

# The Shipping Technology of Cholas

K.V. Ramakrishna Rao I.R.S.,

B.Sc., M.A., A.M.I.E., C.Eng. (I.), B.L.

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Assistant Commissioner of Customs,  
Central Excise and Service Tax.  
Independent Researcher.  
Director – Institute for the Study of  
Ancient Indian Arts and Sciences

25 (Old.9), Venkatachala Iyer Street,  
West Mambalam, Chennai – 600 033  
Cell: 98402 92065  
e- mail: [kopallerao@yahoo.co.uk](mailto:kopallerao@yahoo.co.uk)

**Introduction:** Of late, some researchers<sup>1</sup> have started throwing doubt on the overseas expedition of Rajaraja Chola through Rajendra Chola on the plea that the Parasasti / Meikkirti could have been written with poetic fantasy rather than the factual accuracy. Even, had Rajendra Cholan gone there, it could have been only a raid to loot and not to set foot as a conqueror! Earlier Aidan Southhall<sup>2</sup> analyzed the West African politics in terms of the “**segmentary states theory**” and applied to medieval European states. Burton Stein<sup>3</sup> applied such model to South India, though Bernard S. Cohn<sup>4</sup> opposed. Burton, then applied such theory to Cholas and George W. Spencer<sup>5</sup> accepting it to declare that in such “segmentary states”, the state’s functions were custodial rather than regulative, magico-ritualistic rather than managerial. Thus Cholas resorted to the policy of “plunder and piety” just like Frankish kings of early mediaeval Europe. Rajaraja too fulfilled his charitable obligations – his “necessary giving” – in an extravagant way, aggressively acquiring booty only to donate more lavishly to temples and Brahmans. In such an attempt, the Tanjore inscriptional details of Cholas expedition to South East Asian Countries are dubbed as mere rhetoric. All these continue, though R. C. Majumdar<sup>6</sup> after discussing the “struggle between the Silendras and the Cholas”, long back pointed out, “***That the story of this victory is not merely an imagination of the court-poets, but based on facts, is proved, beyond doubt, by the detailed references to the***

<sup>1</sup>George W. Spencer, *The Politics of Expansion – The Chola Conquest of Sri Lanka and Sri Vijaya*, New Era Publications, Madras, 1983.

Richard G. Fox (Ed.), *Realm and Region in Traditional India*, Duke University Program in Comparative Studies on South Asia, Monograph No. 14, Durham, Duke University, 1977.

Moti Chandra, *Trade and Routes in Ancient India*, Abhinav Publications, New Delhi, 1977, pp.212-214. He doubts the naval battles of the Cholas, but not the oversea expedition.

<sup>2</sup>Aidan W. Southhall, *Alur Society*, Cambridge University Press, UK, 1956.

<sup>3</sup>Burton Stein, *The Segmentary State in South Indian History*, in *Realm and Region in Traditional India*, pp.3-51.

<sup>4</sup>S. Benard Cohen, *African Models and Indian Histories*, in *Realm and Region in Traditional India*, pp.90-113.

<sup>5</sup>George W. Spencer, *opt.cit*, he starts his hypothesis in his introduction to his book and elaborates thereafter in subsequent chapters, segmentary theory - pp.6-7, piety and plunder – pp.8-10 etc.

<sup>6</sup>R. C. Majumdar, *Hindu Colonies in the Far East*, Firma KLM, Calcutta, 1973. pp.38-39.

**vassal states.** It is interesting to note that many of these States are included in the Silendra Empire by later Chinese authorities”.

Though, non-Indian researchers point out the maritime activities<sup>7</sup>, international trade, import and export of goods, movement of people-groups with religious beliefs<sup>8</sup> etc., their studies have been restricted to Chinese, Arabic and European exploits or impact with passing remarks to Indians and Cholas. Accepting the fact of Indian goods, people, their religion, temple-building technology etc., going there, but doubting their mode of travel appears illogical and unhistorical. Therefore, a critical study is made in this paper to analyze the shipping, ship-building and naval capabilities of the Cholas.

**Whether Naval battles were fought or not?**: The core is dealt with The concept of oversea expedition and conquer is linked with Naval battles so that the incoming warriors from the ships land and enter into cities so that the conquest is complete. The critical observations made by different researchers are mentioned as follows:

George W. Spencer<sup>9</sup>: “In spite of several references in Tanjore record to ships and bodies of water, there is nothing in those purely rhetorical references that requires us to believe that Cholas fought naval battles. ***Indeed, the equally conventional reference to capturing the Kedah elephants would suggest land battles***”.

Moti Chandra<sup>10</sup> succinctly describes the Cholas expedition to SEA concluding as follows: “In the conquests of Rajendra Chola came almost the whole eastern part of Sumatra, and the central and southern parts of the Malay peninsula. He also occupied the capitals of Srivijaya and Kedah. Perhaps this expedition started in 1025 A.D”. Significantly, in next the line, he poses the issue:

“The Indian literature does not mention many sea battles. Therefore, we are surprised to read the description of an Indian fleet in Tilakamanjari<sup>11</sup> of Dhanapala<sup>12</sup>. The story mentions that this Indian fleet was led by an Indian prince, Samaraketu of Ranganasala. He led this expedition to Indonesia because the feudatory chiefs there refused to pay the tributes and taxes in time.....”. Surprised by the close similarity between the narration about Cholas naval expedition and the Tilakamanjari story, he notes:

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<sup>7</sup> Geff Wade, *An Earlier Age of Commerce in Southeast Asia: 900-1300 CE*, Asia Research Institute, National University of Singapore.

<sup>8</sup> Tansen Sen, *Buddhism, Diplomacy and Trade: The Realignment of Sino-Indian Relations 600-1400*, Honolulu, Association for Asian Studies, University of Hawai'i Press, 2003. p.156.

See also Tansen Tan, “*Maritime Contacts Between China and the Cola Kingdom (A.D. 850-1279)*” in K.S. Mathew (ed.), *Mariners, Merchants and Oceans: Studies in Maritime History*, Delhi, Manohar, 1995, pp. 25-42.

<sup>9</sup> G. W. Spencer, *opt.cit*, Sl.no. 6 of Notes to Chapter 7, p.172.

<sup>10</sup> Moti Chandra, *opt.cit*, pp.212-214.

<sup>11</sup> *Tilakamanjari*, 2<sup>nd</sup> edition, Bombay, 1938, pp.113-141.

<sup>12</sup> Dhanapala seems to have flourished in the reigns of Styaka and Vakapatiraja of Dhara (774-995 A.D). but, Merutunga places him as contemporary of Bhoja (1010-1025 A.D).

***“Whether the sea expedition described in the Tilakamanjari gives glimpses of the victorious expedition of Rajendra Chola, or some other Indian ruler, depends on the exact date of Dharmapala.*** But, there is hardly any doubt that Dhanapala had an intimate knowledge of Indonesia”. Then, he gives a free translation of the story, which narrates as to how the army encamped on the shore, the soldiers marched to the villages, the Indonesian prince meeting the pilot, who was a very clever navigator and did not care for any sea danger, usage of boats while disembarking etc., Thus. The text uses many expressions related to naval expedition. Then , Moti Chandra discusses about hero-stones that depict naval battles ending with A. S. Atlekar’s reference<sup>13</sup> to ***“flotilla of ships”***. P. C. Chakravarti<sup>14</sup> has dealt with “Navak Warfare in Ancient India”, in 1930, particularly pointing out the Naval capabilities of the Tamils.

K. V. Raman<sup>15</sup>, in the context, just points out the Cholas’ trade relation with China and SEA countries without going into the naval aspect. P. Venkatesan<sup>16</sup>, though deals with “Naval Battles and Shipwrecks Referred to in Tamil Epigraphs”, he repeats the details from the inscriptions of Rajaraja and Rajendra, again not explaining about naval details. But, there have been depiction of ships not only in hero-stones, but also on the coins of Satavahanas, Salankayanas, Pallavas and others and such coins are in fact known as “ship-type” coins.

**“Ship-type Coins” Of Sathavahanas, Salankayanas, Kurumbas, Pallavas:** The introduction of “ship-type coins” has been attributed to the Sathavahanas<sup>17</sup>, who were ruling the south during c.200 BCE onwards, just touching the northern boundaries of the Tamils of the Sangam period. Vasishthiputra Pulumavi and Yajna Sri Satakarni have issued Ship-type coins depicting two-mast ships sailing on wavy oceanic waters under partially clouded sky. The coins of Pulumavi have been recovered between Madras and Caddalore proving the existing of ports in that area. The coins of the latter were found in Maharastra. Here, under the two-mast ship fish (LHS) and conch (RHS) are also depicted. The other parts of ship – have also been clear. The Salankayanas have also issued similar coins proving that they too had seafaring activities and naval dominance. Interestingly, their ships portray some parts of the ship on both sides under water. Though, they could be easily interpreted as oars, but the shapes negate it. In another coin, a roughly circular shape object attached to one side of

<sup>13</sup> A.S. Atlekar, *Indian Culture*, Vol.II, 1935-36, p.417.

<sup>14</sup> P. C. Chakravarti, *Naval warfare in Ancient India*, The Indian Historical Quarterly, Vol.4, No.4, 1930.12, pp.645-664. Also see in: <http://ccbs.ntu.edu.tw/FULLTEXT/JR-ENG/cha.htm>

<sup>15</sup> K. V. Raman, *Port Towns of Tamilnadu – some Field Data and the Prospects of Marine Archaeology*, in *Marine Archaeology of Indian Ocean Countries* (Proceedings of an International Seminar), National Institute of Oceanography, 1988, pp.114-118.

<sup>16</sup> P. Venkatesan, *Naval Battles and Shipwrecks Referred to in Tamil Epigraphs*, Ibid, pp.26-27.

<sup>17</sup> E. J. Raposon, *Catalogue of the Coins of the Andhra Dynasty*, London, 1908, p.34ff.

V. V. Mirashi, *A Ship-type Coin of Yajna Satakarni*, Journal of the Numismatic Society, Vol.III, Pt.I, 1941, pp.43-45.

R. Krishnamurthy, *Pallava Coins*, Garnet Publishers, Chennai, 2004, pp.46-49.

the ship. Then come the ship-type coins issued by the Pallavas<sup>18</sup>, which depict both one-mast and two-mast ships and also single-mast boat with Nandi / bull symbol on the observe. The picture nos. are given as appearing in the book of R. Krishnamurthy<sup>19</sup> for convenience. In the coins with sl.nos. 25 and 26, the oars are very clear. No.35 also shows two-mast ship. In 36, part of a ship is depicted with a lengthy device underneath with three rectangular scooped out holes. It could not be an anchor, as it has been depicted with full length of the ship.

Sir Walter Elliot<sup>20</sup> gives interesting description for the two-mast ship depicted in Pallava coin: “**Two-mast ship like the modern coasting vessel or d’honi, steered by means of oars from the stem**”. About this ship-type coins, he records that there were two and both were found missing and then, one recovered. In his words<sup>21</sup>, “**This is one of the two coins mentioned on p.36, supposed to have been lost. It was discovered in arranging the present series, but the other is still missing**” (1884). In another Pallava coin (numbered as 55 in plate II), he comments that observe has ‘a horse facing right, with a pellet in front’ and reverse ‘indistinct’. But, the reverse depict a two-decked ship, perhaps which he did not want to acknowledge, as **it would be too modern to be imagined in the Pallava period!** In fact, he calls them as “Kurumbas”. These coins were recovered from the coastal Labis and Merkayars in exchange for useful necessities. About the coins, he describes as follows<sup>22</sup>:

“Those of native origin are small, irregularly rounded pieces of thin copper, bearing generally the device of a bull, with occasionally some letters in Cave-character on the observe; and on the reverse, a tree, **ship, star, crab, fish etc.** but, **their most remarkable characteristic is the elegance and delicacy of form with which the animals are designed**, indicating a considerable advance of art; and in this respect contrasting favourably, but with the Andhra money on the one side, and with the Chola, and Pandyan currencies on the other” (emphasis added).

Thus, he could have noted the similarity of coins of Cholas and Pandyas, besides Andhras and Kurumbas, as implied in his argument of contrast of art. Coming to Cholas of the material period, the available / reported coins depict only stars, fish prominently (these are specifically mentioned in the context). Therefore, it is intriguing to note that there are no coins issued by Rajaraja or Rajendra either to commemorate their oversea expeditions or victories or at least depict their naval capabilities on their coins. When so many metallurgical highly skilled bronzes are attributed to the Cholas, it is also intriguing that they issued fewer coins. But, considering the disappearance of coins from India<sup>23</sup>, it can be surmised that such

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<sup>18</sup> I. K. Sarma, *Coinage of the Sathavahana Empire*, p.227.

<sup>19</sup> R. Krishnamurthy, *opt.cit.*,

<sup>20</sup> Sir Walter Elliot, *Coins of Southern India, Prithvi Prakashan*, Varanasi, 1970, p.152.

<sup>21</sup> Ibid, p, 152B.

<sup>22</sup> Ibid, p.35.

<sup>23</sup> K. V. Ramakrishna Rao, *The Appearance and Disappearance of Coins in Ancient India*”, to appear in Dr. Raja Reddy Facilitation Volme, 2007.

coins could have gone to the foreigners (just like Leiden Copper plates) and in the possession of private collection (Indian coins are offered for sale in internet).

**Revenue System proves the Maritime activities of Cholas:** The Revenue system of the Cholas interestingly talks about duty on imported goods into their territories. The South Indian Inscriptions have given enough details about it. It is unique in the sense that the levy was imposed based on the type of the vessel in which the goods were imported or imported goods brought in instead of the goods imported. Thus, the levy is mentioned for the following:

- 🌐 Marakkalam = Ship
- 🌐 Patavu = Boat
- 🌐 Kalavam = Raft

P. Shanmugam<sup>24</sup> dealing with the topic notes that. “.. **a similar tax imports are mentioned in an epigraph of Ganapatideva (1244). We have no such evidence to suggest a corresponding item in CM (Cholamandalam)**”. That is, the dilemma implied is that the inscriptions mentioning the three type of naval tax levied are found only in Tondaimandalam and not in Cholamandalam, but such division has been conceived, perceived and applied by us only. It is well known that such import-export, naval-maritime, shipping-shipbuilding activities would be near sea and not interior areas under the Cholas. Therefore, such inscriptions located near sea, here, Kollitturai, are significant.

**The Navy (of Cholas):** Under the caption “The Navy”, K. A. Nilakanta Sastri<sup>25</sup> has given the following details and they split into points for interpretation as follows:

⇒ The ‘numberless ship’ which carried Rajendra’s troops across the ‘rolling sea’ to the conquest of Sri Vijaya and its dependencies could not have come up suddenly and must be accepted as proof of a steady naval policy pursued by the Cola monarchs of the period.

🌐 The steady naval policy pursued by the Cola monarchs of the period could not have been without the knowledge of ship-building, ship-technology and shipping.

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<sup>24</sup> P. Shanmugam, *The Revenue System of the Cholas 859-1279*, New Era Publications, Madras, 1987, p.52.

<sup>25</sup> K. A. Nilakanta Sastry, *The Cholas*, University of Madras, Madras, 1984, pp.458-460.

For convenience, the notes references as he mentioned are reproduced here for convenience:

Notes

53. Journal of Oriental Research. vi, 299ff.

54. Ferrad, Voyage, p.32; Wilson, Persian Gulf, pp.57-58 and n.Pelliot casts a doubt on Sulaiman’s authorship of the work attributed to him, T’oung Pao, xxi, pp. 401-402.

55. Ferrad, op.cit., p.93. See also Renadout-Ancient Accounts- Remarek ‘E’, and Marco Polo.

56. Ferrand, Voyage, p.14.

57. ‘Dans tous ses ouvrages nautiques, Ibn Majid fait frequemment allusion’a l’ opinion des Colas qu’il approuve ou rectifie. Ce’s t qu’il devait avoir en main les Insructions nautiques tables geographiques avec indication de la latitude des ports, utilis’ees par les marins du Coromandel et qu’il les comparait avec les documents arabes des meme nature’. Ferrand, Journal Asiatique, 11:14, (1919), pp.171-172.

- ⇒ The early Colas of the Sangam period had a good share in the maritime trade and activity of the Indian seas.
- 🌐 So such “naval policy” had been continuous and not originated suddenly. Thus, the Colas of Sangam period must have had ruled like their contemporary Satavahanas, as otherwise, it is unimaginable or intriguing to note Satavanas ruling states and the Colas without state reportedly leading “tribal state”, as has already been suggested by some historians<sup>26</sup>.
- ⇒ The history of the Hindu colonies in the Malay Archipelago and Indo-China gives clear evidence of a steady increase, under the Pallavas, in the trade and culture contacts between these lands and the countries of South India.
- 🌐 Thus, the Pallavas navigation technology goes before the Colas in the seafaring activities. B. Ch.Chabra<sup>27</sup> has pointed out as to how the Pallava inscriptions of non-Indian sources (available in SEA countries) are dating before the Indian Pallavas. Thus, the overseas trade and shipping of Pallavas cannot be ignored.
- ⇒ The Tamil inscriptions of Takuapa<sup>53</sup> shows that an important mercantile corporation of South India, the manigramam, had established itself on the opposite coast of the Bay of Bengal in the ninth century A.D.
- 🌐 Now, there have been many inscriptions found even upto Southern-China and they are discussed separately.
- ⇒ The Colas only continued an ancient tradition in the attention they gave to developing their power on the sea. The conquest of Ceylon and the Maldives, and the evidence of the Chinese annals of the embassies that reached China in the period from the Cola country give us some measure of the success they attained in this direction.
- 🌐 The literary evidences of Sangam literature and the conquest of Ceylon and Maldives had been prelude to their overseas expansion.
- ⇒ And the overthrow of the Cera fleet at Kandalur salai may well be taken to mark the definite establishment of Cola naval power in this period in the territorial waters of Southern India. We have little direct evidence on the build of the ships employed.
- 🌐 Though about the “overthrow of the Cera fleet at Kandalur salai” is interpreted differently, the fact being that not only Colas had maritime capabilities, the Ceras too possessed such capabilities with their unique ship-building and ship-academy.

<sup>26</sup> Champaka Lakshmi et.al eds. *State and Society in Pre-modern South India*, Trissur, 2002. pp. 39 ff., see “Antecedents of the State Formation in South India,” therein.

R. Champakalakshmi, *State and Economy: South India Circa A. D. 400-1300*, Romila Thapar, ed., Recent Perspectives of Early Indian History (Bombay: Popular Prakashan, 1995), pp. 266-308.

Burton Stein, *The Segmentary State: Interim Reflections*, Hermann Kulke, ed., *The State in India, 1000-1700*. (Delhi: Oxford University Press, 1997), pp. 134-161.

Nicholas Dirks, *Political Authority and Structural Change in Early South India*, in *The Indian Economic and Social History Review*, Vol. XIII, No. 21, pp. 125-157.

James Heitzman, *State Formation in South India, 850-1280*, in Kulke, *The State in India*, pp. 162-194.

<sup>27</sup> B. Ch. Chhabra, *Expansion of Indo-Aryan Culture During Pallava Rule (as evidenced by inscriptions)*, Munshiram Manoharlal, New Delhi, 1965.

⇒ Considering that the author of the periplus distinguished three types of vessels several centuries earlier on the Coromandel coast and that naval expedition of Rajendra was a great achievement in itself, the existence of a well-ordered fleet comprising ships and boats of different grades must be admitted.

🌐 Of course, the “civilized, progressed and advanced” Egyptians, Greeks, Romans, Arabs and others would not have been dealing with “mythical goods” of Indians and the latter sailing in “mythical ships”.

⇒ The Arab merchant Sulaiman made several voyages between China and the Persian Gulf in the ninth century A.D., at a time when this long distance trade was being carried on very briskly. In his curious account of Maldives, he says that the people of these islands ‘built ships and houses and executed all other works with a consummate art’<sup>54</sup>.

🌐 The mention of Maldives is interesting as it was stronghold of Pallavas once and they were building ships and supplying to others.

⇒ Sulaiman had no occasion to visit the Coromandel coast; and his voyages were made before the rise of Colas of the Vijayala line into prominence. Taking into account Sulaiman’s testimony to the quality of the ships built in Maldives, and the conquest of these islands effected by Rajaraja’s fleet, we may form some idea of the efficiency of Cola navy in this period.

🌐 Rather, the Colas tried to imitate the Pallavas in dealing first with the “Pallavas” of Maldives and then Ceras (Kanthalur salai). In any case, the ship-connection (ship-building and ship-academy) is interesting.

⇒ Abu Zaid Hasan, in the notes which he added to Sulaiman’s work about the beginning of the tenth century A.D., observes that the vessels of the Indian ocean, specially those made at Saraf, differed in construction from those of the Mediterranean. ‘It is a fact that the type of ship built by pieces of wood sewn together is a specialty of the builders of Siraf, the ship builders of Syria and of Rum (Byzantium) nail, on the contrary, these pieces of wood and never sew them one to another’<sup>55</sup>.

🌐 Zaid observation of “sewn Indian ships” must be general, in otherwords that the Indian ships were built in such a way that the joints could not be seen buty appeared as if the wooden planks / parts were sewn together with wooden nails.

⇒ Today we can see boats on the maras coast with planks ‘sewn’ together by threads of cocoanut fibre. But these are usually of a small size; and the observations of Abu Zaid based on what he saw and heard at Siraf about A.D., 916 on navigation in the Indian Ocean<sup>56</sup> should be no obstacle to a just estimate of the size and importance of the navy of the Cola empire more than a century later. If the Arab writers are too early, Marco Polo comes unfortunately too late, and we are without a good contemporary account of ship-building on the Coromandel coast under the Colas.

🌐 Again , this is generalized observation. What used on the Maras coast are boats, but what is discussed here are ships. Therefore, the shipbuilding technology varies accordingly.

⇒ Ahmad-ibn Majid, an Arab writer of the fifteenth century and author of several nautical works, makes frequent allusion to the opinions of the Cholas which he approves or modifies. He must have had before him a specialised nautical literature of Tamil (Cola) origin which he compared with Arab documents of a like nature.

🌐 He must be having Indian books on Shipbuilding etc., for example, Kappal Sattiram (the science of ships), Navai Sattram (The Technology of Shipbuilding). When he tried to write without mentioning the sources, naturally, opinion was bound to change because of borrowed ideas. Copying technology is different from understanding science behind it.

⇒ This literature must have included geographical tables with indications of the latitudes of ports for use of the mariners of the Coromandel coast<sup>57</sup>.

🌐 Yes, H. B. Sarkar<sup>28</sup> has proved from the sources that the Arabs freely used Indian tables, but circulated them as if they were authors. Baitul Hikmah of Harun-al-Rashid (785-809), and the works attributed to Abu Zayd al-Balkhi (919-921), al-Ishtkhri (934), Ibn Hawqal (c.980), al-Muqaddasi (985), Abdul Fida, Sidi Ali (d.1562) etc., prove the fact.

⇒ Of this technical literature mentioned by this Arab writers, unfortunately no part seems to have survived.

🌐 Naturally, as pointed out, the Arabs destroyed the Indian originals and circulated their version as their own without any acknowledgement to Indians. And there was no respect for intellectual honesty or intellectual property, rights and so on, which we talk about nowadays!

From the above note of K. A. Nilakanta Sastri, the following facts could be known:

⇔ The navy possessed by the Cholas.

⇔ Their seafaring capabilities.

⇔ Their oversea expedition to SEA countries.

⇔ Arabs testimony to Cholas presence even in the West, besides East (SEA Countries).

### **The Naval expeditions of Cholas mentioned in the Inscriptions:**

A detailed account of overseas expedition undertaken by Rajaraja through his son and Commander-cum-Captain has been recorded in the inscriptions as “Meikirti”, where certain description, expression and words point to Oceanic, maritime and naval details and they are discussed as follows:

That the “மெய்க்கீர்த்தி / Meikkirti” references of the following description of the oversea exploitations imply the science and technology behind:

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<sup>28</sup> H. B. Sarkar, *Trade and Commercial Activities of South India in the Malaya-Indonesian World (up to A. D. 1511)*, Firma KLM Private Limited, Calcutta, 1986, pp.645-664.



- ☞ காந்தளூர் சாலை கலமறுத்து<sup>29</sup> = He checked / controlled the College of Marine Shipping and Military Academy at Kanthalur, as the Chera King was building ships and selling to Arabs and Europeans and all in turn were acting against the interests of the Cholas. The Chera King perhaps, refused or stopped sending ships required by the Chola Empire. Some take the literal meaning of கலமறுத்து as destroying ships, but in the context, it is incongruent and meaningless, as he could not have destroyed, therefore he must have seized the ships meant for Arabs or Europeans, instead of offering to Cholas.
- ☞ முந்நீர்ப் பழந்தீவு பன்னீராயிரம் = the expression முந்நீர் has been frequently used in the ancient Tamil literature from Tolkappiyam and therefore, its usage in historical context has been very significant and its identification with Maldives has been more significant. That the Pallava inscriptions and sculptures have been found in Maldives proves the Tamil connection dating back to 3<sup>rd</sup> cent.CE. Again, interestingly, Maldives play role in supplying cowries (used in astronomy) and as coinage and ships to India – that were build with wooden planks sewn together).
- ☞ கடலிடங் காவலன் = the Protector or Lord of places of Ocean (implying ports, port cities and coastal areas). This title is followed by the titles of Narapati, Aswapati, Gajapati etc. Moreover, the conquered places mentioned in the SEA countries happened to be coastal cities or ports. Therefore, where his influence was felt and hence, known as so.
- ☞ கடல்புக வெகுண்டு = He was angered because of the entering of oceanic waters (implying some sort of Tsunami / deluge occurred)
- ☞ பொரு கடல் ஈழம் = Ezham situated in the attacking oceanic waters
- ☞ தெண்டிரை ஈழம் = Ezham situated in the cold / southern oceanic waters.
- ☞ நெடுங்கடல் உத்தரலாடம் = the place to be reached by traveling a long distance in the north of ocean.
- ☞ அலைகடல் நடுவுட் பலகலஞ் செலுத்தி = he steered his fleet through the wavy ocean. It is mentioned in the context of Kadaram.
- ☞ ஆழ் கடல் சூழ் = the wavy oceanic waters surrounding “Mayirudingam” or Ji-lo-ting as mentioned by the Chinese.
- ☞ நிறைபுனல் = brimming estuary. It is mentioned connecting Mapappalam located in the Isthmus of Kra.

<sup>29</sup> The different interpretation of காந்தளூர் சாலை கலமறுத்து are as follows:

- ⇔ The naval fleet at Kanthalur was destroyed.
- ⇔ Food was supplied to the students there at Kanthalur on calculated basis.
- ⇔ The Naval academy at Kanthalur was checked.
- ⇔ The ships at Kanthaur were seized.

⇒ தொடுகடற் காவற் கடமுரட் = the oceanic water touching and well protected. Again it is mentioned in the context of Kadaram. The extra word used denotes the confronting nature of Kadaram with the Cholas.

Here, each word or expression has to be taken in the maritime context instead of appreciating the literary nuance to dub it as a rhetoric. This description has been doubted by researchers as pointed out above. But, considering the description correlating with other evidences, the shipping and navigational skills of Cholas cannot be mythologized.

**Inscriptions found in the SEA Countries and China**<sup>30</sup>: Significantly, inscriptions in mainly Tamil and Tamil bilingual (Tamil with Sanskrit, SEA languages like Thai, and Chinese) have been found in SEA Countries and Eastern China. They are tabulated as follows:

Where found / located	Script and Language used	Dated to	Remarks
On the hill Khau-Pra-Narai (Bra Narayana), about ten miles upstream on the Takuapa river, on the west coast of peninsular Thailand.	The Pallava Grantha and entirely in Tamil.	Mid ninth century CE or 870 CE.	The tank was dug by the Pallava King Nandivarman III. Valanjiyar – a merchant association is mentioned.
At the early port site of Loho Tuwa, just to the north of Barus on the west of the island of Sumatra.	Tamil in the Kawi script of Java.	1010 Saka or 1088 CE	Nanaesa-Tisaivavirattu-Ainnurruvar – The Merchant association is mentioned.
Neusu Aceh, North Sumatra		12 <sup>th</sup> century CE	It deals with trading regulations among the exporters.
Batu Bapahat, west Sumatra	Tamil in the Javanese influenced central Sumatran script	13 <sup>th</sup> century CE	Translation not available
Porlak dolok, north Sumatra	Tamil and Old Malay /	Late 13 <sup>th</sup> cent.CE	Invoking God for the protection of the city.

<sup>30</sup> *The Medieval Tamil-language Inscriptions in Southeast Asia and China*, <http://ismaili.net/0104c.html>

		Javanese language.		
Nkhom Thammarat Thailand	Si	Tamil- Sanskrit, bilingual.	Late 13 <sup>th</sup> cent.CE. 1183 Saka or 1261 CE	Grant given to Brahmans by Senatipati.
Pagan, Burma	Upper	Do	13 <sup>th</sup> cent.CE based on paleographic grounds – dated by Hultzch	Gant of Mantap, door and lamp to a deity.
Quanzhou, China	Eastern	Tamil in Tamil- Chinese language.	Late 13 <sup>th</sup> cent.CE	Text not completely read and published. It refers to a permission given by Chekchai Khan to Dava Chakravartigal Sambandha Perumal.

**Cross-checking with Local literature of SEA:** H. B. Sarkar<sup>31</sup> after discussing about the so-called “Leiden grant” of Rajaraja Chola (980-1014) delves upon the inscriptional evidences of the Cholas, which asset the conquest of Kadaram even by Virarajendra Cola (1069-1070), implying that the movement of Cholas or representatives of Cholas had been there for nearly 100 years from Rajaraja to Rajendra reign. Quoting Tibbets<sup>32</sup>, Sarkar points out that Cholas knew SEA more than the Arabs, as Idrisi could add only two names in the geographical data on South-East Asia: these are Karimata and al-Anam. Joustra<sup>33</sup> pointed out Tamil names in central Sumatra: Coliya, Pandia, Meliyala and Tekang, thus clearly referring to Cola, Pandya, Malayala and the Deccan. Ma Tuan-lin<sup>34</sup> records about the Chu-lien mission to China reaching there in 1025. Then, he mentions about one text *Nagarakritagama* is an old-Javanese literary work (dated to 1365). The text was discovered from Bali in 1894, translated and published later. In this work, the Colas are designated as Coda or Gauda. It mentions the places which were raided by the soldiers of Rajendra Cola as Kampar, Kampe, Haru, Parlak, Samudra etc., (Nagar.13. 1-2). The local stories, particularly, the story of Manimekhalai show similarity. Of course, the art and architecture prove the Indian influence, which is too well known to be repeated here.

**The Astronomy of Chola Period:** The Shipping, navigation and astronomy go together. Rajaraja encouraged astronomy and there was Colleges exclusively at

<sup>31</sup> H. B. Sarkar, *opt.cit*, p.25-27.

<sup>32</sup> Tibbert, *Lexicon geographicam ini titulus est Marsid alittila ala asma al-ambika-was al-bika*, 6 volumes, Leyden, quoted by H. B. Sarkar, p.25.

<sup>33</sup> Joustra, *TBG*, 45 (1902), pp.541-576, quoted by H. B. Sarkar, *opt.cit*, p.68.

<sup>34</sup> Marques d’Harvey Saint-Denys (Trans.), Ma Tuan-lin, quoted by H. B. Sarkar, *opt.cit*, p.161. Also see, K. A. Nilakanta Sastri, *Foreign Notices of South India*, Madras, 1939, p.323.

important cities like Madurai, Tanjai and Trichirappalli<sup>35</sup>. Incidentally, there was an astronomer hailing from Gangaikonda Cholapuram, which is mentioned as Gangapuri, Gangapura and Sriranga-gangapuri (Epigraphica Indica xv, p.49) with prefix Sri-ranga (the stage of goddess of prosperity). His name was Suryadeva<sup>36</sup> and also known as Suryadeva Yajva, Suryadeva Somasut and Suryadeva Dikshita (c.1191- 1260 CE). He was born on Monday, 3<sup>rd</sup> that of the dark half of Magha, Saka 1113 (= 1191 CE). The ahargana for that day, according to Aryabhata-siddhanta was 15,68,004, i.e, so many days elapsed since Kaliyuga. So dividing 15,68,004 by 365.25, we get 4293. Subtracting 3102, we get 1191 (4293-3102=1191), this tallies with the year obtained based on Saka era 1113+78=1191 (विश्वेशमित 1113 शकेमागकृशण). He was a Brahmin with Nidhruva gotra belonging to the Chola country and a resident of Gangaikonda Cholapuram and thus, evidently patronized by the Chola Kings. Rajendra Chola (1012-1044) founded the city to commemorate his victory over Ganges campaign. Probably, Somadeva Yajva's forefathers had been with the Cholas and he could be the Royal Astronomer he was the Principal of the Astronomical College (Vidhyalaya) in the Chola territories interacting with others. This all of sudden could not have come into existence. Referring to Post-Sangam literature, we come across Civaga Cintamani (dated to 9<sup>th</sup>-10<sup>th</sup> centuries, verse no.995) mentioning existence of Colleges as follows:

### கலத்தற் காலங் கல்லூரி

When time comes (after primary education), the youth are admitted to College (for higher studies). Thus, the mention of கல்லூரி is very interesting and significant to prove the well-established educational system in the Tamizhagam during 9<sup>th</sup>-10<sup>th</sup> centuries.

Thus, Professor Somadeva Yajvan must have been teaching and researching there. He has written commentaries on the following works:

- ☪ Aryabhataiya (c.500).
- ☪ Mahayatra of Varahamihira (c.500)
- ☪ Laghumanasa of Majula (c.932).
- ☪ Jataka-paddhati of Sripati (c.1039)

His commentary on Sripati proves that the Indian astronomers were in touch with each other discussing on the subject matter dealt with.

As mentioned, the forefathers of Suryadeva or their disciples must have accompanied with Rajendra during his overseas campaigns. Thus, during the Chola period, the knowledge of geography accompanied with cartography must have been there, as otherwise, Rajendra chola could not have navigated and directed his ships exactly going to the respective countries, carried the campaign

<sup>35</sup> Colleges at Madurai, Tanjai, Trichirappalli had been famous and their popularity was noted by the European scholars and professionals.

<sup>36</sup> Suryadeva Yajvan, *Aryabhataiyam*.

K. V. Sarma (Ed), *Aryabhataiya with commentary of Suryadeva Yajvan*, Part – 3 of Aryabhataiya critical edition, Indian National Science Academy, New Delhi, 1976.

by landing on the shores respective cities of the countries after anchoring. He must have used small boats to reach the shores. After campaign, he must have come back to his ship and started sailing after de-anchoring. This proves that Cholas were having maps of India accompanied with the South East countries. However, it is intriguing and surprising to note none of the maps are available or reported in possession of anybody.

Civaga Cintamani (verse no. 882) mentions about the existence of “books on the knowledge of Oceans”, which is very significant in the context:

வாண் மின்னு வண்கை வடிநூற் கடற்கேள்வி மைந்தர்  
தான்மின்னு வீங்கு கழலான்றனைச் சுழமற்றப்  
பூண்மின்னு மார்பன் பொலிந்தாங்கிருந்தான் விசும்பிற்  
கோன்மின்னு மீன்கூழ் குளிர்மாமதித் தோற்றமொத்ததே.

The brothers are having hands which are well-versed in the handling of glittering swords and as well as well-written books on Oceans (The sailors of all categories – traders, businessmen, should be warriors and also good navigators with the knowledge of shipping, astronomy, geography and oceanography). As Civaga, the hero is encircled with his brothers shining, the cool Moon is also encircled with other planets and asterism (visible clearly during the night, as could be observed by them on the ship during their voyage, i.e, the knowledge of stellar navigation is also a must for them).

- ⌚ The mention of availability of books on the knowledge of Oceans is significant.
- ⌚ “The Books on the Knowledge of Oceans” covers all aspects of Ships, shipping etc.,
- ⌚ That the sailors should be capable of handling swords and such books is also significant considering the dangers involved in ocean-trade, visiting many countries, the nature of people dealt with in trading etc.
- ⌚ Interestingly, both the Science of Ocean and the Sky are mentioned together in the same context figuratively.

**The Astronomical link among the SEA countries and India:** The Siamese<sup>37</sup> and Tiruvalore<sup>38</sup> astronomical tables created a great storm in the Europe making the mathematicians, astronomers and scientists to study them to find out the accuracy<sup>39</sup>, as they reportedly had calculations starting from Kaliyuga

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<sup>37</sup> Johnplayfair, *Remarks on the Astronomy of Brahmins*, A paper presented by the author in Edinburgh University on March 2, 1789 and published in the Transaction of the Royal Society of Edinburgh.

<sup>38</sup> Simon de La Loubere (1642-1729) brought an extract of a Siamese manuscript containing tables and rules for calculating the places of Sun and moon (*Mem de l'Acad. Des Science, tom.8, p.281 & c*). Inspired by this, the European scientists started their research in the tables.

<sup>39</sup> K. V. Ramakrishna Rao, *European Scientists: Indian Chronology and Historiography*, XXth Session of South Indian History Congress held at Tiruvananthapuram from Feb.25-27, 2002.

that started coinciding with a planetary conjunction or alignment that occurred around 3102 BCE<sup>40</sup>. The movement of Cholas, particularly, Somadeva Yajvan with Rajendra to SEA countries could be a source for the spread of such knowledge. Moreover, historically, the entire area was known as “India” according to the middle-east and European people, as is evident from their writings and maps<sup>41</sup>. The flooding of Jesuits to Siam attacking Royal palaces<sup>42</sup>, infiltrating temples and Buddhist Viharas and researching the scholars for astronomical, geographical and medical manuscripts speak the motive<sup>43</sup>. The movements of selected Jesuits from Cochin and Goa to China and back<sup>44</sup>, SEA countries and back to Pondicherry, Tranqubar etc., prove their collection of scientific and technical manuscripts, tables, charts and materials.

**The Disappearance of Indian Astronomical documents, instruments and maps:** Like the details of Indian shipping, the astronomical documents, instruments and maps are also surprisingly missing, though, usage of them were there, as the naval expedition had been the proof. K. A. Nilakanta Sastri’s observation<sup>45</sup> made on Ahamad-ibn Majid are interesting to note:

“Ahmad-ibn Majid, an Arab writer of the fifteenth century and author of several nautical works, makes frequent allusion to the opinions of the Cholas which he approves or modifies. He must have had before him a specialised nautical literature of Tamil (Cola) origin which he compared with Arab documents of a like nature. This literature must have included geographical tables with indications of the latitudes of ports for use of the mariners of the Coromandel coast. of this technical literature mentioned by this Arab writers, unfortunately no part seems to have survived”.

Ferrand<sup>26</sup> in his writing has clearly pointed out as follows:

‘Dans tous ses ouvrages nautiques, Ibn Majid fait frequemment allusion a l’ opinion des Colas qu’il approuve ou rectifie. Ce’st qu’il devait avoir en main les Instructions nautiques tables geographiques avec indication de la latitude des ports, utilis’ees par les marins du

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....., *The Interest of European Scientists in Indian Chronology and Historiography*, UGC Seminar on **Situating Historical Writings in Post-Independence India** (Abstracts volume), held at Bharathidasan University on March 23 & 23, 2002, Tiruchirappalli, pp.16-17.

....., *The Interest of European Scientists in Indian Calendar and Chronology*, in *Indian Calendar and Chronology* (Seminar papers) held at Central Mining Research Institute, Dhanbad on August 9 & 10, 2003, pp.1-20.

<sup>40</sup> B. L. Van der Waerden, *The Conjunction of 3102 B.C.*, Cetus, 1980, Vol.24, pp.117-131.

<sup>41</sup> The Southern China was known as “Cochin China”, as that area was totally dominated by the Kerala / Chera merchants / mariners.

In fact, the entire SEA area was marked as “INDIA” in their maps and dealt with accordingly.

<sup>42</sup> Pietro Cerutti S.J., *The Jesuits in Thailand*.

<sup>43</sup> Francis X. Clooney, *Fr. Bouchaet’s India*, Satya Nilayam Publications, Chennai, 2005.

<sup>44</sup> *Doing Theology in the Context of Mission: Lessons from Alexandre de Rhodes S.J* for more details, see in <http://eapi.admu.ph/eapr002/rhodes.htm>

<sup>45</sup> K. A. Nilakanta Sastri, *opt.cit*, p.459.

Coromandel et qu'il les comparait avec les documents arabes des meme nature'.

Therefore, the following questions arise:

- ↔ What were the allusions made about Cholas by Ahamad-ibn Majid?
- ↔ Why he approves or modifies such allusions?
- ↔ What was “a specilised nautical literature of Tamil (Cola) origin” possessed by the Arabs?
- ↔ Why he compared Arab records with Tamil-Chola nauctiical literature?
- ↔ After comparision, what he did with such “specilised nautical literature of Tamil (Cola) origin”?
- ↔ If the “specilised nautical literature of Tamil (Cola) origin” included “geographical tables with indications of the latitudes of ports for use of the mariners of the Coromandel coast”, what happened to such geographical tables?
- ↔ K. A. N. Nilakanda Sastri could say only that, “***Of this technical literature mentioned by this Arab writers, unfortunately no part seems to have survived***”.

**More Evidences to prove that Indian maps were taken away:** The following references are given to show the vulnerable condition of Indian researchers, when most of the historical evidences are in the collections of the foreigners, which are not easily accessible. Encyclopedia Britannica (1952 edition) gives the following details<sup>46</sup>:

“The charts in use by medieval navigators of the Indian ocean – Arab, Persians or Dravidians – were in equal in value if not superior to the charts of Mediterranean. Marco Polo (1292) mentions such charts; Vasco Da Gama (1498) found them in the hands of Indian pilot, and their value is fully explained in the Mohit or encyclopedia of the sea compiled from ancient sources by the Turkish Admiral Sidi Ali Ben Hossein in 1554. These charts are covered with a close net work of lines intersecting each other at right angles. The horizontal lines are parallels, depending upon the altitude of the pole star, the calves, the little Bear and the Barrow of the Great Bear above the horizon. This altitude was expressed in “isbas” or inches each equivalent to 1°4’50”. Each isba was divided into “Zams” or eights. The interval between the parallels thus amounted to 12’51”. These intervals were mistaken by the Portuguese occasionally for degrees, which accounted for Malacca, which is, in latitude 2°13’N. being placed on Cartino’s chart (1502) in lat. 14’S. it may have been a map of this kind which accounts for Ptolemy’s moderate exaggerations of the size of Toprobana (Ceylon). A fdirst

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<sup>46</sup> Encyclopedia Brittanica, Volume. 14, p.841, 1952 edition, UK (quoted by Tripathi in his book, p.293). Quoted by Maya Prasad Tripathi, *Development of Geographic Knowledge in Ancient India*, Bharatiya Vidya Prakashan, Varanasi, 1969.

meridian, eparating a leeward from a windward region, passed through Ras Kumari (Camorin) and was thus nearly identical with the meridian of the Indian astronomer which passed through the sacred city of Ujjain (Ozone of Ptolemy) or the meridians of Azin of the Arabs. Additional meridians were drawn at intervals of Zams, supposed to be equal to three hours sail”.

As the taking away or possession of such “specilised nautical literature of Tamil (Cola) origin including geographical tables with indications of the latitudes of ports for use of the mariners of the Coromandel coast” by the Arabs was accepted, it is evident that they compared, used and prepared tables and maps, but suppressed or destroyed the Indian originals. And we know lot of maps produced exactly during that period onwards attribute to the Arab / Mohammedan / Muslim geographers / cartographers and so on. This is just similar to the Jesuits who took Indian books, instruments, charts, tables, samples etc on Indian science and technology. In any case, we have to show evidences for such happening. Here, comes the manuscript of “Kappal Sattiram”<sup>47</sup>.

### **Kappal Sattiram – Science and Technology of Ships and Shipping:**

Indians used to write books on Palm-leaves, particularly, in South India. They used different scripts to Sanskrit and Tamil languages o various subjects. Most of the original Sanskrit books are missing as they must have been destroyed by the Mohammedans, taken away by the Mohammedans for study and also by European missionaries. As the demand for books increased with the exigencies, more books could have been produced engaging the scribes. An expression, “Tiruppugira Pusthakam” found in “Kappal Sattiram”<sup>37</sup> (Science and Technology of Ships and Shipping) proves that copies of books were made from the translations and as well as originals. The expressions “Edu Tirupudhal” (turning the pages) and “Tiruppugira Pusthakam” (the book that is turned) convey copying a book from its original, so that the original could be preserved and the copy given away or sold. As per the directions of the Danish, in the house of Kangirayap Pillai or Kalingarayap Pillai, a Dubash, the book was dictated and a scribe had written down. The name of the book is mentioned as “*Nikamasigamani*”, a Sanskrit name. As the last line of 8<sup>th</sup> song clearly mentions that, “*Salaikathirangan sorppadi idanai tamil seythittan*”, it is evident that as per the directions of one Salaikathirangan, it was made into Tamil i.e, translated into Tamil from Sanskrit. As it was known that there was a work named “Nauka Sastra” in Sanskrit, that book might have been used for translation. Here, Kangiyap Pillai says that he is producing the book as per the directions of Danish in 1620 (of Salivahana Era) or 1698 of CE in his house. So the Danish used different tactics to get the science and technology books from the Indians.

The book gives the following details (the author’s comments are given in different colour):

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<sup>47</sup> T. Chandrasekharan (Gen.Ed.), *Kappal Sattiram*, Madras Government Oriental Series, Government Oriental Manuscripts Library, Madras, 1950.



- ⇔ The standard measurement is given (Verse.3).
- ⇔ The time suitable for manufacture of ocean-going vessels is given astronomically based on an earlier work, “Nigama Sigamani” (நீகம சிகாமணி, Verse.4).
- ⇔ The properties of ships (5).
- ⇔ The suitable time for navigation is given (6-9).
- ⇔ The best time for fixing of mast is given (13).
- ⇔ A Tamil king “Parasi Vendan”, who helps shipping technology, is mentioned.
- ⇔ When a ship could sail safely, when it might face with danger, when a ship may wreck, and such other exigencies are mentioned (23-28). Thus, it is amply evident that the Tamils knew the ship wreckage occurred as a result of piracy by non-Indians. As they followed the rules and regulations of nature and sailed in the prescribed time, the wreckage due to natural disasters like tempest, cyclones, rough weather etc., must have been minimal.
- ⇔ Mathematics involving points / dots is mentioned (29). As it is not explained, it is not known exactly what mathematical method or mathematics involving points was used in the maritime context. But, it must have been connected with Cartography making points on the maps drawn, developed, corrected and modified. In those days, maps could have been produced only after undertaking any voyages. Ironically, such projection in navigation charts used is known as the Mercator, named after the Flemish mathematician and geographer Gerardus Mercator (1512-94), who reportedly devised it. But it is evident that they must have known from Indians, as existence of such method is mentioned here.
- ⇔ Experts of Books without any weariness (31). It is mentioned that these details are given by the Experts of Books without any weariness implying that they exclusively engaged in such observatory and cartographic work making projections etc.
- ⇔ When the destruction of a ship with cargo would occur (33) is mentioned.
- ⇔ When a ship would return successfully with earned profits after selling the goods aboard (37) is given. These two exigencies have been given in astrological interpretation, but involving astronomical observation. The Tamils must have found out the arrival of Arab and European vessels to SEA countries at a particular time, as their starting with winds from their destinations had been different from that of Indians. However, they tried to coincide with the timings of Indians with an intention to compete initially and then seize cargo by piracy realizing their law abiding nature. Moreover, the cunning Arabs and Europeans must have used Indian flags, symbols, dress etc., to cheat the Indians to complete their piracy.
- ⇔ Persons with two eyes and one eye are compared figuratively with Sun and Moon. Danger to cargo would come from the persons with one eye (39), as they stealthily attack other vessels without following any marine-ethics or Maritime regulations. This is clear indication that Tamils knew of the nature of pirates, who were not Indians, as they were not following the Indian ethics

of not attacking the vessels of others. Incidentally, the western depiction of standard pirates have been “one-eyed”!

- ⇔ Interestingly, another point implied is about the persons with “Surya dhristi”, “Chandra dhristi”, “Raja dhristi”, “Griha dhristi”, “Rakka dhristi” etc. They were nothing but persons with eye-sight of Moon, Sun, King, Planets, sides etc. in other words, the ocean going ships had such experts / observers of Solar, lunar, planetary motions and time calculations. As they had to visit different countries, they had to know about the Kings of such countries, thus the experts of Kings. And there were experts in observing directions also, as it is important in navigation. As such things could have been possible with past experience, it is evident that the experts mentioned must have had books on such subject matter.
- ⇔ Suddenly, the work changes from poetry to prose giving statistical details of planets, asterisms, stars etc.
- ⇔ Thus, the measurements for masts are given.
- ⇔ The measurements for anchors are given.
- ⇔ Measurement details of a “English ship” is given.
- ⇔ At the end, it is appended with “Silpa sastram” (A Manual of Sculpture) only with 13 verses.
- ⇔ As most of the verses have been written with defective words, language and grammar, it is evident that the Danish must have engaged poor scribes to write this work, evidently to substitute, as the original was taken away by them.
- ⇔ Many verses have been adopted or imported straight away from the following earlier works:

சரஸ்வதி அந்தாதி  
சோதிட கிரகசிந்தாமணி  
கணக்கதிகாரம்  
நீகம சிகாமணி

However, the scribe has not acknowledged the source.

- ⇔ As the work has been incomplete in many aspects, it is evident that the copy has been only a part of a bigger book.

**“Navai Sattiram”<sup>48</sup>:** It is only part of the original work, as the available 64 leaf-book does not give more details than that of the above “Kappal Sattiram”. Most of the available songs delve on the auspicious time, date and period for start and return of journey with astrological couch. In fact, same songs are repeated, however, subject matter is concerned, it differs and at many places it is incomplete and thus, there must have been complete book. Particularly, after discussing about the wooden planks used for mast, the verses are found to be with broken sentences. Therefore, the copyist must have hurriedly copied from the original work. The crude drawing of a three-mast ship also proves the fact, as

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<sup>48</sup> S. Soundarapandian, *Navai Sattiram*, Madras Government Oriental Series, Government Oriental Manuscripts Library, Madras, 1955.

in many other manuscripts, very good pictures with minute details have been drawn.

**Piercing the veil of Buddhism:** If the veil of Buddhism is pierced, the treatment of all Buddhists – Indians, Chinese, Ceylonese, and SEA categories alike, would be removed. The tracing of maritime trade between the India and the ports Southern China to first centuries points to such a possibility. As Tamil Siddhas<sup>49</sup> have made their claimed sojourns or voyages to China, Chinese have also done<sup>50</sup>. Haraprasad Ray<sup>51</sup> has pointed out the links between India and China based on the Chinese records. Thus, as described by the Imperunkappiyangal, the Tamil and other Indian merchants had reached China, as evidenced by the archaeological evidences of Quanzhou region. Tamil / South Indian merchants had been there already in the Southeast Asia from the first centuries. The Buddhist interpretation of events has made all people to appear as “Buddhists”, but Indians of the whole region acted and interacted together irrespective of their personal religious beliefs.

Thus, the observation of Tansen Sen<sup>52</sup> that, “***some credit for the ‘emergence of a world market’ must go to the Chola (or Cola) kingdom in Southern India. The trading ports and mercantile guilds of the Chola kingdom, he suggests, played a significant role in linking the markets of China to the rest of the world***” has been apt. The movement of “Brahmanas and Sramanas” here had been phenomenal along with other groups. As they already settled or colonized or established themselves, their building activities had been natural exhibiting in the material culture. Thus, the Pallava, Chola, Silendra and other influences are found in script, literature, sculpture and art.

**Indian Maritime Trade with Africa:** The South Indian maritime trade with East African coastal countries during medieval period has been very interesting and revealing throwing light on Pallava, Chola and Kadamba maritime trade and shipping. The movement of merchandise cargo from south Indian ports through Maldives, Chagos for Archipelago, Mauritius, Reunion, Madagascar and coastal East Africa has been easiest the South Indian marine-traders<sup>53</sup>. Incidentally, these islands were used by the Pallava and Cholas for their ship-building

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<sup>49</sup> Bogar has mentioned his visits to China. In fact, some interprets that he himself was a Chinese came and settled in Tamilnadu.

<sup>50</sup> Wang Gungwu, *The Nanhai trade: a study of the early history of Chinese trade in the South China Sea*, JMBRAS 31, 2 (1958).

<sup>51</sup> Haraprasad Ray, *Trade and trade routes between India and China, c. 140 B.C.-A.D. 1500*, Kolkata : Progressive Publishers, 2003; ....., *Chinese sources of South Asian history in translation :data for study of India-China relations through history*, Kolkata, Asiatic Society, 2004.

<sup>52</sup> Tansen Sen, *Buddhism, Diplomacy and Trade: The Realignment of Sino-Indian Relations 600-1400*.. Opt.cit, p. 156. See also Tansen Tan, *Maritime Contacts Between China and the Cola Kingdom (A.D. 850-1279)*, opt.cit, pp. 25-42.

<sup>53</sup> This exactly fits with the inscriptional claims of the Cholas, which are doubted by some western scholars. As the scholars have tried to locate the mentioned places only in the south-east, they never thought of locating on the western side of India.

activities. Pallava sculptures, inscriptions and temples have been found in Maldives<sup>54</sup>. How the Pallavas could have exercised their influence far and wide distances from SEA countries to East African coast could be noted from these archaeological evidences found in those places. During Pallava, Chola and Kadamba period, the Indian metal workers had achieved highest state of art and their skill been a great demand throughout the world. In fact, before the advent of Islam, the movement of Indians to Africa had been very smooth without any maritime strife.

The finding of a bronze lion statuette<sup>55</sup> at trading port of Shanga, Lamu District, Kenya, in January 1986 raised many questions. It has been dated to 1100 CE and compared with that of Central and South Indian counterparts, because of close resemblances and casting techniques. Moreover, the lion is easily comparable with the depiction noted on South Indian coins also starting from 1<sup>st</sup> century BCE with characteristic features. E. C. L. During Caspers<sup>56</sup> has pointed out that the practice of trading bronze animals within the Indian Ocean dates back to at least the 2<sup>nd</sup> millennium BC. Scientific analysis of the composition of bronzes found at Africa and South India and historical evidence of maritime goods prove that either, Indians exported such bronzes to Africa or the settled Indian metal workers created them. Roger Summer<sup>57</sup> brought out the gold-mining techniques of Zimbabwe had been very similar to Deccan / South India. Hromnik pointed out that the Indians of Africa were also responsible for the introduction of cattle and crops, the stone architecture of Great Zimbabwe and by attracting Negroid labourers to the south, for the Bantu migrations as well.

It may be noted that the vague references of Herodotus Indians supplying to “gold dust” and ferrum Indicum to the Persians and the Greeks prove the metallurgical skill of Indians since c.1500 – 300 BCE period. The Bongozkai inscription already proved the Indian presence in the Mesopotamian area around c.1450 BCE. Thus, the fine casting technology of Cholas could easily be correlated and corresponded with the African specimens. Therefore, the South Indian history in the context of metallurgy has to be recast with these metallurgical evidences.

The findings<sup>58</sup> of Thor Heyerdahl, Prof. Arne Skjølsvold and Prof. Egil Mikkelsen have brought out the remains of a temple, Raksha-like sculptures with Pallava-type inscription. The local Maldivian people arrange shells in such a way, they look like a stupa - ruined miniatures of **satihirutalu** which formed the apex of the Maldivian Buddhist **usthumbu**. The **usthumbu** has three parts: the

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<sup>54</sup> K. V. Ramakrishna Rao, *The Maritime Activities of the Ancient Tamils and Indus Valley Civilization*, a paper to be presented during the International Symposium on Indus Civilization and Tamil Language at Chennai on February 16<sup>th</sup> and 17<sup>th</sup>, 2007.

<sup>55</sup> M. C. Horton & T. R. Blurton, ‘Indian’ metal work in East Africa: the bronze lion statuette from Shanga, *Antiquity*, 1988, Vol.62, pp.11-23.

<sup>56</sup> E. C. L. During Caspers, *A Copper-bronze animal in Harran style from Bahrain: evidence of mercantile interaction*, *Journal of the Economic and Social History of the Orient*, 1987, Vol.30, pp.30-46.

<sup>57</sup> Roger Summer, *Ancient Mining in Rhodesia*, Salisbury: National Museum, 1969.

<sup>58</sup> [biblioteknett.no/.../kon-tiki/Research/Maldives](http://biblioteknett.no/.../kon-tiki/Research/Maldives)

quadrangular base representing earth; the bell-shaped middle part, representing water; and the **satihirutalu** representing air which crowns the **usthumbu**. The Buddhist stupa<sup>59</sup> from Kaiyuan Temple, adjacent to the site of the Quanzhou Maritime History Museum resembles exactly like that of Maldivian model. The pagoda spire with lotus base of the stupa has striking resemblance with the material evidence and also that of Manimekhalai description. Therefore, the connection of Pallavas and Cholas with these areas is very visible.

**The motive behind the conquests of Cholas:** Considering maritime and other activities, the maritime activities or the over-sea expeditions / conquests could be interpreted in their attempt to establish their monopoly. Thus, many times scholars have expressed that they could not understand the motive behind the conquests, when all Kings had been earning profits in over-sea trade. The conquest of southern Karnatakadesa by Rajendra in 1032, has been definitely securing internal trade routes in southern India and as well as control the western ports, where Gujaratis and Arabs were dominating. Moreover, the left out Cholas could be considered as “Kadamas” by modern-day historians<sup>60</sup>. Kadambas had been so powerful on the western coast, that their influence was felt on the eastern African coast and middle east countries. They had the title “The Lord of Western Ocean”. Their inscription<sup>61</sup> point to their maritime activities and authority over the western ocean. Their fleet was so powerful that they could conquest many islands and lands as recorded in the inscriptions. The Nadukals interestingly depict the fleet, naval battles, and other minute details of ship technology carved on them<sup>62</sup>.

The conquest of Southeast Asia in 1025 and again in the 1070s, the occupation of Sri Lanka in 1080 prove such dominating attempt. The Chola-China commercial links reached at an appreciable level with the exchange of missions with gifts. That the Chinese could build a Vihara at Nagapattinam proves the establishment of such relationship as proved by the *Dao-yi zhi-lue* account. The Chinese inscription found there vouchsafes it. The Japanese scholars<sup>63</sup> pointed out the trade between the ports of South China and the Cholas evidenced by the 11-12<sup>th</sup> century Chinese ceramic remains found in Tamil Nadu and Sri Lanka. The Classical Chinese texts<sup>64</sup> and Siddhas poems convey that the Chinese obtained pepper from Indian ports, and Indians mercury, certain chemicals etc from China.

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<sup>59</sup> <http://www.chinaheritagequarterly.org/scholarship.php>

<sup>60</sup> G. M. Moreas, *The Kadamba Kula*, Indian Historical Research Institute, St. Xavier College, Bombay, 1931, pp.7-11.

<sup>61</sup> John Faithful Fleet, *Inscriptions Relating to the Kadamba Kings of Goa*, JBBRAS, Vol.IX, p.307.  
....., Epigraphica India, Vol.XIII, p.309.

<sup>62</sup> Sheila Tripathi,

<sup>63</sup> Noboru Karashima (ed.), *In Search of Chinese Ceramicsherds in South India and Sri Lanka*, Tokyo, Taisho University Press, 2004.

<sup>64</sup> For information of Chinese texts on Southern India during the Yuan, see Roderich Ptak, *Yuan and Early Ming Notices on the Kaval Area in South India* *Bulletin de l'Ecole Française d'Extrême-Orient*, 80 (1993), pp. 137-55.  
The issues of “Indian Archeology – A Review” report the findings of Chinese materials from Indian sites proving the Indo-Chinese connection during the earlier and medieval periods.

**Conclusion:** As seen, some scholars doubted the Chola inscriptions on the plea that they are rhetoric without going into the facts or cross-checking the doubted claims with the local evidences of SEA countries. Why the well-established Cholas could not have issued coins depicted their maritime excellence, while their predecessors Sathavahanas, Salankyanas, Kurumbas, Pallavas could have issued ship-type coins is not explained. As pointed out by Sir Walter Elliot that ship-type Kurumba / Pallava coins could be obtained on exchange of necessities, what would have happened to other coins, had they been paid with valuables instead of necessities is not considered in the context. Incidentally, it has to be noted that the Tiruvalangadu Copper plates, ironically known as “Leiden grants” and most of the “ship-type” coins have been now in possession of foreign museums. Therefore, the fate of missing coins is not taken into consideration.

As the material period 11<sup>th</sup> century had been dominated by Cholas, Silendras and SEA powers within “Indian domain” and the Arabs and Chinese playing with them, the Indian rulers could have been exercising their influence only within their domains and crossed the boundaries, when the powers of others declined. Therefore, the theories of “segmentary rule / power”, “piety-plunder” etc., could not be applied by generalizations. The European medieval of “Frankish plunder and distribution” is not applicable to Cholas.

That the Cholas granted tax-free lands to Brahmans only to pursue their astronomical activities, as has been vouchsafed by Suryadeva Yajvan, as astronomy helped the navigation and not to support their hegemony. In fact, the work of Brahmans stopped with astronomical activities, as the navigational work and techniques were carried on by other professional groups. In fact, in such supposedly or assumed raidings and plunderings, only non-Brahmin groups had been evidently involved. Therefore, such casteist interpretation would not help to decide the maritime sojourns effected by the Cholas.

The struggle between Silendras and Cholas in India and as well as the rivalry among them with Chinese in SEA have resulted in some documents, particularly that of Chinese, which create wrong impression. In an established governance and tax-collection, the raids, confiscation and other punitive punishments against tax evaders has been normal feature and it could not be interpreted as something unwarranted or historically unacceptable. Tribute payment is just like tax compliance. Thus, even had the Cholas raided the tax evading Sri Vijaya, Cheras and Sri Lankan, that would fit to any democratic State governance. The circumstantial and correlative evidences – the literary evidences, the existence of Naval architecture books, international trade, impost of tax on goods imported through different types of vessels, rivalry among the competing national groups etc., have been normal feature and prove the oversea expedition of the Cholas.