

Sembiran: the beginnings of Indian contact with Bali

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In Classical times, the Indian continent was central to a trading network that ran west to the Mediterranean world revolving round Rome: despite its name, the Mediterranean was not the centre of the known world. Another world opened eastwards from India, and there are many obscure references to its eastern fringes. Now a series of finds from Bali, in the Indonesian archipelago, gives the elusive direct connection of Indian traders to that farther East.

In July 1987 during a preliminary survey in northeastern Bali, Indonesia, the two authors discovered rich pottery-bearing deposits in the sides of wells and in the low beach cliffs bordering the coastal garden lands of Bangkah, Sembiran, Pacung and Julah villages in Tejakula District (FIGURE 1). Subsequently, excavation by Ardika at some of these locations yielded material spanning much of the past 2800 years. The focus here is on the prolific archaeological remains from Sembiran, including Indian imports which probably belong on combined ceramic and epigraphic grounds to the period between approximately AD 1 and AD 200.

Most of the present villages along this coastline are located on the circum-island road which runs close to the inland edge of the 500-m to 1-km wide alluvial coastal plain (FIGURE 1). Their 1st millennium AD predecessors appear to have been located directly on the coast for access to maritime transport, an attraction not relevant today. Indeed, the coastal part of the plain is now used only for the cultivation of a range of non-irrigated crops such as coconuts, cassava, maize, cloves and bananas, since the dry season here is too severe to support permanent streams.

During the archaeological excavations by Ardika in 1987 and 1989 eleven trenches, each 1.5 or 2 m square, were excavated through the relatively fine-grained alluvial deposits of the

coastal plain in varying locations where prior survey had revealed the presence of sherdage. Much of the excavated material dates from within the past 1500 years and is not discussed in this paper. Imported Indian pottery was discovered first in the 1.5 × 1.5 m trench of Sembiran (SBN) IV, excavated in 1987. SBN VI and VII were dug together in 1989 as a single trench of 4 × 2 m, one metre south of SBN IV, to uncover more of what was obviously a very rich deposit. The trench of Pacung I (2 × 2 metres) was also dug in 1989, 300 metres to the east of the Sembiran trenches, to investigate the find-place of a bronze drum (page 227 below).

The basal levels of the Sembiran trenches, between about 3 and 3.5 metres in depth, produced archaeological materials dating from possibly as much as 2800 years ago through to perhaps 1500 years ago, as did the trench Pacung I. No structural evidence was found; the excavated area at Sembiran seems to have formed a discard area somewhere within a settlement. The material from Pacung, much sparser, was perhaps outside the settlement area proper. All the deposits are formed of alluvium, presumably released from the inland hills by forest clearance for agriculture during the past 3000 years. All trenches were dug down to an archaeologically-sterile underlying deposit at or just beneath the water table, which stopped further digging.

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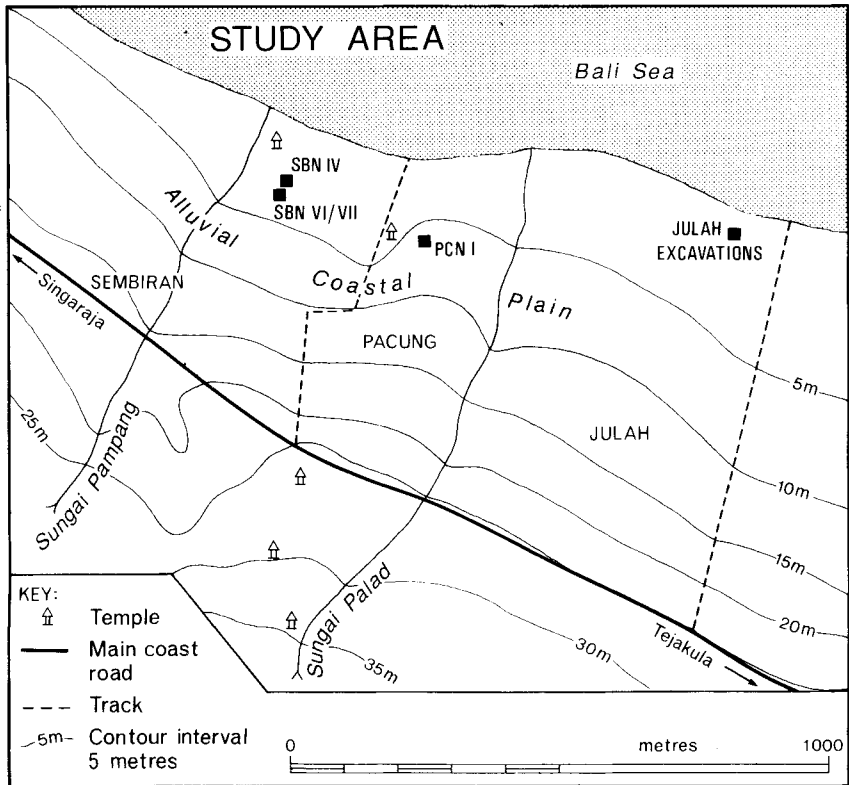
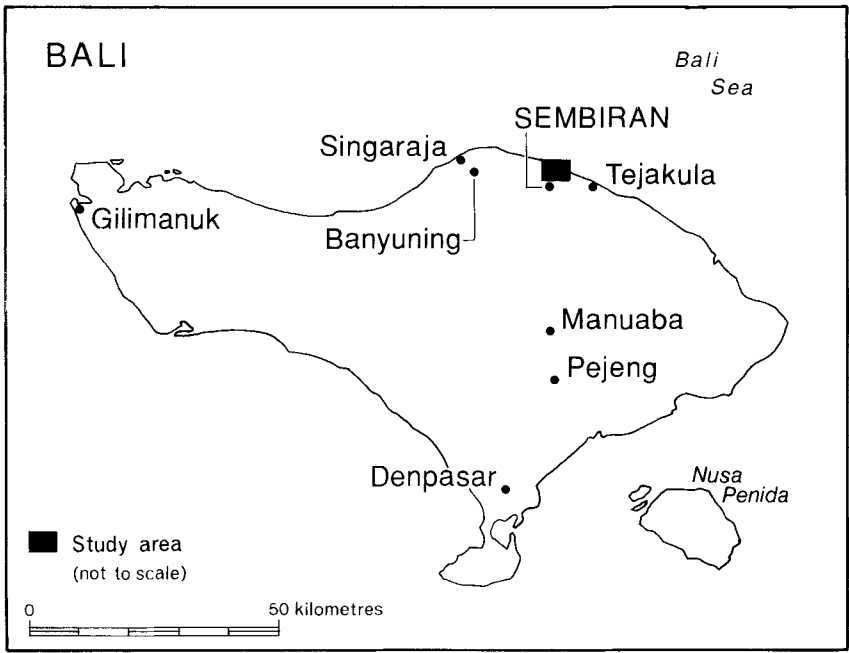


FIGURE 1. Map of Bali, showing the locations of the Sembiran and Pacung excavations. (The Julah excavation is not discussed in this paper.)

The imported Indian pottery

The occurrences of the definite sherds of Indian Rouletted Ware are shown in TABLE 1, together with those of another class of definitely non-local pottery termed 'other imported ware'. The concentration of sherds of all types (including the pieces listed in TABLE 1) in the lower levels of the Sembiran trenches is quite remarkable, totalling almost 45,000 pieces. It is likely that the excavations have only revealed a small part of the whole site, which could have been at least 300 m in diameter. The total number of Rouletted and other Indian sherds in the site may thus be in the thousands.

Indian Rouletted Ware

The Indian Rouletted Ware, like that reported from illicit diggings around Kobak Kendal and Cibutak in northwestern Java (Walker & Santoso 1977a; 1977b), is a fine pottery made on a fast wheel and provided with glossy slip inside and outside before firing. Vessels are usually black inside and various shades of grey, black, orange

or brown outside. The shape is a standardized and almost flat-based platter between 17 and 26 cm in diameter with an incurved and slightly beaked rim. The central part of the inner base is decorated with two or three bands of rouletted patterns (FIGURE 2) (Wheeler *et al.* 1946: 46; Begley 1986: 311). Fabrics are very fine and well-fired, with an even light grey to pale orange colour through their thicknesses.

The eleven rouletted body sherds from northeastern Bali are varied in terms of colour and the forms of the rouletting. The motifs of triangles, diamonds, dots and wedges are all entirely within the range published for Arikamedu and other Indian/Sri Lankan sites such as Satanikota (Ghosh 1986: figure 34), Salihundam (Subrahmanyam 1964: 41–7) and Anuradhapura (Deraniyagala 1972: figure 12). Both fine and coarse types of rouletting occur in Arikamedu and other Indian sites; ten of the Balinese sherds are very fine and only one (the single sherd from Pacung I) can be described as coarse.

trench	depth below surface (m)	sherds of Rouletted Ware	other imported ware	glass beads	other beads
SBN IV	2.4	1	—	—	—
	3.0	2	—	—	—
	3.1	4	—	7	—
	3.2	1	—	3	—
	3.3	2	—	7	—
	3.4	—	—	7	—
SBN VI/VII	2.7	1	—	—	—
	2.8	1	—	3	—
	2.9	5	—	21	—
	3.0	6	—	72	1 carnelian
	3.1	11	—	57	—
	3.2	13	18	75	—
	3.3	11	20	44	—
	3.4	9	53	75	—
	3.5	6*	81	76	1 carnelian
	3.6	5	46	35	1 gold
3.7	—	4	19	—	
Pacung I	3.4	1	—	—	—
<i>totals</i>		79	245	501	3

* The sherd of Arikamedu type 10 and that with the Kharoshthi 3 graffito came from this level.

TABLE 1. The distribution of Indian and other imported sherds in the Sembiran and Pacung trenches. The 'other imported ware' is discussed in text; the date of 2660±100 b.p. (CAMS 723) is on a sherd of this type from the 3.5-m level in trench SBN VII.

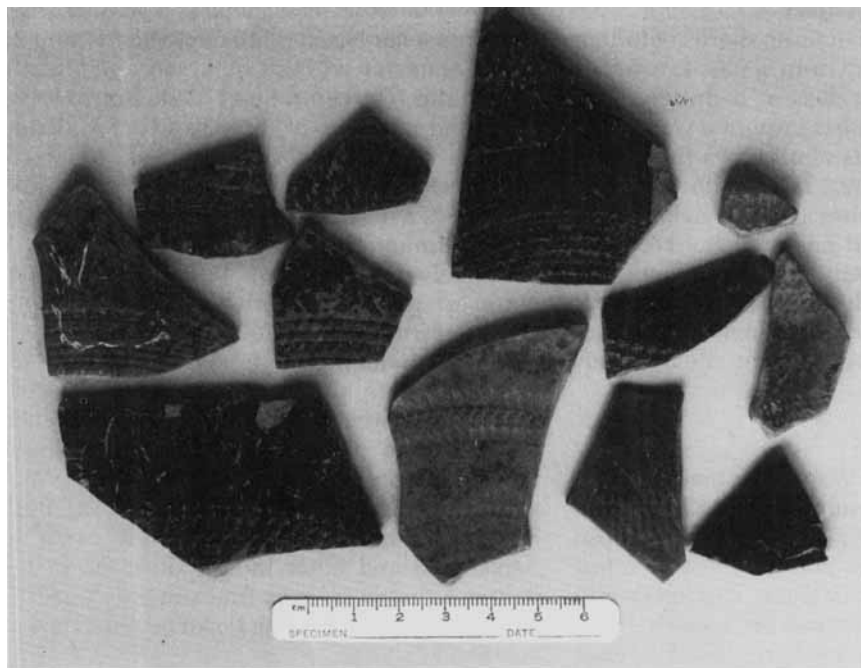


FIGURE 2. Rouletted body sherds from the Sembiran and Pacung excavations. The sherd at bottom right is perforated.

X-ray diffraction (XRD) analysis has so far been performed on one rouletted sherd from SBN IV, four from Anuradhapura and three from Arikamedu. All have essentially the same minerals; mainly quartz with traces of mica, muscovite, potassium feldspar and plagioclase feldspar. Both slips and sherd interiors are of the same basic composition, but in one example, from Anuradhapura, the orange surface slip also revealed traces of haematite. The composition of the SBN IV rouletted sherd is completely different from that of soil samples from the Sembiran site and local sherds (see page 226). The XRD results conclusively support an Indian origin.

In addition to the XRD analysis, nine rouletted sherds (two from Anuradhapura, two from Arikamedu, one from Karaikadu (Tamil Nadu), three from Sembiran and the single sherd from Pacung) have also been subjected to neutron activation (NAA) analysis for 20 rare elements. The results indicate that all the Rouletted Ware is so close in composition that a single manufacturing source for all the samples listed, both Indian and Balinese, is a definite possibility. The rouletted sherds cluster completely separately in principal components and average link cluster analysis from those of presumed Balinese manufacture.

Sherd with bird motif

One non-Rouletted Ware rim sherd from SBN VI belongs clearly to a specimen of Wheeler's Arikamedu type 10 (Wheeler *et al.* 1946: figure 17). This rim is direct and everted with an unthickened lip, glossy black in colour. The interior reveals an impressed panel (originally one of several) with a bird motif, probably a peacock (FIGURE 3); a sure indicator of an Indian rather than an Indonesian origin (the sherd has not been subjected to XRD or NAA analysis). Outside Arikamedu, this type of pottery has also been discovered in the sites of Chandraketurah in West Bengal and Alangan-kulam on the Vaigai river in Tamil Nadu (H.P. Ray pers. comm.). No information is at present available on its occurrence elsewhere.

Other imported pottery

The Sembiran assemblage also contains a large number of other vessels ('other imported ware' in TABLE 1), either black-slipped or resin-glazed, sometimes carved-paddle-impressed and sometimes tempered with rice husks. XRD analysis of these sherds indicates that they are not local to northeastern Bali. In their high quartz contents they compare closely with the Rouletted Ware, but differ slightly in containing rutile. In their NAA results they cluster very

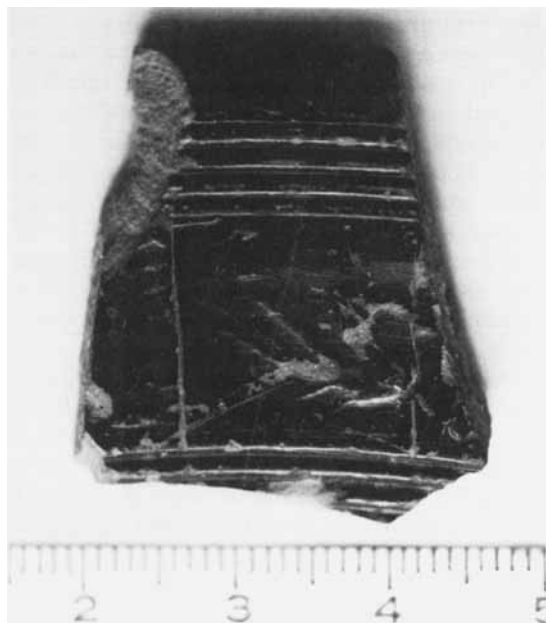


FIGURE 3. Sherd of Arikamedu type 10 from Sembiran trench VI.

tightly with the Rouletted Ware according to principal components and average linkage cluster analysis. An Indian origin seems very likely, although probably not one identical with the Rouletted Ware. The most common form is a shallow dish on a tall splayed pedestal.

One sherd of this imported ware, of a large black-slipped storage jar, was tempered with rice husks which have been dated by AMS radiocarbon to 2660 ± 100 b.p. (CAMS 723). The one-sigma calibration for this date (University of Washington C14 Calibration Program 1987, Rev.2.0) is 910 (818) 790 BC. This is considerably older than the oldest date which one would expect for the Indian components of the Sembiran assemblage on other grounds (see page 228). TABLE 1 suggests that the stratigraphic centre of gravity of this class of pottery lies slightly below that of the Rouletted Ware. Unfortunately, however, the relevant stratigraphic profile in SBN VII, where most of these sherds occurred, was disturbed by the digging of two inhumation burial pits. The vessels of this group might have been placed originally as grave goods with these burials, although their fragmentation and situation close to the water table made precise determination of their original locations impossible. While there is a hint here that the lowest

excavated layers of the Sembiran trenches were laid down during the early to middle 1st millennium BC, some centuries prior to the arrival of the Rouletted Ware, the evidence is still very tenuous.

Sherd with Kharoshthi characters

An exciting ceramic discovery, made at depth of 3.5 m in the waterlogged basal deposits of trench SBN VII, was a body sherd of an open dish-like vessel inscribed on its inside surface with three characters of an Indian script (FIGURE 4). At first the script was believed to be Brahmi, similar to that used for the Tamil or Prakrit graffiti found on many potsherds from south Indian sites such as Arikamedu, Anuradhapura and Salihundam. However, according to Prof. B.N. Mukherjee of Calcutta University (pers. comm.), the script is Kharoshthi, although no definite translation is possible owing to the fragmentary nature of the inscription.

The Kharoshthi script, which was written from right to left, has been discovered mainly in sites in the northwest part of the Indian subcontinent (Konow 1929; Das Gupta 1958; Dani 1963: 251–8). Kharoshthi characters are syllabic and are believed to have been developed during the Achaemenian period for the writing of



FIGURE 4. Graffito, believed to be Kharoshthi, scratched on black-slipped potsherd from Sembiran trench VII.

Northwestern Prakrit (Mukherjee 1989–90). The script was used on an official basis in India from the Mauryan period onwards, between the 3rd century BC and the 4th century AD. Kharoshthi and Brahmi characters also occur on seals recently discovered in several sites in West Bengal, particularly in the vicinity of Tamruk and Chandraketurah (Mukherjee 1989–90). The characters on the sherd from SBN VII are potentially important evidence for the actual presence on the site of Indian traders, probably of ultimate Kushan origin but travelling, according to Mukherjee (1989; 1989–90 and pers. comm.) from the polity of Vanga, located in Bengal between the 1st and early 5th centuries AD. It relates closely to local Balinese pottery in NAA results, but most closely to the other black-slipped imported pottery in XRD results. The source of this sherd therefore remains uncertain, although a northern Indian source seems likely, perhaps somewhere in Bengal.

Local sherds

The local sherds from Sembiran have a wide range of incised and paddle-impressed decorative motifs similar to the pottery from Gilimanuk in western Bali (Santoso 1985). XRD results confirm that sherds from both Sembiran and Gilimanuk are composed of similar temper minerals; dominantly plagioclase feldspar and magnetite/maghemite with minor haematite. These minerals also dominate in the soil samples from Sembiran, although this does not mean that the pottery was all made in the immediate vicinity. Indeed, the local alluvial soils around Sembiran seem not to contain suitable clay; today the closest place of pottery manufacture is at Banyuning, about 25 km west of Sembiran, where alluvial clay can be found. A lack of quartz characterizes all the Balinese samples in XRD analysis and separates them clearly from the Indian and other imported samples.

Non-ceramic artefacts

Beads and glass

A total of 501 monochrome and mostly spherical glass beads was discovered in trenches SBN IV, VI and VII, many in apparent association with the two poorly preserved inhumations close to the water table in SBN VII. 70% of these beads are red or dark reddish brown in

colour (*mutisalah* types); other colours include blue (15%), green (7%), yellow (5%), brown (1.6%), and white and black in small numbers. Bead diameters range between 0.1 and 0.7 cm. In general, they appear very similar to the range of colours and sizes in the glass beads from contemporary sites such as Khuan Lukpad in southern Thailand (Bronson 1990), and the two Malayan sites of Kuala Selinsing (Harrison 1964; Lamb 1965) and Kampong Sungei Lang (National Museum collections, Kuala Lumpur).

Preliminary analysis of some of the Sembiran beads by Kishor Basa at the Institute of Archaeology in London indicates that an Indian origin is highly probable (K. Basa pers. comm.). However, a flat-sided fragment of blue glass may be scrap glass of kind found in other Southeast Asian sites where the manufacture of beads is presumed to have taken place (Lamb 1965; Bronson 1990). This is the only piece of potential glass raw material found at Sembiran.

In addition to the glass beads, two of carnelian and one of gold were also found. The carnelian beads are orange in colour and barrel-shaped rather than faceted. The gold bead is biconical in shape and very similar to some specimens from Oc-Eo (e.g. Malleret 1962: plate XII, top right). Carnelian and glass beads have also been discovered in some Early Metal phase sarcophagus sites in Bali (Soejono 1977; Ratna Indraningsih 1985), perhaps indicating close relationships between the ports of the northern coastal regions and the southern inland portions of the island (Ardika 1987). The latter regions, then as now, presumably supported the bulk of the Balinese population by the irrigated cultivation of rice.

Evidence for bronze drum manufacture

Another extraordinary find, made in SBN VI at depth of 3.4 m and in close association with sherds of Rouletted Ware, was a fragment of volcanic tuff stamp or mould carved with two parallel bands of triangles (FIGURE 5). This probably belonged to a stamp for impressing decoration into wax during the production of bronze drum of Pejeng type. Such drums have only been found to date in Java and Bali and presumably were made in these two islands; the likely techniques of casting them are described by Kempers (1988: 188–9, 204–5). A similar but larger piece of stone stamp, also used for



FIGURE 5. Fragment of a stamp or mould of volcanic tuff used during the manufacture of a Pejeng-type bronze drum, from Sembiran trench VI.

impressing wax original according to Kempers (1988: 189) and with a face design very similar to those on the sides of the Pejeng drum, is kept in the village of Manuaba in central Bali (Soejono 1977). The Sembiran mould fragment is too small to carry traces of any face design to which it might once have been connected, but the spacing and lay-out of the rows of triangles are very similar to those on the Pejeng drum. However, the Sembiran mould seems not to have had a row of f-patterns, like those on the Pejeng drum, between the two rows of triangles (van Heekeren 1958, figure 11). To a lesser extent the rows of triangles also resemble those on the drum recently reported from Pacung (McConnell & Glover 1990: figures 4 and 5). It is not possible to estimate how large were the drums for which the Sembiran mould was used, but the triangles are of a similar size (about 8 mm high) to those on the Pacung drum, which stood 86 cms high (McConnell & Glover 1990: 12). To judge from the drawing in van Heekeren (1958: figure 11), the triangles on the Pejeng drum appear considerably larger as one would expect for the tallest bronze drum (186.5 cm) ever reported from Southeast Asia.

The badly damaged Pejeng-type drum from Pacung was found some years ago by villagers digging a well (Widia 1981; McConnell 1986; McConnell & Glover 1990). The 1.5 × 1.5 m trench (Pacung I) excavated by Ardika at the

findplace in 1989 clearly revealed the section of the well in which the drum was found, and also a large undercut area at about 3 m depth from where the drum was presumably grubbed out of the side of the well. Local memories of the find depth are now confused and the well was backfilled some years ago, but the information from the excavated section seems quite reliable. The digging of the well removed the profile of the original hole in which the drum was buried, so it can only be stated that this hole must have been dug from higher than the depth of 3 m. During the 1989 excavation one sherd of Rouletted Ware was found at a depth of 3.4 m in the surrounding undisturbed deposits. Stratigraphically, the drum would appear to have been buried from a higher level than that of the Indian sherd, but presumably still from one belonging to the mid or late 1st millennium AD.

The stamp/mould fragments from Manuaba and the dated fragment from Sembiran suggest that the large drums of Pejeng type were made on Bali from perhaps the 1st century AD onwards. As Ardika has noted (1987; 1989), the absence of sources of copper and tin in Bali (Bemmelen 1949) means that both had to be imported from Java or further west, the tin perhaps from Bangka. The presence of these ancient drum moulds in Bali has further implications. Pejeng-style drums were clearly being cast locally at the same time as many of the Heger I (Dongson) drums were being traded through the region from their presumed sources in northern Vietnam (Bellwood 1985: 280–89). We may ask if the two aspects of ancient trade through the Sunda Islands – that with early historical India and that involving the Vietnamese Heger I drums – were not in some way linked. They seem to have been roughly contemporaneous with each other and with the beginnings of a highly skilled local Indonesian tradition of bronze casting. The production of socketed axes and other simple items might have occurred earlier in western Indonesia, perhaps as early as 500 BC, but the remarkable artistic flowering exemplified by the Pejeng-style drums might have followed the stimuli provided by truly international trade.

The dating of the Sembiran Indian materials

The observation of Wolt (1967: 65), 'The early Indian merchants in Indonesia have cer-

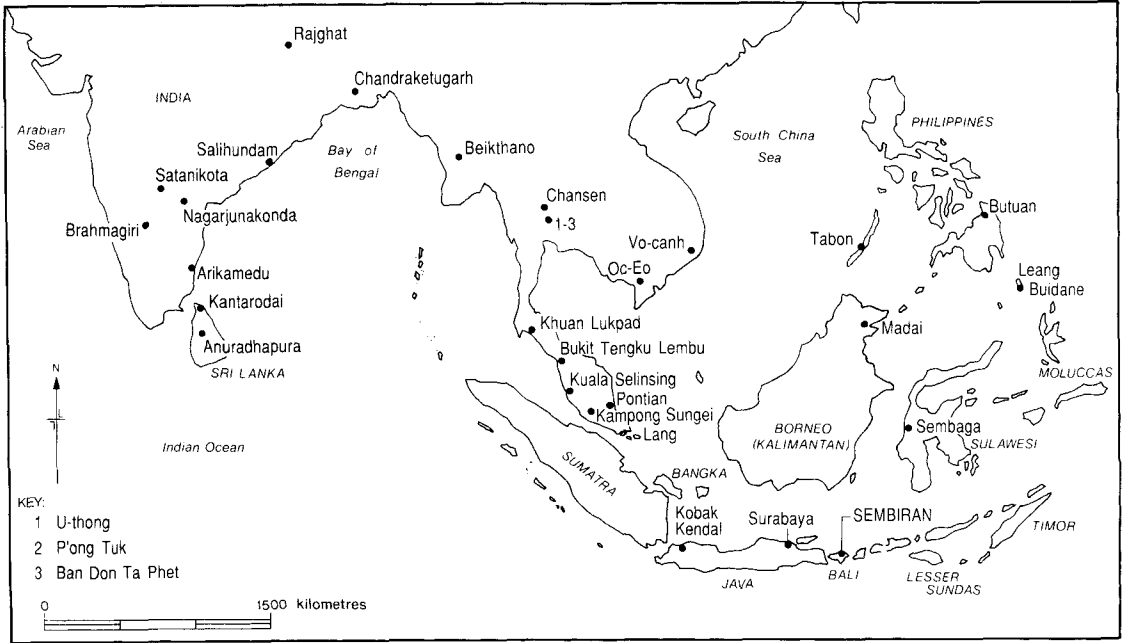


FIGURE 6. India and Southeast Asia, showing sites referred to in the text.

tainly left no evidence of themselves', has now been superseded. But how early are the materials under discussion? From the Sembriran site the AMS radiocarbon date on rice husk in pottery calibrated to 910 (818) 790 BC is several centuries earlier than that allowable for Rouletted Ware by the Indian evidence. Another date of 1010 ± 110 b.p. (ANU 7218), calibrated to AD 900 (1015) 1160 (ANU 7218), from a level in SBN VI about 50 cm above that of the Rouletted Ware, forms a certain *terminus ante quem*.

The Indian and Sri Lankan sites which have produced Rouletted Ware (FIGURE 6) have fairly precise dates. Wheeler (in Wheeler *et al.* 1946: 46) first proposed that the Rouletted Ware at Arikamedu dated mainly to the first two centuries AD, owing to its co-occurrence with Roman amphorae, considered to commence in the reign of Augustus, and with Arretine Ware datable to AD 20–50. The brick warehouse in the site, constructed after the Arretine period, presumably continued in use, with Rouletted Ware, until c. AD 200, after which date Arikamedu was abandoned. Wheeler later found Rouletted Ware, together with a coin of Tiberius (AD 14–37), in the Andhra levels at the sites of Brahmagiri and Chandravalli in Karnataka (Wheeler 1948). At Satanikota in Andhra

Pradesh (Ghosh 1986) Rouletted Ware occurs with Satavahana coinage of the 1st century AD. As Ghosh also notes that Rouletted Ware was absent in layers of the following Iksvaku period (3rd–4th centuries AD) at the downstream sites of Nagarjunakonda and Kesrapalli, its demise seems to have been before or around AD 200.

But what of its beginning? Two recent statements are relevant. Deraniyagala (1986) has published four radiocarbon dates from Anuradhapura which point to a commencement date for Rouletted Ware during the 2nd century BC. Begley, in a re-analysis of the Arikamedu excavations of Wheeler and Casal (Casal 1949; Begley 1983; 1986), has proposed that Arikamedu contains seven phases:

- Phase A: black and red pottery, Brahmi graffiti, no Rouletted Ware. c. 200 BC.
- Phase B: first Rouletted Ware, bricks and terracotta ringwells. Late 2nd century BC.
- Phase C: first Roman amphorae and sherds of Wheeler type 10. 1st century BC.
- Phase D: Arretine Ware. AD 1–25.
- Phase E to G: Rouletted Ware and amphorae continue, but the Rouletted gradually declines in quality. c. AD 25–200.

All of this suggests that Rouletted Ware was manufactured in India and/or Sri Lanka

between perhaps 150 BC and AD 200. The commencement date clearly supports the suggestion of Begley (1986: 314) that the rouletting and the stamped panels on the Arikamedu type 10 pots were of pre-Roman, possibly Hellenistic, inspiration and not of direct Arretine derivation.

This date range for Rouletted Ware only overlaps in part with the date range of the 1st to early 5th centuries AD offered by Mukherjee (1989–90) for the use of the Kharoshthi script in Bengal. Neither range encompasses the Sembiran radiocarbon date on the rice-husk-tempered sherd. For these reasons it may be suggested that the Indian materials from northeastern Bali can be given the following date ranges in order of likelihood:

- 1 800 BC to AD 450 (outer possible range)
- 2 150 BC to AD 450 (intermediate range)
- 3 AD 1–200 (most likely date range in terms of the chronological overlap between use of the Kharoshthi script and Rouletted Ware).

The background to the Sembiran discoveries

The historical and epigraphic background to the Sembiran discoveries has been hazily known for many years. This is not the place to repeat in detail the many references in Classical and Indian sources to trade between the Mediterranean, the Indian subcontinent and Southeast Asia during the centuries after c. 200 BC. Many of these references are extremely difficult to interpret and many are of uncertain date, but Classical sources leave little doubt that Indonesian spices were known to Mediterranean civilizations by at least the 1st century AD (Miller 1969).

The direct evidence for the beginning of Indian contact with Southeast Asia for many years focused on epigraphic materials. The oldest Indonesian stone inscriptions (c. 4th–5th centuries AD, from West Java and East Kalimantan) are in Sanskrit, in the Pallava script of Tamil Nadu. The slightly older inscription from Vo-Canh in Vietnam (c. 3rd century AD) is in a script related to that of the Ikshvakus of Andhra Pradesh (Chhabra 1965; De Casparis 1979). The Vo-Canh inscription also contains a Tamil royal title (Wheatley 1983: 125). Such details support a view that the contacts between India and Southeast Asia were initiated from southern India.

However, some of the pre-5th-century AD

short inscriptions on rings and seals – from Oc-Eo in southern Vietnam, U-Thong and Khuan Lukpad in southern Thailand, and Kuala Selinsing in West Malaysia – are in north Indian scripts of Brahmi or Kharoshthi origin (or both), presumably with Kushan or Gupta cultural backgrounds (De Casparis 1979; Ray 1989; Mukherjee 1990a; 1990b). Southern India appears a likely source for at least some of the ubiquitous early glass beads of Southeast Asia (Malay *manik* or *manek*, bead, is a word of Dravidian origin according to Gonda 1973: 164), yet etched stone beads of north Indian origin, dating from perhaps 300 BC onwards, have also been found quite widely in Southeast Asia. Sembiran, with its Rouletted Ware, Kharoshthi graffiti, glass beads and carnelian (but not etched) beads also presents both northern and southern Indian elements. All of this suggests that the earliest Indian contacts with Southeast Asia were not entirely from the emporia of the south, but from various parts of the east coast, at that time perhaps linked together by a single trade network (Ray 1989).

Other artefactual evidence for Indian trade with Southeast Asia prior to AD 400 has most recently been summarized by Glover (1990) and Ray (1989; see also Mabbett 1977). There are references to 'Rouletted Black Ware' in contexts of the 1st and 2nd centuries AD from Beikthano in Burma (Aung Thaw 1968; Aung-Thwin 1987: 11), but in the absence of illustrations the significance of these identifications must remain uncertain. More definitely exotic materials of presumed 1st/2nd-century AD origin include the Rouletted Ware vessel and sherds from looted sites in northwest Java (Walker & Santoso 1977a; 1977b), the Indian ivory comb from Chansen II in central Thailand (Bronson 1979), the Roman lamp from P'ong Tuk in southern Thailand (Coedes 1928), the sherd of apparent Arikamedu type 18c (Wheeler *et al.* 1946: 58) from Bukit Tengku Lembu in northern Malaya (Sieveking 1962: 29; Bronson 1979: 330), and the Antonine bracteates (amongst numerous other items including a fragment of a late Han mirror) from Oc-Eo in Vietnam (Malheret 1962: plate XL). North Indian etched beads of this period are also found throughout a very wide region, ranging from Ban Don Thapet in central Thailand (Glover 1990) to the Tabon Caves in the Philippines (Fox 1970) and Leang Buidane in the Talaud Islands (Bellwood 1976:

271). Glass bead manufacture, perhaps using Indian technology and scrap glass of Middle Eastern or Mediterranean origin (Lamb 1965), was evidently under way before AD 400 at sites such as Kuala Selinsing, Khuan Lukpad (Bronson 1990), and perhaps Gilimanuk in Bali (Ratna Indraningsih 1985: 138).

Not all of this trade was necessarily the result solely of Indian enterprise. High-tin bronze bowls, made in Southeast Asia perhaps as early as 200 BC, might have been exported to India and even as far as Taxila in Pakistan (Glover 1990). Pottery decorated with intricate angular or curvilinear carved-paddle-impressed designs, of types very common throughout at least the past 2000 years in western Island Southeast Asia (Walker & Santoso 1977a: 42; Bellwood & Omar 1980; Solheim 1981), has also been found in major Indian trading sites of the early historical period, such as Arikamedu (Wheeler *et al.* 1946: plate XXXI), Anuradhapura (Deraniyagala 1972: figures 10, 11) and probably Kantarodai (Begley 1967: 26) (see also Solheim & Deraniyagala 1972). Although the occurrences in India cannot be assumed to be from Southeast Asian sources without chemical analyses, this kind of pottery would clearly repay further research.

In what were they trading?

The oldest Indian records of Bali seem quite late, the first mention being in the *Manjusrimulakalpa* of about AD 800 (Sarkar 1981: 312), although Indian literature going back to the last centuries BC appears to refer to Java and possibly Sumatra (Levi 1925; Wheatley 1961: 177–84; Coedes 1975: 16–17; Sarkar 1981). The products of probable Indonesian origin mentioned in both Indian and Classical sources make a very varied list. For instance, the *Ramayana* (prior to AD 200) mentions gharuwood and sandalwood from eastern Indonesia, where the best quality sandalwood was to be found, according to the first European visitors in the early 16th century (e.g. Cortesao 1944: 204 for Timor in 1512–15). The *Raghuvamsa* of Kalidasa (c. AD 400) mentions cloves (*lavanga*; Wolters 1967: 65–6), indigenous, with nutmegs, to the Moluccas. Miller (1969) provides detailed list of spices mentioned in Classical texts which are presumed to have been produced in Southeast Asia during the Roman Imperial period. Cloves were known to Pliny in AD 70 (Miller 1969: 51), as was cinnamon, which probably

was grown widely in Sri Lanka and Island Southeast Asia at that time. Residue analysis on prehistoric pottery from the Agop Atas cave mouth at Madai in Sabah (East Malaysia) suggests cinnamon there at a date approximating 1700 BP (Hill in Bellwood 1988: 229–31). Early Chinese sources for Indonesia (Wolters 1967) add other items, including pearls, gold and areca nuts. No organic remains have yet been recovered from Sembiran, but there may be some in the waterlogged lower layers.

All this suggests that Bali, during the early centuries AD, was probably located on a major trade route which delivered spices and fragrant woods from the Moluccas and Lesser Sundas to ports in western Indonesia. These ports, including Sembiran, were presumably visited by both Indian and Indonesian traders, the latter perhaps also sailing to India in their own vessels as well. Interestingly, Miller (1969: 176) had prophesied that an early trading site would one day be found near Surabaya in northeastern Java. Surabaya still has an unknown archaeological potential, but Bali is not far distant.

A number of north Balinese inscriptions in the Old Javanese and Old Balinese languages dating from the late 1st–early 2nd millennia AD (Brandes 1889; Goris 1954) also refer to contacts with foreign traders. That of Bebetin AI (AD 896) mentions the landing of a *banyaga* (long-distance or seafaring merchant) at Banua Bharu (an unidentified location) in north Bali (Goris 1954: 54–5; Wheatley 1975: 268). The inscriptions of Sembiran AI (AD 922) and AII (AD 975) both mention a *kuta* (fortified settlement) and a *ser pasar* (market officer). Sembiran AI also mentions the regulations of Julah (a village just east of Pacung) for dealing with *tawan karang* (stranded ships) within its territory. Sembiran B (AD 955) and AII contain the term *banigrama* (Sanskrit *vanigrama*) which refers to a merchant guild (Goris 1954; Wheatley 1975: 268). Sembiran AIV (AD 1065) and C (AD 1181) also state that seafaring merchants (*banyaga saking sabrang*) arrived at Julah. Sembiran AII mentions shrines, a bathing place, graves and a main road, all of which had to be maintained by the villagers of Julah. Taken as a group, these inscriptions make it clear that this region of northeastern Bali was the scene of much maritime trading activity about 1000 years ago. The archaeology, of course, pushes this activity back perhaps a millennium further.

Conclusion

The discoveries at Sembiran suggest that contacts between India and Indonesia were already occurring at the beginning of the Christian era. They also suggest that Indian traders were visiting Bali in person, although there is much evidence from other sources to suggest that Indonesian ships and traders were also active at this time. Copper and tin, used for drum casting in Bali during the early 1st millennium AD, also had to be imported into the island. Topographically, Sembiran is located on a sheltered coastline and adjacent to a deeply shelving sea bed; it would have been in an excellent strategic location for roadstead. Indeed, considering the early 1st-millennium BC date on the basal and imported rice husk tempered pottery from SBN VII, the region might already have been functioning within a widespread network of international trade before the period of the Rouletted Ware.

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