the gun powder provided to ships, raises serious doubts as to how armed this armed trade may have been. In short, allowing merchants to carry unspecified cannon in defense from regional pirates is not the same as adopting the technologies and methods of real armed trade, far from it. But did the absence of powerful weapons detract from the Chinese vessels' technical oceangoing capabilities? No, why would it? If anything, the lack of arms made them more economically efficient.

The real differences in costs between armed and unarmed trade may be more reflective of the human resource rather than the presence of naval ordnance. The super-abundance of crew on European warships and privateers immediately stands out in

¹⁷⁴ Qianlong Emperor, in decree to Ministers of the Grand Council, May 25th, 1721; cited in Lo-shu Fu (editor), *A Documentary Chronicle of Sino-Western Relations 1644-1820* (Tucson: University of Arizona Press, 1966), 317.

¹⁷⁵ Xiamen Zhi II: 178; cited in Leonard Blussé, *Strange Company: Chinese Settlers, Mestizo Women, and the Dutch in VOC Batavia* (Dordrecht: Foris Publications, 1986), 106.

comparison to Chinese vessels. English diplomat John Crawford notes that junks in the 19th century seemed to have more crew than comparable European vessels, but he was comparing unarmed merchantmen on both sides. The evaluation of the differences between armed and unarmed trade is much more difficult. Whereas a large Fujian pole-junk might have possessed a crew of 30 sailors, armed merchant ships such as privateers went to sea with 120 or more on board. The American schooner *George Washington*, less than 100 feet long and carrying only three cannon, went to sea with 80 men.¹⁷⁶ And what better example is there of the operations of armed trade than the category of privateers and "Guerre de Course" and semi-formal war on trade? Additional crew were needed for boarding captured commercial vessels, "prizes," and sailing them home.

The problems of recruitment and manning, of providing provisions for the voyage and additional wages for the crew, the reduction of cargo space, and the constant need to secure fresh water are only some of the additional costs of maritime aggression. Cipolla and others have featured the technical differences in European vessels, but the true basis for comparisons between modes of maritime trade may lay elsewhere.

Conclusion

Though the details may not be completely worked out, it is clear that these junk styles can be associated with the historic Junk Trade as well as with earlier and wider trade patterns. Elements of these broad design classifications of *fuchuan* and *shachuan* were photographed and captured in time, before they vanished from the active maritime scene. The reflection of these historic elements is the technical aspect of this dissertation. Many of these features are known now only as occasional models in the few maritime museums which maintain them. Six decades ago the beginning of the end of all such vessels was already in sight. Commentary from 1938 repeats the observation of devastation due to the Pacific War.

¹⁷⁶ Excerpt from George Little, *Life on the Ocean, or Twenty Years at Sea: Being the Personal Adventures of the Author, in Every Man Will Do His Duty: an Anthology of Firsthand Accounts from the Age of Nelson, 1793-1815*, Dean King and John B. Hattendorf editors (New York: Henry Holt and Company, 1997), 322.

Chinese sea-going junks, like foreign sailing ships, are slowly disappearing and are being superseded by nondescript power vessels of various sorts, and, moreover, their number has been, and is being further, reduced by the destruction of the present hostilities; in the course of a few more generations, therefore, they may possibly vanish altogether. Seeing that Chinese junk-builders seldom or never leave on record plans and specifications, it follows that as time progresses it will become increasingly difficult—if not, indeed, impossible—to provide accurate models of these interesting and historical craft.¹⁷⁷

War, modernization, and cultural exchange doomed the large fleets of sailing junks. By 1946 most of the best examples had disappeared.

The great war junks used by the Chinese in former days, resplendent in scarlet paint and golden decoration, have all disappeared, giving way to steel-built cruisers and gunboats of European design; so, too, have gone the magnificent merchant junks that voyaged to India and the Persian Gulf in Marco Polo's day and long before, vessels that boasted even then many of the features that, re-invented, characterize quite modern European ship design...But though these finely built junks have accompanied the European built tea-clipper to the lumber room of Ocean, Chinese sailing craft of the present day, dingy and roughly built as they often are, conserve the essential features of the type.¹⁷⁸

The few "roughly built" junks today, in some cases represented only by a handful of photographs, are the last representatives of vessel designs literally centuries old. In geographical terms, they are a sample that stretches from the coastlines of Ningbo in the north to Beihai on the Gulf of Tonkin. In maritime terms, these junks, from the small Beihai fishing vessel to the large Fujianese pole junk, range among the maritime zones of the inner rivers and coastal strip or *neihe*, to the inner sea or *neihai*, to the outer ocean or *waihai*.¹⁷⁹ In chronological terms, they stretch back to the creation of the *fuchuan* and *shachuan* design patterns with roots set at least as early as the Tang dynasty. Joseph Needham summed up his appreciation of the long seagoing traditions of the Chinese:

¹⁷⁷ Maze, *The Maze Collection*.

¹⁷⁸ Hornell, *Water Transport*, 86.

¹⁷⁹ Dian Murray has made very interesting stratifications in the sailors' world in "The Kwangtung Water World," in *Conference Proceedings* (Nanking: Academia Sinica, 1999).

The conclusion that this indicates a clear technical superiority of Chinese seamanship seems almost unavoidable...All that our analysis indicates is that European seamanship probably owes far more than has been generally supposed to the contributions of the sea-going peoples of East and Southeast Asia. One would be ill-advised to undervalue the Chinese sea-captain and his crew.¹⁸⁰

Given these Chinese junks which crossed the Pacific in the early 20th century, and given the advancements in their designs over time, it's hard to understand how scholars can still state that China gave up oceangoing vessels hundreds of years ago.¹⁸¹

¹⁸⁰ Ronan, *Shorter Science and Civilization*, 210, 272.

¹⁸¹ As suggested by Diamond, *Guns, Germs, and Steel...*, 258.

CHAPTER 5 CULTURAL FEATURES OF CHINESE VESSELS

Beyond being only technological objects dedicated to the economically efficient transportation of persons and cargo from point A to point B, junks "sailed" within wider social, political, and even religious realms as well. This chapter extends the physical analysis of the junks into the realms of maritime folklore and religious beliefs. The broad category of "cultural" features could, theoretically, include just about anything on any manmade artifact. While the economic and political aspects of the wooden sailing vessel's shape fit more conveniently into historical context (chapter six), the social and religious aspects reflect elements of folklore and symbolism. The machine of the sailing junk cannot ever be truly separated from features of larger social patterns, for it is the larger social realities which give the object its full meaning.¹ This is true not only for Chinese junks, but for the broader category of historical sailing vessels of many different cultures.

Junks carried or were constructed with features which had no other apparent functions than to assuage the crew of their natural fears at sea, or to comply with certain established observances of the coastal seafaring culture. Many of these cultural features, though not part of the technical operation of the craft, fulfilled very real functions, types of risk management. As part of this risk management, wooden sailing vessels took on living qualities. Junks, with their ornate carvings and decorations, were treated as living entities, much like many of the seafaring craft of other cultures. In fact, during the 17th century, regulations were passed in England to reduce the amount of costly and purely decorative carvings which proliferated all over navy vessels.²

Certain trends in maritime folklore seem universal, particularly where smaller, hand-built wooden sailing vessels are concerned. The reverence that most mariners feel towards the creaking groaning wooden vessel which literally cradles them in safety as it travels

¹ Lubar, citing Lewis Mumford, in "Machine Politics...", 205.

² Philip Cowburn, *The Warship in History* (New York: MacMillan Company, 1965), 107.

through the hostile ocean environment is very commonly noted in the maritime world.

Folklorist Horace Beck notes the position of environment in the maritime realm:

For folklore to survive and flourish it requires a very special climate. It feeds on isolation, illiteracy, and tradition—tradition stretching backward into the dimmest, most musty corners of antiquity. It is bred in unknowing and violence. It survives because in some way it is functional. Environment plays a large part in its creation, shaping and preserving. Few areas of the world are better suited to the preservation and creation of folklore than the sea.³

Given the often dangerous nature of the sea, it is not difficult then to understand the metaphor of the ship as a living being, always being referred to by Europeans in the female gender. In many ways, such vessels lend themselves to symbolic interpretations which cross the line from physical objects to cultural signs, taking on meanings that go far beyond technical analysis.

As complex cultural artifacts, junks and other vessels are expressions of a general seafaring culture. Myths, legends, celebrations, ceremonies, decorations, charms, and all sorts of customs and social routines make up a part of the meaning of junks.

Anthropologists and archaeologists have not always noted the extended meanings of ships.

Nautical archaeologist Fred McGhee recently stated:

...ships are often technological marvels, but their reification by nautical archaeologists has obscured the obvious: they are primarily cultural and political entities and ought to be thought of and investigated as such.⁴

Certainly the Chinese officials who objected to a war junk like the *Whang Ho* becoming the property of westerners felt the social and political inappropriateness of such an act. As a symbol of the Imperial dynasty, an official bearer of the flag so to speak, it could not be released to any foreign power. In a sense, the vessel itself was a representative of fading

³ Horace Beck, *Folklore and the Sea* (Middletown: Wesleyan University Press, 1973), xiii.

⁴ Fred McGhee, "Towards a Postcolonial Nautical Archaeology," paper delivered to Society for Historical Archaeology, Washington D.C., 1997, 5.

Imperial culture. Other junks in the sample reflect a more commercial and civil side of society, of a particular subset of society. Richard Gould, in *Archaeology and the Social History of Ships*, proceeds with a broad anthropological perspective in regards to social meaning behind ships. Gould finds the construction features themselves are the archaeological remnants of a cultural system as it existed when the inhabitants (sailors) were alive and functioning as a society.⁵

That crews of wooden sailing vessels were a form of society very different and separate from the normal population is taken as a given and not really questioned here. Vilhelm Aubert and Oddvar Arner, sociologists who specialize on seafaring cultures, refer to the seagoing society as:

...a total institution, comparable in significant respects to the hospital, the army camp, the prison, the cloister, and the boarding school...This place of work is physically isolated from the family, and from the national and local community...The seaman shares an international seaman's culture...one of the few known international cultures.⁶

Maritime society featured a distinctly different view of the world. Nautical charts, nautical language, unique rituals, ceremonies, and stages of naval advancement, all indicate a reality different from land society.

Anthropologist Christer Westerdahl captures this separate nature by emphasizing a number of distinctive maritime traits: nautical similes, boat symbols, proverbs, ship models, votive offerings, myths, etc. All of these things make up parts of a "maritime cultural landscape," Westerdahl's term signifying a broader "human utilization (economy) of maritime space by...settlement, fishing, hunting, shipping and its attendant subcultures, such as

⁵ Richard A. Gould, citing Michael Schiffer, in *Archaeology and the Social History of Ships* (Cambridge: Cambridge University Press, 2000), 9.

⁶ Vilhelm Aubert and Oddvar Arner, "On the Social Structure of the Ship," in *Acta Sociologica* 3, no.4 (1965?): 200, 208.

pilotage, lighthouse, and sea park maintenance.”⁷ Obviously, then, the traces of Westerdahl’s maritime society extend both on the sea and inland along the coasts. The shore is not necessarily the clear dividing line between maritime and terrestrial cultures.

Pacific author Greg Denning, in his influential ethnographic work *Mr. Bligh’s Bad Language*, highlights the separate society of sailors as well.⁸ True, he uses the structure of the ship itself to enhance his self-conscious theatrical metaphor, and for the most part finds the ship a microcosm of society as a whole. The ship is a stage upon which the rituals of social power, in this case the hierarchical command of the Royal Navy, are played out. Its very construction reflects the prevailing social order. Yet Bligh’s problem, according to Denning, is that Bligh, though an officer, did not fully understand the nature of the maritime society in which he found himself, and was therefore inadequate as the “lead role.” By forbidding the crew to engage in ceremonies endemic to the maritime world, such as hazing rituals associated with crossing the “line” or equator, Bligh violated the rules of the maritime society. Remaining unaware of the difference between terrestrial and maritime societies led to one of the most famous mutinies in European maritime history. These things have little to do with the actual physical operations of making the craft move through the water.

Just as the West has a rich heritage of ceremonies, traditions, and objects, its figure heads and coins beneath the mast step, Poseidon and Davy Jones, China has the oculus, coins, inscriptions, carvings, gods, and much more. The eyes portrayed on the bows of Chinese junks are most striking, for one of the seemingly universal impressions about ships is that they are living beings, imbued with very human-like characteristics. There is no concise reference on the plethora of ceremonies and superstitions, on the number and types of gods considered sacred to seagoing Chinese sailors. There is only the scattering of partial descriptions and the images of the vessels themselves.

⁷ Christer Westerdahl, “The Maritime Cultural Landscape,” *International Journal of Nautical Archaeology* 21, no.1 (1992): 5.

⁸ Greg Denning, *Mr. Bligh’s Bad Language: Passion, Power and Theatre on the Bounty* (Cambridge: Cambridge University Press, 1992).

Observances popular among the working class sailors would, in all likelihood, not reflect any strict official dogma of the more defined Chinese practices such as Daoism and Confucianism and Buddhism. Transient coastal populations on working junks fall into the loose category of popular religion, a dynamic mixture of multiple beliefs and practices. Patricia Ebrey and Peter Gregory, in *Religion and Society in T'ang and Sung China*, highlight the expansion and role of popular beliefs originating from the transition period between the Tang and Song dynasties. If the three great institutions of Buddhism, Daoism, and Confucianism can be represented by the peaks of three adjacent triangles, then popular beliefs are represented by the overlapping bases of those same structures.⁹ This makes up a fourth "religion," yet one particularly difficult to define. Though this mountain peak model of the total four strains of Chinese religions may reveal flaws upon close examination, it does serve to emphasize the hybrid nature of common beliefs or popular religions. Unfortunately, it proves quite difficult for historians to unveil the complex domain of these popular beliefs. There is less and sometimes no documentation left behind by lay and common practitioners of the popular realm. Practices combine an eclectic mixture of systems into a plethora of cults and symbols.

Notably, in the many selections of essays assembled by Ebrey and Gregory, as well as in other sources, researchers have skipped over the specific topic of seagoing popular beliefs. The sole exceptions are scholarly attentions paid to one particular goddess, Mazu, and some scattered information on the beliefs of coastal fishing populations. There is little doubt that the Chinese deep water sailing world featured many more. James Fenimore Cooper stated that "superstition is a quality that seems indigenous to the ocean."¹⁰ But how to get at these hidden meanings? There is no text that specifically addresses this task, but

⁹ Patricia Buckley Ebrey and Peter N. Gregory, eds., *Religion and Society in T'ang and Sung China* (Honolulu: University of Hawai'i Press, 1993), 12.

¹⁰ Cooper quoted in Beck, *Folklore and the Sea*, 279.

an attempt will be made here to partially lift the veil surrounding portions of the popular religion by analyzing a portion of the many significant symbols found on Chinese junks.

What, then, were the cultural features and practices on board these vessels? What aspects of popular religion do they reflect? And how were these craft perceived and treated as essentially living artifacts, much more than wooden machines? How are the seafaring cultural beliefs and practices recorded by the physical form of the junk itself? Do such depictions really represent a maritime culture, or simply the general culture of Southern China? Given the nature of the ocean environment, are there similarities between Chinese and European maritime folklore? These are no easy questions, for Chinese nautical beliefs fall into an obscure corner of an already difficult topic. Secondary texts, 19th century firsthand observations, and archaeological discoveries contribute to the answers. Though not many of the practices mentioned here were conducted by the western crews which brought some of the ten junks across the Pacific, the vessels themselves had been constructed with all or many of the appropriate features of the maritime Chinese world. The junks reveal traces of Chinese maritime popular beliefs. The following headings reflect the activities of a "living" vessel, rather than the passive division of the ship into its inanimate portions. Animism, the imbuing of natural objects with living souls and even supernatural powers, serves as the most obvious and basic condition here.

A Ship's Birth, Leaving or Making Port

The ceremonies which accompanied the actual departure of Chinese junks went well beyond mere recognition of ritual decoration on the ship. Junk launchings were important social occasions marked with religious significance. Worcester recorded the specific ceremonies of launching:

A small, temporary alter is made of anchor chain on which stand cups of wine and joss sticks. Taking a live cock in his hands the junkmaster, or the carpenter who built the junk, performs the kowtow in the direction of the bow and to each side, and pours the wine on the deck as a libation. The cock's throat is then cut, and its blood is sprinkled on the bow. Blood is also

daubed on each side of the house and wherever deemed auspicious, and a feather or two is dipped in the blood and left adhering to the woodwork.¹¹

Likewise, the permeating influence of religious traditions in the selection of auspicious dates and times feature heavily in John Gray's 19th century description:

At the commencement and termination of each voyage, the goddess Tien-how receives a special homage. When a junk is ready for sea, a number of Taoist priests are invited to go on board for the purpose of chanting prayers and offering sacrifices to Tien-how. But should a violent storm arise after all these religious observances and threaten the safety of the vessel, there is an all-prevailing opinion amongst Chinese sailors that it is owing to the anger of the gods against some sinful person, or persons, on board. A similar notion prevailed amongst [European] mariners in ancient times...

The departure of a vessel from port takes place on a lucky day, selected by Taoist priests, or, in their absence, by astrologers. The day generally selected is either the first or fifteenth of each lunar month, at the new or full moon. As a junk is leaving port, other crews which hail from the same port mount the poops of their junks with the view of propitiating the wind and waves in favour of the departing vessel, some of them energetically beating gongs and tom-toms, whilst others, to dispel all evil influences, increase the din by discharging popguns and fire-crackers. When the vessel reaches the port, religious ceremonies are again observed in honour of Tien-how. The services on such occasions are not usually held on board the junk, but in a temple in honour of the goddess. They consist of thanks giving, prayers, and offerings of boiled fowl and pork, or small portions of the merchandise which the junk has brought to port. In 1864 I entered a temple dedicated to Tien-how on Fishers' island, one of the Pescadore group...In the same temple there was a large model of a Chinese junk, which I was informed it is the custom of the islanders to carry in procession through the streets of their villages when celebrating the natal anniversary of Tien-how.¹²

Mazu, also known as the Queen Empress of Heaven or Heavenly Consort, *Tianhou* or *Tianfei*, was and is one of the most important goddesses for Chinese sailors as well as overseas communities. Temples to Mazu were found all along the Southern Chinese coast, as well as overseas. She was one of the few minor historic figures who, after becoming a

¹¹ Worcester, *Junks and Sampans*., 124.

¹² John Henry Gray, *China: a History of the Laws, Manners, and the Customs of the People* (London: MacMillan and Co., 1878), 260-261.

local deity worshipped by coastal people in Fujian, developed into a massively popular goddess in South China during the late Song period. According to most accounts, her real name was Lin Moniang, a daughter of a Song official (960-987 AD). Reportedly, in one version of the story, a young girl named Lin fell into a deep three-day trance at the same time as her brothers were encountering a storm at sea. Her image appearing before them, she led them to safety and became venerated by local fishermen. The goddess of the sailors was later elevated by imperial recognition to the status of official godhead, receiving a title appropriate to her rank.¹³ The cult of Mazu fell under the direction of the Imperial Board of Rites. Not much is recorded concerning how Mazu died and passed into heaven, and there are a number of alternate versions of similar myths as well. For instance, Mazu is also remembered in Taiwanese oral traditions as having been the daughter of poor peasant fishermen in Taiwan.¹⁴

The Mazu cult provides an example of the widely-dispersed nature of maritime beliefs and popular gods. Her local fame quickly pervaded the south China coast at a time when certain State-sanctioned cults successfully challenged previously established doctrine. Later, the famous Ming admiral Zheng He, perhaps Mazu's most famous supporter, dedicated his voyages to her by erecting a stone tablet in the 1431.

We have traversed more than one hundred thousand *li* of water spaces and have beheld in the ocean huge waves like mountains rising sky high, and we have set eyes on barbarian regions far away hidden in a blue transparency of light vapors, while our sails loftily unfurled like clouds day and night continued their course (rapid like that) of a star, traversing those savage waves as if we were treading a public thoroughfare. Truly this was due to the majesty and the good fortune of the Court and moreover we owe it to the protecting virtue of the divine Celestial Spouse.

The power of the goddess having indeed been manifested in previous times has been abundantly revealed in the present generation. In

¹³ For more information on the cult of Mazu, see James L. Watson, "Standardizing the Gods: the Promotion of T'ien Hou ("Empress of Heaven") Along the South China Coast, 960-1960," D. Johnson et al. (eds), *Popular Culture in Late Imperial China* (Los Angeles, 1985). Luochanu is another important goddess for Chinese sailors; see Gang Deng, "Seas and Oceans," 20.

¹⁴ Ibid, 297.

the midst of the rushing waters it happened that, when there was a hurricane, suddenly there was a divine lantern shining in the mast, and as soon as this miraculous light appeared the danger was appeased, so that even in the danger of capsizing one felt reassured that there was no cause for fear. When we arrived in the distant countries we captured alive those of the native kings who were not respectful and exterminated those barbarian robbers who were engaged in piracy, so that consequently the sea route was cleansed and pacified and the natives put their trust in it. All this is due to the favors of the goddess.

It is not easy to enumerate completely all the cases where the goddess has answered (prayers). Previously in a memorial to the Court we have requested that her virtue be registered in the Court of Sacrificial worship and a temple be built at Nanking on the bank of the dragon river where regular sacrifices should be transmitted for ever. We have respectfully received an Imperial commemorative composition exalting the miraculous favors, which is the highest recompense and praise indeed. However the miraculous power of the goddess resides wherever one goes.¹⁵

Mazu's popularity continues in certain locales today. She is usually prominently featured in Chinese New Year's parades among overseas Chinese communities, such as San Francisco. Original overseas Chinese communities were offshoots of maritime merchant activity, and thus the goddess of the sailors remained appropriate for distant settlers. Contemporary oral accounts attribute the successful defense of Taiwan against Communist mainland attack to the goddess, her arms catching some of the bombs midair and preventing explosion (duds).¹⁶ Judging from the distribution of her cult alone, it would be reasonable to assume that Mazu was a goddess important to both sailors on seagoing vessels as well as the coastal population in general. The image of Mazu would usually be found on board vessels flanked by her attendants "Thousand Mile Eyes," *Qianli Yan*, and "Fair Wind Ears," *Shunfeng Er*, supernaturals credited with the possession of abnormally sensitive ocular and auricular perceptions. Mazu reportedly captured both of these on Peach-Blossom Mountain, and they assisted her in rescuing sailors in distress.¹⁷ Offerings

¹⁵ J.J.L. Duyvendak, "The True Dates of the Chinese Maritime Expeditions," 345. An interesting official line for Zheng He, considering the fact that he was a Muslim (though many eunuchs were Buddhists).

¹⁶ Interview of Chinese merchant in Sausalito, California, by author, April 22nd, 1995.

¹⁷ Eberhard, *Dictionary*, 183.

of chicken and roast pork, accompanied by incense and candles, and prayers for protection on the deep sea, were always made on the 23rd day of the third lunar month.¹⁸

Guandi, the popular god of war, and Guanyin, the Chinese Buddhist goddess of mercy, also could appear on board sea vessels. These portable images must have functioned in a similar fashion to their land-based counterparts, hearing the supplications of the crew, particularly in times of duress. Guandi, or Guanyu, it was said, had begun as a seller of bean curd, before becoming a famous general. Could this have resonated with the large number of river junks involved in transporting bean curd? Guanyin, according to one story the daughter of a northern king during the Zhou dynasty, had lived for nine years on an island near Ningbo, healing the diseased and saving sailors from shipwrecks.¹⁹ On the Southern China Coast, Guanyin, who is often depicted as seated upon the shoreline deep in meditation, has often been identified with Mazu herself, the two images merging into one entity.²⁰ Many other gods associated with the sea, such as Yen Gong, God of the Sailors, Long Wang or Sea Dragon Kings, and Fengbo, Earl of the Winds, are described in E.T.C. Werner's *A Dictionary of Chinese Mythology*. As might be imagined, the mythical realm of Chinese sailors included the highly bureaucratized *Shui Fu*, or Treasury of the Waters, where many divisions and subdivisions of ministries and councils, led by spirits and dragons and gods, "recreated" the official political and social structure of Chinese society for the maritime realm. A partial example of the plethora of Chinese maritime spirits captures some of the popular beliefs of sailors:

¹⁸ *China: Catalogue of the Collection of Chinese Exhibits...*, 281.

¹⁹ E.T.C. Werner, *A Dictionary of Chinese Mythology* (Shanghai: Kelly and Walsh, 1932), 226.

²⁰ Eberhard, *Dictionary*, 135.

Table 3: Maritime Mythology²¹

Name:	Brief description:	Page:
<i>Fengyi</i>	A god of waters, deified as <i>shuishen</i> .	W126
<i>Fengbo</i>	Earl of wind, a stellar divinity directing the winds; also said to be a dragon.	W126-7
<i>Guanyin</i>	Goddess of Mercy, especially popular with merchants.	W225-227
<i>Guandi</i>	Chinese god of war.	W227
<i>Long Wang</i> or <i>Si Hai Long Wang</i>	Sea dragon king, the "Neptune" of the Chinese, with palaces at the bottom of the sea. Although found on earth, proper element for dragons is the water. Such powerful creatures could be protectors of sailors and grant safe navigation to trade vessels.	W285-293 D74
<i>Beidou</i>	Spirits of the stars of the Northern Dipper.	W369
<i>Yang Si Laoye</i>	One of the gods of sailors, often depicted as a youth dressed in white, carrying an axe and grasping a dragon (control over the dragon king). Worshipped by all who dwell in boats or are associated with the sea.	W398
<i>Mazu</i>	Also known as Tianfei, Tianhou, Tianhou Niangniang,, heavenly concubine, goddess of sailors.	W503
<i>Yang Si Jiangjun</i>	Worshipped by boatmen, wood merchants, managers of rafts...holds axe and dragon, identical to Yang Si Laoye. Axe is the symbol of workers of wood.	W585
<i>Yen Gong</i>	God of Sailors, said to have lived during the Song or Yuan dynasty, a native of Fuzhou. Responsible for saving an emperor's life. Capable of calming storms at sea.	W590-91
<i>Lu Ban</i>	Patron of carpenters, credited with invention of paddles, oars, and boats as well. Patron of ship builders.	D109
<i>Shen Feng Da Ji</i>	God of the favorable winds, also known as a boatmen's patron.	D163
<i>Yu Hua Wu</i> <i>Sheng</i>	Fishermen's patron	D213

The significance of vessels being launched or departing from ports for European sailors need not be emphasized here. The social and political and even economic importance of new vessels beginning their life on the sea manifested in large celebrations and sometimes informal holidays for the local region. Vessel launchings are still occasions for celebrations, speechmaking, and consecration by the smashing of champagne bottles against the prow. In the past such events involved direct blood sacrifice of animals, and

²¹ Excerpts from W = Werner, *A Dictionary of Chinese Mythology*; D = Clarence Burton Day, *Chinese Peasant Cults* (New York: Paragon Book Gallery, 1974).

occasionally humans, as in the Viking ritual of "roller reddening" by tying slaves beneath the ships' timbers. Poseidon and Neptune fulfilled specific nautical roles for European sailors. Saint Elmo, patron of the sea, and Saint Christopher, friend to all travelers, also garnered particular favor among the sailing population.

Housing the Gods and Goddesses

Some of the many gods and goddesses associated with the oceangoing junks have been mentioned above, but others of the inland lakes and rivers of China existed as well. How were they cared for on board these vessels? Such idols were typically housed in a special section or altar of the stern cabin, as with the Fuzhou pole junk, or in a separate compartment built on deck between the stern cabin and the main mast, as with the northern style Antung trader.²² Incense was burned before the images in the "joss house," offerings made, and often the compass was housed in the same vicinity. Some of the transpacific junk voyages reveal participation in these traditions.

Of course, many of these beliefs have not always been continued by more modern societies. The fact that certain maritime nations, such as England, often celebrate their seagoing folklore is no guarantee that other nations, such as Taiwan or the People's Republic of China, will always take the same attitude towards what are sometimes seen as backward traditions. As navigator Paul Chow describes the event, even Mazu had no place in the launching or the voyage of the junk *Free China*:

You'll have to understand the mentality of the "intellectuals" at that time in Taiwan. (China is going through the same cycle at this time.) I can only blame May Fourth Movement for it. Only "yang" is good, a sign of "advance. All "tu" is no good, a sign of "backward". America has her young Washington chopping down the cherry tree. China has her young Sun Yat-san knocking down the "idols made of mud" in the temples. Claiming ourselves to be "intellectuals," we would not think of calling upon the tian-hou niangniang's blessing. Firecrackers were the only thing allowed.²³

²² D.W. Waters, "Chinese Junks: the Antung Trader," *Mariner's Mirror* 24 (1938): 52.

²³ Personal communication with Paul Chow, March 27, 2001.

Firecrackers never seem to lose their social acceptability. A great deal of noise in general upon launching and setting out from port seems the general rule. The description of the noisy send-off in John Gray's 19th century excerpt above seems very similar to European practices, where ships arriving and departing were saluted by cannon fire as well as the organized cheers of the vessels' crews.

The mention of sacrifices, or *ji*, in the Gray excerpt and the selection of the lucky day for departure indicate that the event was firmly grounded in popular traditions, rather than more institutionalized practices.²⁴ Daoists did not generally encourage sacrifice, for their pure immortals did not need to eat or drink. Certain observers found the notion of sacrifice distasteful. Karl Gutzlaff, a missionary who traveled along the China coast in the early 19th century, kept a keen eye out for the more common or base nature, according to him, of maritime superstitions:

When a vessel is about to proceed on a voyage, she is taken in procession to a temple, where many offerings are displayed before her. The priest recites some prayers, the mate makes several prostrations, and the captain usually honours her by appearing in a full dress before her image. Then an entertainment is given, and the food presented to the idol is greedily devoured. Afterwards the good mother [Tianfei], who does not partake of the gross earthly substance, is carried in front of a stage, to behold the minstrels, and to admire the dexterity of the actors; thence she is brought back, with music, to the junk, where the merry peals of the gong receive the venerable old inmate, and the jolly sailors anxiously strive to seize whatever may happen to remain of her banquet.²⁵

Several of the transpacific junks, such as the *Sea Dragon* and the *Free China*, are known to have had some sort of celebration along these lines, usually incorporating elements of western launchings as well. The *Free China*'s launch was accompanied by

²⁴Europeans were also quite superstitious about the timing of voyages, and it was only relatively recently that insurance agencies stopped charging official penalties for vessels leaving port on Fridays, or on the 13th of any month. In general, Wednesday, originally sacred to Woden, proved a more prudent choice; Beck, *Folklore of the Sea*, 5.

²⁵Karl Friedrich Gutzlaff, *Journal of Three Voyages along the Coast of China in 1831, 1832, and 1833*. (London: Frederick Wesley and A.H. Davis, 1834), 97.

speeches, banquets, fire crackers, and gifts, but not the parade to the temple of the Sea Goddess.

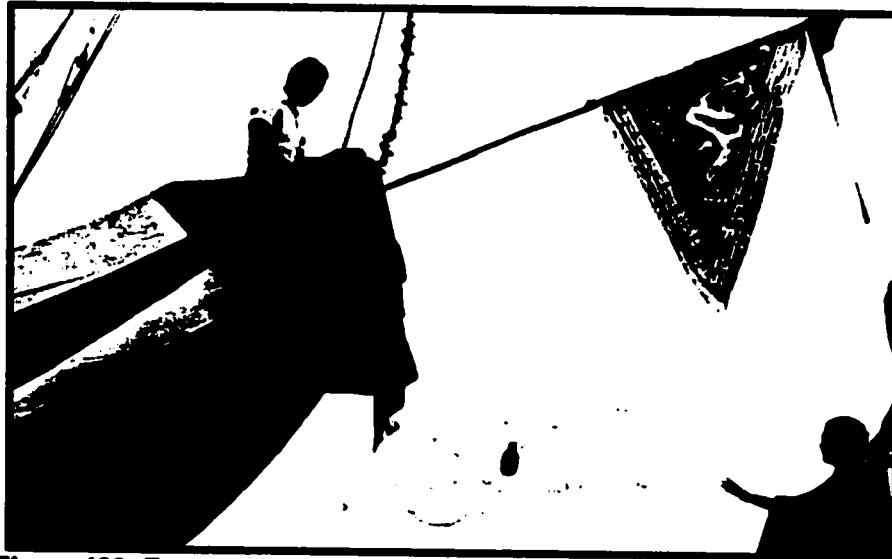


Figure 120: Eastern/Western style christening of the junk Free China; the mayor's wife pitching the champagne bottle at the bow. Fire crackers hang from the foremast. (Chen collection)

Several other transpacific junks, though, did feature the traditional idols as passengers across the ocean. The scientific yacht-junk *Cheng Ho's* image of Mazu had to be housed, due to space restrictions, in the botanical library, where the Chinese crew made offerings. A small red alter, once tacked to the forward bulkhead of the living compartment in the Beihai junk in Portland, now only contains a candle, the image of the god or goddess long absent. And from the junk *Ning Po*, a statue eventually surfaced, causing a small mystery in the maritime circles of Southern California. A figurine initially identified by Dr. Michael Saso as the temple guardian *Wang Lingguan*, a figure not usually associated with ships, originally arrived with the *Ning Po* and was only recently returned to the museum on Catalina Island. What this statue was doing on the junk is puzzling.

I would suggest that it is a guardian spirit of the ship, not of the sea. It is pop religion rather than Taoist. (Taoist spirits belong to the Taoist's ordination

register, and are known only to him/her.) The wide-eyed bearded figure with the imperial belt, human-faced mask over the belly, is the trade symbol of the *Wang-yeh* cult, a spirit cast out to sea in the "*Da Wangye*" (exorcising the demons of pestilence, pirates, maritime patrol, etc., all along the coast of SE China, Chekiang, Jiangsu, Fukien, Kwangtung, even to Vietnam and Okinawa. In the P.I. the demons who expels pestilence is substituted for by St. Peter, who appears on boats along Mindinao in S. Philippines. You are right, it may not have been the original figure. When the ship was sold to haoles, the preferred statue of Matsu (Tinhau) may have been taken off, and a *Wangye* put in its place, a spirit (of pestilence) to be expelled from the villages by being put on a ship and cast out to sea...It could have been that the seller put a *Wang Yeh* on the ship so that *laowai* could carry it out to sea, thus casting out foreigners and pestilence demons together. If one can get on the web and locate a book on 19th century junks with drawing or figures, it would be possible to identify the types of statues used on junks, and whether or not *Wangye* were one of those.²⁶

Worcester, in *Junks and Sampans of the Yangtze*, notes that the figure of Wang Yeh, the River Guardian King, was quite well-known among sailors.

Actually, his profession was that of a pirate in the 12th century, with a stronghold in the Tungting Lake. So secure did he feel in his fortress that he arrogantly announced that the government forces could not "capture the place unless they could fly and come from the air." However, without recourse to this modern form of warfare, he was finally defeated by General Yo Fei and in his despair cast himself into the lake, there to join many others of China's mythical personages. Nearly every junk has a model of him. The figure is often handed down from father to son and may serve in several junks.²⁷

²⁶ Michael Saso, Correspondence between Beijing Center and Ching Lim of Catalina Island Museum, 4 July 1997, regarding Wang-ye cult figure. About hopping on the web and locating a book on 19th century junks, it's not that easy.

²⁷ Worcester, *Junks and Sampans*., 118.



**Figure 121: Wangye figure from the Ning Po, now at the Catalina Maritime Museum.
(Author's photo)**

European vessels were also not without the occasional statue. Statues of Catholic saints were placed within special niches built into the ship, the saint being often of the same name as the particular vessel. Votive candles, prayers, and even offerings of food and libations might prove effective during times of duress. If not, captains could berate the statue, sometimes even tying a line to the powerless saint and tossing the idol overboard to be towed astern. If the storm were particularly powerful, the captain might cut the line.²⁸

Construction of Successful Voyaging

There are many features on Chinese junks which are deemed important to its safe passage over the seas. Junks seem to feature as much, if not more, cultural affectations than any other seafaring culture. The physical nature of the ship itself reflected an intense

²⁸ Beck, *Folklore of the Sea*, 14.

concern with proper religious observation. Written characters in well-known phrases, *chengyu*, adorned appropriate features of the vessel, while other religiously significant artifacts were built directly into the hull, keel, mast, and beams. John Gray's 19th century observations record this:

The mainmast is placed amidships; the foremast well forward in the bows; and the mizzenmast quite near to the taffrail. Upon the masts, strips of red paper are pasted, with sentences of the following import in large Chinese characters: "The mast is as the general commanding ten thousand soldiers;" "From every side of the compass may fair winds blow;" "May this mast scorn tempests, from whatever quarter of the heavens they may come."...On the first, and on the fifteenth day of each Chinese month, that is at the new, and again at the full moon, there is on the taffrail an array of small triangular-shaped banners, whilst a large red, or white, or black flag adorns the main-top.²⁹



Figure 122: Chengyu on the rudderpost of the junk Free China: wan jun zhu shui, "general commanding ten thousand troops," a fitting statement for the rudderpost. (Chen collection)

²⁹Gray, *China*, 257.

This particular practice of placing significant ritual phrases at certain locations on the vessel does not seem to have any obvious European counterpart.

Chinese characters were often carved onto the stern transoms as well, though these did not signify the "name" of the vessel.³⁰ This caused a certain amount of confusion for western travelers, and often these particular phrases, or *chengyu*, were interpreted as vessel names. The *Ning Po*, before her renaming by Gordon, was referred to as the *Jin Tai Feng*, or *Kin Tai Fong* in many western sources, as if the individual characters represented the actual name of the vessel. Such characters might readily have been found on numerous merchant junks, but were more supplications to the fates rather than identity labels.

"Whenever people put money together to open a shop or build a ship, they attach the name "Chin" [as a prefix to the name of their partnership]. The character chin [gold] symbolizes cooperation."³¹ Needless to say, it also symbolizes cold hard cash. Other *chengyu* or *duizi* on the transom delve into poetry, such as "water that sleeps in the moonlight," or "white robe crumpled by the son of heaven," or "pale cheek touched by the rainbow," and so on.³² There seems to be no limit to the number of different phrases meant to flatter the gods and bring good luck: "be invincible in all directions!," "may there be abundant fish!," "may there be seasonable weather."³³

The matter of ship names in the European world occupies an interesting historical niche. Vessel names combined (and combine) a variety of factors, such as the type of trade carried out, nation of origin, type of vessel, etc. Types of ship names change with time as well. Names carried with them an element of luck, the stigma of supernatural influences; who has named any ship *Titanic* since 1912? Basically, European vessel names were expected to protect the ship from harm from either natural or supernatural forces, and also to

³⁰ Hommel, *China at Work*, 337.

³¹ Blusse, citing the *Xiamen Zhi* V, 649, in *Strange Company*, 106.

³² Worcester, *Sail and Sweep*, 25.

³³ Kani, *A General Survey*, 74-5.

promote the ships' commercial ventures.³⁴ These are the same things accomplished by the Chinese *chengyu*, so the important functions of the vessels' names still seem to be accounted for, even though the actual name of the Chinese ship may simply reflect the identity of the owner and an unembellished number.

The oculus, or the eyes of the ship, have for a long time been associated with Chinese vessels, "by which the sailors imagine that the vessel can espy sunken rocks, shoals, and other dangers of the deep."³⁵ These eyes often gave the bow of the ship the appearance of a fish or sea monster. The eyes of fishing vessels appeared to be looking downwards, while those on commercial vessels gazed straight ahead.

Actually, the oculus use typically associated with Chinese ships is one of those truly universal maritime customs stretching back into the past beyond documented reference. Oculus, or more properly *oculi*, have been found throughout the entire width of the Old World, from the Mediterranean to the China Sea (with the singular and unexplained exception of the west coast of India).³⁶ It is possible that the custom in southern Europe originated in Egypt, for the painting of the Horus eye is depicted on the bows of funeral boats. The function of the eyes at the bow of Chinese ships was partially mirrored by the presence of figureheads on Western craft.³⁷ Some Western figureheads feature large bulging eyes, more reminiscent of the traditional oculus of ancient Mediterranean vessels. Nothing seems to capture the animism which permeates the reverence of the wooden sailing vessel better than the practice of adorning it with figureheads or eyes.

The suspected origins of the oculus in China, though, have not been thoroughly investigated. Horace Beck speculates that the animistic eye painted on the bows of ships, such a widespread feature, was originally transmitted both eastward to East Asia and

³⁴ Beck, *Folklore of the Sea*, 18.

³⁵ *Ibid.*, 259.

³⁶ Hornell. *Water Transport*, 285.

³⁷ The origin of the oculus for the West extends at least to Greek times, when many ships were depicted with such eyes. See Margaret Baker, *Folklore of the Sea* (London: David and Charles, 1979), 36.

westward to the Mediterranean by Arabic sailors.³⁸ The passage of time has allowed the Chinese practice to develop multiple styles. The three distinct types are the Dragon, the Phoenix, and the Tadpole stylized oculi.³⁹ Dragon eyes, large rounded forms usually painted on separate wooden pieces and nailed to the hull, are found in the Chusan Archipelago and Fujian. These rounded eyes are also found in Hong Kong, but are there (as elsewhere in Guangdong) elongated into a stretched oval form in imitation of more southern Annam styles.⁴⁰ Most of the transpacific junks feature dragon style eyes at the bow. These are clearly evident in the numerous drawings and photographs throughout this study.

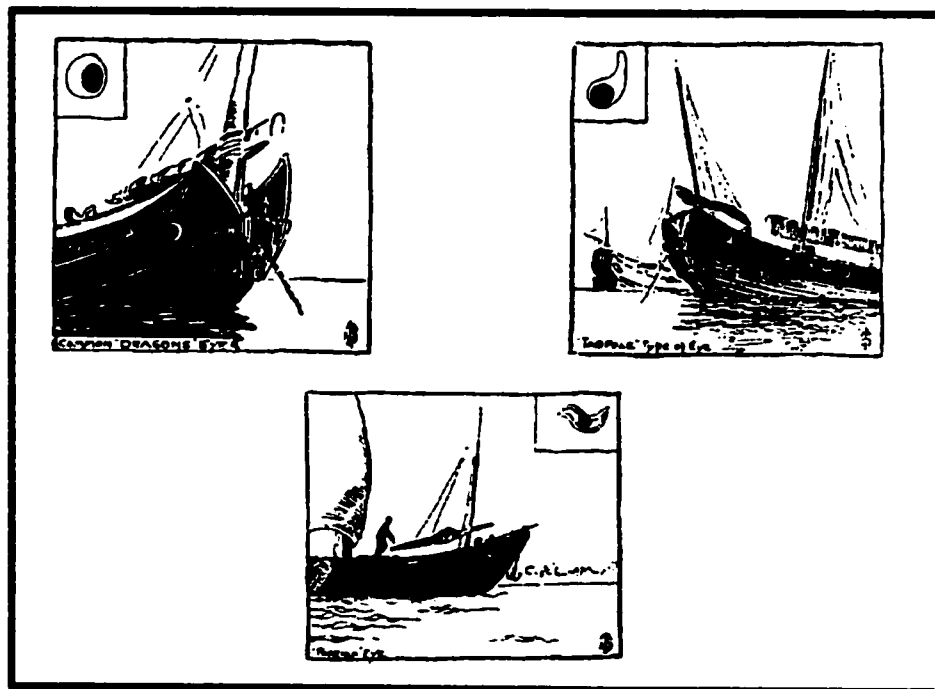


Figure 123: Oculi or long mu in three styles, inset in upper corners of images: dragon eye, tadpole eye, and phoenix eye. (Hornell, *Water Transport*, 289)

Rolls of coins and ceremonial mirrors were sometimes buried within the joints of the keel of the ship itself. The wreck at Quanzhou provides the most historic example of this.

³⁸ Beck, *Folklore of the Sea*, 15.

³⁹ Ibid, 288.

⁴⁰ Ivon A. Donnelly, "The Oculus in Chinese Craft," *Mariner's Mirror* 12, no.3 (1926): 339.

Placed in patterns resembling specific constellations, in this case Ursa Major, known in the West as the Big Dipper or The Plough, and as the Great Bear or Northern Dipper (*bei dou*) in China. This unique construction feature goes back at least to the Song dynasty and reportedly was still in practice in 1949.⁴¹ Nails at this late date took the place of holes, and a coin replaced the mirror in more modern cases.⁴²

The constellation pattern of the seven stars, *qi xing*, and the mirror as the moon, have significant connotations. The seventh day of the seventh month marks a major celebration in the Chinese calendar, and the *qi xing* were frequently represented in Daoist ritual. According to legend, it was the Northern Dipper constellation as the Great Bear who decided the time of death for humans. Chinese astronomers felt the shafts of the constellation held influence over the change of seasons. Furthermore, in Taiwan, the seven constellation holes are drilled into the board upon which the body is placed in the coffin.⁴³ Exactly what this says about the nautical application of these longevity holes remains difficult to determine. The bright mirror or *jing* also carved into the scarf deep within the keel, a good omen, served to make spirits visible to themselves.⁴⁴ Perhaps evil sea spirits would then take flight at their own countenance? A rare mid-19th century document on the navy of Fujian refers to this feature as the "seven stars wood," placing this significant timber across the interior stern transom, instead of in the keel of the ship.⁴⁵

This does not seem too unlike European sailors placing coins beneath the mast steps of their vessels, always face up.⁴⁶ Silver coins have long been placed beneath the

⁴¹The Song Dynasty shipwreck is the noted Quanzhou vessel, now in a museum in Fujian Province; see Song Shipwreck (archaeological group), "The Song Dynasty Shipwreck Excavated at Quanzhou Harbor," *Wen Wu* 10a (1975): 1-18. These holes were known as *baoshougong* or 'longevity holes.'

⁴² Green, "The Song Dynasty shipwreck....," 254.

⁴³ Eberhard, *Dictionary*, 72.

⁴⁴*Ibid*, 188.

⁴⁵ F. Moll, and L.G. Carr. Laughton, citing manuscript #5 of the Hirth collection, in "The Navy of the Province of Fukien." *Mariner's Mirror* 9 (1923): 376.

⁴⁶ The coins under the mast step were, perhaps, a prepaid toll to Charon, the ferryman of Hades; Baker, *Folklore of the Sea*, 36.

mast step of sailing ships. Furthermore, Scottish shipwrights often hide a gold coin "for luck" somewhere within the splice of the main keel, and sometimes fixed a gold sovereign to the main deck beam for similar reasons. Modern sailing yachts continue to place coins beneath the mast step.⁴⁷ In motorized vessels, silver coins were sometimes used to shim or adjust the engine bed.

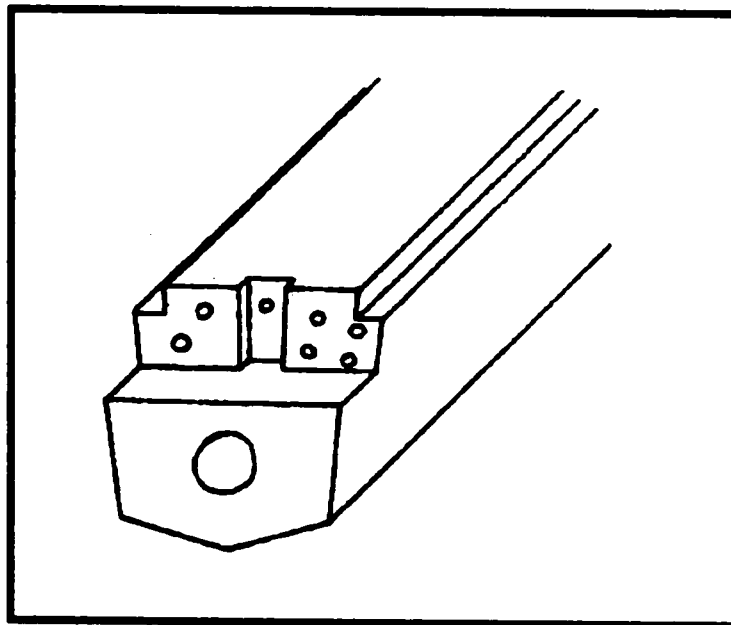


Figure 124: Scarf joint between keel sections from the 13th century Quanzhou shipwreck, showing depression for mirror or jing and arrangement of seven stars or qi xing coin holes. (Green, "Song Dynasty Shipwreck," 254)

The extensive decorations on both stern and bow transoms have been noted throughout the previous chapter. Significant depictions of the *taiqi* yin and yang image, one of the most powerful metaphysical symbols, were usually placed high on the stern and often on the bow transom as well. This was a strong indication of the animistic concept being applied to the Chinese junk. Occasionally the eight trigrams would be seen surrounding the

⁴⁷ Beck, *Folklore of the Sea*, 12. I can remember thinking "why didn't it work?" when my father and I discovered the coin beneath the mast step on the modern fiberglass sloop *Brunhilde* during its accidental dismasting at sea, 400 miles west of San Diego, 1976.

Taiqi symbol. Perhaps this related to the directions of the wind, for the Chinese wind rose was represented by a fan with eight radial sections.⁴⁸

Legendary immortal figures from Chinese history, and/or the very recognizable bird arising from the stormy sea decorate the oval stern transoms of Fujian vessels. Worcester refers to this creature as the *yan niao*, a type of swallow known for swift flight, unperturbed by the stormy ocean as it perches on a rock amidst the crashing waves.⁴⁹ The bird then imparts its qualities onto the vessel itself (see figure 37). The serpent painted on the stern quarter of large coastal trading junks, is likewise a common feature from Fujian province.

Not only was the swallow in China a sign of Spring and fecundity, it had a specific maritime connotation. According to legend, every winter the swallow returned safely from the sea, where it had spent its time inside the mussel, a bivalve.⁵⁰ Junks, too, would hopefully always return to land. From the economic perspective, the regurgitated nests of certain swallows in Southeast Asia and the Indian Ocean were and are a major import item, when added to soup a renown delicacy in China. The benefits of this dish included, among other things, the power to increase sexual potency. Many merchants and sailors made a good living carrying the expensive nests of the swallow across the South China Sea, borne away in ships with the very same *yan niao* on the stern.

The maritime significance of birds is not limited to Chinese sailors. Europeans held the petrel and the albatross in particular reverence, assuming that these sea birds were restless forms of their dead comrades.⁵¹ Other birds, in general, represented good omens. Pacific Islanders also relied on birds, particularly for their navigational abilities. One canoe prow ornament from Micronesia features "two sea swallows who appear to be facing each

⁴⁸ Eberhard, *Dictionary*, 315.

⁴⁹ Worcester, *Junks and Sampans...*, 191.

⁵⁰ Eberhard, *Dictionary*, 280.

⁵¹ Beck, *Folklore of the Sea*, 291.

other—swallows who might act as guides in a dangerous storm."⁵² Birds, then, are commonly incorporated into the maritime world as protective devices or symbols.

The swallow on the stern of Fujian junks was typically depicted as perched on a rock emerging from the stylized wave-tossed sea. In Chinese art, pictures of rocks jutting out of the sea are commonly representations of the Daoist paradise in the Eastern Ocean.⁵³ Traditional Chinese gardens often include jutting stones representing these "Islands of the Blessed."⁵⁴ These legendary islands, typically identified as Fangzhang, Penglai, and Yingzhou, lie somewhere in the Pacific off the Chinese coast. Some scholars promote the Penghu islands, off the southwest corner of Taiwan, as being the same as the mythical home of the Eight Immortals, while others suggest the Islands of the Blessed used to exist immediately offshore of Qingdao and Shanghai, but have since been joined to the mainland.⁵⁵

Other cultures share in such images of immortal mythical landfalls. The island of Dilmun in the Sumerian Gilgamesh epic has been tentatively identified as corresponding with the Bahrain islands of the Persian Gulf. Plutarch made the pseudo-geographical identification of Roman Elysium with the Canary Islands; and Celtic myths allude to paradises in the Western Sea, the Atlantic.⁵⁶ Atlantis itself may be such a type of island

⁵² Honolulu Academy of Arts tour coordinator Jackie Wesolosky, personal communication with author, April 3rd, 2001.

⁵³ Eberhard, *Dictionary*, 277.

⁵⁴ Hans Biedermann, *Dictionary of Symbolism: Cultural Icons and the Meanings Behind Them* (New Yrk: Meridian, 1989), 186. These same islands were the legendary targets of ancient Chinese Pacific maritime expeditions, as emperors sent adventurers in search of longevity drugs from the Tree of Long Life, along with the Jade Fountain from which flowed the Elixir of Life; Harry T. Morgan, *Chinese Symbols and Superstitions* (Detroit: Gale Research Company, 1972), 77.

⁵⁵ Eberhard, *Dictionary*, 152. Interestingly, the Penghu islands lie astride historic sailing trade routes for Chinese mariners. Local sailors would have been very familiar with the navigational hazards of these hundreds of rocks, shoals, and reefs. In 1983, researchers from Taiwan's Ministry of Education located over 100 historic shipwrecks among the Penghu islands, stretching back in time to the Song dynasty.

⁵⁶ Biedermann, *Dictionary of Symbolism*, 185-6.

mythology. The connection between sacred islands and customary shipboard decorations may not be too hard to imagine.



Figures 125: tracing the "Eight Immortals Across the Sea" pattern on the bow of the Free China. (Chow collection)

Besides birds and islands, other images of myth and legend found their place on sailing junks. Stories from the Three Kingdoms period, and depictions of the Eight Immortals or *ba xian* appear in the records.

In some areas, notably between Ningpo and Swatow, the sea-going junks are painted in bright colours and some have various classical scenes painted on them, particularly on the stern. The most popular designs depict the heroic and romantic exploits of that great general and statesman Chu Ko Liang, who is held in high esteem because of his many victories over the arch traitor Ts'ao Ts'ao during the period of the Three Kingdoms, A.D. 221-265.⁵⁷

⁵⁷ Worcester, *Sail and Sweep*, 25.

The Eight Immortals, featured so often in Daoist iconography, were reportedly inhabitants of those elusive Islands of the Blessed.⁵⁸ Their travels across the South China Sea, to attend the feast hosted by the Queen Mother of the West, *Xi Wangmu*, would have been a natural subject for junk ornamentation. Such depictions of legends were common in other cultures as well. The overly-decorated sterns of European sailing vessels of the 17th century, as well as the elaborate figurehead carvings on many European vessels, have already been mentioned.

The serpent, which appears so often on the stern quarter images of Fujian junks, carries more ambiguity than symbols such as the Eight Immortals. As one of the five noxious animals, the snake could represent an evil and treacherous creature; yet serpents could make gifts of great wealth, and snake meat was allegedly good for the eyes.⁵⁹ Did such images on the stern quarter assist the junk's eyesight (see figures 138 and 139)? Or were these images variations of the powerful dragon symbol, including the legendary sea-dragon king, which lived in a palace at the bottom of the sea?⁶⁰ Such water snakes, or *shuishhe*, had the power to calm the waves.⁶¹ Serpents, as well, often corresponded to types of river-gods. River-gods, among other spirits (*shen*), needed to be appeased, for they could be hungry for human sacrifice.

One cultural feature actually does seem to have had operational value as well. The diamond-shaped fenestrations, or the holes cut into the large square rudder blades of southern Chinese junks, have been commented on in a number of different sources.⁶² While the common explanation holds that fenestrations are cut in rudder blades and even fixed keels in order to free the junk from entanglements with evil marine spirits, hydrodynamic tests in towing tanks reveal that the rudder with holes cut in the blade

⁵⁸ Biedermann, *Dictionary of Symbolism*, 113.

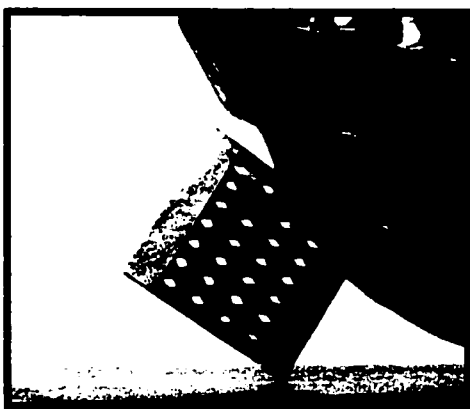
⁵⁹ Eberhard, *Dictionary*, 268.

⁶⁰ *Ibid*, 84.

⁶¹ Chen, *Zhongguo Fanchuan...*, 144

⁶² Worcester, Needham, Jarrett, Muir, and others.

performs more effectively at low speeds.⁶³ This phenomenon involves the localized turbulence of water passing through an opening actually increasing the effective surface area of the rudder blade. More commonly, sailors held that cutting these holes in the rudder blade made it that much easier to maneuver, or "put over," for the pressure acting against the rudder blade would be partially relieved. As none of the seagoing transpacific junks show indications of having fenestrated rudders, such analysis does not have any specific application. Yet the practice still persists in modern wooden examples (figure 134) and even present-day mass-produced steel rudders on junks in China.⁶⁴



Figures 126 and 127: Diamond shape fenestrations on model of Chinese war junk; modern fenestrations in rudder (decorative) on junk in Richmond, California. (Johnson, Shaky Ships, 44; author's photo)

Like the *chengyu*, or ritual phrases mentioned above, fenestrations below the waterline do not appear on European ships until they were adopted for experimentation purposes on the rudders of high-speed torpedo boats.

Death at Sea, or Shipwreck

All this attention to the spirits was of vital importance, in the Chinese view, for the gods or fates could not only grant financial success to the voyage, but also ensure a safe

⁶³ Patrick Smith, marine science student at the University of California, Berkeley, carried out towing tank tests on fenestrated rudder designs and contacted the author, 1997.

⁶⁴ Muir, *One Old Junk is Everyone's Treasure*, 112.

and fast passage. The Chinese, like sailors all around the world, held a special aversion to death by drowning. For a Chinese mariner to lose his life at sea meant that there would be no body to bury, hence no grave to be cleaned, so no ancestor to be revered. This was obviously to be avoided. And in Chinese tradition, dead ancestors who did not receive proper sacrifices of wine and food became hungry ghosts, *egui*. Those who drowned at sea became water ghosts, *shuigui*, and their spirits hungrily sought out living victims to take their place, others to drown.⁶⁵ If they could not find such a proxy, then they were doomed to never achieve rebirth. This was such a noted phenomenon that several observers recorded Chinese sailors refusing to give aid to victims struggling in the water, or refusing to assist vessels which had capsized and were in the process of sinking.⁶⁶ Water ghosts were also believed to be able to move inland and visit villages.⁶⁷ Occasionally, dozens of these malevolent spirits joined together, attempting to drown *en masse* all who ventured on the waters.⁶⁸

The nautical dead represent a topic emphasized by many maritime cultures. European sailors who died at sea, particularly during accidents which denied them the appropriate funerary rites, were understood as having the capability of returning to the area of their death and haunting other passing vessels. Such vessels which experienced tragic and multiple loss of life were sometimes even abandoned at the dock, crews refusing to sail again on them.⁶⁹ European sailors, unlike Chinese, could be given proper rites and buried at sea, while the bodies of Chinese sailors were, if possible, returned to their village.

⁶⁵Eugene N. Anderson, "The Happy Heavenly Bureaucracy: Supernaturals and the Hong Kong Boat People" in *Asian Folklore and Social Life Monographs* (Taipei: Orient Cultural Service, 1972), 15. For this reason, Chinese mariners never buried their dead at sea, a ritual European mariners practiced without hesitation.

⁶⁶Vengeful spirits of drowned lobster men also haunted Maine mariners. Baker, *Folklore*, 74. Interestingly, the most personal amulet that European sailors had for protection against drowning, the tattoo, seems to have no counterpart in maritime China.

⁶⁷ Wu Yuey Len, "Extract from the Life and Culture of the Shanam Boat People," *Nankai Social and Economic Quarterly* 9, no.4 (1937): 20.

⁶⁸ Werner, *A Dictionary of Chinese Mythology*, 192.

⁶⁹ Beck, *Folklore of the Sea*, 287.

Sacrifice and blood donation played a role on junks as well. The Chinese crew of the *Cheng Ho*, following the unfortunate fire on board the vessel in the South Pacific, performed certain purification rites, sacrificing a chicken and sprinkling the blood about the decks, before offering the cooked remains to Mazu (and then eating it themselves).⁷⁰

Whenever someone is born or someone dies in a junk, whenever a new boat is launched on her maiden voyage, there would be a chicken offering. A Taoist priest summoned just for this occasion would have to slit its throat with a sharp blade. There would be a spurt of blood. Blood is supposed to cleanse all sins, to purge all souls and to exorcise all evil spirits. The ceremony of blood donation is one of the important rituals that must be observed...Many of these offerings are made, of course, in the shrine of *Tin Hau* [*Tianhou* or *Tianfei*], the patron saint of the boat people.⁷¹

European vessels, nearing completion of their construction and prior to launching, would also sometimes be blessed with animal sacrifice, the blood of goats and sheep, as well as chickens, being sprinkled on the decks and into the adjoining water.⁷² European blood rituals involved a substance of unfaltering vitality.⁷³ In Chinese culture, blood consecration had the power to animate all sorts of statues and images. Pictures of gods and goddesses gained souls by having their eyes painted over with blood.⁷⁴ Blood consecration was a direct method of animating the sailing vessel, of purifying its soul. Were the oculi on Chinese vessels painted at the same time? The junks were animated, but were not, after all, representations of gods and goddesses themselves.

If the junks did have the power of sight, then one might have to be careful to protect them from gazing at dangerous omens. Like European vessels, Chinese ships were

⁷⁰ Fairchild, *Garden Isles of the Great East*, 122.

⁷¹ Kani, *A General Survey*, 77.

⁷² Beck, *Folklore of the Sea*, 23.

⁷³ Biedermann, *Dictionary of Symbolism*, 43.

⁷⁴ Eberhard, *Dictionary*, 42.

regarded as living beings, capable of possessing or suddenly acquiring good or bad luck.⁷⁵

Robert Fortune observed this first-hand in the mid-19th century.

In going up one of the rivers at this time I observed the effect of a curious superstition which both amused and surprised me at the time. Every one knows that nearly all the junks and boats of China have eyes carved or painted in the bows. I had observed them on all parts of the coast, and had often heard the reason said to be given by the Cantonese, namely, "Suppose no got eye, how can see?" But I did not imagine that any one was so superstitious or ignorant as to fancy that these junks or boats really could see with the eyes which had been given to them. It seemed, however, that I was mistaken. As I was sailing slowly onwards one of my boatmen seized his broad hat, and, rushing past me to the bows of the boat, placed it over one of the eyes. Several other boats in company were also blinded in the same way; some with hats, others with coats, cloaks, or anything that came readiest to hand. I did not understand this proceeding at first, but soon found out the cause. A dead body was floating up the stream with the tide, and if the boat is allowed to see an object of this kind some evil is sure to happen to the passengers or crew before the voyage is over. Such is one of the superstitions of the Chinese, and hence the reason for covering up the eyes of the boats in order that they might not see.⁷⁶

Other reports record this same attitude towards ships. One, after having capsized, was salvaged, repaired, and put back on the market. Though practically brand new, no buyer could be found, "men would have nothing more to do with her."⁷⁷ The same sorts of incidents have been recorded for European ships and crews.⁷⁸

Many aspects of seafaring superstitions can be seen as risk avoidance, taking care not to do the wrong thing and so offend the fates or gods, rather than taking positive action. When eating broiled fish, the *shui ren* or *shuishang renjia*, the boat people of modern Hong Kong, were once careful not to break off any of the bones, nor turn the fish over. Both were actions which symbolized damage to the boat, as in wrecking or capsizing. When they

⁷⁵Europeans referred to their ships as feminine beings, always as 'she,' and ships carried individual names. Though the Chinese regarded their vessels as living beings, the craft was of neither sex.

⁷⁶Fortune, *A Residence*, 405-406.

⁷⁷John Scarth, *Twelve Years in China; the People, the Rebels, and the Mandarins* (Edinburgh: T. Constable, 1860), 118.

⁷⁸Sometimes the remains of unlucky western vessels were cut up and burned, in order to "get the death out." Baker, *Folklore*, 44.

drank, they did not toast "bottoms up" for the same reason. Also, laundry was never hung high on the mast, in order not to impede the wind spirits.⁷⁹

European sailors also possessed a host of behavioral modifications, such as never whistling on board a ship (unless in dead calm), or scratching the mast for a breeze.⁸⁰ Some mariners today are sometimes still just as reluctant to engage in certain taboo subjects. As part of the University of Hawai'i's 1999 summer field school in maritime archaeology, students interviewed Matson officers on board the container ship *R.J. Pfeiffer* regarding the history of certain sunken artifacts on the island of O'ahu. The officers grew uneasy with the general topic of sunken ships, and finally informed the students that this particular topic was not appropriate for shipboard discussion.⁸¹ Even in the world of steel containers and modern shipping, certain specifically maritime traditions continue.

A Living Nautical Terminology, Animal Symbolism

Shipwrights and sailors, no matter which culture they are from, need, use, and modify when necessary a distinctive terminology suited for their very specialized environment. This has led to the creation of separate maritime or nautical dictionaries in a number of different languages, including Chinese and Japanese. The single drawback of the Asian references is that they reflect the modern industrial maritime world, applicable to motorized vessels, steam power, diesel engines, and even nuclear powered craft. They do not recall the maritime realm prior to these radical changes. European sources are rich in the nautical lingo of the wooden sailing era.

European history is so familiar and relatively well documented that expressions from the wooden ship sailing era are fairly recognizable. Even landlubbers, frustrated with repetitive failure, find themselves "flogging a dead horse," driving them to become "three

⁷⁹ Kani, *A General Survey*, 73. Today laundry and scrap cover the decks of the *Free China*.

⁸⁰ Beck, *Folklore of the Sea*, 101.

⁸¹ Interview with Dale Hazelhurst, Jerry Bert, and Captain Scott Abrams on board the MV *R.J. Pfeiffer* at Honolulu Harbor, July 1999.

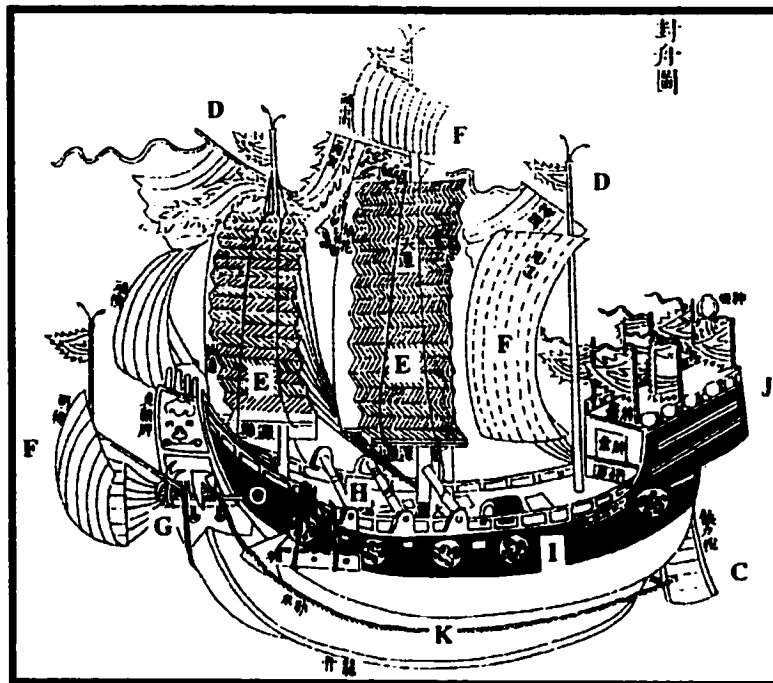
sheets to the wind" or drunk, especially if it's cold enough to "freeze the balls off a brass monkey."⁸² Nautical language captures much of the romantic culture of the sailing past, and was often the mark of "Jack Tar" on shore. Perhaps as a subset of the animistic tendency, much of this language reflected animal names and animal parts for certain reasons. Donkey engines and horse latitudes and the dreaded cat-o'-nine-tails (lash) spiced the sailor's world. Dogs proved particularly popular. Sailors not "dogging it" (loafing) might be ordered to take the "dog iron" (pry bar) and "dog down" (close) the hatches against their "dogs" (clamps), all this during the "dog watch" (split watch between 4:00 PM and 8:00 PM).⁸³ Specific language such as this is unique and inseparable from maritime culture. Nautical language reflects the special attitudes held towards sailing vessels, the "living creature" aspect of ships. The animism which surrounds sailors of different cultures reflects a common inclination to anthropomorphize the inanimate object.

Fortunately, one document captures some of this language and culture for Chinese sailing vessels. A shipbuilding manual for the Fujian navy, written by a naval functionary around 1850 A.D., has been saved in the Hirth collection of the Royal library in Berlin.⁸⁴ In technical details it does not go beyond the single image of the Qing dynasty vessel from the *Liu Qiu Guo Zhi Lue*, or the drawings and photographs of certain more contemporary junks. It does, however, list the local terms for a variety of ship parts, allowing a glimpse of the specialized language of regional Fujianese junk builders.

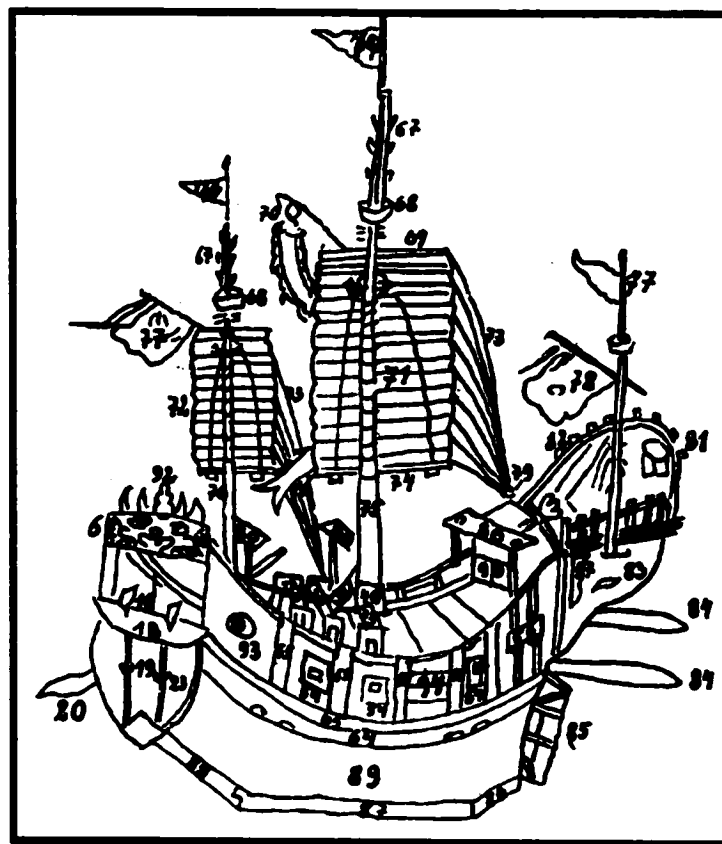
⁸² An effigy of a horse was flogged and hoisted aloft, marking the end of working off advanced wages and the beginning of making real pay; general drunkenness could send men reeling down the street, flapping like loose halyards in a stiff breeze; iron cannon balls stacked on brass holders would, if the weather were cold enough, go rolling across the deck due to the differing rates of shrinkage in dissimilar metals.

⁸³ Beck, *Folklore of the Sea*, 58.

⁸⁴ Moll and Laughton, "The Navy of the Province of Fukien," provide a translation of this document.

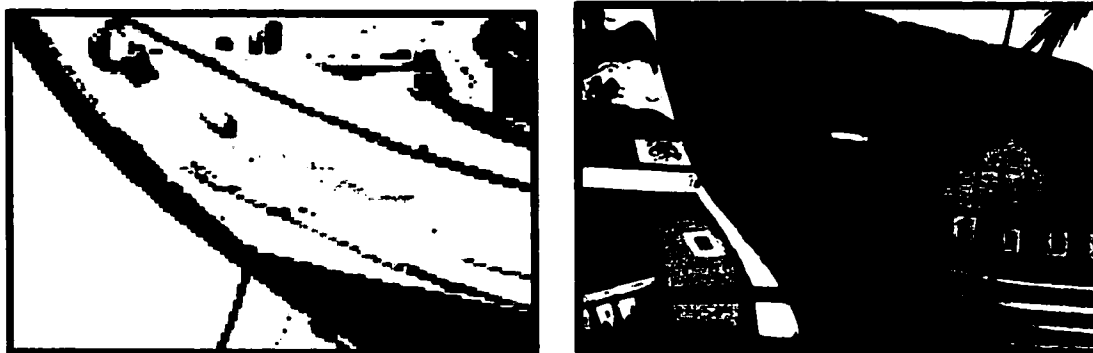


**Figure 128: Junk from 1757 for reference.
(Ronan, Shorter Science and Civilization, 78)**



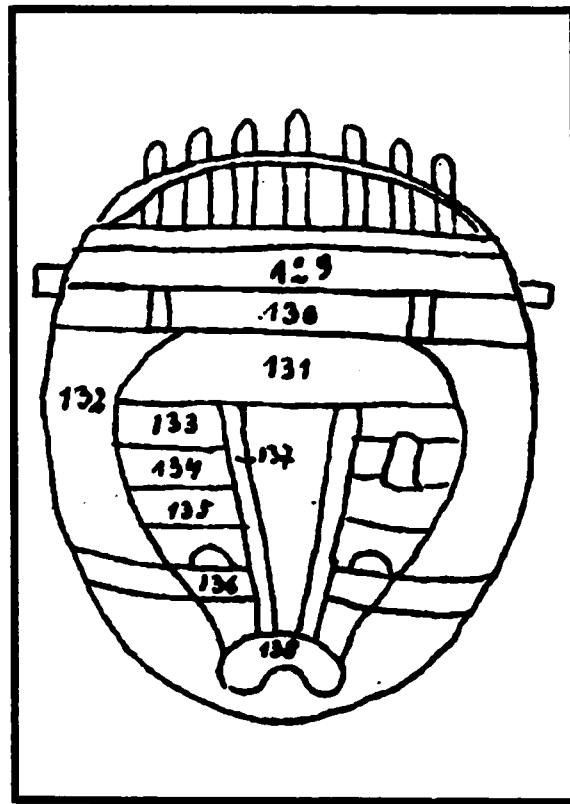
**Figure 129: A 60 foot Fujian naval vessel of 1850.
(Moll, "Navy of the Province of Fujian," 365)**

The bow transom, or "wave pressure board (19)," is capped by the bow rail, or "hare's ears (18)," which are used as fairleads for lines and cables. The "sparrow's tongue board (6)" here features a carving of a lion's head. A "deer's saddle (23)," or hardwood board reinforces the bow transom, and has holes cut for the underwater cables. Sculling oars, or sweeps (20 and 84) extend beyond the vessel's hull. The "dragon's head bone (88)," or forward keel, is attached to the "dragon's middle bone (87)" and the "dragon's tail bone (86)." The "dragon eye (93)" is just forward of the gunwale supports or "wave protection boards (55)," which are pierced by "gun eyes (54)" of varying number. These are above the series of rounded wales, the "water snake (65)" above the "running horse (64)." On deck, the windlasses (30) are fixed and strong "winch-oxen," and "peace-oxen (33)" near the mast, providing tie-downs for halyards. Three "sail support boards (80)," or gallows frames, take the weight of the rig when lowered. Wind vanes (77) flutter above the "flag for the god of the sea (78)." This is also called the Mazu banner.⁸⁵ The standard decoration of the Fujianese serpent, the "tail of the harvest fish (83)," can be seen on the stern quarter.



Figures 130 and 131: Stern quarter of junk *Free China* with Fujianese serpent or shuishe design; detail of Fujianese trading junk stern quarter, early 19th century. (San Francisco Maritime NHP; © National Maritime Museum, London)

⁸⁵ Chen Xiyu, *Zhongguo Fanchuan yu Haiwai Maoyi* (Xiamen University, 1991), 415.



Figures 132: Stern of Fujianese naval vessel.
(Moll, "Navy of the Province of Fujian," 369)

Though the curved "under transom (138)," or lower wooden gudgeon, cannot be seen in the photograph, the tops of the vertical timbers which define the opening of the rudder trunk, the "hard muscles (137)," are visible. The "rudder board, sleeper, and bedding (134, 135, and 136)" are not well defined, but the wide curved outer "swallow tail board (132)" gives the transom its oval shape. The "turning board (131)" caps the rudder trunk, and this is surmounted by the "inscription (130)." The "eagle's plate (129)" lies just below the taffrail.

Conclusion

How much more can be inferred about Chinese maritime ethnology from the examination of the junks themselves remains an open question. A handful of photographs and a couple aging examples like the Beihai junk and the *Free China*, provide somewhat

slim evidence. It's obvious, though, that the physical form of the junks themselves do reflect the social setting, the religious beliefs, and the cultural folklore of Chinese seafarers, and that these junks occupy the same special niche reserved by sailors of many other cultures for their vessels. The decorative Fujian-style sterns of the *Ning Po* and *Free China*, the inscriptions on the Beihai junk and others, the decorative serpents and the images of sacred islands...these things did not exist as random elements, but reveal a cultural belief system within a known context.

Though Chinese maritime folklore and vessel construction may seem sometimes quite different from European traditions, different particularly from the Celtic origins of British nautical traditions and the predominantly English-Scottish-Irish folklore of New World maritime beliefs, there are certain similarities between them. Risk abatement, the physical, emotional, and even spiritual search for protection from a potentially dangerous environment, exists as a common theme among seafaring societies. The first-hand observations of maritime rituals in China, the sometimes thinly-veiled surprise recorded by clergymen or diplomats, do not necessarily represent a sailor's appreciation of familiar ceremonies.

There has not been much written on the commonalities of the transnational maritime society beyond a few certain articles on the "total institution" of the ship, as mentioned above. And from the technical standpoint, the many specific differences between European and Chinese wooden sailing vessels do not speak of a common heritage or shared traditions. But it is in the realm of human behavior, the many ways in which sailors in the past have attempted to cope with their environment, where the argument of a common maritime realm might be further advanced.

Table 4: Comparison of Maritime Cultural Phenomena

Chinese Attributes:	Euro/American Attributes:
Auspicious launch/departure dates	Lucky/unlucky days of the week/month
Firecrackers	Cannon fire
Prayers at Temple	Prayers at church
Mazu	St. Elmo, Poseidon/Neptune etc.
Idols carried on board	Saints carried on board
Oculi	Figureheads
<i>Chengyu</i>	---
---	Ship name
---	Ship gender (female)
Coins hidden in construction	Coins hidden in construction
Longevity holes	---
Mirror hidden in construction	---
Fenestrations	---
Reverence for birds	Reverence for birds
Reference to mythical islands	Reference to mythical islands
Eight Immortals decoration	Poseidon, Saints, etc.
Serpent/dragon	Numerous monsters, Kraken
Belief in water ghosts, <i>shuigui</i>	Belief in water ghosts
Use of blood consecration (chicken)	Use of blood consecration (champagne bottle)
Numerous behavioral modifications	Numerous behavioral modifications
Animal symbolism	Animal symbolism

Generally this subject falls under the heading of folklore, the appreciation of which by no means being constant among different cultures. Likewise, topics involving elements of a transnational or universal maritime folklore do not easily lend themselves to the arena of national history-making. Yet it is precisely these elements of transnational character which prove so fascinating. There can be no question of the transmission of cultural beliefs and constructional features in the maritime world, because they already existed for both Europe and China. And in many ways, though not all, there are striking similarities.

Do these practices and artifacts represent a particular maritime culture? Or are such things only the repetition of already familiar symbols? This is a complex question, but from the small sample of evidence available, the maritime practices and objects do seem to be unique to the maritime world most of the time. The individual gods or goddesses are often specific to the sailor's experience. Where they're not, as for example with Guanyin, they

may tend to merge with specifically maritime images, Mazu. Specific saints and gods were granted responsibility for the European sailing world as well. Yet, certainly, praying in churches or temples is a generalized behavior. Celebrations with firecrackers, 21-gun salutes, etc. are all well-known expressions everywhere.

Constructional features, the many things like oculi and figureheads and longevity holes and rudder fenestrations, these things obviously have no counterpart in the terrestrial experience. That is only to be expected, though, as the wooden sailing vessel is a very specific and dynamic form itself. Belief systems, expressed in ship names and gender, and in *chengyu* and the many unique behavioral modifications of sailors everywhere, seem very limited to the nautical realm. Water ghosts and sea serpents and Davy Jones and the Flying Dutchman, these things exist only for the maritime culture. Yet certain elements like blood sacrifice are more general manifestations. In short, from this brief examination, the maritime cultural world partakes in some similar elements of the terrestrial world, yet adds on to that many more variations, as well as unique features, which only make sense to the sailing world. Such particular practices are important elements of seafaring cultures, indicative of a separate and enclosed society.

These ten junks which crossed the Pacific provide an opportunity to glimpse the maritime realm of Chinese beliefs and behavior, in spite of the American influence involved in their Pacific voyages. The physical manifestations of this behavior for Chinese sailors appear in the many cultural features of these vessels, and occasionally in the descriptions of the voyages and activities themselves. Such things, as difficult as they may be to investigate, are a major "chapter" in the "book" of the junk.

CHAPTER 6

THE HISTORICAL CONTEXT

The history surrounding these vessels and their trips across the Pacific influence what we know of them in countless ways. While there is obviously no need to repeat or rewrite complete histories of the Pacific region, some background material proves necessary to place these junks in historical context. This context can be divided into three separate semi-geographical sections: 1) the setting in China, 2) the state of transoceanic travel, and 3) history or conditions on the west coast of America.

In general, these Chinese junks were procured under difficult circumstances, transported across the Pacific in dangerous conditions, and dispersed on the West coast in a casual and informal manner. Though few documents capture the details about these junks, the historical setting during the first half of the 20th century shaped their voyages as well as our perceptions of the them. They serve as a kind of bridge connecting the historical settings between China, the Pacific, and America. The junks also allow us to examine the ethnographic perspective and how material culture was and is displayed in America.

Maritime Change in China

The origins of most of these Chinese vessels are surrounded by historical periods of turmoil and disruption. The periods in which the junks were procured for their voyages encompass the Republican Revolution, subsequent warlord rule of the divided countryside, and the outbreak of the Pacific conflict. This does not appear to be the most opportune time to journey on the Chinese coast seeking examples of traditional sailing vessels. There is very little about the early 20th century which could be referred to as "normal" in the case of conditions in China. Steamships and other European vessels were transforming the trade routes in China and Southeast Asia, and the major home ports for these junks had become Treaty Ports, undergoing social and economic change due to foreign influence. The opening of the Suez Canal in 1869 served to increase the flow of European traffic to the China coast.

Unfortunately, any specific details extending beyond the scant notices of vessels being acquired and setting out to the east are missing from most of these cases, and so the investigation must turn towards the general topic of Chinese junks during this period. The *Sea Dragon*, *Free China*, and *Ning Po* stand out as the only exceptions to this general rule. The *Ning Po* herself was said to have been purchased from Chinese revolutionaries, and to have played an important role in a number of political uprisings, but it remains difficult to confirm any of the junk's colorful past. The remaining junks emerge almost unnoticed from the western Pacific. The *Whang Ho* was purchased in 1905 or 1906. The *Amoy* was built in 1921. The *Fou Po II* was built in 1935. The *Hummel Hummel* was purchased in 1938, as was the *Mon Lei*. The *Cheng Ho* left the slipways the following year, 1939. Brief notice is made of the illegality of foreigners owning Chinese junks in the era before the 1911 Revolution. In the 19th century selling a junk to foreigners illegally was a capital offence. The *Whang Ho* sale was delayed due to difficulties surrounding the issue of ownership and registration. The foreign ownership of Chinese junks constituted an issue which had long bothered officials in China. Customs revenue and ease of access to the many ports on the Chinese coast were determined by such things as the origins of the individual vessel, and emperors had in the past expressed their concerns at so many Chinese junks being illegally sold in Southeast Asia.¹

The *Keying*, a Fuzhou junk which sailed the Indian and Atlantic oceans in 1846, also faced the same difficulties. The *Keying* was purchased by a group of Englishmen "by the adoption of Chinese dress as a disguise, a pretence of yachting locally, and finally some amount of fighting before Hong Kong was fetched."² In short, the *Keying* was stolen.

¹ For more detail on this see Hugh R. Clark, "The Politics of Trade and the Establishment of the Quanzhou Trade Superintendency," in *China and the Maritime Silk Route* (Fujian, 1991), 376-394; and Chan Cheung, "The Smuggling Trade Between China and Southeast Asia during the Ming Dynasty," in F.S. Drake (ed), *Symposium on Historical, Archaeological, and Linguistic Studies on Southern China, South East Asia and the Hong Kong Region* (Hong Kong, 1967), 223-227.

² H.H. Brindley, "The 'Keying'," *Mariner's Mirror* 8 (1922): 311.

"Clandestinely bought" is another phrase used by Europeans to describe the transaction.³ It is only following the end of the Qing dynasty that sources begin to refer to the legal transfer of ownership of junks to foreign masters.

This early imperial precaution really dates back to traditional imperial regulations on the control of coastal and overseas shipping. At various times in the Chinese past, official decrees have specifically limited size and design of coastal junks in an effort to curtail overseas operations, often set amidst periods of particular xenophobia. The most immediate example of this is the mandate from the early Ming dynasty:

The Principle criminal, official and commoner alike, guilty of the following violations – building illegal large ships with more than two masts, carrying forbidden goods to the sea, going to trade in foreign countries, secretly contacting pirates and plotting to group together, acting as their guide or plundering lawful people—is to be executed, and his entire family are to be banished to the frontier to serve with the Military Guards.⁴

Illegal trade overseas covered, of course, the vessel itself as a trade item. Extensive deforestation and the shift in Chinese junk construction from China to Chinese communities in Southeast Asia in the 19th century spurred similar concerns regarding the sale of junks to foreigners.

More immediate to the sample cases than the historical reluctance to part with ships, world events posed many obstacles to the procurement of these junks at the time of the Pacific voyages. Given our hindsight on events of the Pacific War, the several projects involving junks either purchased or built in the late 1930s seem particularly precarious.

For Americans overseas during this period, the coasts and rivers of China represented a rough frontier with elements harkening back to the days of the wild west.

Piracy, gun battles with warlords and armies of various factions, banditry, kidnapping, opium smuggling, gunrunning, corruption and extortion—all these violent activities, superimposed on the most dangerous natural

³ Richard D. Altick, *The Shows of London* (Cambridge: Belknap Press, 1978), 294.

⁴ A.B. Woodside, "Early Ming Expansionism (1406-1427): China's Abortive Conquest of Vietnam," *Papers on China* (Seminar at Harvard University) 17 (1963): 49.

waterway ever sailed by Americans, made the real world of seamen in China far more exciting than the storied world of pulp fiction.⁵

Needless to say, this identification of the Yangzi River with an American frontier makes little sense, but the experience of Americans abroad does speak to the dangers of the maritime environment in China.

Richard Halliburton makes many comments on the state of unrest in China and the constant stream of war time refugees amidst his plans to sail from the China coast. He also offers a rare glimpse into the problem of sailing a junk past the Japanese navy:

I've just learned one reason why the Japanese wage such a merciless campaign against the apparently harmless fisher-junks. In the early days of the war the Chinese civilians were allowed to sail their junks rather much where they chose. Then one day a Japanese airplane carrier—an object of special hatred in China—appeared off the coast and began to discharge its death-laden planes. The crew was so occupied that it scarcely noticed a group of small junks, busily fishing, which drifted slowly out from shore toward the gray steel monster. Then, when the junks and battleships were only 200 yards apart, a Chinese mosquito boat, hitherto concealed, suddenly dashed from the midst of the junk fleet—full speed at the carrier. Point blank it loosed a torpedo, and struck the Japanese vessel squarely amidships. The great carrier was so badly damaged that it had to go into drydock for three months.

At once the Japanese swore vengeance on all junks—honest and otherwise. They shelled every junk they could find, set fire to the wreckage, and disposed of the crews (which in China means whole families) by pushing them into the sea without boats or lifebelts. Even at anchor in the harbors of the coastal cities the helpless native craft were systematically bombed—as they still are today. Knowing all this, I plan to go first to Tokyo and formally ask the Japanese Navy to grant a safe-conduct for the *Sea Dragon's* journey through the war zone.⁶

Other researchers have also noted the destructive effect of the war on the sailing junks.⁷

The general feeling of Halliburton's contemporaries ran along the lines that "the Japs will

⁵ David H. Grover, *American Merchant Ships on the Yangtze, 1920-1941* (Westport, Connecticut: Praeger, 1992), xv.

⁶ Halliburton, *Richard Halliburton*, 402-3. In October, 2000, a small "native" craft, a local inflatable boat actually, involved in refueling the American navy destroyer USS *Cole* in Yemen detonated a hidden bomb, killing 17 sailors and sending the ship into drydock for months. Small vessels have frequently been able to threaten larger ships in such ways.

⁷ Sir Frederick Maze, Inspector General of the Imperial Maritime Customs, for one; see chapter four.

blow that ruddy junk galley west the moment she sticks her prow into the Formosa Straits," as the British naval officers put it.⁸

Junks were difficult to find because they were vanishing. An estimate on the numbers of sailing junks destroyed over several years of systematic effort by the Japanese would prove difficult. Estimates of the numbers of junks in China for the period preceding the conflict only produce vague information. Geographer Herold Wiens, in "Riverine and Coastal Junks in China's Commerce," attempted to do just this by averaging the number of clearings and entries from customs records for the 1930's. Variations in the definitions of junks, vessels larger than seven tons in one region as opposed to vessels larger than four tons in another, as well as multiple sailings on short routes by many vessels, greatly complicated the process. Wiens, in the end, produces an estimate of 57,536 active junks in China for the 1930's.⁹ He immediately states, as well, that the true number could lie anywhere between 20 and 50 thousand, not counting vessels described as sampans. Annual junk carrying capacity, from this estimate, fell probably between 520,000 and 1,300,000 tons.¹⁰ Thus, the erroneous impression that by the late 19th century steam vessels had eliminated the sailing junk trade in China must be reexamined.¹¹

The war in the Pacific had other nautical consequences than simply the removal of an unknown number of sailing junks. Beginning in 1940 the sailing vessels, under wartime conditions, began to be fitted with engines in order to run the Japanese blockade on the China coast. Later in the war the Japanese themselves, suffering considerable losses to their merchant fleet, continued putting engines in the wooden junks in order to maintain their

⁸ Root, *Magnificent Myth*, 20.

⁹ Wiens, "Riverine and Coastal Junks..," 262.

¹⁰ Ibid, 263.

¹¹ "By the 1890s sailing vessels had all but disappeared..," Pin-tsun Chang citing Yu-t'ang Sun, in "Maritime China in Historical Perspective," in *Papers in Social Sciences* (Taipei: Academia Sinica, 1993), 242.

lines of communication.¹² As noted previously, engines necessitated major departures from established junk designs.

The Japanese navy was not the only concern for Halliburton and the crew of the *Sea Dragon*. A large number of pirates had been driven south by the invading forces, and their seafaring operations had grown to an unprecedented level in the absence of any significant local coastal patrols. They were said to have watched the construction of Halliburton's junk "as a panther would regard a suckling pig."¹³

Junk Operations on the China Coast

Documents which describe the nature of junk traffic in China are rare, but translator Andrew Watson, in *Transport in Transition: the Evolution of Traditional Shipping in China*, has edited a series of articles by Japanese scholars concerning Chinese junk ownership operations. Watson describes this period, 1900-1940, as "a key transitional phase...when it [shipping] was absorbing the influences of various forms of modernization and on the eve of its major organizational transformation under the direction of the Communist Party."¹⁴ True, the articles focus on a wartime situation, where activity was artificially depressed and trade restricted, not optimal conditions. But some of the information directly reveals the nature of the sailing trade occupations, the very background of the transpacific junks.

In general, trade junks in China were owned by partnerships of related individuals in the north and live-on-board families in the south.¹⁵ They were almost always operated under the direction of shipping brokers or *chuanhang*, those individuals and institutions which bought and sold local products, acted as agents for distribution, provided warehouses and

¹² Worcester, *Classification*, xiii. This, in Worcester's view, was the beginning of the end. "Due to their independence of tides and favourable winds, this type of vessel may be expected in future to be seen in increasing numbers on the coasts and rivers of China."

¹³ Ibid.

¹⁴ Andrew Watson (translator), *Transport in Transition: the Evolution of Traditional Shipping in China* (Ann Arbor: University of Michigan, 1972), iii.

¹⁵ Koizumi Teizo, "The Operation of Chinese Junks," in Watson, *Transport in Transition...*, 7. As much as 99% of the junks in northern China were in partnerships with joint capital, usually made up of between 10 and 30 people who were related or were old friends; Nakamura Yoshio, "Shipping Brokers in North China," in Watson, *Transport in Transition...*, 26.

lodging services, hired junks, etc.¹⁶ Brokers belonged to a certain class of licensed merchants, *yahang*, who received special permits to act as middlemen between shippers of goods and junk operators.¹⁷ Brokers also acted as intermediaries in the sale of junks, and may have been the contact points for Europeans seeking to procure vessels for the Pacific voyage.

In almost all aspects of business, junk ownership and operation was based on strong family or local relationships. Partners in ownership were often related, and employees of brokerage companies were usually close relations or acquaintances of the general manager, secured through recommendation.¹⁸ This extended to the crew, or *chuanfu*, on board the junk itself. Crew members were hired for reasons of family or locality connections.¹⁹

As Harry Lamley notes in "Lineage Feuding in Southern Fujian and Eastern Guangdong Under Qing Rule," the late 19th century was a period open warfare between lineage groups on China's southern coast, involving all levels of economic competition not only locally but overseas as well.²⁰ This suggests that it would have been very unlikely to find sailors from different regions, perhaps even different villages, coexisting on the same ship. Traveling missionary Karl Gutzlaff, among others, noted regional tensions on his China voyages:

Several junks were in company with us, and a quarrel between our sailors and some Fuhkeen [Fujian] men broke out, the consequences of which might have been very serious. Some of our men had already armed themselves with pikes, and were placing themselves in battle array...several

¹⁶ Koizumi Teizo, "Operation...", 9-10.

¹⁷ Hayashi Tokumura, "The Shipping Brokers and Transport Companies of Soochow," in Watson, *Transport in Transition...*, 35.

¹⁸ Ibid, 47.

¹⁹ Kosaka Torizo and Nakamura Yoshio, "Junk Ownership and Operation in North China," in Watson, *Transport in Transition...*, 55.

²⁰ Harry J. Lamley, "Lineage Feuding in Southern Fujian and Eastern Guangdong Under Qing Rule," in *Violence in China: Essays in Culture and Counterculture*, Jonathan N. Lipman and Stevan Harrell editors (SUNY Press: New York, 1990), 27-64. Also Leung Yuen Sang, "Regional Rivalry in Mid-Nineteenth Century Shanghai: Cantonese vs. Ningpo Men," *Ch'ing-shih wen-t'i* 4, no.8 (1982): 29-51. Coastal Chinese, during this period, not only had ties to their family and village, but all could be strongly loyal to larger 'corporate' identities associated with historic lineage or locality or both.

years ago a quarrel, which originated between two junks, brought all the Fuhkeen and Chaou-chow men in the neighborhood into action; both parties fought fiercely...²¹

As junk construction proved regionally specific, so did the crews themselves seem regionally derived. The close character of crews is further emphasized by the kinship connections that served to unite members on the ship. Selection often depended on association with the captain's clan, or on residence in the village or region where the ship was registered.²² This degree of paternalism or affinity between captain and crew stands in sharp contrast to European vessels, where the greater social distance between the higher and lower ranks was an intentional feature, central to maintaining strict discipline. As Cushman puts it: "There is no evidence that the social hierarchy among the crew of a Chinese junk was governed by a codified set of regulations..."²³ She goes on to describe the crew of one of Gutzlaff's vessels: the captain was a Chaozhou man as were the sailors, his brother-in-law was the ship's clerk, and his uncle succeeded him when he left the vessel at Namoa.²⁴ This observation on social relations has important implications for the understanding of the structure of command on Chinese ships. Relationships on board were not formed along new lines of strict discipline, but based on kinship ranking of the home area. This implies that, unlike European ships, the captain of the junk trade vessel did not have complete authority over all the crew.

In fact, the sailors exercise full control over the vessel, and oppose every measure which they think may prove injurious to their own interest; so that even the captain and pilot are frequently obliged, when wearied out with their insolent behaviour, to crave their kind assistance, and to request them to show a better temper.²⁵

²¹ Karl Friedrich Gutzlaff, *Journal of Three Voyages along the Coast of China in 1831, 1832, and 1838* (London: Frederick Wesley and A.H. Davis, 1834), 138.

²² Cushman, *Fields*, 99-100.

²³ *Ibid.*, 101.

²⁴ *Ibid.*, 100.

²⁵ Gutzlaff, *Three Voyages*, 96.

Though relations might not have been strictly delineated, there were specific roles to fill in order to make the vessel work. Care must be taken, however, when comparing the roles of those officers and crew on Chinese vessels and those on European ships, for there is not always a close correspondence between the two. For instance, the captain of the Chinese vessel not only lacked absolute authority, but had very little to do with navigation during the voyage, this being the chief role of the pilot. Instead, the captain acted more as ship's merchant, or *boshang*. Gutzlaff presents a description of traditional positions on Chinese ships:

Chinese vessels have generally a captain, who might more properly be styled a supercargo. Whether the owner or not, he has charge of the whole of the cargo, buys and sells as circumstances require; but has no command whatever over the sailing of the ship. This is the business of the Ho-chang or pilot. During the whole voyage, to observe the shores and promontories are the principal objects which occupy his attention, day and night. He sits steadily on the side of the ship, and sleeps when standing, just as it suits his convenience. Though he has, nominally, the command over the sailors, yet they obey him only when they find it agreeable to their own wishes; and they scold and brave him, just as if he belonged to their own company. Next to the pilot (or mate) is the To-kung (helmsman), who manages the sailing of the ship; there are a few men under his immediate command. There are, besides, two clerks; one to keep the accounts, and the other to superintend the cargo that is put on board. Also, a comprador, to purchase provisions; and a Heang-kung, (or priest,) who attends the idols, and burns, every morning, a certain quantity of incense, and of gold and silver paper. The sailors are divided into two classes; a few, called Towmuh (or head-men), have charge of the anchor, sails, &c.; and the rest, called Ho-ke (or comrades), perform the menial work, such as pulling ropes and heaving the anchor. A cook and some barbers make up the remainder of the crew.²⁸

If the origins of sailors for Chinese junks could be unambiguously precise, and design features also rooted in regional variation, the functional roles of commercial junks were less so. In all of the articles included in Watson's *Transport in Transition*, vessels under the control of the shipping brokers could fulfill a number of different economic

²⁸Ibid, 95.

functions, their roles were not specialized.²⁷ Fishing junks, by and large excluded from the Japanese studies, formed a distinct functional class, and larger junks were obviously more suited for certain longer routes than smaller vessels. Teshima Masaki and Arai Yoshio, in "Junk Crews in Soochow," find that the larger the junk, the closer the connection to "more modern structures such as transport companies, the less its connection with agriculture, and the less seasonal its form of operation."²⁸ Thus, it seems by the 20th century, strict observances of monsoon patterns and established cyclical sailing routes, emphasized by Anthony Reid and others, had begun to break down in China, at least for the larger 200 to 500-ton vessels. Beyond these general observations, though, junks seem to have been flexible utilitarian tools, capable of carrying different types of cargo on multiple routes.

Finally, junks had long possessed a natural efficiency over land transportation which has sometimes been said to apply to all water vessels, particularly for shipping bulk goods. Such efficiencies should be taken into account when describing junk operations and changes in maritime transportation. Andrew Watson concludes that junk transportation was not just cheaper than other forms, but much cheaper. The following table highlights comparative costs per kilometer.

Table 5: Average Transportation Costs, 1900-1940²⁹

Mode:	Japanese cents/km:
Junk	1.2
Railway	2.0
Donkey or Horse	2.4
Wheelbarrow	19.0
Motor Vehicle	30.0
Porters	34.0

The very nature of junk ownership and operation in China, then, lent this mode of transportation certain advantages in the face of accelerating change on the coast. Hayashi

²⁷ Koizumi Teizo, "Operation...", 13.

²⁸ Teshima Masaki and Arai Yoshio, "Junk Crews in Sochow," in Watson, *Transport in Transition...*, 68.

²⁹ Koizumi Teizo, "Operation...", 4.

Tokumura, in "The Shipping Brokers and Transport Companies of Soochow," states that the close nature of junk traffic extended operations in the face of competition.

The reason that they continue to survive in such unfavorable conditions probably derives from the network of personal relationships that they have built up. Lacking capital, they rely on the confidence inspired by same-locality origins or long-standing business contacts to operate within a delimited area.³⁰

This seems to be an application of the same kind of phenomenon which Anthony Reid describes for Chinese junks in "The Unthreatening Alternative: Chinese Shipping in Southeast Asia, 1567-1842." The operation of sailing junks in China remained firmly entrenched in established economic and social circles, and often benefited the immediate family. It was a familiar business and much less threatening than foreign businesses. Yet this did not stop Chinese merchants and others from realizing the advantages of steam vessels.

Competition with Steam in China and the Pacific

After the mid-19th century, steam navigation began to make a noticeable impact on communication across the Pacific. Steamship lines started to capitalize on the transportation of goods and passengers, capturing routes which had previously been dominated by sail. This was first to appear in coastal and riverine settings chiefly because of the extended distances involved in oceanic travel. Until steamships achieved relative efficiency in coal consumption, represented by the technological breakthrough of triple-expansion engines and high-pressure steel Scotch boilers, they could not compete with sail effectively on long sea routes. England led the world in this maritime transition from sail to steam, and England had long had a commercial presence in East Asia. Steamships operated early along the coasts and up the major rivers among the sailing junks, and only later captured the bulk of transpacific trade. American and British entrepreneurs were quick to exploit the advantages of river steam navigation over the slower and established river

³⁰ Hayashi Tokumura, "The Shipping Brokers...", 35.

junks, which often relied on season winds and the employment of shoreside trackers to move upstream.³¹

Important coastal routes and sailing commerce along the deeper branches of major rivers were the first to feel the effects of coming maritime modernization. Sailing junks were sometimes limited to local fisheries, or pushed out of important routes and into smaller areas of secondary economic importance. By 1873, steamships entered the trade of carrying rice from the south to Tianjin, for transshipment to the imperial capitol. Eventually, steamers would monopolize this traffic.³² Steamships would also make inroads in the lumber trade, supplanting pole-junks in carrying timbers up and down the China coast. J.E. Spencer, in "The Junks of the Yangtze," states:

Old native style shipping has not been totally eliminated, but its volume has decreased tremendously, and much of it has been relegated either to small unit movement between ports not connected directly by steam or to those waters totally or seasonally out of reach of steam launches.³³

Just as the business of commercial sail continued to exist for decades after the introduction of transoceanic steam, Chinese riverine and coastal junks persisted during this period.

Edward Cunningham, managing partner of the American firm Russell and Company, noticed their most obvious advantages in 1868:

The business of the river for steamers has been overrated through many causes, not the least of which is the expectation that they would entirely supercede Chinese carriers. But even at low rates of freight there is always a large proportion of produce which passes to the sea-board through interior channels in small native boats, the Chinese being able to perform water carriage at a cost, lower than would be believed by the most economical of Western people.³⁴

³¹ Edward Cunningham, in Kwang-Ching Liu, *Anglo-American Steamship Rivalry in China, 1862-1874* (Cambridge: Harvard University Press, 1962), 67.

³² Wiens, "Riverine and Coastal Junks..," 249.

³³ J.E. Spencer, "The Junks of the Yangtze," *Asia* 38 (1938): 469.

³⁴ Cunningham, *Anglo-American Steamship Rivalry*, 68.

The 1920's and 1930's saw not just the increase in steam technology in China, but the intrusion of internal combustion gasoline, and the diesel, engines and motorized vessels. These waited neither for the appropriate wind, nor the advantageous tide, and made much better time upriver. Scheduled runs became more reliable. An older pattern of trade, consisting of ships which waited on their cargo and sailed at the master's or shipping broker's convenience, and could only give approximate dates for arrival, slowly began to change to one where vessels could be much more obedient to the clock, departing and arriving on schedule, more to the merchants' and passengers' approval. In an economic setting strongly linked to seasonal sailings and the regular periods of the alternating monsoon winds, the technological step to the marine power plant could find immediate opportunities for profit.³⁵ Yet these early steam inroads seem to have been supported by reliance on relatively higher freight rates in comparison to the junk trade, and met with more resistance by the numerically superior traffic on less crucial routes.

The effect of steam technology on the junk traffic in China was not one of equal increase in all locations, but took place in an inconsistent manner. The commerce of some ports benefited, while others declined. Hong Kong, its background of foreign investment dating back to 1842, quickly saw many steamship companies and modern dockyards prosper, and the sailing trade began to fall off in the face of the steamers. Even such events as the Russian-Japanese War of 1904 failed to diminish trade at Hong Kong, as British steamers arrived to replace the commerce temporarily lost by the Japanese lines.³⁶ *Twentieth Century Impressions of Hong Kong, Shanghai, and Other Treaty Ports of China*, compiled in 1908, provide examples of the transition, a partial list of emerging businesses.

³⁵ "...There were relatively few mishaps in the junks because they did not attempt to tack against the wind or sail at unseasonable times, but simply sailed a straight course before the reliable monsoon winds. The vessels did indeed obey the rhythm of the monsoons absolutely..." Reid, "The Unthreatening Alternative..." 21.

³⁶ Arnold Wright (editor), *Twentieth Century Impressions of Hong Kong, Shanghai, and Other Treaty Ports of China: their History, People, Commerce, Industries, and Resources* (London: Lloyd's Greater Britain Publishing House Company, Ltd., 1908), 192.

Table 6: Steam Companies and Dockyards in Hong Kong

Company name:	Date in operation in Hong Kong:
Peninsular and Oriental Company	1837
Apcar Line	?
Hong Kong, Canton, and Macao Steamboat Company	1865
Hong Kong and Whampoa Dock Company	1866
China Express Company	?
Eastern and Australian Steamship Company	?
American Asiatic Steamship Company	?
North German Lloyd Steamship Company	1866
Taikoo Dockyard and Engineering Company	1867
Pacific Mail Steamship Line	1867
China Navigation Company	1867
Canadian Pacific Railway Company Line	1881
China and Manila Steamship Company	?
Indo-China Steam Navigation Company	?
China and Manila Steamship Company	?
Douglas Lapraik Steamship Company	1883
Osaka Shosen Kabushika Kaisha	1884
Nippon Yusen Kaisha Line	1885
Hong Kong and Kowloon Wharf and Godown Company	1885
Norddeutscher Lloyd Line	1885
Toyo Kisen Kaisha Line	1892
Hamburg-Amerika Line	1901
Messageries Cantonaies	1907
Java-China-Japan Line	?
Kwong River Steamers	?

British, Chinese, American, French, Japanese, German, Bombay, and other commercial transportation companies involved not only large steamships, but the inherent necessity for drydocks and repair facilities, engineering shops, cargo boats, coaling stations, railway heads, fresh water systems, depots, wharfs, breakwaters, boiler-shops, and other infrastructure. The first improvements to the physical shape of the harbor itself, the Praya Reclamation schemes, began at Hong Kong in 1851; the first lighthouses there were established in 1875.³⁷ The days of servicing all foreign vessels at the mud docks at Whampoa, run by the Chinese without European supervision, had come to an end, and newer vessels necessitated major upgrades in facilities.

A certain amount of friction accompanied such shifts in the maritime scene at Treaty Ports. Local Chinese sailors finding employment as cargo boat operators often protested

against increasing regulations and taxes. Labor strikes in 1862 and 1884 and even blockades of the harbor marked the tension during the transition from the patterns of sailing trade and steamship operations. Hong Kong exemplified the greatest amount of such change.

But it was not the advantages offered by Kowloon for the establishment of a depot of this class which...gave promise of success to the Wharf Company, but rather the intolerable exactions of the Chinese coolie hongs and the boat people, and the delays occasioned to European traders by their antiquated methods of handling cargo. Often seven or eight days were wasted through these methods, and the advent of a European-managed concern was welcomed by the community as a means of escape from such vexations. Faced with competition, the Chinese changed their tactics, and an endless struggle ensued between the rival interests. The coolies, tallymen, and boat people would not work so well for the Company as they worked for their own countrymen; and when, as their business extended, the Company needed additional lighters, the Chinese, without reason or justification, gradually raised their charges from \$4 a load to \$15, and the Company were obliged to build their own fleet of lighters.³⁷

The ports of Xiamen and Fuzhou, compared to Hong Kong, saw much less transition to the steamship lines. The well-situated deep-water port of Xiamen, known to local speakers as Amoy, suffered from economic competition with Taiwan and the decline of the tea trade. And "as tea went, so did sugar...the local sugar was killed by the superior article prepared and grown under modern scientific methods in Java...the Amoy of today is thus a shadow of its former self."³⁸ Likewise, the tea trade declined in Fuzhou. The imposition of maritime technology could, thus, spur infrastructure in some places and at the same time play a role in the decline of others. Amidst this change, sailing junks found fewer niches in which to compete, yet they continued to be a factor of major significance through World War II.

Even with the increasing modernization of maritime transportation, certain roles for junks continued to remain strong. T'ang Hsiung-chieh, in *Examination of the Process of Grain Transport in the Provinces of Anhwei, Kiangsu, Chekiang, and Kiangsi*, holds that:

³⁷ Ibid, 194.

³⁸ Ibid, 200.

In the present scientific age, despite the fact that means of transport are daily improving and old-fashioned means are being overwhelmed by the new, the state of grain transport in the four provinces of Anhwei, Kiangsu, Chekiang, and Kiangsi is quite the opposite. Not only are the old-fashioned junks not being overwhelmed, they are actually strengthening their position.⁴⁰

"[E]conomies must, to a greater or lesser extent, go through a phase in which various levels of technology and various methods of operation are found side by side, sometimes in harmony and sometimes in conflict."⁴¹ Competition between junks and motorized ships took place in a great variety of settings on an uneven playing field, and junks were not always the immediate losers, for the variety of reasons hinted at above.

Chinese sailors had experience with steam vessels from another perspective as well. As a kind of parallel development to the rare Chinese junks crossing the ocean, Chinese crews were boarding steam ships and working their way across the ocean. Eventually, the majority of the crews on the Pacific Mail Steamship Line and the Canadian Oceanic Line were Chinese sailors contracted in Canton and Shanghai at half the price of their American or Canadian counterparts. Documents infrequently cite transpacific junks being contacted mid-ocean by steam passenger or cargo liners, and it is, invariably, the captain's reaction recorded, if at all. What the Chinese crews, the deckhands, engine crews, firemen (stokers), cooks, and stewards, thought about such random meetings at sea between junks and steamships remains unknown. The large number of Chinese crewmen on Pacific steamships represented a threat to organized labor, and suffered from the anti-Chinese agitation on the west coast. Eventually labor unions were successful in curtailing ship owners from contracting Chinese crews, adding significant restrictions within such things as the La Follette Seaman's Act of 1915.⁴²

³⁹ Ibid, 820.

⁴⁰ Koizumi Teizo, "Operation of Chinese Junks," in Watson, *Transport in Transition...*, 2.

⁴¹ Ibid, iv.

⁴² Robert J. Schwendinger, "Chinese Sailors, America's Invisible Merchant Marine 1876-1905," in *California History* 57, no.1 (1978): 58-70; and *Ocean of Bitter Dreams: Maritime Relations between China and the West* (Tucson: Westernlore Publishing, 1988).

As a sign of this traffic, most of the junks headed east were reported days, if not weeks, in advance of their arrival. News came from the number of busy steamships making their way between ports. Passengers and officers of the steam liners, often incredulous, had the time to stop and offer food and assistance to the small sailing vessels. Not all the encounters between the future and the past were so amiable. Though there are very few studies which include targeted statistical analysis of certain types of collisions at sea, many slow-moving sailing vessels, especially fishing vessels immobilized by deployed nets, were run down by steamers not only in the Pacific but world-wide. Merely the wake created by large river steamers could and did capsize many low-built river junks.

Mariners Previously in the Pacific

These steamships with their Chinese crews, and this selection of ten voyaging junks, had been preceded into certain parts of the Pacific Ocean by yet other Chinese mariners. Guam and the Mariana Islands possess what may be the earliest traces of Chinese sailing navigation into the Pacific. When Father Sanvitores' Spanish mission landed at Guam in 1668, they encountered the stories of two survivors of the wreck of the *Senora de la Concepcion*, a galleon that had run onto the reefs of Saipan in 1638. One was the Spanish survivor on Guam called Pedro, the other was a Chinese blacksmith who had taken up residency on Saipan, the first Chinese known to have lived in the Northern Marianas, the earliest recorded Chinese beachcomber in the Pacific.⁴³ The blacksmith, however, was not the only Chinese in the area. One of the Jesuit priests recorded the details of a Chinese trader known as Choco, who had been voyaging between Manila and Ternate in his junk and blown off course in about 1648 to Saipan.⁴⁴ Years later, after establishing a family, Choco relocated to Guam, where he eventually became the nemesis of Father Sanvitores. Attempts to successfully convert Choco, a.k.a. Ignacio, ultimately failed. Perhaps memories

⁴³ Dirk Anthony Ballendorf, "The Chinese as Pacific Explorers," *Asian-Pacific Culture Quarterly* 17, no. 2 (1989): 78.

⁴⁴ *Ibid.*

of discrimination and massacres by the Spanish against the Chinese in the Philippines had been transplanted to Guam.⁴⁵

The story of this contact remains firmly implanted in the lore of Guam, and there is some speculation as to what type of junk, known in the records as a sampan, actually made the landing. Suggestions center around something like the Hangzhou Bay trader, a northern-style junk from the 19th century, but apparently similar in decoration and design to the vessel which brought Choco to the Marianas.⁴⁶ A model was donated for display to the University of Guam in 1988, making that university the first in the Pacific to commemorate the early Chinese presence in the Mariana Islands. The implications of such contact are intriguing. If Chinese ships in local waters were cast into the Mariana Islands by typhoons in the 17th century, why not in the 16th? the 15th? Such speculation, though, is always most useful in formulating more questions rather than providing any answers.

Other clues suggest even earlier Asian maritime activity in the Pacific. Chinese sailors, perhaps from shipwrecked vessels blown off-course, are said to have possibly improved irrigation methods of taro cultivation in Tonga and Samoa.⁴⁷ An endemic method in bark cloth manufacture on the island of Futuna has, likewise, been attributed by some to Chinese mariners.⁴⁸ One article, based on circumstantial evidence, argues that traces of an endemic Chinese system of divination using the Daoist trigrams and a complex mathematical selection process can be found in Micronesia, specifically on the Caroline Islands of Chuuk, Yap, Ulithi, and Puluwat.⁴⁹ Another draws similarities between the Tangaloa cult of Samoa and Tonga and Chinese seafarers.

⁴⁵ Robert F. Rogers, *Destiny's Landfall: a History of Guam* (Honolulu: University of Hawaii Press, 1995), 49. Rogers repeatedly in the text calls Choco "the Chinaman," hopefully this is a reflection of the historic record and not a casual reference.

⁴⁶ Ballendorf, "Pacific Explorers..." 79. Exactly why a 19th century junk should be similar to a 17th century junk remains unclear. Regarding the definition of sampan and junk...the Chinese junk trade to the Philippines was known locally as the sampan trade.

⁴⁷ Robert Langdon, "Castaways," in *The Cambridge History of the Pacific Islanders*, Donald Denoon et al editors (Cambridge: Cambridge University Press, 1997), 71.

⁴⁸ Ibid.

Gradually, as the search proceeded, it became evident that in many general and specific cultural and physical traits the Tangaloa-Polynesians exhibited Chinese characteristics. Investigation of the name Tangalo revealed the fact that this word is applied to the river population of southern China, spelt in redaction Tan-kah-lo, meaning people (*lo*) of the egg (*tan*) family (*kah*). The discovery of this correspondence in names and in cultural traits led to the conclusion that a group of seafaring Chinese, whose religion combined the strictly Chinese worship and philosophy with Buddhism, came into Polynesia...⁵⁰

Research from the 1920s and later explaining Pacific cultures in terms of diffusion from Old World civilizations are usually seen in a more critical light these days, for the assumptions of cultural features being adopted from outside influence frequently harbor a subtle colonialist and imperialist spirit. The possibilities of Chinese contact in the Pacific, nonetheless, remain interesting.

By the time the vessels in this study had begun crossing to North America, at least one Chinese shipwright was already plying his trade in the Pacific. The Chinese merchant Lee Tam Tuck, known locally as Uncle Ah Tam, had previously established himself as an independent shipwright and merchant on Matupit island of New Britain. He worked alongside the German colonial setting, serving as a conduit for migrant southern Chinese in search of labor overseas. Many Chinese worked at Ah Tam's shipyard before moving on and finding work with the German companies or branching out and becoming independent traders.⁵¹ By 1910, Ah Tam's empire included a wholesale and retail store, one hotel, several plantations, a gambling den, a brothel, an opium house, and two shipyards, another part to the historical context of Chinese maritime activity in the Pacific.⁵²

⁴⁹William A Lessa, "Chinese Trigrams in Micronesia," *Journal of American Folklore* 82 (1969): 356.

⁵⁰E.S. Craighill Handy, "Polynesian Religion," *Bernice P. Bishop Museum Bulletin* #34 Honolulu, 1927), 325. *Tan Kah*, or *Danjia*, refers to the *shuiren* or boat people, those who continually kept chickens on board their vessels, paid their taxes in eggs, etc.

⁵¹David Y.H. Wu, *The Chinese in Papua New Guinea: 1880-1980* (Hong Kong: Chinese University Press, 1982), 21. Annual reports reflect a rise in the number of boats for the year 1900-01, due to "a Chinese in Matupit who builds largely within the Protectorate." A Chinese ship-building company in the 1930's would carry on in Ah Tam's wake, providing vessels for the New Guinea coastal trades (37).

⁵²*Ibid*, 52.

Chinese shipwrights also built and operated junks on the beaches near Darwin, Australia. These were used in the lumber trade in the late 19th and early 20th centuries.⁵³ The annual reports of the Government of the Northern Territory include some brief information on their registration and tonnages, but it is still unclear whether these junks, or those from Ah Tam's shipyards, reflect specific regional designs from China. In all likelihood, such craft resembled the designs familiar to the home villages (*xiang*) of the immigrants abroad, as the fishing junks built in California in the 19th century clearly confirm.⁵⁴ These episodes are, however, suspect cases of junks sailing into, and not across, the Pacific.

Chinese Ships and Sailors in the "New" World

These 10 examples of historic Chinese junks may not be the first vessels to have tried the entire journey across the ocean. The saga of Chinese vessels braving the Pacific has a long and interesting history. "History" can be the correct term here if we include within that term healthy doses of speculation on thin evidence. Others have researched the topic, and in fact others have attempted experimental voyages on craft of ancient design in order to add weight to their theories.

Though at this point it consists mainly of reasoned speculation, there is a history of investigation into Chinese transpacific crossings that stretches back far beyond the scope of this study into speculation of Shang dynasty voyages. The topic has, understandably, become a feature of diffusion-style studies.⁵⁵ Betty J. Meggers, in "TransPacific Origin of MesoAmerican Civilization: a Preliminary Review of the Evidence and its Theoretical

⁵³ Nick Burningham, Duyfken 1606 Replica Foundation, personal communication with author, 14 July 1998.

⁵⁴ Muir, *One Old Junk is Everyone's Treasure*.

⁵⁵ Stan Steiner, *Fusang: the Chinese who Built America* (New York: Harper and Row, 1979) presents one of the most accessible overviews of the 19th century obsession with transpacific diffusion, though "few now practice such 19th c intellectual adventurism." Ben J. Wallace and William M. Hurley, "Transpacific Contacts: a Selected Annotated Bibliography," *Asian Perspectives* 11 (1968): 157-175, also summarize a large portion of this trend. Such early contact has been the focus of several public collections, such as the "Across the Pacific" exhibition in New York at the American Museum of Natural History in 1949, which, as anthropologist Robert Heine-Geldern expressed it, made the probability of very early cultural

Implications," highlights a number of interesting similarities between the Shang dynasty in Asia and the Olmec tradition in central America.⁵⁶ The use of jade, ceremonial batons, square earth platforms oriented north-south, and a number of other similarities, raise questions which Meggers feels have gone unanswered not for a lack of evidence, but for modern scholars' limited ability to form hypothesis outside the boundaries of conventional investigation. She states that, in general, terrestrial scholars habitually regard the sea as a barrier, rather than a line of communication. Here Meggers stands in agreement with Asian scholar Timothy Brook, who critiques the same ocean-as-a-barrier paradigm. Brook goes so far as to place a substantial part of this paradigm at the foot of John K. Fairbank's original outline in his many influential works.⁵⁷ Furthermore, specific to this argument of ancient diffusion, significant linguistic barriers exist between East and West, hampering the investigation of many such subjects that attempt to straddle the Pacific.

Noted Asianist Joseph Needham himself, along with his colleague Lu Gwei-Djen, in *Trans-Pacific Echoes and Resonances: Listening Once Again*, carries this investigation into very early transpacific communication further, adding a number of carefully researched threads to the discussion.⁵⁸ Comparisons involving the use of jade, city structures, artistic motifs, games such as *pachisi*, the *quipo* mnemonic tool, ziggurat/pyramid/mound/temple complexes, etc. are set forth as a collection of circumstantial evidence suggesting not colonization from Asia, but relatively minor contact and the diffusion of a few technological and cultural traits. Both Needham and Lu express their distaste for suggestions which would seem to denigrate indigenous achievements, a fine point for those doing diffusion studies in

contact between East Asia and America "an acceptable subject for research." Knobl, *Tai Ki: To the Point of No Return*, 31.

⁵⁶ Betty J. Meggers, "TransPacific Origin of MesoAmerican Civilization: a Preliminary Review of the Evidence and its Theoretical Implications," *American Anthropologist* 77, no.1(1975), 1-27.

⁵⁷ Timothy Brook, presentation at Chinese Studies Symposium "Maritime China: Culture, Commerce, and Society," University of California at Berkeley, March 13-14, 1998. Such subtle yet influential anti-maritime paradigms may have limited regional and transcultural maritime research.

⁵⁸ Joseph Needham and Gwei-Djen Lu, *Trans-Pacific Echoes and Resonances : Listening Once Again* (Singapore, Philadelphia: World Scientific, 1985).

a post colonial setting. They also find the available technology at the time, alleged voyages from the 3rd century B.C. to the 5th century A.D., would have been quite sufficient in completing the crossing. In this case, lug sail rigs and bamboo rafts were the tools, the design descendants of which still ply the waters both in Southeast Asia and Peru.⁵⁹

This is not to suggest that anyone who has attempted to recreate these ancient voyages has been successful, for there have been two attempts and two failures in "experimental archaeology" along these lines. Kurt Knobl and an enterprising group of German/Danish/English/Austrian voyagers, in 1972, constructed what was, according to them, a replica of an ancient Chinese Pacific voyaging junk. The *Tai Ki*, as it was known, was roughly based on a clay model of a junk discovered in a Han dynasty tomb near Canton in 1952. Comparing this *Tai Ki* to more recent information on Chinese junks, as well as the multitude of junk designs that existed until very recently in China, it becomes apparent that the Han dynasty model was probably a riverine vessel, not meant for operation on the high seas. Indeed, no mast or mast step is even evident in the model. Did the project fail due to a lack of understanding of Chinese junk designs? This was undoubtedly a factor. The book, *Tai Ki: To the Point of No Return*, aptly sums up the ultimate fate of the experiment. About halfway across the Pacific, on the "express route" at latitude 40 degrees north, the vessel, rudder already broken and threatening to capsize, began to disintegrate and take on water. The crew was rescued by a passing freighter.

Maritime ethnographer Tim Severin based his 1992 recreation attempt on a sailing raft rather than a plank-built junk. The *Hsu-Fu* was constructed out of giant bamboo in Vietnam, where fishermen still make the type of sailing rafts once used around Taiwan and Southeast Asia. Following the Kuroshio current from Hong Kong to Taiwan to Tokyo, the raft turned to the east around latitude 40 degrees north. This voyage, too, ended mid-ocean, approximately 1000 miles west of Mendocino county, California, as the organic lashing

⁵⁹ For South American evidence, see Clinton R. Edwards, "Sailing Rafts of Sechura: History and Problems of Origin," *Southwestern Journal of Anthropology* 16 no.3 (1960): 368; for Southeast Asian information, Tim Severin, *The China Voyage: Across the Pacific by Bamboo Raft* (New York: Addison-Wesley, 1994).

holding the many poles together came apart faster than the intrepid crew could repair them.⁶⁰ Fortunately the experiment included radio and satellite navigation, and the container ship *California Galaxy* rescued the team.

The archaeological component of this line of speculation consists of investigations surrounding the "anchor stones" off of the Palos Verde peninsula in Los Angeles county, California. First described in 1972, divers reported numerous carved stones, some with holes drilled for anchor cables, scattered on the seabed in 30 to 60 feet of water.⁶¹ While some archaeologists continue to hold that these confirm ancient contact from China, these stones resemble simple and expedient anchors used by numerous cultures, including the Arabian stone anchors found in the Red Sea. Furthermore, the site at Palos Verde, known in the more recent past as Portuguese Bend, featured at one time a shore whaling station, and such anchors may have been used to moor the whale boats or the whales themselves. Still, the rocks, which now rest in the parking lot of a local dive shop, have achieved a certain amount of fame, and images of ancient Chinese junks sinking beneath the waves can be found on local tourist posters.

For over two and one-half centuries, beginning in the 1560s, the Manila galleon trade between the Philippines and Acapulco ferried the wealth of the Americans to the east, and the goods of status and privilege across the Isthmus of Panama and to the Spanish Main. Though migration is often overlooked in these histories, this trade brought Asian voyagers to the "New" World long before the English Puritans landed at Plymouth Rock in 1620. The Chinese were among the founding fathers of the city of Los Angeles. In fact, "so many Chinese had crossed the ocean by 1635 that the Spanish barbers of Mexico City had petitioned the Municipal Council to protest the competition of Chinese barbers in the capital."⁶² And, though it is commonly assumed that the Spanish built and operated typical

⁶⁰ Tim Severin, *The China Voyage: Across the Pacific by Bamboo Raft* (New York: Addison-Wesley Publishing Company, 1994), 313.

⁶¹ Larry J. Pierson and James R. Moriarty III, "New Evidence of Asiatic Shipwrecks off the California Coast," *Underwater Archaeology: the Challenge Before Us* (California: Fathom Eight, 1981), 89.

⁶² Steiner, *Fusang, the Chinese who Built America*, 81.

Spanish galleons in the early Manila-Acapulco trade, there is almost no documentation of any kind which accurately describes the vessels used. Many of these ships were, after all, built in the dockyards of Cavite by Asian craftsmen and referred to as *Naos de China* or China Ships. The galleons were distinguishable by their very large capacities, loftiness and extremely high-ended "half-moon" sheer, and unusual width.⁶³ Though this aspect of the Manila galleon trade, the actual construction of these Pacific vessels, is steeped in speculation, Stan Steiner, in *Fusang, the Chinese who Built America*, classifies the galleons along the lines of Chinese junks.

Ships from Europe were pitifully small on the vast expanses of the Pacific. They had neither the cargo space nor the weight for a journey across an ocean that was twice the width of the Atlantic, a voyage that could last as long as six months. Nor were they designed to survive the peculiar furies of monsoons and typhoons upon those treacherous and unfamiliar seas. And so the Spanish had decided to have native artisans build ships native to those seas. The shipbuilders came from China, mostly from Canton. In using their centuries-old experience in ship construction and their deep-sea knowledge, the Chinese redesigned the Spanish galleons and adapted them to the styles of the majestic seagoing junks of the Ming dynasty.

In the large shipyards of Cavite on Manila Bay in the Philippines, these great galleons were entirely built by Malayan and Chinese shipbuilders...Some of the galleons weighed in excess of two thousand tons, an unheard of tonnage at that time, ten times the weight of Columbus' flag ship. The designing of the ships was done almost wholly by Chinese ships' engineers and architects. The hulls were built by Chinese carpenters. And the metalwork and casting of cannon were done by Chinese smiths. Even the elaborate designs on Spanish baroque themes were done by Chinese artists.

No wonder the graceful crescent-shaped hulls and the huge cargo holds of the Manila galleons resembled the seagoing junks of the Ming dynasty as much as they did the many-oared galleasses of the Mediterranean for which they were named. They were more Chinese than European.⁶⁴

There is not much firm evidence with which to back up Steiner's descriptions, though it is certainly possible that some overseas galleon construction resembled, in certain ways, Chinese junks. It's most likely that Pacific galleons were essentially European-designed

⁶³ William Lytle Schurz, *The Manila Galleon* (New York: E.P. Dutton and Company, Inc., 1939), 195. These galleons had also been constructed both in Siam and Japan.

⁶⁴ Steiner, *Fusang*, 81-2. It's not clear how Steiner knows what Ming Dynasty vessels looked like.

vessels with minor Asian influences, and Steiner's comparisons are of a general nature only. After all, the basic foundations of galleon and junk construction differ in major ways.

Images from later centuries are popularly, and erroneously, used to depict the undocumented vessels in the very early Manila-Acapulco trade. Archaeological investigations of wreck sites in the Pacific yield more information on the cargo, and certainly gain more notoriety by intentionally featuring the bullion and ceramic treasures, than they do the often more perishable wooden ship structure itself. The question of the Asian origins of the Manila galleons tests the limits of nationalist-type histories, in this case Spanish, set within the transnational Pacific ocean. Again the question is raised of what exactly is a European ship and what is a Chinese ship. The topic of Manila galleons also tests the limits of good archaeological work in the Pacific.⁶⁵

Closer in time to the confirmed 20th century voyages, there are interesting but infrequent indications that Chinese junks made landfall on the California coast as early as 1849. Albert Lyman's journal records witnessing the arrival of a large Chinese junk in San Francisco on August 27, 1849.

A Chinese junk came to port yesterday and anchored a little ahead of us. Her sails are made of matting, and altogether she is a singular and queer-looking craft. Her China men on board seem to be quite active sailors.⁶⁶

Unfortunately, no further references to this rare incident have been discovered. The Spanish in the New World, though, did think it was necessary to intentionally adopt a policy discouraging anyone else, including the Chinese, from conducting transpacific trade and threatening the Spanish monopoly. The leading citizens of Manila drew up such a memorial in 1586.⁶⁷

⁶⁵ Currently, Jinky Smalley of East Carolina University's Maritime Studies Program is working on a thesis investigating Asian shipbuilding influences in Manila galleons.

⁶⁶ Albert Lyman excerpt August 28, 1849, cited in William Camp, *San Francisco: Port of Gold* (Garden City, New York: Doubleday, 1947), 259. Camp dryly notes "at least one of these queer-looking craft reached here..."

⁶⁷ Schurz, *Manila Galleon*, 301.

Researcher Sandy Lydon, author of *Chinese Gold: the Chinese in the Monterey Region*, is currently working on the case of the mid-19th century arrival of junks from the Pearl River delta area.⁶⁸ Descendants of these Chinese migrants, today living in Mendocino county California, recall the oral tradition of several families setting out on five junks. Lydon has gathered similar oral accounts regarding Chinese Pacific-voyaging vessels from multiple sources.

They seem to originate in Hong Kong—purchased there perhaps—and then they went to Manila to, as one of the descendants put it, "learn how to sail" as they were really farmers. Then, from Manila across the northern Pacific heading for SF and the Gold Mountain—missed and were carried by the northwesterlies down to coast of Baja. Two were lost in the crossing, and the remaining three refit on the Mexican coast and then began the arduous sail north to SF. Stop at San Diego for a time, and then continue north—two more junks are lost along the coast—possibly off the Big Sur coast and the last one wrecks on the beach at the mouth of the Carmel River. They are rescued by the Indians, nursed back to health and then move over to Point Lobos where they establish a small fishing colony.⁶⁹

Oral accounts in the records of the Chinese Historical Society of America allude to similar events in the past.

As a case in point, a story written by Mr. H.K. Wong in our January 15 1966 booklet carried a paragraph about a sampan which arrived at Caspar beach, near Mendocino, in 1852. A local post office employee saw the article, investigated, and informed us that he had written about his grandfather. The grand son is now a member of the Society...Apparently the men whose grandfather came to Mendocino were Charley and George Hee. Their grandfather left China in a sampan, one of eight vessels which sailed together for America in 1852. Six of the vessels were lost at sea, one beached a Monterey. The eighth, their grandfather's 20-footer, landed at Caspar beach, four miles north of Mendocino. Apparently the wood from the sampan was used by the group of eight pioneers to build the temple on Albion street, Mendocino.⁷⁰

And then, of course, there is the previously mentioned legend of the Chinese war junk fleet landing at Monterey in 1870 (see Halliburton and *Sea Dragon*). Few if any other

⁶⁸ Sandy Lydon, *Chinese Gold: the Chinese in the Monterey Region* (Santa Cruz: Capitola Book Company, 1985).

⁶⁹ Sandy Lydon, personal communication with the author, 29 July 2000.

records exist of isolated landings such as these, nor does the generic term "sampan" offer much by way of description, though the recorded length seems miniscule indeed compared to the Pacific voyage. Is this description merely a different version of the previous story of five sampans crossing the Pacific? Perhaps, but it also does not serve to make matters clearer that multiple wrecks on the rugged Pacific northwest coastline are all referred to as "China" ships, including European vessels bound for or returning from East Asia with silks or porcelains.

Surreptitious landings in remote locations, strandings, and wrecks, often escaped the notice of harbor record keepers along the west coast. No such junk arrivals as those mentioned above appear in customs documents for the official port of entry, San Francisco, for this period. Yet there exist further intriguing clues to this story. Archaeologists continue to find Chinese coins, predominantly from the Kangxi and Qianlong reign periods of the Qing dynasty, at Native American habitation sites in the Pacific Northwest.⁷¹ Judging from the context of the finds from two locations and their mint dates, these coins were being traded well prior to 1830. Some and perhaps all of these coins may be attributable to the active European fur trade between China and the northwest coast. European vessels, after all, had engaged Chinese shipwrights and sailors as early as 1788 for work in places like Nootka Sound, Vancouver Island.⁷² But some of these coins allegedly came from yet another mysterious shipwreck off the Oregon coastline, always assumed to be Spanish, yet with no other evidence indicating possible origin.⁷³

Such are the outlines of the more interesting trends in speculation, but are such voyages even feasible? The logistical possibility of such voyages, the chances that small wooden sailing vessels could cross the Pacific in a relatively short amount of time, is

⁷⁰ Anon, *Bulletin of the Chinese Historical Society of America*, 1:2(1966): 3; Linda Bentz, Los Angeles county researcher, personal communication with author, 21 January 2001.

⁷¹ Herbert K. Beals, "Chinese Coins in Six Northwestern Aboriginal Sites," *Historical Archaeology* 14 (1980): 58.

⁷² 1788 is the first known contact on the northwest coast with the Chinese. See Hubert Howe Bancroft, *History of the Northwest Coast* vol.1 (San Francisco: A.L. Bancroft and Company, 1884).

supported not by just the multiple arrivals of junks in this study. Whether survivors were on board or not, whether under steerage or adrift, other vessels arrived in one piece on the West Coast. Charles Walcott Brooks records, among the 60 cases of vessels lost throughout the Pacific, at least one dozen Japanese sailing junks cast by accident onto the northern and central American coastline.⁷⁴ Interestingly, though, "every junk found adrift or stranded on the coast of North America, or in the Hawaiian or adjacent islands, has on examination proved to be Japanese, and no single instance of any Chinese vessel has ever been reported, nor is any believed to have existed."⁷⁵ Katherine Plummer and Evelyn Iritani, in *The Shogun's Reluctant Ambassadors: Japanese Sea Drifters in the North Pacific and An Ocean Between Us*, have both contributed to this intriguing story of the Japanese Pacific crossings.⁷⁶

The late 19th and early 20th centuries on the west coast of North America were a period of increasing migration to America, driven by the period of significant social and political upheaval in Asia and the lure of gold in the California foothills. Ironically, in the years following the completion of the Statue of Liberty in New York harbor, Chinese migrants faced America's first race-based exclusion laws, banning them from entry to the western hemisphere.⁷⁷ This period of anti-Chinese agitation coincides for the most part with the arrival of the Chinese sailing junks. Perhaps as a function of this timing, in each case the attentions attendant upon these foreign vessels goes to the American owners of the Chinese vessels and not the crews, some of which did include Chinese sailors.

The manner in which anti-Chinese hysteria influenced the nature of the arrival for the Chinese sailors and the Chinese junks obviously involves a number of complex

⁷³ James A. Gibbs, *Shipwrecks of the Pacific Coast* (Portland: Binford and Mort Publishing, 1957).

⁷⁴ Brooks, "Report of Japanese Vessels," 50.

⁷⁵ Ibid.

⁷⁶ Katherine Plummer, *The Shogun's Reluctant Ambassadors: Japanese Sea Drifters in the North Pacific* (Portland: Oregon Historical Society Press, 1967); and Evelyn Iritani, *An Ocean Between Us* (New York: William Morrow and Company Inc., 1994).

⁷⁷ See Jack Chen, *The Chinese of America: from the Beginnings to the Present* (San Francisco: Harper and Row, 1981).

relationships, shaping the early 20th century receptions in a number of ways.⁷⁸ The reactions of Chinese crew members, having just crossed the largest ocean in the world, remain unrecorded. They do not just vanish from the record, they never made the record in the first place. And understandably so, for violent anti-Chinese riots broke out across the American West during this period. For the early junks of this sample, it must be the European sailors who act as spokesmen. Yet, while the majority of Asians were unwelcome on the west coast during this period, Chinese culture in the form of the junks did make public appearances as artifacts within the grander exhibition of cultural and technological progress. American attitudes towards China and the Chinese, often expressed as part of the reactions to the Chinese junks themselves, are the topic of the following chapter.

The Age of the Expositions: Junks on Display

This period from the mid-19th to mid 20th century coincides with what has been called the classic age of the International Expositions. The progenitor of these massive displays took place in London in 1851. The affair was known as the Great Exhibition of the Works of Industry of All Nations, alternatively as the Crystal Palace Exhibition. Some 80 fairs and exhibitions took place in various locations, even China, during the following century, and these have received much scholarly attention as fertile ground for the study of nation-building, social and political histories, and especially ethnographic studies.⁷⁹ In the wave of a type of anthropological imperialism, not just curious objects, but native peoples were sometimes displayed as living museum pieces.

[S]everal individuals...joined forces and organized a firm called the International Anthropological Exhibit Company for the purpose of exhibiting Filipinos around the country...It would be my idea to arrange for their stay in this country for about two years, exhibiting them at the Portland exhibition, at Coney Island, or other amusement centers, and at the larger State Fairs."⁸⁰

⁷⁸ Junk *Amoy* supposedly masked the fact that the crew members on board were Chinese; likewise the junk *Ning Po* on arrival in California. The junk *Free China*'s arrival in 1955 escaped the more notorious reactions of the earlier decades.

⁷⁹ John E. Findling, (ed.) *Historical Dictionary of World's Fairs and Expositions, 1851-1988* (New York: Greenwood Press, 1990).

⁸⁰ Robert W. Rydell, *All the World's a Fair: Visions of Empire at American International Expositions, 1876-1916* (Chicago: University of Chicago Press, 1984), 194.

Five of these large-scale events play some sort of role with the Chinese junks: the Panama Pacific International Exhibition, San Francisco 1915; the Panama California Exposition, San Diego 1915-1916; the Century of Progress Exposition, Chicago 1933-34; the Golden Gate International Exhibition, San Francisco 1939-40; and the New York World's Fair, New York 1939. Most of these fairs featured only traces of the junks, rather than complete vessels; in one case, Chicago 1933-34, the only connection with the foreign vessel, in this case the *Ning Po*, was a display of carvings and statues made from timbers stolen from the aging wreck.⁸¹

Chinese junks either attended these fairs, or were making their way to them, with varying levels of success. These expositions generally feature more heavily in the plans of the junk owners, rather than in the display of the junks themselves. But junks of a type had already been placed on display for the American public. Junk models had made their debut in America earlier than the arrivals of any of the Pacific vessels. The collection now housed at the National Maritime Museum at Antwerp was on display at the St. Louis world fair in 1904.

⁸¹ Hampton, "Saga...", 25.



Figure 133: The small sails of junk models, visible behind the other furniture, in the Chinese exhibit hall at St. Louis, 1904. (Johnson, Shaky Ships, 35)

Though the plans for the junk *Whang Ho* included the Lewis and Clark Exposition of 1905, due to delays the junk failed to make it to Portland in time for the event, arriving on the west coast in 1906. Entrepreneur and entertainer W.M. Milne had, in all likelihood, attempted to make the schedule for the event, hailed as the "Lewis and Clark Centennial and American Exposition and Oriental Fair," for the promise of audience and profit. The official nature of the war junk led to delays involving the Chinese government.⁸² Ironically, the fair itself emphasized Portland's Asian trade connections and the potential for soon shortening the historically distant routes to the commercial markets of Japan and China.

In a similar manner, the Panama Pacific Exposition was the target for the junk *Ning Po*, which had aged and deteriorated to such a condition as to be unable to sustain the rough voyage under tow from San Pedro to San Francisco Bay. The *Ning Po*, already in Southern California, made the detour back to San Diego for the smaller Panama California

⁸² "Curious Vessel...", 51.

Exposition.⁸³ Events such as these contributed to city coffers and gave a boost to local industry. In San Diego's case, as the first major port-of-call for vessels passing westward through the Panama Canal, the international connections of the Pacific Rim harbor were a featured theme.

Richard Halliburton directed the entire effort behind the construction and voyage of the *Sea Dragon* towards making it to the Golden Gate International Exposition, an event held on Treasure Island in celebration of the Golden Gate and San Francisco-Oakland Bay bridges in 1939. Like the earlier expositions in 1905 and 1915, the 1939 event featured themes incorporating both oriental and occidental motifs and ideas. Exposition promoters had contacted Halliburton as early as July, 1936 with the suggestion for the project. In other words, the planners, in this case, convinced the adventurer himself to procure a junk for commercial purposes, rather than the other way around. Chinese businessmen stood as sponsors behind the fair's agents, and all three parties met repeatedly to make plans for the participation of the scheduled junk in the event. Halliburton, of course, was convinced that the junk would be "the most exciting concession at the Fair."⁸⁴ What the managers did with Halliburton's unused berth at Treasure Island after he failed to show up remains unknown.

Though W.M. Milne publicly expressed his intentions to eventually take both the *Whang Ho* and the *Ning Po* through the Panama Canal and up the eastern seaboard, the only two junks to actually make this trip were the *Mon Lei* and the *Amoy*. The *Amoy* made New York harbor at the time of the World Fair, and the *Mon Lei*, owned by Robert Ripley, reached the eastern seaboard in 1938, though it is not known if either vessel definitely played a part in the official fair concessions.

Keying the Progenitor

Whether or not the junks actually made it to these grand events on time, the expositions did act as an enticement for the vessel owners. And Chinese junks as

⁸³ Nineteen million people visited the San Francisco event; 3.5 million attended the regional exposition in San Diego.

⁸⁴ Halliburton, *Richard Halliburton*, 399.

attractions at these kinds of events were definitely not without precedent. The large Fujian pole-junk *Keying*, which appeared at the first Great Exposition in London in 1851 and received much publicity, probably represents the earliest and certainly most celebrated Chinese ship to appear in Europe. The large vessel and its 30-man Chinese crew actually initially arrived several years earlier, landing at the Thames wharf in the spring of 1848, where the crew performed their pike and shield military exercise for the Duke of Wellington.⁸⁵

The *Keying* made it to London by way of New York, after having survived a hurricane while rounding the Cape of Good Hope. The junk's crew, claiming in essence that they had been "shanghaied" or kidnapped from their intended journey to Batavia and Singapore, sued for wages, and the owners of the *Keying* were ordered by the court to sell the vessel and recompense the crew.⁸⁶ How the results of this ruling led, apparently, to the same Chinese crew arriving in London the following year and displaying the junk at the Great Exposition is unexplained. Though the vessel never sailed in the Pacific, the commercial potential of its voyage could not have gone unnoticed by the west coast American entrepreneurs, as witnessed by their several later junk commercial ventures.

The vessel, essentially stolen from Chinese waters, played an interesting informal role in the 1851 Exposition. Though the Chinese government had been officially invited to the event, the Qing ruler had seen fit to decline, and the unused space at the fair was partially taken over by the *Keying* concession. The junk and the crew, inadvertently or otherwise, became at that moment China's impromptu and unauthorized ambassadors. China would not make an official appearance at world expositions until the St. Louis world's fair in 1904.⁸⁷ For the Missouri exposition, the nephew of the last ruling Manchu emperor and his entourage were ushered courteously across the country, while at the same time other Chinese travelers, attempting to enter the country, were being detained in cages in San

⁸⁵ Altick, *Shows of London*, 255.

⁸⁶ *Times*, July 10th and October 15th, 1847, in Altick, *Shows of London*, 294.

⁸⁷ Irene E. Cortinovis, "China at the St. Louis World's Fair," *Missouri Historical Review* 72, no.1 (1977): 59.

Francisco. The social context for junks of exhibitions and museums has a great deal to do with the way such things were and are perceived by the public, and is dealt with in the following chapter.

Contemporary Perspective on Chinese Seafaring

This junk-type of Chinese maritime history should be understood to have significance in the modern context as well. Up until about 1820, Chinese ships carried more tonnage than any other vessels in Southeast Asia.⁸⁸ With the advent of large steam ships in the late 19th century, Chinese crews were quick to take advantage of employment opportunities in the Pacific, and soon replaced Canadian and American crews on board these vessels. Today ships are still the primary units of exchange for all nations, carrying from 90 to 95% of the world's trade goods. Today's modern commercial fleets, including the containerships regularly traveling back and forth across the Pacific Ocean, are manned chiefly by Asian sailors, up to 67% by 1987.⁸⁹ Typical complements on modern ships include a European master, Chinese officers, and mixed Asian crew.⁹⁰ And the bulk of today's largest most profitable shipping lines, such as OOC and Evergreen, fall under the control Asian companies, Taiwanese, Korean, Japanese, and Chinese owners. Six of the top ten shipping lines are based in East Asia, and China Ocean Shipping is currently the fourth largest shipper of American container cargo.⁹¹ Some of the shipping owners are descendants of well-to-do overseas Chinese merchants, themselves descended from families of merchants once dependent on junk sails and the wind, on the arrival of vessels from the China coast. In other words, Asian mariners have played, and continue to play, a large and important role in maritime transportation, and these transpacific sailing junks represent a part of that history. The continuity of Chinese maritime activity, even in the Pacific, usually goes unnoticed by most maritime experts.

⁸⁸ Reid, "The Unthreatening Alternative," 13.

⁸⁹ Clifford B. Donn, in introduction to Paul K. Chapman, *Trouble On Board: the Plight of International Seafarers* (Ithaca, New York: ILR Press, 1992), xxvi.

⁹⁰ Luc Cuyvers, *Sea Power: a Global Journey* (Annapolis: Naval Institute Press, 1993), 64-66.

⁹¹ Paine, "Global Maritime History," 137.

Andre Gunder Frank, in *Reorient: Global Economy in the Asian Age*, inverts the usual Eurocentrism with an avowedly Sinocentric flair, highlighting the Asian control of the bulk of global trade over the majority of history. Frank is not really stating something completely new in this maritime context, for other Europeans have made the same point. Marco Polo's well-known assertion in the 13th century, that China possessed more ships than the rest of the world combined, certainly provides one example, but not the only one. A Dominican friar in the 17th century, Domingo de Navarette, found the same to be true.

There are those who affirm that there are more Vessels in China than in all the rest of the known World. This will seem incredible to many Europeans, but I, who have not seen the eighth part of the Vessels in China, and have travel'd a great part of the World, do look upon it as most certain.⁹²

In Frank's view, the West has only won the regional trade competition with Asia temporarily. Gaining control of the bulk of trade in Asia only in the mid-19th century, Western shipping companies now seem to be in the process of losing the trade and transportation edge again.⁹³

Chinese sailors have played a more consistent role in regional maritime trade in the Pacific than is usually recognized in most history texts and popular books. What obstructs this story from diffusion in America and Europe? Certain historical elements, such as turmoil in East Asia, social upheaval and race riots on the West Coast of America, the long distances and dangers associated with sailing vessel technology, the anthropological imperialism often inherent in various international expositions, and others. The historical conditions surrounding these ten vessels and their trips across the Pacific influence not just what we know of the ten junks, but what we know, or don't know, about junks in general. Some of the obstacles to the investigation of the junk story are truly representative of the general barriers between East Asia and western culture in America. The *Whang Ho* and the *Ning Po* and the *Amoy* and the others, for a full interpretation, should be understood within

⁹² Dominican friar Domingo de Navarette, 1669, cited in Ronan, *Shorter Science and Civilization*, 89.

⁹³ Frank, *Reorient*, 276.

the larger historical contexts of the Pacific region. Perhaps the story of these Chinese wooden sailing vessels reflect, in some small manner, Frank's rather bold assertions of Asian trade domination? These junks which made it to the West coast represent one small part of a larger story.

CHAPTER 7

AMERICAN PUBLIC PERCEPTIONS

Judging from the public's reactions to the junks which crossed the Pacific, few people in America had the ability to appreciate the foreign vessels, few had a clear idea of nautical technology in East Asia. The common denominator which stands out among all the range of public reactions to the arrival of Chinese ships on the west coast is the general lack of understanding. Americans were faced with objects which, though the functions were familiar, all else appeared foreign and strange. Observations expressed the general opinion that such unwieldy and ancient vessels were surely the work of a people unschooled in the nautical arts. The sole exception to this general public reaction comes by way of the small group of nautical specialists who have written about Chinese junks. Though the technical and scholarly impressions have been favorable, this public situation has not changed significantly. Reactions to Chinese junks from the mid-19th to mid-20th centuries show little change in perceptions. The lack of understanding by the general population which greeted the Chinese vessels almost 100 years ago continues on into the 20th and now the 21st century as contemporary articles continue to recycle old (mis)information.

The arrival of transpacific voyaging ships of any nationality was, in the 19th century, more of a noted occasion than the nearly anonymous visit of ocean carriers today. This is particularly true of the arrival of the relatively exotic Chinese craft. The fact that many Americans on the West Coast had already experienced the sight of Chinese-built local craft does not seem to have tempered the fascination with the transpacific voyagers.¹ People were interested in these craft and in the stories of the voyages which had brought them to their shores, even though entrepreneurs might have sometimes overestimated the vessels' profitability. But the reasons for the public's interest did not seem to stimulate any real understanding of, or technological curiosity about, what they were seeing.

¹ Chinese migrants in California had, at least since the 1860s, been constructing Chinese fishing junks from local material (redwood) for commercial operation in San Francisco Bay, Monterey, Santa Barbara, and San Diego; see Robert A. Nash, "American Built Chinese

The difficulties of describing objects foreign in culture have been noted by more than a few scholars. As Anthony Pagden notes in his book, *European Encounters with the New World*, that which is unfamiliar must be cast in familiar terms.² Attributes of European society were attached, somewhat artificially, to unfamiliar cultures.

From Columbus to Humboldt the principle of attachment served to make the incommensurable seem commensurable, if only for as long as it took the observer's vision to adjust...Attachment allowed for the creation of an initial (if also sometimes troubling) familiarity. It also allowed the discoverer to make some measure of classification.³

While Pagden's context for the phenomenon of attachment consists of European voyagers placed in unfamiliar foreign contexts, the Chinese junks brought a bit of an unfamiliar world, if not to the Americans in Asia, to the general public on the West Coast of America. It represented an indirect encounter with China, with the Other, the civilization so often held as diametrically opposed to European society. Can the theory of attachment still apply? Was it possible in the case of the Chinese junks to use the familiar to describe the unfamiliar? Were they sufficiently similar to European and American sailing vessels, enough so to allow fairly accurate assessment? Apparently not. It was difficult for the public to do this for something so unlike the more familiar vessels.

For the most part, western observers simply did not have the language or indeed the will to investigate the individual junks which made it across the ocean. Notes about the transpacific junks were often, as elsewhere, expressed in terms of negation, a listing of western features that the junks did not have. Anthropologist Richard Gould, author of *Archaeology and the Social History of Ships*, noted the same phenomenon.

European observers of medieval-era Chinese ships, including Marco Polo, were characteristically impressed by their seaworthiness but at the same

Junks," *Nautical Research Journal* 4, no.7 (1952), 111-112, and "The Chinese Shrimp Fishery of California," Ph.D. diss., University of California at Los Angeles, 1973).

² Anthony Pagden, *European Encounters with the New World* (New Haven and London: Yale University Press, 1993).

³ Ibid, 36.

time described them in Eurocentric terms on the basis of what they lacked—such as keels, stemposts and sternposts, centerline rudders attached to the sternposts, and masts that were not positioned along the ship's longitudinal centerline.⁴

This may be useful in deciding what a junk is not, but gives little information on the actual object. In the case of the Chinese junks, familiar European or American measures of nautical technology, how tall the masts or how fast or how comfortable the vessel, were applied to the foreign ships, and often the junks were found wanting.

Beyond this type of confused description, though, few ever ventured. An informal visit on board and confirmation of some stereotypical conclusions about the Oriental mind was enough for the public. Several basic themes, as expressed in numerous articles published at the time, will be examined here to better understand the difficulties Americans had with these unfamiliar objects cast up on their shores.

Common Reactions to Transpacific Junks

Junks as Alien Sea Monsters

That all vessels, and particularly sailing vessels, are complex artifacts which reveal not just technical but social, economic, and even political information about their culture of origin remains a basic premise of this study. This is not the same as stating that all these various parameters will be consciously celebrated by that same culture. True, European ship owners relied on steerage passengers as their bread and butter in the transatlantic trade in the early decades of the 20th century, and the conditions in those dark holds say something about the rigid class structure of Victorian society. But the large steam liners were celebrated for their massive engines, for the speed in which they vied for the coveted Blue Riband, and not for their anthropological significance. Vessels, especially during the transition from sail to steam, were judged by European society primarily on their technological assets and limitations, as visible evidence of progress. They were that, and they were more.

⁴ Gould, *Archaeology and the Social History of Ships*, 192.

Chinese junks were evidence of late stages of sailing technology, but they were also the result of other influences. Jennifer Cushman, in *Fields from the Sea*, is the revelation that vessels were directly affected by social and economic politics. Cushman and others demonstrate that specific design features, such as the beam (width) and the style of rigging were determined by the need to conform to tax codes on the Chinese coast. This was in accord with the greater mobility and freedom from foreign surcharges enjoyed early on by domestic carriers, defined as Chinese style vessels. In short, Chinese junk designs were the result of complex historical forces, the process of which could be understood as logical within the context of Asian history.

It was clear to the public where European vessels found their origins. Ever since the infusion of scientific method into the art of naval architecture, as evidenced by the drawings of Matthew Baker in the 16th century and the application of mathematical formulae to ship design, much has been made of the relationship between the study of buoyancy and stability and the production of the efficient European sailing and fighting machine. The logic of the scientific process is a featured element in the topic of naval architecture ever since the advent of the English race-built galleons.

Rationality and science were understood as the cornerstones of this type of progress, as features which set Europeans apart from other civilizations still locked in traditions and superstitions. Thus, a civilization judged as less than rational in European terms could only produce less than rational ship designs. American and European opinions on Chinese junks contain the general view of the "organic" and random evolution of Chinese junks.⁵ Articles in modern engineering journals specifically addressing junk construction promoted this view. "The Chinaman does not experiment; it does not pay. He discovers things by accident or evolution and adopts them..."⁶ Apparently the use of the scientific method was the all critical

⁵ Junk design is frequently explained by allusions to sea monsters, akin to natural forces...see almost any article on the *Ning Po*. Indeed, one source refers to junks as products of the elements themselves; Ting, V.K. (trans.) "Things Produced by the Work of Nature," *Mariner's Mirror* 11, no.3 (1925): 234-251.

⁶ W.G. Winterburn, "The Chinese Junk," *Cassier's Magazine Engineering Illustrated* 21(1901-2): 425.

measure of technological success, whether or not the innovation proved worthy. If a foreign culture had not been "granted" the comprehension of the scientific method by outside observers, then all its innovations had to be mere accidents.

Chinese junks, in this light, are not so much designed as discovered. Sources repeatedly refer to them in terms which go far beyond the mundane state of inanimate units of transportation. Junks seemed to be anything but plain old vessels. They were variously labeled as "unique, fantastic, strange, picturesque, teakwood tubs, crazily built little ships, relics of the past centuries, peaceful, and queer old hulks." Likewise, the junks were all at once "fabled, famous, infamous, celebrated, venerable, quaint, reprobates and floating heaps of lumber." They were "beautiful barnacled objects of Oriental art...notorious...improbable, utterly absurd, and slightly delightful...an awesome thing."⁷ And these are the contemporary reactions to the small sample of this study. The generally negative reactions by 19th century travelers in China have already been mentioned (chapter three).

Along these lines, "sea monsters" seems to be the common assessment of Chinese junks. The *Ning Po* was commonly believed to be, at the time of her initial visit to the west coast, modeled after the Chinese idea of a sea monster.⁸ This idea continues to the current day, in articles from the late 1980s, as others continue to paint the vessel as some kind of dragon. "Her open bow (with her sides joined at the waterline, but widely spread apart at the deck) was built to look like a mouth, the two disks on both bows formed the eyes, masts and sails resembled fins, and her exaggerated high stern formed the tail of the beast."⁹ The attributes of the *Ning Po* were transferred to all Chinese vessels. The most learned minds in the west on the subject, back in the 1920s, held that "to a Chinaman every junk is a fish."¹⁰ To be fair, westerners had, as early as the 16th century, conceptualized their vessels' hulls as

⁷ Terms chosen from the collection of newspaper articles on the transpacific junks.

⁸ Phillips, "A Peaceful Pirate," 327.

⁹ Lawson, "Catalina's Pirate Ship," 26.

¹⁰ Ivon A. Donnelly, "Chinese Junks," *Mariner's Mirror* 9, no.10 (1923): 319.

the offspring of a cod and a mackerel.¹¹ Both are simply representations of the vessel as metaphor. Surely the serpent-headed Viking long ships of legend and the sculpted northern European boat coffins which bore leaders to the afterlife entered a similar metaphorical realm, and were/are not considered seriously designed from sea monster dimensions...

This particular equation of junks as dragons or sea monsters has decidedly negative overtones for westerners. Analysis of seafaring myth points to examples of this stereotype. Folk tales of dragon junks are:

...typical of a class of devil ships, because to the student of folk tales there can be no more significant symbol or embodiment of evil than the dragon or serpent. The Junk...is the very spirit of evil moving upon the face of the waters, a terror so real that it conquers even cupidity and curiosity.¹²

That piracy was (and is) so frequent in Southeast Asia, among a few other select locations, has not helped the popular reputation of junks in the west. Tourists visiting the junk *Amoy* at the waterfront in Victoria in 1922 would have agreed. "As far as folks here were concerned such a craft was associated with Chinese pirates and all previous knowledge had been gained from prints in books."¹³

Strangely enough, the fact that Chinese junks were higher at the stern than the bow was considered a noteworthy feature.¹⁴ "True to the Oriental way of doing things, in direct opposition to the Occidental, this craft [*Ning Po*] was navigated from the stern; and the captain stood on the sea-monster's elevated tail to direct the vessel's movements."¹⁵ Such an emphasis seems odd, given the fact that for hundreds of years European sailing ships featured elevated stern decks, and all such vessels, commercial or military, were navigated from the stern.

¹¹ 16th century drawings by Baker, an English shipwright, portray this famous design conception.

¹² Wilbur Bassett, *Wander-ships: Folk-stories of the Sea*, (Chicago: Open Court Publishing Company, 1917), 92.

¹³ "Romantic Craft Ends Thrilling Trip from China," 1.

¹⁴ Donnelly, "Chinese Junks," 318.

¹⁵ Phillips, "A Peaceful Pirate," 329.

The European and American general impression of Asian sailing vessels is not one very informed by the historical circumstances of their development. A lack of understanding of the principles of nautical architecture led to the common explanation for the observed facts about many junks in the Pacific, particularly the Japanese junks encountered disabled and adrift in mid ocean.¹⁶ In Japan junks were constructed with large unwieldy rudders, unprotected from the large waves of the open ocean. Fisherman and merchants who violated imperial regulations which restricted them to coastal travel only, *either intentionally or otherwise*, risked shipwreck. Yet, for most Western observers, the simple fact was that the Japanese didn't appear to know how to build oceangoing vessels.

About the year 1639 the Japanese Government ordered all junks to be built with open sterns, and large square rudders, unfit for ocean navigation, hoping thereby to keep their people within their own islands. Once forced from the coast by stress of weather, these rudders are soon washed away, when the vessels naturally fall off into the trough of the sea, and roll their masts out. The number, of which no records exists, which have thus suffered during the past nineteen centuries (*sic*) must be very large, probably many thousand vessels.¹⁷

In China, the imperial government, always wary of the comings and goings of overseas Chinese and the possibility of merchants becoming pirates, likewise enforced regulations which limited the size of vessels, shape, number of masts, etc.¹⁸

From a larger perspective, it was the only way that land-bound governments can attempt to control a seagoing population. There is very little that any entity can do to control the actions of captains or crew, once a ship is hundreds or thousands of miles from the shore. Limiting the design of the vessel, the single necessary tool available to seafarers, in an attempt to curb certain activities, is one of the few options. The most extreme case comes from China as well, when the Qing government, in order to combat the rebel pirate

¹⁶ Brooks, "Report of Japanese Vessels," 50-66.

¹⁷ Ibid, 50-51.

¹⁸ And, regarding the point made earlier, so did the West. In an attempt to control smuggling in the 18th century, "any boat built to row with more than four oars found upon land or water within the counties of Middlesex, Surrey, Kent or Sussex, or Ipswich, or any boat rowing with six oars found upon land or water, in any other port, or within two leagues of the coast of

organization of 17th century Zheng Chenggong, forcibly removed its own coastal population and erected barriers across the inland rivers, so that "not an inch of board may set out to the ocean!"¹⁹ The intention was to deny Zheng's fleets material for repair. This was the ultimate in retribution by a land bound government against a seafaring population. No one knows the true dimensions of suffering caused by the Qing coastal zone prohibition, and the policy did not have complete success due to Zheng Chenggong's overseas connections. Nevertheless it highlights the fact that seafarers, to a level unknown in any other human activity, are completely dependent upon the technological artifact of the ship. Hydrographic science and economics are not the only influences upon ship design.

That places like Japan and China had a long history of discrete maritime codes, formed by the interaction of complex political and economic forces, which dictated specifics of ship construction, was something simply not often taken into consideration. For Westerners, junks looked like fish. Whether or not individual designs like the pole junk actually were modeled after fish, as Worcester claims, the connection stands firmly in the way of a clearer understanding of their physical evolution.²⁰



Figure 134: The massive transom bow of the Ning Po, a sea monster? (Los Angeles Maritime Museum)

Britain, was subject to forfeit." David E. Walker, *The Modern Smuggler* (London: Secker and Warburg, 1960), 23.

¹⁹ Cheng K'o-Ch'eng. "Cheng Ch'eng-Kung's Maritime Expansion and Early Ch'ing Coastal Prohibition," in *Development and Decline of Fukien Province in the 17th and 18th Centuries*, ed. Eduard B. Vermeer (Leiden: E.J. Brill, 1990), 242.

²⁰ Worcester, *Junks and Sampans*, 191.

Junks as Ancient History

A similar lack of appreciation of a dynamic history in Asia is evidenced by the popular assertion that Chinese junks are ageless vessels, little changed through thousands of years, and all deserving the label "ancient." No one in America seemed at all sure what era such vessels represented. The *Amoy* voyage in 1922 was immediately compared to seafaring in northern Europe, circa 800 A.D. "Surely an exploit comparable only to the intrepid voyages of old! Let the shades of the Vikings guard jealously their laurels, with such as Captain Waard and his Chinese mate about the Seven Seas!"²¹ The *Whang Ho*, the "most curious object in the nature of a vessel that has ever entered the harbor..." was a "typical Chinese war craft of many many generations ago."²² The *Free China*, arriving in San Francisco in 1955, sailed "out of the storied past."²³ The crew, though, were apparently on a mission only some four or five hundred years old, as they were "bound eastward around the world, reversing Magellan."²⁴ The *Hummel Hummel* was obviously "emulating venturesome Chinese pirates who sailed their junk to these shores from ancient Cathay long before Columbus crossed the Atlantic..."²⁵ The *Ning Po* was old enough to "claim existence before the famous Flying Dutchman came into being..."²⁶ Indeed, that particular junk had seen so many evil deeds that "ancient ghosts of those who died in horror aboard her must swirl around that spot on Ballast Point like a spectral cyclone, yet unseen by the crews of the

²¹ "Rivals Viking Voyages of Old," 12.

²² "Curious Vessel Bought of Viceroy," 51. Occasionally, as with this estimation of the *Whang Ho*, European observers were actually pretty close to correct as to the approximate age associated with certain junks. The point, though, remains that these quesses were detached from any serious historical context.

²³ Anon. "Junk Comes Sailing out of Storied Past" *San Francisco Chronicle*, 10 August 1955, 18.

²⁴ Ibid.

²⁵ "Adventurous Quartet Reaches Port," 1.

²⁶ "Ancient War Junk Spoken by Liner," 10. The Flying Dutchman, of course, from the days of Dutch tall ships rounding the Cape of Good Hope. Specifically, this refers to the tale of Captain van der Decken who, frustrated in his attempts to round the Cape, fired his pistol at the constellation of the Southern Cross, and was condemned to sail those seas for eternity.

sleek new yachts that now anchor year round in Catalina Harbor."²⁷ And regarding the transpacific junks' distant cousin *Keying* in London in 1848:

The primitive build, and still more primitive contrivances for handling this specimen of Chinese naval architecture, are in themselves worth all the money and time that must be expended in paying it a visit. Talk of the wisdom of our ancestors! Here is a sample of the ship-building wisdom and skill of the ancestors of the Chinese which may have dated from the earliest ages of the world. Certainly never before did so unwieldy and misshapen a vessel traverse the Indian and Atlantic oceans; and the underwriters, if there were to be found men bold enough to insure a craft of this build, had great need of the pious invocation which is appended to the bills of lading in use amongst Christian nations. The junk *Keying* is of precisely the same build as the vessels which carried the "Celestials" three thousand years ago...²⁸

Thousands of years have passed away, since the first Chinese junk was constructed on this model; and the last Chinese junk that was ever launched, was none the better for the waste and desert of time. In all that interval, through all the immense extent of the strange kingdom of China—in the midst of its patient and ingenious, but never advancing art, and its diligent agricultural cultivation—not one new twist or curve has been given to a ball of ivory; not one blade of experience has been grown.²⁹

The problem here is two-fold. The first and underlying misconception is that China represents a civilization void of history, an unchanging tradition stretching back into the formless past. This general bias is a distinct development of the process of history and historiography from the 19th century. It has been held forth by some of the major influential thinkers of the past, and is a fallacy which, except for the maritime realm, has been more or less laid to rest.

The second part of this misperception of history is more complex, for in terms of the past several centuries, *though not the past millennia*, the perception of junks as changeless ancient vessel designs does not seem to be too wide of the mark. On the one hand, a clear bias has labeled the Chinese past as changeless, and on the other hand, though there is obviously evolution over time, there has not been much significant change in sailing junk design in the past several hundred years. These two facts combine to confuse the picture of

²⁷ Hampton, "Saga of the *Ning Po*," 25.

²⁸ *Examiner*, 20 May 1848, 333.

²⁹ *Examiner*, 24 June 1848, 403.

the historical development of sailing junks in China. In short, even certain scholars have been too loose with the use of the word "ancient." G.R.G. Worcester himself falls into this camp.

The junk, therefore, like so many customs and contrivances in China, has survived down the ages as a sort of perpetual and useful anachronism and is in many essentials very little altered from its ancient prototypes.³⁰

"We are faced with the oldest state in existence, and yet with one which has no past, but exists at the present time in exactly the same way as we hear of it from antiquity...To this extent, China has no real history."³¹ With this, the German philosopher Georg Wilhelm Friedrich Hegel ranked China as at the beginning of the evolution of civilizations. This status for Oriental peoples fell within the context of the other more advanced societies, the great civilizations he termed the Graeco-Roman, and the modern or Germanic. Hegel also applied geography to the classification and ranking of societies, not as bands of northern, temperate or southern climate, but as eastern and western divisions. For Hegel, the true divisions between men were based on internal, moral principles. "The course of the sun is a symbol of the course of the human spirit; and as the light of the physical sun travels from the east to the west, so does the light of the sun of the self-consciousness. Asia is the determinate east or absolute beginning, and Europe the determinate west or end of history."³²

As strong as these statements appear today, they were not seen as so radical at the time they were made. The 19th century, as far as historiography is concerned, was a time when the scientific nature of history was a great topic of investigation. Civilizations as units rose and fell, influenced by concepts of 19th century social Darwinism. "The British rule the whole world with their trade; they have opened East India and China to Europe, and all these

³⁰ Worcester, *Sail and Sweep*, 5.

³¹ Hegel, as quoted in Wolfgang Franke, *China and the West* (Columbia: University of South Carolina Press, 1967), 142.

³² Hegel, in Harry Elmer Barnes, *A History of Historical Writing* (Norman, Oklahoma, 1937), 196.

empires are almost submitting to the European spirit."³³ Foreign nations, thus, without the technological advancements of steam and steel and modern transportation, had no place in the modern interpretation of history. Leopold von Ranke himself regarded China, for instance, as a "nation of eternal stagnation..."³⁴ These very same sentiments appeared at the world expositions where evidence of the backwardness of Chinese technology, in the form of the occasional sailing junk, was available for tour. An anonymous observer at London's Great Exhibition, stated "we need envy nothing that they have...Their porcelain has been known from time immemorial, and in everything else the Chinese are so stationary, that they may be considered as the most ancient workmen on the earth."³⁵

It could be argued that nationalist-style history, associated with figures like Hegel and von Ranke and this period of the birth of the modern science of history in the 19th century, is itself naturally biased against topics that are, by nature, transnational and transcultural. The type of modern historical analysis created by von Ranke limited the scope of the field of history. The long haul maritime voyagers of not just China but many nationalities and polities operated (and operate) between national institutions more easily defined from shore. There have been for long periods of time serious efforts by the nation-state to "settle" maritime nomads and have these populations conform to land-based societal norms.³⁶ It is not always initially successful. In short, a tension exists between the modern nation with its nationalist histories and the more fluid realities of the maritime realm.

Fortunately, more attention is beginning to be paid to sometimes hard-to-define regional maritime histories. James Warren's work on the Sulu region in Southeast Asia serves as an example of a study cast in distinctly maritime parameters.³⁷ The outlines of Warren's zone cannot be found drawn on any map, but are more indicative of the seasonal

³³ Leopold von Ranke, as quoted in Franke, *China and the West*, 142.

³⁴ Ibid.

³⁵ Tobin Andrews Sparling, *The Great Exhibition: a Question of Taste* (New Haven: Yale Center for British Art, 1982), 27; quoting observer at exhibition.

³⁶ David Edward Sopher, *The Sea Nomads: a Study based on the Literature of the Maritime Boat People of Southeast Asia* (Singapore: Memoirs of the National Museum 5, 1965).

trade winds and the cruising ranges of the Suluwesi vessels. His work reflects a maritime perspective, the fluid and dynamic struggle for labor resources (coastal populations), rather than the conquest of territory.

Other scholars have addressed the broader task of defining topical boundaries in maritime studies. In the volume of the *Geographical Review* devoted to maritime analysis, "Oceans Connect," world historian Jerry Bentley states:

Since World War II historians and other scholars have become increasingly aware that the focus on national communities distracts attention from large-scale processes that have deeply influenced both the experiences of individual societies and the development of the world as a whole...³⁸

Bentley goes on to note that the arena of cultural interaction, though less developed as an approach, might benefit from such ultra-national perspective. This requires breaking beyond the permeating influences of von Rankian style histories, histories which "make limited provision for processes of commercial, biological, and cultural exchange..."³⁹ And of course, oceans have figured historically as avenues of this exchange. It is this very field of technological and cultural exchange across the Pacific which provides the context of this study. The "flow" of culture across the Pacific, in this case the features of the Chinese junks, encounter the American shores.

It might also be said that where there is no Chinese history, there is no reason to study the Chinese past. General ignorance of junks has led to rather large errors being published about them. "The square-sailed junk of China has not altered for thousands of years..." includes a sail type never featured on Chinese vessels.⁴⁰ There is, simply, a lot of bad history when it comes to the nautical world.

³⁷ James Warren, *The Sulu Zone, 1776-1898: the Dynamics of External Trade, Slavery and Ethnicity in the Transformation of a Southeast Asian Maritime State* (Singapore: Singapore University Press, 1981).

³⁸ Jerry H. Bentley, "Sea and Ocean Basins as Frameworks of Historical Analysis," *Geographical Review* 89, no.2 (1999): 213.

³⁹ *Ibid*, 221.

⁴⁰ Winchester, *Shipping Wonders of the World*, 668.

The Chinese sailor has held to his square sail junk from the earliest times down to the present day. It may have been his refusal to adopt fore-and-aft sails that prevented the wide spreading of a Chinese civilization by long voyages and overseas colonization. The Chinese were skilled and scientific enough in other maritime matters...⁴¹

Chinese junks, in this analysis then, were no more than antiquarian curiosities, evidence of the backwardness of Chinese mariners, useful only in comparison to the modern situation. These ideas about the stagnation of East Asian civilizations have been driven far from the present field. Yet the perception of junks as throwbacks to an ancient age persists. Today the sentiment is not one of disgust at inferiority, but one of appreciation for a symbol of an imagined and distant time. The introduction of the masterful *Junks and Sampans of the Yangtze* itself provides an example:

The China seen by Marco Polo has disappeared, and that known by Worcester is fast going. Here is a chance to let an old China hand take you to one of the great rivers of the world for a last look at a timeless land just before time there ceased to stand still.⁴²

Where on the planet does time ever stand still?

Such a modern and sympathetic intention to capture a frozen moment of the past, making that "historical snapshot" represent a sort of timeless reality, goes by the term of "the ethnographic present." A type of anthropological illusion, noted by Renato Rosaldo in *Culture and Truth: the Remaking of Social Analysis*, the ethnographic present is a perspective which voids all questions of change over time and renders foreign cultures artificially frozen in the present tense.⁴³ This phenomenon provides a single unchanging picture of an assumed static and unchanging society, accepting this as accurate contemporary description. It denies change. It is an illusion that accomplishes the same thing 19th century historiographers attempted, making the very real dynamic nature of history vanish for China.

⁴¹ Ibid. Chinese junks *did* feature fore-and-aft sails, almost exclusively!

⁴² Front leaf, Worcester, *Junks and Sampans of the Yangtze*.

Quite often, some of the pitfalls of the ethnographic present illusion prove difficult to avoid. Given the lack of a plethora of sources for this study, sources used for analytical purposes, such as Worcester's *Classification of the Principle Chinese Sea-going Junks* are exactly the kind of instant snapshots that attempt to freeze an image of a changing process, the evolution of junk design. Searching for individual construction features or "language" within an overall pattern of vessel design helps, for features can continue to change while the "Chineseness" of the junk pattern is not invalidated. Basically, though, the ethnographic present illusion is a fallacy inherent in classification schemes, and when in use should be acknowledged.

Combining all these intentions to render Chinese junks as ageless and unchanging, junks as voyagers from an unspecified ancient time, with the fact that there appear to be few significant changes in sailing junk design in the past several centuries, led to uncertainty in the approach to Chinese nautical evolution. Several scholars point to evidence of changes in junk design both throughout the long span of Chinese history and within the scope of the late imperial era.⁴⁴ Gang Deng and Worcester and Needham and others have all studied the topic enough to know that sailing vessels in China evolved through time. Not all agree on the exact dates when changes in junk design became evident, but the fact remains that Chinese vessels, like those of other cultures, changed in response to a variety of factors.⁴⁵ These same scholars point out that junks were stable in design in recent centuries not because there were ancient, but because they were advanced.

⁴³ Renato Rosaldo, *Culture and Truth: the Remaking of Social Analysis* (Boston: Beacon Press, 1993).

⁴⁴ Mark Elvin mentions a type of vessel known as the "unlike the three others," developed first in 1699 in "Skills and Resources in Late Traditional China," in *China's Modern Economy in Historical Perspective*, ed. Dwight Perkins (Stanford: Stanford University Press, 1975), 98. Gang Deng describes change over a longer time frame. Both are elaborating on changes also described in Zhou Shide's "Shipbuilding."

⁴⁵ Even for nautical experts this evolution is difficult to grasp. J. Richard Steffy, from the maritime program at Texas A&M, remains under the impression that "we still know nothing about transitions in construction or the methods by which they built those fabled great ships of the Orient..." from *Wooden Shipbuilding and the Interpretation of Shipwrecks* (College Station: Texas A&M University Press, 1994), 126. At least he does include one page of text on the "Far East" in his volume.

Chinese junks had, relative to European history, met all the design requirements demanded of them by their operating environment very early on indeed. By the end of the Song dynasty, they had already achieved the major technological changes needed to remain efficient for hundreds of years. Gang Deng divides the entire span of Chinese nautical development into three major phases: 1) rudimentary period 6000 B.C.-1030 B.C., 2) period of progress 770 B.C.-1279 A.D., and 3) period of status quo 1279 A.D.-1911 A.D.⁴⁶ This broad classification can be broken down in more detail in terms of individual ship designs. The *lochuan* or multidecked ship of the Han to Sui periods gave way to the *fuchuan* or Fujian ship from the Tang to Song, and finally the *shachuan* or shallow draft 'sand' ship.⁴⁷ Each of these broad transitions brought technical innovations. "Thus, it is no exaggeration to say that after the twelfth century A.D. Chinese sailors were technically capable not only of sailing to but also returning from the Pacific and Indian oceans."⁴⁸ Gang Deng estimates that the majority of design advancements, roughly 70%, took place before the fourth century A.D. By the end of the Song dynasty, the remaining 30% of major advancements had been completed. There is no need to outline the entire history of Chinese vessel evolution, for that task lies beyond the scope of this dissertation. The point that the major technological changes in junk design occurred previous to European maritime contact in East Asia reinforces the very basic design differences between Chinese and European ship designs.

The solid bulkheads, multiple decks, axial rudder, fore-and-aft lug multiple sail rig, and mariner's compass represented major achievements in vessel design, and these were all well known in China at a time when Anglo-Saxons were steering single-masted square-sailed cogs with oars, defending themselves against the Vikings. The next major step in nautical technology for Europe was the so-called ship of discovery, capable of crossing oceans with the trade winds. Carracks and early galleons were the first European vessels to show up in East Asia. Further refinements led to the faster "race-built" galleons of the English, and the more economical *fluit* vessels of the Dutch. Following that, the European

⁴⁶ Gang Deng, *Chinese Maritime Activities*, 22.

⁴⁷ Gang Deng, *Maritime Sector*, 7.

vessel design of the frame-built multi-masted sailing cargo/war ship does not change radically until the advent of shipboard steam power and iron hull construction. Sailors on 16th century galleons would be shocked, but perhaps not at a total loss, if transported to the decks of a Royal Navy frigate in the Napoleonic era. So when European vessels arrived in China, the Chinese already had achieved a kind of equivalent stability in design. The transition to iron hulls and steam power comprises a different field for comparison.

For reasons which really go far beyond the scope of this study, the 19th century industrial take-off was a European phenomenon. Steam power on board wooden sailing vessels, initially outfitted with side paddle wheels, soon found its more technologically compatible expression in iron hulled ships with screw propellers. Chinese junks remained the same. The fact that Chinese junk design had "peaked" early allowed these vessels then to serve as a backdrop of a type to the European nautical evolution. Kenneth Pomeranz, in *The Great Divergence*, states "it is China, more than any other place, that has served as the 'other' for the modern West's stories about itself..."⁴⁸ Though his analysis leaves out discussions of many specific maritime topics, the same forces can be seen shaping contemporary views of the maritime past. Chinese junks could represent all that was traditional and less efficient and backward in comparison to nautical advancements. Junks could be all that modern European vessels were not.

Are there other reasons that many of the designs of Chinese junks remained stable in recent times? Other scholars have addressed the steady state of China's trade technology in the days of junks and sails, taking into account broader economic forces. The picture for the late imperial era, according to J.C. van Leur in *Indonesian Trade and Society: Essays in Asian Social and Economic History*, is of quantitative, not qualitative evolution. Conditions, in van Leur's analysis, simply did not conspire to demand technological change.

Trade, then, can be viewed as an "historical constant." No qualitative transformations can be indicated in the course of history; the basis, which was determined by the fixed rhythm of arrival and departure with the

⁴⁸ Gang Deng, *Chinese Maritime Activities*, 58.

⁴⁹ Pomeranz, *The Great Divergence*., 25.

changing yearly monsoons, remained the afflux of larger or smaller crowds of pedlars of expensive and valuable high quality products, and the only alterations were quantitative ones within the given framework.⁵⁰

"However, one needs to remember in the first place," van Leur continues, "that ship construction develops to a much higher level in connection with and dependence on warfare than within the commercial framework."⁵¹ In the case of European ship development, this is a commonly held presumption. Stout galleons capable of maneuvering relatively quickly and carrying a large number of heavy cannon definitely played a role in inter-European warfare. That European maritime trade existed in a state of armed tension, that iron and steam and screw propulsion proved to be essential technological changes for European navies (not to mention the later reliance on steam power for commercial navigation lines), again raises the many differences between armed and unarmed trade in the development of ships.

It would not be correct to maintain that sailing junks in recent centuries experienced no change at all. Junks had changed in the past, and continued to change throughout the period of European contact, continuing to adopt some new technologies. Basically, though, the major design elements remained constant during a time when the nautical technology of the European world changed dramatically. Junks changed some of the features or language within the consistent pattern, while European ships changed the whole pattern. From this point of view, Europeans were not completely wrong in assuming ancient (or at least very old) models for contemporary junks. The only problem was that early observers made their assumptions, not from historical information of comparative technological evolution, but from inherently flawed historiographical traditions. In short, if Europeans saw Chinese junks as essentially unchanged (though they had misplaced the chronological scale), many were right for the wrong reasons.

⁵⁰ van Leur, *Indonesian Trade and Society*, 87.

⁵¹ *Ibid*, 85.

Junks as Floating Museums of Fascinating Atrocities

For anyone who has visited a Ripley's entertainment, a "Believe-It-Or-Not" wax museum, the attraction of various torture devices and grisly scenes is easy to recall. Junks fulfilled the same function in America. Both the *Whang Ho* and the *Ning Po* served as warehouses and museums for a collection of weaponry and devices reportedly well-worn with use in East Asia. Museums of the period reflected not the thematically-designed educational institutions of today, but the entertainment venues of the 19th century, haphazardly collected assortments of random and exotic items aimed at stimulating the senses. At London's first Great Exposition in 1851, the Chinese junk *Keying* was available for public examination.

Brilliant colours shine upon the spectator from every side, with all the formless gaiety which is peculiar to the Chinese. Gaudy shields, as weapons of defense, hang along the deck—and jingalls, a hybrid race between cannon and arquebusses, threaten on each side. If you would take a more concentrated view of Chinese existence, the grand saloon is fitted up as a sort of museum, with all sorts of curiosities; or you may turn into a neat little chapel containing the idols which those serious Orientals who lounge about the deck are in the habit of worshipping.⁵²

The *Ning Po* in 1912 continued in this tradition, being advertised as "a floating museum of ancient Chinese arms, instruments of torture, and quaint historical relics."⁵³ The junk carried a selection of implements guaranteed to excite the casual visitor:

Here, also are shown some of the modes of torture that were practiced in China. The *Kee-long* is the wooden cage in which persons accused of piracy or crimes against the government were suspended without food or water until death came. Other torture instruments on boards included a two-handled sword, a big beheading knife, iron flairs (bone crushers), thumb screws, the *Kang* double and single-boards that were fitted about the neck, a "weazened (sic) rusty little gun" 3-feet long, estimated to be 400 years old and a capstan whose iron bands litter the decks.⁵⁴

⁵² *Annual Register*, 1848; and *Chronicle*, 43., cited in Altick, *Shows of London*, 296.

⁵³ From the brochure printed for visitors, in Catalina Maritime Museum collection.

⁵⁴ Phillips, "A Peaceful Pirate," as cited in Hager and Marie, "The *Ning Po*, 195. The "weazened" gun, in Phillip's article, is said to be of "a kind being made thirty-six hundred



Figure 135: American tourist contemplates the starvation cage on board the Ning Po. (Catalina Island Museum)

Items were added to the collection as time passed, and one or two sources note the inaccuracy of a beheading block on the junk, as no such item was necessary in the Chinese traditional execution. No tour of the pirate vessel would have been complete without venturing below decks, though, and the appropriate modifications were made.

Back of the officer's quarters and mandarin's cabin is the old smuggler's chamber of horrors. In this dungeon dark compartment there was originally only one very small entrance, and the compartment itself a deep well of darkness, extending clean to the hold.

Finding it impractical to show visitors such a ventless, rayless place, the exhibitors of the ship sawed a large section out of the thick wall, and put floorings across the deep chasm. Even then the way amidst the thick blackness of the gruesome chamber cannot be found without the aid of a lantern. By means of its feeble rays one may perceive on its outer wall the marks of the shelves that once had been there—shelves where the prisoners were placed until they either divulged the secret of their wealth or treasure to the outlaws who had captured them or died of starvation or lack of air in that

years ago—so old is civilization in China...” Needless to say, that’s a little early for the development of firearms.

horrible place. They were literally laid on the shelf, with the prospect of dropping to the depths below if they became restless in their narrow beds.

After looking at this place, beheading knives did not appear so forbidding to me.⁵⁵

This theme found its counterpart ashore, for it was typical for the grand fairs to feature such experiences for the regular visitor, whether junks were available for display or not. "As a result of objections raised by member of the local Chinese business community and by the Chinese consul, the directors agreed to close one portion of the Chinese Village—the Underground Chinatown concession, operated by theatre executive Sid Grauman, which depicted a 'chamber of horrors' including opium dens."⁵⁶

Contradictory Impressions

The various attitudes towards the Chinese and the junks which were displayed on the American or European coasts occasionally combined to produce, what appear today as, amazingly contradictory conclusions. It is a reaction similar to the familiar fallacy of "presentism," the amazement which comes with the discovery that people of other times were capable of doing things we do today. We build of stone; the Egyptians built of stone. We are amazed at their ability to lift stone. Our ships sailed across the Pacific; Chinese junks sailed across the Pacific. We are amazed at the sailing junk's ability to sail, to do what it was designed to do. Yet the discovery does not lead to much more than just that. Conclusions about the skills of Chinese shipwrights and seafarers have not benefited significantly from the demonstration. It seems contradictory to be surprised that ships floated, that sailors sailed.

Dickens, writing on the junk *Keying* in the *Examiner*, marveled "that seafarers who knew nothing of shipbuilding or navigation managed to bring the craft to London in the first place."⁵⁷ The ship, in this case, was not a ship at all.

⁵⁵ Ibid, 329.

⁵⁶ Rydell, *All the World*, 228.

⁵⁷ Altick, *Shows of London*, 297.

If there be any one thing in the world that it is not at all like, that thing is a ship of any kind. So narrow, so long, so grotesque, so low in the middle, so high at each end (like a China pen-tray), with no rigging, with nowhere to go aloft, with mats for sails, great warped cigars for masts, gaudy dragons and sea monsters disporting themselves from stem to stern, and, on the stern, a gigantic cock of impossible aspect, defying the world (as well he may) to produce his equal—it would look more at home at the top of a public building, at the top of a mountain, in an avenue of trees, or down in a mine, than afloat on the water.⁵⁸

The ship, as defined, meant of course the European style ship. Notes on the *Keying* provide examples of the phenomenon of Pagden's attachment. Apparently, the fact that the vessel had arrived from China under its own power did not go far in clearing up its identity. Likewise, even the more technical venue of the *Mariner's Mirror* proved to be afflicted by the same puzzling juxtaposition.

There is much about the *Keying* in the periodical literature of the time and the memory of her still lingers in men's minds, but it seems worthwhile to attempt a collection of some of the scattered information about a vessel which, though constructed on lines and equipped in a fashion not associated with ocean passages, proved herself a very good sea boat. Much of the contemporary information fails in technical clearness, and no scientific account of the *Keying* seems to have been written. Still, she does not appear to have differed essentially in important points of construction or in fittings from typical junks of the larger class.⁵⁹

Here one apparently finds that typical large Chinese junks were "not associated with ocean passages," seeming to be adapted to the environment almost by accident. If large junks the size of the *Keying*, some 160 feet long and 33 feet in beam, sailing between Southeast Asia and China, were not adapted to the ocean, what then was their function?

This curious attitude may be a holdover of the earlier European opinion that the Chinese never indulged in blue-water sailing. At the time of European contact in East Asia, the general maritime resistance to private overseas business had limited shipwrights to the production of shallow draft coastal vessels, leading to the mistaken European impression

⁵⁸ *Examiner*, 24 June 1848, 403.

⁵⁹ Brindley, "The 'Keying'," 305.

that Chinese sailors were incapable of crossing large bodies of water. In this contradictory fashion, Chinese ships were not ships and Chinese sailors were not sailors.

How the flowery region [China] ever got, in the form of the junk *Keying*, into the latitude and longitude where it is now to be found is not the least part of the marvel. The crew of Chinamen aboard the *Keying* devoutly believed that their good ship would arrive quite safe, at the desired port, if they only tied red rags enough upon the mast, rudder, and cable. Perhaps they ran short of rag, through bad provision of stores; certain it is, that they had not enough on board to keep them from the bottom, and would most indubitably have gone there, but for such poor aid as could be rendered by the skill and coolness of a dozen English sailors, who brought this extraordinary craft in safety over the wide ocean.⁶⁰

The general opinions regarding the skill of Chinese sailors are also to be found in abundance in the 19th century literature of those who traveled in China.

All of these basic contradictions add up to a dual perspective: Chinese junks are at once fascinating and improbable. Though the *Ning Po* was best summed up as an object modeled on a sea creature by some, its own fame has made the junk somewhat immortal in the eyes of Southern Californians. The story of the junk continues to be reworked in popular magazines, and museum curation of the various related items, once held in private ownership and now donated and still arriving by mail, continues at the facility on Catalina Island. The model of the *Ning Po* has now taken its place alongside models of the *Bounty*, *Sovereign of the Seas*, Viking long ships, etc. For tourists who visit the two or three institutions which happen to have the representations, the *Ning Po* has become *the model* of the Chinese junk, the single representation of the entire species. This even though interpretations are at once respectful and derogatory.

⁶⁰ *Examiner*, 24 June 1848, 403.



**Figure 136: Junk model Ning Po on display at Los Angeles Maritime Museum.
(Author's photo)**

Perspective on Entangled Junks

It is clear that ships, whether they are junks or schooners or steam ships, embody more significance for various seafaring cultures than mere transportation machines.⁶¹ And it is clear that oceans have acted as seaways for the transmission of not just technology but culture.⁶² Is there any fixed relationship between the mode of transportation and the message? Do objects, such as Chinese junks, laden with cultural features specific to the long history of Chinese seafaring, carry with them any inherent and unchanging cultural meaning? Nicholas Thomas, in *Entangled Objects: Exchange, Material Culture, and Colonialism in the Pacific*, answers no.⁶³ In Thomas' view, cultural meaning stems from the original society, and is not easily transmitted through the trade of just the actual object. The language barrier between cultures comes immediately to mind as part of the host of obstacles obstructing cultural contact. "[T]here was a gap in the sense that there was no

⁶¹ One of the best examples of this is the *Titanic*, a ship of enduring and repetitive cultural media influence. For comments on this particular historical phenomenon, see Biel, *Down with the Old Canoe*.

⁶² The "Indianization" of Southeast Asia is one important case in this regard, the transmission of not just Buddhist religion but Hindu culture as well.

developed language through which their relevance...could be specified."⁶⁴ Without language, without relevance, artifacts become trivialized. Chinese junks were tossed into that much larger category of foreign curiosities reserved for ethnographic collections. Regarding this loss of relevance for objects in 19th century collections, Thomas states:

The artifacts of non-Western peoples were known over a long period as "curiosities." Occasionally, this term, or "curios," also embraced certain kinds of antiques and classical relics, and (in the absence of the qualifier "artificial") even natural specimens—coral, bones, and mineral samples...This is to express, perhaps in extreme terms, a tension between a scientifically controlled interest in further knowledge and an unstable "curiosity" which is not authorized by any methodological or theoretical discourse, and is grounded in passion rather than reason.⁶⁵

One single observation, from a functional standpoint, applies universally to all ten vessels that crossed the Pacific: none of the Chinese junks continued to be what they once were. All of these objects shifted function and lost original meaning in their journey over the Pacific, despite the permanent features built into their keels and carved into their sides. What were cargo carriers and fishing vessels and war junks became pleasure yachts and tourist attractions and floating museums. Commercial vessels became movie sets and made to impersonate a variety of cultural disguises. Even the junks which were built under the overall direction of Europeans in Asia display this cultural hybridism. The *Cheng Ho*, built for scientific cruising, took its form from what was imagined to be an early Ming dynasty *baochuan* or treasure galleon. Why use a Ming galleon, or what someone said represented a Ming galleon, for scientific cruises? Except for the sentiment of wishing to preserve something, this question goes unanswered.

Chinese junks brought across the Pacific were large features capable of transporting themselves across an ocean for viewing much as any artifact would have been, on display at the museum or exhibition. These junks, in a certain sense, were portable sites in

⁶³ Nicholas Thomas, *Entangled Objects: Exchange, Material Culture, and Colonialism in the Pacific* (Cambridge: Harvard University Press, 1991).

⁶⁴ Ibid, 131.

⁶⁵ Ibid, 126-7.

archaeological terms, loci of human activity. Sailors fill the role of inhabitants for these locations, and as any nautical archaeologist can testify, aspects of their work, food processing, leisure hours, cargo etc. can all be revealed in the physical remains of their homes. Sites are complex entities and often demand well-thought out research designs and slow deliberate investigation in order to maximize the return of information.

Any effort to approach these junks as forms of archaeological sites, any design involving a systematic and rational approach, would have produced a much more informative record than the handful of carnival postcards and tourist brochures of curiosities. Who would appreciate, in a casual manner, the star-shaped patterns of nails, the long history of the oculus, the Chinese written *chengyu* on the junks themselves? The statue in the joss house was too frequently just another pagan idol. What other perspective was necessary for such casual visitors at public fairgrounds?

Armchair Sailors and the Tourist Gaze

John Urry, in *The Tourist Gaze: Leisure and Travel in Contemporary Societies*, confirms Umberto Eco's remarks: "Tourism is a leisure activity. Post modernism involves a dissolving of boundaries, not only between high and low cultures, but between different cultural forms. The post tourist does not have to leave their home in order to see the typical objects of the tourist gaze."⁶⁶ A bit of China itself had come to the exposition tourist, not to be analyzed, but simply to be experienced in juxtaposition to the modern technological wares of the western nations. This is what promoters like W.M. Milne and Robert Ripley were selling. Images of the junks were captured in tourist postcards, that ubiquitous and easily reproducible tourist souvenir essential to the casual act.

The fairs and expositions on the west and east coasts of north America played a role in the journey of the Chinese junks. These events have become a subject for study in their own right. The anthropological assessment of foreign peoples, a charting of the physical and social evolution of the various races, was often a major theme at these expositions. Fairs

were no longer, as they had once been, intended for the mere trade and sale of goods, but as Burton Benedict in *The Anthropology of World's Fairs, San Francisco's Panama Pacific International Exposition of 1915* states, "they were selling ideas: ideas about the relations between nations, the spread of education, the advancement of science..."⁶⁷ Thus, primitive products and tribes were juxtaposed with gleaming examples of modern industry for obvious purposes. Exhibitions during this period, then, were not specifically held to investigate historical or technological facets of artifacts. They were, in the words of Umberto Eco, *Travels in Hyper-Reality*.

[A]n enormous gathering of evidence from Stone to Space Age, an accumulation of objects useless and precious, an immense catalogue of things produced by man in all countries over the past ten thousand years, displayed so that humanity will not forget them...The merchandise is "enthroned," as Benjamin says, "with an aura of amusement surrounding it." A boat, a car, a TV set are not for sailing, riding, or watching, but are meant to be looked at for their own sake. They are not even meant to be bought, but just to be absorbed by the nerves, by the taut, excited senses, as one absorbs the vortex of projected colors in a discotheque."⁶⁸

And often in an attempt at comprehensive arrangement of the objects of the world, the logic behind the specific selection of goods could be lost. Though the discipline of anthropology may have been present, the end result at the fairs could be confusion.

Two other exhibits dealt with human social life in an evolutionary mode. One was a history of human habitations shown in full scale models ranging from stone age caves to Persian palaces and from wigwams to Chinese pagodas. The other was an international retrospective Exposition of Labor and of the Anthropological Sciences, which began with the skeletal remains of early hominids, ranged through the Paleolithic and Neolithic, touched upon all major civilizations of recorded history, and then surveyed the liberal arts, sciences, trade, transportation, and military arts.⁶⁹

⁶⁸ John Urry, *The Tourist Gaze: Leisure and Travel in Contemporary Societies* (London: Sage Publications, 1990), 82. The concept of the "gaze" is, of course, borrowed from Michel Foucault's concept of the "medical gaze."

⁶⁷ Burton Benedict, *The Anthropology of World's Fairs, San Francisco's Panama Pacific International Exposition of 1915* (Berkeley: Lowie Museum of Anthropology, 1983), 2.

⁶⁸ Umberto Eco, *Travels in Hyper-Reality* (London: Pan Books, Ltd., 1987), 292, 294.

⁶⁹ Benedict, *Anthropology of World's Fairs*, 32.

This is a tall order to present in any meaningful context, especially given the often random nature of the exotic collections. With the possible exception of the *Fou Po II*, chosen intentionally by the avowed maritime ethnographer Eric De Bisschop, very little work apparently went into the selection of each particular junk type. As is clear from the individual narratives (chapter two), whatever was quickly available and cheap, happened to look seaworthy, and satisfied the whim of the particular owner, came across the Pacific. Richard Halliburton, for instance, working directly for the promoters of the San Francisco Exposition, arrived in China with no preconceived criteria on which type to obtain. Nicholas Thomas points out:

A lack of specified interest is also apparent from the actual practices of collecting, in that the explorers did not make systematic effort to acquire either representative samples of a totality or artifacts of particular kinds... These points suggest that what was important about collecting, was not so much what could be said about or done with the specimens collected but the way that collected material attested to the fact of having visited remote places and observed novel phenomena.⁷⁰

This applies to the selection of junks on the Chinese coast. Junks were obtained as trinkets and displayed as objects from a monolithic and homogeneous land, not as specific artifacts from distinct regions.

This should not be surprising, for these vessels were not part of any academic agenda. The immediate reason for most of these voyages would appear to be financial profit. The entrepreneurs who brought the early Chinese junks across the Pacific must have been well aware of the profit-making potential that such events represented. Gaining access to a dock anywhere within the vicinity of one of these fairs could be a guarantee of better returns. The larger question remains of how these vessels were perceived by the western public at these events. Were they an official part of the materials classified within the national exhibits? Or were they relegated to the outskirts of the various amusement zones? The records are not specific. Even for the later arrivals, this legacy of trinkets and fairs survived.

⁷⁰ Thomas, *Entangled Objects*, 138 and 141.

The junk *Free China*, which arrived in San Francisco almost directly from the salt fish trade on the Chinese coast, was not immune.

From: Douglas F. Storer
President
Ripley's Believe It or Not! Incorporated

To: Mr. Paul Chow, owner
Junk FREE CHINA
Care of Chinese Consulate General
551 Montgomery
San Francisco, Calif.

Dear Mr. Chow,

August 29 1955

I received your letter when I returned from my vacation.

We would be interested in the junk FREE CHINA. Will you please send me all the details in regard to its equipment and instructions. I would also like to know whether it would be delivered on the east coast or whether it would be bought only on the west coast. I would also like to know what is your selling price on the west coast and also on the east coast.

For your information Mr. Robert Ripley, founder of this great feature, passed away in 1949 and after 25 years of association with him I have the privilege and honor of continuing this feature.

Sincerely,

Douglas F. Storer⁷¹

Interestingly, Storer, President of Ripley's Believe It Or Not! requests "instructions" to be sent along with details on the junk's equipment. Many types of documents follow the complex artifact of the sailing vessel throughout its "life," log books, charts, registration papers, maintenance schedules, etc. Instructions are usually not included.

Conclusion

Nicholas Thomas' observations on the processes of perception seem to hold true for the general case of Chinese junks. Regarding the colonial exposition of 1886:

This is to remind us, once again, of the crucial role of material culture and of the optical illusion that it constantly offers us: we take the 'concrete and palpable' presence of a thing to attest to the reality of that which we have

⁷¹ Document in Paul Chow collection.

made it signify; our fantasies find confirmation in the materiality of things that are composed more of objectified fantasy than physical stuff.⁷²

This is quite a statement. Given the prevailing anti-Chinese views of the late 19th century, junks were anything from floating prisons to sea monsters to direct threats to American sea-borne trade. The physical reality of the visiting junks did little to change American attitudes, perceptions which involved much more than the handful of vessels. Reactions to junks mimicked reactions to Chinese immigration. In the popular media of the time, Chinese sailing junks, a symbol of Chinese sailors who competed for jobs with American crewmen, can be seen implicated in the destruction of American commerce. A striking image in Philip P. Choy and Lorraine Dong and Marlon K. Hom's *The Coming Man: 19th Century American Perceptions of the Chinese*, captures this spirit. Set on the rocky coast, the familiar female persona of Lady Liberty impales herself on her own sword, as Chinese junks sail past the sinking ships of American merchant vessels. The caption of this particular image reads "the ship of state glided noiselessly to her doom."⁷³ In the state of tension between two civilizations, these junks seemed to have symbolized the encroachment of the hordes of uncivilized Chinese.

Junks arriving from across the Pacific were simply curiosities used to confirm what most visitors knew to be true about "Orientals" or "Mongolians" before ever stepping on board. Even though the physical form of the junk was filled with specific cultural features, the interpretation of the artifact was a kind of blank slate, to be filled in by the entrepreneur or ship owner. Nine out of the ten junks selected in this study were not built for public exhibition, but only end up fulfilling that role through a combination of forces generally

⁷² Thomas, *Entangled Objects*, 176.

⁷³ (Seattle: University of Washington Press, 1994), 128. Unfortunately permission to reproduce this image was denied. This is not to say that there was, at the time, a correct view of Chinese junks which was neglected in favor of the populist misperceptions. The "optical illusion" aspect is not, in Thomas' work, limited to any one interpretation, such as museum curiosities or carnival rides. It may apply equally as well to the academic mission, the supposedly scientific process of observation, if such processes come to the topic with a *priori* conclusions, with conclusions already written. It is a warning, highlighting the need for an enlightened self-awareness in the interpretation of material culture.

termed the "agency of display."⁷⁴ Junks briefly became ethnographic objects through certain processes which Barbara Kirshenblatt-Gimblett, in *Destination Culture: Tourism, Museums, and Heritage*, terms detachment and contextualization. Once purchased in China and detached from their original functions, they were displayed on the west coast in the context of the museum artifact, juxtaposed with modern shipping. The exposition of ethnographic objects, from this point of view, is fundamentally theatrical, neither objective nor scientific.⁷⁵ Almost any exotic artifact could be placed on board the vessel and "sold" to the public.⁷⁶



**Figure 137: Saloon of the junk Keying, furniture lamps and artwork on display.
(Altick, *The Shows of London*, 295)**

What is significant about a relatively small wooden craft that brings visitors from afar across the largest ocean on the planet? Significance is in the eyes of the beholder. In America these odd Asian vessels were remarked briefly upon and then scrapped, abandoned

⁷⁴ Kirshenblatt-Gimblett, *Destination Culture*, 1.

⁷⁵ *Ibid.*, 3.

⁷⁶ The specific allusion here is to the *Ning Po* and the scavenged miscellaneous collection which came on board following the vessel's sinking and salvage in San Pedro.

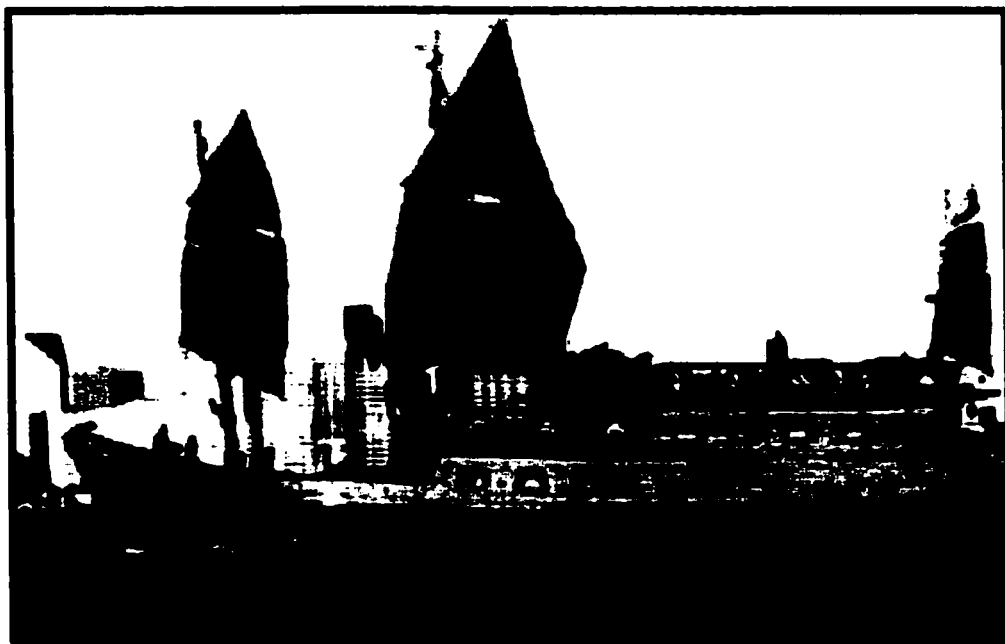
or sold into private hands. The effort to understand these foreign vessels in America never failed, because the effort was never made. These were, in the national sense after all, someone else's history. Chinese junks in America, no matter the long individual histories of Asian migrants, were not part of the selective American story, nor were they a part of the narrow and selective tale of the evolution of ships.

Junks were available to be come anything that the American imagination desired them to be, and this was never what they had once been. The terms "quaint" and "insignificant" come to mind, but usually the motive was profit from the tourist trade. This may be an interesting statement on American culture, for the most immediate uses for odd objects detached from their original meanings seems to be profit and sales. This situation has not changed much. The most recent incarnation for the adaptable junk is a floating dockside boat and bed by the name of *Mei Wenti*, available for \$220 per night.

Boats and the water are the stuff my dreams are made of...so imagine my delight upon hearing that I could spend a night on an authentic Chinese junk in Long Beach Harbor...Inside, the junk is comfy and compact. The galley is surprisingly spacious and fully equipped, including refrigerator, microwave, coffee maker, electric rice cooker and a table carefully laid with lacquer rice bowls and chopsticks, wineglasses and fresh flowers.⁷⁷

The real junkmen never had it so good. The "authentic" junk comes complete with diesel engines and gleaming controls set in polished wood. It is a fantasy out of time and place, and the tourist is drawn to it not to learn about the vessel, but to be able to say she spent a night on board a junk. What really distinguishes this vessel from a replica at Disneyland? It costs more.

⁷⁷ Ellen Clark, "Junket of a Junk," *Los Angeles Times*, 6 August 2000, L-5.



**Figure 138: The modern motorized luxury junk Mei Wenti, operated by Dockside Boat and Bed, at Long Beach, 2000.
(Dockside Boat and Bed)**

Perhaps some of the above statements regarding the whims of American perceptions and the nature of the tourist act involve more supposition than actual fact, but these speculations remain grounded in reality. Almost all the junks have slipped away. These Chinese vessels have not been, and will not be any time soon, protected by any American museum or preservation institute. The *Keying* was broken up for scrap, the *Ning Po* burned and looted, the *Free China* abandoned by the San Francisco National Maritime Museum, and the Beihai junk relegated to the blackberry bushes, all efforts to find a permanent home for the artifact to date unsuccessful.

Dear Mr. Tilburg,

Thank you for your very interesting letter on the history of Chinese junks on the west coast. I enjoyed the information, a very interesting and little known part of our maritime heritage.

Unfortunately, there is little I can offer to help out with the historic junk in Portland, OR. We have a very well defined collections mission, and little budget for more storage space. At this time we have over 30 vessels in the collection, and about the same in offers of vessels, all of which tie in strongly to our mission.

I will stop by and take a look at the vessel the next time I am in Portland. I don't know of any connections that would be interested in helping

out at this time, but will certainly keep you informed if I come across any interested parties in supporting-restoring the Chinese junk.

Best of luck, thanks for your letter,

Sincerely, Dave Pearson, Curator⁷⁸

This chapter began by raising Anthony Pagden's question of whether it is possible to ever really understand elements of foreign culture, and by extension, Chinese junks. Pagden's text, *European Encounters with the New World*, has been noted in the past as being fatalistic, setting forth an insurmountable barrier, a basic "incommensurability" between different human societies. He states "literally nothing that does not come within the range of our own cultural experience, and hence within the range of our own language, can have any meaningful existence for us."⁷⁹ This is perhaps a bit strong. What do these stories of the junks indicate? It does indeed seem to be the case, judging from the popular misconceptions surrounding Chinese junks in America, that the public has struggled with the difficulty of incommensurability. Nothing meaningful is learned from a series of hollow metaphors. It remains a fact that the only institution in America to take a serious interest in these junks is Ripley's Believe It or Not! Incorporated. But we do know something about these vessels. We know at least enough to know we're confused, and more. How is that?

The only Americans and Europeans who are able to gain any real appreciation for the qualities of the Chinese vessels are nautical specialists themselves, those that contribute in such a large part to chapter four of this study. In this sense, maritime specialists exist outside the land components of their own cultures, and are able to take part in a different subset of experience. Cultures are not as monolithic as Pagden's *European Encounters* might sometimes suggest. Sailors, whose experiences, geographical scope, and very language set them apart from landsmen, are then capable of crossing some cultural bridges otherwise inaccessible. Their contributions should be incorporated into the mainstream curricula of the appropriate fields, and not relegated to lost notes in the popular media.

⁷⁸ Dave Pearson, personal communication with author, October 2000.

⁷⁹ Pagden, *European Encounters*, 174.

CHAPTER 8

CONCLUSIONS: A CARGO OF MARITIME INFORMATION

What do we gain from "reading" these objects? What can these junks contribute to our historical understanding? In order to answer these questions, this study attempts to go beyond the simple treatment of ships as the mere listing of dimensions and ultimately the demises of individual vessels, and to investigate case histories of selected craft from an interdisciplinary standpoint. This approach proves useful to the particular subject of Chinese junks in the Pacific, delving into the area of cultural exchange between East Asia and Europe and America. The treatment of this group of junks includes narratives of voyages, a survey of what we know about these kinds of vessels, the technological analysis of ship design, the complex nature of the ship as a cultural artifact, the historical setting that shaped each voyage across the Pacific, and an ethnographic analysis of the many ways these things were perceived in the west. The private nature of these very isolated journeys on small wooden vessels precludes certain other types of analysis, such as economic impacts of marine transportation, class divisions on board, or the nature of maritime labor. These broader issues are topics for other areas of the field. The topic of Chinese junks, though, remains relatively unstudied outside China, and therefore provides an opportunity to reveal new ground, as well as experiment with various methods of historical research, material culture analysis, nautical archaeology, comparative ethnography, etc.

Likewise, while the field of maritime history in China, and the development of nautical technology over the long span of time in East Asia, are areas which deserve much more treatment both there and abroad, this dissertation does not pretend to directly fill those roles. Rather, this study attempts a full look at a selected sample of ten Chinese sailing vessels which crossed the Pacific, one way or another. To borrow a term from the field of ethnographic studies, this study takes the stories and the primary physical artifacts of these Chinese vessels and attempts a "thick" description, weaving a number of different but closely related disciplines. Pardon the pun, but the goal here is a deep reading into the historical information contained in these junks. Ultimately, the effort produces data on Chinese and

Pacific and American/European maritime history, nautical technology, cultural perceptions and misunderstandings between China and America, etc. These junks tell us a number of different things about both Chinese and American history, revealing larger-scale patterns and phenomena in technological change, maritime folklore, armed and unarmed trade, and the politics of perception. The information that these junks possess, as types of primary "documents" which can be read, represents the true cargo which they brought across the Pacific.

Individual narratives, culled from a mixture of newspapers, magazines, sea-adventure stories, and obscure footnotes, make up the first encounter with these junks. All documents relating to the vessels and the voyages had to be scraped together from a wide variety of scattered locations, almost none having been saved or preserved in any professional manner. These and a few collections of photographs in archives make up the bulk of the data base. This state of affairs simply does not seem to agree with the historical significance assigned to these vessels, nor perhaps to maritime history in general. Might it be necessary to rescue history from the ocean?¹

In general, the study of ships is limited to historical narratives of a few famous European vessels, certain significant events, or a combination of both. In a sense, our general perception of the whole significance of our maritime past seems to be encapsulated in a few stories and a handful of preserved vessels, like the USS *Constitution* and sailing replicas of the *Nina*, *Pinta*, and *Santa Maria*. Superficial treatment of ships as if their significance does not extend beyond their individual characteristics, though they are complex cultural objects, unfairly constrains the field of maritime history. Granted, some scholars have begun more involved maritime studies which incorporate the ships as the tools of the trade, but as almost all existing ship analysis exclusively features European development, findings must be limited in time and space to historical European processes.

¹ Reference here is to the influential work P. Duara, *Rescuing History from the Nation: Questioning Narratives of Modern China* (Chicago: University of Chicago Press, 1996).

Possibilities for new histories come from two directions: the growing awareness of regional trade systems featuring maritime trade routes prior to the 15th century, and the increasing inclusiveness of broader social and economic perspectives by those specialized nautical scholars, such as maritime historians and nautical archaeologists, who have in the past focused primarily on the purely technical aspects of seafaring. Ship buffs and wreck hunters might concern themselves primarily with the technical aspects of ships at first, but the field is open to growth. Maritime histories and the technical analysis of ships in the Indian Ocean, Southeast Asia, and the East China Seas could very well expand our understanding of regional trade prior to European influence, as well as the processes of later interaction.

Eurocentric bias and its reflection in the available literature on ships, as noted in chapter three, certainly affects what we know about Chinese junks. But are we really to assume that European vessels did not rule the seas? Lincoln Paine, in "Aspects of a Global Maritime History," notes:

When considering the period of maritime history—the period following the arrival of the Spanish in the Americas—on a popular level, at least, we are really in an Anglocentric world. Even in such neutral areas as exploration, it seems at first glance that the English were alone in their quest for knowledge. If Nelson is the English naval hero par excellence, Cook is the explorer.²

Perhaps, as Paine later points out, Europeans simply seem to write much more about the maritime experience than other cultures. But as influential as western ships were in the days of armed trade and world "discovery," such a modern focus skips over hundreds and thousands of years of maritime trade activity around the continent of Asia. And what, in the arrival of Spanish ships in America, heralds the modern age for Asian junks sailing the waters of the South China Sea? The caravel and galleon did initiate world change, but the junks came first.

If the type of treatment of Chinese junks is superficial in western sources, Chinese records provide only general assistance. Time and again, Chinese historians and nautical

² Paine, "Global Maritime History," 133-4.

specialists refer to the handful of western sources, such as *Worcester's Junks and Sampans of the Yangtze*, as primary documents. Chinese sources are noticeably lacking detailed information on regional junk construction. Much of European ship construction, before the 18th century, suffers from the same kind of deficiency. The informal and closed nature of the shipwright's trade plays a role in this, as well as illiteracy rates among craftsmen and sailors. In China the social and political position of coastal populations added to this phenomenon. The odd result of all this is that foreign sources, for all their occasional misperceptions and omissions, comprise to bulk of the significant works on junk construction. Junks that cross the Pacific and were recorded in the western hemisphere serve as a critical portion of that record. They must, therefore, be considered as important documents, rather than exotic oddities.

A few monographs provide, then, most of the previously recorded information for the technical analysis of these junks. These Chinese vessels were well adapted to their environment, as many of their features attest. They were also, in many ways, completely different from their western counterparts. There is little doubt that, were these junks an integral part of the western maritime tradition, they would be the focus of specialized societies bent on preserving something of their nature. One only needs to hop onto the internet to witness the variety of such groups as Ships of Discovery Inc., dedicated to the investigation of European vessels of exploration in the New World; or the Institute for Nautical Archaeology and its focus on western topics; or *Spero in Deos, Arquivos e Arqueologia* (dedicated to Portuguese maritime technology). A search under almost any European topic, whether English or Norwegian or Dutch, will turn up lists of societies interested in vessel technology. Not so for the Chinese. Why is this? The ships were distinctly not part of the mainstream European vessel evolution, though many of their features were, over time, adopted by European shipwrights. These junks are not part of that "tunnel" history which portrays the maritime past as a narrow and almost predetermined road winding through western civilization. The imported construction features, such as battens and bulkheads, and perhaps

even the mariner's compass, were understood as natural "accidents" of evolution, and not deliberate and rational innovation.

The technical analysis accomplishes two things: 1) places the vessels in a larger context of nautical evolution, both within their own culture and compared to foreign vessels; and 2) characterizes their physical nature in broader terms, such as within the modes of armed or unarmed trade. Junks, from an analysis of their construction, were not part of the armed trade mode of maritime expansion as known in Europe. This area has created confusion for historians. Armed maritime trade has become a measure used, almost unconsciously at times by some historians, to define maritime activity on the world's oceans. These junks represent an older unarmed tradition, such as the junk trade to Southeast Asia, that were in place before the European maritime influence and the rise of the modern ship design.³ If the topics of maritime trade and travel before 1500 A.D. are important, then these junks and what they can tell us about that lifestyle and technology are important. Yet, there is a large disconnection between the significance of earlier non-European maritime pathways, as we now understand them, and our failing perceptions of those Asian vessels. Such oceangoing ships are, mistakenly, even denied existence by certain contemporary historians. Confusion still exists between the practice of armed expansion and the physical vessels themselves. Some equate the two, concluding that China abandoned ocean vessels hundreds of years ago; others note the difference, but having separated the cannon from the ship, conclude that all vessels were equal. Both positions seem to suffer from a lack of detailed awareness of the relationships between nautical technology and maritime activity, between the tools and the mode of operations. Activity on the seas is determined, to a certain extent, by the characteristics of the vessels used. Chinese junks do not represent designs borne from conflict, but private vessels dedicated to cargo space. Likewise, political, social, and economic realities often influence the design of those same vessels. Interactions

³ The allusion here is to John Horace Parry's *The Discovery of the Sea* (New York: Dial Press, 1974) and its almost totally one sided vision of a Eurocentric maritime world beginning around 1500 A.D. Along the same lines, see Cipolla, *Guns, Sails, and Empires*. Arab dhows on Indian Ocean routes exemplify the same unarmed mode.

between ship design and culture run both ways. The real differences between armed and unarmed trade may be in the costs of manning, and not the vessel design anyway. Oversimplification runs the risk of missing these relationships. Do contemporary histories still suffer from a lack of nautical awareness? Perhaps.

These transpacific junks were representative, each to a greater or lesser degree, of much broader established maritime traditions from East Asia. From patrol vessels of the Green Banner army, to Fujian long distance traders, to a variety of regional fishing vessels (including those of the *shui ren* or *tanjia* boat dwellers) and the odd collection of fanciful eastern/western motorized creations, often unsatisfactory to the shipwrights of both cultures, these vessels were the physical record of the skills of the Chinese seafaring population. These are all difficult topics for standard historical methods. No other document remains to really capture that particular aspect of the past in the same manner as these actual objects.

These junks also record elements of folklore and popular religion of the coastal population. And though the technical features of junks were so different from European ships, many of the cultural features and practices reveal striking similarities with other maritime cultures. As odd as European and American observers found Chinese images and practices in the 19th century, it appears that western sailors behaved very much in the same manner as their Chinese counterparts. Along these lines of comparative maritime ethnography may lie a kind of common denominator for seafaring cultures, practices closely tied to the nature of the shared sea environment.

Such comparisons, though, must take into account notable exceptions to the rule. Other similarities aside, rank and the social privileges of command on board European vessels does not seem to find an equivalent system on Chinese junks. European captains of the smallest sea-going vessels represented both symbolic and real expressions of ultimate authority, responsible for all on board their ships. Can this strict command be associated with the burgeoning powers of the State? Is such a structure symptomatic of emerging nation-states, nautical officers symbolic representatives of the king? If so, the social structure of European vessels would be well-suited to state-sponsored armed expansion, while familial

relations on Chinese junks reflects private informal social systems. Overseas trade in China can be technically classified as smuggling for long periods, due to imperial restrictions. Perhaps it's not surprising that the social structure of nautical command reflects the basic differences between European and Asian modes of operation. Nations which relied on armed trade for existence, such as England and America, produced the aggressive maritime doctrines (i.e. Alfred Thayer Mahan) which provided for domination of the seas. Those which merely tolerated commercial activity yet ultimately restricted aggressive maritime expansion, such as China, faced nautical defeat at the hands of the British and French and Japanese. Given these very different backgrounds, it's even more impressive that many of the religious and cultural practices of the common sailors seem similar between China and Europe.

The historical circumstances surrounding these junks shaped their Pacific voyages to a greater extent, of course, than their supernatural situations. And the cumulative effect of historical settings in the Pacific region added up to a net negative influence on the clear transmission of Chinese junk culture, whether technical or religious, across the ocean. At the time these junks were procured, sailing operations in China had not vanished, but were undergoing large-scale changes, stimulated by foreign influence and the intrusion of steam technology. The junks were not, then, modern units of transportation, but slowly becoming artifacts themselves in their own home setting. Steamships were dominating the transpacific routes, and commercial sail, while not having been immediately replaced, was in decline. And the social environment in America, during the anti-Chinese agitation and Exclusion laws, certainly did not lead to the open reception of these vessels or to any serious interest in their significance.

The junk "exchange" would seem to have been truncated very early on. The junks, interpreted as documents, went basically unread by the majority of the public. The exchange basically went only as far as the small group of maritime experts who found it worthwhile to write about the junks, but no further. We can speculate about why this happened, or didn't happen as the case may be. The timing was wrong; the period of anti-Chinese exclusion met the period of steamship innovation, and neither boded well for the traditional wooden sailing

vessels; the way the practice of history in the past has featured easily-definable nationalistic topics. Transpacific junks fall into the cracks between nations and between national histories.

The junk experience in America went beyond the specific setting of expositions and entrepreneurs, and involves more basic and deep rooted aspects of perception and display. From the very beginning of their western encounter, entertainment rather than study proved most often the explicit goal. This took the vessels out of the technical world of nautical evolution, away from the context of Chinese maritime history, and placed them into a museum-like setting, isolated from history and open to free interpretation. Entrepreneurs spun tales designed to please the tourists, and Ripley's Believe It Or Not bid for access. According to modern scholars like Nicholas Thomas and Anthony Pagden and John Urry, something deeply imbedded in our human psyche gives us a tendency to gawk unknowingly at foreign objects, especially when these have been, for one reason or another, predefined for us as exotic curiosities and not legitimate subjects for our attentions. Observers were more than able to fill in the gaps in understanding, it seems, with multiple theories on junks as sea monsters, as ageless artifacts, as almost anything except what they actually were.

Junks did not manage to find any permanent destination overseas, any serious presence; they were a vanishing feature of someone else's maritime past. There was a type of cultural exchange across the Pacific Ocean, but one which faced numerous obstacles, one in which meanings shifted and transmission was unclear. Examining these junks and this exchange leads to numerous conclusions regarding material culture, the field of maritime technology, and general obstacles between Chinese and American contact.

Table 7: Summary of Junk Perspectives

<i>Perspective:</i>	<i>Sample junk:</i>
1. historical narratives of voyage	All
2. technical analysis of machines of transportation	All
3. cultural artifacts of maritime society and popular religion	All
4. entangled objects in Pacific cultural exchange (cultural meanings misplaced)	<i>Ning Po</i> <i>Amoy</i>
5. museum artifacts of the tourist gaze (featured as tourist sites)	<i>Whang Ho</i> <i>Ning Po</i> <i>Mon Lei</i> <i>Amoy</i> Beihai junk
6. technological hybrid east/west creations	<i>Sea Dragon</i> <i>Cheng Ho</i> <i>Mon Lei</i>
7. relatively stable examples of established Chinese junk patterns	<i>Whang Ho</i> <i>Ning Po</i> <i>Amoy</i> <i>Fou Po</i> <i>Hummel Hummel</i> <i>Free China</i> Beihai junk
8. potential sites for future investigation	<i>Ning Po</i> <i>Free China</i> Beihai junk

Clearly, junks, and by implication ships in general, can open the doors to a variety of historical topics, such as trade and technology, seafaring cultures, etc. From the study of these junks, it is possible to continue on and open the doors both forward, into the manner in which they were used and perceived, and backward, into the very material of their construction and the social and economic setting which made that possible. The history contained within the study of material culture should not be a subject apart from, but one merged with, the components of the rest of the maritime story. In this case, inclusion is an absolute necessity, for the vessels are the major primary documents. The task laid out here has been to illuminate their significance from the remaining records and examine the forward

linkage of how these junks fared in the west. Since European ships are the usual subjects for maritime buffs, there is much room for expansion.

In these junks we, as foreign observers, have tended to package our perceptions of the Asian Other, and our judgments of our own technological progress, thus missing many of the details and significance of this material record. Somewhere down the line, though, the Andre Gunder Franks and the Marshall Hodgsons, those historians who include a larger and older Asian world system in the changing field of world or global history, will meet the Richard Goulds and the Basil Greenhills, those maritime specialists who realize the greater historical implications for the maritime field, and the vessels of non-European trade will receive further attention.⁴ Undoubtedly, there will be even fewer of the actual objects in existence when and if this ever begins to happen, and future researchers will have to rely even more than they do now on the shadows of the ships, the rare photographs and brief notes left in relatively obscure publications.

⁴ Hopefully; both Frank and Hodgson represent that small cadre of scholars emphasizing large scale Asian trading systems prior to the maritime "break-out" of the European ships; see Frank, *Reorient* and Marshall G.S. Hodgson, *Rethinking World History: Essays on Europe, Islam, and World History* (Cambridge: Cambridge University Press, 1993). Richard Gould expands on larger social and anthropological issues in his *Archaeology and the Social History of Ships*; and Basil Greenhill is one of the more noted maritime ethnographers and technical specialists in print, contributing particularly in *The Archaeology of Boats and Ships*.

GLOSSARY

ENGLISH AND CHINESE NAUTICAL SAILING TERMS

The few published Chinese nautical dictionaries, as mentioned in the text, feature the modern terminology of steam and diesel-powered vessels, and not the world of the wooden sailing junks. There is partial information, though, available from a variety of separate sources. The problems in sorting out this terminology are legion. In almost every instance where sources include identical categories, exact Chinese terminology differs. This, in addition to the regional variations in nautical language noted in the text, ensures that any attempt to create a nautical glossary for junks is bound to remain somewhat general in nature. As Needham notes:

Again the trouble is that the practical men never committed anything to writing, and the literary men had little or no knowledge of the building and handling of ships; they could only make commentary on technical terms which even their predecessors had perhaps only half understood.¹

This glossary represents only some of the basic technical terms included in this study, juxtaposing both English and Chinese versions where possible. Information has been gleaned from a variety of miscellaneous sources. Some of the colorful descriptions for the following table comes from various standard Chinese dictionaries, some from manuscript #5 in the Hirth collection in the Royal Library of Berlin, a document written about 1850 by a Chinese naval official. Other sources include *Mathew's Chinese-English Dictionary*, *Liu Qiu Guo Zhi Lue* in *Needham's Science and Civilization in China*, *Chen's Zhongguo Fanchuan yu Haiwai Maoyi*, *Worcester's Junks and Sampans of the Yangtze*, the *English-Chinese Maritime Dictionary* (ECMD), and the *Oxford Pictorial English-Chinese Dictionary*.

¹ Needham, *Science and Civilization*..., 402.

Table 8: English/Chinese Sailing Junk Glossary

English	Chinese	Description	Characters	Citation
anchor	ding, or mao	Chinese ding for wood/stone, and mao for metal anchor	碇, 碇, 錨	Ronan 78
batten	ban tiao	"wood strip," longitudinal stiffening element attached to sails	板條	Oxford
beam	zheng heng	breadth of vessel at widest point	正橫	ECMD 61
berth	ding bo	"anchor mooring," space for vessel next to dock or quay	碇泊	<i>Zongguo Gudai de...</i> 52
boat	chuan	boat, in west any vessel usually shorter than 60 feet, as opposed to ship	船	Mathews
bollards	jiang jun zhu	"two generals," symmetrical posts for securing lines (ropes)	將軍柱	Needham 413
bow	chuan tou	"boat head," Forward or front end of vessel	船頭	DeFrancis
bulkheads	cang bi	"cabin wall"	艙壁	ECMD 88
bulkhead (forward)	long kou liang	"dragon mouth bulkhead," first watertight bulkhead at forward end of vessel	龍口梁	Needham 411
bulkhead (at main mast)	shi feng liang	"wind-using bulkhead," adjacent to main mast and mast partners	使風梁	Zhou 486 Needham 411
bulkhead (stern)	duan shui liang	"cut water bulkhead," watertight partition just forward of transom	斷水梁	Zhou 486 Needham 411
bulwark gate	shui xian men	"water spirit door," Door in side of vessel	水仙門	Ronan 79 Needham 407
chapel	shen tang	"spirit hall," shrine	神堂	Ronan 78
chunam	you shi hui	"oil stone ash," caulking material for Chinese junks	油石灰	Worcester 35
compass cabin	zhen fang	"needle place,"	針方	Ronan 78

daggerboard	chui ban long gu, or zhong cha ban	"lower(able) board dragon bone," or "center insert board," adjustable stablizer housed in slot, resists leeward drift when sailing	垂板龍骨 中插板	Oxford 284
deck	jia ban, chan	"shell board" or "deck," or "planks"	甲板, 櫓	Needham 412
deck beams	heng liang	"horizontal cross beam," solid interior structural timbers	橫梁	Needham 411
fenestrations		diamond-shaped holes cut into rudder and keel of Chinese junks		
fore-and-aft sails		sails carried on masts or spars oriented to the major axis of the vessel		
fore mast	qian wei	"front mast,"	前桅	
foremast sail (mat)	tou peng	head awning or sail	頭蓬	Ronan 78
frames	chuan lei gu	"boat rib bones," Transverse curved structural timbers, or ribs, of the hull	船肋骨	Oxford
freeboard	qiang	vertical measure of hull side above the waterline	檣	Needham 412
gallows frames	peng jia	"sail support boards," frame(s) above deck to support batten sails when lowered	蓬架	Hirth Chen 415
gudgeon		female part of European rudder attachment		
gunwale	zheng fang	"straight timber," uppermost longitudinal members along sides of hull	正枋	Needham 412
halyards	xian	lines or ropes used to raise and lower sails	弦	Needham 411
hatchway	huo cang kou	"goods hold opening"	貨艙口	ECMD 100
hold	shui mi ge cang	"watertight partitioned room," lower cargo compartment	水密隔艙	Chen Xiyu 63
hull	chuan shen, shui di ban	"boat body," or "bottom water boards,"	船身, 水底板	Chen 415

keel	long gu	"dragon's bone,"	龍骨	Hirth
keel (fore)	tou long gu	"head dragon bone,"	頭龍骨	Chen 415
keel (mid)	zhong long gu	"middle dragon bone,"	中龍骨	Chen 415
keel (stern)	wei long gu	"tail dragon bone,"	尾龍骨	Chen 415
keelson	nei long gu	"inner dragon bone" main longitudinal element running above keel and interior of hull	內龍骨	ECMD 310
leeboards	pi shui ban	"overside water boards," adjustable keel-boards mounted on the side of vessels	披水板	
lines	liao	ropes on board sailing ships	繚	
lines for sails	liao si, peng liao	"wind silk," running rigging, the ropes used to manipulate the sails	繚絲, 蓬繚	Mathews Chen 415
main mast	da wei or zhong wei	"big mast" or "middle mast,"	大桅, 中桅	Mathews
mainsail (mat)	da peng	"large awning" or sail	大蓬	Ronan 78
mast	wei	mast	桅	Mathews
mast partners	wei jiazi, di long	"mast tongs," verticle side-by-side supports of mast built into vessel, also called "ground dragon" (horizontal)	桅夾子, 地龍	Mathews Needham 413
mizzen mast	wei wei	"tail mast," stern-most mast of the ship	尾桅	Mathews
mizzen sail (mat)	wei song	"tail sail,"	尾送	Ronan 78
oculus	long mu	"dragon eye," painted or carved eyes on the bow quarters. Bow quarters above the eyes were known as "eyebrows"	龍目	Ronan 79 Chen 415 Needham 413
pine	sha mu	pine tree	杉木	Worcester 35

port side	zuo xian	"left ship side," sometimes called "horse door side," Left side of vessel when facing forward	左舷	ECMD 423
rigging	wei gong Sheng lian	mast pole rope	桅槓繩練	Mathews
rudder	duo	rudder	舵	Ronan 78
rudder cables	du le	"belly straps" Fore-and-aft underwater cables attached to rudder	肚勒	Ronan 78 Needham 405
rudder post	duo tou	"rudder head,"	舵頭	Oxford
sail	fan	"sail,"	帆	Mathews
sailors	chuan fu	"boat crew,"	船夫	Mathews
sampan	san ban	"three boards," generic term for small skiff or boat	三板	Worcester 42
scantlings	cai liao chi cun	material measurements (width and thickness) of main structural elements in wooden ship building	材料尺寸	ECMD 481
scarf	jie kou	"joint cut," joining connection between two timbers	接口	
sheer	xian hu xian	"ship arc line," curving sweep of line of hull	舷弧線	ECMD 497
shipwright	zao chuan shi	"boat building expert,"	造船師	Mathews
starboard side	you xian	"sail spread side," Right side of vessel when facing forward	右舷	ECMD 423
stern	wei	aft or back end of vessel	尾	
strake	ban	"board," Hull plank	板	
taffrail deck	jiang tai	"general's platform," the uppermost rail and highest deck across the stern transom, poop deck	將台	Chen 415 Needham 405
thole pins		"tongs," fulcrum for operating oars over sides of vessel		Hirth
tiller	duo bing	"rudder handle,"	舵柄	Oxford

transom (stern)	wei ban	"stern boards," Transverse end of vessel	尾板	Oxford 285
transom (bow)	tou ban	"head boards," prow or bow transom, also called tuo lang ban or "wave protection boards"	頭板, 托廊板	Oxford 285 Chen 415
transom (bow, lower portion)	tuo lang ban	"wave lifting board,"	托浪板	Needham 406
wale (lower)	zou ma	"running horse," thickened strake, often semi-rounded (unfinished) log running length of hull	走馬	Chen 415 Hirth
wale (upper)	shui she	"water snake," wale above the "running horse"	水蛇	Chen 415 Hirth
winch	jiao che	"twisting machine," synonym for windlass	絞車	Chen Xiyu 107
windlass	liao, da xiao liao niu	"winders," deck equipment for hauling on lines, also "large and small winding ox"	繚, 大小繚牛	Ronan 78

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