

A Survey of the Major Industries in the Sangam Age

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Abstract

The Sangam Age witnessed several flourishing industries spread across the Tamil region. Textiles, metalworking, shipbuilding shell, and gemstone crafts were major manufacturing activities practiced by ancient Tamils. Besides, there existed various ancillary industries such as salt making, carpentry, construction works, etc. which sustained trade and urban development in early Tamilakam. Geographical features of the land characterized by unevenly distributed resources played a key role in generating the need for the exchange of commodities between different physiographic zones. This further led to the extension of trade networks to different parts of the subcontinent and other countries. The products including pearls from the Gulf of Mannar; textiles from Madurai and Uraiyur; high-quality steel and gems from Kodumanal; metal artifacts and beads from various centers were valuable items of trade as these commanded high demands in distant lands. The industrial activities paved the way for diversification of crafts and economic growth subsequently leading to urbanization in early Tamil Nadu.

Keywords: Archaeological, Bead, Industry, Jewelry, Literary, Metal, Pearl, Sangam, Shell, Ship, Tamil, Textile, Trade, Urbanization

Introduction

The land inhabited by ancient Tamils during the Sangam age constituted diverse physiographic zones as reflected in the concept of *tinai* (landscapes) which classified Tamilakam into five ecological regions namely *kurinji* (the hills), *palai* (arid or wastelands), *mullai* (woodland or forest), *marudam* (the cultivated river plains) and *neydal* (coastal region) (Iyengar, 1929, pp. 73-74; Arokiaswami, 1972, p. 84; Pillay, 1975, pp. 160-88). The distinct features of these geographical zones influenced agricultural and industrial productions owing to unevenly distributed resources. The exchange of products between these environs, thus, became a necessity for subsistence. The interaction brought about the development of an agrarian economy, diversification of crafts, expansion of trade activities, and the rise of towns. The mainstay of the economy in the initial phase of the Sangam period was agriculture-based production characterized by domestic activities. Later, the spurt in the urbanization process resulted in a factory or workshop-oriented industrial manufacturing. The principal industries of the period include textile, metalworking or smithy, pearl fishing, shipbuilding, gemstone or lapidary work, etc. Besides, several ancillary industries such as salt manufacturing, fishing, carpentry, construction work, etc. supported the flourishing trade and urban activities during the period. This paper presents a survey of the major commodity production at various manufacturing centers during the Sangam era as known from literary sources and archaeological evidence.

Textile

Textile manufacturing was a popular industrial engagement in the ancient Tamil region. Textual sources contain significant information in this regard. More than 1,750 words have been used in ancient Tamil works to denote a dress (Seshachalam, 1982, p. 83). Spinning and weaving developed as an important craft that engaged the women of domestic households mainly in rural areas. The discovery of terracotta spindle whorls at sites such as Tirukkampuliyur (Mahalingam, 1970, p. 110), Uraiyur (Raman, 1988, pp. 104-14), Perur (Shetty, 2003, pp. 18-49) and Keeladi (Ramakrishna, et al., 2018, pp. 30-72) indicate the practice of manual spinning. With the growth of the cloth trade and the rise of urban centers, however, industry occupied a significant place in the economic transformation of the region. Sangam texts mention a great demand for high-quality cotton and silk fabrics from Madurai and Uraiyur. According to the *Silappadikaram*, products of natural textiles such as cotton, silk, and wool were sold in the market at Madurai (Daniélou, 1967, p. 98; Ganesan, 1979, p. 193). The fabric made from silk was manufactured with its threads gathered in small knots at its ends, a practice that has continued to the present times. The muslin products were known for their fine floral works in different colors and the softness as the slough of the snake and the cloud of steam as portrayed in the *Porunararruppada* (Chelliah, 1985, pp. 67. 71; Subrahmanian, 1966, p. 228; Venkatasubramanian, 1988, p. 86). The Sangam poems also mention the art of embroidery as a popular art during the period, although its use was primarily confined to serving the needs of the aristocratic class (Subrahmanian, 1966, p. 229).

Dyeing was an industry that was closely associated with weaving. The blue dye was a favorite color choice of the people. Besides the silk and cotton fabrics, clothes made of wood fiber called by names such as *sirai maravuri* and *narmadi* were also used by the priestly class (Subrahmanian, 1966, p. 229). Archaeological discoveries such as the brick structures identified

as dyeing vats discovered at Arikamedu (Wheeler, 1946, pp. 3-31) and Uraiyur (Indian Archaeology – A Review, 1964-65, p. 25; Raman, 1988, pp. 21-22) attest the existence of the dyeing industry in early Tamilakam. Uraiyur has been also mentioned in Sangam texts and foreign accounts as a famous center of cotton textiles. Weaving, however, was not practiced in the hilly regions as the textual portrayal of life in the hills does not show the use of cotton garments during the period (Swathamby, 1981, pp. 13-74). The *Periplus* also mentions the exchange of products such as wine, brass, lead, glass, etc. brought by the Greek merchants with pepper, betel, ivory pearls, and fine muslins of Tamil region at the port of Muziris (Pattanam) (Kanakasabhai, 1956, pp. 36-37; Casson, 1989, pp. 81-85). We also find references to the varieties of clothes such as *Kalingam* and *Kalagan* imported from Kalinga and Malaya respectively (Subrahmanian, 1966, p. 244). The cloth was woven into long strips and then cut into small pieces called *aruvai* or *tuni* for sale. The textile dealers, thus, were called *aruvai vanigar* and lived in the part of the city known as *aruvai vidi*. Besides the commonly used loin cloth and an upper garment, we also find references to the stitched garments worn by foreign merchants and royal officials. Such tailored dresses were stitched by the tailors called *tunnagarar* who lived in Madurai and other big towns (Subrahmanian, 1966, p. 229; Venkatasubramanian, 1988, p. 86).

Metal Crafts

The antiquity of the use of metals in Tamil Nadu can be traced to the middle of the first millennium BCE (Sasisekaran, 2002, pp. 17-29). Artifacts made of metals including iron, copper, gold, and silver have been mentioned in ancient Tamil texts as well as discovered from several sites (Hart and Heifetz, 1999, pp. 17, 47, 53–54, 60, 85, 96, 100, 119, 153, 212, 220, 246, 272, 298, 369, 383; Venkatasubramanian, 1988, p. 85). Smithy was essential to day-to-day life as the blacksmith manufactured various kinds of objects to be used in everyday routine. Ancient texts such as the *Manimekalai* mention various terms for artisans such as *Kollar* (blacksmith), *kammar* (smiths), *tachchar* (carpenter), etc (Pandian, 1989, pp. 169-70; Subrahmanian, 1966, p. 228; Seshachalam, 1982, pp. 130-31). The *Purananuru* refers to the manufacture of weapons and other artifacts of daily use by the blacksmiths. It further mentions that the metal caps used for covering the tusks of the elephants were made of steel (Hart and Heifetz, 1999, pp. 252, 254, 260). Foreign accounts like the *Periplus* and that of Pliny record the export of copper from Barygaza (Bharuch) in India to the ports on the Persian Gulf and the Red Sea (Rackham, 1942, p. 413; Casson, 1989, pp. 73, 81).

The smithy or the workplace called *panikkalari* played a significant role as a sphere of industrial activities. Some of the essential items which were forged or repaired in the smithy include weapons of war, tools such as the plough, domestic utensils, and the iron wheel (Subrahmanian, 1966, p. 230). These ancient factories used a pair of bellows called *turutti* to blow air for lighting the fire that was used for smelting and welding. Such workplaces were neither numerous nor widespread, especially in rural areas. Each smithy catered to the needs of many neighboring villages (Raghunathan, 1966, p. 230). Tamil region was famous for its gold ornaments which were exported to the Mediterranean World (Subrahmanian, 1966, p. 243).

Archaeological excavations and explorations have established that the districts including Coimbatore, Salem, Dharmapuri, Tiruvannamalai, and Vellore formed the nuclear zone of Iron

Age culture from where it further spread to other regions of Tamil Nadu. The discovery of iron furnaces at Guttur, Kodumanal, and other sites indicates the presence of skilled artisans within the megalithic community (Sasisekaran, 2002, pp. 18-19). The evidence of the manufacture of steel by crucible process datable to *circa* 300 BCE has been found at Kodumanal. The wootz steel (a crucible steel with high carbon content) manufactured in this region was exported to the Mediterranean World on account of its high quality (Prasad, 1977, p. 214; Sasisekaran, 2002, pp. 23-24). The bronze articles from the same site reflect a high level of craftsmanship (Rajan, 1994, p. 98).

Ship Building

The extensive coastline of the Tamil region was studded with several ports that played a significant role in international trade. The overseas trade was facilitated by the shipbuilding industry which is evident in the use of a variety of boats and ships for either river or sea travel. *Marakkalam* was a general term used for the ship as it was made of wood (Subrahmanian, 1966, p. 241). There were artisans skilled in the repair of the wooden ships called *perunkadal nindiya maram* which means timber that swam the great ocean' (Venkatasubramanian, 1988, p. 86). Sangam literature contains information about the use of vessels of various sizes ranging from the small catamaran (*kattumaram*) is a bunch of logs tied together side by side to the big ocean-going ships with mast and sail. The common types of smaller crafts included *ambi*, *pahri*, *padagu*, *odam*, and *timil*. Among these, *ambi* and *padagu* were used for ferrying across streams and rivers whereas the *timil* was a fishing boat. The *navay*, *vankam*, *marakkalam* and *matalai* were large vessels used for long-distance trade (Rajamanickam and Arulraj, 1994, pp. 9-18, 45; Arulraj and Rajamanickam, 1988, pp. 7-18'; Rajamanickam, 2004). The *Periplus* also mentions the ships sailing along the coast of south India. It further refers to the large vessels called *sangara* and those making voyages to the Ganges known as *colandia* (Casson, 1989, p. 89).

Pearl Fishing and Shell Industry

Pearl fishing was another industry that flourished during the Sangam age. Literary works refer to the Pandyan port city of Korkai as the center of the pearl trade and produced pearls that were sought after not only in Tamilakam but in north India and the Mediterranean region (Caldwell, 1881, p. 20). Ancient Tamil texts such as *Pattupattu*, *Ahananuru*, *Purananuru*, *Kalithogai*, *Narrinai*, *Silappadikaram*, and *Manimekalai* contain references to the trade of pearls and chanks (Arunachalam, 1952, pp. 13-28). According to *Silappadikaram*, for instance, the port of Kaveripattinam (Poompuhar) maintained a large store of pearls (Daniélou, 1967, pp. 3, 40, 211; Arunachalam, 1952, pp. 34-36). The *Manimekalai* also refers to the manufacturing of chank and pearl products at Kanchi (Pandian, 1989, p. 268; Madhaviah, 2000, p. 76). The *Perumpanarruppadai* counts the right-whorled chank (*sankha*) as a prized commodity (Raghunathan, 1997, p. 75). Foreign accounts including the *Periplus* mention that the varieties of pearls exported from Persia to Barygaza (Bharuch) were inferior in quality to those found in India (Casson, 1989, p. 73). Pearl from the Gulf of Mannar was the most expensive animal product that was exported to the Roman Empire. These high-valued items were woven along with nice muslin cloth before being exported. Literary sources mention the employment of slaves and convicted criminals as pearl divers at Korkai (McCrindle, 1879, p. 111; Casson, 1989, p. 87; Caldwell, 1881, p. 20; Venkatasubramanian, 1988, p. 55). An early Tamil inscription records that the community of the *Paravas* was associated with pearl fishing (Heras, 1936, pp. 281-88;

Deckla, 2004, pp. 29-30). The pearl from south India was also a valued item for the northern Indians who used it for decoration purposes. The *Rig Veda* mentions the use of pearls on a wide scale and that the demand was so high that the pearls from the Ganges, although of inferior quality, could not fulfill the demands in the north (Iyengar, 1929, pp. 21-22). The *Arthashastra* also refers to the flourishing trade in shells between southern and northern India (Shamasastri, 1915, pp. 86-87, 366-68; Iyengar, 1929, pp. 23-24).

Excavations at Korkai and Kayal have brought to light large quantities of pearl oyster shells (Caldwell, 1881, pp. 17-18, 104, 282-84). The chank-cutting machinery for manufacturing bangles found at Korkai is notable evidence in this regard (Hornell, 1913, pp. 408-10; Hornell, 1914, pp. 42-45). Shell artefacts such as bangles and its pieces in different stages of manufacturing datable to the early historic period have been also discovered from other archaeological sites in Tamil Nadu such as Alagankulam (Nagaswamy, 1991, pp. 247-58; Sridhar, 2011c, pp. 75-77), Kaveripattinam (Poompuhar) (Indian Archaeology – A Review, 1961-62, pp. 26-27; 1964-65, pp. 24-25; 1977-78, p. 50), Karaikaddu (Kudikadu) (Indian Archaeology – A Review, 1988-89, p. 80; Raman, 1992, pp. 128-29), Arikamedu (Wheeler et al., 1946, pp. 22-23, 108), Tirukkampuliyur (Indian Archaeology – A Review, 1961-62, p. 28; 1962-63, p. 64; Mahalingam, 1970, p. 19), Alagarai (Mahalingam, 1970, p. 50), Uraiyur (Indian Archaeology – A Review, 1964-65, p. 25; Raman, 1988, p. 100), Kodumanal (Indian Archaeology – A Review, 1990-91, pp. 67-68; 2012-13, p. 142; Rajan, 1991, pp. 111-12; Rajan, 1998, pp. 65-77; Rajan and Athiyaman, 2004, pp. 385-414), Boluvampatti (Sridhar, 2004, pp. 61-62), Perur (Indian Archaeology – A Review, 1970-71, pp. 33-34; Shetty, 2003, pp. 8-9), Karur (Sridhar, 2011b, p. 70), Kovalanpottal (Sridhar, 2004, pp. 29-33), Sengamedu (Banerjee, 1956, pp. 43-46; Ramachandran, 1980, pp. 104-05), Adiyamankottai (Indian Archaeology – A Review, 1980-81, p. 65; 1981-82, p. 63), Teriruveli (Sridhar, 2011a, pp. 205-15), Mangudi (Shetty, 2004, pp. 59-61), Andipatti (Sridhar, 2005, pp. 25-26, 43), Modur (Sridhar, 2005, pp. 11-16, 43-44) and Keeladi (Keezhadi) (Ramakrishna et al., 2018, pp. 40-41, 69; Rajan, 2019, p. 50).

Gemstone Industry (beads, jewelry, etc.)

The literary accounts record that the beads of different varieties were exported from Indian ports to other countries (Prasad, 1977, pp. 212-13; Francis, Jr., 1987, pp. 9-10). As mentioned in the *Periplus*, beads made of agate, onyx, and carnelian were exported from Barygaza (Bharuch) to the Mediterranean region (Casson, 1989, pp. 81, 83, 85). Pliny also refers to the beads of onyx and chalcedony exported from India to Rome (Rackham, 1938, p. 63). Archaeological excavations have also revealed the presence of bead-making centers in early Tamilakam such as Tirukkampuliyur (Mahalingam, 1970, pp. 19, 50), Alagarai (Mahalingam, 1970, p. 106), Uraiyur (Raman, 1988, pp. 96-98), Alagankulam (Majeed, 1992, p. 16; Sridhar, 2011c, pp. 75-77), Kaveripattinam (Poompuhar) (Soundararajan, 1994, p. 88), Kodumanal (Rajan and Athiyaman, 2004, pp. 385-414), Karaikaddu (Indian Archaeology – A Review, 1966-67, p. 21; 1988-89, p. 80) and Arikamedu. Beads made of semi-precious stones like chalcedony, jasper, amethyst, agate, carnelian, soapstone, etc. have been discovered at these sites. Kodumanal, with its flourishing gemstone industry, was an important center of lapidary working in the Coimbatore region (Indian Archaeology – A Review, 1990-91, pp. 67-68; Rajan, 1991, pp. 111-12; Rajan, 1996, p. 76; Rajan, 1998, p. 75; Rajan and Athiyaman, 2004, pp. 385-414). Arikamedu (Francis,

Jr., 1987, pp. 9-10), which was another major manufacturing center for bead-making, has yielded beads and gems of Mediterranean origin suggesting contacts with the Roman Empire (Francis, Jr., 1987, pp. 6-20). Based on the central role of south India, especially Tamil Nadu, in the international gem trade scholars refer to the region as the 'Treasure Chest' of the ancient world (Francis, Jr., 2002, pp. 153-60). One of the gems discovered at Arikamedu depicts the head of Augustus in *intaglio* whereas the other is a quartz *intaglio* portraying the cupid and the eagle (Wheeler et al., 1946, p. 101). Gold jewelry in the form of gold finger rings locally made by Graeco-Roman artists settled in the region was found in the Vellalur hoard in the Coimbatore district (Nagaswamy, 1995, pp. 67-68). The gold signet rings with *mithuna* figures datable to the first century CE is a noteworthy specimen in this regard as this reflects the combination of the efforts by a goldsmith and the lapidary art (Nagaswamy, 1995, pp. 66-69; Suresh, 1992, pp. 56-57; Suresh, 2004, pp. 142-44).

Other minor industries

Salt making along with fishing flourished in the coastal areas. The *Paradavar* community was instrumental in trading the coastal products including salt (Iyengar, 1929, pp. 11-13, 36, 40, 72; Subrahmanian, 1966, p. 241). The *Perumpanarruppadai* mentions that the salt merchants called *umanars* carried large bags of salt in the carts from the salt pans to different parts. It appears that the government had no role in salt manufacture and therefore, the *umanar* community enjoyed the traditional right over the salt trade (Raghunathan, 1997, p. 75; Subrahmanian, 1966, pp. 232, 281).

Carpentry was a hereditary occupation and the skill was imparted to the children at a young age. The services of carpenters were required in works such as the construction of dwellings, shipbuilding, chariot making, etc. (Raghunathan, 1997, p. 82). Making jaggery from sugarcane juice was an organized industrial activity in rural areas (Raghunathan, 1997, p. 87; Seshachalam, 1982, pp. 89, 130). Oil milling too was an important craft that has been mentioned in Sangam works such as the *Narrinai* (Seshachalam, 1982, p. 130). Pottery making, rope making, basket making, manufacture of leather sheaths for war weapons, ivory works, manufacture of bangles, terracotta making, and construction-related works are other industries mentioned often in contemporary literature, which catered to the requirements at the local level (Mudaliar, 2000, pp. 71-72, 74-76; Subrahmanian, 1966, p. 230; Sivathamby, 1981, pp. 173-74).

Conclusion

The evidence from the literary texts and archaeological studies show that the ancient Tamil region experienced a transformation from a simple village-based rural economy to an urban economy characterized by the rise of large towns which became the centers of trade, commerce, and industrial activities. The level achieved in the field of metalworking and other manufacturing sectors suggests that a considerable section of early Tamil society was engaged in artisanal occupations. It should, nevertheless, be underlined that the geographical environment of the region was fundamental to the interaction between different zones of Tamilakam that further led to the diversification of crafts to fulfill the varied needs of people. Furthermore, the natural resources in the form of extensive coastline, hills endowed with a rich variety of minerals, etc. combined with the employment of technical skills determined the nature of products and also

facilitated trade contacts with distant lands. The study, thus, demonstrates that the early Tamil society was nourished by a considerable scale of industrial development which conditioned the growth of the urban environment.

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