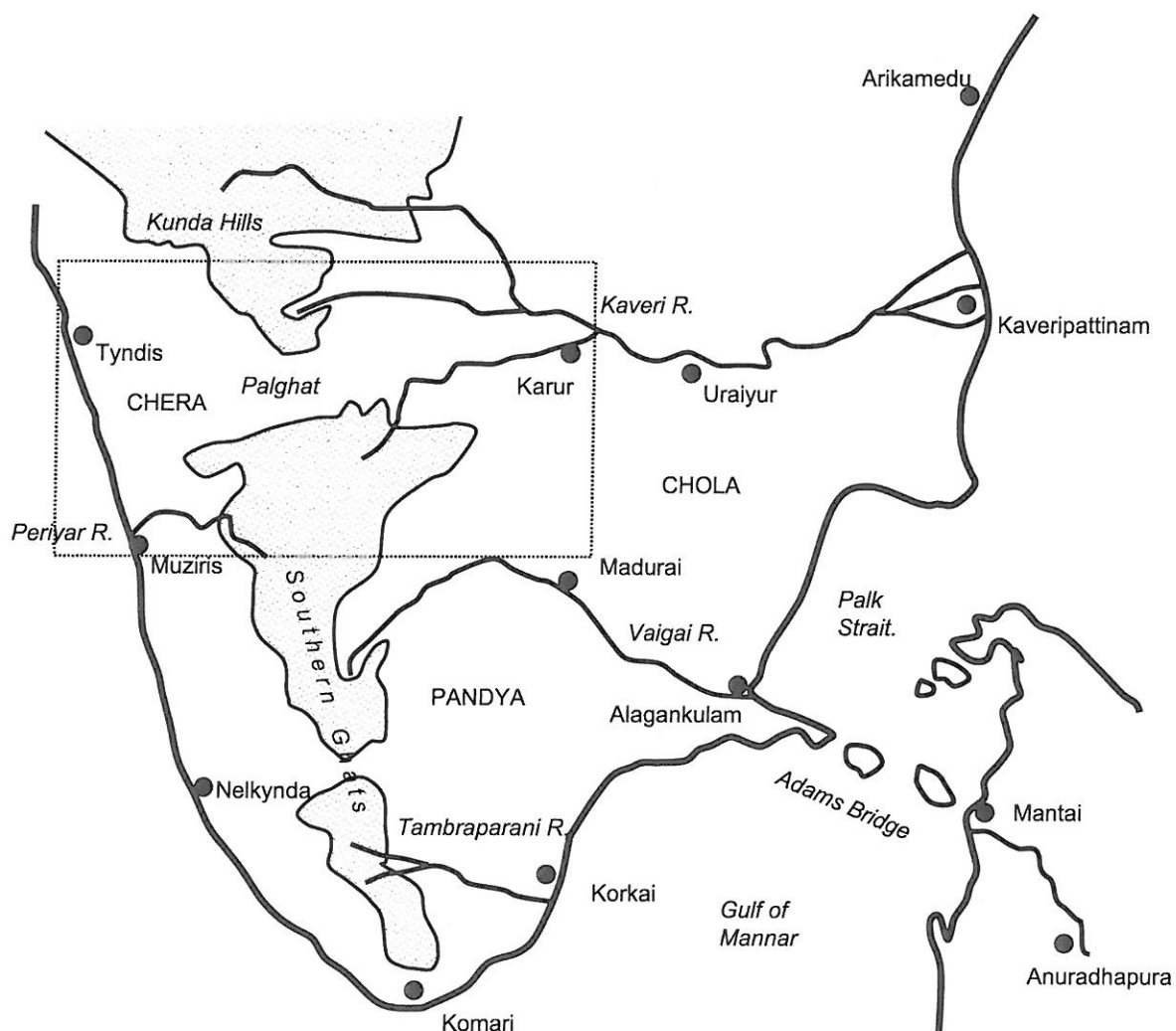


Map 4: Southern India and Sri Lanka in the ancient period



KINGDOMS

Places

Modern Names

Area containing most finds of Roman coins.


Mountains

PORTS, PTOLEMY, *PERIPLUS* AND POETRY – Romans in Tamil South India and on the Bay of Bengal*

Eivind Heldaas Seland

The monsoon trade between India and the Roman Empire has received its share of scholarly attention in the past. When historians quit a field now dominated by archaeology, however, the view that Roman subjects were settled in ports of trade along the Indian east coast was allowed to persist. This would imply that Roman subjects controlled parts of the transit trade between Indian ports or even across the Indian mainland. In consequence, Roman trade would indirectly have extended north to the mouth of the Ganges and across the Bay of Bengal to Southeast Asia. Archaeological evidence for Roman trade east of Cape Comorin is and remains scant. The continued emphasis on the Roman side of the trade has been ascribed to an earlier bias placed on written sources. Here an attempt is made at a re-evaluation of these sources, and the conclusion is that no unbalance exists between the written and the archaeological evidence.

The conquest of Egypt by Octavian in 30 BCE marked the start of two centuries of unprecedented peace and prosperity in the Mediterranean world. The new conditions favoured increased long distance trade. Interrelated trading networks stretching from China in the east, through the Roman Empire and beyond, carried not only goods, but people, ideas and cultural impulses as well.

The Indian Ocean became an important artery of this ancient world trade. Roman, Indian and Arab ships, very possibly African as well, plied the waters from East-African Zanzibar to the Indian Malabar Coast. Ships hugged the coasts, or set sail straight across the ocean helped by the monsoon winds. Without these winds, the trade would hardly have been possible. They blow steadily from the southwest in the summer and from the northeast in the winter months. The trade winds brought ships carrying Indian spices and textiles, Arabian aromatics, African ivory and Chinese silk to Roman Egypt. Silver, gold, weapons, textiles and slaves were among the goods exported in the opposite direction. Many of the traders met in Tamil South-India, making this an ideal area in which to study the patterns of trade.

Excellent works have been written on this trade;¹ however, they deal almost exclusively

with Roman traders and Roman commercial networks. The view that in addition to controlling the bulk of trade on the Red Sea and the western Indian Ocean, Romans also traded directly with the Indian east coast and even maintained trading posts there has persisted.² If this was correct, it would imply that Romans controlled parts of the transit trade between Indian ports or even across the Indian mainland, and that Romans at least indirectly played a part in the trade north to the mouth of the Ganges and across the Bay of Bengal to Southeast Asia. This view should be critically examined, as it implicitly marginalizes the extent and importance of indigenous maritime networks.

More than a decade ago, Himanshu P. Ray reacted against this tendency towards viewing the Indian Ocean trade as a Roman trade, and pointed out that the distribution of archaeological material of western origin in India has its shortcomings as evidence for Roman trade with the subcontinent.³ Elsewhere, Ray has argued that the focus on the Roman side of the trade must be ascribed

¹ Standard works now include Miller 1998; Raschke 1998; Warmington 1995; Wheeler 1955 and Young 2001. Dihle 1984; Jones 1974; Karttunen 1995 and Puskas 1987 give shorter accounts.

² This view has to different degrees been held forth or adopted by scholars like Casson 1989: 25f.; Dihle 1984: 142ff.; Hall 1985: 27ff.; Puskas 1987: 154; Sidebotham 1986: 22; Thapar 1992:16f.; Warmington 1995: 61ff. and 126ff.; Wheeler 1955: 173 ff.; Wheeler, Gosh, and Deva 1946:18 ff. and recently by Young 2001: 31ff.

³ Ray 1993.

* The author is much obliged to Professors Christian Meyer, Department of History, Richard Holton Pierce, Department of Classics, University of Bergen and Assistant Keeper / Senior Researcher John Lund, National Museum of Denmark, for valuable advice and criticism on different parts of this article.

to the bias earlier placed on the classical written sources.⁴ Here it is argued that no classical sources attest anything but exceptional presence of Mediterranean traders on the east coast of India and the Bay of Bengal, but rather helps us to delimit the role of the Romans in relationship to other actors in the Indian Ocean trade.

Arikamedu and archaeology

In 1937, children found a small, inscribed gem and other artefacts near a village just outside Pondicherry, then still a French enclave, in southeast India. The finds were brought to the attention of the French authorities, who carried out the first surveys on the site.⁵ Then in 1944-46, a team of British and Indian archaeologists led by Mortimer Wheeler carried out excavations on a larger scale. What they found was to amaze the archaeological world. Not only did large quantities of Roman pottery come to light – both high quality *terra sigillata* and remains of amphorae once used for goods such as wine, garum and olive oil – but also Roman glass, a Roman lamp and remains of buildings, which were at that time interpreted as facilities for storing and producing goods like glass beads and dyed cloth.

These finds, first published in 1946,⁶ were interpreted by the excavators as the remains of a Roman trading station on the Indian east (Coromandel) coast.⁷ Here, one of the Roman settlements mentioned in the Tamil literature had been unearthed. Arikamedu was the long sought archaeological evidence of Roman trade on the Bay of Bengal. Remains of workshops even made it seem that Romans in India had produced goods both for export to Mediterranean markets and for sale in India.

Still, the picture was flawed. What was not found was perhaps as important as what was found. A common find in South India, lacking at Arikamedu, was Roman coins.⁸ The

archaeologists, however, also had problems identifying the residential areas, which could have helped confirming the cultural background of the inhabitants. This was problematic at a trading post supposedly visited by and lived in by Roman merchants for more than 200 years.

These weaknesses have been pointed out repeatedly.⁹ Several historians have, however, continued to view Arikamedu as a Roman trading post,¹⁰ most recently Gary Young in his long needed new synthesis on Rome's eastern trade.¹¹ Wheeler's and subsequent French¹² and joint Indian and international¹³ excavations at Arikamedu can hardly be said to have yielded evidence of a Roman trading settlement. Vimala Begley and her co-workers at the 1989-92 excavations underlined the indigenous nature of the site. However, they interpreted especially the *terra sigillata* and the oil and *garum* containers as signs of inhabitants with a foreign diet, and thus held that there was indeed a western settlement at Arikamedu – a settlement integrated in the Indian town, rather than a foreign colony.¹⁴

Even this could, however, be too optimistic. Prestige ceramics like *terra sigillata* must have had a near universal appeal, and have for example also been excavated at Khor Rori in modern Oman,¹⁵ without anyone arguing that there ever was a Roman settlement there. Tamil poems attest vivid trade in refined fish between coast and inland¹⁶ and in that context there is no reason why the ancient Tamils should particularly dislike garum. Moreover, *garum* and olive oil were staple articles of Mediterranean trade, and it is not surprising

the historical significance of Roman coins from India in Christian Meyer's article in this volume.

⁹ Begley 1983: 461f. summarizes the criticism up to then. Ray 1998: 46f. and 64ff. brings it up to 1994.

¹⁰ E.g. Casson 1989: 25 and 228; Champakalakshmi 1999: 108 and 178f.; Hall 1985: 28; Puskas 1987: 147; Sidebotham 1986: 22.

¹¹ Young 2001: 31f.

¹² Casal 1949.

¹³ Begley et al. 1996.

¹⁴ Begley et al. 1996: 18 and 22.

¹⁵ Comfort 1960.

¹⁶ *Puranannuru* 343, *Porunarattupadai* 250-260. See also Zvelebil 1973: 100.

⁴ Ray 1994: 69.

⁵ Wheeler 1955: 173.

⁶ Wheeler, Gosh, and Deva 1946.

⁷ Wheeler, Gosh, and Deva 1946: 18ff.

⁸ Three Roman coins are reported to have been found at Arikamedu, but these claims can unfortunately not be verified as no coins have been found *in situ* (Begley et al. 1996: 6). More on

that remains of amphorae are found in areas that were in commercial contact with the Mediterranean, even if this contact was indirect. The sherds of *garum* and olive oil amphorae from Arikamedu make up about five percent each of the identifiable fragments found at the site.¹⁷ This does not necessarily imply a very large number of amphorae. Even the smallest cargo ship in the days of the Roman Empire would carry several hundreds; among them would be a few containing durable food for the crew and fuel for their lamps. On a journey to India approximately half of these would be empty on arrival, regardless of whether Arikamedu was the port of call or not. If the Tamils were in fact uninterested in olive oil and *garum*, there is no reason to assume that these empty containers could not occasionally be reused in Indian trade between the Malabar and Coromandel Coast, or that they ended up in India as a result of re-use of amphorae in Egypt. These amphorae could even be the remains of containers of food bought in Egypt for the homeward journey by the Tamil merchants who went westwards to trade.¹⁸ The finds at Arikamedu alone are not sufficient to speak of Roman trade on or beyond the east coast of India, even less so of Roman settlements.

Tamil literature

Archaeological material of Mediterranean origin is known from a number of sites in India, and Arikamedu would hardly have been interpreted as a Roman settlement in the first place without the reports of the ancient Tamil (*sangam*) literature, which contain several references to so-called *Yavanas*. The Tamil poems describe *Yavanas* coming as traders and entering Indian service as mercenaries, tradesmen and artisans. The word *Yavana* is also known from North Indian sources, and it has been seen as derived from the ethnical term *Ionian*, describing Greeks.¹⁹ The term is known as far back as the days of Alexander the great, and was used at least until the 7th century CE.²⁰ In

northern sources the Indians used the word mainly to describe Alexander's Hellenist and Indo-Greek successors. In the South Indian, Tamil literature, we meet the *Yavanas* as foreigners in different stations in life. The poems mentioning *Yavanas* have been taken to support theories about Roman trading posts in India. An excerpt from the South Indian epic *Silappadikaram* describing the merchant quarters of Kaveripattinam, the port of the Tamil Chola kingdom, high up on the Indian east coast has frequently been referred to.²¹

Near the harbor, the passerby was stopped dead
By the homes of Yavanas whose profits never
shrunk.

On the edge of the burnished waters lived
And mingled as one traders from distant
Lands, come for goods carried
By ships...²²

Here we read about *Yavanas* resident in the merchant street of one of the important Tamil trading ports. A written source describing Greek settlements on the east coast of India should be all the evidence needed for Roman participation in internal trade in India and across the ocean to Southeast Asia, but what does this source really tell us?

Yavanas are mentioned in several of the eight Tamil anthologies, in two of the "Ten longer texts" – *Pattuppattu*, in the epic *Silappadikaram* (cited above) and in its "sibling", *Manimekhalai*. Altogether, we find *Yavanas* mentioned 10 times in the more than 2000 poems of various lengths, making up the corpus of ancient *sangam* literature.²³ The poets mention *Yavanas* in Indian service as soldiers, guards and artisans, or report which goods their ships carried. Only one single passage, the one cited above mentions resident *merchants* on the east coast of India or anywhere else.

A problem encountered when dealing with the *sangam* literature is the date of the various poems. Most of the anthologies of shorter poems are dated to the two first centuries CE,

¹⁷ Will 2004: 438f.

¹⁸ On the possible presence of Tamils in the port of Berenike on the Red Sea, see Begley and Tomber in Sidebotham and Wendrich 1999: 181.

¹⁹ Narain 1957: 165ff.

²⁰ Ray 1998: 83ff.

²¹ Casson 1989: 25; Sidebotham 1986: 93; Warmington 1995: 69; Wheeler 1955: 160.

²² *Silappadikaram* 5.11-15, transl. Parthasarathy 1992: 46.

²³ Zvelebil 1956; Zvelebil 1973: 35.

but this important text, the epic *Silappadikaram*, is dated to about 450 CE.²⁴

The passage most often cited or referred to in support of theories of Roman trading stations on the Coromandel Coast, thus turns out to be part of a text that linguists claim was written centuries after the period from which the bulk of evidence of Roman trade with India has come across. Now, based on the mention of the Chera king Cenkuttuvan mentioned in the epic, the events depicted are supposed to have taken place in the late second century CE.²⁵ The question remains, however, whether we can trust the poet to have had any accurate knowledge of what his homeland was like more than 250 years earlier or whether he used his own time as a model when describing history. Unfortunately, a poem composed in the 5th century has very little value as a source for the state of affairs in the 2nd century. This is underlined by a parallel source, the poem *Pattinappalai*, one of the "ten longer texts" that describes the same city at about the same time as *Silappadikaram*, but which was probably committed to palm leaf around 190 CE.²⁶ Despite its detailed description of the city and its trade, this poem mentions people speaking different languages meeting in Kaveripattinam,²⁷ but no resident *Yavanas*.

There is little doubt that in some cases the *Yavanas* we meet in the *sangam* poems were in fact Roman subjects, trading with South India or entering Tamil service in the first two centuries CE, but this can hardly be the case with all of them. The term "Yavana" entered Indian languages from the west, being a Semitic and perhaps originally Hebrew term first for Ionian Greeks of Asia Minor, then for the Greeks settling in Syria and Persia in the wake of Alexander's conquest. Used in Semitic areas and in Northern India, the word referred to the resident, local Greek speaking population, rather than Ionians or inhabitants

of Greece proper.²⁸ This can hardly be the case in South India as there were no Hellenistic Greek kingdoms or large Greek minorities there. We have to look further:

Linguists hold that the meaning of the term divides along two lines: one geographical and one chronological. The geographical difference in meaning is that *Yavana* meant "Greek" in the sense of Hellenistic Bactrian or Seleucid in the once Hellenistic areas in the Northwest, where Indians and the descendants of Greeks had regular contact for centuries, but that it had a broader meaning of "stranger" or "foreigner" in the Tamil areas in the south. Chronologically the meaning of the word changed from "north-Indian (Hellenist) Greek", to include Egyptians and Romans, and to finally mean "foreigner" in general in the later texts. In medieval and later times it was for example used to describe Arabs.²⁹ We can compare this change of sense with the word "Saracen" in European languages. In Roman times it referred to certain tribes on the eastern border of the Empire. Later it was extended to include "all Arabs" until, during the mediaeval crusades it acquired the sense of "Moslems in general". But to return to the *Yavanas*: who were they if they were not Greek? The late reference in *Silappadikaram* could be one of the places where the term refers to foreigners in general, or it could refer to western visitors more likely to be present in Kaveripattinam in the 5th century than Imperial Romans, for instance Arabs, Persians, or Aksumites. The Byzantine traveller Cosmas report the prescence of the two latter groups on Sri Lanka in the early sixth century,³⁰ while evidence of trade on Roman or Byzantine keels on the Indian Ocean proper is scant or non-existent in this period.

The Coromandel and beyond in the classical sources

As the Tamil evidence turns out not to reveal much about Roman trade east of Cape

²⁴ See Zvelebil 1975: 78f. and 96. There has even been expressed serious doubt as to whether the *sangam* literature belongs to the ancient / early historical period at all (Tieken 2003).

²⁵ Zvelebil 1995: 145.

²⁶ Zvelebil 1975: 78f. and 107.

²⁷ *Pattinappalai* 254-260.

²⁸ Torrey 1904: 302ff.

²⁹ Chelliah 1962: 137; Narain 1957: 165ff. esp. on the northern sources and Ramachandran 1974: 87 on the Tamil. As P. Meile concluded (1940: 99ff.) it is hard to determine the precise meaning of the term in the Tamil areas in the ancient period.

³⁰ Cosmas 11.15.

Comorin, we turn to the classical sources, and indeed there is an important Greek source that seems to attest direct contacts between the Roman Empire and areas much further east than the Coromandel Coast. Ptolemy's *Geography* contains both detailed and considering the circumstances, quite accurate knowledge of the eastern coast of India and the Bay of Bengal.

The work has traditionally been ascribed to the mid second century CE. Divided into eight books, it has two main parts: a theoretical treatise on mapmaking and a *topography*, the latter being lists of rivers, mountains, markets and towns in the known world with their geographical positions. The *Geography* gives us an excellent impression of the degree of geographical knowledge in the time when the work was written, but it provides less information about *what* exactly the author(s) knew about these places. Maps are an important part of the work as we know it today, and their reproductions are favourite illustrations of the ancient world as seen by the ancients. These maps were, however, drawn in the renaissance, and the oldest mention of maps belonging to the *Geography* is from 947, whereas no classical sources mention any.³¹ The maps that we know are probably not based on ancient maps, as maps most likely never accompanied manuscripts of Ptolemy's work,³² but were drawn from the data contained in the manuscripts.

Maps based on Ptolemy's *Geography* were constructed from two separate sources. The basis was the theoretical part explaining how to make maps, and then the mapmaker would have to actually draw the map, either from the coordinates presented in the topographical chapters, or at least in theory with coordinates of his own. The idea of the *Geography* was not to supply a map, but the means to draw one. This makes it perfectly plausible that the work could and would be copied without accompanying maps.

In our case, Book 7 would be the most relevant part of the *Geography*. It deals with India and the areas east of India. The *Geography* describes the coast of the Bay of

Bengal eastwards to the Strait of Malacca (separating the Malay Peninsula from Sumatra). Some names of ports and cities all the way east to China are also mentioned.³³ This has been seen as a result of increased Roman trade across the Bay of Bengal. Roman traders are supposed to have been Ptolemy's sources of information regarding areas east of India.³⁴ The conclusion seems quite reasonable, but one has to be cautious.

The problem is that Book 7 of Ptolemy's *Geography* as it has come across to us could be considerably later than the second century. The debate about the age of the *Geography* had been heated for several decades, when the Swedish geographer Leo Bagrow in 1945 concluded that the *Geography* in the form we know it, must have been the compilation of Byzantine scholars in the 12th century.³⁵ In Bagrow's view, the only part actually written by Ptolemy himself in the second century was the theoretical treatise on mapmaking contained in book I and in smaller parts in some of the later books. The topographical lists as we know them were then added *at some later stage*, but before the 12th century. Now, Ptolemy's work would hardly have been complete without topographical tables of some sort, and his discussion of the size of the inhabited world in Book 1 is based on the relative location of certain places, which would hardly have made sense without the existence of such lists. Still, the depressing implication of Bagrow's finds is that we cannot know what these original lists looked like, and that any use of the topographical parts of the *Geography* as a source to 2nd century history is impossible or at the very best highly problematic. Modern editors believe that all the more than 50 extant manuscripts descend from a common ancestor later than Ptolemy,³⁶ and even if this text could be much older than Bagrow believed, it still cannot provide a secure picture of the second century work.

The topographical lists were texts of practical use and importance. If a scribe was aware of

³¹ Bagrow 1945: 345.

³² Berggren and Jones 2000: 45ff.

³³ Ptolemy 7.3.

³⁴ Dihle 1984: 143; Vogel 1952: 230; Warmington 1995: 108f.

³⁵ Bagrow 1945: 385.

³⁶ Berggren and Jones 2000: 42.

an error in the lists, it could be potentially fatal to anyone relying on the maps produced from the text if he did not correct it. Also the system was flexible. If a scribe knew of places and coordinates not included in the lists, he could and should add them and would thereby improve on rather than corrupt Ptolemy's great work, an attitude that would be completely in accordance with the spirit expressed by Ptolemy himself, who stresses the obligation of the cartographer to use the most recent data available in a world that changes over time.³⁷ The depressing implication of this is that as we have no copies of ancient maps based on Ptolemy, we have no certain idea of which parts of the topography on India and Southeast Asia belong to the ancient period and which parts were added or revised as late Roman, Byzantine or why not even Arab knowledge of Asia increased over the centuries.³⁸

This makes it likely that to the extent that the topographical parts of the *Geography* can tell us anything about Roman trade with South- and Southeast-Asia; it is about the little known and later Byzantine trade, an interesting subject, but outside the scope of this article and most of the cited works on Rome's trade with India. The theoretical parts of the *Geography* are, however, a different matter altogether, as their authenticity seems more certain. Ptolemy here openly acknowledges his debt to the lost work of an earlier geographer called Marinus of Tyre,³⁹ who probably wrote around 100 CE.⁴⁰ Most of Ptolemy's topographical data seem to have been based on this work. His view is however that Marinus' work was defect on several points, the most important being its estimation of the size of the known world and its proposed method of mapmaking.⁴¹ Ptolemy's treatise contains the necessary corrections and improvements.

In his critique of Marinus' estimate of the size of the known world, Ptolemy also reveals that

Marinus' tables included places eastward to the Malay Peninsula and from there on eastwards to the city of Kattigara,⁴² perhaps near modern Hanoi.⁴³ We also get to know that the last leg of the journey was based on the account of an otherwise unknown Alexandros.⁴⁴ This seems to confirm that the original *Geography* did contain a topography of the eastern Indian Ocean, or the discussion would hardly have made sense to the ancient reader. It also supports the traditional view that Mediterranean travellers were Ptolemy's or rather Marinus' informants. Ptolemy's discussion, however, seems to indicate that these contacts between Egypt and Southeast Asia were in fact of exceptional nature:

Ptolemy's criticism of Marinus' data on the Indian Ocean starts with the coast east of Cape Comorin and treats the Bay of Bengal and the last leg eastward to Kattigara.⁴⁵ The discussion is not based on Ptolemy's more accurate knowledge of the area, but on his different opinion on how to calculate the length of the daily sails that both apparently used to decide the distance between ports.⁴⁶ He even enters into a discussion of whether the expression "some days" in Alexandros' lost description of the sail to Kattigara should be taken to mean many or few days.⁴⁷ This not only underlines the fragmentary knowledge of these areas in second century Egypt, but also the difficulty involved in getting new or alternative data. The matter of the size of the inhabited world is of no small importance to a geographer, and we have to believe that Ptolemy would have gone beyond discussing the reasonability of Marinus' evaluation of the distance a ship could sail in a day, if he had access to alternative sources. The theoretical parts of Ptolemy's *Geography* thus indicate that Roman contacts with areas east of Cape Comorin did indeed take place, but were of exceptional nature, and that their frequency decreased with the eastward distance.

³⁷ Ptolemy 1.5.

³⁸ Mathews, 1975: 152, suggests a late fourth century date for the parts describing areas east of India.

³⁹ Ptolemy 1.6.

⁴⁰ Berggren and Jones 2000: 23f.

⁴¹ Ptolemy 1.6-20.

⁴² Ptolemy 1.13-14.

⁴³ Berggren and Jones 2000:155f.

⁴⁴ Ptolemy 1.14.

⁴⁵ Ptolemy 1.13-14.

⁴⁶ Ptolemy 1.13-14.

⁴⁷ Ptolemy 1.14.2.

Heading back in time, let us turn to the *Periplus Maris Erythraei*. This mid first century merchant's guide to the Indian Ocean is the only source we have, written by someone with firsthand knowledge of the trade in question. It should give us a fairly good impression of the extent of Mediterranean geographical knowledge at the time it was written.

The author himself probably never ventured past Cape Comorin, the southernmost point of India.⁴⁸ The description of the coast south and east of the markets of Muziris and Nelkynda becomes increasingly vague, until at last it degenerates into hearsay about horse faced cannibals living near the mouth of the Ganges.⁴⁹

The knowledge of the first part of the coast beyond Cape Comorin seems quite accurate. We learn of ports along the coast, regions and what they produce and export, but as J.C. Christian Meyer points out in his article on Roman Coins from India in this volume (p. 63), one thing is missing, and this is significant: The *Periplus* provides no list of what *Roman goods* could be sold at the ports on the Coromandel Coast. This absence is only echoed in other parts of the work, where the areas discussed clearly were of no commercial interest to our unknown author and his countrymen. One example is the sealed off Island of Socotra,⁵⁰ a second is the description of the ports in the Persian Gulf.⁵¹ Trade goods are listed in both cases, but no imports from Egypt.

The *Periplus* even reveals that Roman goods did end up on the East Coast, but then only indirectly, through Limyrikê, the Roman name for the Malabar Coast:

There is a market in these places for all the trade goods imported by Limyrikê, and, generally speaking, there come to them all year round both the cash originating from Egypt and most

kinds of goods originating from Limyrikê and supplied along this coast.⁵²

So at least at the time when *Periplus* was written, it seems that Roman trade with the east coast was indirect, and that Roman knowledge of areas east of Cape Comorin decreased with the distance. The author of the *Periplus* knew nothing more of eastern waters than he could easily learn from his local contacts during the stay in India, as he waited for the monsoon to turn.

A further argument against direct Roman trade with the east coast is that the author of the *Periplus* had only vague ideas of Sri Lanka, – *Palaisimundu* or *Taprobanê*, being an island. He states that it "extends almost to the parts of Azania that lies opposite to it."⁵³ *Azania* being the Greek name for Africa, this assumption shows that sailing around Sri Lanka to reach the east coast of India was out of the question to the author of the *Periplus*.

There was of course a theoretical possibility of sailing between India and Sri Lanka, but as Lionel Casson comments: "They could not have navigated the shallow channels between the southern tip of India and the northern tip of Ceylon."⁵⁴ Pliny, living and writing only a few decades after the author of *Periplus*, can tell us that the Indians used vessels especially designed for these difficult waters.⁵⁵ Pliny of course had no first hand knowledge, but this piece of information fits nicely with the description of Indian boats used along these coasts provided in the *Periplus*.⁵⁶

Periplus and Pliny are however not our only sources to Greek and Roman knowledge of India. Some decades earlier the geographer Strabo shed light on the India trade of his days, the days of the early principate:

As for the merchants who now sail from Egypt by the Nile and the Arabian Gulf as far as India, only a small number have sailed as far as the Ganges; and even these are merely private

⁴⁸ Fabricius 1883; Schoff 1995: 16 and 234. Casson, 1989: 8 and note 17 p. 8, is more optimistic.

⁴⁹ *Periplus* 58-62.

⁵⁰ *Periplus* 30-31.

⁵¹ *Periplus* 35-37.

⁵² *Periplus* 60, transl. Casson 1989:89.

⁵³ *Periplus* 61.

⁵⁴ Casson 1989: 24.

⁵⁵ Pliny: 6.82.

⁵⁶ *Periplus* 60.

citizens and of no use as regards the history of the places they have seen.⁵⁷

While the very existence of the *Periplus* seems to mock Strabo's claim that the merchants from Roman Egypt were unable to write about the places they had visited, he makes one point clear; that in the period when archaeology can tell us that wine from Italy and Rhodes was drunk at Arikamedu, there were few Romans on this coast.

The negative case

The *Periplus* reveals that the Romans were able to purchase a wide range of goods in the markets on the west coast of India.⁵⁸ Commodities from other parts of India and from areas further east and north, must have been brought there by Indian or other non-Roman traders. An obvious reason for the Romans to wish to travel and trade further east would be to bypass these "middlemen" in order to increase their own profits. Our sources indicate that this did not happen on any larger scale. There are several possible reasons for this:

Most of the profit on the rather expensive eastern goods seems to have been gained not on the way to or through India, but between India and the Roman markets. We have sources that estimate this profit to be ten or even hundredfold.⁵⁹ While these figures should not be taken literally, they do reflect that the profit was considerable and the risk probably accordingly high. The price of eastern commodities in Rome was inflated by a dangerous and expensive transport across the Indian Ocean to Egypt, the long transport within the empire and the high demand for these products throughout the Roman world. In addition to this, Roman authorities levied heavy custom dues and taxes. Together these factors would easily double the price of Indian goods after they reached Roman ports.

The Roman Empire was never a single customs area. Custom dues were among the most important imperial revenues, and were

levied where possible. A second century papyrus reveals that a tax of 25% of the goods, the *tetartê*, was collected in Alexandria, before they were re-exported.⁶⁰ It is likely that the goods would be taxed again upon arrival to the port or market where they were to be sold. The bottom line is that the extra risk connected with, and the time needed for sailing further than the Malabar Coast to obtain cheaper goods, was simply not worth it:

The monsoon winds made it possible to undertake the journey from Egypt to India and back in less than a year. But the same winds made the crossing dangerous. The storms during the first months of the summer monsoon are best avoided even in modern ships. Marine archaeology has revealed that the cargo ships of the first and second century were by no means frail or primitive. It would be impossible to avoid the monsoon storms altogether, but by waiting until July before they set sail from Egypt, the Mediterranean traders would not reach the coast of India before the monsoon had calmed down somewhat.⁶¹

Because the journey from Egypt was safer the longer they waited, a journey past the Malabar Coast and into the Bay of Bengal, or across it to Southeast Asia could be difficult to manage before the summer monsoon ended. When allowing for the time to trade, repair and refit the ship for the return voyage, one would risk missing the winter monsoon, the only possibility to get back to Egypt.⁶²

If this were to happen, the sailors would have to wait until the following winter for a new possibility to return to Egypt. In other words one ship would make one journey rather than two in two seasons, thus reducing the potential profit over time to one half. The longer voyage and the extended travel time

⁵⁷ Strabo 15.1.4, transl. Jones 2001: vol. VII, p. 5.

⁵⁸ *Periplus* 56.

⁵⁹ Pliny (6.101.) tells us that the profit was hundredfold. Chinese sources mention the figure ten, Hirth 1885:42.

⁶⁰ P. Vidob.G40822. See also Sidebotham, 1986: 102ff. and Jones, 1974:141ff. who treat the questions of taxation in the Roman trade with the East in a wider context.

⁶¹ *Periplus* 56. Casson, 1984: 182ff. deals with the likely times for departure and return to the Red Sea ports of Egypt. He informs us that most harbours on the coast of Arabia and India still close today during the strongest summer monsoon.

⁶² Bopaerachchi 1996: 69.

would also increase the risk of shipwreck or piracy. It is useful to keep in mind that based on the rather scant evidence available, all of it from fourth century BCE Athens; it seems that ship loans throughout antiquity were generally given for one sailing season at a time, i.e. for one journey. The security was in the cargo that was to be sold. Compared to other loans, the interest rate was high.⁶³ Thus, large profits were expected in a short time, with equally high risk.

From the Indian vantage point, it must have been undesirable to let the Romans trade directly with areas further east. The Tamil kingdoms of South India supplied important goods like pepper and gems, but their role as middlemen in the trade with the Ganges region and Southeast Asia was also significant. If the South Indians were deprived of their role as a link between eastern and western trade, they would lose an important source of income. Even if doubtful whether rulers or traders in the ancient period, be it in India or in Rome, had any appreciation of the importance of trade for their societies as a whole, the value of ready cash in royal and imperial coffers must have been a message understood by rulers across time and space. This gives us reason to believe that the Tamil kings controlling harbours at the Malabar Coast would do anything within their power to keep the Romans from sailing further east. The lines below, from a second-century Tamil poet saluting a king, illustrate this point. In this case the king keeps eastern ships from entering western waters, but the line of thought is equally valid in the opposite direction:

And therefore we are like boats in the western ocean that belong to some lord other than the Cera, who commands his raging armies and runs his ships that carry gold so that no other vessels dare to travel those waters!⁶⁴

In this way the Chera kingdom on the Malabar Coast would be able to keep the lucrative trade with the Romans to themselves. At the time when the *Periplus* was written it seems that control of the

Malabar Coast was divided between the Cherans and their neighbours, the Pandians.⁶⁵ It is tempting to see this as a result of a Pandian wish to get their share of the trade. Pliny's statement, where he warns against calling at Muziris because of the risk of piracy and points to the neighbouring Pandian harbour of Becare instead,⁶⁶ is another example of the impact that internal Tamil struggles could have on the patterns of the Roman Indian Ocean trade. The third kingdom, Chola, at this time claiming suzerainty over an area which included the site of Arikamedu, would have to trade with the Romans through their rivals, but on the other hand they had access to key resources imported from the Ganges and Southeast Asia.

To sum up, the classical sources do not report Roman contacts with the east coast of India or across the Bay of Bengal on any but exceptional basis. Quite the opposite, they reveal a Roman network that remained restricted to the west coast through the almost two centuries from Strabo to Ptolemy. This is best explained by a range of navigational, commercial and political factors, which together contributed to limit the extent of the Roman commercial network.

The west coast

The discovery of a Roman trading settlement anywhere in India would be of vast importance to our understanding of the Indian Ocean trade in antiquity. That Romans were settled in India seems probable based on what we know of the organization of commerce elsewhere in the period. Ancient traders frequently conducted business through a resident agent, for example a friend, client or freedman, and the *Periplus* mentions resident Greeks and Arabians in several harbours elsewhere on other coasts of the Indian Ocean.

If archaeological remains of Roman settlements in India are to be found, the place to look would, however, not be on the Coromandel Coast, instead we should turn our attention to the west.⁶⁷ At the Malabar

⁶³ Millet 1983: 36ff.

⁶⁴ *Puranannuru* 126 (excerpt), transl. Hart and Heifetz 1999:81f.

⁶⁵ *Periplus* 54.

⁶⁶ Pliny 6.104.

⁶⁷ A difficult task, as the coastline here has changed much over the centuries, but see

Coast we have some indications that Roman subjects were resident in the port of Muziris.

P. Vidob. G40822, the so called Muziris-papyrus, is from the mid second century CE. It draws up the terms of an agreement concerning the transshipment of some goods originating in Muziris and bought on credit, from one of the Red Sea ports, Myos Hormos or Berenikê, via Koptos on the Nile, to Alexandria, thus giving us unique documentary evidence on the Indian Ocean trade. According to some, the agreement was drawn up in Muziris.⁶⁸ Lionel Casson has seen this as conclusive evidence of a permanent Roman settlement at the port.⁶⁹ Gerhard Thür has, however, argued convincingly that the historical context make it more probable that the contract was actually drawn up in Egypt, and that this is not incompatible with the wording of the text itself.⁷⁰ His view is supported in a recent study by R. Gurukkal and C.R. Whittaker.⁷¹ As Thür argues, the issuing of such a very large loan for the monsoon trade is less likely to have taken place at Muziris than in Egypt. The former option presumes a lender with a large amount of ready cash in Muziris, meaning that the money would have had to be transported to India in advance, then the goods to Egypt, and after that the money would have to be brought back to the creditor in India.⁷² One might add that during this time the creditor would have very little possibility to control what happened to his money, unless he had representatives in Egypt, and in that case he would probably have been better off exporting the goods himself. The enterprise seems highly impractical. However, the papyrus loses none of its historical importance by this, but it leaves us in the dark about the possible existence of a Roman settlement in Muziris.

Gurukkal and Whittaker's attempt, supporting the century old identification of Muziris with Cranganore, now Kodungallur. (Gurukkal and Whittaker 2001).

⁶⁸ Casson 1986; 1990; Harrauer and Sijpesteijn 1985.

⁶⁹ Casson 1986; 1990.

⁷⁰ Thür 1987: 235ff.

⁷¹ Gurukkal and Whittaker 2001: 336f.

⁷² Thür 1987: 239f.

The *Periplus* mentions "grain in sufficient amount for those involved in shipping because the merchants do not use it"⁷³ among the imports to Muziris. This seems to be provisions for the stay in India and the return voyage, rather than for resident foreigners. To more northern ports, like Barygaza, this was not necessary as wheat was available locally. If there were resident foreigners among the merchants at Muziris, they must have adopted the local diet.

The third source cited in support of a Roman Diaspora at Muziris is the *templ(um) Augusti* near Muziris on a Roman roadmap from the late third century. The map is known from the medieval copy called *Tabula Peutingeriana*, and it represents the only surviving example of Roman mapmaking. H.P. Ray has questioned the significance of this. She finds it doubtful that there was in fact any such temple in Muziris and holds forth that it could just as well be the temple of a local god, identified with or misunderstood as the divine Augustus by the mapmaker's sources.⁷⁴ Whittaker and Gurukkal are somewhat more optimistic,⁷⁵ but the evidence can hardly be said to be conclusive in either direction.

The lack of sources and sites confirming long-term western presence seems to indicate that to the extent that Romans were settled in India, and most likely some were, they did not live in permanent, separate residences, but stayed among and were integrated with the populace in the relatively few Indian market towns. Once the notion of Mediterranean trade stations or colonies in India is abandoned, we can start to inquire into alternative types of Roman presence in India. Muziris would indeed be one of the more likely entry points for Romans visiting or living in India. The evidence of the *Periplus* and the Muziris-papyrus shows that it was an important port of call for at least a century, and sailors would have to stay there for several months to wait for the winter monsoon that was to bring them back to Egypt.

⁷³ *Periplus* 56, transl. Casson 1989: 85.

⁷⁴ Ray 1998: 66.

⁷⁵ Gurukkal and Whittaker 2001: 337f.

Even if the mentioned Muziris-papyrus is likely to have been drawn up in Egypt rather than in India, it gives us a unique glimpse of second century Roman trade with the country. The shipment in question consisted among other goods of ivory, spikenard and textiles. Its value was calculated by the contract partners to 1154 talents silver and 2852 drachmas.⁷⁶ The figures appear vast, but as we are at an uncertain date in a century of steady and rapid decline in money value in Egypt,⁷⁷ it is hard to say just how vast. Still, the value of the shipment was most certainly considerable.

Moreover, we learn that the consignment made up six shares of the cargo of the ship *Hermapollon*.⁷⁸ Again, we do not know what proportion of the total cargo of the ship these six parts would mean, but we get to know that the ship carried additional cargo to the one mentioned in the papyrus. The papyrus tells us something about the nature of Roman trade with India: It confirms that the amounts invested were high, it implies that the profit was good and that the ships involved of considerable size.

This reveals a lot about the nature of Roman India trade. The participants in this trade knew exactly what they were about. To minimize the risk they would wish to travel straight to India, and thus minimize the time

and uncertainty involved as much as possible. To achieve this, they needed resident agents in India, and they needed them on the west coast. Only this way they could be sure that a cargo would be at hand when they arrived. They simply could not risk sailing along the coast in search of a suitable cargo, with large and bulky ships and with large sums of cash and a valuable export cargo aboard.

Conclusion

That no written sources can attest large scale Roman trade east of Cape Comorin stands in stark contrast to the finds of Roman artefacts on the Coromandel Coast. The bulk of these finds, including many of those from Arikamedu, date from the time of Strabo's *Geography*, the *Periplus* and earlier.⁷⁹ The mentioned works together with the *Geography* of Ptolemy have shown us that Roman knowledge of this area left much to want in this period. They confirm that Roman contacts with these areas did take place, but at the same time they point towards these contacts being infrequent or even exceptional. If the Romans did not bring the goods there themselves, who did? Historians describing Roman trade and trading stations along the east coast have explained this by claiming that the Romans either used the land road across South-India, or that they utilized local ships for the haul from the Malabar to the Coromandel Coast, thus preserving the notion of a Roman trading station at Arikamedu.⁸⁰

Economically as well as practically, the enterprise seems a difficult or even impossible one. Roman goods could certainly reach the whole of India and large parts of Southeast Asia. Still we lack evidence that Romans regularly handled these goods themselves further than the Malabar Coast, or that they were on the receiving end when these goods reached Arikamedu or other ports of call on the east coast of India. As long as we lack this evidence, we should assume that the Romans connected to indigenous trade routes in the harbours on the Malabar Coast, that *Indians* bought the goods there, and that *Indians* brought the Roman goods to their destination at Arikamedu or elsewhere. This

⁷⁶ P. Vidob.G40822: verso, col II. The value of the three mentioned commodities as calculated in the source comes out as a little less than 1/8th of the total, leading us to believe that more goods of higher value were listed in the almost missing column I, which from the little that is left seems to have consisted of calculations.

⁷⁷ Whereas debasement in the Roman Empire proper did not take off before the third century, the Egyptian tetradrachm was debased to about 8% silver (0,92g) at the end of Marcus Aurelius' reign. A tetradrachm was the fixed equivalent of one denarius, still containing 2,56g. silver at that time (Christiansen 1987: 14).

⁷⁸ Here I follow Gerhard Thür in his conclusion that *Hermapollon* was the name of the ship, rather than of the owner as Harrauer and Sijpesteijn assumed, and that the ship in question was the ship carrying the goods to Egypt, rather than exporting them from Alexandria. Harrauer and Sijpesteijn 1985: 134, 150; Thür 1987: 239 note 45. See Casson 1995: 439ff. for the frequent occurrence of names of divinities being used as ship's names.

⁷⁹ See i.e. Wheeler 1955: 173ff.

⁸⁰ Casson 1989: 24f.; Dihle 1984: 102; Sedlar 1980: 94; Young 2001: 31.

is where we glimpse the outline of a non-western trading network, extending along the coasts of India and across the Bay of Bengal to Southeast Asia.⁸¹

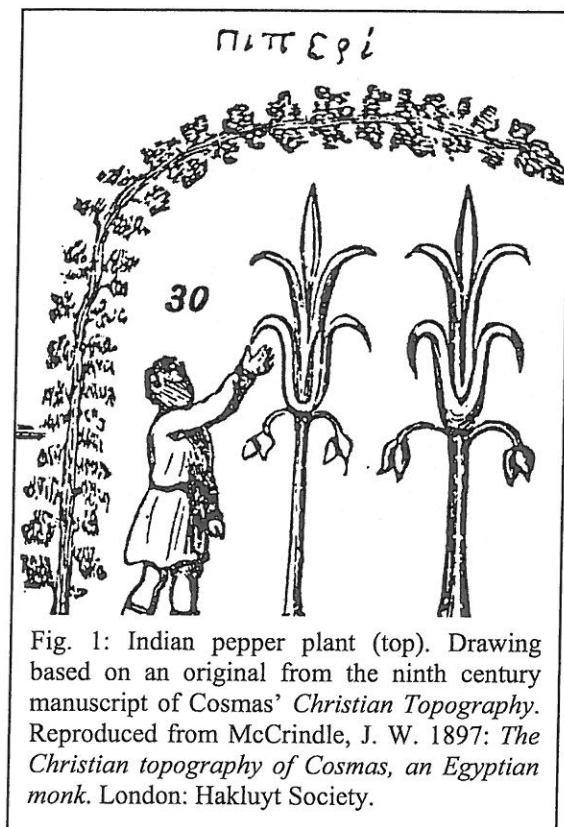


Fig. 1: Indian pepper plant (top). Drawing based on an original from the ninth century manuscript of Cosmas' *Christian Topography*. Reproduced from McCrindle, J. W. 1897: *The Christian topography of Cosmas, an Egyptian monk*. London: Hakluyt Society.

References

- Bagrow, L. 1945. The Origin of Ptolemy's Geographia. *Geografiska Annaler* 27: 318-387.
- Begley, V. 1983. Arikamedu Reconsidered. *American Journal of Archaeology* LXXX (2): 461-481.
- Begley, V., P. J. Francis, I. Mahadevan, K. V. Raman, S. E. Sidebotham, K. W. Slane, and E. L. Will. 1996. *The Ancient Port of Arikamedu, Mémoires Archeologiques* 22. Pondicherry / Paris: École Française d'Extrême-Orient.
- Berggren, L. J. and A. Jones. 2000. *Ptolemy's Geography - An annotated translation of the theoretical chapters*. Princeton: Princeton University Press.
- Bopearachchi, O. 1996. Seafaring on the Indian Ocean - archaeological evidence. Pages 59 - 78 in *Tradition and Archaeology - Early Maritime Contacts on the Indian Ocean*, edited by Ray, H. P. and J. F. Salles. New Delhi: Manohar.
- Casal, J. M. 1949. *Fouilles de Virampatnam-Arikamedu*. Paris: Imprimerie Nationale.
- Casson, L. 1984. *Ancient Trade and Society*. Detroit: Wayne State University Press.
- . 1986. P. Vindobona G. 40822 and the shipping of goods to India. *Bulletin of the American Society of Papyrologists* 23 (3-4): 73-79.
- . 1989. *The Periplus Maris Erythraei*. Princeton: Princeton University Press.
- . 1990. New light on Maritime Loans: P. Vindob G 40822. *Zeitschrift für Papyrologie und Epigraphik* 84: 195-206.
- . 1995. *Ships and Seamanship in the Ancient World*. Baltimore and London: John Hopkins University Press. Original edition, 1971.
- Champakalakshmi, R. 1999. *Trade, Ideology and Urbanization South India 300 BC to AD 1300*. New Delhi: Oxford University Press. Original edition, 1996.
- Chelliah, J. V. 1962. *Pattupattu: Ten Tamil Idylls*. Tirunleveli / Madras: South India Saiva Siddhanta Works Publishing Society.
- Christiansen, E. 1987. *The Roman Coins of Alexandria: Quantitative Studies*. Aarhus: Aarhus University Press.
- Comfort, H. 1960. Some Imported Pottery at Khor Rori. *Bulletin of the American Schools of Oriental research* 160 (1960): 15-20.
- Cosmas, ed./transl. Wolska-Conus, W. 1968. *Cosmas Indicopleustes: Topographie Chrétienne. Sources Chrétiennes* 141, 159, 197. Paris: Cerf.
- Dihle, A. 1984. *Antike und Orient - Gesammelte Aufsätze*. Heidelberg: Heidelberger Akademie der Wissenschaften.

⁸¹ On these eastern networks, see Ray 1998; Glover 1996; Rao 2001; Reddy 2001.

- Fabricius, B. 1883. *Der Periplus des Erythraischen Meeres - von einem Unbekannten - Griechisch und Deutsch mit kritischen und Erklärenden Anmerkungen nebst vollständigem Wörterverzeichnis*. Leipzig: Von Veit & Comp.
- Glover, I. C. 1996. Recent Archaeological Evidence for early Maritime Contacts between India and Southeast Asia. Pages 129-158 in *Tradition and Archaeology - Early Maritime Contacts on the Indian Ocean*, edited by Ray, H. P. and J. F. Salles. New Delhi: Manohar.
- Gurukkal, R., and C. R. Whittaker. 2001. In Search of Muziris. *Journal of Roman Archaeology* 2001:334-351.
- Hall, K. 1985. *Maritime Trade and State Development in early Southeast Asia*. Honolulu: University of Hawaii Press.
- . 1999. Coinage, trade and economy in early South India and its Southeast Asian neighbours. *Indian Economic and Social History Review* 36 (4): 432-459.
- Harrauer, H., and P. J. Sijpesteijn. 1985. Ein neues Dokument zu Roms Indienhandel - P. Vindob. G. 40822. *Anzeiger der Österreichischen Akademie der Wissenschaften. Philosophisch-Historische Klasse* 122 (6): 124-155.
- Hart, G. L., and H. Heifetz. 1999. *The four hundred Songs of War and Wisdom*. New York: Colombia University Press.
- Hirth, F. 1885. *China and the Roman Orient: Researches into their Ancient and Medieval relations as represented in old Chinese records*. Shanghai: Kelly & Walsh.
- Jones, A. H. M. 1974. *The Roman Economy, Studies in Ancient Economic and Administrative History*. Oxford: Blackwell.
- Jones, H. L. 2001. *The Geography of Strabo with an English Translation, Loeb Classical Library*. London: Heinemann. Original edition, 1917-1932.
- Karttunen, K. 1995. Early Roman Trade with South India. *Arctos - Acta Philologica Fennica* 29:81-92.
- Mathews, G. 1975. The Dating and the Significance of the Periplus Maris Erythraei. Pages 147-163 in *East Africa and the Orient: Cultural syntheses in pre-colonial times*, edited by Chittick, N. and R. Rotberg. New York / London: Africana Publishing Company.
- Meile, P. 1940. Les Yavanas dans l'Inde Tamoule. *Journal Asiatique* 232:85-123.
- Meyer, J.C. (this volume) *Roman Coins as a Source for Roman Trading Activities in the Indian Ocean*.
- Miller, J. I. 1998. *The Spice Trade of the Roman Empire*. Oxford: Oxford University Press. Original edition, 1969.
- Millet, P. 1983. Maritime loans and the structure of credit in forth-century Athens. Pages 36-52 in *Trade in the Ancient Economy*, edited by Garnsey, P., C. R. Whittaker and K. Hopkins. Berkely: University of California Press.
- Narain, A. K. 1957. *The Indo-Greeks*. Oxford: Clarendon Press.
- Nobbe, C. F. A., ed. 1843. *Claudii Ptolemaei Geographia*. 3 vols. Lipsiae (Leipzig): Carolus Tauchnitius.
- P. Vidob.G40822, ed. /transl. Harrauer, H., and P. J. Sijpesteijn. 1985. Ein neues Dokument zu Roms Indienhandel - P. Vindob. G. 40822. *Anzeiger der Österreichischen Akademie der Wissenschaften. Philosophisch-Historische Klasse* 122 (6): 124-155.
- Parthasarathy, R. 1992. The Cilappatikaram - an epic of South India, *Translations from the Asian classics*. New York: Columbia University Press.
- Pattinappalai, ed./transl. Chelliah, J. V. 1962. *Pattupattu: Ten Tamil Idylls*. Tirunleveli / Madras: South India Saiva Siddhanta Works Publishing Society.
- Periplus Maris Erythraei, ed./transl. Casson, L. 1989. *The Periplus Maris Erythraei*. Princeton: Princeton University Press.
- Porunarattupadai, ed./transl. Chelliah, J.V. 1962. *Pattupattu: Ten Tamil Idylls*. Tirunleveli / Madras: South India Saiva Siddhanta Works Publishing Society.
- Ptolemy, ed. Nobbe, C. F. A., ed. 1843. *Claudii Ptolemaei Geographia*. 3 vols. Lipsiae (Leipzig): Carolus Tauchnitius.
- Ptolemy, transl. Berggren, L. J. and A. Jones. 2000. *Ptolemy's Geography - An annotated translation of the theoretical chapters*. Princeton: Princeton University Press.
- Puranannuru, ed./transl. Hart, G. L., and H. Heifetz. 1999. *The four hundred Songs of War and Wisdom*. New York: Colombia University Press.
- Puskas, I. 1987. Trade Contacts between India and the Ancient World. Pages 141-156 in *India and the Ancient World - History, Trade and Culture before 650 AD*, edited by Pollet, G. Leuven: Departement Oriëntalistik.
- Ramachandran, C. E. 1974. *Ahananuru in its historical setting*. Madras: University of Madras.
- Rao, K. P. 2001. Early Trade and Contacts between South India and Southeast Asia (300BC - AD 200). *East and West* 51 (3-4).
- Raschke, M. G. 1978. New Studies in Roman Commerce with the East. Pages 604-1341 in *Aufstieg und Niedergang der Römischen*

- Welt II.9.2, edited by Temporini, H. and W. Haase. Berlin: Walter De Gruyter.
- Ray, H. P. 1993. A Resurvey of Roman Contacts with the East. *Topoi: Orient - Occident* 3 (2):479-492.
- . 1994. The western Indian Ocean and the early maritime links of the Indian subcontinent. *Indian Economic and Social History Review* 31 (1):65-88.
- . 1998. *The Winds of Change - Buddhism and the Maritime Links of early South Asia*. Delhi: Oxford University Press. Original edition, 1994.
- Reddy, P. K. M. 2001. Maritime Trade of Early South India. New Archaeological Evidences from Motupali, Andhra Pradesh. *East and West* 51 (1-2):143-158.
- Schoff, W. H. 1995. *The Periplus of the Erythraean Sea - Travel and trade in the Indian Ocean by a merchant of the first century*. Delhi: Munshiram Manoharlal. Original edition, Philadelphia 1912.
- Sedlar, J. W. 1980. *India and the Greek World: a study in the transmission of culture*. Totowa, NJ: Rowman & Littlefield.
- Sidebotham, S. E. 1986. Roman economic policy in the Erythra Thalassa : 30 B.C.-A.D.217. *Mnemosyne. Supplementum* 91. Leiden: Brill.
- Sidebotham, S. E., and W. Z. Wendrich. 1999. *Berenike 1997: Report of the 1997 excavations at Berenike and the survey of the Egyptian Eastern Desert, including Excavations at Shenshef*. Leiden: CNWS.
- Silappadikaram*, transl./ed Parthasarathy, R. 1992. *The Cilappatikaram - an epic of South India, Translations from the Asian classics*. New York: Columbia University Press.
- Strabo, ed./transl. Jones, H. L. 2001. *The Geography of Strabo with an English Translation, Loeb Classical Library*. Cambridge, Mass. / London: Harvard University Press. Original edition, 1917-1932.
- Thapar, R. 1992. Black Gold: South Asia and the Roman Maritime Trade. *South Asia* XV (2): 1-27.
- Thür, G. 1987. Hypotheken Urkunde eines Seedarlehens für eine Reise nach Muziris und Apographie für die Tetarte in Alexandria (zu P. Vindob. G. 40. 8222). *Tyche* 2: 229-245.
- Tieken, H. 2003. Old Tamil Cankam literature and the so-called Cankam period. *Indian Economic and Social History Review* XL (3): 247-278.
- Torrey, C. T. 1904. "Yawan" and "Hellas" as Designations of the Seleucid Empire. *Journal of the American Oriental Society* 25:302-311.
- Vogel, J. P. 1952. Ptolemy's Topography of India: His Sources. Pages 226-234 in *Archeologica Orientalia in Memoriam Ernst Herzfeld*, edited by Miles, G. C. New York: J.J. Augustin.
- Warmington, E. H. 1995. *The Commerce Between the Roman Empire and India*. Reprint of the 2nd. ed. New Delhi: Munshiram Manoharlal. Original edition, London 1928, 2nd ed. London 1974.
- Wheeler, M. 1955. *Rome Beyond the Imperial Frontiers*. 2nd ed. Middlesex: Penguin Books. Original edition, 1954.
- Wheeler, M., A. Gosh, and K. Deva. 1946. Arikamedu: An Indo-Roman trading-station on the east coast of India. *Ancient India* 2: 17-38.
- Will, E. L. 2004. Mediterranean Amphoras in India. Pages 433-441 in *Transport Amphorae and Trade in the Eastern Mediterranean. Acts of an International Colloquium at the Danish Institute in Athens, 26.-29.9. 2002*, edited by Eiring, J. and J. Lund. Athens: Danish Institute in Athens.
- Young, G. K. 2001. *Rome's Eastern Trade: International commerce and imperial policy, 31 BC - AD 305*. London / New York: Routledge.
- Zvelebil, K. V. 1956. The Yavanas in Old Tamil Literature. Pages 401-409 in *Charisteria Orientalia praecipue ad Persiam pertinentia*, edited by Tauer, F., V. Kubickova and I. Hrbek. Praha: Ceskoslovenska Akademie Ved.
- Zvelebil, K., V. 1973. *The Smile of Murugan: On Tamil literature of South India*. Leiden: Brill.
- . 1975. Tamil Literature. *Handbuch der Orientalistik*, vol 2:2. Leiden: Brill.
- . 1995. Lexicon of Tamil Literature. *Handbuch der Orientalistik*, vol. 2:9. Leiden: Brill.