

The sea stories and stone sails of Borobudur

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Abstract

The most profound examples of ancient Southeast Asian ship iconography are found on the walls of the 9th century Borobudur monument in central Java. As the contemporary assemblage of nautical iconography from Southeast Asia is limited, the ship reliefs play an important role in debates over trade and expansion in India, Indonesia and mainland Southeast Asia.

The Borobudur ships are technical depictions, and contain data about rigging, rope use, rowing configurations and outrigger construction. Elements in their design have persisted independently as Indonesian watercraft evolved, including outriggers, bipod masts, canted rectangular sails, and quarter rudders. Discussion has focused on construction features, and scholars have made various assertions about how the vessels might have been built, how they were used, and their origin.

The vessels' artistic context is often ignored. The ship reliefs are part of a religious narrative which directly influenced how the panels were designed, how the ships were portrayed, and how we should ultimately interpret them. The stories provide important clues as to where each vessel was headed, who was aboard, and what is happening on deck. Despite their detail, the Borobudur vessels should be interpreted cautiously, and not as ancient blueprints. They are artistic renditions that were never meant to float - they were meant to inspire.

Key words: Borobudur, bas-reliefs, Sailendra, Indonesia, Java, nautical archaeology

Introduction

The most informative examples of ancient Southeast Asian ship iconography are found on the ninth century CE Borobudur monument in central Java (Fig. 1). Borobudur is a massive terraced pyramid, decorated with thousands of bas-reliefs that tell stories from the lives of the Buddha, Bodhisattvas and other saintly figures. Javanese artisans depicted 11 boats within the 1,460 elaborately carved stone panels (Fig. 2). Due to the quality of their technical detail, the artistic, religious, and narrative context of the Borobudur vessels is often ignored. This is problematic, because the vessels are

components of Buddhist narratives which directly influenced how the panels were designed, how the ships were portrayed, and how we should interpret them. Moreover, examining the Borobudur vessels in the context of their associated seafaring stories provides unique insights into the Javanese perception of sailing, the ocean, and its dangers.



Fig. 1: Eastern Indonesia, showing the location of Borobudur

Borobudur

Members of Java's Śailendra Dynasty erected Borobudur sometime between 780 and 832 CE (Miksic, 2010:29). Viewed from above, Borobudur's nine terraced levels resemble a series of nested concentric squares and circles.

This layout is similar to that of a *mandala*, a sacred diagram that represents the structure of the universe (Miksic, 2010:37). The unique design of the monument has generated more than a century of debate, yet its ultimate nature remains a mystery.

Borobudur seems to have been a place of pilgrimage and instruction. Over the centuries, diverse groups of monks and devotees deposited thousands of votive stupas and clay tablets at the monument (Ray, 2005:318). The visitors continued their pilgrimage as they slowly circled the monument, ascending level by level. The panels on the lower levels depict the core of Buddhist teaching: the *Mahakarmavibhanga* (laws of karma), the *Jātakas* (stories of the Buddha's past incarnations), the *Lalitavistara* (stories from the Buddha's final incarnation), and the *Avadānas* (stories of other enlightened beings) (Soekmono, 1976:20-36). It is probable that once these basic lessons were mastered, monks might have permitted select pilgrims to ascend to the upper levels containing the more challenging and esoteric teachings of the *Gandavyuha* and *Bhadracarī* (Miksic, 2010:71). Surrounded by reliefs of holy figures, miracles and magical stories, the visitor was within a scared, mystical world (Miksic, 2010:46).

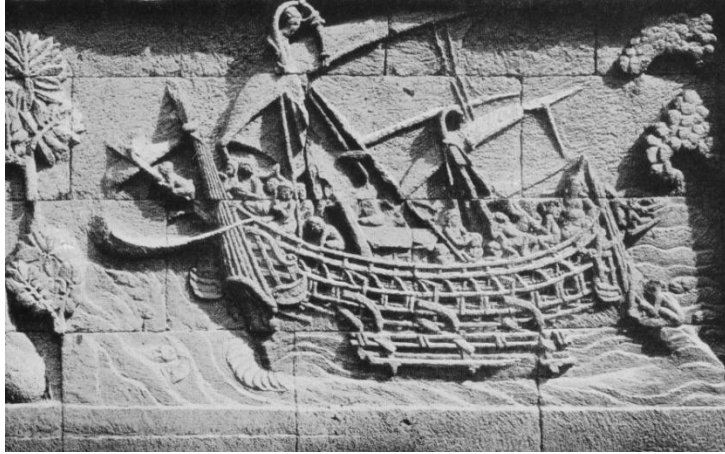


Fig. 2: Vessel I.b.86, Minister Hiru's ship (from Van Erp, 1923)

The Ship Reliefs and Their Artistic Context

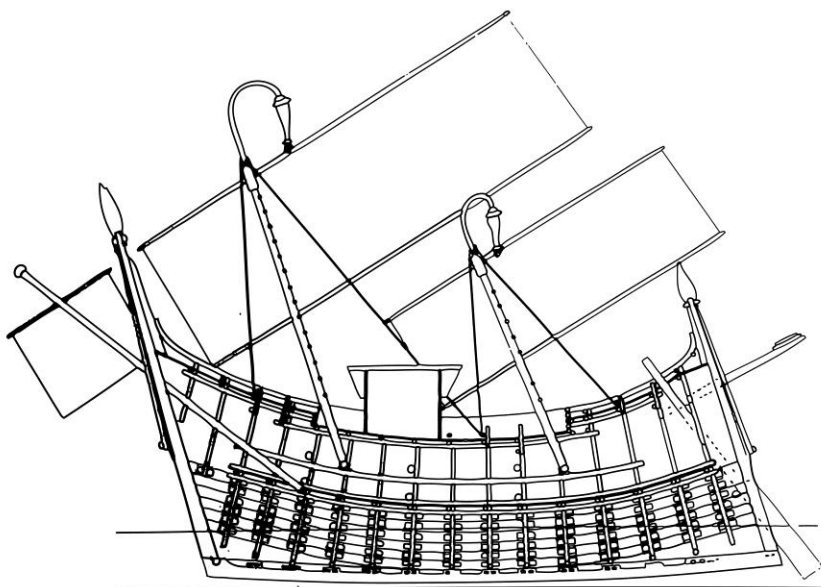
Eleven ships are depicted in Borobudur's reliefs. They are remarkably technical depictions, with data about rigging elements, rope use, rowing configurations, and outrigger construction.

Numerous scholars have used the reliefs to expand our

understanding of ancient sailing vessels including Van Erp (1923), Hornell (1946), Mookerji (1957), Needham et al. (1978), Horridge (1982), Manguin (1993), Ray (1994), Jahan (2006), and numerous others. Debate has focused on five outrigger vessels with canted rectangular sails, bipod masts, and rowing galleries; they are most akin to *kora kora* of the 16th and 17th century (Horridge, 1978:9). Due to their exquisite detail, the Borobudur vessels are often treated as ancient blueprints, while their artistic context is ignored. This is problematic, because the vessels are components of religious narratives which directly influenced how the panels were designed, how the ships were portrayed, and how we should interpret them.

The vessel depicted in panel I.b.86 has inspired several reconstructions. These sailing hypotheses combined information from the reliefs with evidence available from artwork, ethnography, archaeology, and indigenous seafaring traditions. These reconstructions include *Sarimanok*, commissioned by Robert Hobman and sailed from Java to Madagascar in 1985 (Dennison, 1985), Philip Beale's full-sized replica, which was launched in 2003 and sailed from Jakarta to Ghana (Beale, 2005), and the *Spirit of Majapahit*, launched from Jakarta in 2010 on a goodwill voyage to Brunei, the Philippines, Japan, China, Vietnam, Thailand, and Singapore (Antara, 2010, July 5).

Erik Peterson used I.b.86 as a set of blueprints to draft a detailed reconstruction (Fig. 3). Petersen (2003:42) hypothesized that the artist "started by making a precise picture of the ship as seen from the side." To accommodate for some of the obviously skewed



1 Fig. 3: Erik Peterson's elegant reconstruction of I.b.86 (from Peterson 2003).

elements, Peterson suggested that the artist changed perspective to illustrate the rowing galleries and outriggers "as seen from above and from in front." Peterson executed this blueprint experiment well, but there are several problems with the underlying assumptions. The carvings are not

schematic side profiles with elements added in contrary views. The artist who created I.b.86 was a master stone-carver (Van Erp, 1923:19). They chose to depict I.b.86 sailing toward the viewer at an angle, an incredibly difficult illusion to attempt in bas-relief. To show this perspective, the artist exaggerated the stagger of the bipod mast legs and depicted the forward face of the outrigger booms, none of which would be visible in schematic view. The ship tapers dramatically from stem to stern to further reinforce this perspective. The point where the bow enters the water (marked by a furled wave) is close to the lower part of the frame while the break of the stern is positioned much higher. When combined with the tapered form, this slanted waterline gives the impression of an oblique view. The artist tried to simulate this viewpoint in panel I.b.53 as well. The strake lines sweep up to the stem, and down the other side, giving us a head on view of where they meet at the bow. More importantly, I.b.86 is not sitting upright in the water. The artist went to great efforts to show the ship under full sail. The canvas billows in the wind. The rigging is taut. The artist also exaggerated the forward rake of both stem and stern to show that the vessel is heeling over on its side and responding to the force of the wind (this was not corrected in Peterson's model, which has retained the extreme forward rake of the stem and sternpost).¹The artist was attempting to show a dramatic three-dimensional view.

Peterson (2003:42) hypothesized that while the individuals aboard the vessels were exaggerated, "the relative size of all the ship parts seemed to be accurately represented." In his reconstruction of I.b.86, Peterson insightfully suggested that each of the modules in the rowing gallery accommodated one individual, and derived a waterline length of 16.4m (23.4 m overall) by estimating that the distance between each of the "modules" in the rowing gallery was 1 m (Petersen, 2003: 52). However, size is seldom realistic in ancient iconography. Manguin (1993:263) correctly observes that "with very few exceptions, iconographic representations of sailing vessels teach us little of the structure and size of the craft depicted... ...What one learns from these depictions concerns the superstructure: how many masts and sails were used and what their shape was, the position and number of rudders, and whether or not outriggers were present."

I.b.53



I.b.86

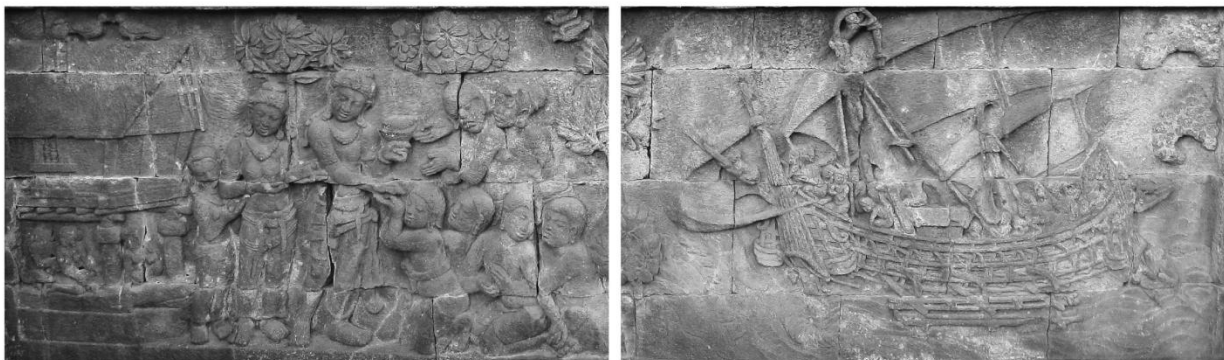


Fig. 4: Multiple panel layouts. I.b.53 has three subdivision, while I.b.86 is divided in two (based on images from www.photodharma.net, Anandajoti, 2013).

Panel proportions and division are the primary factors determining the size, shape, and complexity of the Borobudur vessels. The long panels of the first gallery are commonly divided in half or in thirds (Fig. 4). These sub-divisions show related scenes, a progression of events, or serve to clarify the characters and activities depicted. The watercraft in half-panel format (I.b.86, I.b.88 and I.b.88) have much more detail than those compressed into third-panel format (I.a.115, I.b.23, I.b.53, I.b.82) or those on the Balustrades (I.B.a.54 and I.B.a.193). We can see the effects of compression when we compare three of the outrigger-type ships, I.b.53, I.b.86, and I.b.88. Each has the exact same configuration of an outrigger with three booms, rowing galleries, bowsprit, and two bipod masts. I.b.53 is shortest, with 6 rowing stations and 6 sailors, I.b.88 has 10 stations and 10 sailors, while I.b.86 is the longest with 12 stations and 19 sailors. One could argue that each panel represents different sized vessels (Manguin, 2010:185). This is not necessarily the case. Vertically, each ship consistently fills 90-95% of the panel. The yard ends nearly reach the top of the frame, while there is only a small gap of water between the outrigger and the bottom of the frame. I.b.86 fills a much greater horizontal area than I.b.53, which makes I.b.86 appear long and skinny while I.b.53 looks practically tubby. They have the exact same configuration, and likely represent the same type of vessel, just compressed and uncompressed according to the work space.

The point of these observations and critiques is that the Borobudur Vessels were not created in a vacuum. They are framed by other scenes. The needs of those scenes dictated how much space the artist could work with. If space was ample, they created a beautiful, intricate vessel such as I.b.86. If they had to include more events, the artists allocated less space to the ships and compressed their features, as with I.b.53. In examining the details of these ships, it is important to remember that the vessels are components of stories. The activities and individuals aboard are the centerpieces of the narratives, while the watercrafts are elaborations.

Seafaring Stories and Buddhism

The maritime folklore associated with the Borobudur vessels is critical to their interpretation. Sea stories have deep roots in the literature of India. The second millennium BCE hymns of the *Rigveda* mention merchant voyages and sailing to distant

islands.² Although Vedic literature mentions incidents in the sea, it does not provide evidence of extensive maritime travel (Ray, 2003:13). Shaw (2012:131) observes that surprisingly, almost no travel by watercraft occurs in India's great epics the *Mahābhārata* and the *Rāmāyana*. Where sea travel is mentioned, it is in similes and metaphor. For instance, the *Karna Parva* (Book 8 of the *Mahābhārata*) describes overwhelming grief like "shipwrecked mariners struggling on the bosom of the vast deep" (Ganguli, 1889:II) while the *Anugita Parva* (Book 14) compares joy to the elation of castaways who have made it safely to shore (Ganguli, 1896:LXX). The absence of sea travel likely reflects the prohibitions against travel by boat found in Indian scripture and codes of law. The *dharmasūtras* goes as far as to equate sea travel and maritime trade with crimes such as theft from a Brahmin (Shaw, 2012:13).³ Later codes of laws, such as the *Manusmṛiti* (from the beginning of the first millennium CE), deal with practical aspects of riverine transport (Buhler, 1969: pt. 8).

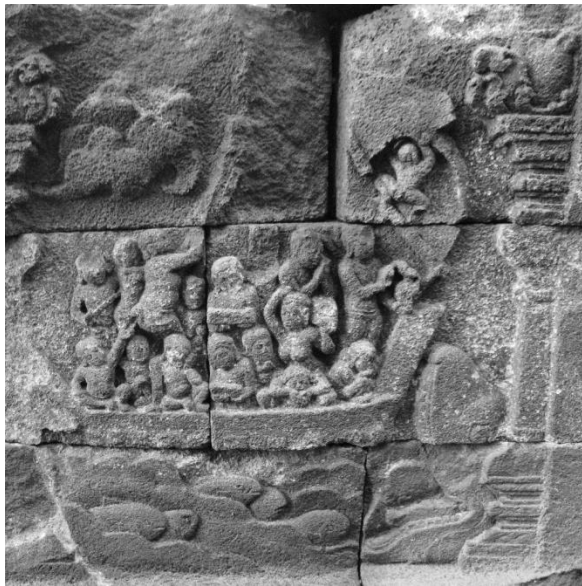


Fig. 5: Vessel I.B.a.54, showing *Supārāga* and the mouth of the ocean (from Van Erp, 1923)

Buddhist maritime folklore demonstrates a familiarity with seafaring that is not found in earlier Indian literature. The *Jātakas* contain numerous references to ship building and ship operation (Ray, 1994:180). The texts knowledgeably describe the roles of captain and crew (Schlingloff, 1988:198). This familiarity is not surprising, as the *Jātaka* and *Avadāna* traditions matured in the first half of the first millennium CE when a series of

trade booms between China, India and the West drove new developments in sailing, the expansion of maritime trading networks, and

the proliferation of ports (see Hall 1985; Ray 1994; Christie 1998; Manguin 2004). During this period, developments in Buddhist men courage maritime development by removing Brahmanical stigmas associated with travel, trade, and outsiders (Wheatley, 1983:272) and by embracing private wealth as a vehicle that could serve spiritual needs

(Holcombe, 1999:280). Hall (1985:37) concludes that Mahāyāna Buddhism was a direct response to the expanding world of commerce.

Pilgrims, missionaries, and monastics traveling along the trade networks between India and China spread Buddhist teachings as they went. Kandahjaya (2004:73-79) calculates that between the third and sixteenth centuries CE, approximately half of these initial Buddhist “transmitters” followed the sea lanes that connected India, Sri Lanka, Southeast Asia, China, and the Indonesian Archipelago. Buddhists established monastic communities which conscientiously served the spiritual and material needs of the laity. This created intimate connections with local villages and trading groups resulting in an “interactive support system” (Ray 1994:122; Ray, 2005:320).

The resulting contact between Buddhists and maritime communities created conditions conducive to the incorporation of maritime folklore into Buddhist scripture. Seafaring stories would have been an important part of the oral traditions, song, dance, and dramatic performances throughout maritime Asia (Shaw 2012:132).⁵ Buddhists capitalized on the excitement, danger, avarice, and courage inherent in maritime folklore, and populated Jātakas and Avadānas with greedy merchants, daring sailors, horrible sea monsters, oceans filled with treasure, islands populated by demons, spirits, and goddesses. These dangers and temptations became components of a vast metaphor in which the ocean represents *saṃsāra*, the endless cycle of death and rebirth, and crossing the ocean represents the process of awakening, searching for understanding, finding salvation, acquiring merit, and obtaining enlightenment (Shaw 2012:133; Tatelman 2013:114). Just as the Buddha offered salvation from the cycle of *saṃsāra*, bodhisattvas developed into saviors that could be called on by sailors during times of distress (specifically Avalokiteśvara/Padmapāni/Guānyīn, see Rao, 1991: 185-6; Ray, 1994: 153; Ohnuma, 1998: 337-40).

Heroes and Mariners

Buddhist seafaring stories are unique, both in their presentation of the nautical/maritime traveler as hero (Shaw, 2012:130), and in their focus on the lower classes of people (e.g. traders, craftsmen, sailors, etc.) who are generally below description in the Vedic texts (Hall, 1985:37). Borobudur’s intricate reliefs provide an intimate look at both heroes and

sailors as they were conceived in the ninth century CE. An example is the story of Suppāraka/Supāraga the blind navigator (*Jātaka* No. 463, *the Suppāraka-jātaka* and *Jātakamāla* No. 14, *Supāraga-jātaka*), carved in panels I.B.a.53-55). Suppāraka (a former incarnation of the Buddha) was a master navigator. He lost his sight as he grew old, and retired from seafaring. A group of merchants (from Bharuch, west India) beseeched him to join their voyage to *suvaṃabhūmi*, the lands of gold (often identified as the Malay Peninsula). A gale blew their ship across six seas until they eventually came to the jaws of the ocean at the end of the earth. Suppāraka knew that only a miracle could save them. He cried out "Friends, bathe me speedily in scented water, and put new garments upon me, prepare a full bowl, and set me in front of the ship" (Rouse, 1901: 90). Properly prepared, Suppāraka leapt to the bow, used both hands to pour libations into the sea, and uttered his *saccakiriya*, an assertion of truth so powerful that it can transform reality (Fig. 5).⁶ The power of his invocation propelled the ship back across all six oceans in a single day (Rouse, 1901: 86-90).

Figures from I.B.a.54



Figures from I.b.86



Fig. 6: A close-up of figures from the relief, showing Suppāraka pouring out libations in I.B.a.54, and prayer and ceremony from I.b.86 (based on images from www.photodharma.net, Anandajoti, 2013).

Without knowing the story of Suppāraka, it would be difficult to identify many aspects of the crowded ship depicted in I.B.a.54. Clearly the sea monster is a source of distress. However, without knowing the story, it would be impossible to know that it represents the devouring mouth of the ocean at the edge of the world. The *Jātakamāla* (No. 14) describes the behavior of the ship's crew during the horrendous gale: "Some were overcome by affliction and stood speechless with terror, some behaved courageously and were busily working to avert the danger, and some were absorbed in prayers to their tutelar deities"(Speyer, 1895: 177 vv. 8). The exact same three reactions (terror, courage, and prayer) are mirrored in the stones of Borobudur. Some of the crew are acting courageously, fighting to control the sail. One is standing on the yard and wrestling with the sail while three are in the stern hauling on the ropes. Desperate passengers in the center of the ship are jettisoning the cargo. Two sitting figures have placed their faces in their hands, sobbing in despair. Another figure has his hand raised high, perhaps calling on the gods. Thanks to the Pāli text (*Jātaka* No. 463), we know that this figure on the bow is Suppāraka, pouring forth libations exactly as described in the narrative (Rouse, 1901:89), Van Erp, 1923:16).

Importance of the Narratives

The actions and reactions of the nearly one-hundred figures aboard the Borobudur Vessels provide important insights into how the Javanese perceived seafaring. Panel I.b.23 shows mariners laboring to raise a sail while their comrades spend time catching fish. Panels I.b.108, I.B.a.54, and I.B.a.193 show us how seamen reacted to a storm – some struggle to save the ship, a few pray to their gods, others yet cling to the rigging in terror while their comrades are thrown into the tumultuous sea. Panel I.b.86 is famous because it provides elaborate technical details of how Southeast Asian shipwrights constructed watercraft during the classical age. However, I.b.86 also teaches us a great deal about ancient seafaring. Hiru's voyage in the *Rudrāyana-avadāna* (*Divyāvadāna* No. 37) is the epitome of a successful expedition; its depiction in I.b.86 correspondingly shows us what an ideal voyage should look like. The crew are lively about the ship, hauling on the rigging and setting the sails. They show bravery by conducting daring acts at the masthead and bowsprit. They are religious and mindful, performing the

proper rituals at the bow of the vessel (Fig. 6). Hiru sits high in the stern, vigilant, and directing his ship to a successful landfall.

The Borobudur vessels are components of Buddhist narratives which directly influenced how the panels were designed, how the ships were portrayed, and how we should interpret them. Examination of the figures demonstrates that the Borobudur vessels can provide more information about ancient seafaring than just the technical configurations of Southeast Asian watercraft. They are material evidence of the intimate connection between Buddhism and seafaring, and provide unique insights into the Javanese perception of sailing, the ocean, and its dangers.

Footnotes

¹If we look at other vessels of this type, the forward rake of the stem is not as prominent, and the sternpost is actually raked slightly aft (as with I.b.88 and I.b.108).

²For examples, see Griffith (1896: v. I.25.7, I.48.3, I.56.2, I.116.3-5, and VII.88.3).

³Shaw (2012: 130–1) also points out that Brahmins were traveling between India and Southeast Asia, so the prohibitions may not have been as serious as these laws seem to indicate.

⁴The Manusmṛti contains rules concerning trade, ferry/boat fees (8.404–406), proper compensation by boatmen in the case of negligence (8.408–409), and stipulations about marine insurance (8.157), indicating the advanced state of Indian riverine commerce in the early first millennium CE (Bühler, 1969: pt. 8).

⁵Shaw (2012:132) suggests that these vernacular versions probably thrived in ancient India, but were almost never preserved in Hindu literature as high-caste individuals seldom traveled by boat, and did not see it as a “ground for heroism, adventure, or narrative.”

⁶Saccakiriya is often translated as “Act of Truth”. In Indic religions, “Truth” held power over both the spiritual and physical realms. Invoking saccakiriya involved making an oath where there was absolute congruity between words and fact (in the case of Suppāraka it was that he had never consciously harmed a living creature). The power of this utterance could then be used to manifest the speakers wish, in this case, delivering the ship back to shore (Kong, 2012: 7–8).

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Biography



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