

5 Networks and Cultural Mapping of South Asian Maritime Trade

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Abstract

This chapter proposes a reappraisal of Indian Ocean trade networks in Antiquity, with a special focus on spatial analysis of the cultural exchanges. Exhaustive quantification and GIS mapping of artefacts that were imported or imitated from the West in South Asia reveal different patterns of trade, depending on the socio-political and cultural background of each region, for example in Tamil Nadu and in the Deccan in India. Moreover, with the tools of social network analysis, a complete view of the East-West exchanges can be drawn, showing the complexity of the global networks in the western Indian Ocean during the first few centuries of our Era.

Keywords: South Asia, networks, cultural interactions, GIS, Mediterranean

Introduction

The routes of the Maritime Silk Road in the western part of the Indian Ocean have mainly received the attention of ancient and modern writers because of the direct sailing between its two shores, from the southern Arabian Coast and the northeast tip of Africa (e.g., Eritrea, Djibouti, Somalia) to the west coast of India during the early centuries of the Common Era. Recent research, however, has increasingly shown how commercial and cultural exchanges taking place in this area benefited from an intense network of regional nodes. This chapter focuses on these networks at the beginning of the first millennium CE, studied through archaeological data. The number of new excavations and recent archaeological discoveries in the Indian Ocean littoral have made possible a reappraisal of the flow of trade in this area in all its diversity. This chapter aims to put into relief the variety of responses

in India and Sri Lanka to the Mediterranean trade. Local socio-political and cultural factors affected the regional impact of the exchanges with the Graeco-Roman world, whether related to the integration of imported objects or the creation of new artifacts.

This chapter will first examine the networks of trade in the Indian Ocean with the use of tools such as graphs and network analysis to fuse data from both texts and archaeological remains, paying particular attention to intermediary nodes, subnetworks, and redistribution points. This offers the reader a detailed analysis of the spatial distribution of Mediterranean imports in South India and Sri Lanka and shows specific choices made by local populations. Last, a few examples of regional discrepancies in artistic borrowings and interactions are provided to illustrate how the social and political contexts impacted the way these foreign objects were integrated into the local culture.

Networks of Trade

A most important source of information when studying networks in the Indian Ocean is the *Periplus Maris Erythraei*, which offers unique testimony. The author of this text, likely writing around 70 CE, mentions various items of trade imported or exported from different ports along the coasts of the Indian Ocean, Red Sea, and Persian Gulf (together known as the Erythraean Sea). The lists given in the text suggest a closed network (see Casson 1989), so that the tools of network analysis can be applied to this data (see Saxcé 2015a; Seland 2016a, 2016b, 2017). Figure 5.1 represents one possible visualization of these networks.

If we assume that these goods were traveling directly between their origin and their point of destination (as mentioned in the text), we can build a graph to render the image of what the complete network probably looked like, according to the author (see Figure 5.2). Thus, the nodes are created by the port-cities and the links refer to the goods exchanged from one port to another (the greater number of goods, the thicker the link). We need to bear in mind that the graph represents the knowledge of the author at one point in time and includes the biases and limitations inherent to a single source. Nevertheless, the visualization as a graph allows us to infer many pieces of information that otherwise remain implicit in the text.

Thus, Barygaza appears to be the main hub for imports and exports; and the second major center is Adulis, but mainly for imports. With imports and exports coming from multiple places of origin, these two ports appear as the principal platforms of trade. Interestingly, the items of trade that appear to

Figure 5.1 Indian Ocean networks of trade according to the *Periplus*

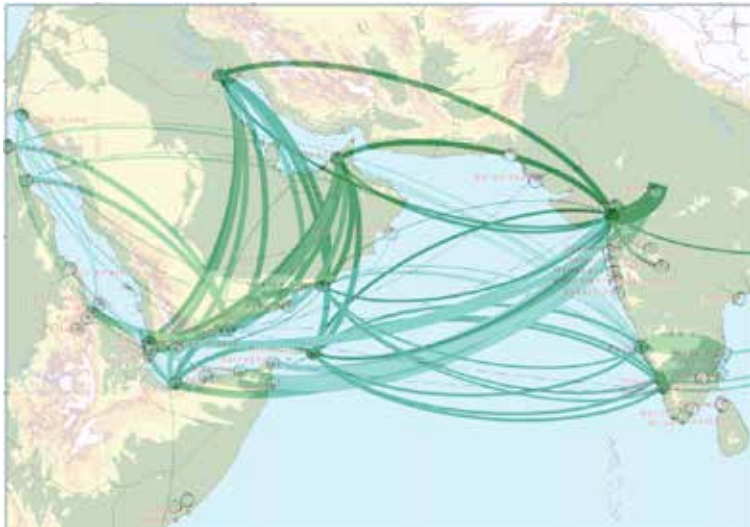
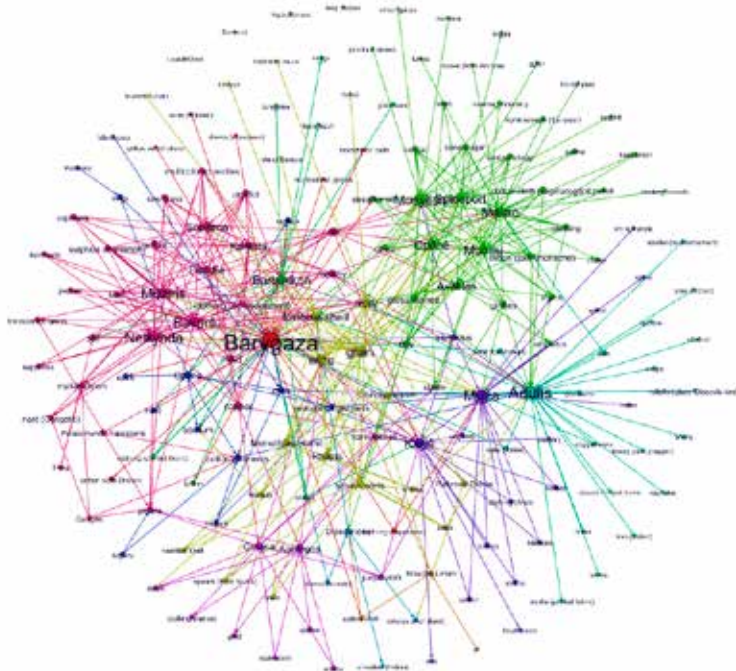


Figure 5.2 Indian Ocean networks of trade according to the *Periplus*, without geolocalization

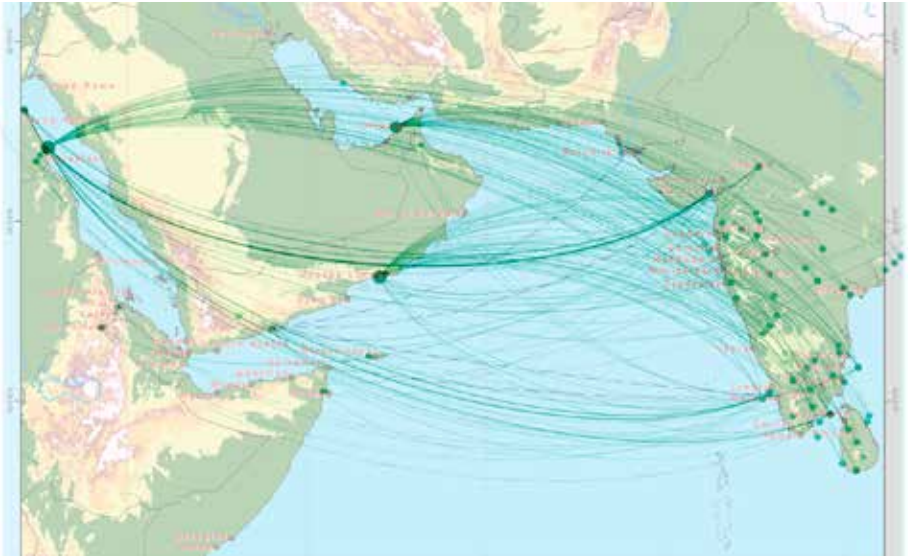


have the highest number of links are not pepper or gold—which are the most well-known items in literature—but grain, wine, and tortoise shell. Cotton also stands out, but it is less obvious in the graphs because of the multiple categories mentioned in *Periplus* (e.g., garments, molochinon, cloth, etc.) Money, ivory, rice, and ghee also appear in prime positions. Pepper is in a peripheral position on the graph since it originates only from two localities and its destinations are not mentioned by the author.

The links between the Persian Gulf and Arabia are emphasized in the graphs, as well as the contacts between Africa and the west coast of India. Connections are found between North Africa and Barygaza through the exchange of ghee; between North Africa and Arabia through ivory, myrrh, and frankincense; and between South India and Arabia through wine and frankincense. This last example suggests how the redistribution network might have worked, as some frankincense exported from Kane (South Arabian Coast) to the Gulf sites may also have traveled from there to Muziris (Malabar Coast), as well as local wine, as the remains of incense and torpedo jars in Pattanam testify (Tomber 2015).

As a result, the picture we get is far more complex than the traditional view of the three main routes mentioned in Pliny (André-Filliozat, 2003, paras. 100–104) that were noticeable for ancient authors because of technical breakthroughs, such as the direct sailing across the Indian Ocean from Arabia to South India. The commercial information in the *Periplus* made into graphs forwards major links between central India and Africa (even though the quantity of archaeological material remains limited) and between the Gulf cities and the coast of Arabia. The direct route between Arabia and South India appears as well, but only as one part of a much larger picture. It can be considered a “weak tie” (Granovetter 1973); that is, two dense local networks—one in India and one in South Arabia-North Africa—were related via a small number of long-distance links. These weak ties play a fundamental role in connecting different subnetworks and thus creating a vast network as a whole: few links end up being key elements in the global picture by creating a broader area of connections.

If we focus on the archaeological remains, the graph we obtain with the data is slightly different and an interesting counterpart to the textual information in the *Periplus*. This next graph (see Figure 5.3) has been constructed using the inventory of archaeological remains on the shores of the Indian Ocean, in the Indian Peninsula, and in Sri Lanka. These include Mediterranean products in India and Sri Lanka and Indian products in the Gulf, Arabia, Africa, and Egypt. Here as well, the different ports constitute the nodes of the graph, and the goods are defined by their origin and destination to create links between the ports. To build a faithful image requires

Figure 5.3 Indian Ocean networks of trade according to archaeological data

information on both the source and the destination of the products. The destination is known by the archaeological site where the remains have been discovered. As far as the source of the material is concerned, it can be accurate if only one source was available but uncertain whenever several possibilities existed. Some products can thus be sourced with precision, such as traceable garnet, sapphire, pepper, glass, teak wood, lapis lazuli, and Z/Z cotton (typical weaving pattern of Indian cotton). Others, such as carnelian, agate, onyx, beryl, and some food products may have several origins but can be reasonably related to a region based on other sources, notably written ones. I have included three areas in the graph—Egypt, the Arabian Coast, and Persian Gulf—when any of them might be the source. It makes the graph a little denser than it should be for these three regions, but it also allows us to visualize all possible options without arbitrarily choosing one of them.

The archaeological remains complement the textual information in many ways. Contrary to Figures 5.1 and 5.2, the Berenike-Barygaza axis appears here as a major link, followed by connections between Berenike and South India (west and east). Similarly, the link between Sri Lanka and the Gulf is visible, thanks to the Persian material found in Sri Lanka (Bopearachchi 2002, 111–113). Additionally, the link with South Arabia has become apparent over the past few years, notably through the ceramic studies identifying Sri Lankan pottery in Khor Rori and Sumhuram, in Oman (Schenk 2007; Schenk and Pavan 2012). The African Coast and the Gulf are underrepresented because archaeological data is limited in these regions, either because of

socio-political (e.g., conflicts and destructions of sites) or academic reasons (e.g., small number of excavations). Nevertheless, a graph, because it focuses on more than just the three routes mentioned in *Periplus* and by Pliny, helps in visualizing the density and complexity of the networks. Subnetworks in Arabia and the Gulf become more visible and show how they greatly helped the long-distance network to function effectively. I have mentioned elsewhere (Saxcé 2015b) on the importance of subnetworks within South Asia. These were along the coasts of India and, in particular between South India and Sri Lanka and between North India and Sri Lanka. These local exchanges were also fundamental for the distribution of long-distance goods in South Asia.

Imports and Their Distribution

Before I offer the details of mapping foreign cultural artifacts discovered in India's territory, it is important to point out the results of a quantification of archaeological remains in the Indian Ocean trade.¹ Even though an exhaustive quantification of all artifacts remains challenging because of the heterogeneity of old and new data, I attempt here to evaluate the proportion of foreign artifacts discovered in South India and Sri Lanka and to highlight their distribution in these territories.

As seen in Table 5.1, the number of imports may seem impressive in absolute numbers but, when compared to the quantity of local artifacts of the same category, it appears that they constitute a very small proportion of the preserved remains.

Table 5.1 Imports versus local artifacts

Material type	Absolute number of remains	Percentage in the same category of remains
Amphorae	9,906	0.06% to 0.2%, ceramic assemblages
Coins	1,278	1% to 12%, stratified coins
Sigillata and fine ware	241	0.004% to 0.01%, fine ware
Glass vessels	260	3% to 30%, glass ware
Glass beads	N/A*	around 3%, analyzed samples
Coral beads	151	0.2% to 50% (aver. 13%), stone beads
Bronzes	21	N/A
Intaglios	3	N/A
Terracotta lamps	3	N/A

Objects found in the Indian Peninsula south of the River Narmada and in Sri Lanka

* N/A: not available or not applicable (figures not available or % not significant)

1 For more details, see de Saxcé 2015a.

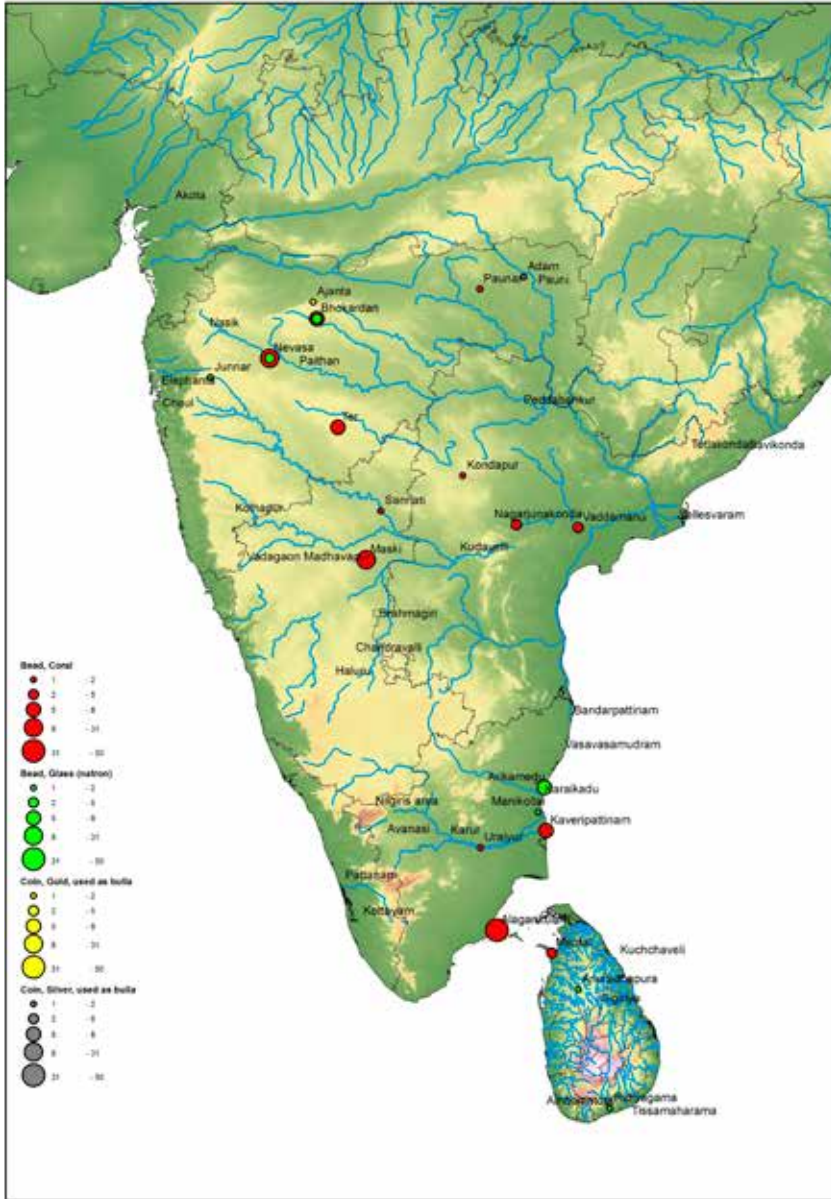
It is important to bear in mind that the objects under consideration here are quantitatively limited yet culturally significant. These artifacts are therefore crucial in highlighting regional differences and local ways of dealing with foreign material.

First, while useful for quantification purposes, considering each category of remains separately proves much less relevant when studying their distribution in the landscape. It is thus preferable to use an anthropological method of categorizing these artifacts so as to interpret their localization. An approach based on “praxis,” as proposed by J. P. Warnier (2006, 2009), proves interesting in dealing with this material. It considers the relationship between the body and the object and the ways in which an individual builds technical skills in this relationship. Artifacts can then be grouped into three main sets. A first set comprises “containers,” including amphorae, unguentaria, terra sigillata and other ceramics, glass vessels, bronze vessels, and terracotta lamps. A second set includes “ornaments,” which are objects that determine the interface of the body with the outside world. These are, among other items, glass and coral beads, bracelets, rings, intaglios, and bullae. A third group is “valuables,” which include objects like coins, figurines, emblemata, and mirrors that are not in direct contact with the body.

The map of containers (see Figure 5.4) shows an overlap pattern of either amphorae and glass or amphorae and sigillata vessels, suggesting that foreign wine (or, to a lesser extent, olive oil and garum) might have been consumed in foreign vessels, as mentioned in the Tamil epics evoking the beautiful vases used to drink wine (see Meile 1940, 103; Zvelebil 1956, 402). However, one can observe an opposition between the Deccan (the plateau area of Central India) and Tamiḷakam (Tamil country, corresponding to the tip of the Indian Peninsula). Finds such as amphorae are found inland on the Deccan but are limited to the coasts of Tamiḷakam, except for the capital Karur. This might be related to the location of Yavanas (Westerners), who lived in the south in neighborhoods around port-cities (see Meile 1940, 113; Zvelebil 1956, 405). But in the Deccan, they were integrated into Buddhist trading communities (Champakalakshmi 1996), at least to the extent that they sometimes adopted Sanskrit names (Rajamani 2009, 88). Interestingly, no containers seem to have reached the areas in the center of the map. This is especially evident for glass vessels, possibly because the Yavanas did not move into inner parts of the Deccan or perhaps because the fragility of the material would have made it difficult to transport over great distances.

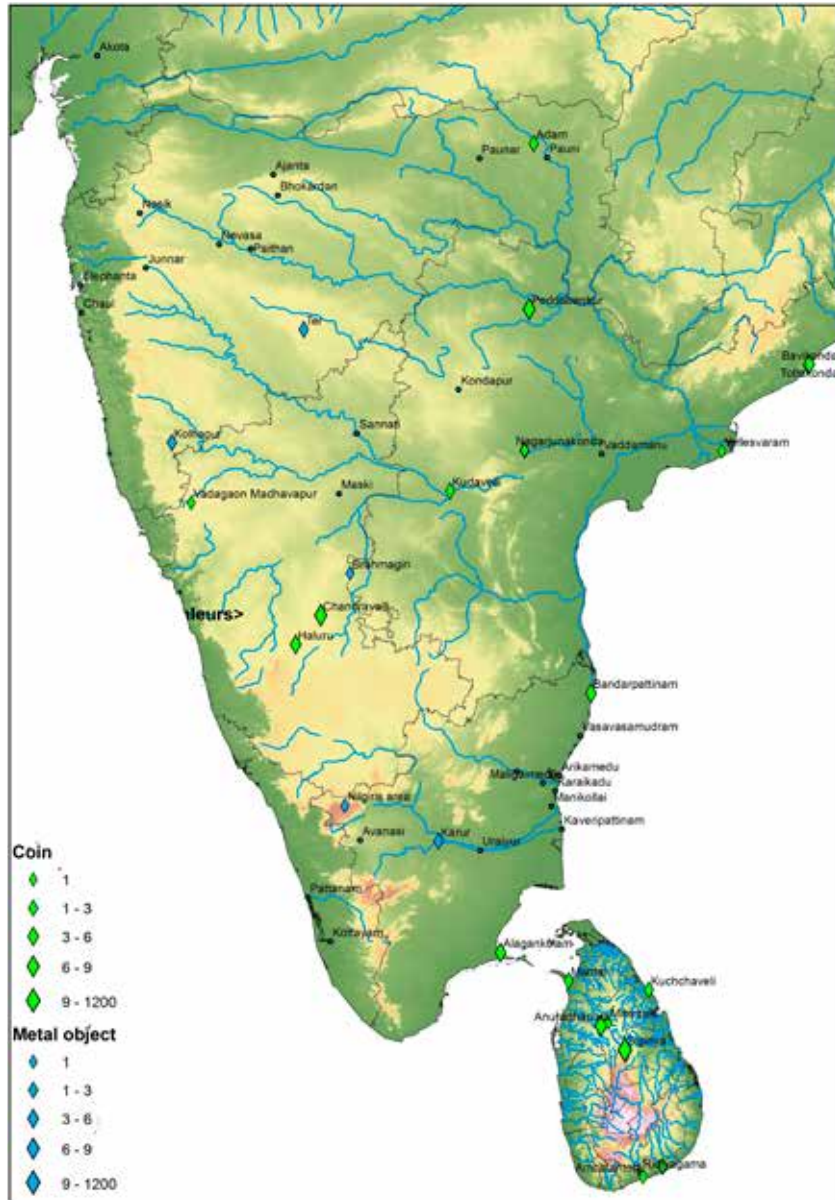
The map of ornaments (see Figure 5.5) reveals a completely different picture, with a higher concentration in the center of the peninsula and fewer finds on the coasts. The important hubs for trade such as Muziris (Pattanam on the southwest coast) and capitals such as Paithan (in the Deccan) are also

Figure 5.5 Distribution of ornaments



Buddhist offerings. There are examples in the treasure of the Jetavanarama (Ratnayake 1984) and in Buddhist sites of the Deccan such as in Ter; Kondapur (Yazdānī 1941); Sannati (Devaraj and Talwar 1996); Nagarjunakonda (Sarkar and Misra, 1966); and Vaddamanu (Sastri, Kasturi Bai, and Veerender 1992).

Figure 5.6 Distribution of valuables



The map of valuables (see Figure 5.6) corresponds well to the locations and compositions of coin hoards: more coins from the second century CE are found in the central and eastern parts of the peninsula, whereas more coins from the first century are in the southwest. In stratigraphy for the area considered (i.e.,

south of Narmada), there are more bronze coins (sixteen) than gold and silver ones (thirteen), as the former were more likely to be circulated. These bronze coins are located mainly in Sri Lanka. Items made of bronze, such as figurines and mirrors, have been found deep inland in Karur, Brahmagiri, and Ter.

If we superimpose these maps, it is striking that the three groupings of containers, ornaments, and valuables do not show much overlap. Each appears to have its own logic and territorial organization, thus demonstrating the extent to which local geopolitical and cultural contexts determined choices and appropriations of objects. Rather than imagining a Yavana “package” of goods and technologies in large trade hubs or capitals, we need to think about the different needs and cultural habits based on context. Only four cities—Ter, Nagarjunakonda, Alagankulam, and Anuradhapura—include all three sets. Contrary to what one might assume, they are neither all located on the coast nor capitals. All four cities nevertheless were points of contact and network hubs.

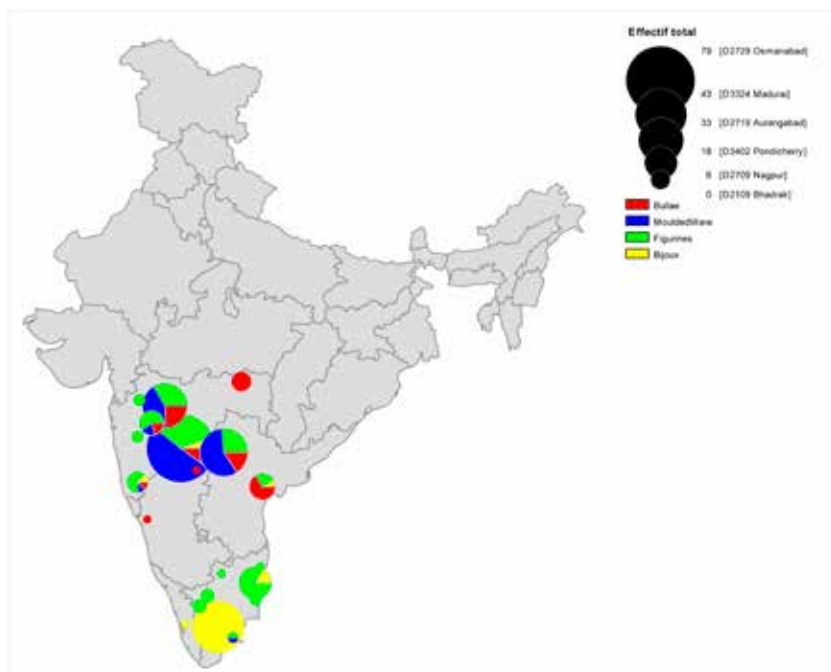
These hubs facilitated not only trade but also cultural interactions and exchanges of ideas, iconographies, and artistic practices. The next section examines the nature and distribution of the material involved.

Cultural Adoptions

Trade exchanges between the Arabian Peninsula and India were followed by cultural contacts via specific artifacts. I focus particularly on small portable objects that were more likely to travel and bear some traces of these travels.

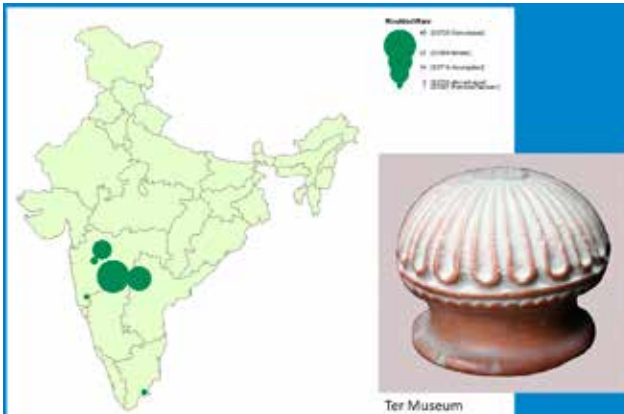
I have been careful to avoid the concept of “influence” (Baxandall 1991, 106–111) because it fails to take into account the multiple actions that take place on the “reception” side of an exchange. The conceptual background of intercultural relations is rich in closely related terms like transfer (Espagne 1999, 286), *métissage*, interculturalism, or acculturation. Most of these terms denote a process of equal exchange between two cultures when two social groups have a close interaction or physical contact. In the present context, we instead have a situation in which very small numbers of people brought new objects into a given culture and the objects were circulated and exchanged within that host population. The agency of the local people needs to be underscored, so I suggest using the term “adoption” to evoke how a main ethnic group may borrow, reproduce, or appropriate² the artifacts of a minority.

² Appropriation is how a majority borrows cultural features from a minority. However, in some cases, it implies a process of oppression and sometimes violence. This process does not seem to have been the case in the Indian context.

Figure 5.7 Distribution of bullae, molded ware, figurines, and jewels

Indeed, with small, scattered groups of Yavanas bringing their culture with them, local populations might have wished to borrow, appropriate, adapt, or adopt some of their habits and objects. This appears to have occurred with ceramic types, jewels, terracotta figurines, and coin imitations (see Figure 5.7).

An opposition again occurs between the Deccan and the Tamilakam in the types and quantities of objects bearing traces of borrowing. I detail the materials under discussion and show how socio-political contexts help explain some of these disparities. In the Deccan, the Yavanas seem to have integrated well into the local social networks; their names frequently appear on inscriptions as donors to the Buddhist community. The organizational support given to trade by Buddhists, and the ideal of a society without caste, helped outsiders integrate into this community. Conversely, in the south, Yavanas appear to have remained more isolated, resided in specific neighborhoods, and earned livings in specific professions—such as guards, carpenters, and artisans (Zvelebil 1956, 404, 406, 407)—but their names do not appear on inscriptions. The elitist society, relying greatly on lineage and kinship, would have kept Yavanas apart from them. In this context, local people may have had direct contact with Yavanas and their objects (as either related to trade

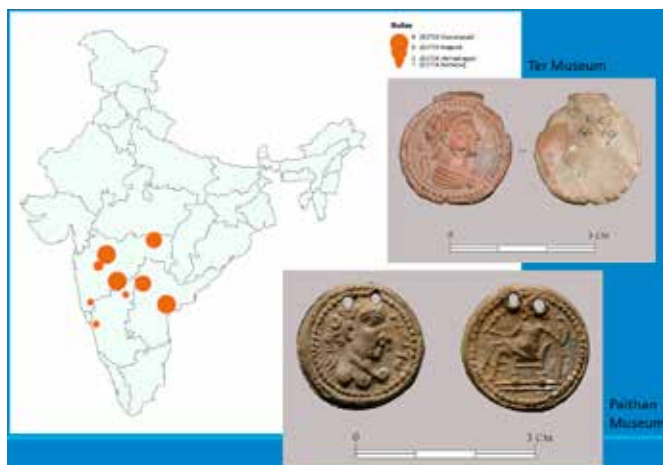
Figure 5.8 Distribution of moldmade ware and an example

or as personal belongings) or a more distant access to some of these Western artifacts, which is why local productions in the Deccan and in South India show very different ways of borrowing external artistic features. The “border,” or point of contact, between these two areas coincides well with the limit of the Aśokan Empire: the southern tip of the peninsula, not included in the empire, presents a number of cultural features that distinguishes it from the center, which was part of the realm. The south of modern Karnataka and Andhra constitute the transition area between the two regions.

On the Deccan Plateau, the main productions were “moldmade ware” (Begley 1991; Rotroff 1982, 3), bullae, and terracotta figurines. All of them integrate the presence or the figures of the Yavanas in one way or another. The moldmade ware (see Figure 5.8), dated between the second century BCE and first century CE, is found in very few sites (Bhokardan, Kolhapur, Kondapur, Nevasa, Paithan, and Ter) and consists of small bowls created with a double-mold technique. This technique was an innovation in this area and could have come through Mediterranean prototypes such as Athenian (Retroff 1982) and Delian (Laumonier and Athanassiadi 1977) bowls as well as Hellenistic metal vessels. The shapes appear to be borrowed from their Western counterparts, whereas the design reproduced “long petals” in a different way, bringing it closer to the local ornament of the lotus. Some vases (in Paithan and Kondapur) even bear the eight Buddhist auspicious symbols.³ We see from these artifacts that local producers borrowed an exotic technique and integrated it into local traditions; and if these bowls were used for offerings and processions, into religious habits as well.

3 Fish, *srivatsa*, *chakra*, *pūrṇa ghata*, *triratna*, *kalpa-vṛkṣa*, *pushpa caitya*, and *swastika*.

Figure 5.9 Distribution and examples of bullae: Tiberius on the obverse (two examples) and seated Livia on the reverse



As for the bullae (see Figure 5.9) and terracotta figurines, they show interesting adaptations of the Yavana image. Reproducing coins in terracotta in areas where metal Roman coinage was rare would have been a convenient and inexpensive way to disseminate exotic images, which were probably fashionable at the time. Bullae representing Tiberius type of coins are by far the most common, as are examples of Augustan portraits. In some cases, the emperor's face appears to borrow features of local rulers, such as of Vasisthiputra Siri Satakarni, whose rule from Paithan was associated with a time of prosperity. Other bullae with local images include auspicious symbols that seem to have played an apotropaic role (e.g., protective, turning away evil spirits), suggesting that the Yavana portraits might have used for protection as well to present an image of powerful and prosperous foreign rulers.

Most of the figurines (see Figure 5.10) also use the double-mold technique and reveal numerous connections with their Egyptian counterparts, including figures of grotesques, young children, and women giving birth. The figurines found in the Deccan show various ethnic types, from Central Asia, China, and Africa, as well as figures with curly hair resembling those from the Mediterranean. They recreate a microcosm that gives an image of the macrocosm and integrate Yavanas who were present in the social networks.

By contrast, in the Tamil country, the context and types of borrowings are very different. Various terracotta figurines seem to owe some of their features to the Mediterranean World, and to Egypt in particular. Such is the case of Tanagra-like statuettes, fertility goddesses (*lajja-gauri*), children's heads,

Figure 5.10 Distribution and examples of terracotta figurines, from the Deccan and the Tamil area



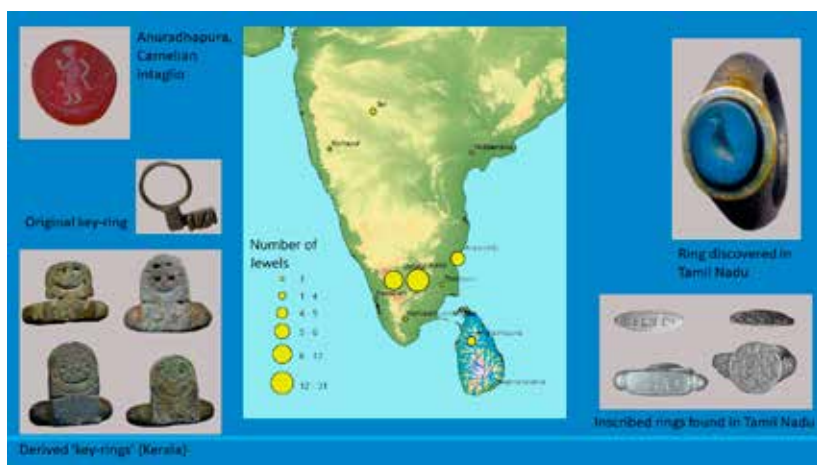
and some heads with plaited hair dress. The latter share iconographical features with their Egyptian counterparts, but in all likelihood appeared in different contexts. Whereas the Egyptian figurines are interpreted as being profane decorative heads (Breccia 1934, 44), the ones from Tamil Nadu are sometimes seen as incarnations of deities, such as Dakṣiṇāmūrti (Sridhar 2009, 67, 97). Even though this identification can be debated, the votive nature of the figurines is likely, thus suggesting that the borrowed features were fully integrated into the local tradition. In the Deccan, images of foreign identities were part of a representation of the world; in the south, the borrowed features were wholly assimilated into local cults. Similarly, a small figurine of a young boy found in Arikamedu⁴ shows some features of Harpocrates: the position of the legs, the hair dress and necklace. But it could also be seen locally as a Skanda with its bird, thus showing a particularly interesting example of syncretism and assimilation of motifs.

Jewelry (see Figure 5.11) presents striking aspects in terms of adaptation of cultural habits rather than iconography. Indeed, the different kinds of Western-related jewels in Tamiḷakam notably include key-rings,⁵ inscribed rings, and intaglios. These were luxury items that were probably gifted

4 Now in the Musée Guimet, Paris.

5 Key-rings were originally created as a way to attach a key to a ring so that it was not lost. Other decorative shapes were created but the rings with this protruding decoration kept the name “key-ring.”

Figure 5.11 Distribution map of jewelry and some examples from Sri Lanka and South India



among the elite in a system of strong kinship ties. Again, their iconography is often of a local type, but the use of such objects testifies to the creation of new habits. For instance, it seems that key-rings and inscribed rings appeared in the first few centuries of the Common Era in connection with the presence of Yavanas in the region. The tradition of wearing a key-ring or a ring bearing one's name was adopted for local purposes and readapted with local motifs and names. The local elite or rulers would have most likely used these foreign objects as luxurious, exotic items and as a visual expression of their power within the community.

In Sri Lanka, as in the Deccan, foreign motifs were imported and reused locally, notably on stone intaglios. For instance, two intaglios from the Jetavanarama treasure, respectively on quartz and carnelian, show an Augustan-type profile and a man carrying a sphere, similar to figures on Antoninus coins. In the Abhayagiri Monastery, one carnelian intaglio was found that shows a standing woman dressed in a tunic and scarf that strongly evokes Roman deities like Nephelai and Maenads.

Conclusion

An important question to ask is: How does the location of the artifacts discussed in this chapter relate to the presence of Yavanas in the territory? The adapted objects are in areas where Yavanas were apparently present. But

were these items meant to be used by foreigners, or only by local people? In Tamilakam, the motifs discovered on inscribed rings that bear local names or symbols suggest usage by local people. Meanwhile, the iconography of the figurines, based on the numerous borrowings of Egyptian style, were likely used as a locally made substitute for travelers unable to bring their own. Depending on the category of objects, it is possible that the Yavanas wanted artifacts bearing similarities to the ones they had left behind. In the Deccan, the figurines and ceramics seem to be part of a local assemblage, uniting foreign and local designs through functional similarities (e.g., ornamentation as pendants, ceremonial bowls, etc.). We may assume that they were all used within a local context.

In conclusion, subnetworks and local hubs were essential parts of long-distance exchanges. Notably, the presence of established connections between North India, South India, and Sri Lanka were important for the Mediterranean trade to flourish, just as were contacts between South Asia and South Arabia, and South Asia and Africa. Within South Asia, internal regional specificities played a predominant role in the way imported objects were reused or imitated. Import distribution maps indicate that a number of choices were made in correspondence with local needs rather than as wholesale acceptance of all Mediterranean products. The socio-political context produced different attitudes vis-à-vis these foreign objects as well as various types of syncretic creations of artifacts and practices. In particular, a discrepancy appears between Central India (that is, the Deccan) and South India (that is, Tamil country) in the types of objects they chose to recreate and the practices or iconographic features they adopted, thus showing the agency of populations involved in both long-distance and local trade, and the strength of regional nodes in the global network.

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