

Softstone

Approaches to the study of chlorite and calcite
vessels in the Middle East and Central Asia
from prehistory to the present

edited by

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Foreword

Carl S. Phillips and St John Simpson

Stone containers have been made and used in the Middle East for over eleven millennia. Within this region they pre-date the invention of pottery and they were widely traded in antiquity. The appearance or properties of the stone helped govern how stone vessels were valued or used and many classes were strictly utilitarian, being used for storage, cooking or lighting. Some were decorated, occasionally carved in relief or inlaid with other materials. At times these vessels were considered valuable *exotica*, particularly in regions far removed from the source areas, and some of these are known from royal treasuries, others from temples and tombs.

There is a growing body of published data examining the production and circulation of stone vessels, particularly those carved from calcite, in the Mediterranean, Mesopotamia and Iran during the 3rd – 1st millennia BC (e.g. Warren 1969; Casanova 1991; Bevan 2007; Sparks 2007; Searight, Reade & Finkel *et al.* 2008; Squitieri 2017). This follows an earlier wave of interest, beginning in the 1970s, in chlorite vessels found in Iran, the Persian Gulf and Mesopotamia. More recent reports of large numbers of chlorite vessels carved with figural designs which come from illicit activity in the Jiroft region of south-east Iran have re-ignited debate over the origins and diffusion of this style of vessel although details of the ongoing excavated findings are still awaited.

The present volume was inspired by a workshop held at the British Museum on 21 July 2004. The theme was on ‘Softstone in Arabia and Iran’, was organised by the editors under the auspices of the former Society for Arabian Studies (now part of the British Foundation for the Study of Arabia) and held in the Department of the Middle East. This subject was considered of particular interest because of the opportunity it offered to explore developments within source areas, both in Iran and Arabia, as well as across different consumer zones. Most of the previous research has either focused on south-east Iranian products of the latter half of the 3rd millennium, later Bronze and Iron Age industries centred in south-east Arabia, or Arabian exports during the early centuries of the Islamic era. However, this is the first single attempt to consider many of these together with other regional industries within a single volume examining the phenomenon of stone vessels from prehistory to the present.

The purpose of the workshop was to explore different aspects of the manufacture, circulation, function and, where appropriate, the iconography of carved softstone vessels and other objects dating from the earliest periods to the present day. Questions of particular concern included the relationship of the material to adapting technologies, intended function, original visual appearance and their relationship to objects of similar function made of other materials. Key questions included: what objects were made of softstone at any single period? How frequent were they? Why was softstone preferred as a material at some periods and for certain functions? What functions did the objects have? Did the use of this material have implications for the relative importance of other crafts? What evidence is there for the places of primary production of softstone objects as opposed to their secondary working?

The number of participants in the original workshop was restricted by the limited size of the venue and the desire for a workshop atmosphere which enabled object handling rather than a more traditional conference format. However, the number and range of papers for publication was expanded to accommodate additional research and peer review comment. These include several previously published yet not widely accessible papers which have nevertheless retained research value and which were therefore translated and lightly re-edited. In some cases the original illustrations were also re-drawn for greater clarity. The papers included here might appear a random selection yet deliberately encompass a number of different approaches, ranging from the archaeological to the art-historical and the anthropological. A lengthy introduction was also added in order to set these different papers within a clearer research context. All the references have been gathered within a cumulative bibliography and the resulting compendium is intended to offer a useful benchmark and starting place for students and scholars who wish to develop or challenge some of the data presented on this subject. All views are the authors’ own and the editors are very grateful to the contributors, colleagues and peer reviewers for their input, constructive comments and patience while waiting for this publication.

Introduction

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Softstone is an ambiguous yet convenient term used by archaeologists to encompass stones of Mohs hardness 3 or less. It is specifically used to describe objects carved of gypsum, limestone, calcite [travertine], alabaster or the family of greyish or greenish stones characterised as steatite, chlorite or talc and which are often popularly subsumed under the name soapstone. Across the Middle East the tradition of carving vessels and other objects from stone pre-dates the development of pottery and continues up to the present day in parts of Turkey, Iran and Yemen. In many cases stone vessels were also decorated, polished and repaired, implying that they were valued for their aesthetic values as well as their functional properties.

Early stone vessels and prehistoric origins

Crudely carved stone containers first appear in the Middle East in the 9th millennium BC (Fig. 1), for instance at Ain Mallaha and Zawi Chemi Shanidar, and were used for the processing of foodstuffs (Mellaart 1978: 42–43, fig. 13; Solecki 1980: 28–31). They gradually become more elaborate and finely finished in later prehistory and excavations at the early aceramic Neolithic sites of Hallan Çemi, Göbekly-depe, Körtik Tepe and Nevalı Çori in south-east Turkey have yielded evidence for carved and polished stone bowls and beakers, occasionally with geometric incised decoration, and thick-walled limestone bowls carved in low relief (Köksal-Schmidt & Schmidt 2007: 99–102, cats 115, 139–60).

There is new evidence for a similar phenomenon in south-west Arabia. The earliest finds come from aceramic Neolithic sites in south-west Saudi Arabia and may date as early as the 7th millennium BC. The first find consists of a fragmentary mottled green steatite bowl with linear incised decoration on the exterior which was found on the surface of the site of al-Mutabthat in the western Rub al-Khali (Edens 1982: 118–19). Other pieces have been reported from the Wadi Dawasir and

Wadi Tathlith regions of the country (Edens 1988: 37–38). More recently, two small dark green chlorite bowls have been published from al-Maqar in Asir province (Curtis & Tallis 2012: 207, cats 179–80). One is plain but perforated below the rim, presumably for attachment of a separate lid, and the second is decorated with a distinctive hatched meandering design; this had broken in two and been carefully repaired in antiquity, presumably by twisting cord through the holes perforated on either side of the break. Other finds reported from this site include Arabian Bifacial Tradition lithics, ground stone querns and pestles with zoomorphic headed terminals, deep mortars and larger pecked stone sculptures. The zoomorphic pestles recall those from aceramic Neolithic Nemrik and M'lefaat in northern Iraq; the deep mortars are represented at 3rd millennium BC Bronze Age sites in Yemen which also had a tradition of making pecked and incised stone anthropomorphic statuettes (Simpson ed. 2002: 86, cats 88–90).

By the 6th millennium BC there was a highly developed stone-carving industry with abundant evidence from Mesopotamia, Anatolia and Cyprus. This is also a period when stone vessels began to be regularly interred as grave-goods, although the frequency of this practice appears to vary according to culture.

In the case of Khirokitia, on Cyprus, it was commented that 'The most striking feature of the culture lies in its stone vessels, for which andesite and other volcanic boulders present in the nearby river bed provided a handy source of material. Many of these are large, and there is a great variety of forms: elegant spouted basins and deep bowls, dishes, ladles, mortars and possible lamps. Some are decorated in relief with rows of knobs, raised chevrons, crosses and other geometric motifs suggestive of basketry and woodwork. Others have intricate handles with thumb grips, or heads of humans, sheep and bulls in high relief. The decorative style, as

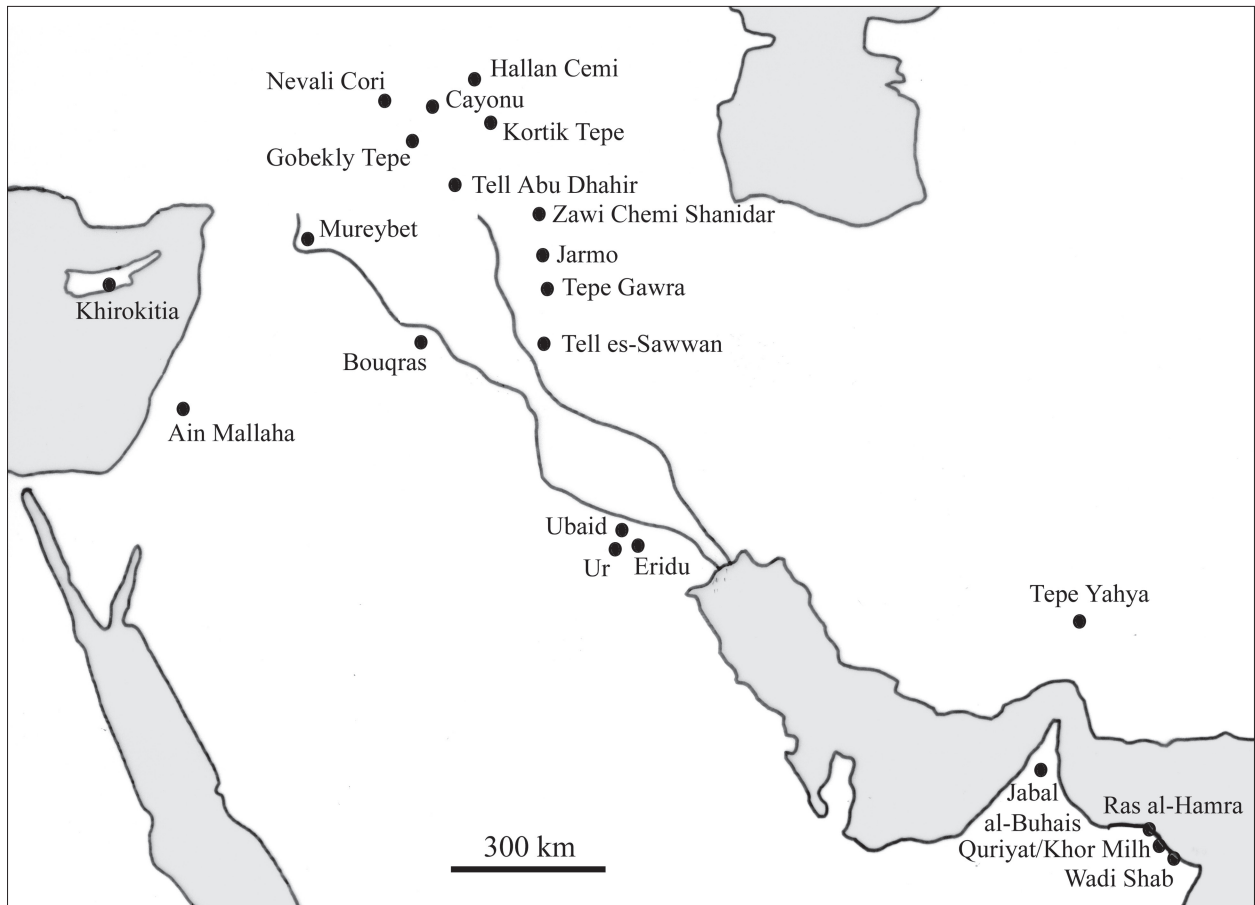


Fig. 1. Map showing prehistoric sites

opposed to the shapes, is sometimes faintly reminiscent of similar workmanship in the Natufian tradition of Ain Mallaha, Mureybet and Çayönü, all of which produced stone vessels, whereas the animal heads on stone vessels and pottery have faint Anatolian parallels' (Mellaart 1975: 132). The allusion to wooden vessels is particularly apt as there was a highly developed craft of making carved wooden bowls, some with close-fitting lids, from broadly contemporary Catalhöyük, in south-central Anatolia, where they were more valued as grave-goods than the stone vessels (Mellaart 1964: 86–92, pls XIX–XXI).

Over 325 stone vessels were excavated in the earliest level at the 6th millennium BC site of Tell es-Sawwan on the middle Tigris, where many (but by no means all) were found placed with infant burials. The preliminary reports indicate that over 220 burials were found in this level, of which 175 are described and 166 of which contained stone vessels. Although one or more burials are said to have contained as many as 11 or more stone vessels, the published lists suggest that this was unusual and 87.4% of these graves possessed between one and three stone vessels (Table 1). These included a large variety of deep and often straight-sided bowls (the commonest form), globular bowls, small pedestal-

No. of vessels per grave	No. of graves
0	9
1	71
2	57
3	25
4	7
5	3
6	0
7	2
8	1

Table 1. Distribution of 325 stone vessels found in the 175 Samarran graves excavated in Level I at Tell es-Sawwan where the numbers of stone vessels are described

footed vessels, platters, ladles and vessels with small stumpy feet (Fig. 2). All were carved from an attractive banded calcite which occurred locally. Several had been repaired in antiquity prior to burial, implying that these at least had not been made specifically for funerary purposes. More unusual were some vases which resemble the lower portion of a seated person, and which may have been closed with separate lids in the form of a human head which were carved from a material which has since perished (cf. el-Wailly & al-

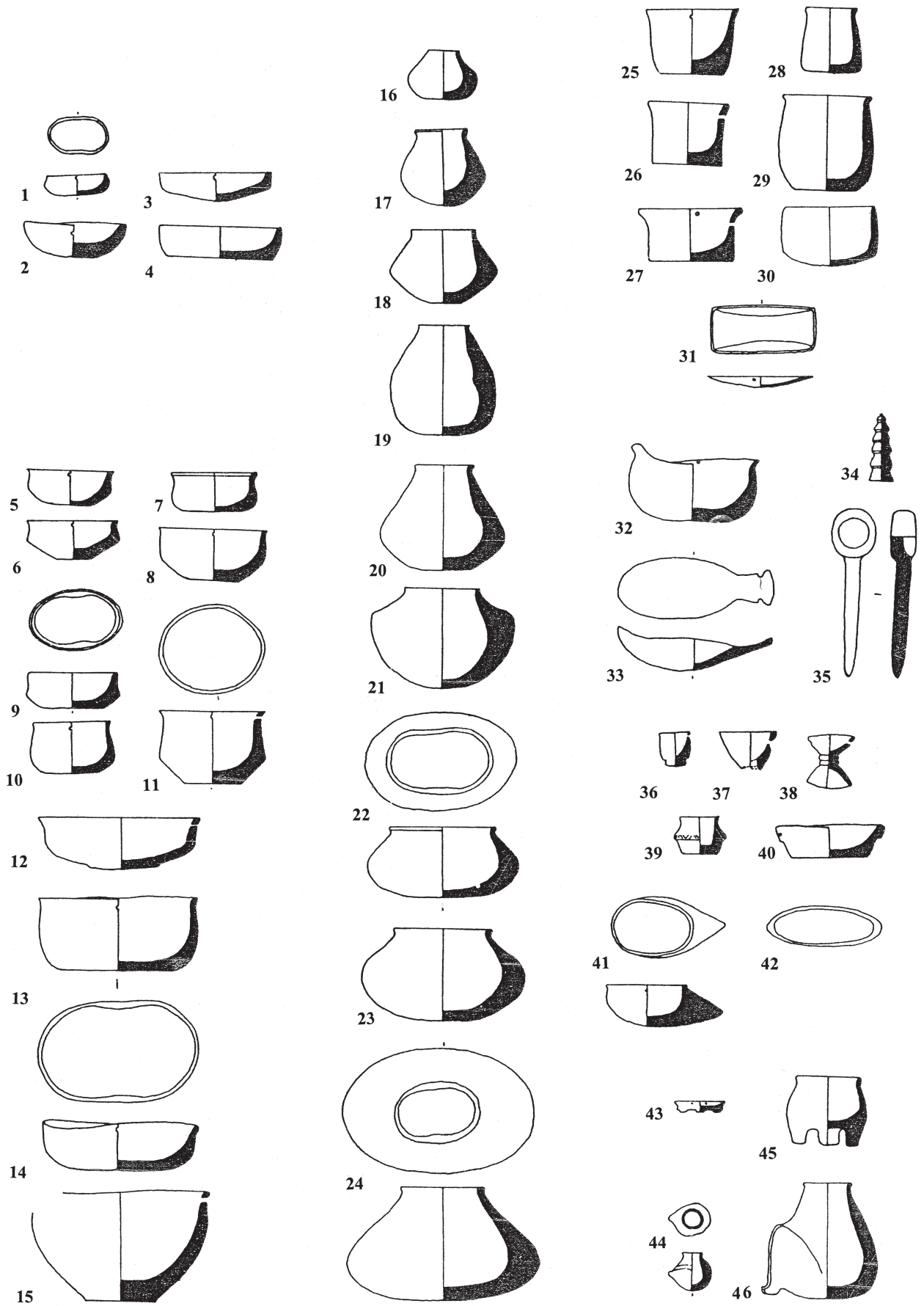


Fig. 2. 6th millennium BC stone vessels excavated at the Samarran site of Tell es-Sawwan in central Iraq (after Mellaart 1975: fig. 90)

Soof 1965: 25). A small number of zoomorphic vessels were also found, and both these and some of the other types are paralleled from earlier domestic contexts at Bouqras at the opposite end of the southern Jazira (Akkermans *et al.* 1983: 351, pls 39, 42.a).

There has been considerable discussion over the significance of these Level I burials from Tell es-Sawwan (e.g. Oates 1978: 118; Fiedel 1981: 307–36), and it has been variously argued that they represent ‘ranked societies’ (Flannery 1972: 403), ‘clear wealth differentiation’ and evidence that ‘not all trade goods were being equally re-distributed’ (Wright 1974: 31). However, the facts that the stone was local, at least some vessels were in domestic use prior to burial and there is little comparable information on Samarran burial practices, suggest a greater degree of caution is necessary in interpreting these graves and their contents.

Stone vessels were commonly used at Halaf sites although not enough is known about their funerary practices to compare these with the Samarran evidence. They continued to be used in northern Mesopotamia during the later Ubaid period judging by the fact that they occurred in 13% of the graves at Tepe Gawra (Tobler 1950: pls CLXXX–CLXXXI) although only two bowl fragments were recovered from domestic contexts and they were absent from the small number of graves excavated at the upper Tigris site of Tell Abu Dahir (Simpson 2007: 23–46). They are moderately common in the Hamrin region at this period (Jasim 1985: vol. II, fig. 71; Kamada & Ohtsu 1991: 237) (Fig. 3). However, they were very rarely placed as grave-goods in

No. of graves	No. of pottery vessels	No. of stone vessels
127	bowls (n. 237)	
120	jars (n. 161)	
12	beakers (n. 12)	
2		dishes (n. 2)
1		jar (n. 1)

Table 2. Distribution of stone versus pottery vessels in the Ubaid cemetery at Eridu; figures are based on the 175 graves which are individually described (after Safar *et al.* 1981: 125–41)

southern Ubaid sites and only five examples were found in the extensively excavated cemeteries at Eridu and Ur, where painted pottery vessels instead dominated (Table 2). The source of the stone for these objects has not been established but they probably represent long-distance imports either from Iran or from northern Mesopotamia.

Carved and polished stones were a popular choice of materials for beads and other items of personal adornment from late prehistory onwards (Fig. 4). Most of the early stone beads were Mohs 3 or softer, and therefore could have been easily perforated with hand-drills. However, other materials measuring up to 6–7 Mohs have also been confirmed and posed a different problem as these are both hard and brittle. Based on their observations of material from the site of Jarmo in northern Iraq, Gorelick and Gwinnett (1990) have argued that such beads were pierced using bow-drills with flat-ended flint drill-bits and loose abrasive in the form of quartz or emery. In addition, between the 6th

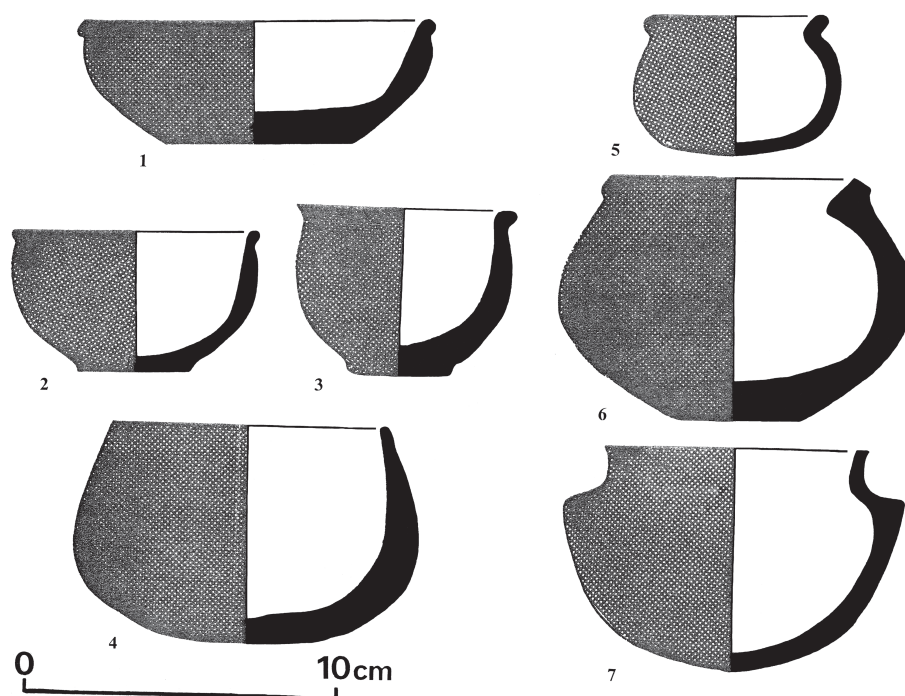


Fig. 3. 5th millennium BC stone vessels excavated at the Ubaid site of Tell Abada in the Hamrin basin of east central Iraq (after Jasim 1985: vol. II, fig. 71)



Fig. 4. 6th millennium BC incised softstone 'butterfly' bead from Tepe Giyan, western Iran. H 5.6 cm. BM 1936,0613.52 = 128672 (photograph: © The British Museum)

and 4th millennia BC from Anatolia to Iran, most stamp seals (often termed 'amulets' in the older literature) were carved from soft dark stones of the chlorite/serpentine/steatite family, although others are described as diorite, limestone, marble, sandstone and occasionally harder materials (Moorey 1994: 74–75).

The tradition of valuing stone vessels continued into later periods in Mesopotamia. These include plain and a small number of relief-carved limestone vessels in the latter half of the 4th millennium BC. The most spectacular example of these is the so-called 'Warka Vase' which measures 1.20 m. in height and is carved with four registers showing rows of plants, livestock, gift bearers and a presentation scene at the top; the intervening areas were originally separated by applied metal bands (for which only the attachment holes now remain) and it was visibly repaired at the top in antiquity (Fig. 5).

Mesopotamia is often regarded as short or lacking in natural resources. However, this is a completely misleading and simplistic impression not least because of the fact that its huge agricultural resources enabled a high population carrying capacity which could maximise the very wide range of agricultural products. Among its other natural resources were a variety of easily worked limestones, gypsums and sandstones deriving from outcrops along the western fringes of the alluvium. These were probably the source of many of the vessels used in southern Mesopotamia during the late 4th and 3rd millennia BC. Moreover at times there



Fig. 5. The 'Warka Vase', a 4th millennium tall footed limestone vessel with low-relief carved decoration and ancient repair holes at the top

was a fashion for hard and soft dark stones, both hard (i.e. igneous and altered igneous rocks such as diorite, dolerite, basalt, granite) and soft (metamorphic rocks such as steatite, chlorite and serpentine), and fine varieties of calcite which could be given a high polish. These were used to carve statuary as well as vessels and small portable objects and these materials were imported from Iran and the Persian Gulf.

Steatite or chlorite?

Steatite is one of the most commonly worked varieties of softstone within the Near East and Indus region. Popularly known as soapstone or potstone, it is a metamorphic stone and varies widely in colour, including white, red, light to dark green, light bluish, light and dark grey varieties (Moorey 1994: 100). The popularity of different shades appears to have varied at different periods and for different types of object. The material is very easily carved and polished as it only registers as 1 on the Mohs scale, but without scientific analysis it is difficult to distinguish from chlorite, which is harder (2 to 2.5 Mohs), or from talc (also 1 Mohs). In addition, the older literature often describes objects of either material, or indeed any other dark green to black stone, as serpentine.

Chlorite occurs widely in the highlands of western and south-west Arabia, the Oman peninsula, and

throughout a 'crushed zone' or 'complex belt' extending throughout the Zagros mountains of Iran and in the Kopet Dagh along the Iranian-Turkmen frontier. Each of these source regions was probably exploited continuously from a very early period, yet at certain phases they underwent more intensive activity and export. Outcrops of steatite and chlorite have also been identified further east in Makran, northern Baluchistan and Rajasthan, and these are likely sources for the prolific Harappan manufacture of steatite beads and seals (Ratnagar 1981: 120).

Kohl, Harbottle & Sayre (1979) applied X-Ray Diffraction analysis to 375 samples, mostly dating from the 3rd millennium BC and almost a third of the then-known corpus, in an attempt to trace excavated objects to source. Although the results proved inconclusive owing to the large number of sources and the mineralogical variety within them, the results did suggest that there were a number of different manufacturing centres within Iran. The authors also concluded that chlorite should be used as the generic term, rather than steatite, soapstone, potstone, serpentine or even softstone, unless specific scientific identifications are available.

More recently, petrographic analysis has been applied to 20 Bronze Age vessels from south-east Iran as well as samples from 21 sources in the Hajjar mountains of the Oman peninsula. The results confirmed the existence of a separate Arabian industry in the 2nd millennium, and traces of ancient working were identified at one site near Yanqul (David *et al.* 1990) (Figs 6–7). Finally, a more recent pilot project has applied Inductively Coupled Plasma Mass Spectrometry and Optical Emission Spectroscopy to a selection of Iron Age



Fig. 6. View of a chlorite quarry at Dank near Yanqul on the south-west limit of the Hajjar mountain in Oman. It shows the excavation made in antiquity in the outcrop. The modern water-bottle gives a sense of scale and every single piece of stone in the foreground is pure chlorite (photograph: © H. David)

Fig. 7. View of an unexploited outcrop at Hyadh in the mountain north of Wadi Jizzi. It was uncovered during bulldozing of the mountain to make a road to a remote village. The picture shows very clearly the dark spot of homogeneous chlorite (about 5 m wide) included within a lighter stone (photograph: © H. David)



vessel fragments from Jebel Buhais and Rumeilah. The results suggested geochemically distinct groups deriving from different sources in the Hajar mountains, although a cautionary note was added over the thermal alteration of chlorite cooking wares (Magee *et al.* 2005; cf. also Namdar, Stacey & Simpson 2009).

It is not surprising that chlorite and related soft stones were independently exploited in different parts of Arabia and Iran as early as the neolithic period, as they were easily extracted from surface seams, and were soft and easy to work. The later development of the chlorite industry in the Bronze Age and Early Islamic periods in both regions corresponds to periods of extensive metalworking and prospecting for new

resources. The medieval writer al-Biruni (2007: 169) underlines this in his description of ‘malachite’, where he not only states that one variety ‘comes out of a copper mine’, but that it ‘is soft when freshly mined, but keeps on gradually hardening’ and ‘If placed in sesame oil its glossiness is enhanced’. They also correspond to expanded long-distance trade networks. These enabled the wider diffusion not only of distinctive decorated vessels, but also – in the 3rd millennium BC – of small cosmetic bottles which, if they were not personal possessions, may have been valued as exotic packaging for the unremarkable coloured pigments inside. The use of coloured inlays or applied pigments appears to be a hallmark of south-east Iran, whereas linear incision was the preferred decoration of the south-east Arabian workshops.

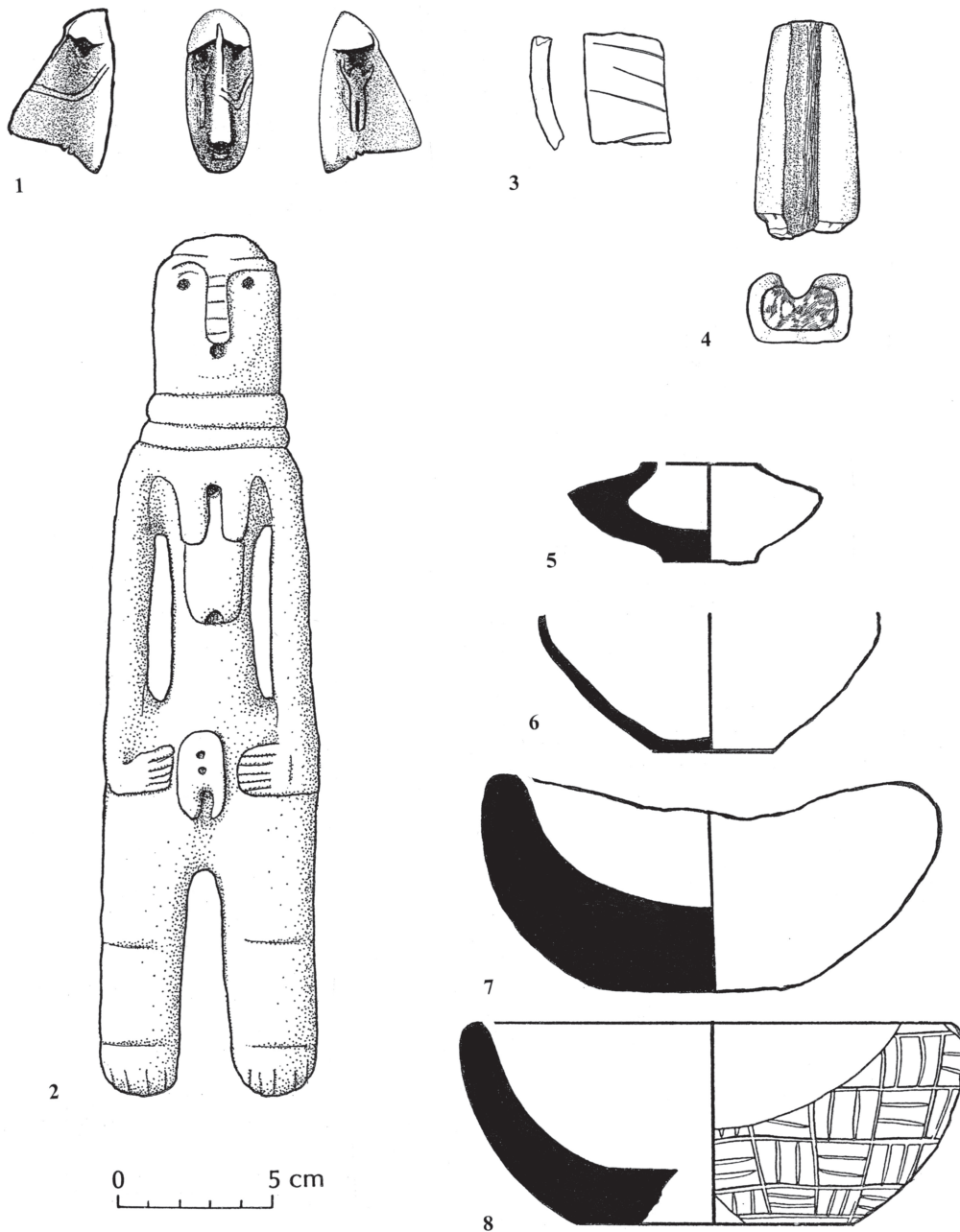


Fig. 8. Early chlorite objects excavated at Tepe Yahya, Periods VII–V: 1–2 statuettes, 3 bangle, 4 grooved stone, 5–8 vessels (after Beale *et al.* 1986: figs 7.8g, 7.15, 7.20, 7.29–30)

Within south-east Iran and the Arabian peninsula there is evidence for the use of chlorite from at least the early 5th millennium BC. Chlorite constituted 19.6% of the stone beads (and 9.5% of beads of all materials) from Period VII–V contexts at Tepe Yahya (Fig. 8). Other chlorite objects from these early periods included as many as 103 fragments of simple open bowls and palettes (totalling 62% of the total stone vessels), nine ‘shaft straighteners’ (probably bead polishers), seven bracelets (some with incised decoration), two labrets, three spindle whorls, a disc or seal with ‘cut-out’ decoration, anthropomorphic figures, a weight, handstones, small discs, cones, spheres and other geometric ‘counting devices’ (Beale *et al.* 1986: 167–206).

From the 5th millennium BC onwards, there is evidence from south-east Arabia for the production of personal ornaments from softstone. Disc-shaped and tubular serpentine beads formed a high proportion of the personal ornaments in 5th millennium BC graves excavated at Jabal al-Buhais 18 (Kiesewetter, Uerpmann & Jasim 2000). Cylindrical beads and earrings have also been found at Quriyat/Kohr Milh in Oman (Phillips & Wilkinson 1979). Evidence for local manufacture of cylindrical and disc-shaped beads and plain, incised or ribbed lunate earrings from light grey and dark grey chlorite has also been documented from the 4th and 3rd millennium BC sites of Ras al-Hamra [RH-5] and Wadi Shab in Oman (Tosi & Usai 2003; Usai this volume). The similarity of the shape of the ribbed earrings to gold sheet lunates from the ‘Royal Cemetery’ at Ur reinforces the evidence for connections between these two regions, particularly as one source of the manganese black make-up found in these Ur graves is also believed to originate in Oman (Maxwell-Hyslop 1971: 4–5, 28, pls 4, 24; Moorey 1994: 139). It might also be added that other than chlorite, shell was commonly worked at these coastal sites. The similarity in shape between other forms of chlorite and shell earring may simply reflect the fact that both materials are very easily worked, but it also supports the bead evidence from 6th millennium BC and later sites which illustrate a fashion for wearing contrasting white and black (or dark) personal adornments (Kiesewetter, Uerpmann & Jasim 2000).

Out of Iran: interpreting ‘Intercultural Style’

During the latter half of the 3rd millennium BC the chlorite industry in south-east Iran diversified with the large scale manufacture of carved vessels. These were not only used locally as large numbers were exported, and their import into south-east Arabia seems to have inspired a similar industry to develop there. It is also during this period that chlorite increases dramatically as a material for manufacturing cylinder seals in Mesopotamia where it replaces serpentine:

identifications of those in the British Museum indicate a rise in chlorite from 1.6% of Akkadian seals to 44% of the post-Akkadian series and 55.5% of the Ur III (Moorey 1994: 75). It is no coincidence that it is from these periods that there is extensive evidence for the working of metallic ores and long-distance trade in metals (e.g. Weeks 2003). Both the metal and softstone industries have attracted extensive archaeological, scientific and theoretical research, although the latter have focused almost exclusively on the decorated vessels rather than all classes of chlorite. Miroschedji’s (1973) pioneering study of almost a hundred chlorite vessels found in early French excavations at Susa was an influential early attempt to classify these, although the poorly recorded stratigraphy forced him to rely on external parallels for chronology (Table 3). Two partly chronologically overlapping groups were initially distinguished: *série ancienne* (c. 2600–2200 BC) and *série récente* (c. 2300–2200 BC), with the later addition of two further groups, *série intermédiaire* and *série tardive* (c. 2000–1600 BC).

Date BC	<i>série ancienne</i>	<i>série récente, série tardive, série tardive</i>
2600	X	
2500	X	
2400	X	
2300	X	X
2200	X	X
2100	?	X
2000	?	X
1900		X
1800		X
1700		X
1600		X

Table 3. The relative chronology of chlorite industries in Iran, primarily Susa (after Miroschedji 1973)

The oldest group is characterised by green or black vessels with all-over relief carving resembling fleeces, woven matting or ribbed basketry (Miroschedji 1973: 12–15, fig. 5, pls II–III) (Figs 9–11), architecture (Miroschedji 1973: 15, pls IV–V; Benoit 2004) (Figs 12–13), or complex intertwined figural compositions often incorporating turquoise, carnelian, white shell or limestone inlays (Miroschedji 1973: 10–12, pl. I) (Figs 14–15). This last subgroup has also been termed the ‘Figurative Style’, has attracted the most attention and, prior to the discoveries reported from Jiroft (see below), Lamberg-Karlovsky (1988) listed 544 examples of which over a hundred derive from the Persian Gulf (David 1996). The commonest shape of vessel is an essentially straight-sided bowl but other bowl forms, cornets, boxes and globular jars are also represented. The fact that their known distribution extends from



Fig. 9. *série ancienne* straight-sided bowl carved in relief with a design resembling ribbed basketry. H 9.1cm, capacity 660 ml. BM 121697 (photograph: © The British Museum)



Fig. 10. *série ancienne* shallow bowl carved in relief with a design resembling ribbed basketry. H 5.4 cm, capacity 250 ml. BM 121698 (photograph: © The British Museum)

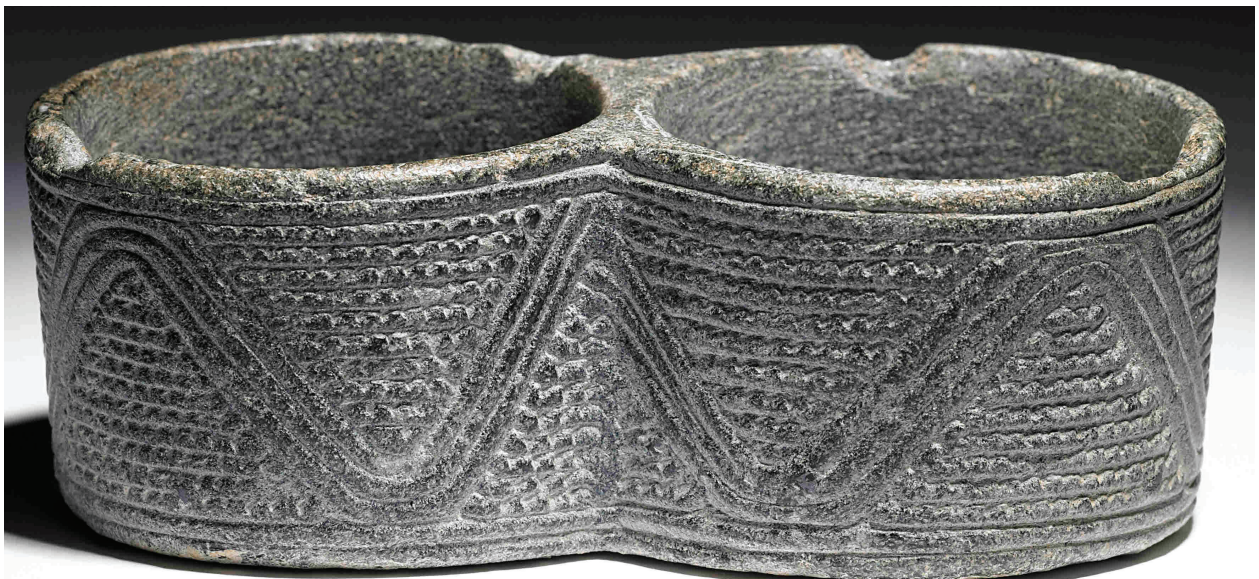


Fig. 11. *série ancienne* double-compartmented bowl carved in relief with design resembling ribbed basketry. H 3.7 cm, capacity 40 ml in each container. BM 135578 (photograph: © The British Museum)



Fig. 12. Dark greenish grey chlorite bowl carved with 'hut model' design. H 7 cm, ext rim D 11.8 – 12.2 cm, capacity 600 ml. BM 135758 (photograph: © The British Museum)

south-east Iran to the middle Euphrates led to the coining of the alternative term 'Intercultural Style', with the implication that these were produced in different places but within the same style although this has since been challenged in favour of a single south-east Iranian source (see below). The original thesis inspired influential reconstructions of a Bronze Age 'world system' of market-driven international trade linking highland resource areas with urban centres of consumption and Mesopotamian merchants travelling deep into the Iranian interior (Beale 1973; Kohl 1974; 1975; 1978; 1979; 1989; 1992; 2001; 2004; Lamberg-Karlovsky 1988) (Fig. 16). However, Amiet



Fig. 13. Imported greyish-green chlorite bowl carved with 'hut model' design excavated in the 19th century at Sippar in south-central Iraq. H 7.1 cm. BM 1882,0918.35 = 118275 (photograph: © The British Museum)



Fig. 14. *série ancienne*: 'Figurative Style' chlorite box originally with coloured inlays which is said to have been found at Khafajah but imported in antiquity from south-east Iran. The rim was originally slightly higher and was designed to seat a close-fitting lid but was later cut down and smoothed, perhaps after the lid was broken or lost, and the container was therefore adapted to function as a bowl. The inlays had either already been lost or were perhaps deliberately removed at this stage. H 10.9 – 11.2, Rim D 17.8 cm, capacity 2100 ml. BM 128887 (photograph: © The British Museum)



Fig. 15. Roll-out image of BM 128887. Note how some of the details along the top are truncated, proving that the rim was re-cut in antiquity (photograph: © The British Museum)

(1986a; 1986b; 1988), has viewed the distribution as the accidental product of 'Trans-Elamite' semi-nomadic artisans (see below), and Possehl (1986: 73–90) argued that the primary markets lay in eastern Iran. The significance of these vessels as 'type fossils' for contact and relative Indus/Mesopotamian chronology has been reiterated by Durrani (1964) and Ratnagar (1981: 116–28). However, although large numbers are reported from the Persian Gulf sites of Tarut and Failaka, less than 20 examples have been published from south-east Arabia or Bahrain, the exceptions including two vessels with so-called 'hut model' designs from Tell Abraq and Bahrain (David & Phillips 2008; Potts 2000: 125; Crawford & al-Sindi 1996; cf. Simpson this volume, a).

The inspiration behind this 'hut' design has attracted widely varying interpretations. A small (poorly stratified) fragment found at the Mesopotamian city-site of Tell Bismaya (Adab) was seized upon in the initial publication as a depiction of a local ziggurat (Fig. 17: 1). More commonly they are believed to be illustrations of the facades of structures made of vertical reed bundles held together with ropes, and as they were assumed to be made in Mesopotamia, they have been viewed, either explicitly or implicitly, as evidence for the strength and continuity of local 'Marsh Arab' building traditions (Andrae 1930: 76; Frankfort 1954: 39–42; Carter 1973). Other interpretations have viewed these depictions as evidence for loose curtain drapes (Eltz 1937), open-topped circular wicker or matting-constructed enclosures (Delougaz 1960), or multi-storey buildings with windows (al-Gailani 1975). As early as the 1930s, Ernest Mackay (1938: vol. I, 321) remarked on the similarity between examples excavated at Mohenjo-Daro, Susa and Kish, although Henri Frankfort (1954) and Lloyd (1961: 88–90, fig. 51) were equally adamant that they

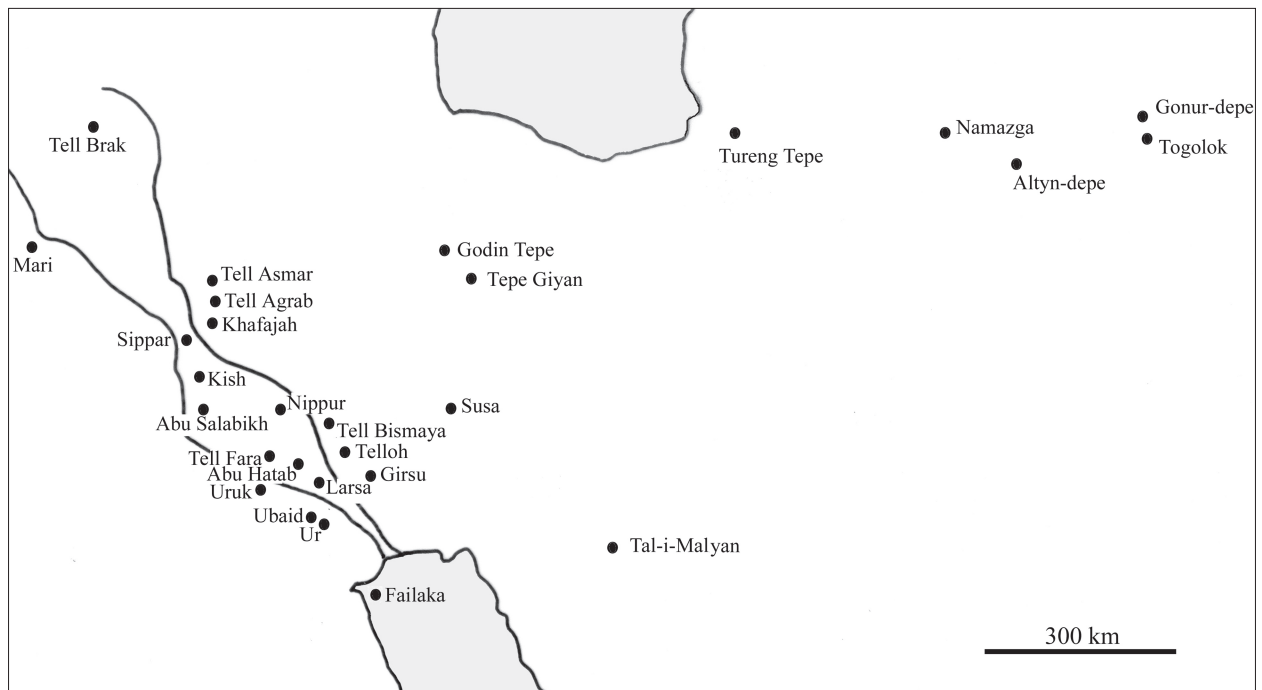


Fig. 16. Map showing early sites from Iran and Central Asia

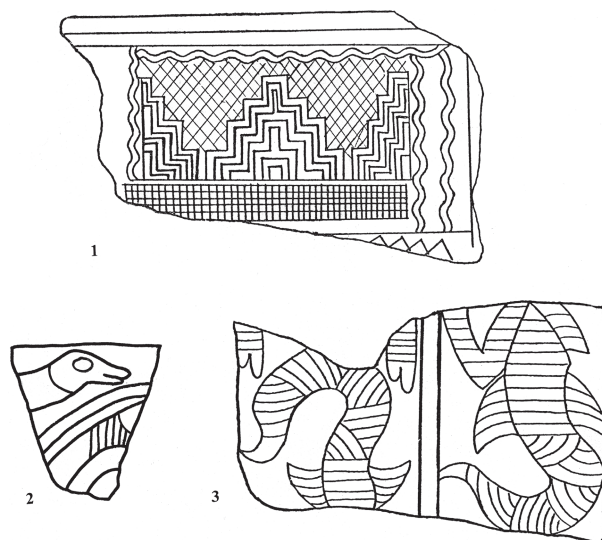


Fig. 17. Imported chlorite vessel fragments excavated at Adab in southern Iraq, 1 bowl carved with 'hut model' design, 2-3 figural designs (after Banks 1912: 242, 267, 270)

were of Sumerian workmanship, despite the fact that associated iconographic elements such as humped bulls were not indigenous to Iraq. The controversy widened following the discovery of carved chlorite vessels at Mehi in Baluchistan (Stein 1931: 160, pls XXVIII, XXX), which Stuart Piggott (1950: 112–13) interpreted as evidence that Baluchi traders were responsible for their export to adjacent regions. This debate over their origin and iconographic symbolism was re-awakened following further discoveries in Iran.

Back to Iran: discoveries at Tepe Yahya, Shahr-i Sokhta and Shahdad

During the late 1960s and early 1970s three major excavation projects revolutionised our understanding of the early periods in eastern Iran, and offered archaeological substance for Mesopotamian literary references to the resource-rich kingdoms of Aratta and Marhashi (Madjidzadeh 1976; Steinkeller 1982; Kohl 2007: 225–30). Excavations between 1967 and 1975 at the small four hectare tell-site of Tepe Yahya, in the Soghun valley, produced the first archaeological evidence for the stages of manufacture of chlorite vessels whose source is believed to be extensive strip mines noted at several spots west and north of the site (Kohl 1975; 2001). The absence of blank vessels suggested that the chlorite was brought to the site in rough-out form. Observations and experimental work suggested that the vessels were then roughly shaped with flint tools, and hollowed with long metal points which left shallow vertical gouges which were subsequently removed by wetting the surfaces and rubbing them with small serpentine flakes (which are harder, being 2.5 to 3.5 Mohs). The decoration was carved at the final stage. All of these remains came from one period of occupation at the site, namely Period IVB₄₋₁. This was initially dated to 2600–2500 BC, in accordance with the traditional Early Dynastic dating of Mesopotamian finds (Kohl 1974), but a lower date is now likely, either of 2400–2100 BC in accordance with calibrated radiocarbon dates (Lamberg-Karlovsky 2001: 276), or between 2200–2000 BC judging by the date of other finds particularly from preceding phases (Potts *et al.* 2001). The other

levels of occupation at the site had significantly lower quantities of finished chlorite items (some of which may be residual), and no other evidence was found for on-site working. The implications are that the industry was relatively short-lived at this site, the function of different parts of the settlement completely changed in different phases (as it did at Tepe Hissar), and/or the organisation of the chlorite industry changed. A further implication is that the intra-site distribution of chlorite waste may be very restricted and, without very extensive excavation, it would be dangerous to exclude the possibility of on-site working. The fact that Period IVB at Yahya post-dates the period of import of the first chlorite vessels into Mesopotamia confirms the fact that there were multiple workshop centres in eastern Iran, and that the precise origins of this industry remain to be determined. The discovery that vessels decorated with naturalistic motifs were being carved at the site nevertheless demonstrated how fortuitous it was that these had previously been found in their largest numbers in Mesopotamia (particularly the Diyala) and the Persian Gulf.

Between 1967 and 1978, investigations were carried out by an Italian team at the 150 hectare site of Shahr-i Sokhta in the Sistan basin (e.g. Tosi & Piperno 1974). Among the discoveries was evidence for the local production of calcite vessels and three nearby supplies of stone were noted (Ciarla 1979; 1981). The nearby site of Tepe Graziani, located some five kilometres away and named after a team member, seems to have contained specialised workshops dedicated to this industry as a large number of vessel blanks were found here (Tosi 1989: 24). Excavations were resumed at Shahr-i Sokhta in 1997 by an Iranian Archaeological Expedition. This included the investigation not only of the craft, residential and monumental building areas, but also of the 20–25 hectare cemetery which is estimated to contain up to 40,000 graves (Sajjadi *et al.* 2003). The exceptional site conditions allowed the preservation of various organic materials, including small wooden vessels, combs and ladles, leather, woven textiles, and bowl-shaped and truncated-cone baskets woven from local species of *Typha* and *Scirpus*. However, although calcite vessels were common and found in 35% of the graves, relatively few chlorite vessels were found (and none in the more recent Iranian excavations), nor was chlorite even utilised for beads (Tables 4–5). The exceptions include a cosmetic bottle originally decorated with white calcite inlays and a fragmentary relief-carved bowl (Tosi 1968: 58–59, figs 92–93).

A sample of 23 softstone items from Shahr-i Sokhta was analysed by XRD, and all but two confirmed as chlorite, the exceptions being antigorite and a chlorite/talc compound (Kohl 1977). Analysis of the lithic drilling technologies indicated the use of flint drill bits in the

Sites	No. of chlorite vessels	No. of calcite vessels	No. of metal vessels	No. of pottery vessels
Shahr-i Sokhta	0	47	0	?
Shahdad	187	110	300	3138

Table 4. Absolute frequency of chlorite, calcite, metal and pottery vessels in graves excavated by Iranian teams at Shahr-i Sokhta (top) and Shahdad (data from Sajjadi *et al.* 2003; Hakemi 1997a)

No. of graves	No. with chlorite vessels	No. with calcite vessels	No. with metal vessels	No. with pottery vessels
137	0	28.4%	0	?
382	36.1%	23.8%	47.6%	99.2%

Table 5. Relative frequency of chlorite, calcite, metal and pottery vessels in graves excavated by Iranian teams at Shahr-i Sokhta (top) and Shahdad (data from Sajjadi *et al.* 2003; Hakemi 1997a)

working of chlorite stamp seals, with an estimated 150 or more separate drillings necessary to create the decoration on the more complex seals (Piperno 1973). The same technique is found at Mundigak in southern Afghanistan, Namazga IV in south-west Turkmenistan, and early Keltiminar turquoise workshops on the border of the Kyzyl Kum (Kohl 1977: 116). However, this use of flint drills differentiates these industries from that at Tepe Yahya IVB₄₋₁. Excavations in the cemetery at Shahr-i Sokhta revealed several graves identified as those of craftsmen. These included one individual interred with over 50 flint micro-blades, a number of jasper smoothers, a copper alloy axe-head, a small hammer, a pestle and grey schist tablet, three cut blocks of lapis lazuli, and 258 turquoise, lapis and chrysoprase beads (Tosi & Piperno 1974). Kohl (1977: 120) interpreted this as evidence for full-time craft specialists who worked more than one type of stone.

Excavations between 1969 and 1977 at the late 3rd millennium 400 hectare city-site of Shahdad revealed further evidence for local south-east Iranian consumption of chlorite. One area included large multi-room structures containing evidence for copper-working. The domestic circulation of chlorite was confirmed by the discovery of 'a small chlorite vessel with two compartments' in one room, and finds from within a storeroom in another building included a chlorite vessel (Hakemi 1997a: 100, 107). However, a wider range of evidence was recovered from the cemetery where a total of 382 graves were excavated. These almost invariably contained several pottery jars (typically plain but sometimes painted), occasionally one or more bowls and more rarely a goblet or beaker. Half of these graves also contained metal vessels, almost a quarter contained calcite vessels, and as many as 36%

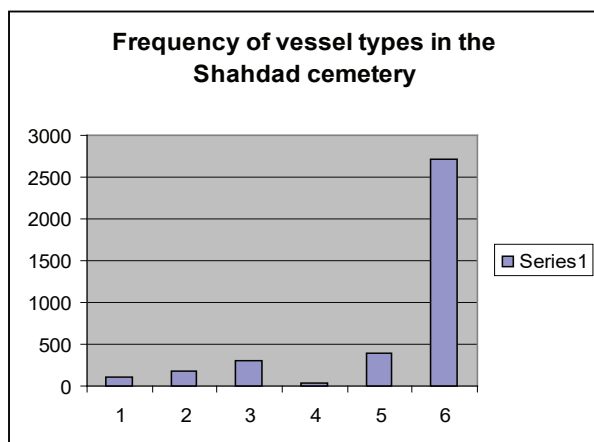


Table 6. Frequency in the Shahdad cemetery of vessels of calcite, chlorite and metal (1–3) against pottery goblets/beakers, bowls and jars (4–6) (data from Hakemi 1997a)

of the graves contained one or two chlorite containers (Tables 4–5 above); although half a dozen or more pottery jars in a given grave was common, most graves only contained one or two chlorite, calcite or metal vessels, only seven graves contained more than two chlorite vessels and in no cases more than four were found (Hakemi 1997a; 1997b). The absolute numbers of pottery jars, bowls and beakers/goblets, calcite, chlorite and metal vessels are graphed above (Table 6).

The implication of the cemetery finds is that whereas pottery was cheap, stone and metal wares were more highly valued and may have been afforded similar status. Although no raised-relief figural vessels were present (whether for chronological, regional or social reasons is unknown), the chlorite vessels included plain flared and S-profile bowls (Fig. 18: 1–4), straight-sided bowls and tall flaring beakers with imbricated or incised geometric designs (Fig. 18: 6–12), small plain or decorated jars (Fig. 18: 16–19), square or rectangular and sometimes compartmented lidded boxes (Fig. 19), composite trays (Fig. 20) and miniature square plain or decorated cosmetic bottles (Fig. 21). The last category resembles a class within Miroschedji's *série récente* (1973: 32–33, pl. VIII.a–e, g–i, k) (Fig. 22). The reported discoveries of similar cosmetic bottles and kidney-shaped palettes from cemeteries in northern Afghanistan and southern Turkmenistan reinforce the shared lithic traditions noted above, and connect these regions within the *koiné* termed the 'Bactria-Margiana Archaeological Complex' [BMAC] or early 'Oxus Civilisation' (e.g. Hiebert 1994a; 1994b). At Shahdad, almost all of the chlorite vessels were decorated, usually with a hollow drill. In addition, a small but unquantified number from Shahdad also bore traces of coloured pigment. A small number of other vessels show similar traces (Fig. 23) (Simpson this volume, a).

Out of Iran: interpreting the exports

Large quantities of *série ancienne* vessels have been found at Tarut (Figs 24–28, 30) and Failaka, although only the latter are stratified and closely dated (Ciarla 1985; Zarins 1978; Cotty 2010; al-Ghabban *et al.* 2010: 193–201, nos 40–67). The finds from Tarut derive from a bulldozed cemetery and include some later vessels dating from the 2nd millennium BC as well as much later periods (Fig. 29). The finds from these two sites led Amiet (1986a: 135–39) to suggest that itinerant 'Trans-Elamite' Iranian craftsmen from the Dasht-i Lut region may have set up workshops in the Persian Gulf (Fig. 32). However, there is no proof that any of the Tarut finds were made locally and the evidence for manufacture appears to rest on some of the pieces missing their inlays, which instead simply reflects lengthy use. Nevertheless, there is some evidence for the recycling of broken vessels and similar reworking of broken chlorite vessels to make stamp seals has been noted at Failaka, Ras al-Jins [RJ-2], Hili North and Lothal (David 1996), and evidence was found at Shahr-i Sokhta for the reworking of broken seals (Kohl 1977: 114, figs 9–10). Although Kohl (2001: 224) has argued that because of their exotic import status, they were not as readily discarded or re-used in Mesopotamia, a 'hut model' sherd from Uruk was found reused as a pendant, another was reused as a brick stamp of Hammurabi, and there is abundant evidence for locally patched or drilled repairs on other stone vessels (Potts 1994: 252, n. 173; Moorey 1994: 59) (Figs 31, 33).

Nevertheless, a variety of decorated and plain chlorite and chlorite-related (mainly talc) bowls, beakers and closed forms have been recognised from a variety of Early Dynastic II–III, Akkadian and Ur III contexts in central and southern Iraq and along the Euphrates corridor into eastern Syria. These findspots include the city-sites of Adab (Tell Bismaya), Tell Agrab, Tell Asmar, Shuruppak (Tell Fara), Girsu (Telloh), Khafajah, Kisurra (Abu Hatab), Larsa, Kish, Mari, Nippur, Sippar, Tell al-Ubaid, Ur and Uruk (e.g. Basmachi 1975: 396–97, nos 34, 37, 56; al-Gailani 1975; Potts 1994: 250–69). Most of these finds derive either from temples (where they were regularly dedicated as booty) or from unspecified or poorly stratified contexts. Kohl (1975: 25; 1992) assumes that they were 'acquired only by the upper ruling classes of the early urban centers', yet this is questionable as we still do not know how many were used by the Mesopotamian equivalent of a middle class. Some vessels carry inscriptions which prove that they were in circulation at least during the Early Dynastic [ED] II–III, Akkadian and Ur III periods but, unlike the metalwork, most of these are royal dedicatory inscriptions to the temple rather than marks of personal ownership (Potts 1994: fig. 41, tables 6.1, 6.3). The frequent absence of the original

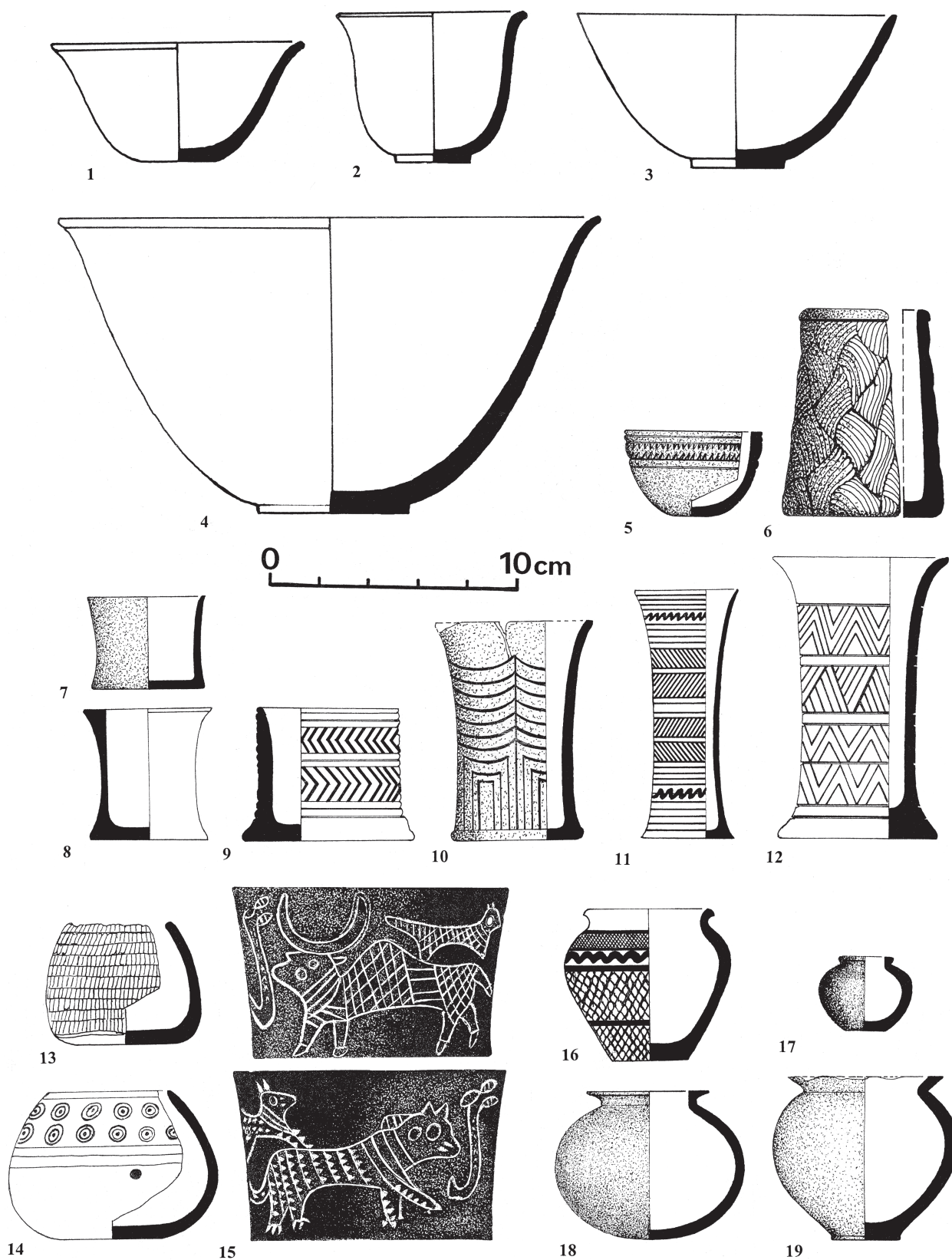


Fig. 18. Chlorite vessels excavated in the cemetery at Shahdad: dark green chlorite bowls with S-profiles (1-4), bowl with zigzag design (5), beaker with fleece-like design (6), plain and decorated straight-sided bowls and beakers (7-12), decorated closed bowls (13-14), flaring bowl with incised zoomorphic designs (15), small jars (16-19) (after Hakemi 1997a: Fa. 7, 9, Fb. 1, Fa. 1, Fj. 2, Fm. 2, Fd. 2, Fi. 11, Fh. 2, Fi. 3, Fi. 1, 5, Fm. 1-2, Fd. 1, Fl. 4, 3, 1-2)

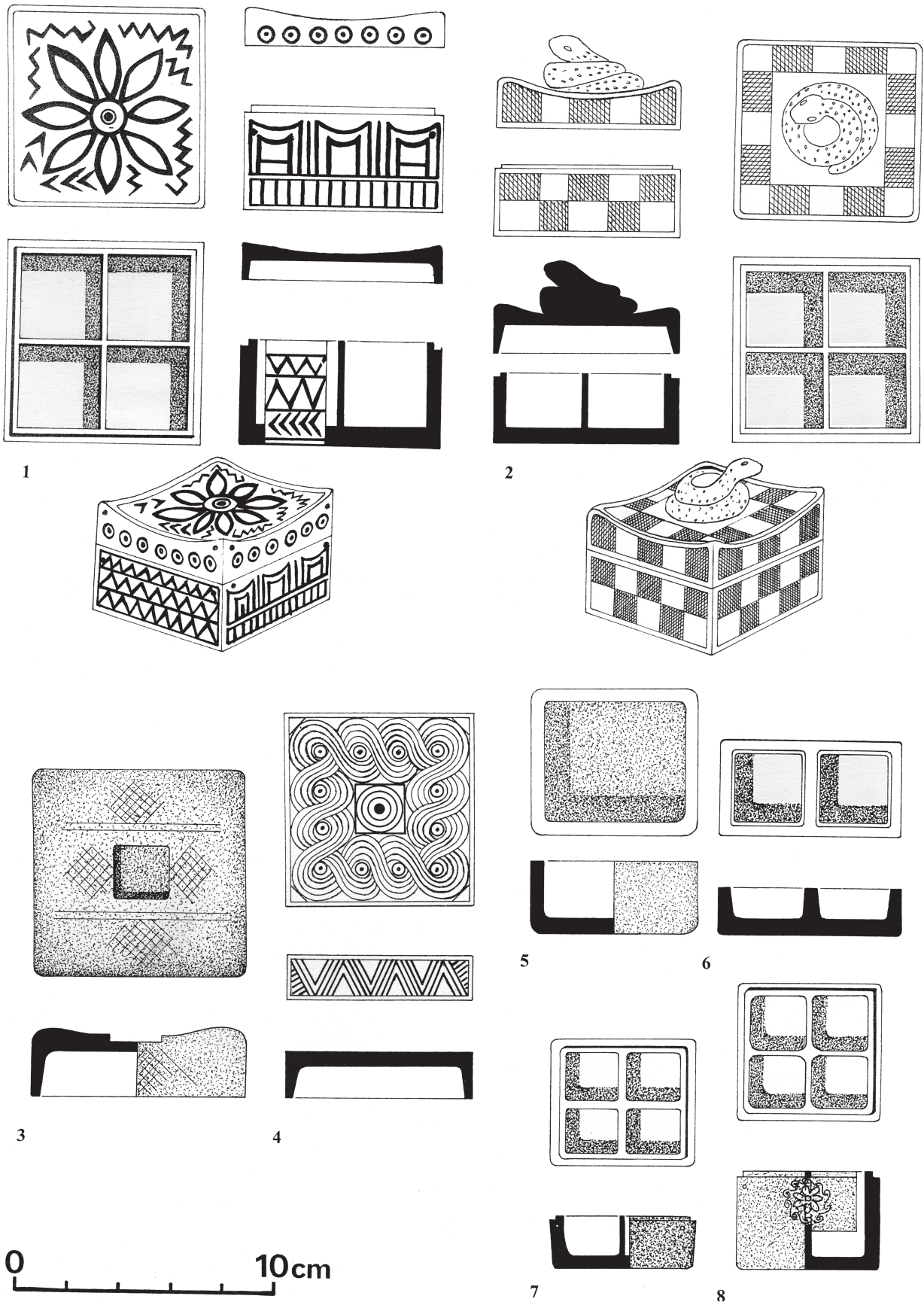


Fig. 19. Chlorite lidded boxes excavated in the cemetery at Shahdad: square compartmented with 'hut model' design and floral design on the lid (1), with a coiled snake carved on the lid (2), square box lid with incised criss-cross design (3), square box lid with guilloche design (4), square box (5), shallow double compartmented rectangular box (6), square quadruple compartmented boxes (7-8) (after Hakemi 1997a: Fk. 11, 10, 9, 8, 1, 7, 6, 4)

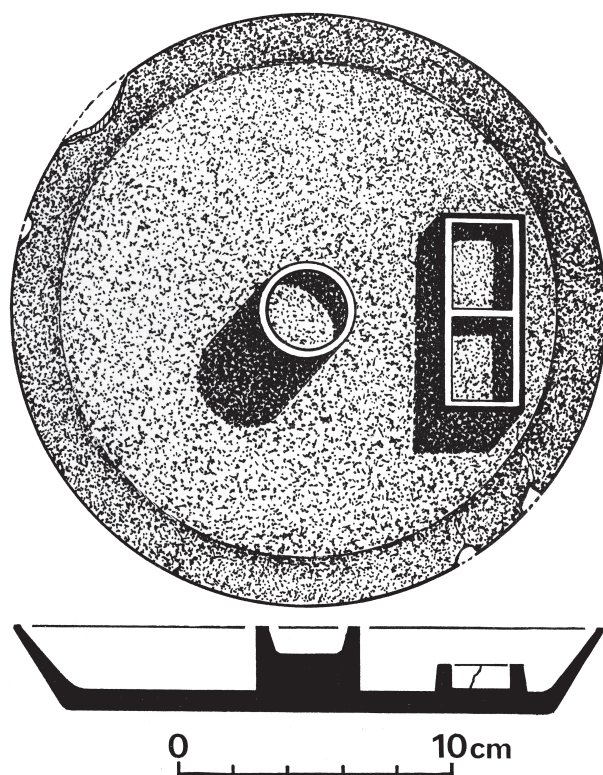


Fig. 20. Compartmented chlorite tray made in imitation of a metal version and excavated in the cemetery at Shahdad (after Hakemi 1997a: Fq. 1)

inlays on others is compatible with their gradual loss through lengthy circulation and parallels the situation noted above from Tarut as well as Failaka. Two *série ancienne* bowls, including one from Ur, carry the inscription 'Rimush, King of Kish, conqueror of Elam and Parahshum', and therefore suggest booty obtained by that Akkadian ruler during campaigns in those regions of Iran (Potts 1994: 228) (Fig. 34). Steinkeller (1982: 251) has also argued that the word *marhushu* be identified with chlorite as it was derived from the land of Marḥashi which in turn has been identified with south-east Iran, although this has since been challenged in detail by Francfort and Tremblay (2010) who prefer an equation with the Bactria-Margiana Archaeological Complex (see below).

A small number of vessels trickled westwards into Syria, either along the middle Euphrates corridor to Mari or across the north Jazira to Tell Brak (David this volume). XRD analyses of a selection of the Mesopotamian finds suggested that those found at Khafajah, Kish, Nippur and Ur were from a similar source region and were distinguished from others found at Adab and Mari (Kohl, Harbottle & Sayre 1979).

The scale of use in Mesopotamia of stone vessels of various types, including locally produced vessels as well

as imported calcite vessels and chlorite bowls 'Figurative Style' designs, was first hinted at by early discoveries in a temple dump at the (since heavily looted) city-site of Adab in 1903/04 (Banks 1912: 259–70) (Figs 17, 35–37). This was later confirmed by Woolley's more systematic excavations at Ur where stone vessels were common in burials of the late Early Dynastic [ED] I and II periods, included new types in the ED III 'Royal Cemetery' but thereafter declined in number (Figs 38–39). In addition to chlorite, other types of stone vessels included diorite, breccia, obsidian and lapis lazuli, although the majority were carved from local gypsum; vessels of banded calcite [travertine], also described as 'alabaster', 'onyx', 'marble onyx' or sometimes 'aragonite' in other publications, appear at Ur in the ED III period (Woolley 1934: 379; Zettler 1998). The functions of these vessels were probably varied. Cohen (2005) argues that most, like the pottery and metal vessels, were used to represent the acts of eating and drinking during feasts, yet references in a Sumerian text to burial gifts including pots of perfumed oil and ghee, a 'large bun₂-di-bowl' and a 'perfume-jar of algameš-stone' suggest that the picture is more complex (Cohen 2005: 163–66).

These are not the only sites of this period in Mesopotamia where stone vessels have been found. A number of fragments were found at the ED III middle Euphrates site of Tell Chokha: most were described as 'veined marble' and belonged to conical bowls but exceptional shapes included a so-called 'fruit stand' (a shape better known from other sites in pottery and silver but also present in stone at Abu Salabikh) and a shallow footed cosmetic palette with dotted circle decoration on the rim; several of the vessels had ancient repair holes.

More closely quantifiable data are provided by finds from the minor Sumerian town-site of Abu Salabikh (Fig. 40). 15 fragments, each belonging to a different stone vessel and all but one belonging to open bowls, were recovered from a very extensive Early Dynastic IIIb midden or so-called Ash-Tip which is believed to derive from a nearby but unexcavated temple (Potts 1993). One was a banded calcite and – like those from Ur – belonged to a class probably manufactured in eastern Iran and which is also attested from south-west Central Asia (Casanova 1991; this volume). A second was made from sandstone, and the remainder were carved from pale sedimentary stones 'varying from soft, chalky limestone to a hard marble-like material': these are believed to be of local Mesopotamian manufacture as similar materials outcrop near Uruk, Ur and along the Euphrates and Tigris north of Baghdad. The comparative rarity of these vessels at Abu Salabikh is illustrated by the fact that only 15 sherds were found in total in the Ash-Tip whereas the total count of potsherds from only two deposits



Fig. 21. Chlorite cosmetic bottles excavated in the cemetery at Shahdad: plain or with simple linear incision (1-8), dotted circles (9-17), dotted circles combined with linear incision (18), linear incision (19), incised 'hut model' designs (20-21), dotted circles (22-36), linear incision (37-38), cavities for inlays (39-40), carinated with dotted circles (41), floral design (42) and carinated on a solid stand support with cavities for inlays (43) (after Hakemi 1997a)

Fig. 22. Imported chlorite cosmetic bottles found at Susa and described there as *série récente* (after Miroschedji 1973: fig. 11.1-6)

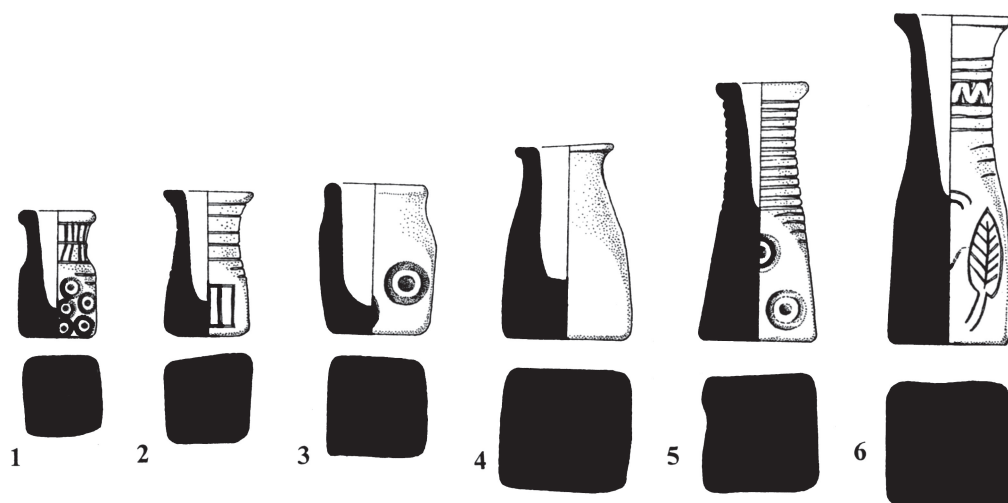


Fig. 23. Imported dark grey chlorite bowl found at Ur; carved, incised and polished with hematite pigment in-filling the dotted circle decoration on the exterior.
H 5.7 cm. BM 1933,1013.101 = 124425
(photograph: © The British Museum)



Fig. 24. Imported Jiroft-type 'Figurative Style' vessel fragment found at Tarut (after Cotty 2010 = Zarins 1978: no. 546; see Fig. 25: 1 below)

in this area totalled 41,869 sherds. In addition, five complete or semi-complete and 31 fragmentary stone bowls of similar stone were recovered from 16 out of the published sample of 99 Early Dynastic III private graves at the site (Postgate ed. 1985: 3-4, 30, 40-41, 64, 70, 74, 81, 85, 95-96, 104, 109, 124, 148, 165, 169, 182-83, fig. 141, pls XXVIII-XXIX = Graves 1-2, 25-27, 30, 32, 38, 48, 51, 69, 80, 88-89, 97-98). Several of these had traces of ancient repairs. No more than one bowl was found *in situ* in a single grave, but these included the richest grave (Grave 1) which also contained silver jewellery and a huge number of stacked conical bowls and spouted jars, with the right hand of the deceased placed inside the (now empty) bowl (Fig. 41); in another grave (Grave 32), the stone bowl contained the remains of a woven reed basket apparently containing fish.

Several conclusions can be drawn from these finds from Abu Salabikh:

1. stone vessels were used in the household as well as in the temple
2. they were significantly rarer than pottery
3. they were sufficiently valued to be repaired when broken
4. they were occasionally interred in private graves
5. the majority were of Mesopotamian manufacture
6. at least one was an eastern Iranian import
7. no chlorite vessels were found.

The attractiveness of the calcite vessels found in Mesopotamia and elsewhere lay in their translucency and natural veining, whereas the chlorite vessels are typified by their dark colour, textured patterning, relief carving, and/or coloured inlay or (less commonly) pigmented highlights. The application of one or more of these decorative concepts to the chlorite containers appear to have triggered local skeuomorphic traditions as other craftsmen directly copied or were loosely

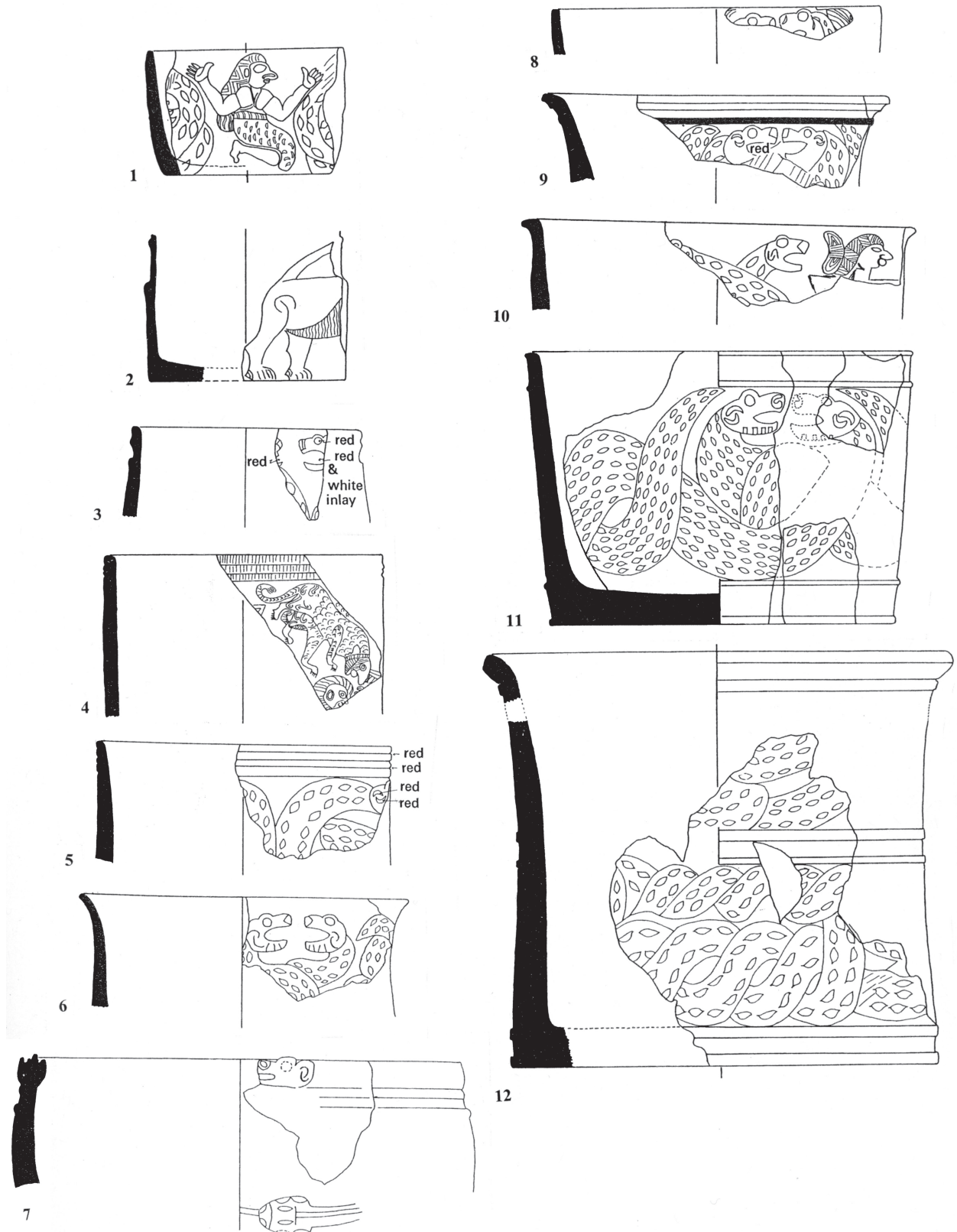


Fig. 25. Imported *série ancienne* chlorite vessels with figural representations found at Tarut; note the survival of red and white inlays on no. 3 and red pigment on no. 5 (after Zarins 1978: nos 546, 52, 132, 47, 135, 58, 60, 570, 157, 49, 545, 542)

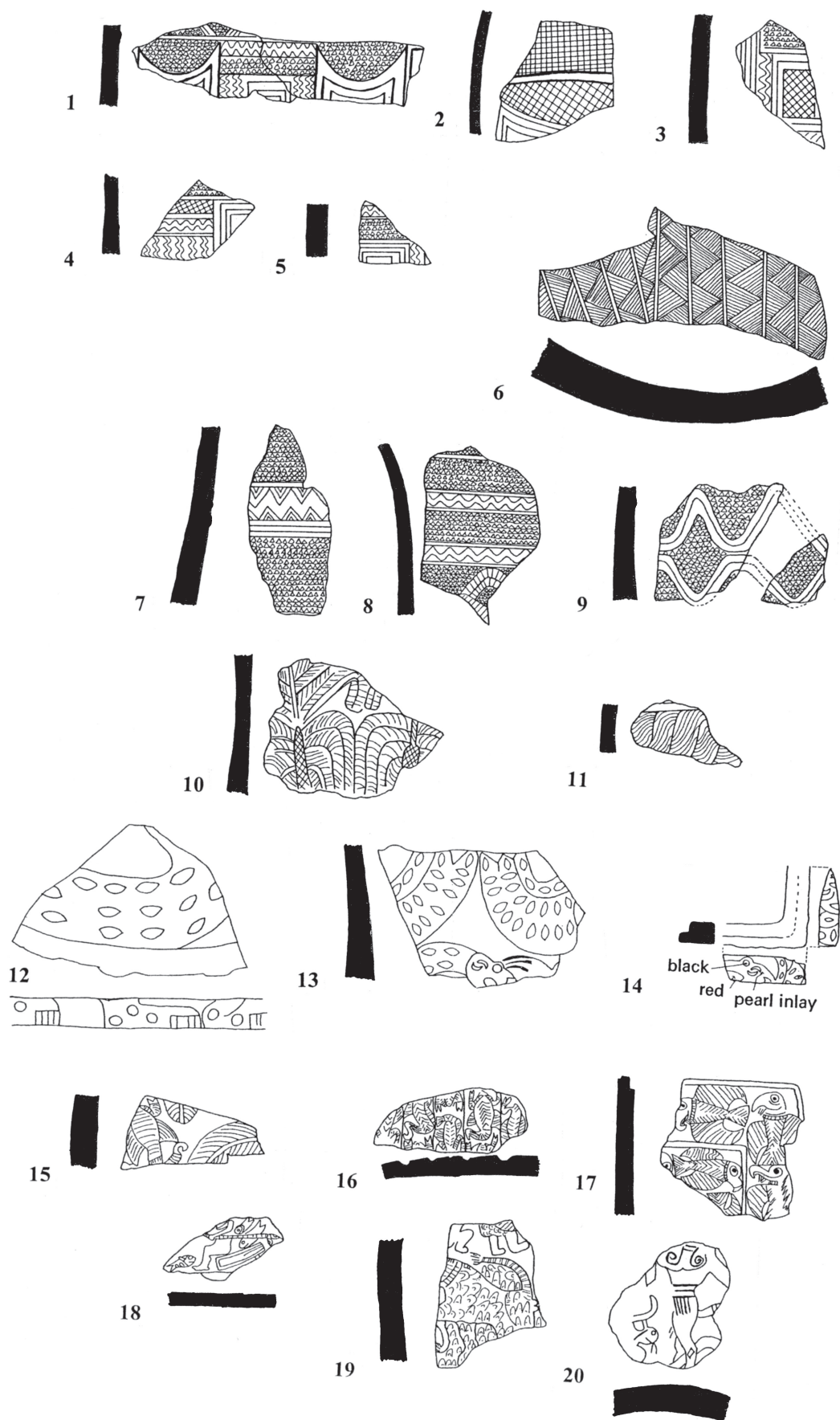


Fig. 26. Imported *série ancienne* chlorite vessels with 'hut model' and other designs found at Tarut; note the survival of black, red and white inlays on no. 14 (after Zarins 1978: nos 568, 201, 273, 276, 279, 141, 245, 138, 106, 581, 308, 63, 140, 97, 116, 123, 62, 41, 48, 42)

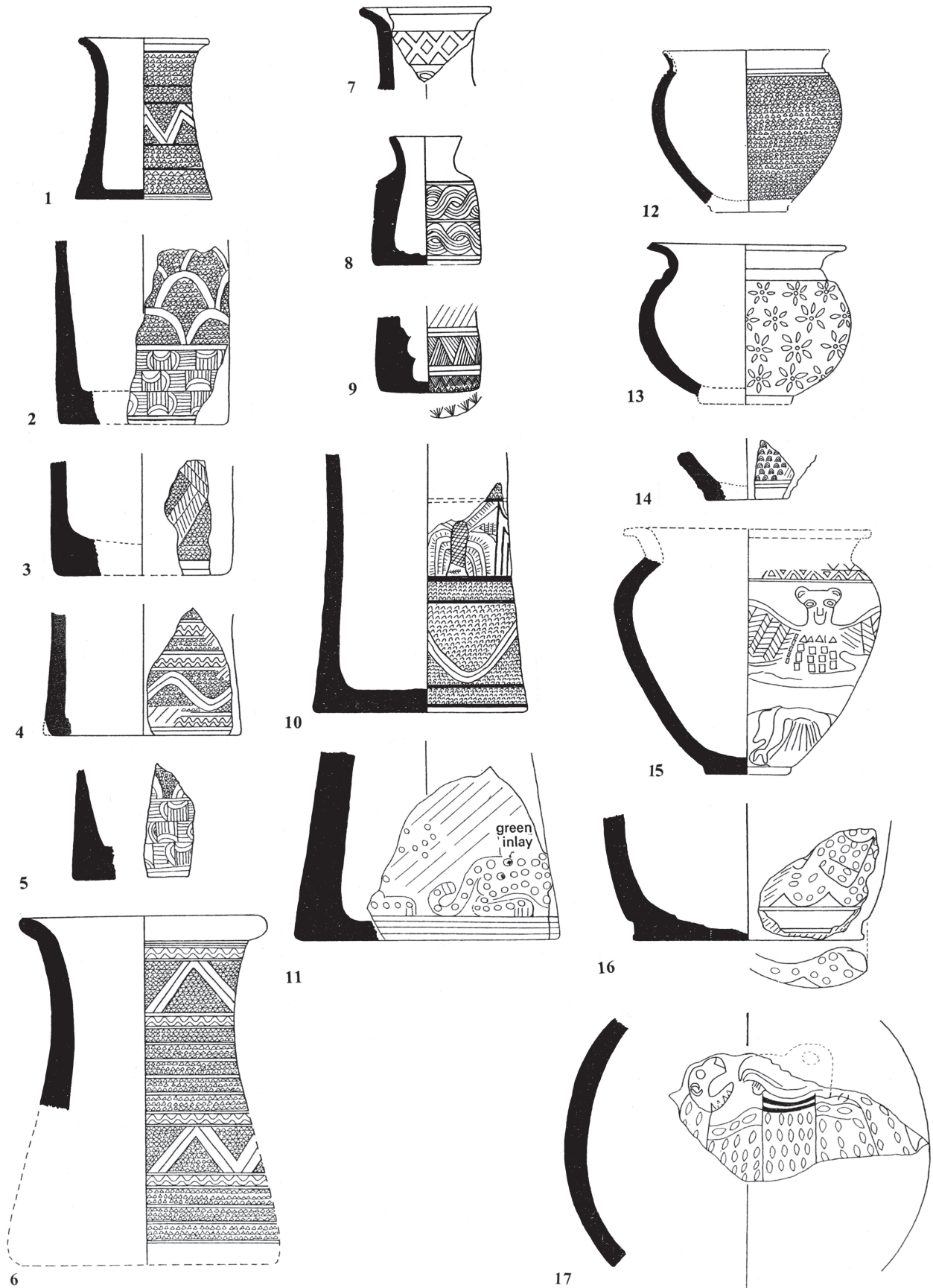


Fig. 27. Imported *série ancienne* chlorite vessels with geometric, imbricated, hatched zigzag and floral designs and representations of birds of prey with outstretched wings found at Tarut; note the survival of green inlay on no. 11 (after Zarins 1978: nos 57, 64, 244, 303, 4, 345, 143, 588, 256, 39, 134, 145, 54, 266, 69, 352, 159)

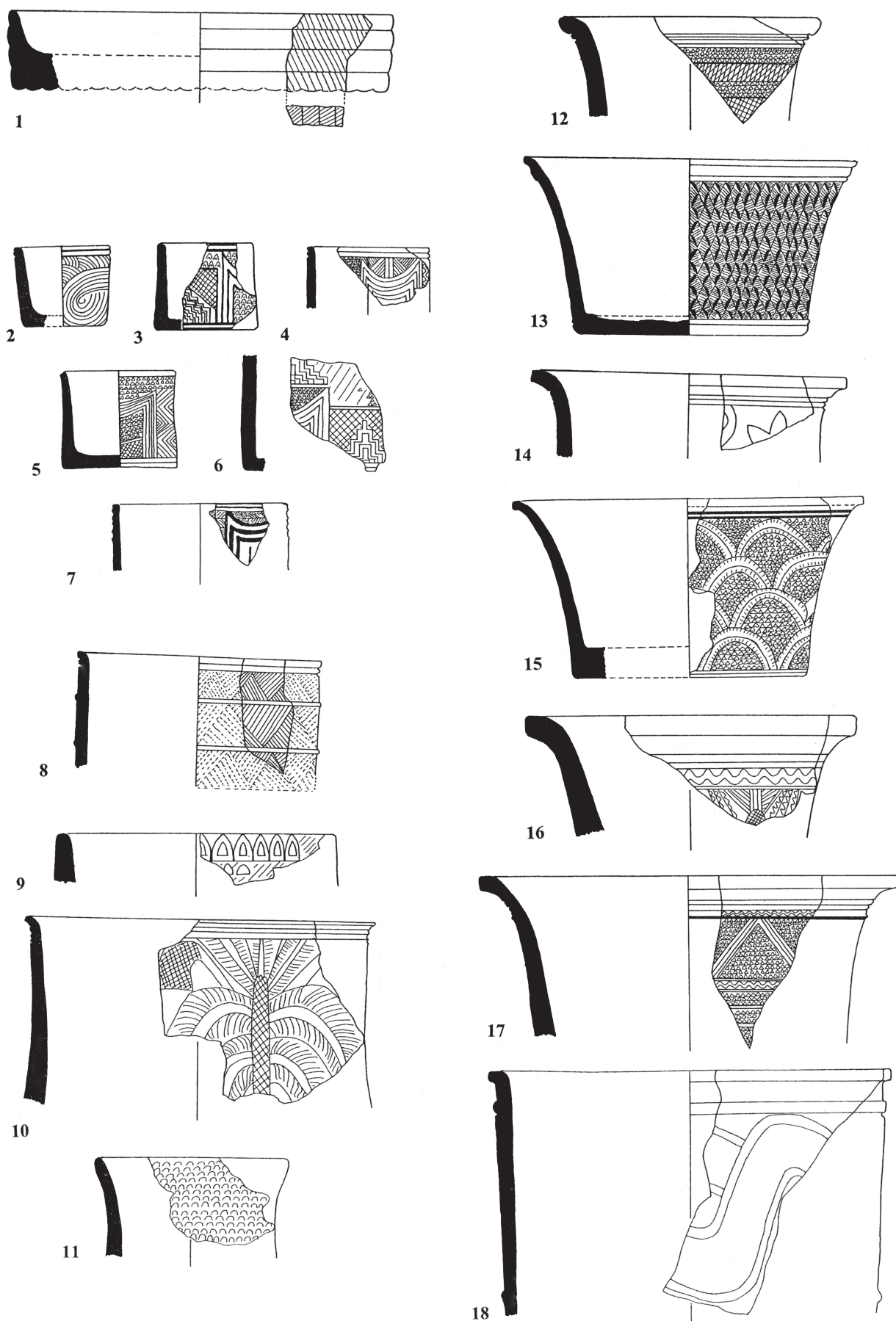


Fig. 28. Imported *série ancienne* chlorite vessels with 'hut model', vegetal and geometric designs found at Tarut (after Zarins 1978: nos 127, 114, 50, 119, 109, 271, 25, 113, 131, 51, 569, 306, 66, 101, 53, 139, 111, 110)

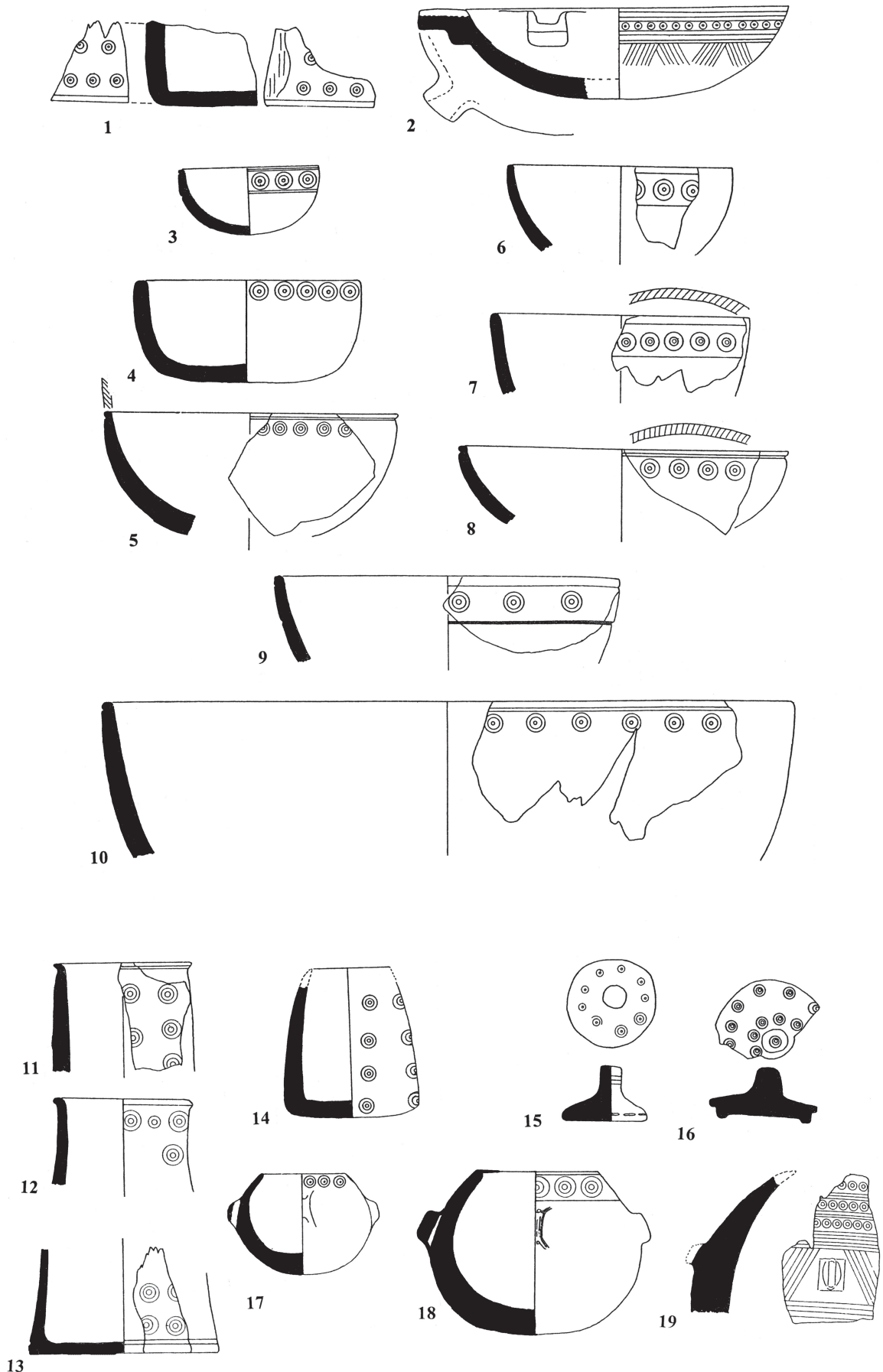


Fig. 29. Imported 2nd millennium BC chlorite bowls, beakers and lids with dotted decoration found at Tarut (after Zarins 1978: nos 551, 246, 586, 595, 129, 565, 252, 300, 104, 384, 107, 332, 331, 547, 130, 37, 594, 40, 136)



Fig. 30. Imported *série ancienne* chlorite bowl with vegetal design found at Tarut (after Cotty 2010; compare Zarins 1978: no. 51; see Fig. 28.10 above)



Fig. 31. Imported banded calcite bowl with ancient copper alloy rivet repairs, excavated at Ur, 1928/29 (U.11851). H. 3.1 cm, D 12.3–12.5 cm, weight 372.5 g, capacity 220 ml. BM 1929,1017.666 = 123705 (photograph: © The British Museum)

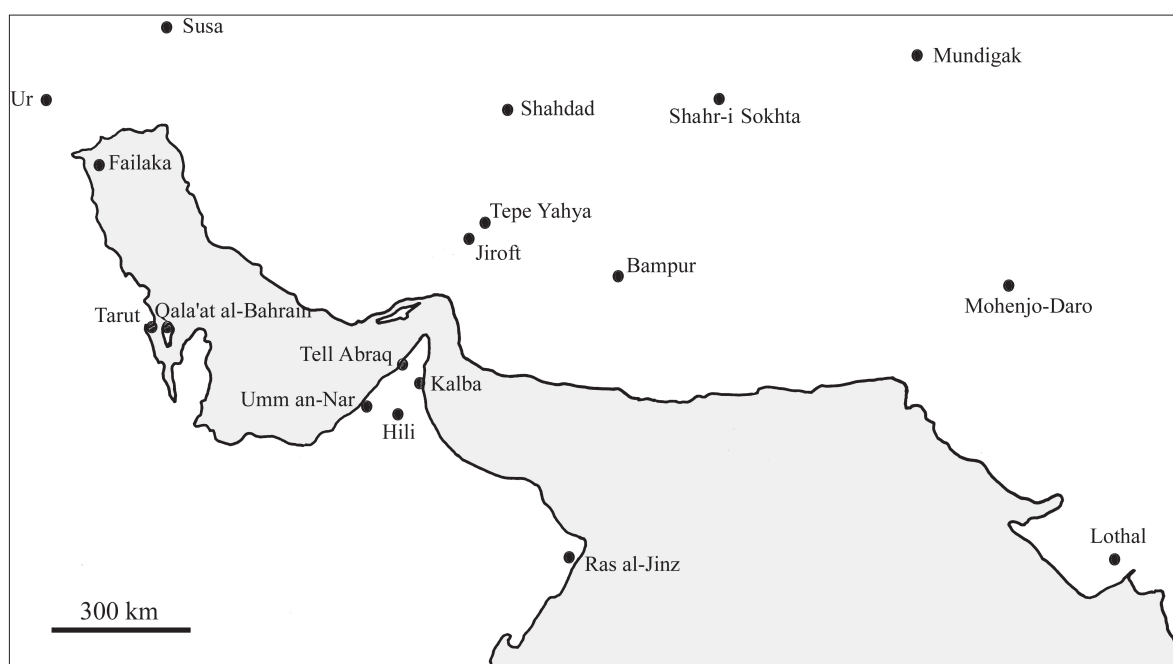


Fig. 32. Map showing sites in the Persian Gulf and south-east Iran



Fig. 33. Imported chlorite bowl sherd with drilled repair hole, found at Ur. H 3.8 cm; estimated rim D 25 cm. Incised below the rim on the exterior with a single row of centrally-dotted double concentric circles, below three horizontal lines; worn surfaces; lower break cut smooth; secondary perforation through the centre. BM 124426 (photograph: © The British Museum)



Fig. 34. Fragments of an imported *série ancienne* dark grey chlorite bowl found at Ur with added Mesopotamian inscription on the interior referring to the lands of Elam and Marhashi. BM 116455 (photograph: © The British Museum)



Fig. 35. Imported and locally made stone vessels found in an Early Dynastic temple dump at Adab. 1: chlorite, described as 'blue freestone'; 2: 'soft limestone'; 3: 'grey sandstone'; 4-6: possibly chlorite, described as 'porphyry'; 7-11: limestone, simply described as 'yellow stone'; 12-31: limestone, described as 'white stone'; 32- 44: calcite, described as 'alabaster' or 'onyx' (after Banks 1912: 260-61, 264-66)



Fig. 36. Imported carved Jiroft-type 'Figurative Style' straight-sided chlorite bowl (or box) fragment found at Adab. It shows a row of bare-chested male musicians wearing knee-length loincloths, hats and braided hair playing lyres and a drum, followed by a shorter person and a singer, with figures of similar appearance and dress running towards them. The intervening space is filled with vegetal sprays and symbols (drawing adapted from Banks 1912: 268). Note the identity of style of representation of the figures to that on the chlorite box said to be from Khafajah (Figs 14–15)

Fig. 37. Imported carved Jiroft-type 'Figurative Style' vessel fragment found at Adab with original inlays partially surviving. One of the loincloths is inlaid with what is described as ivory but is more likely to be polished shell, and a fragment of lapis lazuli survives on one of the branches (photograph adapted from Banks 1912: 267)



Fig. 38. Stone vessels and a gold beaker excavated from the 'Royal Cemetery' at Ur (photograph: © The British Museum)

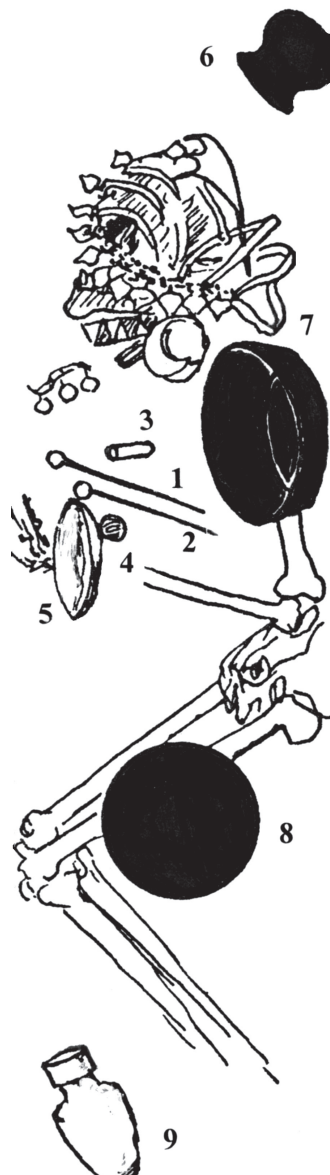


Fig. 39. Plan of Grave 1315 in the 'Royal Cemetery' at Ur showing the position of stone vessels (6–8) along with other grave-goods; 1: silver pin with lapis lazuli head; 2: silver pin with lapis lazuli head and gold cap; 3: lapis lazuli cylinder seal; 4: cockle-shells containing green cosmetic; 5: copper alloy bowl; 6: white calcite vase (Type 90); 7: white calcite bowl (Type 36); 8: white calcite bowl (?Type 36); 9: pottery vessel (adapted from Woolley 1934: fig. 49)

inspired to create similar effects with other materials. Fleece-like decoration of overlapping curls (Kohl's 'whirl' motif) was duplicated in repoussé on the exterior of a range of spouted bronze jars found as far west as Susa and the Tepe Giyan region of western Iran (e.g. Amiet 1986a: 131, fig. 72.3) (Fig. 42).

The periodic imitation or inspiration of carved stone vessels was not limited to metalwork. Two graves at Shahdad contained rectangular compartmented boxes imitating a well-known chlorite and calcite type but

in these cases made from local pottery fabrics (Fig. 43; compare Fig. 19). During the second half of the 3rd millennium, fine greyware vessels with crisply incised 'hut model' and geometric designs appear in eastern Iran and Baluchistan, with imports and local copies also attested from south-east Arabia (Méry 2000: 204–17) (Figs 43: 3, 44). Their occurrence within Baluchistan was interpreted as evidence for imitations triggered by the scarcity of the chlorite originals (Stein 1931: pl. XXX; de Cardi 1967: 39–40; 1968: 149, pl. IVa; During Caspers 1970). The reverse has also been argued from south-east Arabia where straight-sided chlorite bowls decorated with an all-over pattern of horizontal incised lines are believed to imitate pottery bowls found in the Margiana region of south-west Central Asia (During Caspers 1996: 50, pl. II).

In addition, during the late 3rd and early 2nd millennia at Susa, another local industry attempted to imitate relief carved chlorite through the manufacture of containers carved from dark grey artificial bitumen compound (Connan & Dechesne 1996). A small number of these were also exported to southern Mesopotamian cities, where the findspots include Adab, Ishchali, Ur and Uruk (e.g. Banks 1912: 266; Carter 1990) (Fig. 45). These are not the only types or materials inspired by decorated stone vessels of this period and dotted circle designs on pottery vessels found along the middle Euphrates are another manifestation (Oguchi 1997; Kepinski 2007: 128–29). The same probably applies to the colour scheme (although not the form) of another distinctive type, namely a small footed jar with perforated shoulder lugs and red and white-infilled decoration of fish and waterfowl, which has a distribution stretching from Tal-i Malyan, Godin Tepe and Chogha Gavaneh on the Iranian plateau through Susiana and the Diyala to sites in southern and central Iraq (Carter 1990: 96; Potts 1999: 174–75) (Fig. 46).

Bactria and Jiroft: archaeology and art market

From the early 1970s onwards, a number of decorated chlorite objects began to circulate on the international art market via the Kabul bazaar. The commonest types were shallow kidney-shaped palettes and small square-sided cosmetic bottles (so-called 'flacons') measuring between 4 and 9.5 cm in height with short cylindrical necks and separate metal applicators (Figs 47–48). Varieties of plain or decorated shallow and deep bowls, occasionally with trough spouts (Fig. 49), footed rectangular palettes (Fig. 50) and square compartmented boxes also occur. The decorated vessels shared a repetitive canon of shallow incised geometric, occasional floral and rare figural designs incorporating snakes, scorpions and female figures. Encrusted decoration set into recesses was scarce but is occasionally found on small jars

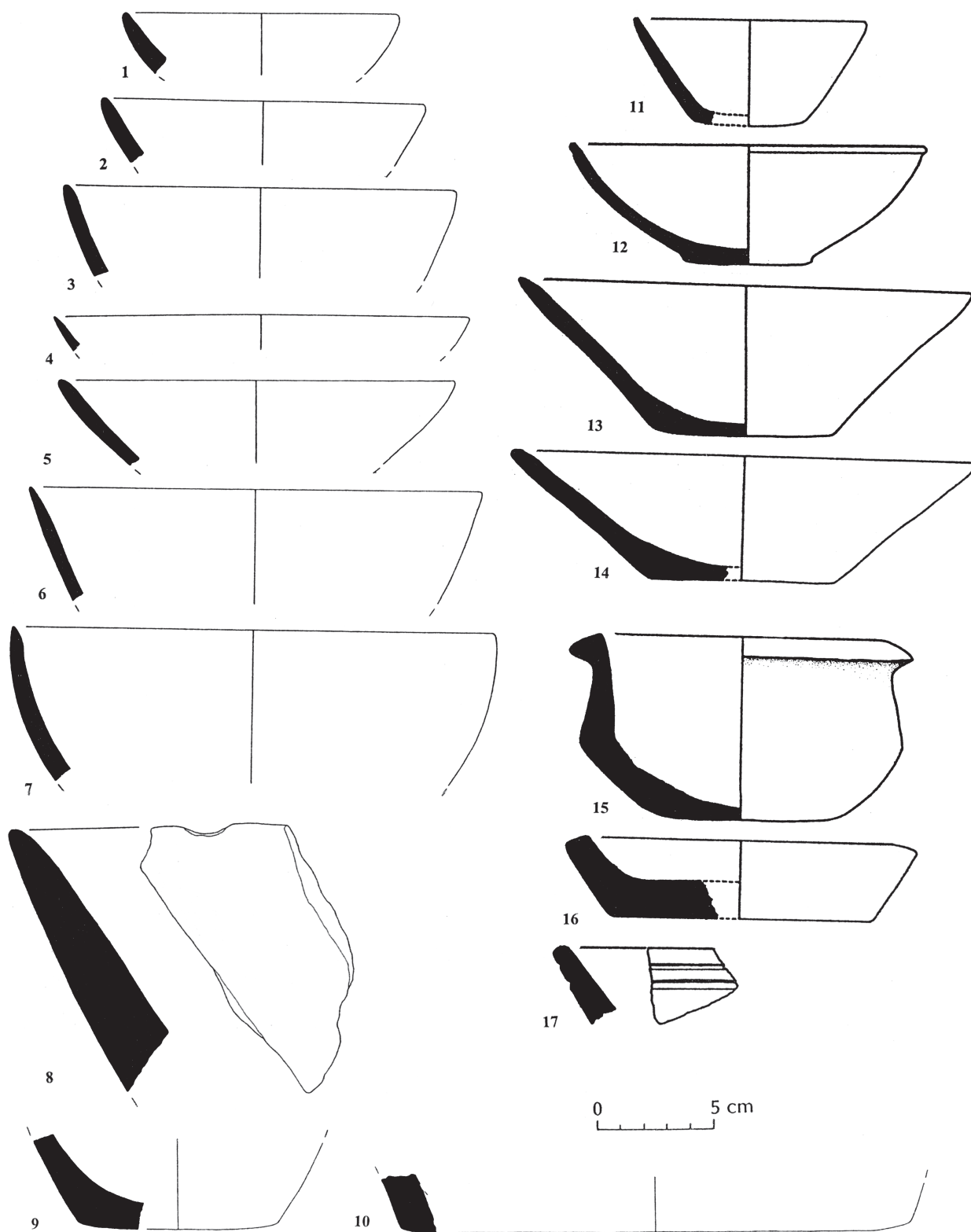


Fig. 40. Stone vessels from Early Dynastic III contexts excavated at Abu Salabikh: 1–10, Ash Tip refuse, 11–17, graves (after Postgate ed. 1985: fig. 141; Potts 1993: figs 11.1–11.2)

(Ligabue & Salvatori eds n.d.: fig. 86; Bonhams 1998: 51, lot 172; 2000: 90, lot 280) and square-sided bottles (Fig. 48: 6, compare Fig. 20: 39–40) (cf. also David this volume).

These objects circulated alongside a variety of small copper alloy cosmetic bottles, compartmented copper alloy and double-sided chlorite stamp seals, copper alloy axes and other objects such as mirrors and

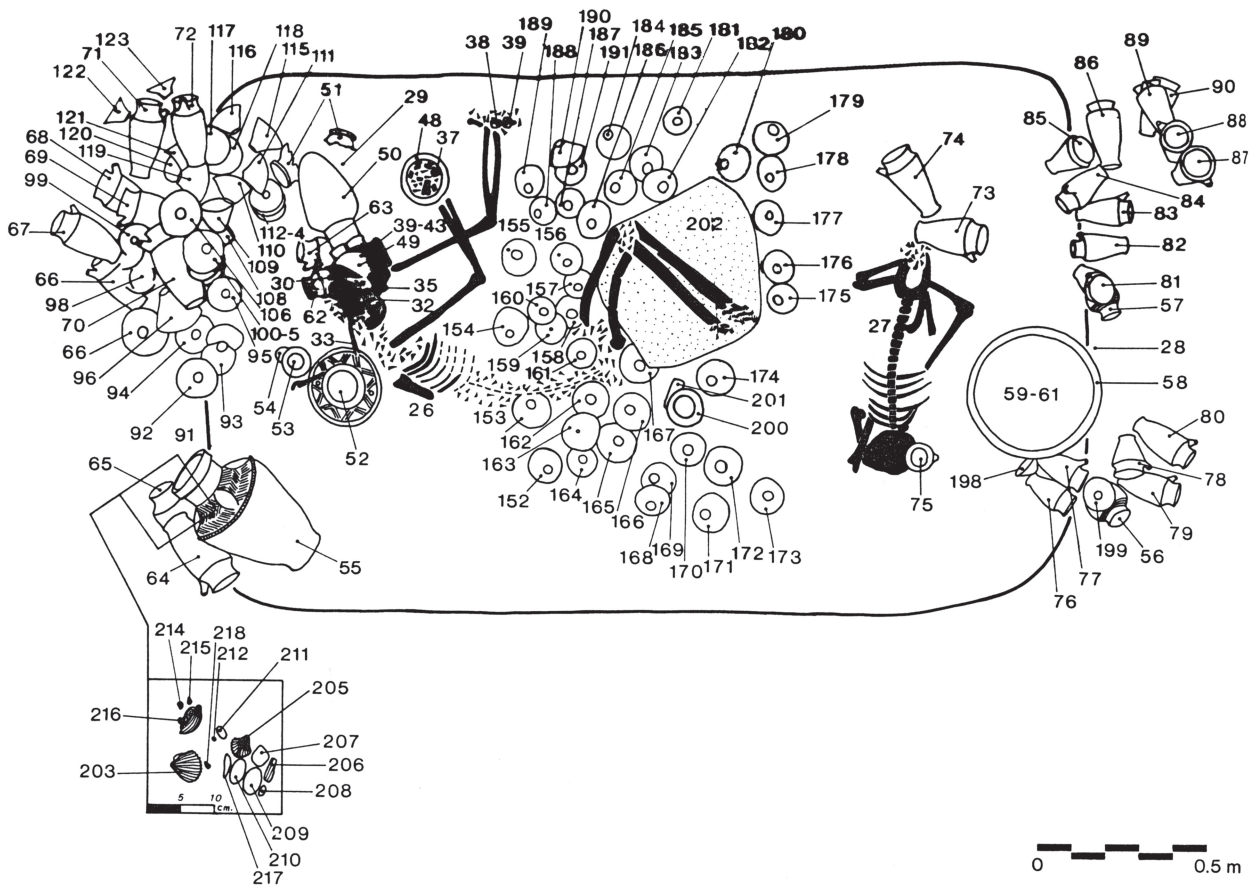


Fig. 41. Plan of the finds in Grave 1 at Abu Salabikh (after Postgate ed. 1985: 26, fig. 8)



Fig. 42. Fleece-like decoration of overlapping curls (Kohl's 'whirl' motif) imitated on a bronze vessel found at Tepe Gilwera in western Iran. H 13.5 cm. BM 1936,0613.200 = 128600 (photograph: © The British Museum)

chlorite-bodied statuettes with fleece-like skirts and separate busts, wigs and arms (Pittman 1984; Pottier 1984). The sources of these were sites in northern Afghanistan (southern Bactria) where V. I. Sarianidi has estimated some 80% of sites in the Dashly, Nichkin and Farukhabad oases had been looted by the 1980s. It was in these areas that Soviet investigators had previously

recorded a total of 59 Bronze Age sites along the alluvial fans of the river Balkhab, and ranging from fortified and open settlements with intramural burials to more extensive cemeteries (Kohl 1984: 159–71). The pattern of circulation on the art market recalls that of Luristan in the late 1920s and early 1930s whereby small attractive objects soon acquired a market but the majority of grave finds – typically pottery – were discarded by the grave-side and others were recycled as scrap or reused in modern tribal jewellery (cf. Simpson 2000).

A series of more elaborately decorated pieces began to circulate on the art market during the 1990s. These included vessels in the *série ancienne* group, footed goblets and other vessels often decorated with red and white inlays (Fig. 51) (e.g. Bonhams 1998: 51, lots 169–75; Christie's 1990: 104, lot 230a; Hakemi 1997b: figs 9–10, 13–14, 18–22, 35–36, 42–53, 56–59). The footed goblets are particularly interesting as this form has not previously been recognised in chlorite vessels of this period although similar shapes are known in pottery and metalwork, including gold and silver versions with figural decoration from the Fullol hoard found in north-east Afghanistan (cf. Maxwell-Hyslop 1982; also Boisgirard – Antonini 2012: 14, lot 41). An exceptional

Fig. 43. Local pottery imitations of chlorite compartmented boxes (1-2) and incised greyware pottery bowl (3); all excavated in the cemetery at Shahdad (after Hakemi 1997a: 580, dgs 1-2, 583, Dk 1; not to scale)



Fig. 44. South-east Iranian skeuomorphic greyware pottery beaker sherd with incised 'hut model' design inspired by chlorite vessels although the carinated profile imitates metalware. H 7.8 cm. BM 150831 (photograph: © The British Museum)



Fig. 45. Imported Elamite bitumen compound bowl excavated at Ur. H 7 cm. BM 1923,1110.43 = 116456 (photograph: © The British Museum)



Fig. 46. Elamite pigmented and inlaid greyware pottery vessel partly inspired by chlorite vessels. H 9.5 cm, capacity 190 ml. BM 1972,0228.1 = 135683 (photograph: © The British Museum)

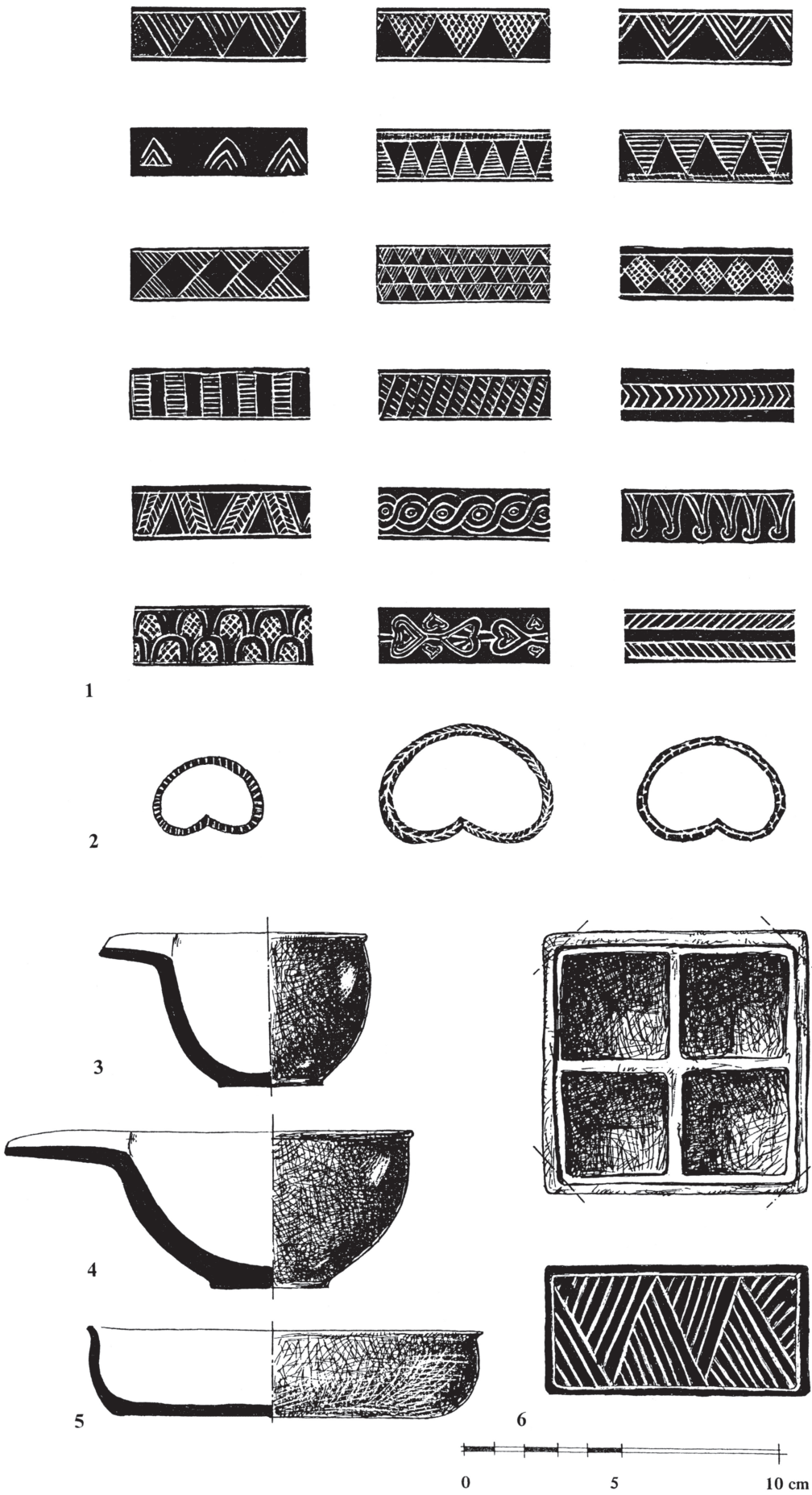


Fig. 47. Chlorite vessels reportedly from looted cemeteries in southern Bactria. 1-2: kidney-shaped palettes; 3-5: trough-spouted and plain bowls; 6: a square compartmented box with geometric decoration (after Pottier 1984: figs 30-31, 42, nos 223-24, 221, 226)

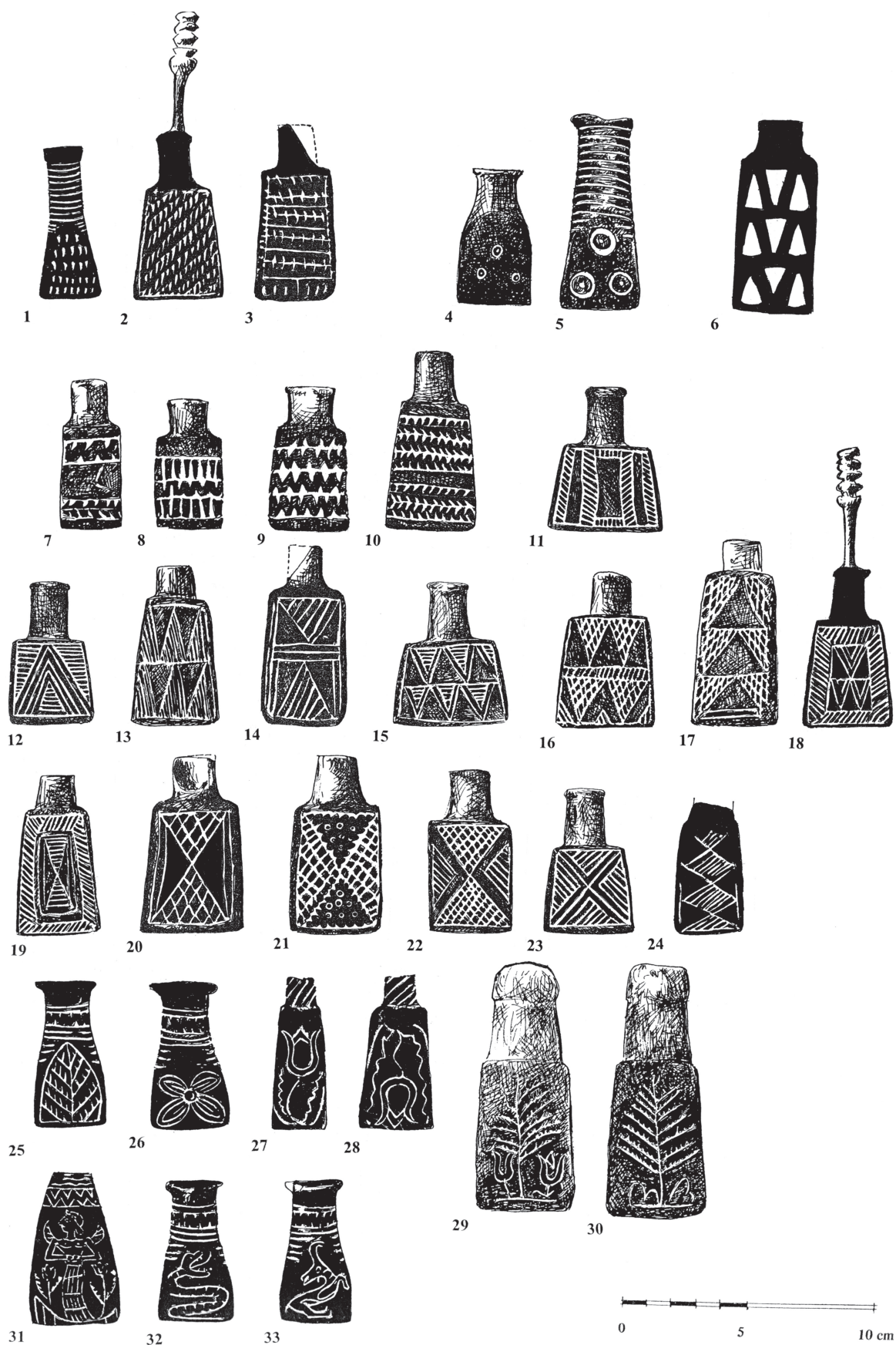


Fig. 48. Chlorite square-sided cosmetic bottles reportedly from looted cemeteries in southern Bactria. 1-3: simple incised, one with copper alloy applicator; 4-5: dotted circles; 6: rows of triangular inlay recesses; 7-10: horizontal zigzag motif; 11: vertical geometric; 12-18: repeating triangles; 19-23: stacked triangles; 24: stacked diamonds; 25-30: vegetal and floral designs; 31: zigzag, floral and figural composition; 32-33: figural designs (after Pottier 1984: figs 18-20, nos 131-51)



Fig. 49. Chlorite vessels reportedly from looted cemeteries in southern Bactria. 1-2: plain deep bowls; 3-7, 9: deep bowls with geometric decoration; 8, 10: straight-sided or deep bowls with snake decoration; 11: rectangular footed bowl with scorpion and snake decoration (after Pottier 1984: figs 30-31, 42, nos 230, 235, 233, 227, 232, 228, 234, 231, 229, 225, 312)



Fig. 50. Rectangular palette, originally supported by four legs but these had been cut down in antiquity and are now merely stubs, decorated on the exterior with incised snake and guilloche designs on the two long sides, and a coiled snake and a snake and tree on the short sides. The guilloche design may have been locally regarded as snake-like. There were no visible traces of pigment in the decoration or any residue within. H 7.3, L 6.6, W 4.7 cm; capacity 20 ml. Looted item from Afghanistan seized from a private collection in London by the Art and Antiques Unit of the Metropolitan Police and returned by the British Museum to Kabul in 2012 (photograph: © National Museum of Afghanistan/The British Museum)



Fig. 51. Carved chlorite footed goblet said to be from Jiroft (after Majidzadeh 2003: 25)

jar acquired by the Musée du Louvre was decorated with intertwined snakes dividing a repeating scene of a large jar with the protruding heads of two female figures (Benoit 2003). Small anthropomorphic statuettes, so-called 'handbag weights', flat bird figures (resembling

oversize stone versions of a category of compartmented metal stamp seal) and gaming-boards are also present (Majidzadeh 2003: 123–39). The last-mentioned objects resemble a wooden example excavated in a grave at Shahr-i Sokhta as well as the famous 'Royal Game of Ur', and were one of the commonest ancient Near Eastern board games until at least the 8th century BC. Until recently, the source of these art market objects was usually attributed to Bactria, although the new finds included much more elaborate types than previously attested from that region.

The assumed Bactrian provenance was finally challenged in 2001/02 when the Iranian Cultural Heritage Organisation officially reported extensive looting of cemeteries in the Kerman region of south-east Iran. These were situated close to mounded settlement sites along the right bank of the Halil Rud and south of the modern city of Jiroft. As with earlier reports of antiquities from regions such as Amlash, the modern name of the nearest major town or city has been adopted for a style of ancient material culture (Perrot 2003; Perrot & Majidzadeh 2005; 2006). In addition to carved chlorite vessels and objects, polished calcite vessels, Emir Greyware and other painted pottery, and copper alloy statuettes, weapons and vessels are also said to have been found here (Majidzadeh 2003: 144–46, 150–53, 156–63).

Some of these newly published chlorite vessels resemble categories familiar from excavations in the cemetery at Shahdad and elsewhere (cf. Casanova 1991; Wright 1989; Hakemi 1997a). The current assumption is that many of the more elaborate 'Bactrian' chlorite (and other) objects which had circulated on the art market over the previous decade actually derive from the Jiroft region. However, there is a dangerous possibility of a new circular argument of provenance being created, just as Bactria was the previously alleged origin even for medieval or later cooking bowls of Iranian and South Arabian types (cf. Bonhams 1997: 22, lot 97; Christie's 1991: 16, lot 20).

There are still many unanswered questions over the 'Jiroft' finds. Some, as Muscarella (2005) has observed, are certainly not authentic and a few even carry faked cuneiform inscriptions in Old Persian style. The variety of styles published by Majidzadeh (2003) suggest that more than one centre of production was responsible but it remains to be demonstrated where any were actually carved as no chlorite workshop debris has yet been reported from the few settlement sites to be investigated thus far. However, if some or all of the authenticated finds do originate from the looted cemeteries at these sites (as is most likely), they would indicate that the so-called 'Intercultural Style' objects – now re-christened 'Jiroft Style' – were not exclusively manufactured for export 'towards final consumption in the urban centres of Khuzestan and Sumer' as argued

by Kohl (1977: 123), but instead were intended primarily for markets in eastern Iran and Indus borderlands (cf. Possehl 1986).

The distinctive figural iconography on some vessels reportedly from Jiroft, as well as that on many previously attested *série ancienne* examples, suggests a complex yet shared pattern of beliefs which some authors, including Winkelmann (this volume), argue as embodying local oral traditions and the Sumerian myth of Etana. Following a preliminary study by Rossignol-Strick (2003), Amigues (2009) has attempted to identify the vegetal representations on these vessels as the ferula which yields assafoetida, Syrian rue, cypress, pistachio and a tall fir-shaped juniper. She proposes that these species, not all of which are even local to the Jiroft region, were selected because of their prophylactic properties. The rich diversity of iconography on the seal impressions excavated at Konar Sandal suggests the picture is very complex and clearly much more research is required.

The initial reports were soon followed by claims that these discoveries were evidence for 'the earliest Oriental civilization' and proof of the existence of the legendary 'land of Aratta' (Madjidzadeh 2003). It is more likely that it was instead part of the land of Marhashi described in late 3rd millennium Mesopotamian texts (e.g. Kohl 2007: 225–31; but see Francfort & Tremblay 2010).

The potential significance of the upper Halil Rud region – midway between Tepe Yahya some 75 kilometres to the west and Bampur the same distance to the east – had been highlighted previously by Aurel Stein (1937: 148–57) and through Martha Prickett's survey in the 1970s (Prickett 1986). The density of ancient settlements here has been supported by a new Iranian survey which began in 2002. This has so far reported some 170 sites and suggested the looting to have been heaviest in cemeteries close to the sites of Konar Sandal A, Konar Sandal B and Qhale Kuchek, which were located within 8 kilometres of each other. Excavations followed in 2003 and monumental mudbrick platforms were found at the first two of these sites, where Stein had previously noted traces of calcite vessel manufacture. These platforms resemble an eastern Iranian phenomenon previously noted at Tureng tepe, Altyn-depe and elsewhere, although links have also been drawn with 3rd millennium Mesopotamian ziggurats and their possible appearance reconstructed on the basis of stepped motifs carved on stone vessels (Madjidzadeh 2004).

Bactria and Margiana

Eastern Iran has always enjoyed a close cultural relationship with neighbouring Afghanistan and

Central Asia. During the late 3rd and early 2nd millennia BC this is encapsulated by the common *koinê* of the so-called Bactria-Margiana Archaeological Complex [BMAC]. The continuing large-scale excavations at Gonur-depe at the northern edge of the Murghab delta in southern Turkmenistan prove the import of exotic items of Indus, Mesopotamian and eastern Iranian type into Margiana at this period (Sarianidi 1990; 1998; 2006; 2008).

Along with these objects are a small number of items carved from grey or occasionally reddish chlorite (Figs 52–53). At Gonur-depe it was reported to be the most commonly used (imported) stone, followed by banded calcite vessels (tall footed bowls, bowls, square-



Fig. 52. Imported chlorite kidney-shaped palette found at Gonur-depe, with modern applicator (National Museum of Turkmenistan, Ashgabat)



Fig. 53. Imported chlorite cosmetic bottle found at Gonur-depe (National Museum of Turkmenistan, Ashgabat)

bodied cosmetic bottles and a trough-spouted vessel), limestone and sandstone grinding equipment, and semi-precious stone beads. Evidence for some working or re-working of steatite and other stone objects, including miniature columns, was also recognised at Togolok-21; an unfinished grey steatite stamp seal was found at Togolok-24 (Fig. 54: 5) and a re-worked bowl is illustrated by Sarianidi (1998: fig. 18.6). The range of steatite objects at sites in Margiana is tabulated below (Table 7).

A great variety of chlorite objects, both finished, unfinished and recycled, therefore occur in Margiana. The origin of these materials has not been identified but in addition to the known sources in Iran, it has been suggested that chlorite may occur in the Kopet Dag and Hindu Kush (Hiebert 1994a: 148). The decorated beads or spindle whorls appear to be a local phenomenon and are matched by examples made of fired clay (Fig. 54). However, the kidney-shaped palettes with incised decoration, the flasks

with geometric or floral designs, and the tall cups with incised cross-hatched triangles belong to a group which is well-known from southern Bactria. By contrast, the bowls with rows of zigzags below the rim may be south-east Iranian imports (cf. Potts 2003) (compare Figs 18: 5, 64: 6–7).

The earlier Soviet excavations at Altyn-depe also produced a number of greenish-black chlorite items. These were found in both settlement and burial contexts. The surface of some of these vessels (such as vessel 4 from room 371 in Trench 9) and a lidded lamp (from burial 626–627) contained irregular reddish-brownish specks of iron impurity. The objects included lamps, a so-called ‘lamp-cup’, small biconical toiletry containers (Fig. 55), stamp seals, beads, and a staff or sceptre measuring 1.20 m. in length which was found in a burial (Fig. 56). In addition, excavations in the temple at Altyn-depe produced a long pestle-like object, plus a miniature column and weight similar to those excavated at Tepe Hissar and made of calcite-alabaster

Type	Description	Publication references	Fig.
Small open or kidney-shaped bowls	Decorated with lightly incised hatched triangles, overlapping petals, zigzag lines with circles or occasionally leaves, or other simple geometric incised decoration on the exterior or along the top of the rim	Sarianidi 1981: 182, fig. 11.27; 1998: fig. 17.6, 9, 14; Hiebert 1994a: 148, fig. 9.10.1–5; Rossi-Osmida ed. 2002: 39	Fig. 52
Zigzag bowls	Decorated with deeply carved rows of zigzag decoration below the rim	Hiebert 1994b: 376–77, fig. 2; Sarianidi 1998: 48–49, figs 17–18; Potts 2003	
Truncated conical bowls	Decorated with diagonal rows of hatched or zigzag decoration on the exterior	Masimov, Salvatori & Udeumuradov 1998: 36, fig. 4.5; Rossi-Osmida ed. 2002: 108, 124, 126, no. 3	
Square-bodied cosmetic bottles	These are typically decorated with light incision on all four sides usually consisting of hatched or cross-hatched geometric designs, occasionally with leaf designs and exceptionally with figural designs. Blanks are also present.	Hiebert 1994a: fig. 9.11.1, 3; 1994b: 376–77; Masimov, Salvatori & Udeumuradov 1998: 36–37, fig. 4.1; Sarianidi 1998: figs 18.10, 13, 19.1; Salvatori 2008: 84–87	Fig. 53
Mace-head or sceptre top	Decorated with a guilloche-like design of intertwined snakes	Sarianidi 1981: 180–82, figs 6.8–8a, 11.32; Hiebert 1994a: 157, fig. 9.22)	
Pestle-like grey rods, staffs or sceptres	Measuring up to half a metre or more in length and with decorated copper alloy tops and possibly additional metal bands akin to those reported from southern Bactria	Masimov, Salvatori & Udeumuradov 1998: 37–38, fig. 4.3; Rossi-Osmida ed. 2002: 86–87, 90–91, 119, no. 24; Salvatori 1993: fig. 16; Sarianidi 1998: 75, fig. 35	
Miniature columns		Hiebert 1994b: 381	
Statuettes with fleece-like clothing	These have a recess at the top for a separate head and belong to a class well-known from finds in southern Bactria and the art market	Sarianidi 1998: 50, fig. 18.8	
Amulets, stamp seals and stamp-cylinder seals		Hiebert 1994a: 151–52, figs 9.14–9.16; 1994b: 379–81; Masimov, Salvatori & Udeumuradov 1998: 37, fig. 4.2; Sarianidi 1998: 62–67	Fig. 54
Conical and biconical spindle whorls	Either plain, with dotted circle or (more rarely) hatched incised decoration	Masimov 1981: 213, fig. 12.1–11; Masimov, Salvatori & Udeumuradov 1998: 38, fig. 5.1–11; Sarianidi 1981: 172–73, fig. 4; 1990: pl. LXXX.2; Hiebert 1994a: 153, fig. 9.17; Rossi-Osmida ed. 2002: 119, no. 23; Salvatori 2002: figs 4–6	Fig. 54

Table 7. Chlorite objects found in Margiana

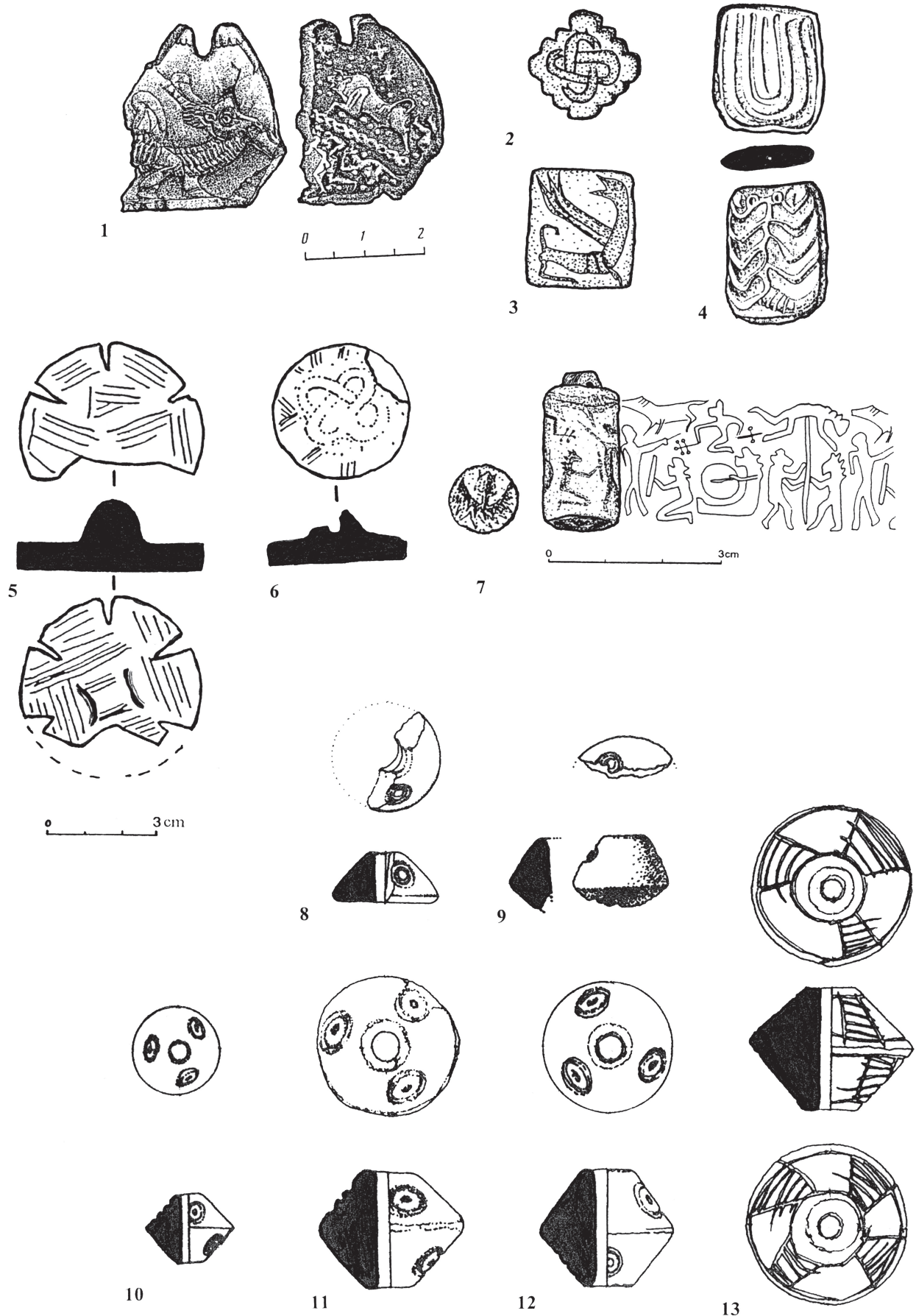


Fig. 54. Chlorite seals (1-7) and spindle whorls (8-13) found in Margiana (nos 1-7: after Hiebert 1994: figs 9.13-9.16, nos 8-13: Masimov, Salvatori & Udeumuradov 1998: fig. 5)













	<i>Gypsum</i>	<i>Calcite</i>	<i>Steatite</i>
1			
2			
3			
4			
5			
6a			
6b			
7			
8			

Fig. 55. Gypsum, banded calcite and chlorite vessels excavated in graves at Altyn-depe
(adapted from Kircho & Kovnurko 1999: fig. 2)

(Schmidt 1933: pl. CXXXVI.A), but in the case of Altyn-depe these finds were all made of steatite.

At Altyn-depe the earliest beads and an anthropomorphic figurine carved from this material were found in a burial chamber (room 1) in level 6. The remainder of the chlorite items, including cylindrical beads (resembling examples found at Mehrgarh and later Harappan sites), a seal (burial 413), and other figurines (burials 634–638) made from a heated form

of steatite (hence its white colour), were from level 5 and later, including Namazga V burials in levels 2, 1 and O. This suggests a date no earlier than the final Early Bronze Age or mid-3rd millennium BC for the use of chlorite at Altyn-depe (Kircho & Kovnurko 1999; 2002).

Early chlorite industries in south-east Arabia

As mentioned above, the manufacture in south-east Arabia of softstone objects started during prehistoric

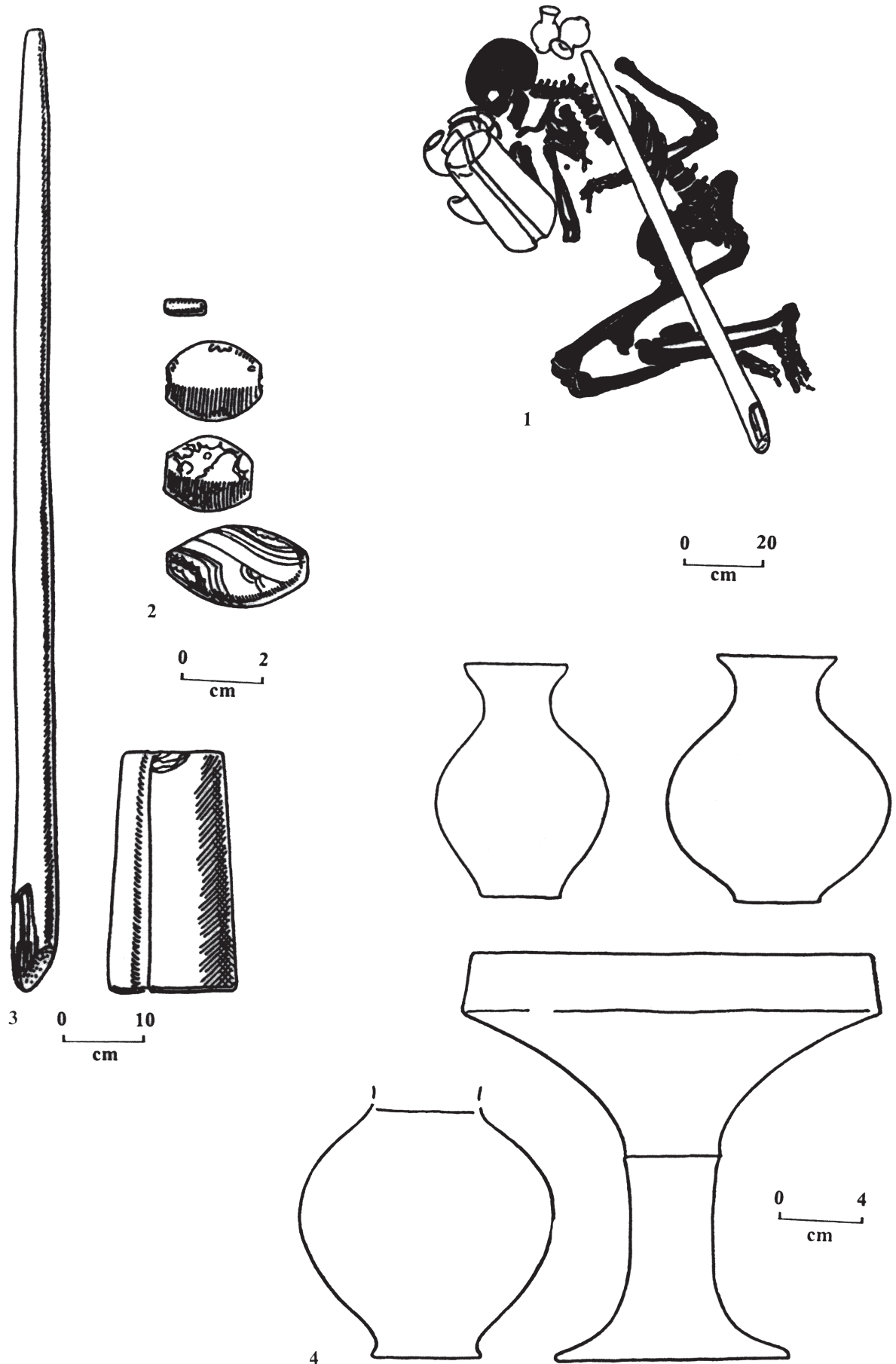


Fig. 56. Finds from Burial 362 excavated at Altyn-depe (after Masson 1988: pl. XXVIII)

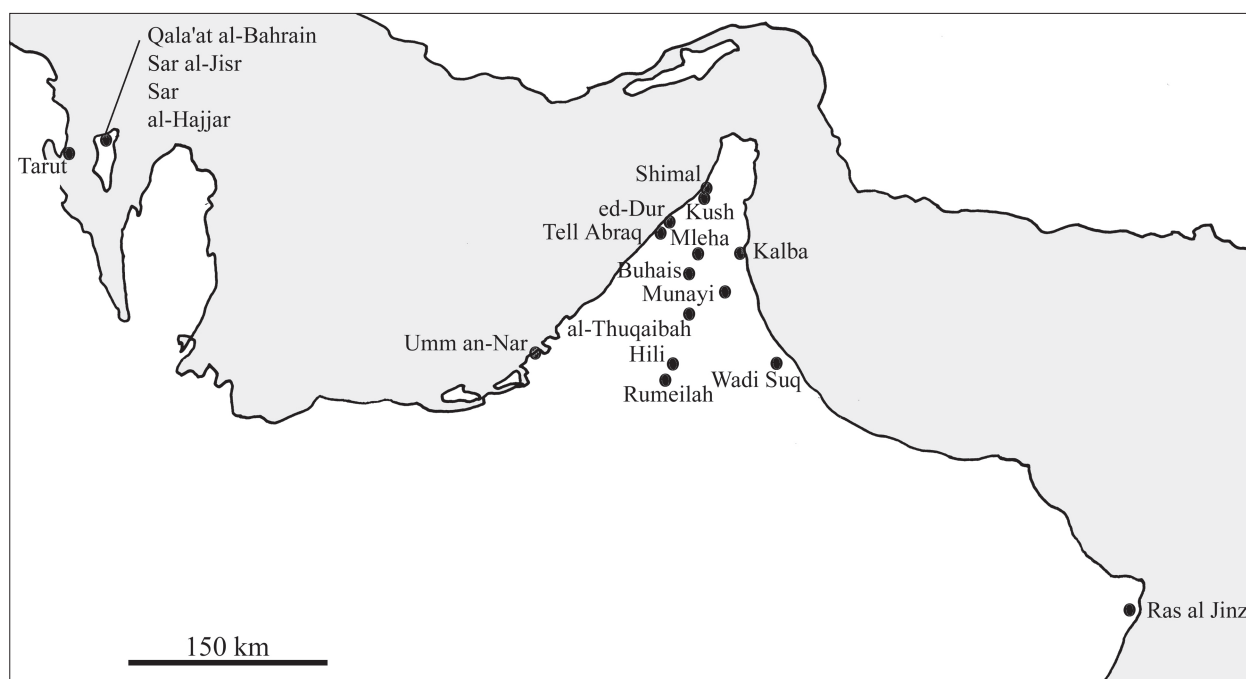


Fig. 57. Map showing sites in the Persian Gulf and south-east Arabia

times. In the Bronze Age, however, it is clear that the locally available raw material was exploited more widely for the manufacture of stone vessels and by the latter part of the 3rd millennium BC south-east Arabia was a major area of production and export (Fig. 57).

The oldest stone vessels found in south-east Arabia are probably the few *série ancienne* examples imported from Iran. These possibly provided the inspiration for the development of a local industry; it has been suggested that a typical Iranian import found in a tomb at Kalba shows evidence of an additional decorative element which is more typical of later south-east Arabian vessels (Fig. 58).

Miroschedji's typological study of softstone vessels from Susa (see above) included some examples which appeared to have a south-east Arabian origin. The most diagnostic of these formed the basis of his *série récente* Group C and consisted of bowls, a concave-walled beaker and two compartmented boxes decorated with regularly placed dotted circles (Miroschedji 1973: 57–58, figs 8–9). The Arabian origin of these has been confirmed following extensive archaeological activity in south-east Arabia from the 1970s onwards (David 1996; David 2011; Häser 1991). Miroschedji's proposed dating was also confirmed by this work. Many similar vessels have been found in tombs of the local Umm an-Nar culture which are generally dated to the second part of the 3rd millennium BC although the tombs containing stone vessels of this type usually date from c. 2300–2000 BC. The dating of these vessels is therefore later than the earliest types of *série ancienne*.

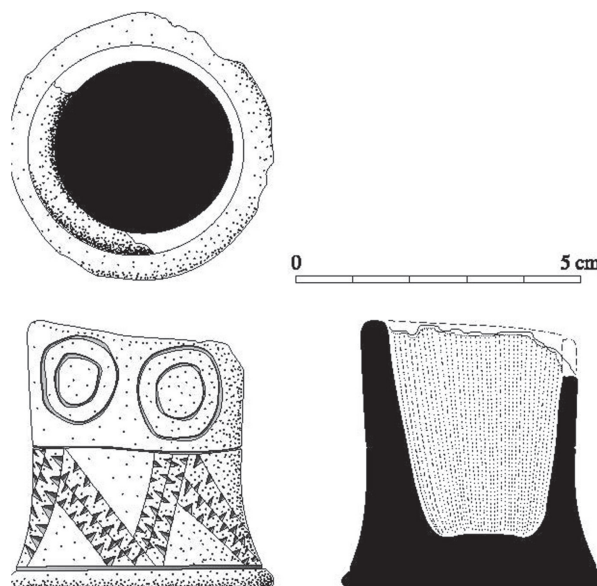


Fig. 58. Imported Iranian vessel excavated at Kalba in the UAE (Tomb K2); the crude concentric circle motif appears to have been added later

Only a small number of *série ancienne* vessels have been found in south-east Arabia, and although softstone was locally used since prehistory for the manufacture of beads and earrings, the production of stone vessels in the latter part of the 3rd millennium appears, therefore, to have been stimulated by the import of vessels from Iran (David & Phillips 2008).

Once established, the manufacture of softstone vessels became a long-lived tradition in south-east Arabia.

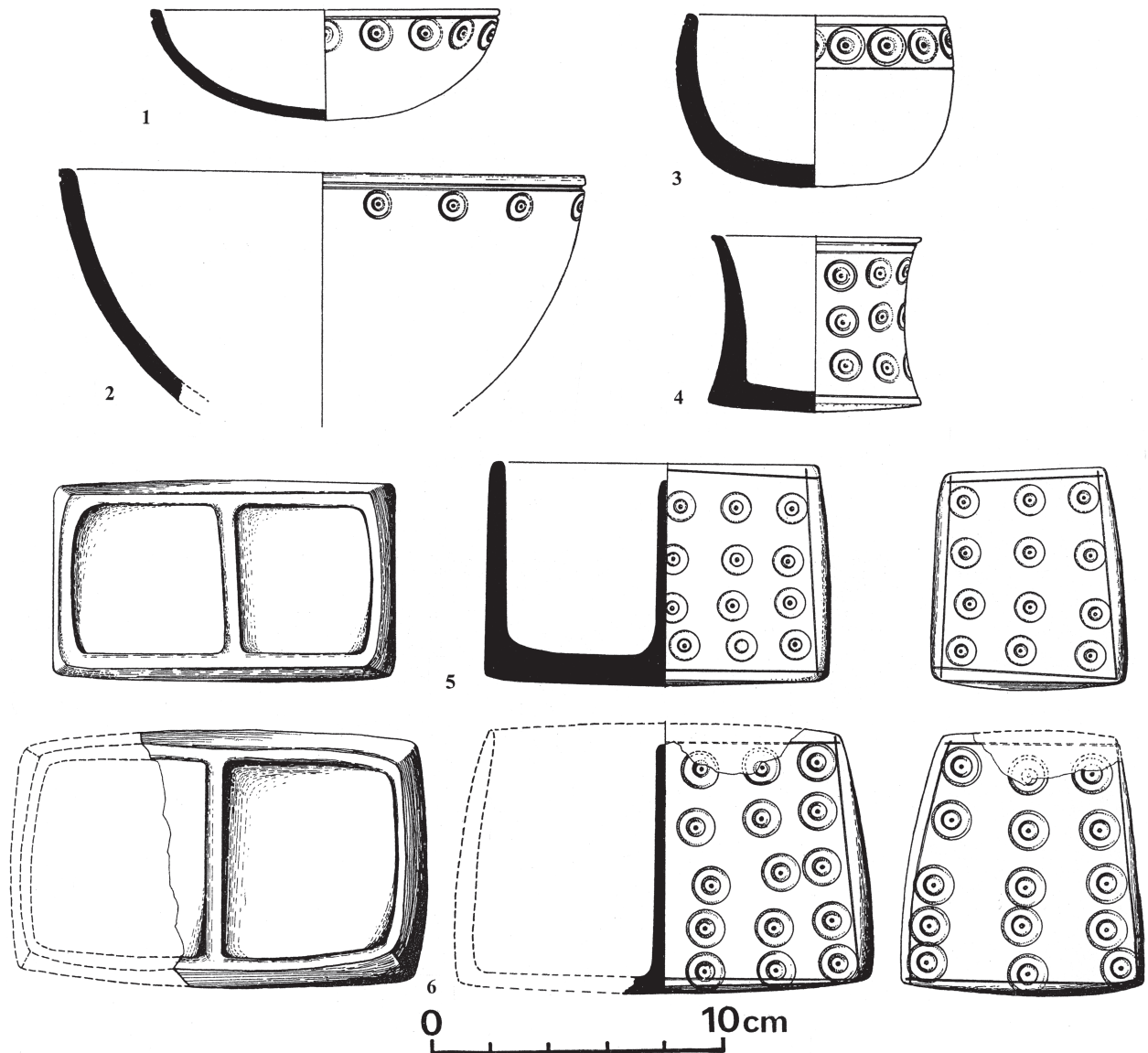


Fig. 59. Imported Umm an-Nar period chlorite bowls, beaker and compartmented boxes found at Susa and termed *série récente* (after Miroschedji 1973: figs. 8.7-10, 9.2-3)

Alongside the changes which mark the transition from the Umm an-Nar to the Wadi Suq periods in c. 2000 BC, there are changes in the shape and decoration of the locally produced softstone vessels. The repertoire of shapes increases and bag-shaped vessels with lugs become characteristic. Hemispherical bowls continue to be made but some now have open spouts. Other shapes include cylindrical or concave-walled beakers and rectangular compartmented boxes (Fig. 59). The forms of some of these may be related to objects in other materials: the shape of the beakers is also known in metal, and the boxes have the strong feel of carved wooden containers (although direct evidence for these is lacking). Lids also become common. Dotted circle decoration remains in use but there is an increase in geometric decoration with horizontal lines and chevrons.

The tradition of making stone vessels continued during the Wadi Suq period (c. 2000-1600 BC). Most of the characteristic shapes of the preceding period continued but the manufacture often appears to be less disciplined. The quality of raw material and decoration also often appears inferior although some of the vessels still show a high degree of craftsmanship: perhaps production became less specialised in this period.

The decoration was combined with diagonal incision on lugged vessels or trough-spouted open bowls (Fig. 60). This group has also been termed the *série intermédiaire* and *série tardive*. Although the lugged vessels are usually interpreted as having been suspended, it is more likely that they were designed so that cord could be used to securely attach the matching knobbed lids (Fig. 61), and thus may have been used as speciality



Fig. 60. Imported Wadi Suq period light grey chlorite trough-spouted bowl with dotted circle decoration, excavated at Ur in 1930/31. H 4.8 cm, rim D 11.5 – 11.8 cm, capacity 310 ml. BM 1931,1010.105 = 123037 (photograph: © The British Museum)



Fig. 61. Imported Wadi Suq period chlorite vessel lid with dotted circle decoration, excavated at Ur in 1928/29. H 4.7 cm. BM 1929,1017.731 (photograph: © The British Museum)

containers. By comparison, lidded stone jars made today in Tamil Nadu are considered desirable for their strength and resistance to rodents (Jaitly 1990: 22). A wider variety of local chlorites were also exploited in this period and match the wider diversity of clay resources used by local potters, but whether these reflect more diffused centres of production or a better awareness of available resources is uncertain (David 1991; Velde this volume).

The typological development of Bronze Age softstone vessels in south-east Arabia is best documented in the assemblages from tombs, and in particular from tombs which have not been re-used in subsequent periods. The vessels from an Umm an-Nar tomb in al-Munayi

(Fig. 62) are typical of the range of vessels characteristic of the latter part of the 3rd millennium. Likewise, the vessels from a Wadi Suq period tomb in Kalba (Fig. 63) are all typical of the early 2nd millennium BC, with the exception of an obvious heirloom (Fig. 63: 5) which is more typical of the preceding Umm an-Nar period.

The retention of softstone vessels as heirlooms is apparent at the Bronze–Iron Age settlement (K4) at Kalba and this implicates the refinement of a precise typological sequence determined by the stratigraphic sequence. The presence, however, of softstone vessels in domestic contexts at Kalba, Tell Abraq, Hili and

Shimal proves that they were used in settlements rather than being exclusively intended as funerary offerings (e.g. Franke-Vogt 1991). That said, the number found in settlements is still small, and given the re-use of many tombs there is still no clear typology of stone vessels for much of the latter part of the 2nd millennium BC.

The differences between *série ancienne* and *série récente* vessels are quite clear, and likewise vessels of early Wadi Suq date are generally distinguishable, but as the tradition continues into the later 2nd millennium these differences are less marked. Initial attempts followed the scheme adopted by Miroschedji. Based on finds coming primarily from tombs, Vogt (1985) proposed a typological sequence extending from the Early Bronze Age to the Iron Age: *série récente*, *série intermédiaire*, *série tardive*, late *série tardive*, *série intermédiaire II* and Iron Age. David (1996) has since highlighted the problems not only of applying Miroschedji's scheme to south-east Arabia but also in attributing vessels to the various intermediary phases. She concluded that Miroschedji's definition of *série ancienne* and *série récente C* are appropriate for this region but given that the latter group originated in south-east Arabia it was preferable to name them after local cultures, thus Umm an-Nar and later, Wadi Suq stone vessels. This simpler labelling is certainly preferable but not without its own pitfalls as there is no evidence for the manufacture of stone vessels at either the eponymous site of Umm an-Nar or Wadi Suq.

Miroschedji defined three other subgroups of the *série récente*. The first of these is an Iranian family (Fig. 64). It is characterised by incised decoration, either naturalistic in a simple linear style, geometric (hatched triangles, chevrons, single dotted circles on square lidded boxes, jars, cylindrical vessels and small square-based kohl-pots), or with wavy lines below the rim of hemispherical bowls. Several different workshop

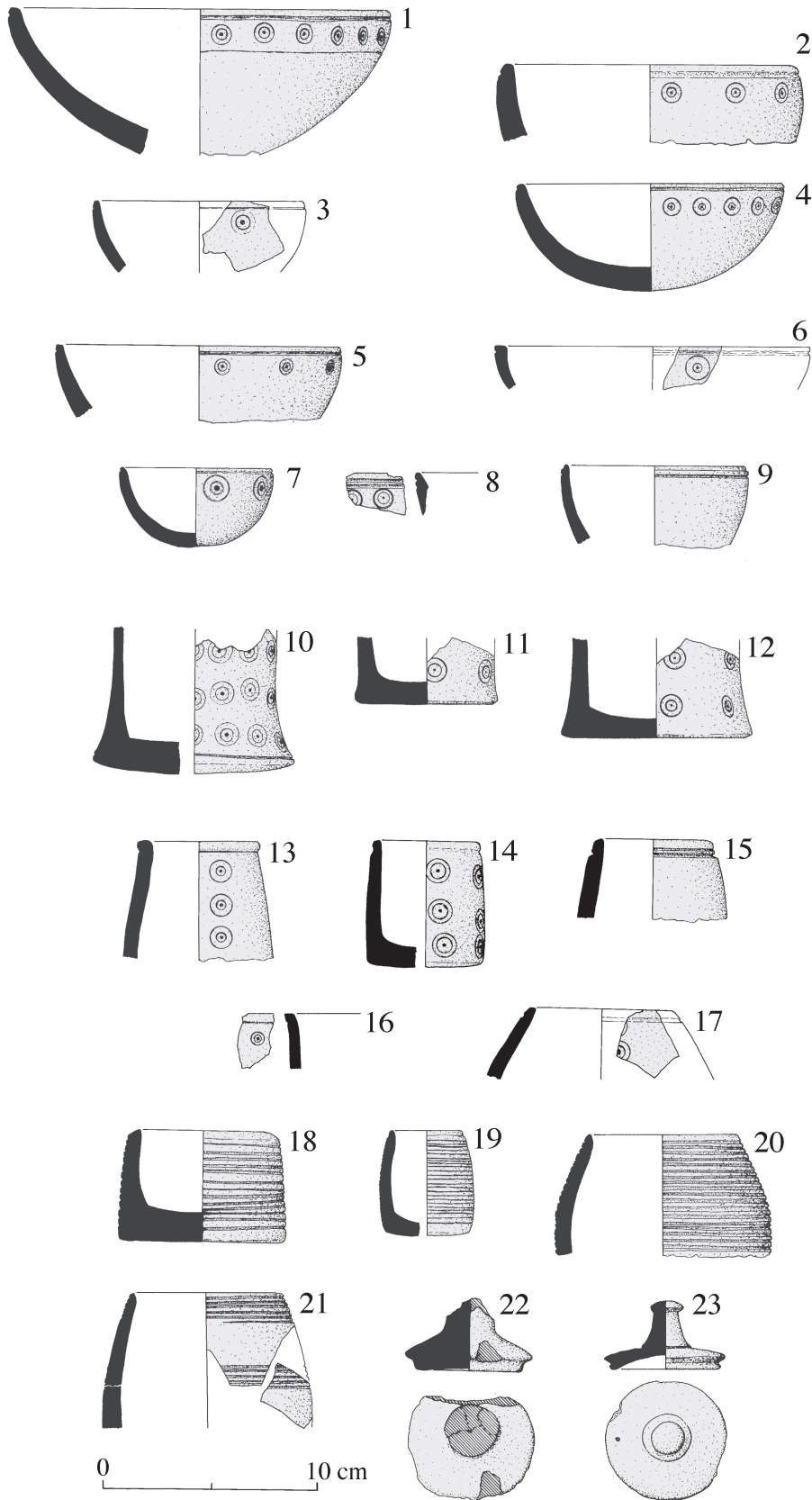


Fig. 62. Typical late 3rd millennium vessels excavated in an Umm an-Nar tomb at al-Munayi

centres and traditions are clearly involved here, and are probably not limited to south-east Iran; the last variety belongs to a class defined by Potts (2003) and pieces have been found as far apart as Ur, Gonur-depe,

Tepe Yahya, Shahdad and Tell Abraq (compare Fig. 18: 5). A second subgroup is characterised by incised cross-hatched triangles on compartmented boxes (Fig. 65: 1-2) and cylindrical vessels (Fig. 65: 3-4, 66). The last

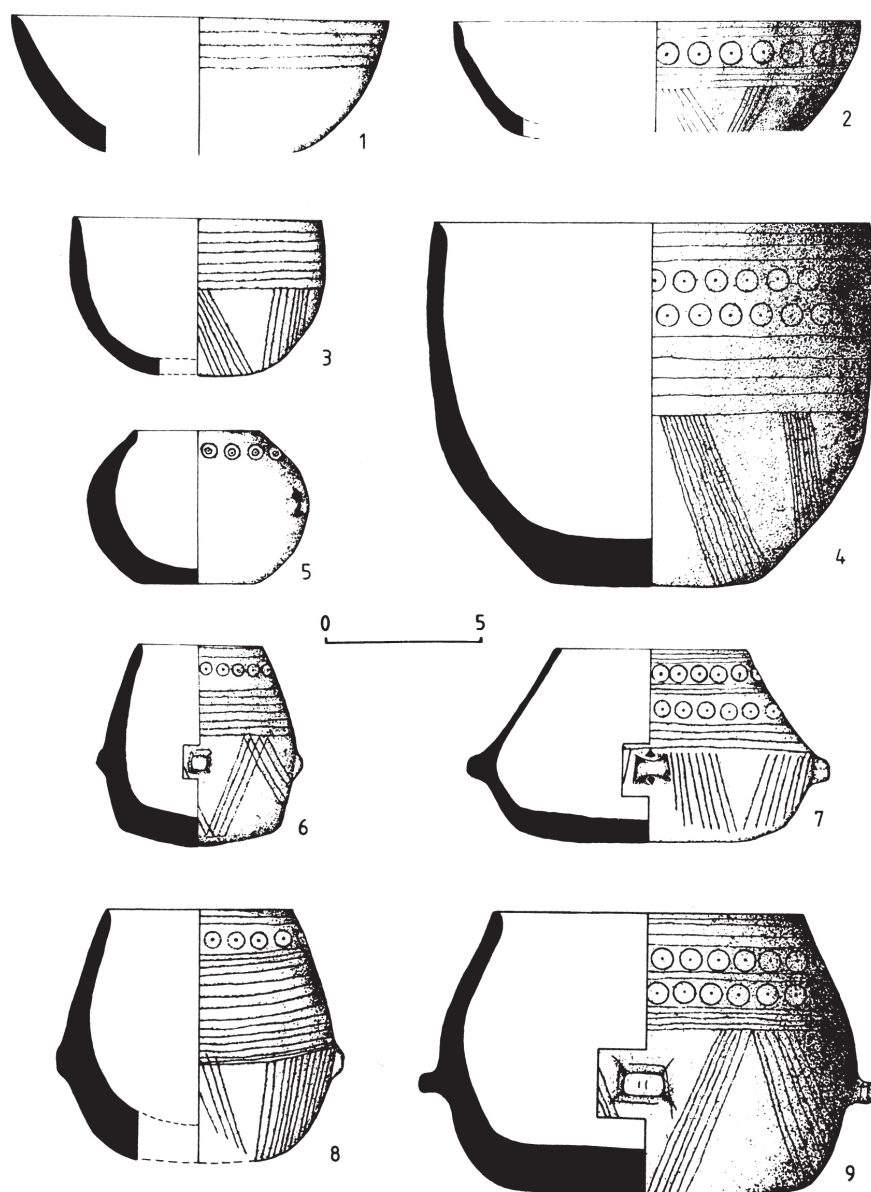


Fig. 63. Chlorite vessels excavated in an early 2nd millennium tomb at Kalba (Tomb K3), UAE (drawing: C.S. Phillips)

subgroup consists of undecorated vessels in light or dark chlorite, but they are not sufficiently diagnostic to be reliably sourced at present (Fig. 65: 5–7).

It is now clear that the term *série récente* subsumes a very complex picture of different chlorite industries operating in Bactria/Margiana, south-east Iran and south-east Arabia in the late 3rd – early 2nd millennia BC. Individual vessels were traded across regions and from one chlorite-producing region to another as well as along the Persian Gulf to Susiana and Mesopotamia.

Softstone vessels manufactured in south-east Arabia were clearly exported and excavated finds have been published from Bahrain (Ibrahim 1982: fig. 45; Mughal 1983: figs 24–25; Denton 1994: 139–41), Failaka, Mesopotamia (Reade & Searight 2001), Susiana

(Miroschedji 1973: pl. VII.e), southern Iran (Pézard 1914: 24–25) (Fig. 67) and the lower Indus. Potts (1999: 180–81) has noted that ‘it is most likely that the contents of these soft-stone vessels were the desired commodity, rather than the vessels themselves’, which might explain the unusually large size and thus capacity of some of those found in Mesopotamia. Nevertheless, the fact also remains that some of these exports – as in earlier periods – are open bowls which were more suited to serving than to storing. This is not the place to explore the contexts of these finds in any greater detail. However, the published data from Bahrain suggest some interesting inter-site variations and also further confirm the dating of south-east Arabian vessels. Amongst the many Bronze Age tombs that have been excavated on Bahrain most lack stone vessels whereas pottery vessels are a standard component. It is only in the grave complex at Sar el-Jisr that they are found

and in comparison with pottery they are very few, perhaps indicative of their rarity (Table 8).

As in south-east Arabia softstone vessels have also been excavated at settlements in Bahrain, although again the quantities are small. At Qala’at al-Bahrain softstone vessels of the *série récente* / Umm an-Nar type have been found in contexts ranging from Period IA to IIC (Højlund & Andersen *et al.* 1994: 386–90), indicating the import of these vessels from the latter part of the 3rd millennium and possibly remaining in circulation into the beginning of the 2nd millennium. Softstone vessels of Umm an-Nar and Wadi Suq type have also been found at Sar where they can be dated between 2050 and 1750 BC (Killick & Moon eds 2005: 205–13). It might be added that several of the pieces excavated in the settlement at Sar show signs of re-working, including the adaptation

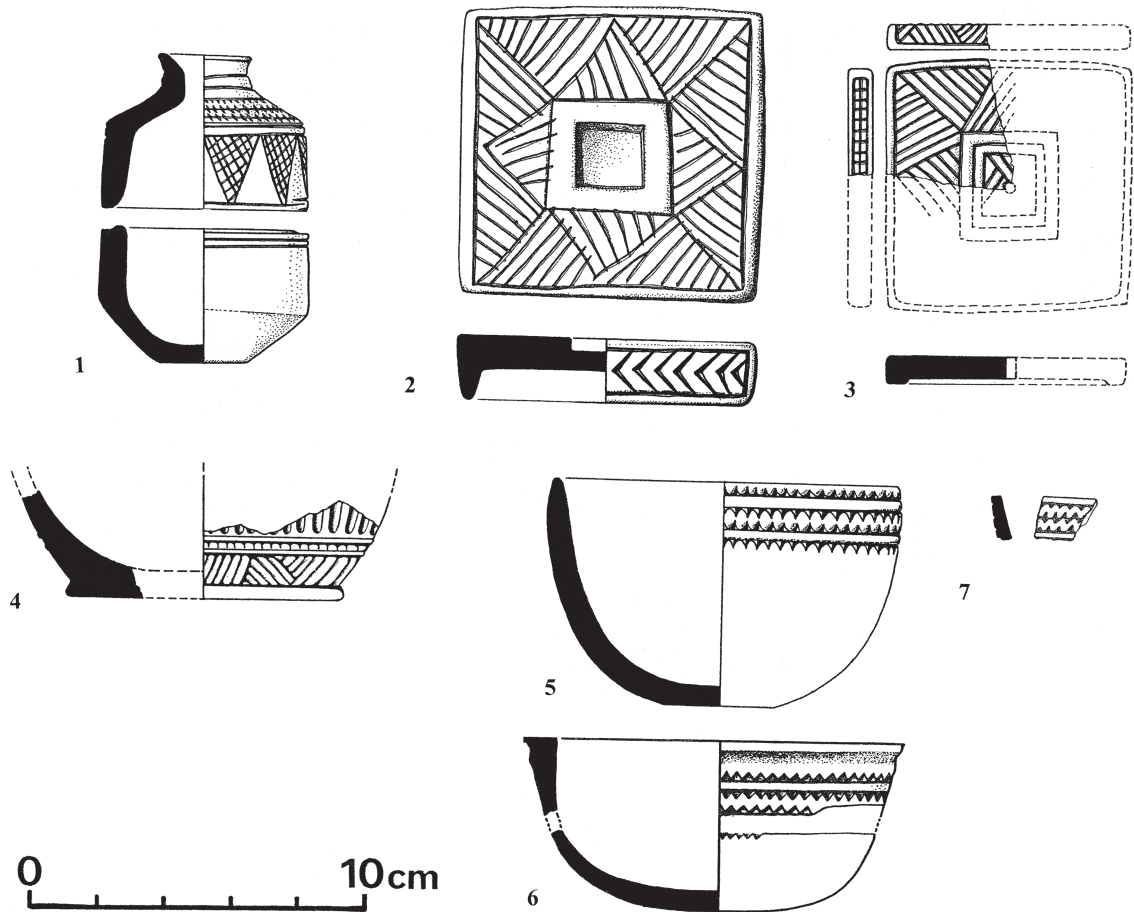


Fig. 64. *série récente*: 1-5: a south-east Iranian family of chlorite bowls and lidded boxes decorated with incised hatched or cross-hatched triangles and wavy zigzags found at Susa (after Miroschedji 1973: figs 11.13, 11.15-16, 8.1, 8.3); 6-7: found at Tepe Yahya (after Magee 2004: 46, 70-72, 75, fig. 5.7; Potts *et al.* 2001: fig. 5.22)

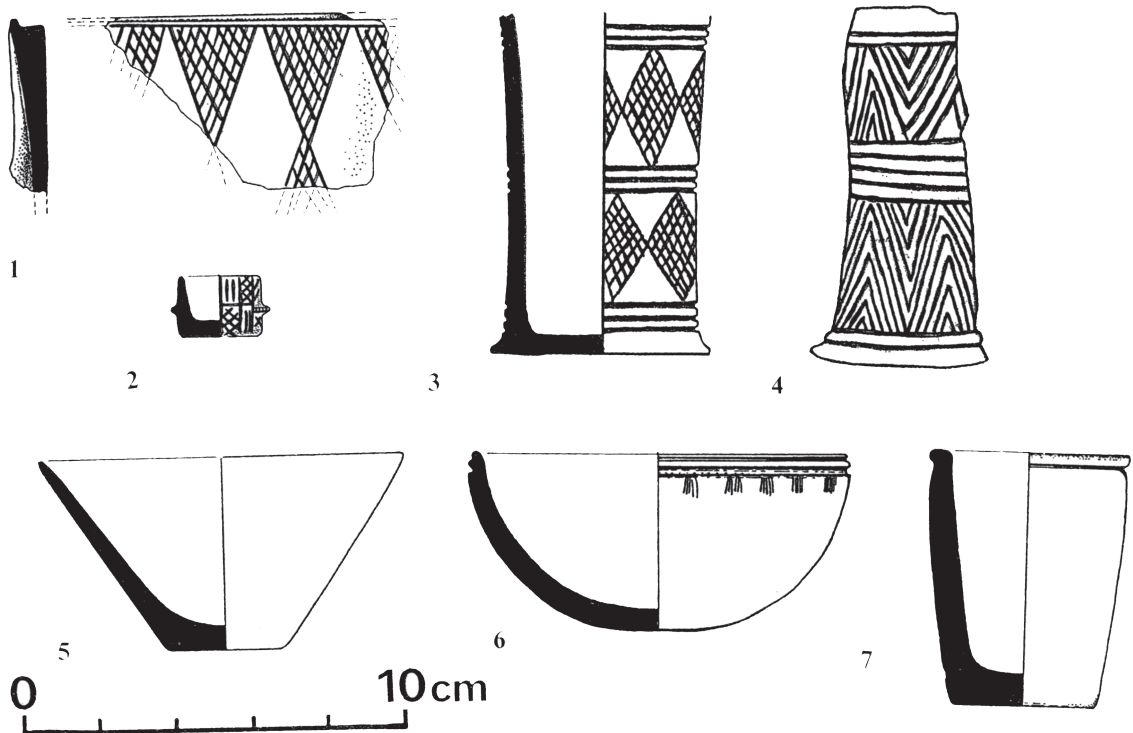


Fig. 65. *série récente*: chlorite boxes and cylindrical vessels decorated with incised cross-hatched triangles, 1-2: found at Susa (after Miroschedji 1973: figs 9.1, 11.12), 3-4: found at Tepe Yahya (after Potts *et al.* 2001: figs 5.23, 25); 5-7: plain or lightly decorated grey chlorite vessels found at Susa (after Miroschedji 1973: figs 8.4, 8.6, 6.2)



Fig. 66. *série récente* vessels with incised designs. Left: BM 129054, H 12 cm. Right: BM 135757, H 5.6 cm (photograph: © The British Museum)

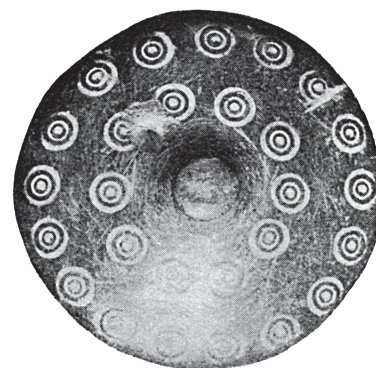


Fig. 67. Imported Wadi Suq period jar lid found at Liyan on Bushehr (after Pézard 1914: pl. VIII)

Sites	No. of excavated graves	No. of mounds with pottery	No. of mounds with stone vessels
Hamad Town (Srivastava 1991)	70	29	0
Sar el-Jisr (Ibrahim 1982 = tomb types I-IV)	107	79	0
Sar el-Jisr complex (Ibrahim 1982; Mughal 1983)	161	113	22 (+ 3 unprov.)

Table 8. Frequency of stone vessels in Bronze Age tombs excavated in Bahrain

of a broken compartmented vessel into a single deep bowl. The finds from Bahrain suggest, therefore, that the number of vessels imported during the Bronze Age was perhaps not great but they remained in circulation for a long time, were sometimes re-worked and only rarely offered as grave goods.

Industries in the Iron Age

Little is known about the possible development of this industry in south-east Iran during the Iron Age. The evidence from Tepe Yahya is limited to an undecorated footed bowl and several spindle whorls, and no evidence was found for on-site working of this material (Magee 2004: 46, 70–72, 75, fig. 5.7).

During the Early Iron Age in south-east Arabia (c. 1300–600 BC) more distinct chronological styles emerged

and continued until the end of the Iron Age (c. 300 BC). The main Iron Age vessel types were first defined by Lombard (1982). The majority of vessels consist of flaring flat-based bowls, sometimes with open spouts, and conical vessels with lids. Other forms include carinated bowls, tall cylindrical forms, occasionally with lugs, and compartmented boxes (Fig. 68). The size of these vessels is larger than in earlier periods and the hand-carved decoration is more varied. Simple dotted circle decoration continued alongside incised herringbone, sawtooth, long petals with rounded ends and hatched patterns (Lombard 1982; cf. Miroschedji 1973: pl. VII.b; Lombard *et al.* 1999: 135–36).

Throughout the Iron Age softstone vessels continued to be exported from south-east Arabia. In Bahrain typical examples have been found at the Qala'at al-Bahrain, first appearing in Period IVC, around the middle of the 1st millennium BC (Højlund & Andersen *et al.* 1994: 386–90; 1997: 200–201). It appears clear, however, that such vessels were imported into Bahrain at an earlier date, as suggested by several vessels found in the cemetery at al-Hajjar. Most of the collective burials at al-Hajjar appear to have contained softstone vessels and are found in association with south-east Arabian pottery comprising typical Early Iron Age types that can be dated c. 1300–600 BC (Denton 1994; Lombard & Kervran 1989: 63–69).

On Iron Age vessels lines are often drawn in a sawtooth pattern which might suggest the influence of metal-working. This is also suggested by the more elaborate rim profiles of some of the stone bowls manufactured in south-east Arabia at this time (Fig. 69). However,

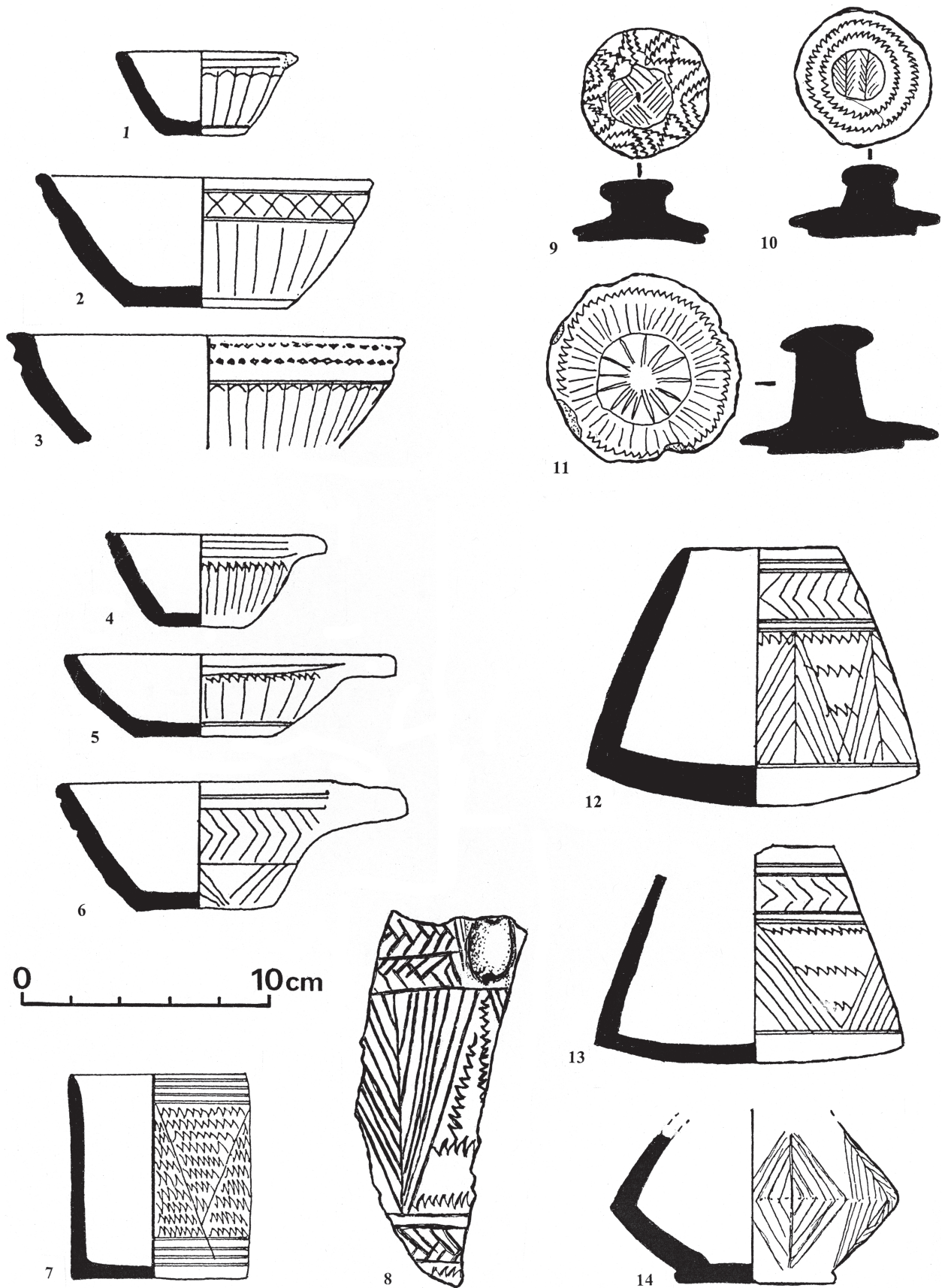


Fig. 68. Local Iron Age chlorite vessels found in south-east Arabia: al-Qusais (1, 4, 11-12), Qarn Bint Sa'ud (remainder) (after Lombard 1982)

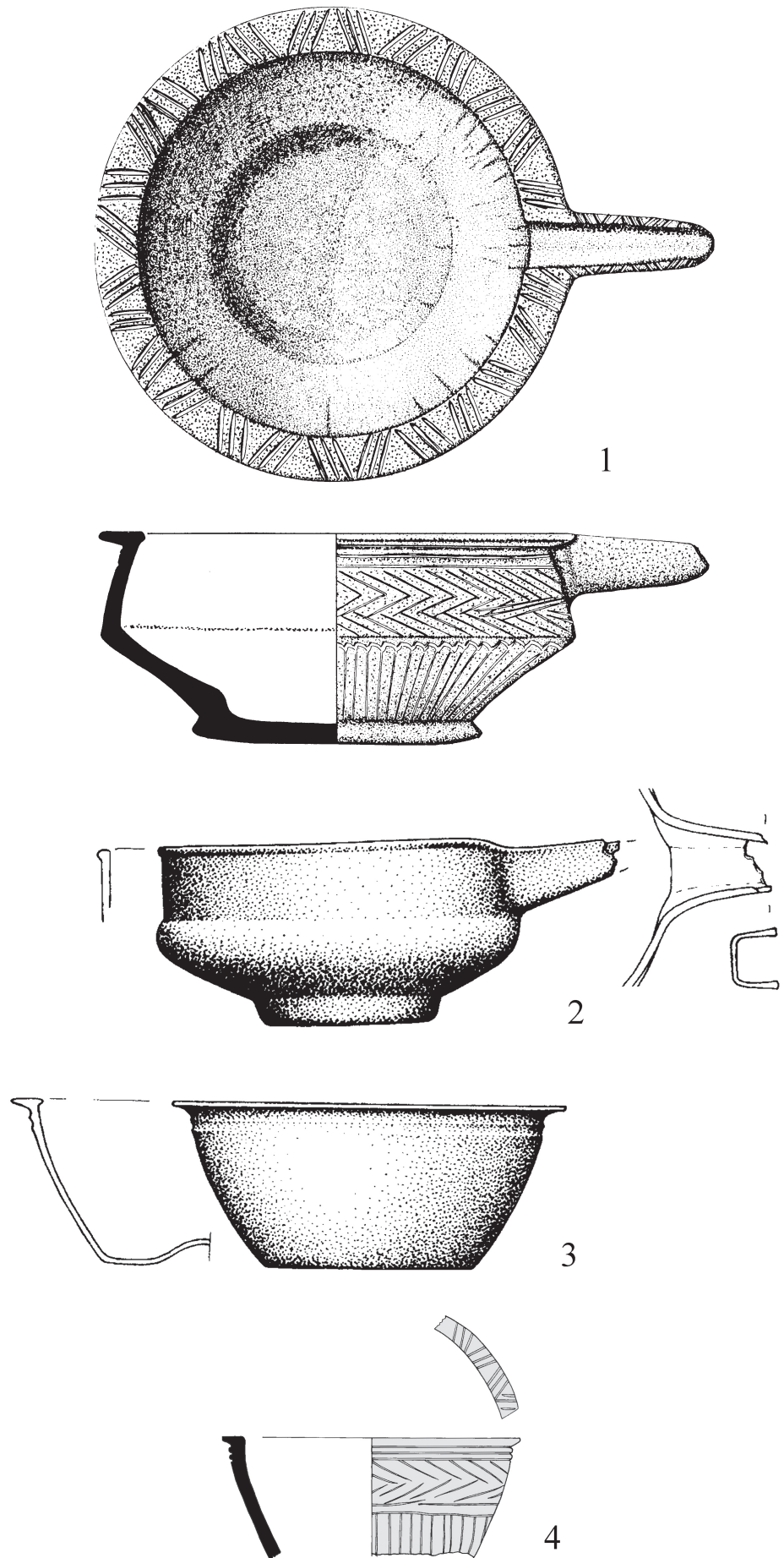


Fig. 69. Stone and metal vessels compared; 1, stone vessel from Rumailah (after Boucharlat & Lombard 1985: pl. 60: 1); 2-3, metal vessels from Ibri / Selme (after Yule & Weisgerber 2001: pl. 35: 325, 333); 4, stone vessel from Wa'ab 4

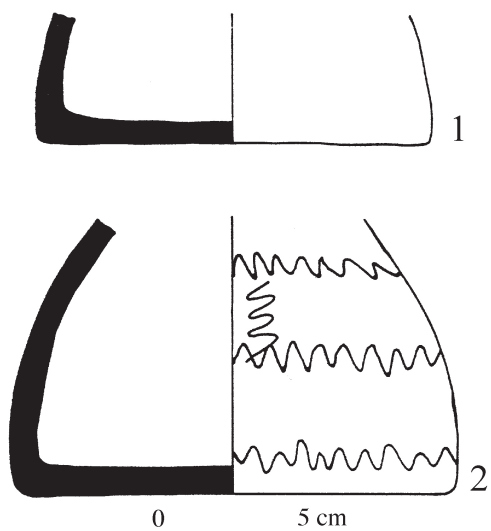


Fig. 70. Local pottery imitations of softstone vessels from Fashgha 1 (after Phillips 1987)

although it appears that some of the stone vessels may have imitated metalwares, there is also evidence for incised greyware pottery imitating stone vessels (Fig. 70).

A tall vessel found in Babylonia and probably dating to the Neo-Babylonian or Achaemenid period seems to owe its shape to metalwares although its place of manufacture is unknown (Fig. 71). The decoration



Fig. 71. Imported carved chlorite vase with bird-head handles, acquired in Babylonia. H 18.1 cm. BM E48448 (photograph: © The British Museum)



Fig. 72. Unfinished locally made stone vessel excavated at Kalba, K4 (photograph: © C.S. Phillips)

on a second chlorite vessel found at Ur is strongly reminiscent of carved woodwork, although organic materials do not survive from south-east Arabian sites (cf. Reade & Searight 2001: 165–66, fig. 13). One possibility is that craftsmen used similar tool kits to work both materials. The ease with which craftsmen can adapt to new materials and opportunities is also illustrated by rural case studies from India in recent times where weavers turned to stone-quarrying, potters turned to carpenters, and woodworkers not only functioned as general handymen but also maintained their own forges for the adaptation and fitting of iron parts (Fischer & Shah 1970: 25, 65–67). An alternative is

that different craftsmen fashioned similar or matching containers in chlorite and wood.

Despite this long tradition of making stone vessels in south-east Arabia there is surprisingly little evidence for manufacturing sites in the Bronze or Iron Ages. Given the large numbers of excavated vessels the number of unfinished pieces is remarkably low. A single piece of worked softstone found at Maysar was for a long period the only piece of evidence supporting local manufacture (Weisgerber 1981: 212, fig. 45). More recently a small number of half-finished vessels and partly worked blocks have been found in the settlement of al-Thuqaibah at Jebel Buhais (Magee *et al.* 2005: 3), and other unfinished vessels were found at Kalba (Fig. 72).

The introduction of the lathe

In about the 3rd century BC the south-east Arabian softstone industry was transformed with the introduction of the wheel-mounted lathe although increased speed of production does not appear to have led to an increase in output. Although some of the 3rd millennium vessels found in Mesopotamia appear to have been turned, most stone vessels were fashioned with drills and adzes (Stocks 2003; cf. Kohl 1977: figs 20–21; Kohl, Harbottle & Sayre 1979: pl. 2; Zarins 1978: 67, 88, pls 65, 72.b, no. 501 = unstratified plain vessel). The exact date and origins of the lathe are uncertain yet the effect on the local stone-working tradition was the manufacture of small polished symmetrical open bowls which replicated the shapes of wooden, metal and glass tablewares used in other parts of the Near East. Those found at ed-Dur and Mleiha were typically carved from dark grey chlorite, suggesting a change in sources from those used previously. This tradition continued in south-east Arabia, and possibly south-east Iran, until about the 9th century although those found at Kush were carved from a bluish rather than dark grey chlorite (Simpson *this volume, b*; Simpson *et al.* *in press*).

The stone cooking pot revolution

From the second half of the 8th to the 9th century, other distinctive types of chlorite vessel were widely distributed across the Near East, although they are not found in very great numbers at any particular site. These included plain, incised or chip-carved straight-sided cooking bowls, triangular or 'boat-shaped' lamps with one or more nozzles, and star-shaped lamps with multiple wicks (Simpson *this volume, b*). These objects were carved by hand and western Arabia appears to have been a major centre of their production: their export along the Red Sea and overland pilgrimage routes such as the Darb Zubayda clearly reflect the cultural and commercial effects of the rise in political

and religious importance of Arabia. The practical shape and dark appearance of the chlorite cooking bowls were imitated by Syro-Palestinian potters, whereas other potters within Arabia recognised the heat-retaining advantages of the stone and incorporated it as temper within the clay. Similar evidence for the recycling of dust from chlorite workshops has been demonstrated from Harappan settlements where it was used as temper in paste beads, chlorite-tempered cooking pots are attested from south-east Arabia in the Late Bronze and Iron Age, and today in India chlorite dust is even collected for its supposed medical properties (Vidale 1989: 298–99). Nevertheless, the tendency of chlorite to crack if over-heated or allowed to cool too rapidly led to a large number of these stone cooking pots being repaired (Fig. 73). This suggests that these items may have had a certain sentimental as well as financial value, and passages in the extensive Early Islamic food literature indicate that stone cooking pots were valued more highly than those of other materials. This is supported by their relative scarcity compared to other types of cooking ware at sites where the finds have been fully quantified (Simpson *this volume, b*). A telling exception comes from the initial quantification and analysis of chlorite found during the first season of British-Kuwaiti investigations at Kadhima in the bay of Kuwait and where an exceptionally high number of chlorite fragments were found, many of which had been repaired and some even recycled as pendants (Bennison-Chapman & Simpson 2010). This raises the possibility that the material acquired an amuletic power, perhaps because of an association with Hajj



Fig. 73. Early Islamic chlorite cooking bowl with a horizontal ledge handle on the outside and a pair of repair holes. A surface find from Williamson Survey Site K124 in the Minab plain of south-east Iran (photograph: Jeff Veitch, University of Durham)



Fig. 74. Light grey chlorite lamp from Yemen. L 24.5 cm. BM 1985,0223.88 (photograph: © The British Museum)

traffic and their import from manufacturing centres in Arabia. The origins and early development of this stone cooking pot tradition lie in late pre-Islamic Arabia (Phillips & Simpson, this volume; Simpson, this volume, *b*) but was spread across the Middle East after the Islamic conquest.

The manufacture of chlorite items continues to the present day in parts of Yemen and Iran. The Yemeni tradition is centred on the hand carving of cooking bowls, 'boat-shaped' and star-shaped lamps (Fig. 74), and is centred on the mountain village of Rāziḥ (Weir this volume; Muchawsky-Schnapper this volume). This tradition appears to be a direct continuation from the late pre-Islamic period (Fig. 75), although the whereabouts of the early workshops is unknown (Glanzman this volume). Although some objects are sold to tourists in the market of Sanaa, most are intended for domestic consumption (Fig. 76). Weir's observations offer a particularly instructive insight into the possible organisation of manufacture and trade of stone vessels in earlier periods: men could only make between two and four cooking bowls a day, distribution was in the hands of traders rather than the manufacturers, bowls

were typically packaged in sets, and within Yemen most customers wrongly assume the objects to come from the entrepôt town of Sa'dah.

Within north-east Iran, a chlorite industry continues to flourish at Mashhad. The antiquity of this is unknown, although it is recorded from the 19th century (e.g. Curzon 1892: vol. I, 167). In addition to cooking pots and minor items, a series of elaborately decorated bowls and other containers with intricately carved figural scenes or floral designs were carved here and in the town of Kur-ata, north-east of Bukhara (Fig. 77) (Fihl 2002: vol. II, 559–61, cats 407–11, figs X.143–45). These somewhat resemble wooden bowls produced in Shiraz at the same period (cf. Wulff 1966: 97) but also combine design elements familiar from metalwork. Today, chlorite cooking pots continue to be produced at Mashhad where they are sold in shops specialising in household and kitchen appliances (personal observation). In the late 1930s there were as many as 200 men directly employed at Mashhad, either in procuring the stone from over thirty mines at 'Stone Mountain' or in the stone pot makers' quarter within the city itself (Wulff 1966:

Fig. 75. Late pre-Islamic hand-carved light grey chlorite cooking pots from the cemetery of the Qatabanian capital of Timna, Yemen. Note the repair holes on the example on the left and how the lowest portions were left unfinished (after Simpson ed. 2002: 116, fig. 45)



Fig. 76. Modern chlorite cooking bowls and pottery vessels stacked for sale in the bazaar in Sanaa (photograph: © St J. Simpson)



130–33; see also Konieczny this volume). In the latter quarter, each craftsman restricted themselves to a different stage of production rather than completing the entire sequence of manufacture and decoration themselves. This model of craft specialisation influenced Kohl (1974) to suggest similar workshop organisation at Tepe Yahya, and was echoed more recently by Takaoğlu's (2005: 45–50) analysis of a 5th millennium BC marble workshop at Kulaksizlar in western Anatolia. Although some cooking pots

are sold at Mashhad to Shi'a pilgrims flocking to the central tomb of Imam Reza, the primary market is local and geared to function rather than curiosity. For this reason, chlorite cooking pots are typically sold along with other kitchenwares (Figs 78–79), and chlorite water pipe charcoal-holders are sold with other pipe components. The close location of a major source to the city allowed for the development of this as an urban industry, and contrasts with the relatively remote location of Rāziḥ in the Yemeni highlands.

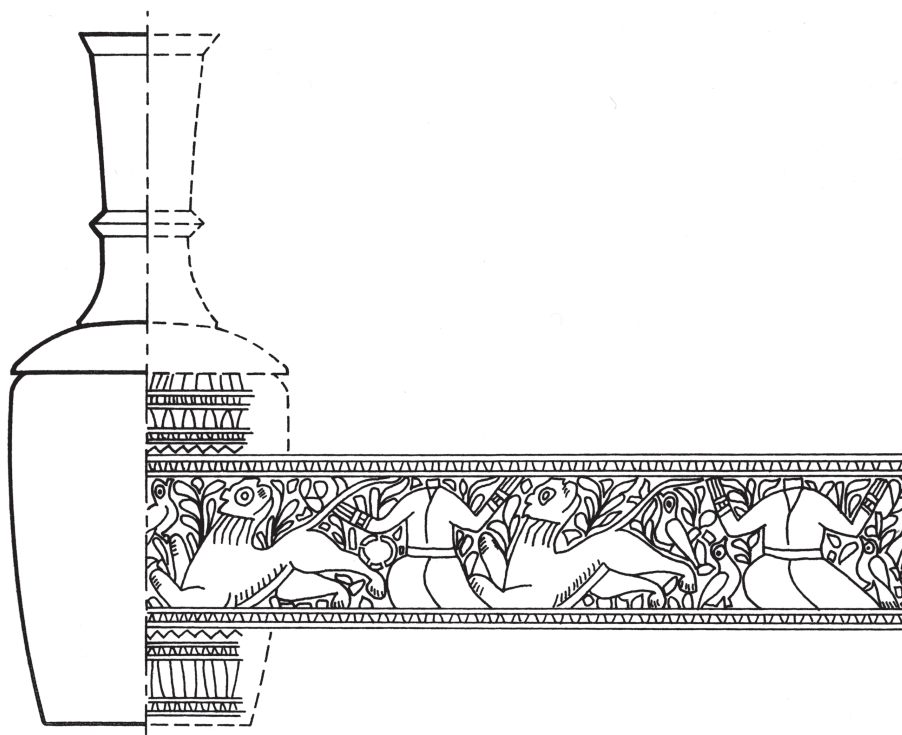


Fig. 77. Late 19th century carved chlorite flask made at Nur-ata, north-east of Bukhara. H24.5, D 9.5 cm. The National Museum of Denmark, Ethnographic Collection, inv. no. Q 396 (after Fihl 2002: fig. X.143)



Fig. 78. Modern talc cooking pot from Mashhad (photograph: © The British Museum)



Fig. 79. Recreating a medieval stew recipe using a modern talc cooking pot from Mashhad (photograph: © St J. Simpson)

A third case-study is provided by Hester and Heizer's (1981) analysis of an alabaster workshop at Qurna, where the raw material was imported from a quarry almost 50 kilometres away. However, in each case the preliminary roughing-out of the stone vessels was carried out close to the mine, thus reducing the weight necessary for transport. The same principle was typically applied by metalworkers in the reduction of ores, and illustrates how excavations of settlement sites situated away from a source typically yield incomplete manufacturing sequences. Another similarity between the two industries is the fact that it is often difficult to date mines, and renewed working at a later period usually obscures or totally removes traces of previous extraction. This was noted in connection with the 3rd millennium BC industry at Tepe Yahya for, although extensive traces of strip mining were noted wherever there were outcrops of chlorite in the mountains surrounding the Soghun plain, it was acknowledged that many may be recent as the local tombstones were typically carved from chlorite (Kohl, Harbottle & Sayre 1979: 134).

Clearly, much remains to be understood in detail about these regional industries, yet the versatility of the material to suit different technologies and changing functional needs is evident. In all periods, chlorite is most commonly used near its source, but the distinctive material shapes and decoration make it immediately recognisable, giving it a disproportionate prominence. In no case can it be reliably demonstrated that there was production specifically for an export trade, although the open shapes of bowls in some periods suggest that they may have been transported in nested stacks. The variety of objects made from this material implies that there were different mechanisms behind its diffusion. Some containers probably travelled as exotic packaging, others had a special religious resonance because of their association with the place where (or near where) they were made or because of the perceived properties of the stone, and yet others may have travelled as favourite personal possessions.