

Technology from Overseas: Misunderstanding Vessels from Afar

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ABSTRACT

In the maritime heritage preservation field, we preserve what we value, and (perhaps) we only value what we truly understand. The nautical technology of traditional Chinese sailing vessels that crossed the Pacific, often demonstrated through the stories of their voyages, have now opened a window for non-Chinese to understand more of the maritime heritage of China and the legacy of Chinese seafaring. Yet, when the Western public first began to encounter these unfamiliar vessels, very few were capable of understanding what they were seeing. With the exception of the few nautical experts of the time, most could not grasp the technical or cultural construction features. Foreign observers were hampered by their social biases, reluctant to grant maritime expertise to shipwrights and sailors from a non-European tradition, unable to recognize the obvious skills that produced vessels so unfamiliar to their own experiences.

They regarded Chinese vessels as quaint and unwieldy creations, derived somehow by accident, or built after the fashion of sea monsters. Vessel designs were generally thought to represent "ancient times," no matter where or when they may have truly originated. Public appraisals often comprised an odd mixture of surprise and contempt. As we now know, the exact opposite was often true: the Chinese vessels that found their way to scattered ports across the Pacific were complex craft. Most represented successful regional designs evolved over many years of trial and error on long sailing voyages.

The Free China was one of the vessels that successfully crossed the Pacific, yet was then subject to some of this foreign bias and misunderstanding. The obstacles faced, therefore, in the preservation story of the Free China include not just the storms of her ocean passage and the ravages of shipworms and weathering over time, but also inherent biases and misunderstandings during her sojourn to the West. Maritime encounters on the global ocean, including Western experience with versions of Chinese traditional ship design, sometimes tell us more about our own limitations as humans, than they do about the amazing variety of nautical design within our shared maritime past.

Keywords: Vessel, Maritime, Preservation, Nautical technology

List of Figures

Figure 1: Chinese vessels in context; 5-masted commercial junks moored near the Gulf Coast of Peichili, northern China, circa 1920. (FH Wells Collection)

Figure 2: The junk Amoy and passengers during its West Coast tour, at Eureka California in 1922. (San Francisco Maritime National Historic Park)

Figure 3: Plan sketch of the bulkhead positions of the Free China, based on drawings by Henry Rusk. (Al Dring Collection)

Figure 4: Harry Dring and associates on board Free China at Alameda in the 1950s; vessel in original configuration. (San Francisco Maritime National Historic Park)

Figure 5: The Free China as Golden Dragon, altered and then abandoned at Bethel Island Boatyard in 1991. (Hans Van Tilburg)

Figure 6: The Ning Po on display at Catalina Island, circa 1920s. (San Francisco Maritime National Historic Park)

(Any views or opinions expressed herein, are those of the author and do not necessarily reflect the views of NOAA or the Department of Commerce.)

INTRODUCTION

Historically, travelers to East Asia from Marco Polo to Ibn Battuta had long observed that China possessed more ships than any other country in the world; perhaps that was so. More recently in the 19th century, the scale of China's traditional maritime capacity had been glimpsed by other foreigners. Beginning in 1842, the Imperial Maritime Customs Service collected revenue on China's large foreign trade at the newly opened treaty ports, but the greater amount of domestic commerce was beyond measure. In 1873, Sir Robert Hart, British diplomat and inspector-general of the Custom Service, noted: "Of native trade in the interior, and the movement of native produce and foreign goods along the coast in Chinese junks, we know nothing." (*Imperial Maritime Customs* 1873: 407) Others were familiar with the variety of Chinese nautical designs, but also saw the impacts of modernization on the world of traditional sail. George Raleigh Gray Worcester, a former midshipman in the Royal Navy, inspector for the Chinese Maritime Customs Service, and editor of *The Mariner's Mirror* (journal of the Society for Nautical Research established in 1911), felt the record of this vast maritime world slipping away: "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 forever..." (Worcester 1966: xiv)

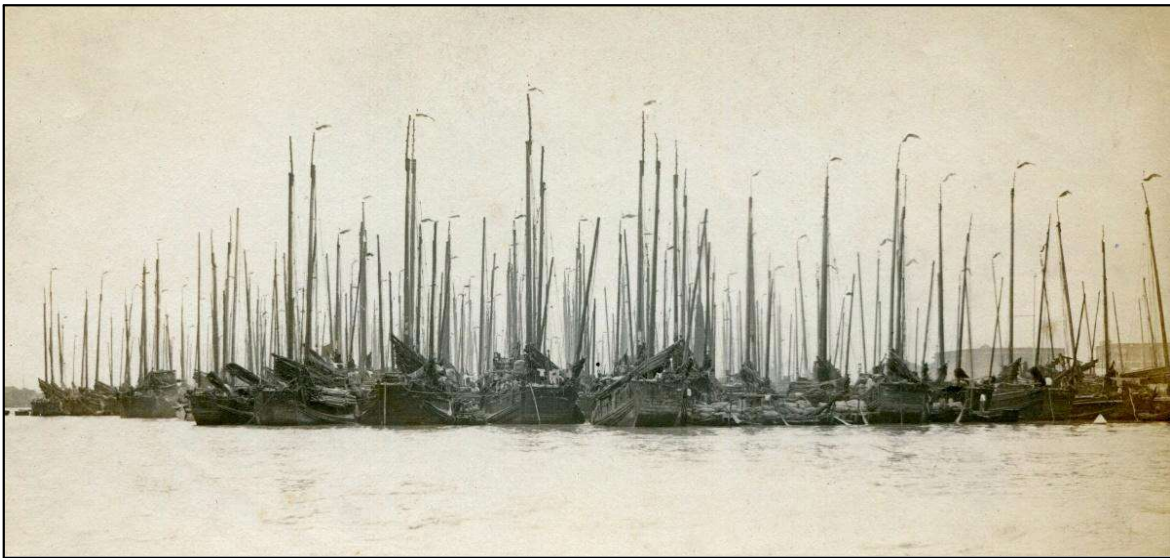


Figure 1: Chinese vessels in context; 5-masted commercial junks moored near the Gulf Coast of Peichili, northern China, circa 1920. (FH Wells Collection)

Joseph Needham, famed British historian and sinologist, was clear in his praise of the technological achievements of the Chinese shipwrights and his appreciation of their traditions. "The conclusion that this indicates a clear technical superiority of Chinese seamanship seems almost unavoidable...European seamanship probably owes far more than has been generally supposed..." (Ronan 1986: 210)

Today, China is clearly understood to have had a significant commercial maritime influence over the regions of East and Southeast Asia, and maritime trade contacts as far west as Africa and the Red Sea. This strongly implies advanced capacity in conducting oceanic trade under sail, advanced nautical designs over a long period of time.

A few of the traditional Chinese sailing vessels that crossed the Pacific in the early 20th century provided examples of particularly historic design elements of these advancements in Chinese nautical technology:

1. *Whang Ho* crossing in 1906 (Guangchuan or southern coastal vessel after the style of a “large soldier boat”)
2. *Ning Po* crossing in 1912 (large commercial vessel known as a Fuzhou pole junk)
3. *Amoy* crossing in 1922 (local fishing vessel from the area of Xiamen, Fujian Province)
4. *Free China* crossing in 1955 (Fujian-style “flathead junk” coastal merchant vessel)

These are remarkable examples of established features in Chinese maritime technology, advancements in designs evolved over hundreds of years. Elements like the adjustable rudders, transom bows, and watertight bulkheads are features going back to the Tang Dynasty (7th century) and earlier. In 2010 UNESCO reviewed and formally inscribed the watertight-bulkhead technology of Chinese junks to the List of Intangible Cultural Heritage in Need of Urgent Safeguarding.



Figure 2: The junk Amoy and passengers during its West Coast tour, at Eureka California in 1922. (San Francisco Maritime National Historic Park)

The *Free China* provides one of the best-preserved case studies of traditional nautical design, because the very rare vessel, as well as most of her transpacific crew, are still with us today. In 1955, a group of intrepid Taiwanese fishermen located and purchased an old sailing junk for a transpacific voyage (Professor Chow’s paper). Their goal was to enter the vessel in the upcoming transatlantic sailing race from New York to Sweden. The voyage completed, the sailing junk remained in the San Francisco Bay area, and has only more recently been returned here, to Taiwan, initially in the care of the National Museum of Marine Science and Technology.

So why are we only now learning more about Chinese ships built hundreds of years ago? In the words of Joseph Needham, “systematic nautical treatises did not arise in Chinese culture, or at least did not get into print.” (Needham 1971: 380) Shipwrights in China did not devote their time to

scholarship, and the literary class did not engage in the building and handling of ships. Yet, for most of history, seafaring people never built watercraft by plans or documents, but by “eye,” the knowledge being passed from person to person within a closed guild or community of shipwrights. This was as much art form as industrial enterprise. China is certainly not alone in this respect.

This presentation raises one hypothesis and one question: foreign observers failed to comprehend the technical features and variety of designs of Chinese vessels even when examples arrived on their own shores; do we have any better understanding today of this vanished maritime world?

NOT LIKE A SHIP OF ANY KIND

This century-old basic misunderstanding by Americans of historic vessels which appeared wholly foreign and strange was expressed through several themes, revealed in numerous articles published at the time. Some thought junks were modelled on sea monsters; authors described vessels like the *Ning Po* 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.” (Lawson 1988: 26) Others were convinced junks were remnants of ancient history, reflected in the popular assertion that Chinese junks were ageless vessels, little changed through thousands of years, static objects of a stagnant civilization.

Inexplicably, when the teak-built junk *Keying* arrived at the Great Exposition in London in 1851, some British writers marveled “that seafarers who knew nothing of shipbuilding or navigation managed to bring the craft to London in the first place.” (Altick 1978: 297) The ship, in this case, was not a ship at all.

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...with no rigging, with nowhere to go aloft...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. (*The Examiner*, 24 June 1848: 403)

This may denote simple cultural arrogance, a vice afflicting all cultures at one time or another. Faced with strange craft from a much older civilization, observers seemed quick to denigrate what they did not understand as a way of confirming their own supposedly more advanced vessels. Perhaps this tendency is something more. 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...” (Pomeranz 2000: 25)

The *Free China*, arriving in San Francisco in 1955, sailed out of the storied past. The crew members, though, were apparently on a mission only some four or five hundred years old, as they were “bound eastward around the world, reversing Magellan.” (San Francisco Chronicle: 1955) The *Free China*, upon arrival, was in close to her original condition. The hull was intact, no engine or modern rudder had been fitted on board. The 80-foot vessel featured ten interior watertight bulkheads, and ten interior watertight compartments.

The images and plans of the *Free China* make clear a number of Chinese construction patterns well established by historical and documentary records. These include bow and stern transom construction, multiple interior bulkheads with mast partners affixed, masts in now familiar forward positions (main mast forward of the 52% aft spot, an alteration from Song-Ming design), greatest beam aft of amidships, complex segmented keel (but without angled fore keel or stem), batten lug rig, masts with no standing rigging, medial suspended rudder with vertical pillars and horizontal

winch, culturally appropriate decorations, etc. The *Free China*'s construction also mirrored a turret-built hull design. Access to the holds exists only through narrow centerline, the hull strakes literally curving over the gunwale or tops of the holds. The turret type construction led to great strength in the hull, "masterpieces of ship construction" (Worcester 1971: 164).

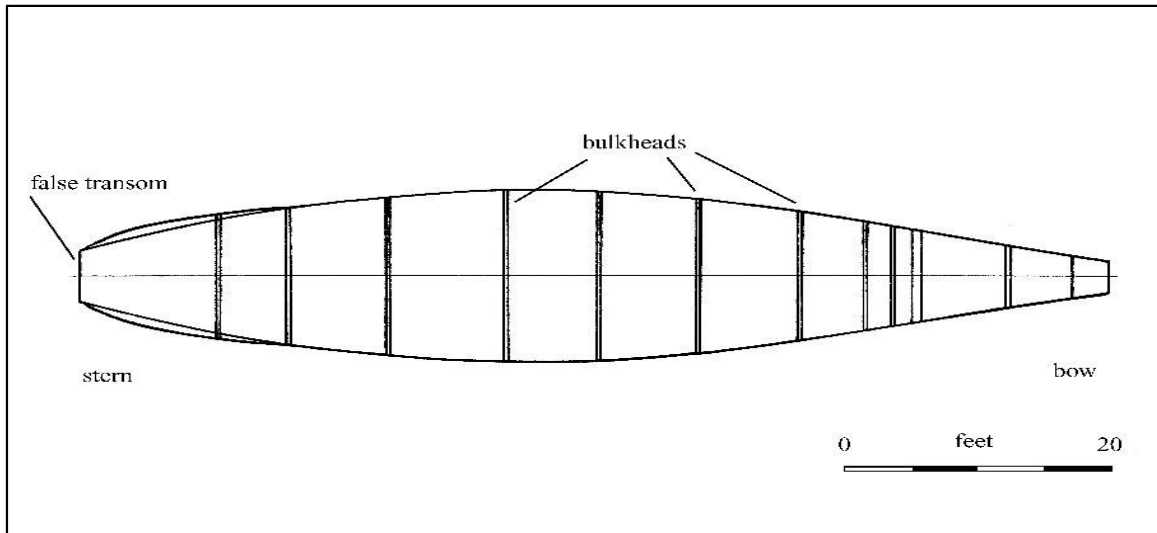


Figure 3: Plan sketch of the bulkhead positions of the *Free China*, based on drawings by Henry Rusk. (Al Dring Collection)

Yet, despite the fortuitous arrival of an exceedingly rare example of sophisticated Chinese nautical design, and a large Chinese-American community in the area, the historic boat could not find safe harbor. The *Free China* was initially moored and then abandoned at China Camp, a former fishing village in Marin County. The National Maritime Museum in San Francisco declined responsibility. Only a small group of local volunteers (including the original crew and Harry Dring, Max Lemke, and Henry Rusk), understanding the significance of the traditional craft, took ownership and had her towed to the Alameda Shipyard across the Bay, where the *Free China* would spend the next four years.



Figure 4: Harry Dring and associates on board *Free China* at Alameda in the 1950s; vessel in original configuration. (San Francisco Maritime National Historic Park)

Incremental and volunteer efforts kept the *Free China* afloat, but were insufficient to preserve or restore her original form. The interior watertight bulkheads were cut away. Her keel was deepened, original adjustable rudder replaced with a fixed steel rudder, and stern compartments were cut open for the installation of an inboard diesel engine. Sold to Govinda Dalton in 1989, the distinctive foremast was removed, and the ornate traditional oval stern was cut away by chainsaw (reportedly, to save dock fees, which were charged by the foot). Alterations continued, fashioning the Chinese junk into a western live-aboard boat, and ultimately a pirate radio station. Finally, renamed *Golden Dragon*, the junk ended up, again abandoned, on blocks at Bethel Island Boatyard near Sacramento, California. Despite volunteer efforts, the sojourn of this important vessel in America was a story of tragic neglect. American readers might imagine the last working Nantucket wooden schooner, or the last commercial sidewheel steamer somehow ending up on distant foreign shores and, misunderstood by all, being turned into matchsticks.

It is axiomatic that oceans have acted as seaways for the transmission of not just technology but culture. However, Nicholas Thomas, in *Entangled Objects: Exchange, Material Culture, and Colonialism in the Pacific*, challenges the easy acceptance of this rule. In Thomas' view, cultural meaning can only stem from the original society, and is not easily transmitted through the trade of just the actual object itself, void of further context or understanding. (Thomas 1991: 131) This may be particularly true if some of the audience is already hostile to foreign immigration itself.



Figure 5: The Free China as Golden Dragon, altered and then abandoned at Bethel Island Boatyard in 1991. (Hans Van Tilburg)

FUNCTIONS BEYOND ARCHAEOLOGY

It is clear that ships, whether they are junks or schooners or steamships, embody more significance for various seafaring cultures than mere transportation machines. One need only read about the RMS *Titanic*, HMS *Victory*, or the importance of the replica dhow *Jewel of Muscat*. On a planet which is 71% ocean, iconic traditional vessels satisfy a deep cultural need for self-identity and nationalizing narratives. On the other hand, judgements about unfamiliar vessels can confirm unfounded and sometimes xenophobic presumptions about outside cultures. Archaeology is the systematic recovery and interpretation of physical evidence in order to shed light on past human behavior. But if these reactions are any measure, foreign encounters with strange sailing junks reveal more about current social conditions than anything else. The history and technology of China's nautical advancement was erased behind socio-political bias.

The ship, or the shipwreck, is a cultural object. Therefore, its interpretation is a cultural process, subject to a much wider interpretations than those associated with research. For example, the misunderstanding of Chinese junks was not simply due to unfamiliarity, it was part of a vast negative reaction to immigration and social change in America. The Chinese Exclusion Act of 1882 was the first U.S. immigration law to exclude an entire ethnic group. Philip P. Choy and Lorraine Dong and Marlon K. Hom's *The Coming Man: 19th Century American Perceptions of the Chinese*, captures this hysteria in a striking image. Set on the rocky coast, their image shows a familiar female persona of Lady Liberty impaling herself on her own sword, as "ancient" Chinese junks sail past the sinking ships of modern American merchant vessels. The caption highlights the American ship of state, our commerce, gliding noiselessly towards its doom.

Contemporary interpretations may ultimately be to either the detriment or benefit of the underwater cultural resource. The recent obsession of discovering World War II shipwrecks provides one case study. Advancements in marine technology are making the deep ocean more accessible. Several private organizations funded by wealthy entrepreneurs possess their own research vessels and highly advanced tools (e.g. autonomous and remotely operated underwater vehicles rated to 6,000+ meters)

dedicated to the search for WWII shipwrecks. This is not driven by any historical or archaeological gap analysis, or by any resource management need; these are not academic or resource management organizations. (Research objectives may be second or even third priority in this case.) There are, however, notable benefits in terms of personal satisfaction and public media exposure. Broadly speaking, the valorization of past naval battles conforms with a national narrative of a (seemingly) more unambiguous war, an important panacea for what many see as a more morally conflicted present. Valorizing World War II often casts the past in black-and-white terms, ignoring the many more difficult “grey areas” of all warfare. WWII wrecks do tell a story, but perhaps enough time has passed to allow contemporary interpreters to shaping their own narratives and leaving out more difficult truths.

Not all WWII UCH sites are amenable to this treatment...it is more difficult to celebrate the wreck site of a sunken B-29 Superfortress located near Saipan, loaded with ordnance for the carpet bombing campaign of Japanese cities (actions now defined as war crimes). The more recent negative public reaction to the reinterpretation of the B-29 known as *Enola Gay* (the aircraft with dropped the atomic bomb on Hiroshima) is also an example of this. Non-combatants as well tend not to be included in this type of deliberate remembrance. They do not fit into the national myth of WWII. Military historians such as Keith Lowe have expanded on the implications of this obsession of focusing on the history and archaeology of WWII, (https://www.ted.com/talks/keith_lowe_why_we_need_to_stop_obsessing_over_world_war_ii?language=en).

Certainly, there are archaeological and historical objectives to be accomplished in these deep ocean WWII discoveries, but those are only two of a host of other factors, and the cost involved in pursuing these projects is often beyond the ability of universities or resource management agencies. Larger motivations beyond intrinsic archaeological values and academic research drive the selection and funding of these major deep ocean explorations; the (almost accidental) beneficiary is maritime heritage research.

When compared to mid-20th century naval battles (often well-documented by historical records), the significance of finding an intact Chinese merchant vessel from the Song Dynasty, fully loaded with export ceramics, seems in a wholly different category. Unquestionably, the opportunity to understand the cargo and trade of the period, as well as the vessel's construction, from an era poorly recorded in historical documents, is invaluable. That such a vessel was discovered along the ancient maritime trade routes of the South China Sea, however, opens a similar window on larger political and economic forces at play. As Dr. Tim Winters notes in *Geocultural Power: China's Quest to Revive the Silk Roads for the Twenty-First Century*, historical interpretation of maritime trade (and Admiral Zheng He himself) provides a critical foundation for the global infrastructure goals of the contemporary Belt and Road Initiative. Clear archaeological significance, and powerful contemporary motivating factors, provide the strongest support for some of the most impressive preservation projects.

Heritage preservation and archaeological research do not take place in a vacuum; they are, like so many other human efforts, shaped by cultural considerations beyond the explicit and defined heritage and research objectives. History and archaeology are only two of the many values of underwater cultural heritage, measured in intrinsic and extraneous aspects. It is not hard to understand the social importance to Taiwan of a historic Chinese vessel named *Free China* (the junk's name prior to being purchased for the transpacific journey was *Sheng Xiao Li*...Victory, Piety, Profit). It is fortunate that the historic vessel survived the period of neglect in California (following prior decades of anti-Chinese sentiment on the West Coast), to emerge as a maritime icon of cultural

identity. Though the value of underwater cultural heritage is usually measured in intrinsic historical and archaeological criteria, notable projects usually find greater roles to play in the wider world.

SAVING A BOAT FROM THE SCRAP HEAP

In 2008, Dione Chen, daughter of the late Reno Chen (*Free China* crewman), founded the non-profit Chinese Junk Preservation society, dedicated to finding a permanent home where the proper preservation and restoration could assure the preservation of the rare vessel. Society supporters included maritime historians, archaeologists, preservationists, maritime enthusiasts, friends and family related to the transpacific crew, and others associated with the story of Chinese Americans in California. In 2010, volunteers from the National Park Service (NPS) and from the National Oceanic and Atmospheric Administration (NOAA) conducted a photo and laser-line scan documentation survey, compiling necessary data for the construction of a steel transit cradle to support the aging wooden hull. The cultural preservation community in Taiwan was contacted, and the response soon included the formation of a special investigative team. Ultimately, the Executive Yuan (Cabinet) directed the Cultural Heritage Preservation Research Center to take ownership and preserve the *Free China* (Dr. Wen-yan Chiau's paper). In April 2012, the old junk finally started her return voyage home, carried by modern containership; the collaborative preservation effort between Taiwan, the United States and New Zealand was successful.

Today, accomplished scholars/archaeologists such as Randall Sasaki (*The Origins of the Lost Fleet of the Mongol Empire* 2015), Jun Kimura (*Archaeology of East Asian Shipbuilding* 2016), and Michelle Damian (*Late Medieval Japan's Seto Inland Seascape: shipping, sailors, and seafaring* 2015) and others are increasingly providing archaeological and historical information on East Asian ship construction accessible to foreign and U.S. audiences. But has this information penetrated the general understanding in the West?

Though the important role of the Chinese migrants in the history of the United States is better understood today, and (arguably) the attitude towards immigration has shifted since 1882 and the Chinese Exclusion Act, the true scale and legacy of Chinese seafaring, and the nautical achievements of Chinese shipwrights, still mainly eludes mainstream audiences in the West. It is in this void that odd mixtures of fact and fiction, even when thoroughly debunked, can be marketed as creditable by savvy publishing houses (e.g. Gavin Menzies' *1421: the Year China Discovered America*). Academic maritime texts purporting to focus on "the history of the wooden ship" and "world maritime history" usually relegate scant few pages to non-European vessels. If Asian craft are included, the topic is usually covered by the generic representation of a single type of Chinese vessel, or a single representative dhow from the Indian Ocean...a gross oversimplification. Symptomatic to this perhaps, neither "dhow" nor "junk" (labels used in the West) are terms truly native to their appropriate regions. 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. The developmental narrative of "the wooden ship" in these purportedly global texts on world maritime history runs like a narrow wormhole through time, from Greece to Rome to Northern Europe and then the West's "Age of Discovery" in the 15th century. The field of maritime archaeology often seems to follow suit by focusing on Western wooden craft, as if its sole task was to explain the progression towards the modern container ship. Other than a few noted technological infusions such as the lateen sail or mariner's compass, Asia as a whole remains substantially without agency and nonintegrated from the maritime world system as interpreted by many foreign historians.

MODERN RELEVANCE, MODERN THREATS

Iconic vessels and UCH sometimes find social connection beyond academia in the broader modern world. The maritime preservation field, shaped from the disciplines of history and archaeology, has clear ramifications for cultural identity, economic infrastructure, and even the geopolitical balance of power (South China Sea). What does this mean for the management and preservation of the underwater cultural heritage itself? It might be useful to capture these broader functions to understand the values of the UCH site, to recognize functions beyond the usual historic preservation template. Alternatively, it might be useful to recognize these broader interpretations to understand why some archaeologically significant sites are not being better preserved.



Figure 6: The Ning Po on display at Catalina Island, circa 1920s. (San Francisco Maritime National Historic Park)

The historic remains of the large Fuzhou pole junk *Ning Po* rest quietly beneath the mud in Cat harbor, Catalina Island (west of Los Angeles). The 138-foot 500-ton coastal cargo vessel was reportedly built in the 18th century and had a storied past: a smuggling vessel in the Opium Wars, a rebel vessel during the Taiping Rebellion, and more. Purchased by an American and used as a museum attraction and an offshore “speakeasy” during Prohibition, the venerable craft was burned to the waterline when fire rafts from a Hollywood movie set drifted off course in 1935 (Van Tilburg 2007: 23). Her lower hull (archaeologically very diagnostic) lies beneath the protective muds of the sheltered bay today; to date no survey work has ever been initiated on the site.

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Biography



Hans Van Tilburg was originally introduced to the ocean on board his father's sloop *Brunhilde* at the age of eight, and started to dive at the age of 11 in 1972. He holds a BA in geography from University of California Berkeley, an MA in maritime archaeology/history from East Carolina University, and a PhD in history from the University of Hawai'i, where he ran the graduate program in maritime archaeology and history. Hans has taught courses in world maritime history and published over 30 articles and book reviews, as well as several books. He has served as a consultant for UNESCO's cultural heritage program and co-instructor for UNESCO's UCH Foundation courses. He is currently the maritime heritage coordinator and unit diving supervisor for NOAA's Office of National Marine Sanctuaries in the Pacific Islands region.