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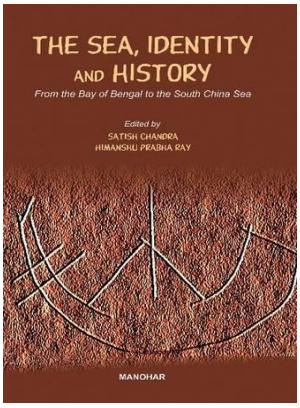

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THE SEA, IDENTITY AND HISTORY
From the Bay of Bengal to the South China Sea.
Satish Chandra and Himanshu Prabha Ray (eds.)

6.
Mariners, Merchants, Monks: Sri Lanka and the Eastern Seas

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Abstract

The paper tries to bring together the different strands that bind Sri Lanka to the Bay of Bengal and the seas beyond. By the 16th.century the people of Sri Lanka already had strong links with the East which had withstood the test of time. These were not limited to the Bay, which was often only the space they traversed on their way further east. "Mariners, Merchants and Monks" are three seminal groups who forged the conduits for interaction, stitching together communities around the Bay, as well as those beyond, and paving the way for cross-cultural interaction. This paper deals with that interaction. In terms of time, the paper will range from early historic to even modern times when traditional links remained functional. In terms of area it will focus on the southern and eastern littorals. The role played by the Ruhunu Rata, Sri Lanka's southern kingdom, in cross-oceanic trade will be dealt with, as will be the contribution of shipbuilders and sailors of the north-east to Bay of Bengal shipping. In terms of subject matter, there will be a decidedly nautical slant: seamen, ships and shipping, and the intangible cross-pollination they engendered.

Preamble: Legends as History

In 1930s and 1940s, when I was yet in Kindergarten, Sri Lanka was planning for Independence from Britain after the War. Our freedom struggle was not as proactive as that in India from where we drew inspiration. Post-war Independence, however, was anticipated and nationalist fervour strongly influenced the Buddhist schools which had grown up in opposition to Missionary schools and we little

chaps were swept along by this swell. While we still sang the standard English nursery rhymes around the piano in the singing classes, out in the playground we embraced traditional Sinhala songs, games and dances which, though new to us urban middle-class children, struck a responsive chord which yet reverberates.

One such song, particularly relevant to today's theme, took the form of question and response and went:

	Translation
"Oliňda thibennē… Koi koidēsē?	"Where, O where is the *Oliňda* plant found?
Oliňda thibennē……Bangali dēsē	In the land of *Bangali* is the *Oliňda* found.
Genath sadannē…..Koi koi dēsē?	To where, O where is it brought and grown?
Genath sadannē …..Sinhala desē."	To the land of the *Sinhala* is it brought and grown"

The verses are from a rural pre-colonial past and preserved in medieval Kandy, our last kingdom. It describes a board game, the *Oliňda keliya.* Said to have been originally played by courtiers using pearls, it had later been adopted by villagers who, lacking pearls, substituted the shiny red-and-black seeds of the *Oliňda* (*Abrus precatorius,* commonly "Crab's eye", "Jequirity", "Rosary Pea" or "Indian liquorice") on carved ebony boards (*Oliňda poruwa*), specifically during the Sinhala and Tamil New Year which dawns in mid-April (which means it had probably a ritual significance). The plant is toxic, and the seeds had been used for weighing gold as they are of a uniform size (1/10th of a gram).

Thus, when an independent "Bangladesh" emerged as a modern state, my generation recognized the name from childhood. Is *Oliňda* found in Bangladesh, now? http://www.disabled-world.com/medical/alternative/herbal/abrus-precatorius.php#ixzz1a1OeJHty says:

> "It is native to India, introduced to warmer regions of the world (Cal, 2004). It is indigenously found throughout India, even at altitudes up to 1200m on the outer Himalayas. It is now naturalized in all tropical countries (Dwivedi, 2004). It grows in tropical climates such as India, Sri Lanka, Thailand, the Philippine Islands, South China, North America, Tropical Africa and the West Indies. It also grows in all tropical or subtropical areas (Inchem, 2004). It is used as an ornamental throughout North America"

Thus the plant is found in India and, it can be presumed, Bangladesh.

Be that it may, our History bristles with references to *Vaṇga desa,* the land of the Bengalis. While we have, in Sri Lanka, prehistoric settlement sites more than 100,000 old and remains of anatomically modern man *circa* 35,000 years BP, we became the island we are now around 7,000 years ago and the new island came to be settled by Indian colonists much later. Historical legend places the date as 543 BC on the date the Buddha attained *Parinibbāna*. Thus "History" – that is, as written by, and about the settlers, only – begins 2,600 years ago. Like most legends, this does not stand up to objective analysis: the 2nd. Century Buddhist monk-chroniclers used the date of the Buddha's *Parinibbāna* as the

date on which, miraculously, History began. On this date, (we are told) Prince Vijaya and 700 companions landed at Tambaṇṇi in the north west of the island. What is relevant for the subject of this Conference is the story of Vijaya, as related in the "Mahavamsa", the Great Chronicle. It begins in *Vaṇga desa*:

> "In the country of the Vangas, in the Vanga capital there lived once a king of the Vangas. The daughter of the king of the Kalingas was the king's consort. By his spouse the king had a daughter, and the soothsayers' prophesized her union with the king of beasts. Very fair she was and very amorous and for shame the king and queen could not suffer her" (Geiger:1912/2003)

The princess, a free spirit, lived up to the prophesy: joining a caravan traveling to *Magadha*, which was attacked in the *Lāḷa* country (now Gujarat) by a lion who took her, and from whom she had twins, a boy and a girl. The son, Sinhahabāhu, finally engineered an escape and mother and children headed back to *Vaṇga.* He killed his father, the lion and, in time, was raised to the throne of *Vaṇga*, but he renounced it, going back to *Lāḷa* to build a city, Sīhapura, from where he ruled with his sister for wife. They had many children but the eldest is Vijaya (one of a pair of twins)

> "…who was of evil conduct and his followers were even like himself and many intolerable deeds of violence were done by them." (Geiger)

Unable to face the people's wrath, the King disowned him and set them all adrift on a ship. The ship reached *Supāraka* (now Sopara, near Mumbai), where Vijaya's men behaved in much the same way and were banished again. Sailing down the west coast of India he made his landfall in Sri Lanka. Defeating the indigenous ruling tribe he established his own – and north Indian – dominance and marrying the daughter of the *Paṇḍu* king in *Madura,* South India.

But the marriage proved childless and Vijaya left no progeny. The kingdom was offered to Paṇḍuvasudeva, his unmarried nephew. Meanwhile, in India, *Paṇḍu*, a Sākya prince who had been foretold of the destruction of the Sākya clan (the clan of Prince Siddhartha who became the Buddha), had left his home and had gone "…to another tract of land on the further side of the Ganges and founded a city there and ruled as king." *Paṇḍu* had a daughter, Baddakaccānā*,* "a woman made of gold, fair of form and eagerly wooed" by seven kings. *Paṇḍu,* unhappy with all of them and, following soothsayers' advice, placed her with her retinue on board a "ship upon the Ganges, saying 'Whosoever can, let him take my daughter'". The ship made its landfall at Gōnagāmaka (now Trincomalee) from where the princess and her retinue proceeded westwards on foot, "robed as nuns", till they were identified as a royal party. Eventually she married Paṇḍuvasudeva, and from this union sprang the Lion Kings of Sri Lanka.

This is the story, in essence. To me, the most interesting things about it are that Sri Lanka had been occupied by an urbanized people at the time of Vijaya's arrival; that Vijaya, Paṇḍuvasudeva and Baddakaccānā can all be traced to Vaṇga desa; and that Trincomalee, in the Bay of Bengal, makes its first appearance very early in our historical writings. Its oldest recorded name recorded is (in Pali) "Gokarna" and, I have recently been told that it is a place name in Bangladesh, too, but am reluctant to make too much of that.

Introduction

I have related this story to show Sri Lanka's umbilical link with Bengal and, importantly, how it hints at two routes of migration over the Indian Ocean, i.e. one from Gujarat following the coast southwards to the Gulf of Mannar to reach the north-western coast of Sri Lanka; and the other from somewhere up the Ganges, traversing the Bay of Bengal in a southerly direction to reach the north-eastern coast of Sri Lanka.

This brings me to the Bay of Bengal itself, and I would like to pose the question: "How does one define the Bay of Bengal"? It is influenced by the facts that the greater part of the lithosphere is under water, and that civilization, culture, trade, ideas, religion, language, etc. spread fastest when Man began to sail the seas. Certainly, "…maritime space cannot be defined only in terms of geography or the environment". The word "only" is important. First, the sea exists (the Bay is but a part of it), and Man's achievements based upon his mastery of it follows. Unless one takes due note of geography and environment one is in danger of losing focus. This I cannot overemphasize. The 'maritime space' that is the Bay of Bengal is a stage: the very stage upon, and across which interaction between cultures and peoples took place. Therefore it is necessary that we agree on what this stage is: in fact, to attempt to define it as a physical entity. We often hear of playing "Hamlet" without the Prince: but both "Hamlet" (the play) and Hamlet (the Prince) "fret and strut their hour" knowing full well that it is "upon a stage" that they do so. More than 20 years ago, at a Conference at the British Museum, I listened to many fascinating talks revolving around the theme of "The archaeology of the Indian Ocean". On my return I had to sing for my supper by speaking of my experience with to the British Scholars' Association: a requirement of the British Council which had generously funded me. I made the observation that, to judge from the perspective of the papers read, I got the distinct impression that the Indian Ocean began and ended on the shores of East Africa. The British Council in Colombo considered it a valid point that should be conveyed to the British Museum, but I hesitated; I was but a neophyte, then. A decade or so later, at a Conference in Oxford, where I first met Dr. Himanshu Prabha Ray, I was glad to observe a sea-change. Perhaps, in our deliberations, we should be mindful that the Bay does not begin and end upon its shores. From the maritime and nautical perspective – and mine, too – the Bay of Bengal is essentially a body of water; and all interaction between countries and cultures could take place because of the existence of ships that could stitch them together across that space. The sea was the stage on which every drama we talk of today was played and the ships provided the infrastructure. The point I make is that the 'maritime space' that is our focus today, is a body of water which we learnt to make use of. Certainly, it "cannot be defined *only* in terms of geography or the environment", but equally, it cannot be defined without appreciating its unique geographical position, environment and character, all of which impinged on our countries.

This view that all the seas of the world are one is particularly relevant to those of us who are islanders. To Sri Lankans, all interaction with those not living in our country could take place only by

sailing the seas. The *Maha muhuda* (the Great ocean) surrounds us and we do not think of any part of the sea as a special maritime space: though we recognize that a part of the sea between India and us which is shallower than the sea that washes the greater part of our shore. We think of the Western Sea, the Eastern Sea and the Southern Sea. The Arabian Sea (along the eastern shore of which Vijaya sailed south) and the Bay of Bengal (down which Baddakaccānā sailed southwards) were parts of these: we had no "Northern sea" that was as such. There was no reason to differentiate the Bay from the Eastern Sea; our view was of it as part of the *Maha muhuda* which lay to the east. Certainly, we had much to do with the Bay, but to make contact with any country along its shore, or way beyond it to the countries farther east, we had to sail across the Eastern Sea. The Bay, lacking a clearly defined southern border, was a part of the Eastern Sea and, hence, for the seafarer, it did not form a different Sea. It is along the routes of the seafarers that intangible links bound Sri Lanka to countries fringing the Bay and it is these routes that made us a part of the cultural continuum that is the Bay.

To end these introductory remarks the bounds of the Bay can be defined visually on the map (Fig.1) which graphically depicts its international, multi-cultural and multi-lingual character

Fig.1 Regions and cultures on the rim of the Bay

Sri Lanka's Eastern Sea

The Bay of Bengal would have been viewed differently by each nation, or region, abutting it. For the nation states of Myanmar and Bangladesh and the Indian states of Bengal, Orissa, Andhra, and Tamil Nadu, it would be "The Sea", the only one that washes its shores. Not so the island states of Sri Lanka and Sumatra (I cannot comment on the Andamans), and the farther appendages of mainland Asia – Malaysia and Thailand – which lie to its far south. This factor would naturally have coloured their perceptions: while they were part of the Bay's dynamic, they were not caught in its gravitational pull to the extent that Myanmar, Bangladesh and the Indian regions are. Thus Sri Lanka's own view of the Bay was influenced not because it was its western-most limit as by the fact that the ports fringing it were a part of the Eastern Sea. The Bay, in fact, has no maritime boundary but is now deemed, for convenience

only, to be separated from the Indian Ocean by a line drawn on the chart linking Sri Lanka's southern-most point to the northern-most point of Sumatra. These two islands, therefore, represent the southernmost limits of the Bay. (Fig.2)

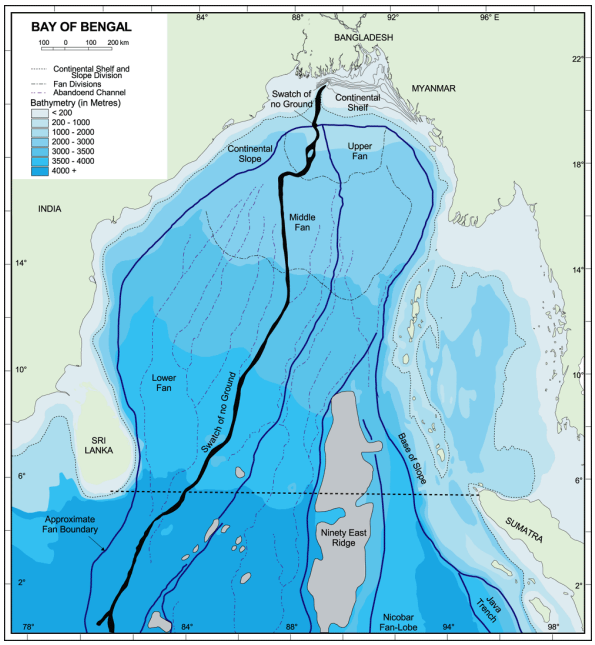


Fig.2 Southern limit of the Bay

These two factors, i.e. its positions *vis-a-vis* the Bay of Bengal and the Indian Ocean, mark Sri Lanka as a geographical punctuation mark between the eastern and western halves of the northern Indian Ocean. Additionally, there are the limitless deeps of the *Maha muhuda* to the south, studded with countless islands, and the shallow Palk Strait to the north, which played a seminal role from the earliest days. For Sri Lanka, surrounded by the Ocean, the Bay was a part of its eastern sea, not an entity itself. Thus, maritime activity which involved the Bay also involved Sri Lanka. An example, from Dutch times, (Fig.3) is the inter-Asian trading network built up by the VOC on a Batavia-Galle baseline from which shipping spread northwards into the Bay of Bengal and the China Sea.

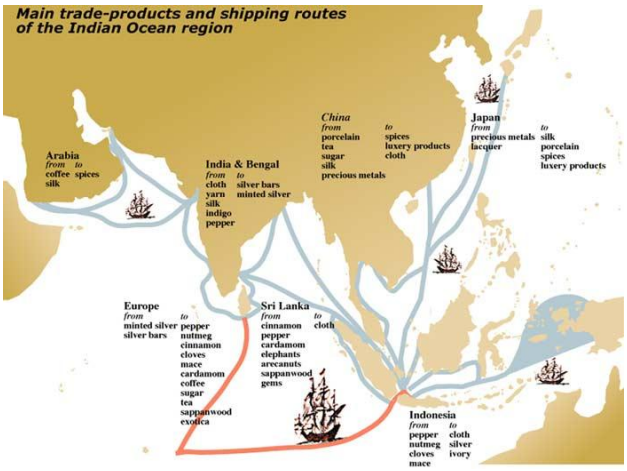


Fig.3 Dutch inter-Asian trading network

In more ancient times, shipping between Sri Lanka and the lands to the east was of two types: coastal and cross-oceanic. Coastal shipping, engaged in trade with eastern and south-east Indian states, extending to Bangladesh (and up-river). The other was cross-oceanic shipping that either struck across the Bay to Myanmar or further eastwards to Singapore, Thailand, Sumatra and thence through the Straits of Malacca "to distant Cathay". Goods and passengers being offloaded, for portage over the Isthmus of Kra, and to board a ship in another shipping area, were also known and some archaeological evidence has been found.

"Mariners, Merchants, Monks"

My paper uses this title as I feel that, under these three categories we can include all persons who traversed the Bay of Bengal (and beyond), carrying with them trade goods, technologies, ideas, philosophies. These three single words can be expanded almost infinitely, but I would like to briefly define these three types of persons as follows.

Under "Mariners" I include ship builders, their technology and adaptation of neighbouring technologies, sailors and navigators, men who created ports and their infrastructure and, importantly, ships and sailors who made their landfall in our ports. In other words, I mean men who made interaction a physical possibility.

Under "Merchants" I include men who utilized the possibilities thus created, proving travel financially viable; who stitched communities together by the exchange of trade goods; who established regular contact between countries and made travel possible as passengers.

Under "Monks" I include men who used the possibilities thus created to carry and disseminate intangible goods – ideas, knowledge, culture and philosophy – perhaps the most enduring legacies that traveled the seaways. Buddhist pilgrims, particularly to India are also included here, as are the many craftsmen and scholars who accompanied monks on their missionary voyages.

Naturally, these are not water-tight compartments and so there will be some overlap. In presenting my ideas I will start in reverse order: "monks" first followed by "merchants", but with some overlap between them. They are necessary to provide context to this paper, but my sources are the work of others from whom I have learnt. But when it comes to "Mariners" I deal with my own research, fieldwork and ideas, for it is in this sphere that, I believe, I can contribute something uncommon to this Seminar.

<u>Monks</u>

It is, of course, Buddhist monks and nuns that I speak of, for Buddhism – more precisely, Theravada Buddhism – was the only religion that mattered to us. Tradition has it that King Devānaṃpiyatissa, a contemporary of the Indian King Dharmāsoka, had requested of the latter that he sends Buddhist monks to the island to spread the Word of the Buddha. He, in fact, requested that he be re-consecrated by Dharmāsoka whose expanding kingdom he did not underestimate. The "Mahāvaṃsa"

has it that the monks arrived, not by sea but by levitation, at the Royal Hunting Ground of Mihintalē on the day that the king was on a hunt. Says the "Mahvamāsa", they "rose in the air…coming hither…alighted on the pleasant Missaka-mountain" (today's Mihintalē). Here the two met and the Mahāvaṃsa records what may well be the first I.Q test in the world. The monk tests the king's intelligence through a series of questions to judge his ability to understand the Teaching. The conversion of the king and his people follow. A recent publication (Goonatilake, S: 2010) quotes an Indian source as follows:

> "Mahinda, the son of Asoka, on his way to Sri Lanka according to Indian archaeologists appears to have traveled by sea through the South Indian port of Kavirapattinam (Kaverippumpattinam). In the spread of Buddhism to South India. Mahinda was 'greatly helped' by Aritta, the uncle of Devanampiyatissa, probably (in) the village near Madura called Arrittapatti with Brahmi inscriptions of Asoka's time attesting to this." (Ref. Ramachandran, T.N.: 1992:2-3)

Personally unacquainted with the work referred to, I take the quote at face value, as this would place Mahinda in a Bay of Bengal maritime context, as being the first of the "monks" I speak of. That he did come by sea is entirely feasible: the "Mahāvaṃsa", though silent about his journey, it is quite clear about the arrival, by sea, of his sister the Therī Sanghamittā, who came to establish the Bhikkhuni ordination, bearing with her a sprig of the original Bodhi tree in Buddha Gaya under which the Buddha achieved Enlightenment. Its history has been meticulously recorded and is yet venerated today. An even more interesting side of the story is the ship itself, which had conveyed Therī Sanghamittā to the port of Jambukola(pattana), in the north of today's Jaffna. After the Bhikkhunis had taken up residence at the nunnery called Upasikāvihāra, Sanghamittā had built three buildings in the premises, says the Mahāvaṃsa, the Therī Sanghamittā:

> "…in one of these great buildings she caused the mast of the ship that had come with the great Bodhi-tree to be set up, in one the rudder, and in one the helm, from these they were named."

That ships, were familiar to even the writers of the chronicles is evident as also the fact that Indian ships were fitted with rudder-and-tiller. Another fact of nautical interest is that ships were not berthed but anchored off the coast, and goods and passengers come ashore by other means: Both Dharmāsoka in India and Devānampiyatissa in Sri Lanka, wade up the ship (and *vice versa*) with the Bodhi-tree on their heads to place it on board or receive it. This maneuver is commented on later in this paper. The fact that monks were familiar with ships and travel by sea from the earliest days is, here, made abundantly clear.

There are, naturally, many references to travel to the seats of Buddhism. That they traveled by sea has to be assumed, and it is likely that they changed vessels at different ports. Ships they traveled in were not liners but cargo ships where goods were landed and others taken on board. So there would have been several legs to a journey and journeys could take many months with breaks ashore in between. Kaveripaṭṭinam, or Poompuhar today, has already been noted and references to other, more northern ports follow. But it was Buddha Gaya that was the magnet. Travel there by sea and river was certainly possible and Goonatilake (2010) quotes a 1926 source when he says:

> "…by the early centuries there emerged a 'single looping network' of sea travel from lower Bengal to Sri Lanka."

But a much respected source (Gunawardena:1990) differs:

> "The development of sea routes connecting Sri Lanka with the more northern ports of the more eastern coast of India probably took place well after the development of routes linking Sri Lanka with places in the western coast of India….It is only with reference to a period around the middle of the first millennium that is possible to speak with confidence about a sea route linking Sri Lanka with the mouth of the Ganges being in operation."

As travel by sea had been achieved, it is a reasonable assumption that ships (or boats or seagoing rafts) did carry goods and passengers from one point to another: this is not to say that there was an established route linking the south and north Indian ports together. Travel would not have been continuous, but from point to point, partly over land and part by sea, with long breaks in-between. "Sea routes", in 'bookish' parlance, ignores many realities familiar to seamen. The plausible conclusion is that north-south travel involving, at least in part, the use of watercraft was in existence and implies that sea travel along the Coromandel Coast was not uncommon. The first links between Sri Lanka, monks and travel by sea had thus been forged early on and was to become a commonplace activity for Buddhist monks who, it must be remembered, were steeped in a missionary tradition from the time the Buddha instructed "Go forth ye monks….."

Many are the references to Sri Lankan monks in India and even Indian monks in Sri Lanka, a sample of which are given here. Mahānāma, a 1st.century pilgrim to Buddha Gaya had left an inscription that was seen in the 4th.century by the Chinese commentator Wan Hieun Tse (Seneviratne, J: 1915). A 4th.Century king, Mēghavarna, sent gems from Sri Lanka to King Samudragupta to build a monastery where Sri Lankan monks resided. It was more than a monastery, being more akin to the Universities of Nalanda and Vickramashila, and was maintained by the Sinhalese. Hsuan Tsang (Barua: 1981) gives us a description of it in the 7th. Century. A Sanskrit inscription mentions the visit, in the 7th or 8th.century, of Prakyatakirtti, a Sinhalese pilgrim of royal descent. Another inscription attributable to 9th-10th mentions a Buddhist image carved by the "Sinhalese Udayasiri" at Mahabodhi. It mentions that the large number of Sinhalese pilgrims present contributed to the upkeep of the temple. Many other sources can be quoted but I will end the reference by the 13th.century Tibetan monk, Dharmavāsin, to three hundred Sinhalese monks at Buddha Gaya, and the fact that only they were allowed to sleep within the courtyard of the main temple.

With Buddhism still flourishing in the Andhra Pradesh, many are the references many to Nagarjunikonda. The suffix "-konda" is "kanda"('hill') in Sinhala and I have myself climbed Thotlakonda on a visit to Visakhapatnam, and seen the 2nd. Century remains of a Buddhist monastery. Not too far (but too far for me, though) was Bhavikonda where, too was a monastery and where a large urn believed to contain relics of the Buddha were found there. Mahayanism made its appearance in India under Nagarjuna with whom Aryadeva, a Sinhalese, was associated. The Theravada Buddhist Establishment in Sri Lanka had split into several schools – the Mahāvihara, Abhayagiri and Jetavanā – and adherents of each school were to be found along the East Indian littoral. In Nagarjunikonda /

Vijayapuri there were at least two Sinhalavihāras: one for the monks of the Mahāvihara, called "Mahāvihāravāsivihāra" and another called "Chūladhammagiri". The prefixes "Maha-" and "Chula-" are revealing. A Sinhalavihāra was built in the 3rd. century by an unknown donor and an upasaka, Bodhisiri added a shrine for the Bodhi tree. Goonatilake says, sourcing Ray, H.P:

> "An inscription records a grant by Bodhisri for the monks of Tambapanna (Sri Lanka) who converted (*pasadakanam*) Kashmir, Gandhara,China, Chilata, Tosali, Avamta, Vanga, Vanavasi, Yavana, Damila Palura and the island of Tambapanni".

The inscriptional record of Buddhist contacts with Andhra continues till even the 14th. Century, with a mention in the Gadalādeniya (near Kandy) inscription of renovations carried out at Amarāvati by a Sinhala monk, Dhammakīrti.

Perhaps for Sri Lankan Buddhists the most important event was the arrival here of the Sacred Tooth Relic of the Buddha. The "Dāthāvamsa", a chronicle of the Relic, speaks of a Prince Dantakumāra, son of the King of Ujjeni who, while in Kālinga to worship at Dantapura, fell in love with Hemamāli, daughter of the King of Kālinga. The crux of the story was that they brought the relic hidden in the Princess' hair, to Sri Lanka. They came in disguise, travelling from Tāmralipti aboard a trading vessel. The Relic became the Palladium of the Kings of Sri Lanka and its fame spread all over the Buddhist world. Many desired it: the Chinese claim to have captured it more than once and the Portuguese claim to have captured and destroyed it. Countless numbers of replicas were made and sent all over the world and the original is yet believed to be here, in Kandy.

The movement of monks and pilgrims was a two-way movement. Instances of Indian monks to this island are on record. Perhaps the best known was Buddhagōsa who translated the Sinhalese written record of the Buddha-word back to Pali. The Tripitaka, which had survived some centuries as orally transmitted, had been written down in Sinhala in the 2nd century B.C. as a great drought drove most monks away from the country. These were now re-written in Pali as the originals had fled India as well. Kānchipura and Madura in South India, according to Buddhagōsa, were yet major centres of Pali scholarship. Others who made an impact were Sanghamittā, who converted King to "Vaitulyavāda", a form of Mahayana and Buddhatta, from the land of the Chōlas who, in the 5th. Century, composed many works at the Abhayagiri monastery. In the 7th century, Buddhists were expelled from Kanchipura and Vajrabōdhi, from Pāndya , passed through Sri Lanka, bound for China. When Rājarāja Chōla ruled Sri Lanka in the 10th. Century, Pāndyan and other South Indian monks made their mark here: among whom were Dipankara Thera, Buddha Mitra, and Mahākasyapa in the 12th.century. So did Anuruddha from Pāndya. King Parākkramabāhu II, in the 13th century, patronized Dharmakīrti, also of Pāndya. Perhaps it is important to note that of Myanmar, who had been in Sri Lanka in the 12th.century, on his return, took with him two monks from Kancipura. This travel was essentially religious in character, meaning that it was only for purposes of learning, building of temples and monasteries and missionary activities. However, culture, technology and the arts followed the monks and a regular two-way communication ensued. When Sanghamittā came here, Dharmāsoka sent with her:

> "persons from royal families, and eight from families of ministers, and moreover eight persons from brahman families and eight from families of traders and persons from the cowherds likewise and from the

> hyena and sparrow-hawk clans (from each one man) and also from the weavers and the potters and from all the handicrafts…." (Geiger:1912)

- and there are yet families in Sri Lanka who claim descent from them.

This very role – of a core of specialists in various trades accompanying the Monks – was one Sri Lanka was called upon to play when this country assumed the mantle of being the centre of Theravada Buddhism. By this time, developments in the Indian social fabric had effectively marginalized Buddhism and Sri Lanka became the natural repository of the southern tradition. Māhāyāna sects were found in Sri Lanka too and some used the island as a springboard to countries further east. The coming of Sanghamittā, with this retinue, transformed Sri Lanka which had been developing a cultural persona of its own although it had started out as a settlement of North Indian settlers. This event changed this trend and the country was drawn back into the mainstream of North Indian culture – by now, a Buddhist culture. Sri Lanka did continue to develop a culture of its own, but the link with Buddhism kept it harnessed to India. Then, when Buddhism lost its hold in India, a more vernacular version of Buddhist culture came into being, particularly after the Buddha-word was set down in writing in the 2nd.century BCE. That one development achieved three things: it put an end to the absolute dependence on the oral transmission of the Teachings; it was written down in Sinhala and not Pali; and it made the history of Sri Lanka (as recorded in the "Mahāvaṃsa") one Buddhist scrpture.

Thus, when Sri Lanka became the repository of Theravada, it was this tradition that was expounded to the Southeast Asian countries of Myanmar, Thailand, Cambodia, Laos, Java, the Celebes, and beyond. Sinhala Buddhist culture spread over these areas in the 9th.-15th.centuries till the arrival of the Portuguese disrupted the organic development of this region. As in the case of India, only a sampling of the information is given here. In the 11th. and 12th centuries, when Bagan Burma reached pre-eminence, an explosion in building began, and the dominant external style emulated was that of Sri Lanka. Writing, too, began to follow that of the "Mahāvaṃsa" which, in turn would have encouraged existing vernacular languages and styles to develop. The Myinkaba Kubuauk-gyi temple of the 12th. Century was painted with many scenes of, not only the life of the Buddha, but also of episodes from the "Mahāvaṃsa". The latter include scenes of the Buddha's visits to Sri Lanka, Arahats Mahinda and Sanghamitta, Kings Dutugemunu, Vasabha, Siri Sangabo and Buddhadāsa. The last king depicted is Vijayabahu 1, who was the last king of Sri Lanka before the building was built. (Fig.4)

Fig.4 Dutugemunu and his elephant Kandula: a Mahavamsa story

Sinhalese forms of Architecture and sculpture permeated other countries like Thailand, Cambodia, Laos and Vietnam. Stupas and Buddha images imitated Sinhalese models and in some cases were imported from, of gifted by Sri Lanka. The Sihinga Buddha image in Thailand was gifted by the 13th.century King Parākkramabāhu ll. Sukhothai city was rebuilt in the 14th.century by Sinhalese craftsmen who were sent by the King Bhuvanekabāhu lV . Less than a century before the arrival of the Portuguese, a group of Burmese months were sent to Kalyāni (Kelani) for instruction and Higher Ordination. From Burmese records we know that there was a serious drought prevailing in Sri Lanka, which prompted their early return – a fact not recorded in any Sri Lankan record.

In most of these countries the Order of monks were re-cast in the Sinhalese model. Many monks took up residence in these countries and “Sinhala Nikāyas” were formed. It followed that Sri Lankan style Monasteries and Viharas were built, and many are yet venerated. An early example is the Ratu Boko (8th-9th.century) monastery in Java. Apart from epigraphical evidence, the architecture and landscaping bears unmistakable parallels with the Abhayagiri monastery in Anuradhapura. Borobudur, notwithstanding connections with Mahayana and Tantra, is now being thought of as an extension of Sri Lankan Buddhism.

The sea-borne Theravada tradition from the south met the Mahayana adherents in Southeast Asia. Mahayana, Hinduism and remnants of animism were what the Theravada monks encountered. Which prevailed cannot be now ascertained as the results were not uniform. It is likely that a degree of competitiveness between the two branches of Buddhism resulted.

In the 17th to 19th.centuries the Myanmar, Thai, Lao, Shan and Cambodian Courts adopted Sinhalese Theravada Buddhist models in ceremony, literature, law and monastic life. As it has happened in Sri Lanka itself, this led to the development of vernacular leaning and development, and the sidelining of Sanskrit. Increased levels of literacy resulted, and a greater demand for a national literature. The

influence of the "Mahāvaṃsa" cannot be overestimated. In fact, there is a "Cambodian Mahāvaṃsa" which serves carries material not included in the existing copies of the original here.

One southeastern Buddhist country, however, had a very significant impact of Sri Lanka. This was Thailand which had the good fortune to return to this country the very Teachings that Sri Lanka had nurtured in that country. Thailand had received the Teachings from Dharmasoka himself at about the same time it reached Sri Lanka and there was no question of Sri Lanka spreading the Dhamma there. There was a well developed artistic Hindu-Buddhist tradition of art, heavily overlaid with Thai native genius. Sri Lankan Buddhism reached Thailand through its neighbours, Myanmar Pagan and Pegu) and Ligor (Nakhon Sri Thammarat). When Sukothai was expanding the Sinhala style influenced the Chiang Saen school of Art of Lanna Thai (Guruge: 1990). A Sanngharaja from Sri Lanka was invited to take up residence in Sukothai and the ruins of the monastery yet stand.

> "The construction of this monastery is the theme of one of the most important epigraphical records of Thailand. It is, in fact, one of the earliest inscriptions in the Thai script. This inscription……records the growing influence of Theravada Buddhism to whose propagation the King, under the guidance of the scholar-monk had devoted the utmost effort, energy and attention..."

As has been mentioned above, a group of Thai monks had received their Higher Ordination (*Upasampadā*) in Sri Lanka in 1423 CE and, on their return, had formed the Siamese Sect which was destined to play a major role in Sri Lanka. After the 15th.century, Buddhism began to fade away in this country and on more than one occasion there were fewer senior monks than required to perform the Higher Ordination ceremony, let alone teach younger novices. After monks brought from Arakan on more than one occasion failed to resuscitate the Sangha, it went into decline. Under a change of dynasty, the new King, Narēndrasinha, was appealed to by a self-taught monk, Saranankara, to get senior monks from other lands. The king himself had no maritime capability as the ports and seas were now under Dutch control: nevertheless, he asked the Dutch for help, and the Dutch responded by making a ship available. This time the country of choice was Thailand and, after formalities were completed, news came that the Sri Lankan king had died, and the mission was aborted by the Thai king. But, two years later, the new Sri Lankan king, Kīrti Sri Rājasingha sent another mission to Thailand which was successful in its mission. In May 1783, Upali Thera and 24 other monks, accompanied by five Ambassadors reached the Kandyan capital with a letter from the Thai king and, in July, six Sinhalese monks received the Higher Ordination. Among them was Saranankara himself. Buddhism of the same tradition as had been introduced to Thailand was now re-planted in Sri Lankan soil by Thai monks.

Three years later another delegation arrived, bringing Buddhist texts that were, by then, lost in this country. Till today, the Siamese Sect remains the largest, most influential and the only one that had been established under Royal patronage. What Sri Lanka had sewn, it had now reaped the benefits of.

Merchants

As Monks traveled by sea on trading vessels, much has been said about Merchants already. Gunatilake (54) sums it up thus:

> "Buddhist monasteries developed along trade routes and growing urban centres. They were at strategic points on trade routes and it should be noted, Buddhist symbols were adopted for coins seals and pottery. They facilitated trading."

What material goods were traded in will not be dealt with here. It is a subject that requires thorough research and, as several respected writers have done so, it will not be dealt with even in summary form. What will be dealt with will be more the nautical aspects of merchant shipping. Simply put, with where and how merchant shipping developed in the Bay of Bengal. I will refrain from going beyond, unless unavoidable.

When did merchant shipping develop in the Bay? Most writers look at the Indian Ocean from the West. Indian Ocean trade and shipping, it is taken for granted, began in the Arabian Sea, then progressed up to Sri Lanka and stopped. Sailing beyond this became possible only after the 'discovery' of the monsoon cycle. Consequently, in India, shipping first developed along its western coast, which happens to be the Arabian Sea's eastern coast. Indian shipping on its eastern coast developed much later. This is generally accepted but, while not attempting to contradict this by chapter and verse, I intend to look at it from another angle altogether. My point of dissent is based upon common sense and material evidence. How can one venture out to sea if one does not know that winds blow in season, that stars rise and set (as do the sun and the moon) and that they do not change their positions in relation to each other? Shepherds who tended their flocks by day, caravan travelers who crossed the desert by night and fishermen afloat or ashore knew those, although they did not know why. Pliny met the Ambassadors from Sri Lanka who arrived in Rome in the time of Claudius, one of whom told him that his father had visited China several times. Not only did they do so before Hippalus, but they knew what he, perhaps, did not. We do know that they had commented on different way the stars appeared over Rome, particularly remarking on the difference in the position of the Great Bear and Pleides, that Canopus was much brighter in the Sri Lankan sky, that the sun was always to the south and, therefore, shadows in the Roman latitudes always pointed north. (Weerakkody:1997). Coming, as they did, from a country (there were others: India being foremost) where astrology was a serious study, this is not surprising. (It was, after all, a star that led the "Three Wise Men from the East" to the Christ-child.) India had, in fact, worked out a 'longitudinal grid' over Indian skies for astrological purposes: one meaning of the Sanskrit word 'lanka' was the 'meridian' of that grid and the Prime Meridian passed over the middle of Sri Lanka. This was knowledge that had been garnered over centuries or even millennia.

The importance of Hippalus' "discovery" of the monsoons was that, it was the work of a man who gathered this "exotic" knowledge and had recognized a pattern, that could be used as a planning tool. He has to be admired for the way in which it analyzed why sailors, other than those he was familiar with, sailed to 'the beat of a different drum'; but he did not 'discover' the monsoons for the whole of the known world, nor did it lead to new shipping routes. In various ways, the alternating monsoons were known and made use of: for example the Sri Lankan knowledge of the "yala" and "maha" seasons in relation to Agriculture. These were determined by the two monsoons: one which brought heavy rains (the water of which was tapped and stored for controlled use after the rains), and the other which

brought less and used to rain-feed crops. Sri Lanka's successful hydrological civilization was built of this knowledge of the monsoon winds. In other countries affected by the monsoons similar knowledge had to have existed.

Once the cycle was known to Arabian Sea sailors, they could use it to go beyond Sri Lanka, but their ships had to develop the necessary rigging and sea-keeping qualities for long-haul voyages. Thus it was a combination of the knowledge of the monsoon cycle and the development of larger and sturdier ships that voyaging around Sri Lanka to the Eastern Sea viable. Knowledge of the movements of stars was the other dimension. In the Mediterranean, the use of stars was known to sailors, but only for direction-finding and not for position-fixing, and hence these sailors could not make much use of the unfamiliar skies of the Indian Ocean. It was the Arabs, who had honed their knowledge of stellar movements by ages of study of the clear desert skies, who made it possible to sail the latitudes. But this was, then, yet in the future.

So far, only the impact of the monsoons in the Arabian Sea has been dealt with, with only a solitary reference to Sri Lanka. But what the monsoons meant to Sri Lanka was not what it would have meant to the different regions of eastern and western coats of India, and of the Bay. Even today, the monsoonal cycle sets the rhythm for many activities there and many of those date back far into the past. The knowledge, from a seaman's perspective, is implicit in the Jataka stories, and specifically in the Suppāraka Jātaka. Dates of these stories vary, many being prior to Dharmāsoka while others are derived from collections of folk stories, such as the Panchatantra. Dates will not be argued here; but it is essential to note that merchant shipping far beyond the coast was taken for granted in times earlier that the purported ' discovery' by Hippalus in the mid-5th.century around which time Ptolemy recorded his findings. Archaeological evidence from Sri Lanka includes two potsherds dated to the 2nd.century BCE show line drawings of ships. One, found in Anuradhapura, (Fig.5) shows a line drawing of a ship with a mast and quarter rudders (i.e. steering oars) and the other (Fig.6), from Hambantota in the south, shows an even more sophisticated ship, with sails hoisted, and structural features that may point to a shipbuilding culture to the east of Sri Lanka.

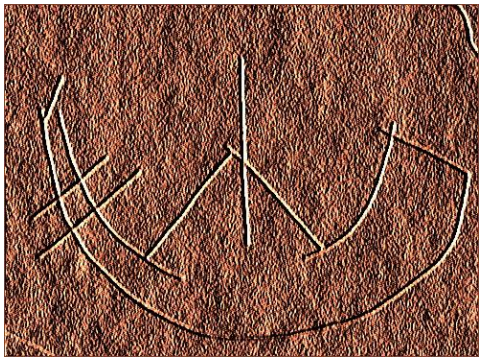


Fig.5 Potsherd from Anuradhapura

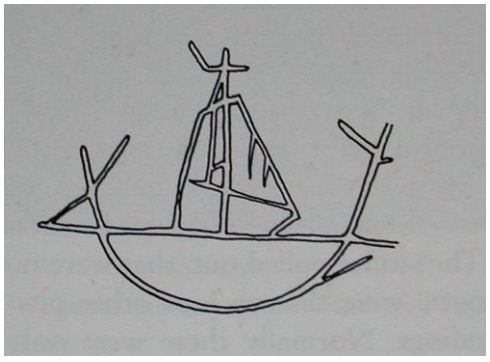


Fig.6 Potsherd from Godawāya

These are ships, not rafts. If such ships could sail for profit, and be seen often enough for potters to remember their lines, some 250 years before Ptolemy and before Hippalus 'discovered' the monsoons, one must re-think the story of shipping in the Indian Ocean eastwards of Sri Lanka.

Gunawardena (1990) says of the 1st.century CE:

> "…it seems likely that at this time by this time mariners proceeding to Java, Sumatra and Malaya had begun to use the monsoon winds to sail directly across the Bay of Bengal. This change in the methods of navigation was of special significance for trade and travel and for Sri Lanka in particular. (Sylvan) Levi tended to believe that the Sātavahanas dispatched their trading ships through Sri Lanka".

Obviously, they had the ships, they had the trade, they knew the routes and they could read the stars: *ergo* they knew when and where the winds blew. And the monsoon winds blew as environmental conditions – not man – dictated.

Leaving the Arabian Sea, our earliest shipping route was to India. It is a shallow sea, the distance was not great, but it had to be sailed across. It was no voyage of discovery as fishermen from both sides knew of each other. A common chank-fishing culture existed on both shores from prehistoric times. Neither coast was *terra incognita* to them. Travel by log raft was, and is, common and the area of operations today extends northward to Visakhapattam. A 2nd.Century BCE rock engraving of one (Fig.7), forms part of an inscription recording the donation of a cave to the Sangha, by a Bharata merchant, survives at Dūvēgala, in Polonnaruwa. It can easily be recognized as a craft in use today.

Fig.7 A shaped-log raft, with mast, engraved at Dūvēgala

There is a literary reference, too.

> "Describing the exodus of :Buhhist monks to South India during the troubled times in the reign of Vatthagamami (133-77 BC) the *Sammohavinodan* refers to an unusual kind of raft supposedly used. The raft which was constructed at the port of Jambukola is said to have three 'decks' *(tibumakam).* The lowest deck, which tended to be immersed in water, was evidently not used. The travelers occupied the second

deck while their belongings were kept on the third. The voyage was considered to be…perilous." (Gunawardena)

The description is of an entirely plausible form of a seagoing raft: the lowest 'deck' was the raft itself, the second would have been raised a couple of feet above it and the third may have formed a roof over the travelers. In fact, rafts from across the Bay of Bengal are not infrequently storm-driven to our eastern shore and, one occasion, I was able to get a photograph from Trincomalee. (Fig.8)

Fig.8 A Burmese bamboo raft washed ashore at Trincomalee

One can see the bottom 'deck', the second and the third, but the last does not cover the whole of the second. There was none on board when she was washed ashore but there were pieces of Burmese-language newspapers which indicated its origin. It was intact. As usual, villages quickly stripped it of all the larger bamboos of which it was constructed as these were larger than those easily available in the country.

The shipping between Sri Lanka and the east coast of India I have dealt with under "Monks" and hence will speak of the more eastward areas of the Eastern Sea. Our sources are, again Buddhist and Chinese but the content is nautical. By the early 5th. century, sea routes with Asia and China were well established. Apart from Fa-Hsian who took ship from Sumatra, there was Gunavarman, a Kashmiri monk, who had spent some time in SL before he took ship to Java through the Malacca Straits. There are also references to two groups of SL nuns who traveled to China and established the Bhikkuni order. They had been taken there by a mariner Nandi. This last event led, in fact, to the preservation of the Bhikkhuni Sāsana, since the Order declined in Sri Lanka and was not re-established under Royal patronage as the Order of Monks was. In fact, in Sri Lanka, the very idea of Nuns was looked at askance. In China the Order took root and spread to adjoining countries where, though in a Mahayana context, the Bhikkhuni Sāsana flourished. A couple of decades ago, a handful of nuns from Sri Lanka traveled to

Korea and were admitted to the Order there; and have returned. Public opinion in fast accepting them into the mainstream.

I-tsing, in his Memoir on Chinese pilgrims, provides information on routes taken from South East Asia to Tāmralipti in the north of the Bay of Bengal. One linked the Malacca Straits with Sri Lanka. A second linked the Malay peninsula with Tāmralipti . I-tsing gives details of his own voyage from Sumatra to Lie-tcha. On the second leg of the voyage the ship drops anchor at the Nicobar islands and he gives a description of the people there. From there he reaches Tāmralipti in half a month. This is the third route, about which he comments that it involved many stops (due to the vagaries of winds and currents conditions we do no know). The fourth route took the monk Tao-lin from Malaya to Java, and from there to the Bay (whether via the Straits of Malacca or not is not known) and to the Nicobar Islands, reaching Tāmralipti after many years.

> "The information presented by I-tsing is articularly relevant and useful since it indicates that Sri Lanka was connected by sea routes not only with ports in the southern, western and northeastern regions of the Indian subcontinent but also with Souteast Asian kingdoms like Ho-ling, Dvaravati, and Fu-nan and through them with China, thus creating an extensive network which facilitated the movement of merchants and goods, as well as of pilgrims, scholars, texts, images and other sources of cultural influence. Li Chao…speaks of visits paid by Sri Lankan vessels to Vietnam and China every year…."
>
> (Gunawardena)

What emerges from I-tsing's Memoir is the availability of ships on which to take passage from port to port: something that indicates frequent trading voyages to different destinations. It is a pity that there is no similar description of sea routes involving Myanmar. We know the routes only because of the monks who traveled in them but hardly anything about the many ports or the goods that were carried in relays from one port to another.

But we do have a riveting description of a sea-borne punitive raid by Parākkramabāhu l of Sri Lanka on the kingdom of Ramaňňa involving, as is not uncommon, trade interests. There had been traditionally exchange of gifts between SL and Ramaňňa. Certain types of elephants were in great demand in Sri Lanka, and Sri Lanka may have been middle-men in the elephant trade. Whatever the reasons, Ramaňňa stopped the trade and Sri Lanka tried to Ramaňňa buy them from neighbouring Kamboja. Sri Lankan envoys were arrested, merchandise confiscated and relations soured. Sri Lanka built a fleet and sailed for Ramaňňa (Arakan), landed there and a skirmish occurred. Elsewhere I had described this event:

> The *Culavamsa*, the continuation of the earlier *Mahavamsa* carries a most illuminating account of the logistics of a punitive raid to Burma, stemming from a dispute involving the trade in elephants. The incident in question is supported by a contemporary inscription recording the grant of land and privileges to the leaders of the expedition. It makes reference to *Hatan Nav,* (lit. "Warships") but it is uncertain whether they were a kind of ship specially fitted out for war, or ships constructed for the expedition. The latter is more likely, following the *Culavamsa* description of their construction:
>
> '….gave the order without delay to make ready ships of various kinds, many hundreds in number. Now all the country round about the coast was one great workshop occupied with the building of the ships taken in hand. When within five months he had all the ships well built he assembled them…(at)

> Pallava-vanka…….he had provisions supplied for a whole year…..and abundant weapons of war such as armour……gokanna arrows…for defence against elephants, also different kinds of medicines preserved in cow-horns for dealing with venomous wounds caused by poisoned arrows…remedies for curing the poison of infected water…iron pincers for extracting iron arrow-heads, ….lastly also skilful physicians…'

This description, which indicates knowledge of the requirements for storing ship for an offensive action, is more important for the reference to the ships of various kinds being built on the sea-shore. It is a pointer to ship-building without the need for inland shipyards; to the ability to mobilize a large work-force capable of undertaking the building of a large fleet; and even to the possibility that the ships were of the outrigger-equipped and capable of being built on the beach – that they were, in fact, *yathra dhonis*. Even leaving room for exaggeration, this account rings true in terms of the building of an expeditionary force. The account continues, and even records the loss at sea of the majority of the fleet. There are other, equally credible accounts of attacks by sea between local warring factions and other expeditions to intervene in south Indian politics. All of these indicate knowledge of naval strategy in offensive operations.

Today, I see two more aspects of interest in this account. The large number of ships lost, with no excuses given or demonic forces blamed, is a detail of interest: it possibly buttresses the credibility of the account. Another is the need to research ships capable of carrying even a few elephants on board: however, even the Dutch took an elephant to Holland. (At Ajantha, elephants in boats are shown in the *Sinhala Avadāna*, an llustration of an incident in the *Valahassa Jātaka*)

Mariners

With "Mariners" one comes to the nautical, as opposed to the maritime dimension of interaction across the Eastern Sea. I will try to refrain from overly referring to the Western Sea to keep the focus on the area this Seminar is concerned with. Further, I am aware that most scholars who have made Sri Lanka their studies have focused on the Western Sea, and less on the Eastern and Southern Seas. What has been written of the Eastern Sea has been confined to culture, religion, literature and travel. A different perspective is called for, in keeping with the aims of this Seminar, and I would like to make a start.

In this section – unlike in the two preceding sections – I will not draw on the work of others but present my own work on the subjects of nautical archaeology and naval architecture. A brief definition of "Nautical Archaeology", (a branch of Maritime Archaeology) is not, as often believed, concerned only with shipwrecks. A simple clarification is offered in www.nauticalarchaeologicalsociety.org

> "Few people in Britain live more than a few miles from an example of our maritime past. It is not just our seas, but our rivers, canals and lakes, and the facilities such as ports, warehouses and factories that make up that heritage. It is however, much more than that. It includes the people who used, made, crewed and built that heritage - without them the ships could not sail, factories would produce nothing and great voyages of exploration would not have happened."

"Naval architecture", on the other hand is concerned with the design of water borne transport, whether meant for marine or freshwater use, in civilian or military roles. It responds to the technical,

environmental and material limits within which the desired vessel must be built and operate. Today it involves basic and applied research, design, development, design evaluation and calculations during all stages of the life of a marine vehicle. In pre-modern times, these stages were not followed: the way a ship was built followed a design that had grown over centuries – or even millenia – in response to the very factors modern naval architecture resonds to. Shipbuilding under the old methods still exist, as I have personally seen, and that is why Naval Architecture is often called more a craft than a science.

Nautical Archaeology

In keeping with the theme of the Seminar consider it apt to include here extracts from a Report I was asked to submit on, what was then a proposal, to build a port at Hambantota. It has now been built but what I had to say on the impact on the heritage of the proposed location is as good a place at any to start on the subject of Nautical Archaeology. I did not confine my report to the site as the land and sea around the proposed port, but expanded it to include history, macro-history, archaeo-history and nautical archaeology. These extracts come as close as possible to a nautical archaeological study of southern and eastern Sri Lanka, without becoming a complete study in itself. Please note that it was a Report for policy-makers and not an academic paper.

Extract 1

> "The line between Pre-history and History is drawn between *before* and *after* the availability of written records, irrespective of their accuracy or otherwise. As noted, Sri Lanka was islanded 7,000 years ago. No written records exist of the period before that. None exists, either, for the ca 6,400-year period between that date and the 6th. Century B.C. In the 6th. Century B.C. the legendary Prince Vijaya arrived here from India. The legend memorializes the arrival of Indian settlers in the island. Later, but still within the first millennium B.C., Buddhism became the dominant religion. Monks in monasteries began recording happenings in the country from that date. "History" in this country, therefore, commences from the 6th. Century B.C.
>
> For the purpose of this project, the **macro-historical** parameter is that Hambantota was a part of the Ruhunu-rata, one of the three major divisions of the country (the Ruhunu, Maya and Raja ratas) during the ancient and medieval periods. Ruhuna was the second in importance, often the refuge of rulers who lost control over the main Rajarata region, which was the focus of attention of the monk-chroniclers who maintained the written historical records. These rulers were able to recoup and win back the lost territory. Foremost among them were Dutugemunu, Vijayabahu 1 and Parakkramabahu 1 – all Hero figures in the written records. From Hambantota, Ruhuna stretched westwards to Beruwela, and eastwards and northwards to Trincomalee. It was, therefore, an area with a long coastline and, consequently, has a rich maritime history. It existed alongside the Rajarata as a largely independent principality, with its own kings and princes for most of this period, although not given the emphasis it deserves in the Rajarata-centric histories. What lacunae there are in the subjective historical records are, however, filled in by archaeology, which deals with material remains.
>
> The **archaeo-historical** parameter of this study is the maritime context. All shipping that traversed the northern Indian Ocean rounded the island. Crossing the ocean by sail, essentially for trade, involved using one monsoon for the outward passage and the other for the return. To ride out the 'wrong' monsoons, havens were needed, preferably sheltered ports, from where trading could be carried on. For this the

hinterland should have industrial and manufactured goods, surplus agricultural produce, *entrepot* opportunities, regulated markets and communities. Ruhuna offered these in its many river mouths, headlands, bays, coves and inland lagoons; the better ones of which developed into fully-fledged commercial harbours. Ports were locii of merchants and seamen. They were managed by them, though the officers of the ruling kings imposed port regulations, imposed customs duties and salvage laws – for all of which contemporary archaeological evidence is available.

The last parameter is the **nautical archaeology**. This involves the nature of shipping using the southern Ruhuna seabord, where they came from and where they went, the facilities they required in ports, their structure, the nature of the sea they sailed in, dangers they faces and their remains (if any).

Together, these parameters covering the hinterland, the coastline and the sea define the archaeological and historical context for the present project."

Extract 2

Much archaeological excavation and analysis has been done on this subject of industrial and commercial sites and will not be repeated here. Those that need to be noted for the purposes of this report are the large number of metal smelting furnaces discovered, dating back to the first century A.D. Foremost among them were the steel smelting furnaces. This country has a very old tradition of steel manufacture, and the product was considered of very high quality. In the early 1990s, Gill Juleff(…….) discovered and excavated furnaces of high-carbon crucible steel, at Samanalawewa, "produced directly and in substantial quantities in sophisticated 'frontal' smelting furnaces driven by wind pressure". This steel was produced for export and would have been transported by boats along the Walawe Ganga to southern ports.

In 1992, excavations conducted in Tissamaharama (Akurugoda) revealed five settlement layers with furnaces. H.-J.Weisshaar and W.Wijeyapala commen: "Numerous crucibles and several furnaces revealed….a workmen's quarter. Clear traces of copper and/or bronze were evident. Large amounts of slag came to light; the metal production was of considerable importance, and lasted for several centuries". Slag heaps, incidentally, are found all over Hambantota and adjoining areas.

During the same series of excavations, definite (though small) evidence of gold melting was found along with a glassy slag, evidence of surplus lead oxidizing and reacting with the underlying ceramic sherds.

Evidence of bead manufacture was common. Very large quantities had been produced, of glass, agate, amethyst, rock-crystal, garnet, carnelian and rose-quartz. From the discovery of some in raw material form, it is surmised that beads had been imported, processed and re-exported. Beads of shell and horn have also been found.

Bopearachchi, in his study of southern port sites, excavated 'more than twenty' furnace structures and extended his search to the very large number of coins, seals, sealings, lead objects, intaglios and beads. These are all items used for obtaining dates by comparing them with others of the kind from other sites here and abroad. One particular hoard comprise 75,000 Roman (or pseudo-Roman) coins.

Whether, these large quantities were meant for local consumption, or not, the conclusion to be drawn is the same: this area was a thriving settlement for many centuries. The finds listed above were found only in the course of excavations or exploration, but there is no doubt that Hambantota – placed between the

capital city (Tissamaharama) and two port of significance (Godawaya and Kirinda) – was not an uninhabited area but one full of settlements, industry and trade.

These extracts cover important aspects which impinge on the Eastern Sea. First, the Ruhuna kingdom, stretching from Beruwla on the western coast and following the coast up to Trincomalee on the east, had the longest coastline. It was naturally a kingdom with a maritime slant: its eyes were turned seawards just as the eyes of the Rajarata were turned inwards. A country with a long coastline does not, for that reason alone, become a magnet for seafarers. There must be places to lay-up while awaiting the desired monsoon winds, there must be communities and traders with commercial interests, the hinterland must be developed industrially and agriculturally, water must be available in plenty. Ruhuna had all these and seafarers began to call at its ports. Gunawardhana (1990) has noted the link between the evolution of larger, long-haul ships, and the rise in importance of ports south of Mantai. Sailors from the west began to venture further south in search of newer destinations and, by the 13th.Century, it had all but ceased to be. Arab merchants were already established in Colombo by the 9th.century, but it is more than possible, from the pattern of Roman coin hordes in the south and up-river, that Roman ships sailed around the islands: in fact, Roman coins (Third Brass only) minted purely for use outside Rome have been found in large quantities, indicating that this had been another industry in the South. After Islam, Arabic cross-oceanic sailing expanded exponentially. Plotting their positions by a combination of star sights from the 'kamal', 'Ded. reckoning', 'Day's run' and compass, every time they touched land they recoded its latitude. Arab "maps", which combined all sites previously plotted, show how ships could sail across the Arabian Sea to Beruwela. There are thirty locations plotted along the coast from Beruwela to Trincomalee, attesting to the commercial interest in this kingdom. (Fig.9)

From Trincomalee, Arab ships used the favourable monsoon to sail across the Eastern Sea to the Bay of Bengal and beyond. It follows that they would have had settlements and I had the fortune to locate one which was ideally suited for ships to lay-up, and plenty of sweet water in the inner harbour of Trincomalee - presently called Nicholson's Cove - we have the site of a very specifically Arab maritime colony which had been continuously occupied for, at least, 200 years. From a seaman's point of view, this is an ideal spot for sailors to ride out the inter-monsoonal storm period, till the wind changed to enable them to sail the rest of the way across the Bay of Bengal. Nicholson's Cove is a narrow inlet, sheltered by parallel hilly ridges from the winds, with a shelving beach where the ships could be beached for repairs, and a plentiful supply of sweet water (Fig.10).

Fig.9 Positions plotted by Arab sailors shown on a Mercator projection

Fig.10 Satellite image of Nicholson's Cove, Tricomalee

Unfortunately, during the second world war, the availability of water made the British military authorities choose this site for a large camp: it is then that they discovered three gravestones, two readable, one of them being the one I reported on and the other of "the matyr Qadi 'Afifu'd-Din 'Abdu'llah son of 'Abdu'r-Rahman son of Muhammed son of Yusuf al-'Alawi" who had died on 16th. August, 1405 AD. The third, also discovered by me, is too defaced to read. The sweet water wells that had proved the magnet to both Arabs and British, yet exist (Fig.11)

Fig.11 Photo of surviving well

From elsewhere in the Ruhuna, ships from what is now Indonesia, had carried on a brisk trade across the Eastern Sea. Soon after Sri Lanka was annexed as a British Crown Colony, Sir Alexander Johnston, as President of the Vice-Admiralty Court, attempted to codify customary law customs governing mercantile shipping. Johnston, writing about the first Arabic inscription found here, made several interesting footnotes, one of which bears repetition here. I quote:

> "One of the principal Arabic works on medicine which they introduced into Ceylon was the work of Avicenna; they also introduced Arabic translations of Aristotle, Plato, Euclid, Galen, and Ptolemy, extracts of which were frequently brought to me while I was on Ceylon by the Mohammedan priests and merchants, who stated that the works them selves had originally been procured from Baghdad by their ancestors and remained for some hundred years in their respective families in Ceylon, but had been subsequently been sold by them, when in distress, for some considerable sums of money to some *merchants who traded between Ceylon and the eastern islands."* (emphasis mine)

Sri Lankan ports, though under the control of the king and his officials for administrative, Customs and Salvage etc. were, in terms of operational matters, more in the hands of the merchants. In the same paper Johnston describes the "The maritime laws and usages, which prevail amongst the Hindu and Mohammedan mariners and traders who frequent Ceylon… may be classed under four heads". His classification is revealing:

> **(1)** Those that carry on trade in small vessels between the coasts of Malabar, Coromandel, and the island of Ceylon;
> **(2)** those which prevail amongst the Mohammedan mariners and traders of Arab descent between the coasts of Malabar, Coromandel and the island of Ceylon;
> **(3)** those which prevail amongst the Arab mariners and traders who carry on trade in very large vessels between the eastern coasts of Africa, Arabia, the Persian Gulf, and the island of Ceylon;
> **(4)** those which prevail amongst the Malay mariners who carry on trade between the coasts of Malacca, the eastern islands, and Ceylon.

He adds the equally revealing comment -

> 'The first are in some degree modified by the tenets of the Hindu religion and by Hindu law. The second, the third, and the fourth are modified in a great degree by the tenets of the Mohammedan religion, and Mohammedan law.'

Prevailing customary law was, therefore, compounded of such factors as size of ship, sailing routes, and religion. Altogether, his observations are very thought provoking.

I surmise that the first international ports (as opposed to coastal-shipping ports) were those which were linked to trade routes that stretched, at least halfway, across the Indian Ocean. Mantai may have been one of the oldest, because, while there was a need for merchandise to cross from the Arabian Sea to the Bay of Bengal, most of the ships that called there from the west were not constructed to navigate the Mannar or Pamban Passages. Cargo had, therefore, either to be portaged along land routes or transshipped on local craft, from Mantai to ports on the northern coast and beyond. Gunawardena (1990) comments:

"Hence even by the middle of the first millennium , voyages from the Red Sea to places like Java in the eastern extremity of the Indian Ocean will have been unusual. This probably meant that patterns if shipping and trade in the eastern part of the Indian Ocean were distinct and autonomous to a certain degree – a situation that emphasized the commercial importance of Sri Lnka due to its strategic situation in the middle of the IO. The comments that Procopius made on problems of Eastern trade suggest that Persian and Ethiopians went only as far as Sri Lanka where they awaited the arrival of cargoes of silk and other merchandise from further east. Ships from the western sector of the Indian Ocean and those from the eastern sector were now meeting in Sri Lanka."

Ragupathy (1987) has mapped the "Distribution of jetty ports and fishing camps in Jaffna" (Fig.12) and it is possible that some of them had served coastal shipping linking the Mantai with the Bay of Bengal through the Mannar Passage.

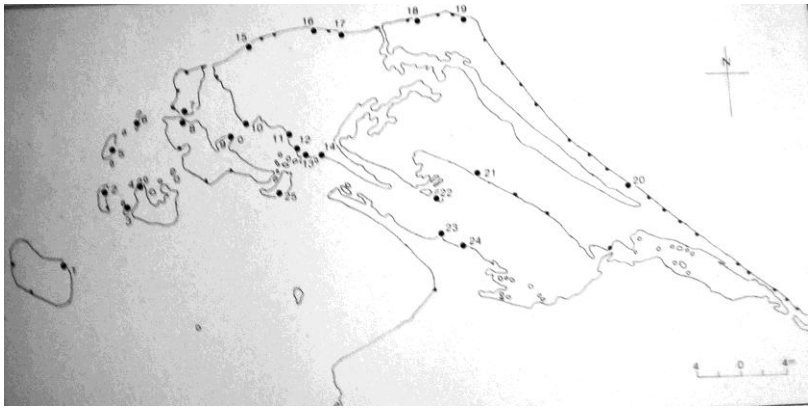


Fig.12 Jetty ports and fishing camps in Jaffna peninsula

Then, the writ of the king in power extended to ports and shipwrecks. Some interesting epigraphical evidence exist. To quote but a few, Parakkramabahu 1 (12th. Century) erected an inscription in the Tamil language, concerning Salvage. This was at Nayinativu in the extreme North (Indrapala: 1953)

'…the foreigners should come and stay at Uratturai (Uratota), that they should be protected and that foreigners from many ports should come and gather at our ports; as we like elephants and horses, if the vessels bringing elephants and horses to us get wrecked, a fourth (share of the cargo) should be taken by the treasury and the (other) three parts should be left to the owner; if vessels with merchandise get wrecked, an exact half should be left to the owner….'

Another, in Devundara (now Dondra) speaks of Customs, bribery and smuggling (Paranavitana: 1953):

'….apart from the levying of such imposts as have been approved by the Maha-Pandithe, illegal imposts shall not be levied. To those coming from foreign countries, means shall not be afforded to avoid the payment of imposts and duties that are due, which they do by establishing places of business, corrupting royal officers by means of presents and keeping with friends the merchandise smuggled from their own countries…'

It would appear that many things do not change. Finally, there is the Galle Trilingual Inscription indited in China and set up in Galle in the 13th.century by Zheng He. Why it merits mention is that the languages in which it is indited are Chinese, Persian (in Arabic script) and Tamil. Since the Nainativu inscription (above) is also in Tamil, it is generally accepted that the *lingua franca* of South Asian sailors was Tamil: after all, these inscriptions are meant for the eyes of sailors. However, this observation has no bearing on vexed question of whether the inhabitants of that area were Tamil-speaking or not.

Ports that were frequented, from time to time, by cross-oceanic shipping – such as Mantai, Colombo, Galle, Godawāya, and Trincomalee – each became important from the coming together of several reasons, flourished for a while, and then became of only regional importance. In ancient and medieval times they were often the mouths of rivers that provided access to the interior, and archaeological evidence yet exist: the walls of the port city at Mantai (Fig.13), the remains of watercraft dated to the 4th.century BCE and 9th.Centry CE upriver at Colombo(Fig.14); a large Arab stone anchor dated (^{14}C date refined using the OxCal programme to 430 +/- 80 BP) to 1310 and 1650 CE) (Fig.15); an inscription regarding the income from the port and recently discovered shipwreck with raw material for the bead making industry of the Ruhuna.

Fig.13 Aerial photograph of the Mantai site

Fig.14 4th.century BCE logboat from Kelani river

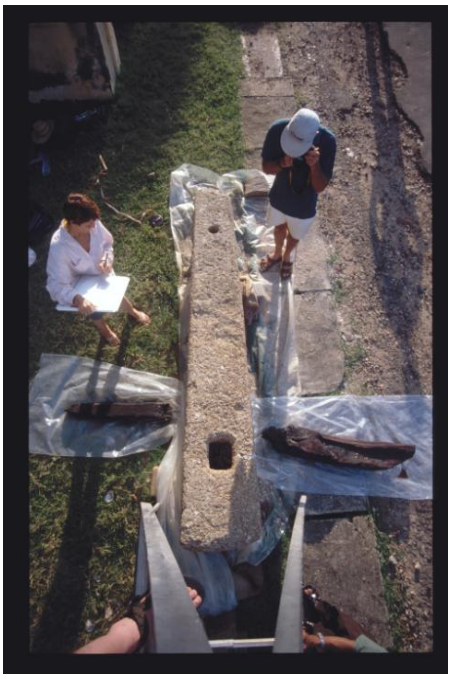


Fig.15 Arab stone anchor with wooden flukes from Galle

Coastal shipping shipping and regional ports had, probably, no built infrastructure. Neville Chittick (1980) has observed that

> "Ports have come and gone throughout the last two thousand years; there seems to be a curious, but presumably fortuitous flourishing of such ports with a cycle of 200-300 years".

Some sites, though, retained their utility on even a minor scale after their hey-day as major ports had ended. But what did these smaller ports look like? Chittick elucidates this position very clearly:

> "Under the influence of the modern model, we tend to think of the ideal port as a largely enclosed expanse of deep water, suitable for the construction of quays alongside which ships were moored. This is a type evolved in north-western Europe, originally because of the heavy swells found there and the nature of the beaches…..In much of the Indian Ocean region…..the circumstances are different. The winds are comparatively moderate, steady and predictable…..The beaches, at least in the west…..have an almost flat foreshore below a steep, sandy beach. Boats can therefore be conveniently beached at high tide on the foreshore, unloaded onto men's shoulders and carried up the beach when the tide recedes. Vessels are consequently built in a fashion to make such beaching possible. Quays and lighters are, in general unnecessary. Only when there is inadequate shelter is it necessary for ships to anchor and unload cargoes into small boats. Such adequate shelter is, however, available in long stretches of the coast…..provided either by a coral fringing reef or an off-shore island or an inlet or creek, or even by a headland, used on either side, according to the duration of the monsoon…."

His observations fit the smaller port sites perfectly, and the absence of alongside berthing and the presence of a headland fit Galle and Colombo, too.

Naval Architecture.

The question that has now to be answered is whether Sri Lanka participated in Indian Ocean shipping. To look at the outrigger-equipped fishing craft, which are all that remain of a tradition of seagoing craft, one would doubt that we had any ships that sailed over the Eastern Sea. It is not surprising that Toussaint (1966) was moved to observe that:

> "The Sinhalese people never looked towards the sea and the navigators whom history records were always foreigners. The outriggers themselves are of foreign origin, and it is not in Ceylon that we shall really comprehend the ocean's story."

But studies into Sri Lankan shipping have progressed beyond Toussaint although it is true enough that, to "really comprehend the ocean's story", one cannot look at Sri Lanka alone. That apart, my own studies into our ships and watercraft, built upon those of Hornell, Vitharana, Kentley and Kapitan, have convinced me that there was and area of the Indian Ocean – of which Sri Lanka was the centre – where a kind of watercraft with unique attributes were in use. The other countries involved were the Andamans and Minicoy (in Lakshdweep). In Sri Lanka this nautical culture, which I call the ORU culture was the dominant culture: "dominant", because there were other cultures, too, in the island. Hornell, (1943) who once served as an advisor to the Sri Lankan Department of Fisheries, remarked:

> No greater contrast can be found in small craft designing than that between the types used on opposite sides of the Gulf of Mannar, South of latitude 9° N. On the Indian, or Tamil, side the catamaran or boat canoe alone are employed; on the Sinhalese side, the outrigger canoe is the national and dominant design, the catamaran being used only in the northern, or non-Sinhalese part of the island and by migrant Tamil fisherman in Colombo .

What he means by "catamaran" is the ORU: the English word is a corruption of the Tamil word "kattumaram" which is the name for a shaped-log raft while the ORU is a logboat married to a single outrigger. The ORU was the dominant design in the Sinhalese areas, in the Tamil areas to the north of Mannar the "kaṭṭumaran", the "Teppam" (both log rafts) and the "vallam" (in Sri Lanka, a logboat without an outrigger though in India it is a generic term) were common. Large "vallam" were imported from India, where the log was transformed in the way Hornell has described. What matters is that there were large, oceangoing cargo carriers both in the north and the south, and that they continued to be built and sailed up to the 1930. True, the northern shipbuilders built ships that were basically not developed within the island, but the fact remains that there was a healthy tradition of shipbuilding and seafaring. The men of Valveṭṭiturai, on the north-eastern tip of Sri Lanka, built and sailed the ships while the owners and financiers were Cheṭṭies from South India. (Fig.16). In the 19th and 20th Centuries the cargo ships of the north, "Thonies", participated in the British inter-Asian shipping network to good effect. I was able to get information from a website www.valvanilla.com where the operations are described thus:

> Most of them (i.e.Thonies), while being built and operated by sailors from Valvettithurai, were owned by the wealthy Chetty families from Tamil Nadu. The rest were owned by the Chetty traders who had settled in Valvettithurai since the opening of secure sea lanes in Indian Ocean by the Portuguese (from Arab & Far Eastern pirates. They might have been there since before Cholas' time.) Building and maintaining large

ocean going vessels in those days required a large sum of capital; it can be afforded by only few families who had already well established themselves as reputed trading families. These vessels, up to World War 2, plied the sea- routes the Tamils had used for centuries before. They made ports-of-call in South India, Vizhakapattinam to Cochin (occasionally even Calcutta), Rangoon, Far Eastern destinations, ports in Middle East (such as Aden). In Ceylon itself, they made frequent trips to Galle and ports in between. They carried rice, spices, roof tiles, timber (teak, sandalwood, etc), palmyra products, dried fish, tobacco products, etc.

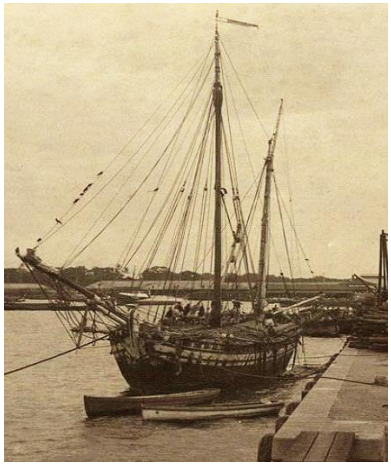
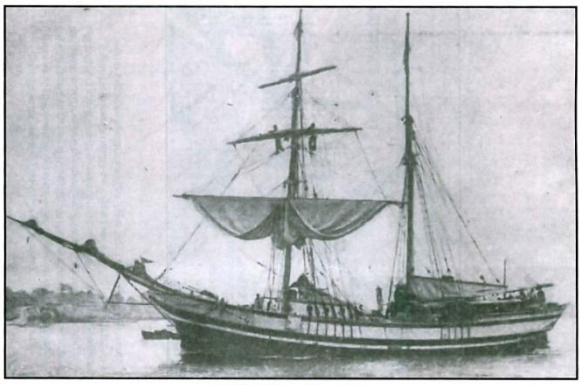


Fig. 16

Jaffna *Thoni* at Colombo harbour



அமெரிக்கா சென்ற அன்னபூரணி

Fig 17

The "Annapooraniyamal" at Boston

In 1938, An American had spotted one, the "Annapooraniyamal" (Fig.17) and admired her lines so much that he purchased it and sailed her from Colombo to Boston with a crew of five from Jaffna.

The same source quoted above describes her as being

….. a cargo vessel modeled on the popular British frigate- type ship; it was known for its speed and maneuverability

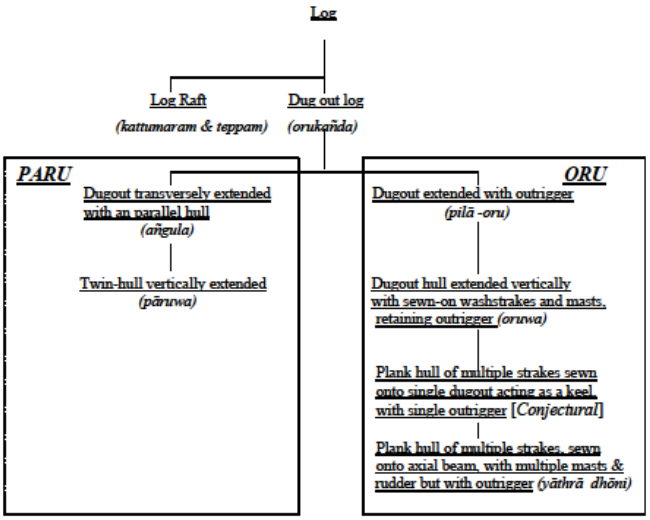
while the "Gloucester Times" of August 2nd.1938 had this to say:

… "resembles the ghost of His Majesty's ship Bounty returning to the seas….The craft itself, a 90- foot affair, was built at Jaffna some nine years ago on the British man-o-war which ever hit into that area at the beginning of the 19th century. That model was the much the same as the 'Bounty' on which a crew mutinied and became white settlers of Pitcairn Island. The natives have never changed the mould, and though larger ones are built, the sch. Annapoorani as it was known, is the popular cargo ship plying the trade in the Indian Ocean"

It is more than probable that this was the longest trip made by an Asian-built sailing ship, which has been recorded. The ship was registered as the "Florence C. Robinson" with Lloyds.

The shipping tradition of the south was totally different although it, too, produced ocean-going cargo ships. It would be tedious to relate my investigations as they have been recently been published at length (Devendra:2010) and expanded in a paper for a Symposium at Mandvi on "Gujarat and the Sea",

which would be out by the time this volume is in print. However, my studies show that the ORU culture was a vernacular naval architectural idiom, based upon a dual-element form, i.e. either logboat and single outrigger or twinned logboats. The line of development from dugout log to seagoing cargo ship I present in this form:



Development of watercraft within the *Oru culture* (Sri Lanka)

It is worth noting that the twin-hull form did not progress beyond inland waters and a solitary beach seine net carrier. In the Pacific, the larger voyaging vessels were the large double-hulled type which suited long voyages successfully. Similarly, our ORU did not expand transversely by building an elevated platform spanning the space between hull and outrigger for carrying of passengers and goods – as had been done in the eastern islands of New Guinea and the Pacific – but had a rudimentary platform for the use of fishermen. Neither did the second outrigger which characterized the Indonesian ships that

sailed to East Africa and Madagascar. Nevertheless, the quantum leap from fishing boat to cargo ship was achieved and I was able to trace the "missing link" to Kerala. The result was the "yathra dhoni" (Fig.18): originally with a single square sail and quarter rudder but later with main and mizzen masts carrying square-headed lugsails, and a jib set on a short bowsprit, and fitted with rudder and tiller. Throughout all these morphological changes, one feature remained unchanged: the single outrigger attached by two booms. This was to be the "signature" of the "Yathra", perhaps the largest (and only) single outrigger, cargo ship to sail the seven seas. Although the last one was built in 1935, it was wrecked on a reef in the Maldives. That "yathra" sailed from Ceylon – Dodanduwa near Galle, was their last home port – to India is well recorded and Paris (Fig.19) gives a detailed drawing of one which he says is common to the Coromandel coast and Sri Lanka. Folk songs, preserved among the fishermen, place the "yathra" further east, near Malacca.

Fig.18 A *yathra dhoni,* beached.

One reads, in translation, as follows:

"Now listen: Malacca is a far-off country.

We bring the telescope on deck and scan the seas around us.

We turn the ship towards *Sinhala desa*

And decorate the ship for our arrival."

(Recorded by Vitharana:1992. Freely translated by me)

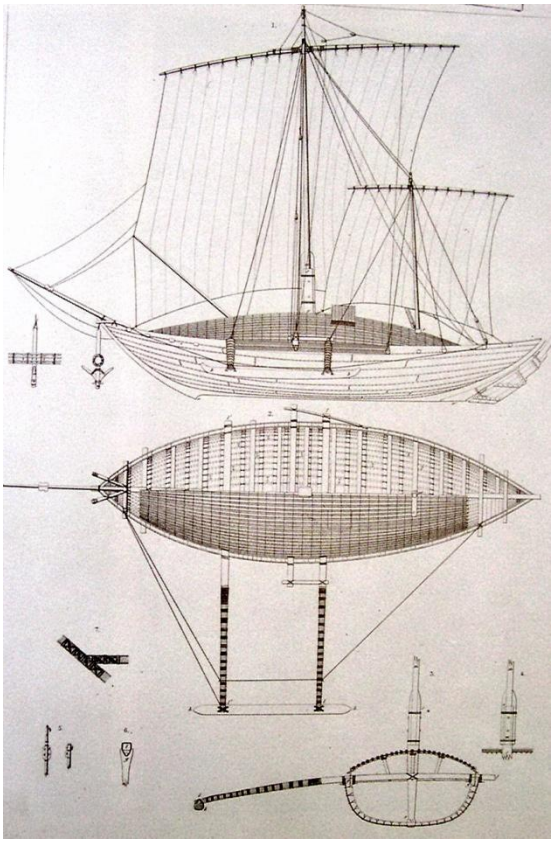


Fig.19 Drawing of a *yathra dhoni* by Paris

The ORU and the YATHRA, were the true vernacular craft of Sri Lanka, while the hybrid vessels of the north speak to us of a more adventurous tradition.

Epilogue

No attempt will be made to summarize the many matters I have collected, found out for myself or commented upon above. I have proposed new ways of looking at certain orthodox views on certain subjects which, I hope, will be seriously considered. Winding up, therefore, I shall present yet another dimension that historians generally do not consider as relevant.

"Experimental archaeology" is rapidly coming of age. www.oxbowbooks.com describing "Experimentation and Interpretation: The Use of Experimental Archaeology in the Study of the Past" (ed. Millson, Dana C.E. 2011) says: "Now that archaeology has moved beyond the focus of the Processual/Post-Processual debates of the 1970s and 80s, which pitted science against the arts, archaeologists have more freedom to choose how to 'do archaeology'." This approach can analyze all known information of an artifact, replicate it in full scale, and test its viability under conditions prevailing at the time. The most recent example, in Sri Lanka, is that of the monsoon-powered, linear, steel-smelting furnaces discovered by Gill Juleff up-river from Godawāya. Juleff, having uncovered a number large enough to assume factory-scale production of steel for export, re-built a damaged one and, using the traditional lore unearthed, successfully smelted high-carbon steel. Her work made the cover of *Nature.* Similarly, at sea, Thor Heyerdhal's *Kon-tiki* and *Ra* made headlines. What I now present are two examples of "experimental archaeology" involving ships that sailed the Eastern Sea.

Gunawardena, whose work I have great respect for (albeit disagreeing with some of his conclusions) says this:

> "(Pierre Yves) Manguin's argument that double outriggers of the Indonesian type were not suited for transoceanic navigation is certainly apt."

Manguin certainly knows Indonesian "lashed-lug" boats and cannot be held responsible for not being aware of evidence – such as that which I now present – since it was not available to him at the time he voiced this opinion.

Towards the early years of the present century, serious nautical archaeologists have turned towards building authentic, full-sized replicas of ancient and medieval ships, and of sailing them according to the manner in which they were believed to have been sailed in the same environment. One such is Nick Burningham, the Australian who built two. One was replica of the VOC "Dufken", the first known Dutch ship to find its way from Jakarta to Australia in 1606. She was a "jacht" (scout), "a fast, lightly-armed ship probably intended for small valuable cargoes or privateering" (www.duyfken.com) built in 1595. I was fortunate enough to witness her being built at the Western Australian Maritime Museum and to board her at Galle in 2002 when she was on the Batavia-Galle leg (31 day's sail) of her voyage home via Mauritius and the Cape and to the Texel, following the old VOC sea-routes. Given below is a picture of her (Fig.20) and of the route she took. (Fig.21)

Fig 20

Replica of the "Duyfken"

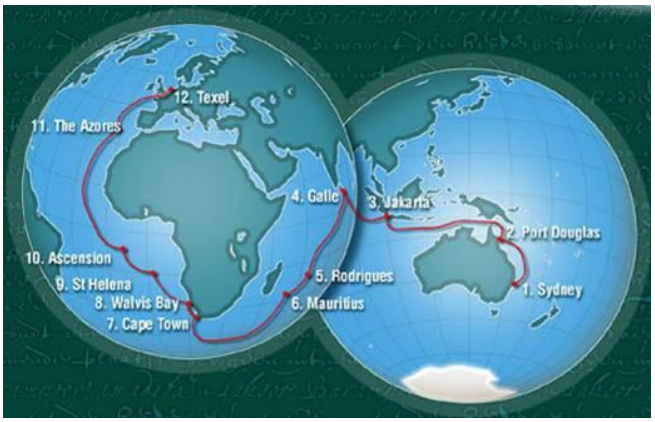


Fig 21

The voyage of the "Duyfken"

The other ship built by Burningham was totally different. She was built by "a team of experienced Indonesian shipbuilders…. practiced in constructing ships using traditional building techniques. They are based in the Kangean Islands, some 60 miles north of Bali". (www.borobudurshioexpedition.com) "The intention is to develop a reconstruction of the type of large outrigger vessels depicted at Borobudur in a form suitable for ocean voyaging and recreating the first millennium Indonesian voyaging to Madagascar and Africa". The ship left Jakarta on 16th August, 2004, sailed south towards Cocos/Keeling to pick up the Trades, sailed a long reach to Seychelles where she arrived on 29th September and, after a 17-day stay, there reached Madagascar on 14th October: a total

of 42 days sailing time to cross the Indian Ocean. A picture of the ship (Fig.22) and a map of her voyage to Ghana (Fig.23) are worth seeing: and the two web sites quoted are essential reading for those who would comment of ships of days gone by.

Fig 22

The replica "Borobudur ship"

Fig.23

The route followed by the "Borobudur ship"

Given the performances of the two ships across the Indian Ocean, one sees that Manguin's assessment of the capabilities of outrigger ships has to be reconsidered. My intention in including new information as concluding remarks, is to show that historians and archaeologists cannot write the oceans' history, without getting under the skin of "those who go down to the sea in ships". In all fairness, however, I must stress that the two replica ships were experimenting with the different routes: the former following the port-to-port route of a homeward-bound merchantman and the latter a cross-oceanic unbroken passage of a voyaging ship. The difficulties faced by the "Duyfken", because of the nature of her chosen route, is best illustrated by a trace of her track (Fig.24) as she approached Galle from westward and departed eastward, causing her to "cross her track"; which was necessary as she was dependent of the prevailing wind.

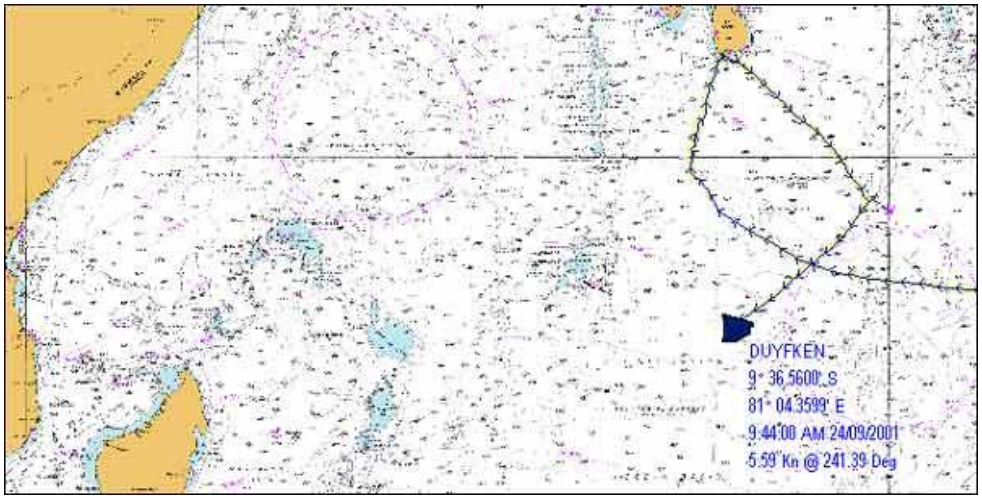


Fig.24 "Duyfken's" track entering and leaving Galle port

My intention in presenting these examples is to stress the need for multi-disciplinary research; and to express the hope that many untapped fonts of knowledge will soon form other parameters of maritime historical and archaeological studies.

Acknowledgements

I am aware that I have, here, bitten-off more than I can actually chew and that the areas I have dealt with deserve to be treated better. I have thus included in the Bibliography only those sources I actually dealt with, although the subject matter calls for a much longer list. I have also included the handful of web sites that I have accessed. My grateful thanks are due to all these sources for enhancing my own education in the process of writing this paper. I must thank particularly two sources: the first being Dr. Susantha Goonatilake, whose *"A 19th.century clash of civizations. The Portuguese presence in Sri Lanka"* I have freely dipped into, and thank him for the permission granted. With such a recent book available, which had all the important details I would normally have to collect from myriad sources, I have been spared a lot of work.

The other is (the late) Prof. R.A.L.H.Gunawardena's much re-printed paper *"Seaways to Seiladiba: Changing Patterns of Navigation in the Indian Ocean and their Impact on Precolonial Sri Lanka"* which, with humility, I consider the best written on this subject. Of course, there are places where I do not agree with him and it is my loss that I could not discuss these with him. I would, therefore, like to dedicate this most inadequate paper to his memory.

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