

# Rome and Mesopotamia – importers into India in the first millennium AD

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*Ever since Wheeler's triumphant discovery of Roman pottery at Arikamedu in the 1940s, it has been appreciated that the east coast of India was in reach of the Roman Empire. Tracking down the finds of Roman pottery on the Indian sub-continent reported since then, the author discovered that many of the supposed Roman amphorae were actually 'torpedo jars' from Mesopotamia. Here the areas of influence of these two great imports, probably of wine, are mapped for the first time.*

*Keywords:* India, Rome, Mesopotamia, Sasanian, amphorae, coins, *dequre*, pottery, torpedo jars

## Introduction

Recent fieldwork in India by this writer included a systematic programme to view and identify imported Roman amphorae. Such an undertaking was possible because of the extensive review of amphora sites compiled by Sunil Gupta (1993; 1997), which lists over 50 potential find spots. Although not all the material has yet been located, imported amphorae have been confirmed from 31 sites. However at approximately half these sites it was also discovered that amphora sherds thought to be Roman were actually Mesopotamian in origin. In 10 cases, the assemblage contained only Mesopotamian sherds, and Roman pottery was absent. The Mesopotamian vessels belong to a type known as 'torpedo jars' which have not previously been identified in India. After a brief mention of the better known Roman imports, this paper describes the Mesopotamian material and goes on to discuss the date, distribution and context of both types of import in India.

## Imports from the Roman Empire

Roman amphorae, together with Roman coinage, are the most important artefacts for documenting exchange between the Roman Empire and India. In absolute terms, coins are the most prolific and most studied Roman find: for South India alone Turner (1989: 23) recorded 6000 denarii. If one includes Late Roman copper coinage this number is substantially boosted with over 4000 from Karur and Madurai in Tamil Nadu (Krishnamurty 1994: x). Although there are also growing numbers of amphorae, identification is more problematic and more difficult to verify through publication, especially in the case of body sherds. Rims, handles or bases are easier to evaluate, and some published examples can be seen to be non-Roman imports: for example, a supposed Roman vessel from the Contai region of West Bengal is an Islamic vessel (Chakrabarti 1999: Figure 56). Apart from the

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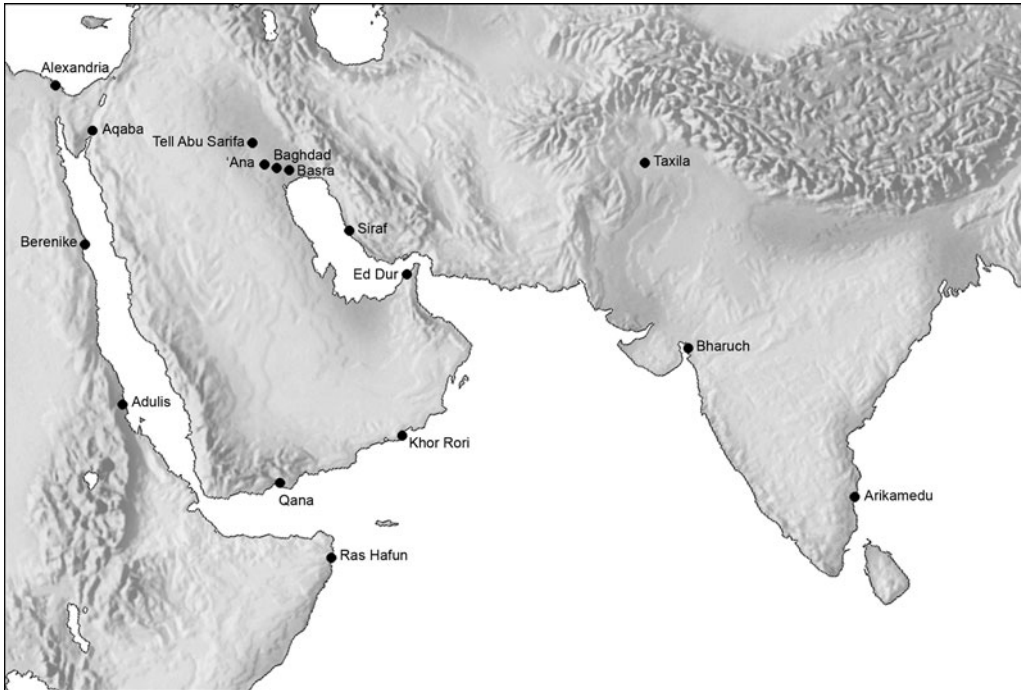


Figure 1. Map of the study area and key sites (Antony Simpson).

assemblages at Arikamedu (Will 1996; 2004) and Nevasa (Gupta *et al.* 2001), few amphorae have been identified to type in India. But since many Roman amphorae are well-dated and well-provenanced they represent an untapped resource for the understanding of Indian Ocean contact, as is well recognised by Indian scholars (e.g. Gupta 1993; 2002; Tripathi 1993; 2004).

### Imports from Mesopotamia

Intermittent interchange between India and Mesopotamia is known from the Harappan period (late third/early second millennium BC), when it is demonstrated, for example, by Indus pottery in Oman (Méry 2000: 219-45), Gujarati pottery in Bahrain (Carter 2001; see also Salles 1993: 500) and by the oft-cited Persian Gulf seal found at Lothal in Gujarat (Ghosh 1989: 259). The intertwined relationship between the regions continues into the later first millennium BC/first millennium AD (incorporating the Sasanian period), as witnessed in documents (for a summary see Whitehouse & Williamson 1973: e.g. 31), and a growing body of artefactual data. Coins are the most prolific Sasanian artefact found in the sub-continent, particularly from the north-west: for example, over 300 are reported from Taxila (Marshall 1975: 790). But, although there has been some recognition of Sasanian finds as far east as Sri Lanka (Lang *et al.* 1998: 11), coarse ware pottery, specifically torpedo jars, has not been recognised in India until now.

The torpedo jar is well-known throughout Mesopotamia and the Gulf (Kennet 2004: 63) (Figures 1 and 2), a distribution that supports its Mesopotamian source despite the lack

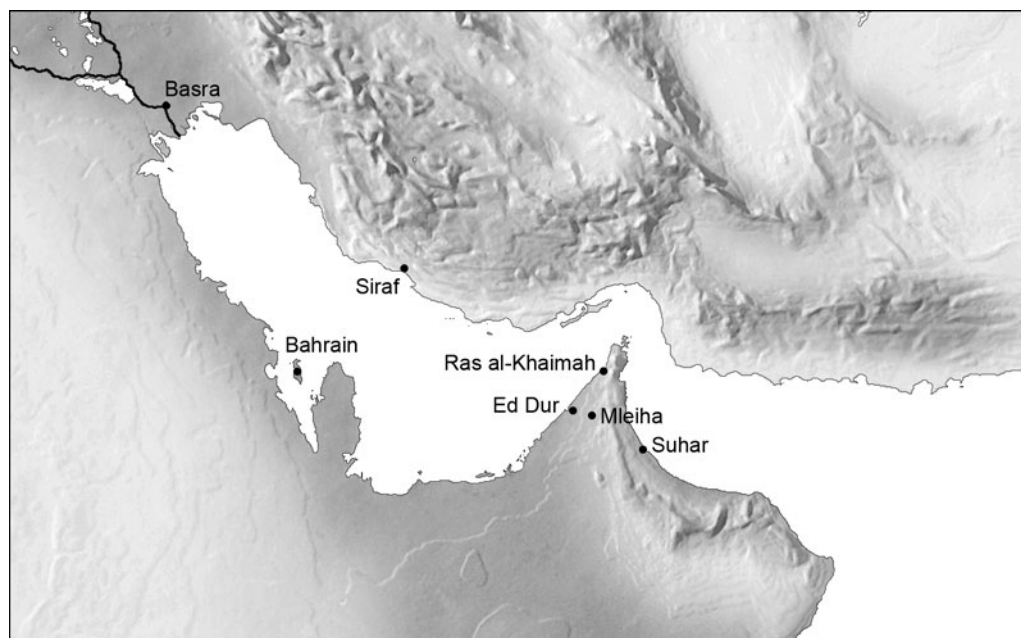


Figure 2. Detailed map of sites in the Gulf region (Antony Simpson).

of kilns. It occurs in assemblages of the later Parthian (*c.* AD 0-224) or early Sasanian (AD 224-379) through the Sasanian (to AD 651) and into the early Islamic period. Published quantified assemblages are rare, with Tell Abū Sarifa in south-central Iraq an exception. Here torpedo jars appear most frequently between Levels II (before AD 500, probably the third century) and V (AD 800-950), although the author draws attention to excavation problems that distort the ceramic patterns (Adams 1970: 91-2; see also Kennet 2004: 83). At another site, 'Āna, on the Euphrates, they first occur in small numbers during the later Parthian phase with their zenith during the Middle Sasanian period (fourth/fifth centuries) through to the early Abbasid (ninth century) (Killick 1988; Northedge 1988).

The jars are characterised by a bead-rim, a neckless and cylindrical shape and a tall, hollow base with small diameter (Figures 3 and 4), that Adams (1970: 100) nicknamed a 'torpedo-fuse point'; the base is alternatively known as a '*Spitzfuss*' (Finster & Schmidt 1976: 92). At Tell Abū Sarifa, Adams (1970: 100, Figure 6c-e) notes that a notch is sometimes applied under the rim, but this disappears after Level III, dated to AD 500-650. A fair amount of variation can be seen in detail, some of which Adams has attributed to chronological factors, seeing the more cylindrical vessels as Sasanian rather than early Islamic. The complete lack of handles distinguishes them from their Roman counterparts.

The most common fabric found in India varies between off-white, yellow to pink (the last with off-white surfaces) with common multi-coloured (white, red, grey and black) inclusions. It is hard and sandy with well-sorted inclusions. Samples from many of the Indian sites were viewed in thin section and they exhibit a wide degree of variability around a restricted suite of rocks and minerals. Predominantly limestone with quartz set in a clean, micaceous matrix, ancillary inclusions are feldspar, mica, chert, ferro-magnesium minerals (pyroxenes,

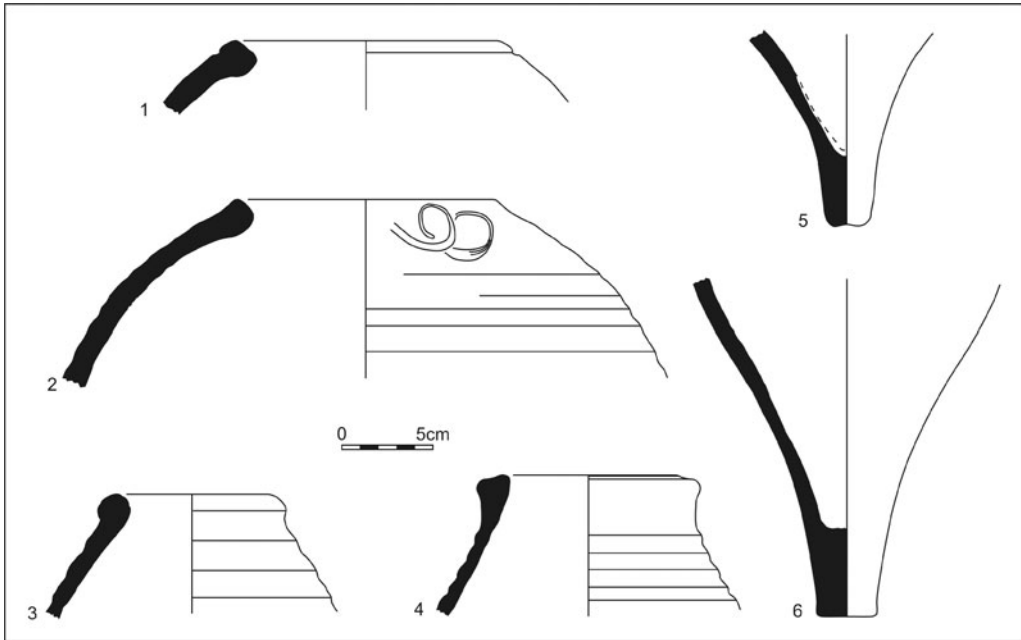


Figure 3. A selection of torpedo jars: 1-3, Kateshwar (circular marks on no. 2 are from wiping); 4, Vallabipur; 5, Nagara; 6, Vallabipur (R. Tomber, Penny Copeland).

hornblende), serpentine, low-grade metamorphics and volcanic rocks. The range of variability between samples could be explained by a series of kilns situated progressively down a riverine system. Interestingly, metamorphic and volcanic rocks sometimes occur in a single sample, a feature associated with clay sources north of Baghdad (Hill *et al.* 2004: 597, Fabric 1). More detailed analysis of these fabrics is needed before any conclusions can be drawn, but it provides an interesting starting point for locating the source of some of the vessels found in India. Although generally finer and better sorted, the torpedo fabric is otherwise remarkably similar – particularly in the hand specimen – to a well-known amphora fabric used for the production of both Early (Tomber 1998) and Late Roman (LR Amphora 1, Riley 1981: 120) types derived from ultra-basic deposits in northern Syria/eastern Turkey (Cilicia) and southern Cyprus; LR Amphora 1 is recorded from India (Figure 5).

Another widely exported Mesopotamian ceramic type found in India is a turquoise, alkaline glazed ware. Summarised by Kennet (2004: 29-30), this ware has a long production period and is present in the Gulf from at least the third century BC – earlier in Mesopotamia – into the Islamic period. Small sherds are notoriously difficult to date, but changes in forms and decorative techniques distinguish the various chronological periods. To date, most turquoise glazed ware published from India belongs to the Islamic period (Glover 2002: 168-9), but new finds may alter this trend. Like torpedo jars they are thought to have been manufactured in Mesopotamia, possibly in the Basra region at the head of the Gulf (Kennet 2004: 30).

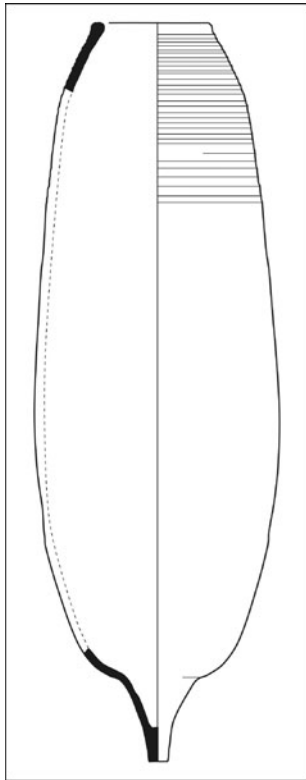


Figure 4. Torpedo jar (c. 830mm high) (Penny Copeland).

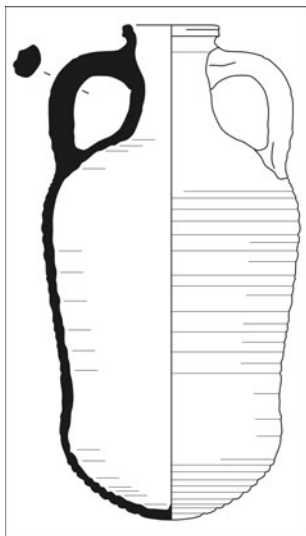


Figure 5. Late Roman Amphora 1 (c. 456mm high) (Penny Copeland after van Alfen 1996: Figure 2).

## What was in them?

Wheeler *et al.* (1946: 41) noted that ‘many of the sherds of [Roman] amphorae from Arikamedu, including the earliest stratigraphically, preserve an internal incrustation which, on analysis [by the Chemist of the Archaeological Survey of India], is found to contain resin, a common constituent of Mediterranean wines’. It is unclear here whether Wheeler is referring to lining on the vessel or residue from the contents. Several sherds from the French excavations in the Pondicherry Museum have a faint dark lining, as does a further vessel published by Will (2004: 391, Catalogue nos. 343-4). All of these sherds have been examined by this writer and none have the substantial black internal coating found on many torpedo jar sherds. Despite having the largest collection of imported Roman amphora sherds of any Early Historic site in India, no torpedo jars have been positively identified from Arikamedu.

In the literature the lining on torpedoes is normally presumed to be bitumen, which was available in Mesopotamia (Connan *et al.* 1998). The black deposits were analysed on sherds from Nevasa (Lal 1960) and Denvimori (Mehta & Chowdhary 1966: 77, quoting Hedge) and respectively described as bitumen and a ‘resinous lustre’. More recent analysis by Carl Heron has confirmed the black lining on vessels from Anuradhapura to be bitumen (Seely *et al.* 2006: 107).

The internal coating indicates that the vessel walls were sealed for the storage of liquid. In the Roman world sealants are consistently associated with vessels used for the transportation of wine. Since the growing of grapes and a culture of wine drinking existed for the Sasanians, the Roman example offers a plausible analogy for the function of torpedo jars. Simpson (2003: 353-5) has summarised the Roman, Talmudic and Sasanian textual references to Sasanian viticulture and has suggested that torpedo jars are the *dequire* of the ancient texts and that they are the Partho-Sasanian equivalent of Roman amphorae. Whether there was a wine-drinking culture in India is another matter, and texts can be found in support of both sides of the argument (Tomber, forthcoming).



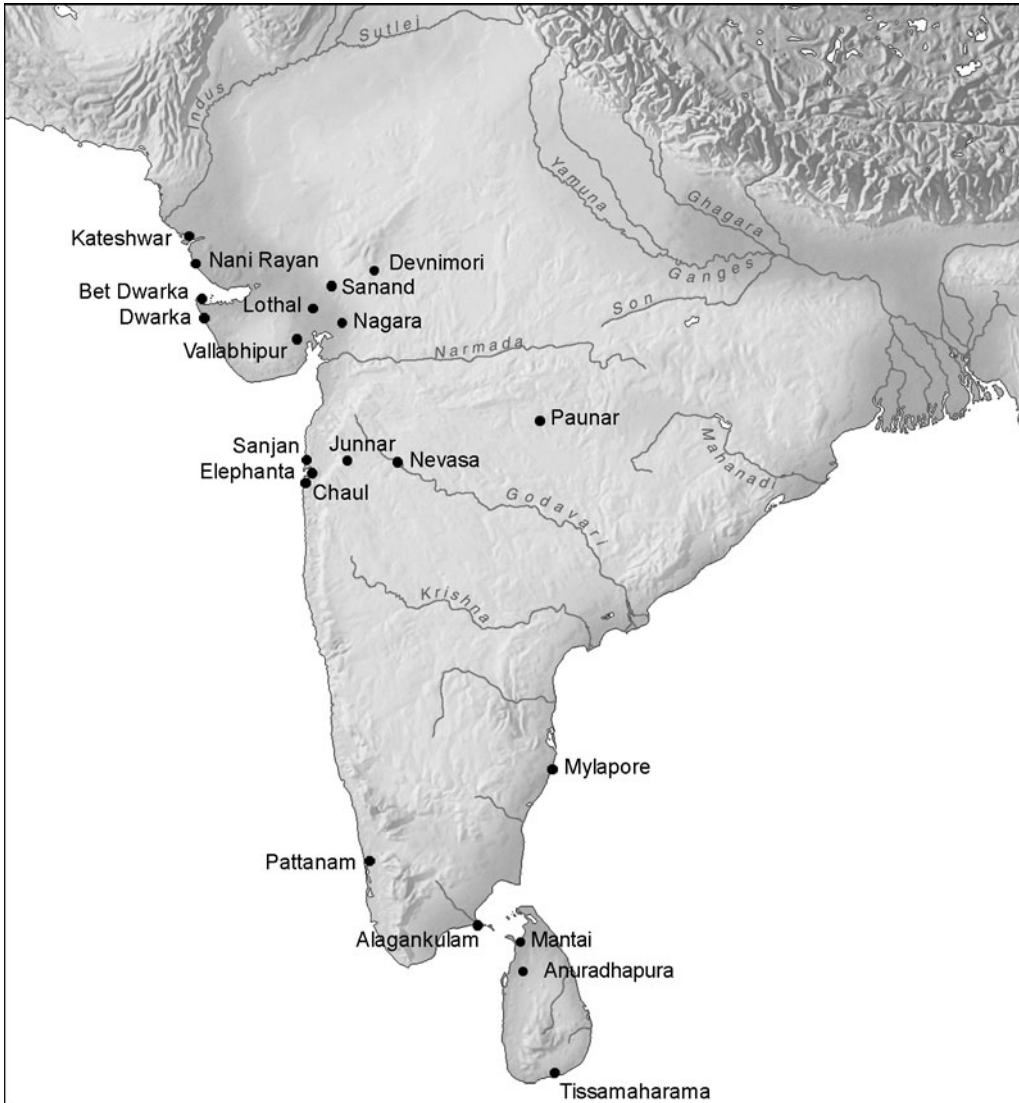


Figure 6. Map of torpedo jars from India and Sri Lanka (Antony Simpson).

### Contexts of the jars

The date of deposition and distribution of torpedo jars in India as currently known are given in Figure 6 and Table 1. Eighteen sites have been recognised and they fall into three geographical groups: Gujarat/Konkan coast, Deccan Plateau and South India. The dating of torpedo jars is imprecise because they lack well-defined typological changes throughout their long production period. Context dating is therefore crucial, although not applicable to surface finds, and frequently relies on association with rare Roman amphorae and other finds, particularly Indian Red Polished Ware (RPW). Coins provide another chronological marker but they too are rare, and must be cautiously used as some silver ones remained

Table 1. Summarised information for Indian sites with torpedo vessels; associated finds are from the same site but not necessarily the same context. Abbreviations: I-S = Indo-Sasanian; RPW = Red Polished Ware; RT = No. of torpedo sherds examined by writer.

| Site & main published references                              | Site type  | Torpedo context                                      | No. of torpedo sherds | RT    | Coins   | RPW | Roman amphorae | Glazed wares |
|---|--|--|-----------------------|-------|---|-----|----------------|--------------|
| Alagankulam: Sridhar 2005                                     | Port   | Period II: 300 – 100BC or Period III: 100BC – AD 500 | 13                    | 13    | Late Roman  | X   | Early          | X            |
| Bet Dwarika: Gaur <i>et al.</i> 2006                          | Religious  | Underwater surface                                   | 6+                    | 0     |   |     |                |              |
| Chaul: Gogte 2003   | Port   | Islamic period?                                      | 1                     | 1     | Satavahana  |     | Early          |              |
| Devnimori: Mehra & Chowdhary 1966                             | Religious  | 2nd/4th – 7/8th AD                                   | 3                     | 0     | Kshatrapa, I-S, Maitraka                            | X   |                |              |
| Dwarka: Ansari & Mate 1966                                    | Religious  | Period II: 1st – 4th AD                              | 5                     | 1     |   | X   | Late           | X            |
| Elephanta: Gupta 2002; Tripathi 2004                          | Port/ Religious                                  | Underwater and land surface                          | 43+                   | 43    |   | X   |                |              |
| Junnar: IAR 1957-8  | Religious  | Excavation   | 1                     | 1     |   |     |                |              |
| Kateshwar   | Religious  | Surface  | 200+                  | 200+  |   |     | Late           | X            |
| Lothal: Tripathi 1993   | Harappan centre, with Early Historic settlement? |  | 1 complete vessel     | 0     |   |     |                |              |
| Mylapore  | Religious?                                       | Excavation   | 4                     | 4     |   |     |                |              |
| Nagara: Mehra & Shah 1968                                     | Port   | Period III: 0 – 8/9th AD                             | c. 20                 | 20    | Kshatrapa   | X   | Early?         |              |
| Nani Rayan: Bharucha-Irani 2002                               | Port   | Surface  | c. 12                 | 12    | Kshatrapa, Gupta, Late Roman, Umayyad, Gadhaiya/I-S |     | Late           | X            |
| Nevasa: Sankalia <i>et al.</i> 1960; Gupta <i>et al.</i> 2001 | Urban centre                                     | Period V: 50 BC – AD 200                             | 2                     | 0     | Satavahana  |     | Early          |              |
| Pattanam: Shajan <i>et al.</i> 2004                           | Port   | Early Historic period                                | 7                     | 7     |   | X   | Early          | X            |
| Paunar: Deo & Dhavalikar 1968                                 | Urban centre                                     | Period IIIB: 1st BC – 2/3rd AD                       | 3                     | 0     | Kshatrapa, Kalachuri, Vishnukundin                  | X   |                |              |
| Sanand: Gupta 1997  | Urban centre                                     | Surface?   | 1                     | 1     | Kshatrapa   | X   |                |              |
| Sanjan: Gupta <i>et al.</i> 2004; Nanji in prep               | Port/Religious (Parsi)                           | 8/9th – 12th AD                                      | Numerous              | c. 15 |   |     |                | X            |
| Vallabipur: IAR 1979-80; Sonawane 2002                        | Urban centre                                     | Phase I: 1st BC – 4th AD<br>Phase II: 4th – 5th AD   | c. 59                 | 59    |   |     |                |              |

in circulation for centuries. Prolonged use for both Satavahana and Kshatrapa coins, to at least the fifth century, can be cited (Shastri 1992: 292; see also Gokhale 2004: 109), and punch-marked ones were still circulating in the early medieval period (Shastri, *ibid*).

Pottery use is more short-lived and it remains important for dating. Most Roman amphorae in India have been thought to belong to the Early Roman (late first century BC to second or third centuries AD) period. But a growing recognition of Late Roman objects, initially known only through coinage but now supported by amphorae (Tomber 2004; forthcoming), challenges this assumption, and a broader bracket extending into the sixth or even early seventh century may be proposed. A date between the first and fifth centuries AD is generally accepted for Indian RPW (Kennet 2004: 65 for a summary), although it may be stretched between the first century BC (Orton 1992: 46) and the sixth century AD (Sankalia *et al.* 1958: 161). Confirmed examples of RPW outside India come from Williamson's survey of the Persian Gulf (Priestman & Kennet 2002: Figure 1; see Whitehouse & Williamson 1973: Figure 7 for distribution of RPW). Excavated sherds from Suhar (Kervran 1998: 40-2 and Figure 2; Kennet 2004: Table 30), Khor Rori (Sedov & Benvenuti 2002: 188, Plates 21, 3 and 25, 8) and Qana (Sedov 2007: 83-4, Figure 4.18, nos. 1, 3-4) are variously dated but generally fall within the first to sixth or rarely seventh centuries. However, at Ras al-Khaimah (Kush), RPW is most common in the seventh and eighth centuries (Kennet 2004: 65-6). Recent evidence from Sanjan in Gujarat may also support an eighth century date (*ibid*: citing Gupta *et al.* 2003: 29-30). Thus the dating of RPW may need to be extended from the first century AD into the seventh or eighth.

The difficulties in dating torpedo ware finds can be appreciated from a few examples of the contexts in which they have been found (see Table 1 for summary, and Figure 6 for locations). Kateshwar, the most northerly find spot, is a Buddhist site particularly known during the sixth century AD. It boasts a collection of 200 torpedo sherds, including rims and bases, collected from a systematic surface survey conducted by Kalini Khandwalla. The presence of glazed pottery and several sherds of Late Roman amphorae is noted. Nearby Nani Rayan (possibly ancient Madvi), best known from fieldwork by MS University of Baroda, is the only known Early Historic (*c.* 300 BC – AD 300/500) port on Kutch and continued as an important trading site into pre-modern times. Giving context to a dozen torpedo sherds and two of turquoise glazed ware are bricks typical of the early centuries AD and coins from the second to eighth centuries AD, including Indo-Sasanian ones of the Gadhैया type (Bharucha-Irani 1996-7: 77; 2002: 69-71). Indo-Sasanian coins refer to Sasanian-style ones minted in western India from the third century; smaller debased ones, Gadhैया, were made from the sixth century until at least AD 1100 (Lal Gupta 1979: 67-8).

At Dwarka (Saurashtra), an Early Historic sequence has been excavated and five torpedo sherds published (Ansari & Mate 1966: Figure 19, no. 71). The sherds are dated between the first and fourth centuries AD on the basis of amphorae and RPW (*ibid*: 29). A sizeable assemblage of at least 59 torpedo sherds was recovered from excavations at Vallabipur. The amphorae derive from Phases I and II, dated respectively from the first century BC to the fourth century AD, and the fourth/fifth centuries AD (*IAR* 1979-80: 24). A Sasanian finger-ring comes from a later phase. The site is identified with the trade centre of Vallabhi, the capital of the Mairaka dynasty and described as '*the most powerful in western India at least for about three centuries or so (480 AD to 790 AD)*' (Sonawane 2002: 306).



The Konkan coast has recently been a focus of archaeological activity (Tripathi 1993; 2004; Shinde *et al.* 2002; Gogte 2003) and prominent in this region is Elephanta Island, approximately 16km from Mumbai harbour. Although occupied from at least the first century AD, it is best known for Buddhist caves on the north-eastern coast with sixth-century monumental carvings to Siva. Its wealth probably derived from its strategic position, ensuring its importance as a port during the sixth and first half of the seventh century (Tripathi 2004: 122). Amphorae have been reported from Elephanta since 1987, when Rao explored the north-east of the island at Morabandar (Shinde *et al.* 2002: 77). Pottery, comprising one of the largest assemblages of amphora imports in India, has been recovered both from underwater survey at Morabandar by Alok Tripathi (1993; 2004) and on land by Sunil Gupta (Gupta 2002; Shinde *et al.* 2002: 77). Tripathi documented four types of Late Roman amphorae (Tripathi & Tomber, nd) and at least 40 torpedo sherds, including rims and bases (Tripathi 2004: Figure 4, Type II). Numerous RPW sherds were also collected (*ibid.*: 117).

On the Malabar coast the Early Historic site at Pattanam, tentatively identified with ancient Muziris (Shajan *et al.* 2004), has yielded approximately seven sherds from torpedo jars, a number of turquoise glazed sherds (mostly undiagnostic body sherds) as well as Early Roman amphorae. These finds come primarily from surface collection, although two of the torpedo sherds are from excavated layers thought to belong to the Early Historic period (Selvakumar *et al.* 2005: 61-2). Some of the glazed sherds are likely to be Sasanian, but a glazed sherd with appliqué decoration may date from between the eighth and tenth centuries and suggests that at least some of the torpedo sherds may be early Islamic in date.

Thirteen torpedo sherds have also been identified from Alagankulam, a port on the Gulf of Mannar. The site has a long sequence, from *c.* 500 BC-AD 1200, with amphorae in Period II (300-100 BC) and Period III (100 BC-AD 500) (Sridhar 2005: 11). Late Roman finds include six coins dating to the late fourth or early fifth century (*ibid.*: 83-6). Turquoise glazed pottery is also present on site, where it is attributed to the Kushan period (*ibid.*: 30).

One explanation for the South Indian sherds, from Pattanam and Alagankulam, is related to their strategic location not only for trade with the west and internal trade, but as trans-shipment points to Sri Lanka. Twenty-six sherds from the citadel excavations at Tissamaharama in Sri Lanka (Weisshaar *et al.* 2001) take on special importance since they come from independently dated, stratigraphically excavated levels. Located approximately 10km from the sea, this site was the capital of Ruhuna and a major port from around 250 BC, with a decline after AD 500. The greatest concentration of torpedo sherds comes from Phase G, dated to the fifth and sixth centuries (Table 2) and serves to reinforce a Sasanian date for some of the South Indian torpedo finds. Roman finds at Tissamaharama include amphorae (both early and late types) and coins, comprising over 470 from the region. At the site itself, over 40 Roman coins have been excavated, primarily of fourth- and fifth-century date (Walburg 2001; *in press*). Additional imported finds include turquoise glazed wares from contexts dating between the Parthian and Islamic periods (Schenk 2001: 74 and *pers. comm.*). With importation of torpedo sherds starting during the Sasanian period it is interesting that Cosmas (*Christian Topography* Book XI 15-16) emphasises the role of the Sasanians in the maritime trade of Taprobane (modern Sri Lanka).

**Table 2. Distribution of torpedo sherds from the Tissamaharama excavation sequence.**

| Site Phase                                  | Number of torpedo sherds |
|---|--------------------------|
| Phase e: 3rd century AD                     | 1                        |
| Phase f: 4th century AD to <i>c.</i> AD 450 | 1                        |
| Phase g: 450-6th century AD (Tissa 3)       | 13                       |
| Phase h: 8/9th century AD                   | 3                        |
| Phase i: mixed to modern                    | 4                        |
| Phase g-h                                   | 3                        |
| Phase g-i                                   | 1                        |
| <b>Total</b>                                | <b>26</b>                |

Torpedo jars have been recently published from elsewhere in Sri Lanka, namely from the important administrative, religious and commercial centre of Anuradhapura and its main port, Mantai (Coningham 2006: 1; Seely *et al.* 2006: 107). Fifty-nine torpedo sherds have been recovered from pre-Islamic and Islamic levels at Anuradhapura. The earliest comprise 36 sherds from Periods C, D and E (Coningham & Batt 1999: 129) generally placed within the period AD 200-600 (Coningham 2006: 5, Table 1.1). Turquoise glazed wares are also recorded from Anuradhapura and Mantai (Seely *et al.* 2006: 99; Carswell & Prickett 1984: 64, Table 1). While the majority of the 116 Anuradhapura sherds come from contexts of Sasanian and Islamic date, eight are from earlier periods and could be intrusive or potentially Parthian (Seely *et al.* 2006: 99). Other excavated western finds include five Late Roman bronze coins (Bopearachchi 2006: 13) and five fragments of eastern Mediterranean glass dating to between the first centuries BC and AD (Coningham 2006: 334-5).

Thus although the context date for many of the torpedo assemblages is imprecise, we can say that they occur in Sasanian levels at the excavated sites of Alagankulam, ? Devnimori, Dwarka, ? Nagara, Nevasa, Pattanam, Paunar and Vallabipur. The surface collections from Elephanta and Katheswar are also likely to be Sasanian. Chaul and Sanjan are Islamic, the others uncertain. However, if the revised dating of RPW into the seventh and eighth centuries is applied, as well as the possibility of long circulation of Kshatrapa and Satavahana coins, then these contexts may move later, and there may be substantially fewer examples of Sasanian date.

Beyond the subcontinent further evidence for Sasanian period torpedoes exists. They occur at Ras Hafun in Somalia (Figure 1) at both the second/third to fifth-century Hafun Main site (Smith & Wright 1988: 125, 138 and Figure 7a-b) and from the first century BC/AD site of Hafun West (*ibid.*: Figure 5a-c). They are paralleled with Parthian and Early Sasanian vessels (*ibid.*: 121) and co-occur with glazed wares (Smith & Wright 1988: Figure 5d-e; Figure 7c, d, f-k). Roman vessels are also common at West Hafun, but at the main site they are absent during the fifth and probably during the second/third centuries as well (*ibid.*: 139-40). Recently Sedov (2007: 89, Figure 4.22-5-6) has published as Late Roman amphorae what appear to be torpedo jars from the Upper period (sixth and early seventh century AD) at Qana, alongside Roman wares, as well as glazed pottery (*ibid.*: 83-4, Figure 4.18, nos. 9-11). As noted above, torpedoes occur in the Gulf, which, despite the scarcity of

confirmed Sasanian sites (potentially Siraf, Whitehouse & Williamson 1973: 33-5), supports a sea route to India.

## Discussion

The evidence from Ras Hafun, Qana, Tissamaharama and Anuradhapura indicates sea-borne transport of torpedo jars during the Sasanian period. Sasanian involvement in the maritime trade of the Gulf and Indian Ocean is historically documented and the jars provide archaeological evidence in support of Whitehouse & Williamson's (1973) premise of pre-Islamic trade. By the sixth century, the Sasanians controlled the Gulf and the Indian Ocean coastline from Aden in south Arabia to Karachi in the Indus delta. This eastward expansion was episodic, achieved gradually through a succession of leaders including Ardashir I (AD 224-41), Shapur II (AD 383-88), Bahram V (AD 420-38) and culminating in Khusrau II (AD 590-628) (Whitehouse 1996: 346; Kröger 1979: 446-7). Ubulla, a pre-Islamic port near Basra, is referred to by early Islamic writers as the gateway to India (Lang *et al.* 1998: 11, citing Friedmann 1992: 15-16) and it is likely that this region served as an embarkation point for both glazed vessels and torpedo jars, which would then have travelled together.

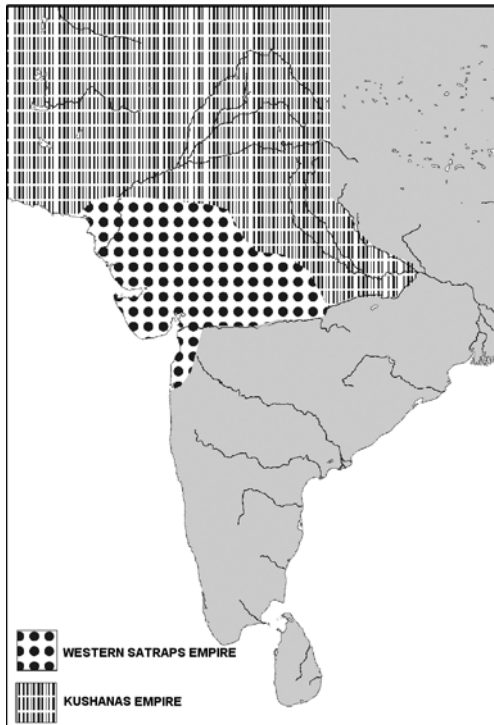


Figure 7. Map showing the territories of the Western Kshatrapas and Kushanas (Antony Simpson, after Jha 2000).

It is notable that the majority of torpedo finds in North India lie within the territory, or the borders, of the Western Kshatrapas (or Western Satraps), whose larger region encompassed Kutch, Saurashtra, the northerly reaches of the Konkan coast and Maharashtra. Although they ruled between the first and early fifth century AD, during the Parthian period the Western Kshatrapas were under Pahlava (Parthian) suzerainty. Further to the north and north-east are the Kushanas, who were subordinated to the Sasanians from the mid-third century (Figure 7). The presence of torpedo vessels near or in areas controlled by Mesopotamia therefore owes much to the overall cultural connections and shared histories within a wider economic context. Although some sites such as Elephanta may well be post-Kshatrappa in date, they may nevertheless fall within the Sasanian period in a region with Sasanian influence and

interaction. Some scholars attempt to trace the Pallava kingdom of Tamil Nadu to the Parthians, but there is no strong evidence for this (Thapar 2002: 328).

Equally striking is that the concentration of torpedo jars in Gujarat and Maharashtra is mirrored by that of Late Roman amphorae, which cluster in the same regions, although rarely on the same sites (Kateshwar, Nagara and Elephanta are exceptions). It is therefore of interest to speculate whether these vessels travelled together or separately. The *Periplus Maris Erythraei* (Casson 1989), a Greco-Egyptian navigational guide of the mid-first century AD that lists many of the important port sites for trade between the Roman Empire and India offers some insight into Roman international relations. Its lack of clarity for the Gulf indicates that the writer knew this segment of the landscape only from second-hand sources, and that the Gulf was controlled by Arab-Persian merchants (Salles 1993: 496-8, 515-16). Salles has suggested that during the time of the *Periplus* Roman material in the Gulf, at sites such as Mleiha and Ed Dur (ancient Omana?), did not come directly from the Roman world but instead reached the Gulf via Bharuch (Broach or ancient Barygaza) in India, from where they were re-exported to the Gulf (*ibid.*: 514-18). Archaeological evidence is not available from Barygaza, nor does evidence from elsewhere support this on a regular basis.

A similar hypothesis is put forth by Schoff (1974: 151) for the re-export of western copper from India to the Gulf. While the *Periplus* describes the export of copper from India to Apologos (modern Basra) and Omana (PME 36; Casson 1989: 28-9) there is no evidence that this is western copper rather than Indian. An early-fifth-century Babylonian Talmudic writing refers to the importation of *Hinduan* [Indian] iron into Mesopotamia (Lang *et al.* 1988: 11) indicating that at this later date at least some of the metal travelling through the Gulf was Indian. If Roman material was filtered to the Gulf via non-Roman ports then Qana (Figure 1), which received western copper (PME 28) and archaeologically has a wealth of Roman finds, is a more likely transshipment point than an Indian port. Another possibility is that goods reached Apologos at the head of the Gulf by land routes via Palmyra and were re-exported from here (*contra* Salles 1993: 514-15).

Returning to the Late Roman period, if Roman and Mesopotamian vessels arrived together in India, it is most likely to have been by way of an entrepôt. The obvious contender for this role is Qana, which could be supplied with Mesopotamian goods via the Gulf and Roman ones via the Red Sea (Berenike through the early sixth century; Aila and Adulis continuing into the seventh century) and ultimately Alexandria. And indeed, it is at Qana that the mingling of Late Roman amphorae and torpedo jars is seen. This provides an explanation for the co-occurrence of torpedoes and some but not all of the Roman amphora types at Kateshwar, Nagara and Elephanta. But what of the other Roman amphorae or sites with only torpedoes or only Roman amphorae? Salles (1993: 517) argues that, by their very nature, emporia will not exhibit the full range of items exported from that place. However this will depend on whether the emporium is a thriving place in its own right – such as Alexandria – and if so it is argued that one would expect to find objects of trade.

Even focusing solely on Roman amphorae, it is difficult to find a site that may have served as an entrepôt. Neither Qana nor Berenike contain the full range of Late Roman amphora types found in India. The best match can be made with Alexandria or from David Peacock's work at Adulis (Geresus *et al.* 2005). Since Late Roman amphorae may have arrived in India between the late fourth and early seventh centuries, and the torpedo jars for an even longer period, it is overly simplistic to look for a single place that would have acted as an entrepôt

for this entire period. Instead each of the sites mentioned above could have had a role in this process.

The lack of torpedo jars at Alexandria and on the Red Sea reflects overall relations between the Sasanian and Byzantine Empires, which were never simple. Writing in the sixth century, Procopius describes Byzantium's failed attempt to gain control over Sasanian dominated silk and buy it instead from the Aksumites (*History of the Wars* I. xx.9-12). This attempt was rebuffed, as was a mid-sixth century Sogdian embassy that sought to act as an intermediary between the Persians and Byzantines in the silk trade (Blockley 1985: 116-27). Archaeologically this antipathy is supported by evidence from northern Mesopotamia, where Simpson has shown that Sasanian and Roman finds respect political boundaries (Lang *et al.* 1998: 111).

The distribution pattern for torpedo and Roman vessels suggests three seaborne routes to India: directly from the Gulf (torpedo jars), via Qana (torpedoes and some Roman amphorae) and even directly from the Red Sea (Roman amphorae). These potential routes hint at the overall complexity of travel and transport within the Indian Ocean. The clustering of torpedoes around the territory of the Western Kshatrapas can be related to cultural factors, but that of Roman vessels owes more to an overall social and political climate within this region which encouraged the importation of foreign goods. Influenced by wave upon wave of foreign invaders from the north-west, from the Greeks to the Parthians, Scythians, Kushanas and Sasanians, the area was part of a nexus of trade routes connecting coastal ports with inland sites.

In this framework one can argue that the Sasanians held sway over the Gulf and the products from this region, and that Late Roman finds reached India via a separate mechanism; at times they came together via an entrepôt at Qana. This story is plausible if one accepts a Sasanian date for the majority of torpedo jars from North India, which is strengthened by the findings from Qana. If instead many are early Islamic in date, then the distribution of torpedo jars and Late Roman amphorae become two separate patterns due to chronological differences only. It is clear that at least some of the North Indian vessels are early Islamic, demonstrating continuity between the two periods. Whatever the exact dating of torpedoes in India, their recognition is nevertheless significant in providing a more accurate representation of imported finds previously considered to be Roman. Thus, it provides an important step in our understanding of exchange systems in the Indian Ocean of the first millennium.

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