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Patterns of trade in third-millennium BC Mesopotamia and Iran

T. F. Potts

The past twenty-five years have witnessed a series of discoveries on the eastern fringes of the Near East from Turkmenia and Afghanistan in the north to the Arabian/Persian Gulf in the south, which have revolutionized previous views on the origin and development of early civilization in these regions. Excavations during the 1960s and 1970s at late fourth–third-millennium sites across Iran (notably Godin Tepe, Tal-i Iblis, Tal-i Malyan, Tepe Yahya, Shahdad and Shahr-i Sokhta) brought to light urban centres of a previously unsuspected size, richness and technological sophistication, demonstrating that the conventional Childean picture of southern Mesopotamia and the Indus valley as isolated poles of early urbanism separated by a cultural backwoods in the intervening highlands was no longer tenable. With the closure of Iran to foreign expeditions in 1979, a number of archaeological teams moved south to the Arabian side of the Gulf, building on the pioneering work of the Danes on Bahrain and Umm an-Nar islands. The ensuing excavations, from Failaka island to the Oman peninsula, gradually made possible the definition of a sequence of local cultures and allowed archaeologists to document the crucial economic role which this maritime corridor was known from textual sources to have played, both as a source of metals and stones and as an intermediary in trade between Mesopotamia and the Indus.

Meanwhile, Soviet archaeologists working at Altyn-depe, Namazga-depe and other sites in southern Turkmenia and adjacent Margiana were revealing Central Asian cultures with many of the features of complex society in Mesopotamia and the Indus (Masson and Sarianidi 1972). The ‘Namazga civilization’, as the Turkmenian complex became known, was initially assumed to have been distantly derived from these ‘primary’ riverine civilizations, but subsequent radiocarbon datings led to a higher chronology which brings the development of Central Asian urbanism more in line with the early cities of Sumer, the Indus and Iran while also emphasizing its achievement as essentially different and independent (Kohl in Kohl (ed.) 1981; Kohl 1984). No less surprising were the results of recent tomb robbing in southern Bactria (northern Afghanistan), which brought to light a culture closely related to those of Turkmenia and Margiana dating to the late third and early second millennia, notable especially for its elaborate metalwork and stone carvings (Pottier 1984; Sarianidi 1986; Amiet 1986; Ligabue and Salvatori (eds) n.d.). Unfortunately, torn from context in illicit excavations, these Afghan finds have become the

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'Luristan bronzes' of the 1980s, assigned a place in space and time largely on the basis of dealers' hearsay. Finally, the local background to the Harappan civilization of the Indus – a much longer sequence than previously realized – has been greatly expanded and clarified by recent French excavations at Mehrgarh near Quetta and at other sites in Pakistan (Jarrige 1981; Jarrige et al. 1988).

This vastly expanded data base has given rise to radical reassessments of the development of urban culture in Iran and Turan, as the eastern periphery of the Near East has been called (Tosi 1982; cf. Kohl 1984a; Lamberg-Karlovsky 1986). Recent reconstructions now give prominence to the long pre-urban development that can be traced in Iran and the Kopet Dagh piedmont of Turkmenia, and emphasize the distinctive character of the urban cultures which evolved in these and adjacent regions in the third millennium, setting them apart from their counterparts in Mesopotamia and the Indus.

One of the most striking features to emerge has been the extent of trade and other cultural contact between the early societies of southern Turkmenia, Bactria, the Indus, Iran and the Arabian Gulf. Proto-Elamite texts and other distinctive bureaucratic records of around 3000 BC, first encountered in large numbers at Susa, can now be traced as far east as Seistan, showing that the culture on Sumer's eastern border itself extended to, or maintained direct links with, the fringe of the Proto-Harappan world. Likewise in the mid- and late third millennium, metalwork, stonework and glyptic in distinctive 'Trans-Elamite' and 'Bactrian' styles occurs at widely separated sites from Bactria to Baluchistan and even Susa, where decorated metalwork long assumed to be of local manufacture must now be fitted into this broad network of exchange and diffusion reaching over 1,000km to the north-east (Pottier 1984; Tallon 1987).

The closure of Iran to foreign expeditions brought a number of very fruitful research projects to an abrupt halt but has also provided an opportunity to assess the significance of what was quickly becoming an overabundance of new and novel material. Using the newer stratigraphical sequences it has been possible over the past twenty years to reassess material from the older excavations at Susa, Tepe Sialk and Tepe Hissar and thereby to establish a broad cultural and chronological context in which the increasing quantities of 'prestige' metalwork and stonework from illicit excavations may be placed. A recurrent theme of this research, culminating in P. Amiet's recent synthesis *L'âge des échanges inter-iraniens 3500–1700 avant J.-C.* (1986), has been the circulation of materials and goods within Greater Iran and the cultural cross-currents which flowed in their wake. It is to these that we now turn.

Late Uruk and Proto-Elamite trade

Evidence of an early literate culture on the eastern border of Sumer first came to light almost a century ago in the French excavations at Susa (summarized in Amiet 1986). The primitive nature of the early excavation and recording techniques at Susa (usually consisting of simply measuring absolute levels below the variable top of the mound) prevented the establishment of a reliable stratigraphy and hindered appreciation of the vacillating Mesopotamian and Iranian orientation of Susa's material culture. This pattern – what Amiet (1979) has called Susa's 'alternance and duality' – was elucidated as far as

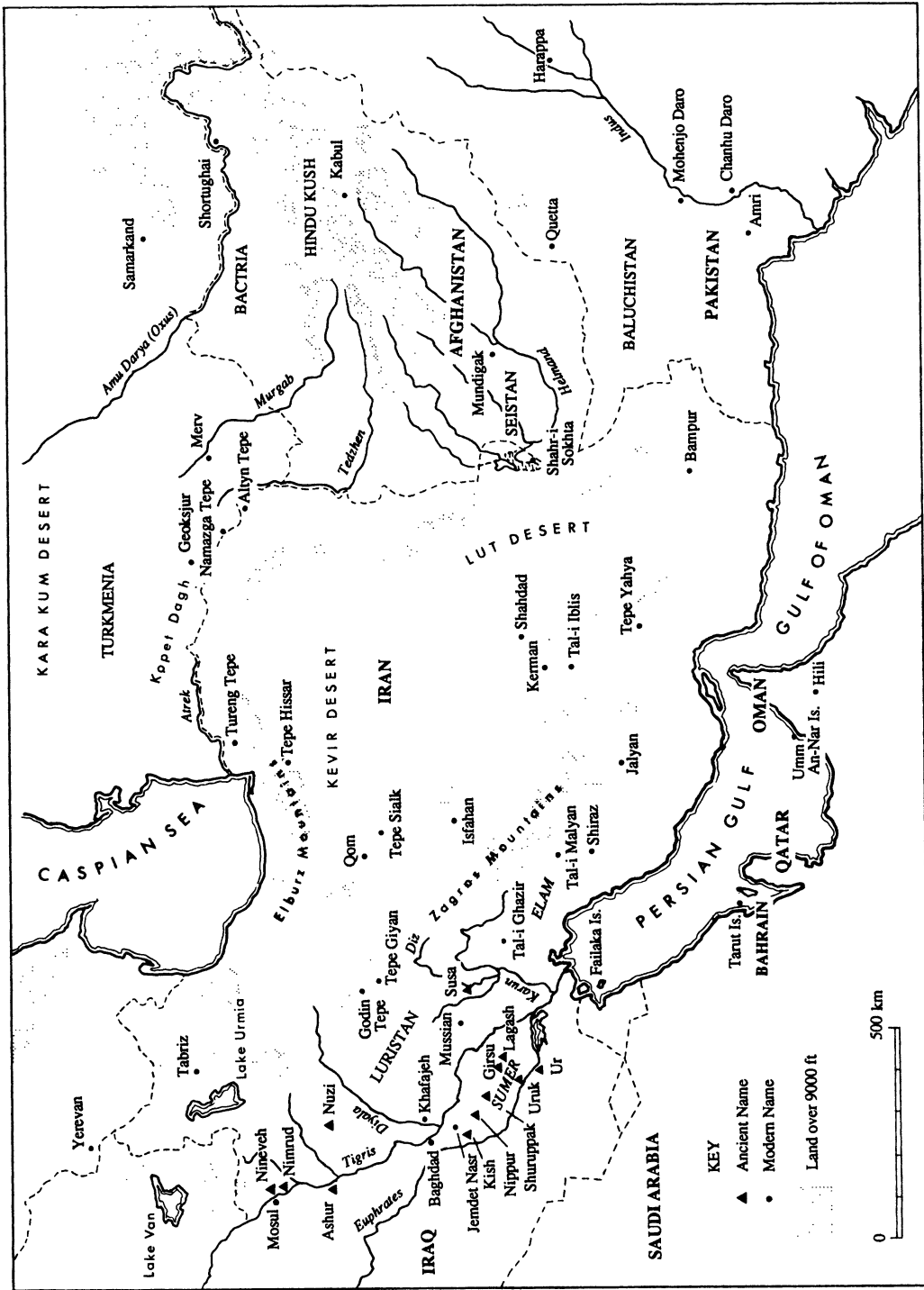


Figure 1 Map showing principal third-millennium sites.

ral commodities, bullae (clay envelopes for containing tokens), clay sealings from doors, jars, bales, etc., and 'numerical' tablets (i.e. tablets with impressed numerical signs but no pictographs), all except the tokens typically bearing the impressions of cylinder seals used to identify the supervising authority and deter pilfering (Fig. 2: 1–4, 9–11). After a stratigraphic break of uncertain duration (Canal 1978; Le Brun 1978), the Susa III period (= Jemdet Nasr to Early Dynastic II in Mesopotamia) saw the appearance of tablets bearing the Proto-Elamite script (Fig. 2: 16–17) – the earliest Iranian writing which was almost certainly inspired by, though it shares few direct links with, contemporary Sumerian cuneiform – together with new architectural elements and ceramic and glyptic assemblages (Fig. 2: 12–15, 18–19, 21) which no longer relate to Sumer but rather look eastwards to highland Iran, in particular to Tal-i Malyan (site of the later Elamite capital of Anshan) in Fars.

The discovery in the 1930s of a similar assemblage, including numerical and Proto-Elamite tablets, lowland-type ceramics and glyptic, at Tepe Sialk (Ghirshman 1938–9; Amiet 1985) remained for many years an isolated testament to the penetration of this Sumerian/Susian culture onto the Iranian plateau, which the excavator R. Ghirshman attributed to the lowlanders' desire to exploit the rich nearby copper deposits of Anarak. In subsequent decades, however, further concentrations of Uruk/Jemdet Nasr-related material, some clearly representing intrusive colonies or outposts, were discovered widely scattered around the highland periphery of Mesopotamia on the Iranian plateau (Godin Tepe, Tal-i Iblis and Tepe Yahya (Fig. 2: 18–21)) and along the upper reaches of the Tigris and Euphrates Rivers in northern Iraq and Syro-Anatolia (Fig. 2: 1, 3, 4; evidence reviewed in Algaze 1989; J. Oates this volume), a phenomenon unmatched in the archaeological record of earlier times or indeed in the historical Sumero-Akkadian period. Recent reports of further Uruk-related material from the Nile Delta at Buto (clay cones from wall mosaics etc.) suggest that early contacts with Egypt too probably fit into this broader pattern of Mesopotamian cultural (and economic?) expansion during the late fourth millennium (Moorey 1990).

The Uruk-related sites vary significantly in size and in the range of lowland-type-artefacts and architectural features present, suggesting a hierarchy of settlement types from distant trade partners and outposts to full-scale colonies (Algaze 1989). The political dimension of this phenomenon can now be little more than speculation but its economic effects are traceable in the archaeological record, and these suggest that the Uruk expansion was at least partly motivated by the desire to channel raw materials – especially metals, stones and probably also timber – from the surrounding highlands into the Sumerians' expanding urban agglomerations. The wide variety of exotic stones – notably coloured marbles, chalcedonies, agates, schists and steatite – which are now found in sacred and burial contexts at Uruk (Heinrich 1936; Limper 1988; T. F. Potts in press (2)) provide a gauge of Uruk's broadening economic horizons. The locations of many of the Uruk outposts on major watercourses – the Tigris, Euphrates and their tributaries – underlines the strategy of establishing a Sumerian presence along the major arteries of bulk transportation.

The Uruk network of trade satellites seems to have collapsed at the end of the Late Uruk (Eanna IV) period around 3200 BC. The Sumerians of the succeeding Jemdet Nasr and Early Dynastic periods, however, were not deprived of foreign goods by this disruption, if

such it was. A considerable range of metals and stones – albeit less extensive than before – continued to be imported, as the archaeological and, later, textual sources attest. What seems to have changed are the mechanisms of trade and, in particular, the extent of direct Sumerian involvement in the extraction and procurement processes.

The fall of the Late Uruk network was followed closely (perhaps with some overlap?) by the establishment of a similar and even more widespread network of exchange. This time, however, it had a more eastern focus which served a different culture – that of the Proto-Elamites – and indeed excluded Mesopotamia altogether. According to the generally accepted chronology (which admittedly leaves considerable scope for adjustment), the old and new networks overlapped only in Susiana and perhaps at Sialk (Amiet 1985). Susa, at the junction of the two worlds, provides the clearest chronicle of the changeover from the Sumerian regime (Susa II) to that of the Proto-Elamites (Susa III), for whom this lowland city was now their westernmost outpost (Fig. 2). Other sites which have produced distinctive Proto-Elamite artefacts (pottery, glyptic, tablets, bullae, sealings, etc.) include Tal-i Ghazir and Chogha Mish in Khuzistan; and Tepe Sialk (IV₂), Tepe Yahya (IVC₁₋₂), Godin Tepe (V), Shahr-i Sokhta (I) and Tepe Hissar (II) (one possible Proto-Elamite tablet) on the Iranian plateau (summaries in Carter 1984; Amiet 1986).

The Proto-Elamite tablets and other bureaucratic devices commonly recovered from these sites seem to relate to the accounting of local agricultural produce rather than long-distance trade (Lamberg-Karlovsky 1986: 208–11; Damerow and Englund 1989: 61–4). Yet their appearance over such a broad geographical expanse represents an unprecedented diffusion of highly specific bureaucratic practices – and the movement of people familiar with this technology – far beyond its original homeland, whether this was in Fars (Malyan) or in Susiana. As in Late Uruk Sumer, the political developments underlying this phenomenon and its relationship to the earlier Uruk colonies are now very difficult to divine, but it is again plausible to suppose that a primary motivation for what must have been a major logistical undertaking was the need to distribute the valuable natural resources of the Iranian plateau within the Proto-Elamite realm. It is often assumed that the Proto-Elamites also supplied highland commodities to Sumer, filling the gap left by the collapse of the Late Uruk colonies. At least as regards copper, this may be supported by trace element analyses of Early Dynastic I metalwork from the Hamrin basin to the north-east of Baghdad, which suggest the use of the same Anarak ores which had long been used at Susa and in highland Iran (see below). The Gulf too may already have been drawn upon for its extensive copper deposits in Oman, as is suggested by the discovery of Sumerian pottery of Jemdet Nasr to Early Dynastic II date in Omani burials (D. T. Potts 1986a), and by Archaic texts from Uruk mentioning ‘Dilmun(-type?) copper (objects?)’ and ‘Dilmun(-type?) axes’ (Englund 1983: 35), though the identification of this toponym as the Dilmun of later times has been challenged (Michalowski 1988: 100f.; Glassner in press).

Patterns of trade in the mid- to late third millennium BC

Evidence for the traffic of goods between mid/late third-millennium Mesopotamia and

Iran comes principally from raw materials; artefacts of foreign manufacture are relatively rare, although account must always be taken of recycling and other factors which have distorted the archaeological record.

(i) Stones and stonework

Aside from limestone and its light-coloured derivatives calcite and gypsum, which are available from outcrops in western Sumer and along the Tigris and Euphrates rivers north of Baghdad (T. F. Potts 1989: 123, n. 2), southern Mesopotamia is largely devoid of stones. The darker more durable 'common stones' used in Sumer for sculpture, cylinder seals, vessels, doorsockets, sculpture and so on – principally diorite, dolerite, schist, serpentine, steatite/chlorite and olivine-gabbro – all had to be imported from abroad. Many of these materials are widely available in the broad mountainous arc surrounding Mesopotamia from Anatolia in the north-west along the Zagros mountains to Kerman and across the Gulf to Oman in the south-east. Establishing a more precise origin for the stones used in Mesopotamia, however, is very difficult in the absence of textual evidence specifying sources. Source provenance analysis through mineralogical 'fingerprinting' has been undertaken only for steatite/chlorite, from which the Iranians carved plain and decorated vessels which were widely circulated throughout the Near East (Kohl 1975). This has revealed a variety of stone profiles, none of which can yet be definitively located, and which has therefore proven of limited use in identifying the origins of vessels from sites in Mesopotamia (Kohl et al. 1979).

The vast majority of Early Dynastic votive statuary and other stonework recovered from



Plate 1 Early Dynastic light stone statuettes from Khafajeh, c. 2500 BC.



Plate 2 Akkadian dark stone stele found at Susa, Iran, c. 2300 BC.

sacral contexts in Sumer and Akkad as well as related sites in Syria (Mari, Khuera) and at Susa (Amiet 1976a) was carved from locally available light-coloured limestones and calcites (Plate 1). The hard, dark igneous and metamorphic stones which were particularly prized for their lustrous effect when polished began to be used for sculpture on a regular basis only in the Akkadian period. Sargon's 'diorite' stele from Susa (Amiet 1976: no.1) evinces a predilection for this and similar exotic materials which was shared by later Akkadian and Post-Akkadian rulers (Plate 2), most famously by Gudea, ensi of Lagash, c. 2100 BC (Johansen 1978). These heavy, dark diorites, dolerites and olivine-gabbros clearly possessed a prestige value which made them particularly appropriate for temple dedications and other royal monuments (T. F. Potts 1989: 143f).

Old Akkadian royal inscriptions on statue dedications (and Old Babylonian copies of other lost monuments from Nippur) for the first time furnish direct evidence of where these stones were obtained. Manishtushu (c. 2269–2255 BC), Sargon's son and second successor, relates how, after defeating the Elamites of Anshan (Tal-i Malyan) and Sherihum, he 'crossed the Lower Sea (Arabian Gulf)' and 'mined their dark stones', which he then shipped back to Agade and made into statues (Kienast and Gelb 1990: Manishtushu 1, C1). Manishtushu's successor Naram-Sin (c. 2254–2218 BC) and the later Sumerian ruler Gudea likewise relate how they mined stones in the Gulf, and their origin is now explicitly given as Magan, a region firmly identified with modern Oman (ibid.: Naram-Sin 3; Gudea Statue A, ii: 6–iii: 3 (Pettinato 1972: 137, n.818); cf. D. T. Potts

1990: 133–49). The material of the Akkadian statues – called **na₄ esi** in their inscriptions – has been shown by mineralogical analysis to be olivine-gabbro rather than diorite, the previous visual identification (Heimpel 1982). Such gabbros are available in Oman (i.e. Magan) but occur also in Iran; indeed, Manishtushu’s inscription associates the source of esi-stone with mines of ‘silver/precious metal (**kù**)’, which is so far reliably reported only on the Iranian side of the Gulf (Moorey 1985: 111), although such negative evidence cannot be regarded as decisive.

Of finished stonework, vessels provide the only substantial evidence of eastern imports into Mesopotamia. Large numbers of vessels in a variety of hard, dark igneous and altered igneous stones, have been recovered widely in Sumer-Akkad from burials of the Jemdet Nasr to Early Dynastic II periods, notably at Ur, Kish, Girsu (Tello), Shuruppak (Fara), Abu Salabikh and Khafajeh (Vértesalji and Kolbus 1985; T. F. Potts in press (1)). The large numbers in which they are attested, many from otherwise quite humble burials, suggests a context of general availability which was probably supplied in large part by trade. Iran is the nearest and most likely source, although a sub-conical bowl from Tepe Hissar (Schmidt 1933: 423, pl. CXXXIX: H391; cf. Woolley 1955: pl. 35: U19241; Watelin 1934: pl. XXII lower) is so far the only close typological parallel which provides a hint as to their possible area of manufacture.

From the Early Dynastic III period onwards, dark stone vessels tend to be replaced in tombs (and increasingly also in religious contexts) by vessels of a distinctive banded yellow-white calcite (T. F. Potts 1989: 137f). The commonest shapes are illustrated in Figure 3. The same types are also found at Susa (Amiet 1986: 127). More surprising is that close parallels for these vessels, identical both in form and type of material, occur over a wide area of highland Iran, including Shahdad, Shahr-i Sokhta and for some types also Bactria (T. F. Potts 1989: 129f., 133, n. 39, 137f). Most importantly, there is evidence of production of some of these and other forms using local calcite deposits at Shahr-i Sokhta and Mundigak (Ciarla 1979; 1981; Tosi 1984).

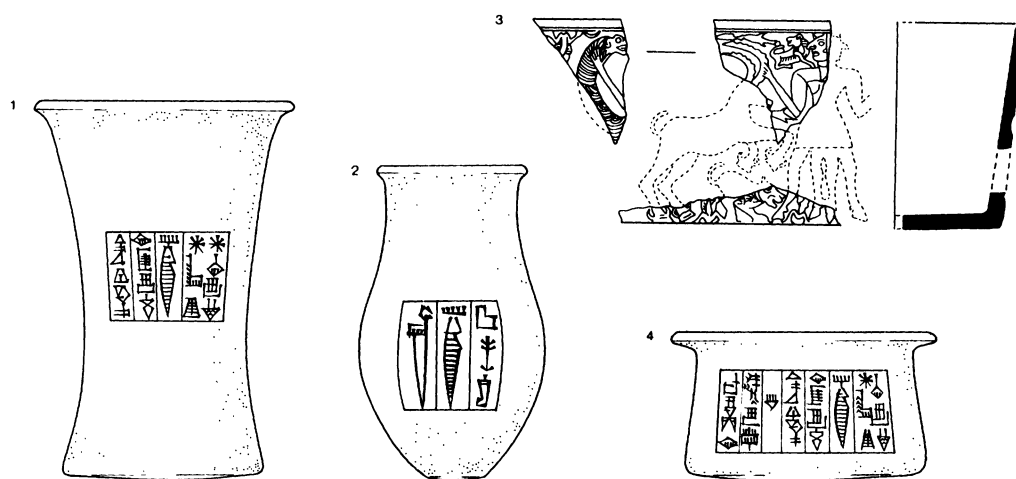


Figure 3 Booty vessels of Rimush (2–3) and Naram-Sin (1, 4) from Elam and Parahshum (2–3) and Magan (4, ?). 1–2, 4 calcite; 3 steatite/chlorite. Found at ?Drehem (1), Girsu (2) and Ur (3) (4 unprovenanced). Not to scale.

That the Mesopotamian examples did indeed come from the east is confirmed by the Akkadian inscriptions which some of them bear celebrating the conquests of eastern lands and sometimes describing the vessels as booty from those campaigns (Fig. 3; T. F. Potts 1989). Inscriptions of Rimush (c. 2278–2270 BC), Sargon's son and successor, describe the vessels of these types as 'booty of Elam' taken in a campaign which, as Rimush relates elsewhere (Gelb and Kienast 1991: Rimush C6), was fought 'in the midst of Parahshum', an important highland Iranian state of uncertain location (Steinkeller 1982; 1989 [Kerman]; Vallat 1985 [Baluchistan]). Naram-Sin dedicated similar pieces (and one Omani chlorite vessel of the *série récente*) 'from the booty of Magan' (Fig. 3:4). From archaeological evidence it is clear that vessels of these kinds, manufactured on the Iranian plateau and Oman, were widely exchanged within and between these regions. Iranian calcite types are found along the Arabian littoral and vessels of the Omani *série récente* have occasionally been recovered from highland Iran (T. F. Potts 1989: nn. 41, 48). Captured among the spoils of Elam, Parahshum and Magan by conquering Akkadian kings, they were taken back to Agade and dedicated as offerings to the gods.

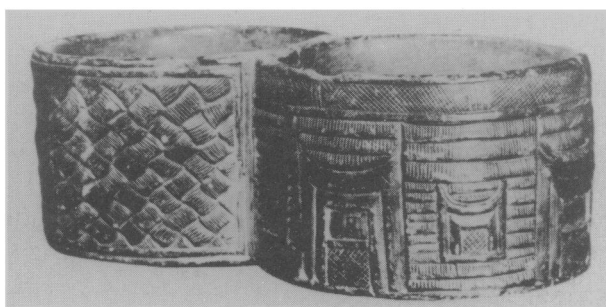


Plate 3 Steatite/chlorite vessel of the *série ancienne* from Susa, late third millennium BC.

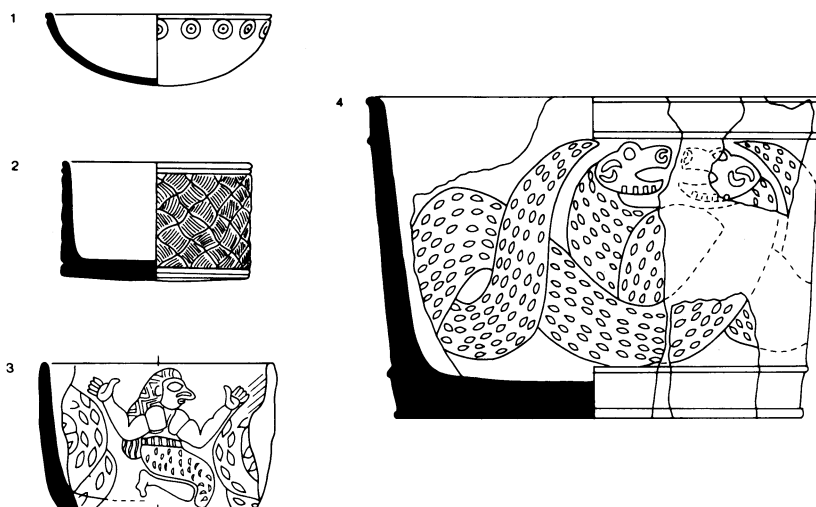


Figure 4 Steatite/chlorite vessels of the *série ancienne* (2–4) and *série récente* (1) from Susa (1–2) and Tarut Island (3–4). Scale 1:4.

Among the vessels inscribed ‘Rimush, king of Kish, conqueror of Elam and Parahshum’, but not explicitly described as booty from that campaign, are two fragments of steatite-chlorite bowls decorated in low relief with figurative designs (Fig. 3:3; T. F. Potts 1989: table 1, C1a, C2a). Such vessels – known as the *série ancienne* (Miroschedji 1973) or Intercultural Style (Kohl 1975; 1979) – have been widely reported across the Near East from Mari in the west to the Indus Valley in the east, with heavy concentrations (mostly Early Dynastic III-Akkadian) in Mesopotamia (Plate 3; Fig. 4:2–4; Kohl 1975; 1979), Tarut Island in the Gulf (Zarins 1978) and at Tepe Yahya in Iran (Lamberg-Karlovsky 1988). Stylistic judgements that these vessels are non-Sumerian were confirmed in the late 1960s and 1970s by the discovery of manufacturing debris from a mid-late third millennium workshop at Tepe Yahya (Kohl 1975). Rimush’s inscriptions make it highly likely that the vessels of this type recovered from Mesopotamia, including the many more uninscribed examples, came there (like the calcite types) as booty from the east.

Among Naram-Sin’s vessels from the ‘booty of Magan’ is one example of a second steatite/chlorite series – the *série récente* (Fig. 4:1; Miroschedji 1973) – characterized by simple geometrical designs, especially concentric dotted circles (T. F. Potts 1989: 133f., fig. 10; D. T. Potts 1990: 140). Excavations in the Gulf have established that this series, which dates from the mid-Akkadian period to the early second millennium, was produced in Oman (Kroll in Weisgerber 1981: 212–14, Abb. 46, 47). Besides booty, other examples seem to have arrived in Sumer with merchants engaged in the Gulf trade between southern Mesopotamia, Bahrain and Magan (e.g. Amiet 1986: fig. 88; Miroschedji 1973: 28 n. 116). The small flasks which contained unguents and scents may represent genuine articles of trade (Amiet 1986: 164; Miroschedji 1973: 33), but the common hemispherical bowls were probably incidental acquisitions, picked up as *momentos* by merchants engaged in the economically primary trade in copper and other raw materials. Tarut Island seems to have been a major consumer and probably also an *entrepôt* for the distribution of both the *série ancienne* and the *série récente* along the Gulf (Zarins 1978).

(ii) *Semi-precious stones*

Along with gold, the semi-precious stones carnelian and lapis lazuli were the most highly prized and widely exploited materials for jewellery and luxury inlay work in third-millennium Mesopotamia. Unlike lapis, carnelian is widespread in Iran and on the periphery of the Indus region, the largest nodules being found in Gujarat (Tosi 1976–80: 448f). Evidence of local working in Mesopotamia has been discovered at Larsa (Chevalier et al. 1982) and Uruk (Aue 1985), although imported heat-treated (‘etched’) beads of Harappan manufacture are also found (Reade 1979). Third-millennium and later cuneiform documents confirm that the Sumerians obtained carnelian from the east, especially Meluhha, i.e. the region of the Harappan civilization (e.g. Reiner 1956: 133; Attinger 1984: 13; Jacobsen 1987: 408, 437). From Akkadian times on, when sea-borne commerce between the Indus and Sumer is amply attested, this trade may be assumed to have been transacted by boat. In the earlier third millennium, however, the possibility of a more significant overland trade in this low-volume commodity must also be considered.

The source and trade routes of lapis lazuli have been much discussed in recent years. Since Herrmann’s seminal study (1968), most discussions have accepted her conditional

proposition that the nearest source of Mesopotamian lapis was Badakhshan in Afghanistan. That this lapis was indeed mined in the third millennium has been corroborated by the discovery of a Harappan lapis procuring colony north of the Badakhshan mines at Shortugai on the Oxus river (Francfort and Pottier 1978).

Herrmann posited an overland Iranian route between Badakhshan and Mesopotamia following the 'Great Khorasan Road' across northern Iran via Tepe Hissar and along the Diyala river to Akkad. The discovery of lapis working debris at Shahr-i Sokhta later raised the possibility of a southern route along the Helmand River and thence through Seistan, Kerman and Fars debouching onto the lowlands near Susa (Tosi 1974; 1984). There can be no doubt that lapis was indeed transported along these or similar routes within Iran, since it was consumed in substantial quantities not only at Shahr-i Sokhta but also at Shahdad, Tepe Hissar and elsewhere. It is an open question, however, whether this was a side effect of overland trade directed towards Mesopotamia or evidence of a primarily Iranian network satisfying local demand.

In the first place, aside from the tendentious narrative poem *Enmerkar and the Lord of Aratta* (S. Cohen 1973; Jacobsen 1987: 275–319; Michalowski 1986: 133), which describes lapis being sent from Aratta to Uruk, the Mesopotamian textual evidence suggests that lapis was acquired principally from Meluhha (e.g. Gudea Cyl. B xiv: 13; M. Cohen 1975; Pettinato 1972: 78, 135), with which trade was conducted by boat along the Gulf. Contemporary documents from the second half of the third millennium give no indication of overland trade in stones with Iran. Sea trade with the Indus, on the other hand would tie in well with the evidence for Harappan procurement at Shortugai (although a problem remains in the rarity of lapis on mature Indus sites; Ratnagar 1981: 132–5).

There are occasional references from the Achaemenid period to modern times to sources of lapis in Iranian Mazanderan, Kerman and Azerbaijan (Herrmann 1968: 27f.). While none of these has been confirmed by modern reconnaissance, neither can they be dismissed. An indication of how small outcrops may easily escape attention is provided by the recent discovery of lapis near Quetta on the Iran–Pakistan border (Berthoud et al. 1982: 41 n. 21). A further problem is that there are other materials (azurite, sodalite, etc.) virtually indistinguishable from lapis by eye which may exist in Iran and may have been exploited in antiquity alongside lapis.

(iii) Metals

Lacking any local supplies, Sumer was entirely dependent on external sources for the metals which were an essential requirement of urban life, providing the raw material for tools, weapons and utensils, as well as artistic pursuits such as sculpture and jewellery. Evidence for the origin of Mesopotamia's metals comes from textual references (royal inscriptions, literary compositions, lexical lists and administrative records) and source-provenance pinpointing through trace element analysis. A recent programme of analyses on a wide range of Iranian and Mesopotamian metalwork in the Louvre provides a much improved basis for discussion (Berthoud et al. 1982; Tallon 1987), although its conclusions need to be regarded as provisional in view of methodological and analytical questions which have been raised (Seeliger and Pernicka 1985: 643 n. 74; Hauptmann et al. 1988: 34).

As would be expected, for copper the settlements of highland Iran seem to have depended on the major plateau mines of Anarak-Talmessi and, less extensively, Bardsir-Sheikh Ali (Berthoud et al. 1982; Malfoy and Menu 1987). Susa too drew heavily on these supplies throughout the late fourth to mid-third millennium (Susa I–III periods). Less evidence is available for Mesopotamia, but the Early Dynastic I sites of the Hamrin in northern Akkad likewise seem to have received copper from Anarak (Berthoud et al. 1982: 43; Amiet 1986: 35).

Both Susa and Sumer show a shift from Iranian to Omani copper (characterized by higher iron content) in the second quarter of the third millennium (Amiet 1986: 126; Malfoy and Menu 1987: 364f.; Cleuziou 1986: 145; Moorey 1985: 12, 14). In Early Dynastic III and later periods, down to Old Babylonian times, there can be no doubt but that much of Sumer's copper came from Oman, for lexical and economic texts are explicit in citing Magan as the source of the copper regularly acquired by Gulf merchants, Dilmun acting as the major entrepôt.

The usual alloying material used for hardening copper in Mesopotamia and Iran at this time was arsenic, for which the principal Near Eastern source was Anarak. (Other reports of usable arsenic mineralizations, e.g. in Armenia (Muhly 1976: 90), remain unconfirmed.) Early arsenic-rich coppers of the fifth and fourth millennia were no doubt natural alloys resulting from the use of Anarak copper ores, which typically contain up to 1 per cent arsenic. However, higher levels of between 1 per cent and 3 per cent, which become common in the Early Dynastic III and Akkadian periods, almost certainly indicate some degree of intentional alloying. There is no textual evidence for how the additive may have been traded (no Sumerian or Akkadian word for arsenic has been identified), whether overland directly to Susa and Mesopotamia, or south to the Gulf and thence by boat to Sumer. The presence of arsenical coppers in Oman may indicate some movement along the latter route.

Tin bronze, although occasionally attested from the late fourth millennium, does not appear as a consistent feature of Mesopotamian metallurgy until the Early Dynastic III period, and only replaces arsenical copper as the staple alloy around the turn of the second millennium. (The most abundant analytical evidence comes from Susa, which may be used as an approximate guide to Sumer: definitively intentional bronzes of over 5 per cent tin are still very rare in the Akkadian period (Susa IVB), and represent only 10 per cent of the tested sample in Ur III (Susa VA); they become widespread only in the early second millennium (Susa VB), when 48 per cent of the sample contains over 5 per cent tin (Malfoy and Menu 1987: 333, 361, table D)).

The source of Near Eastern tin has long been one of the outstanding problems of ancient metallurgy. Mesopotamian texts indicate that, like carnelian and lapis, tin came primarily from the east, but the evidence is patchy and inconclusive as regards specific locations. The more reliable documents – historical and administrative texts – cite Meluhha (Gudea Cyl. B xiv: 13) and Dilmun (Pettinato 1983: 77 (Ebla)), the latter presumably an entrepôt. Transactions involving tin (of unspecified origin) were made at Susa (Scheil 1913: no. 35) and tin was issued at Lagash to the ensi of the Elamite border town Urua (Lambert 1953: 65). This suggests that tin may have changed hands as part of the Gulf trade, although it is not cited as such among the surviving trade texts from Ur (Oppenheim 1954; Leemans 1960). Literary and lexical texts also cite Aratta (S. Cohen 1973: ll. 17–19, 415),

Magan (M. Cohen 1975: 281. 144), beyond Mt Ebih (Hamrin) (Muhly 1973: 288 n. 341; cf. Heimpel 1982: 67 n. 21), Zarshur (Leemans 1960: 7 l. 25), [Za]rha and BAR-gungunnu (Reiner 1956; Leemans 1960: 8 ll. 23f.) while royal inscriptions mention tin as booty from Zabshali/Shimashki (Sollberger and Kupper 1971: IIIA4e) and probably Anshan (Davidović 1984: 186f., 200). In the second millennium, tin was traded by caravan from Ashur to Cappadocia, and was exchanged in transactions (though from which sources is unclear) at Susa and Shemsharra (Larsen 1976: 87–9; 1982: 40; Leemans 1960: 123f.; Muhly 1973: 292ff.).

The first confirmed report of a plausible tin source has recently come from western Afghanistan (Berthoud and Cleuziou 1983: 24ff.). Evidence of ‘protohistorical’ workings near the Misgaran mines (Berthoud et al. 1982: 49) lends support to the view that Afghan tin was indeed exploited in antiquity, perhaps as early as the third millennium. Evidence of an alternative source in the Bolgardagh region of the Taurus mountains in Turkey (Yener n.d.; Yener and Özbal 1987) is accumulating (but cf. Muhly et al. 1991). On the other hand, earlier reports of usable tin deposits in Iran, the Caucasus and Turkey remain unconfirmed (Muhly 1973: 248–61; 1985; Franklin et al. 1978; de Jesus 1980: 53ff.; Berthoud et al. 1982: 49). The dearth of tin bronze in highland Iran (Berthoud et al. 1982: table C; Moorey 1982: 87f.; Tallon 1987: 335; Beyer 1989: 118) strongly suggests that any Afghan tin traded with Mesopotamia travelled south through the Indus and up the Gulf by boat, rather than overland across the Iranian plateau. Such a sea route would account for the Mesopotamian tradition of tin from Meluhha, Magan and Dilmun, and for the occasional occurrence of tin bronze in Oman (Berthoud et al. 1982: 47, 50). It is also supported by the fact that the use of tin in the Indus region reaches a peak in the Harappan period (Ratnagar 1981: 83; Agrawal 1984: 164).

The precious metals silver and gold are both widespread in Iran, Anatolia and elsewhere, and were probably obtained from various sources at different times. In the second millennium, Mesopotamia obtained silver from the nearest and richest mines, those of the Taurus mountains. However, while Sargon refers to the ‘silver mountain’ (= Bolkardagh) near the ‘Upper Sea (= Mediterranean)’ (Kienast and Gelb 1990; Sargon C2: 34f.), there is no textual evidence for silver arriving from this direction in the third millennium. Rather, what indications exist again point to the east. Some documents – mainly literary and lexical texts – allude to the silver of places believed to lie in highland Iran (e.g. S. Cohen 1973: 18f., 39; Reiner 1956; Gudea Cyl. A xvi: 18f.), as well as Dilmun and Meluhha along the Gulf (M. Cohen 1975: 31. 149f.; Pettinato 1972: 123). On the other hand, the receipt of silver in transactions along the Mesopotamian-Iranian border at Der (modern Badra), Urua (eastern Khuzistan?) and Elam (here probably Susa) (Lambert 1953: 61 (DP 513), 63 (Nik 292); Michalowski 1978: 48) reflects its use as a medium of exchange and so cannot be used to plot sources. More significantly, the Akkadian king Manishtushu relates how, after conquering Anshan, he crossed the Lower Sea where he engaged the enemy as far as the ‘silver mines (*hu-ri kù*)’ (Kienast and Gelb 1990: Manishtushu C1: 29). This itinerary suggests Oman (Magan) but since silver is not attested in substantial deposits there (Moorey 1985: 111; cf. Tosi 1975: 202) the possibility must be considered of a source in southern Iran. (A land ‘across the (Lower) Sea’ is not necessarily in Arabia; in Assyrian times this expression could be used to refer to Iran and Glassner (1989: 186) has argued that it should be understood in this way also in texts of the

Akkadian period). Wherever it lay, Manishtushu's silver mine was accessible by boat and its produce could therefore have been traded by the sea-borne Gulf merchants.

Gold too seems to have come primarily from the east. Lexical and literary documents mention a number of gold sources which can be placed with varying degrees of confidence in Iran (Aratta, [H]arali, Hublul, Zarshashum, Hahum), as well as Meluhha (S. Cohen 1973: ll. 39, 124, 618f.; Attinger 1984: 13; M. Cohen 1975: 31; Pettinato 1972: 79 n. 235, 154–6; Gudea Statue B vi: 33–5). Of these, only Meluhha is confirmed by an 'historical' source, the inscriptions of Gudea (Statue B vi: 38–40, Cylinder A xvi: 19f. (Pettinato 1972: 146, 166ff.; Jacobsen 1987: 408)). References to gold taken as booty from Shimashki, Elam, Parahshum, Susa, Awan and Adamdun are unfortunately no guide to original sources (Kutscher 1989: BT4 v: 5–8, vi: 19–33, ix: 12–20; Kienast and Gelb 1990: Rimush C6: 138f.; Sollberger and Kupper 1971: IIIA5b–c; for locations see Edzard and Farber 1974: s.v; Stolper 1982; Steinkeller 1982; Vallat 1985).

Some gold may also already have come from Anatolia. Gudea cites gold from a Mt Hahum, which probably lay between Diyarbakir and Elazig (Groneberg 1980: 85f.) or in the Elbistan plain (Garelli 1963: 109). In a very damaged text the fourth king of the Ur III dynasty Shu-Sin (c. 2037–2029 BC) refers to the mining of gold and silver, apparently in the vicinity of [Mar]daman (= Mardin; Edzard and Farber 1974: 118) and Ha[bura] (= the Habur) (Kutscher 1989: BT4 vi: 1–18). Northern mines became the primary source of Mesopotamian gold in the second millennium (Moorey 1985: 73f.), although some may still have come via Dilmun (Leemans 1960: 120f.). After a promising start, trace element analysis has not so far shed much additional light on this picture (Ogden 1977; Meeks and Tite 1980).

(iv) *Finished metalwork*

If there is ample evidence for the flow of raw metals into Mesopotamia, finished metalwork of eastern origin is conspicuous by its absence. A number of distinctive elaborately decorated Iranian and Bactrian-related types, including axes with 'winged' butts (Fig. 5), occur widely in the Iranian highlands from Khinaman and Shahdad westwards across the plateau and onto the lowlands at Susa, but there they stop (Pottier 1984; Amiet 1986; Curtis 1988). Only a handful of pieces from southern Mesopotamia may plausibly be classed as Iranian imports, and there are none from further afield (Carter 1990; T. F. Potts in press (2)). Aside from the most simple undiagnostic utilitarian forms, metalwork of Mesopotamian type is similarly scarce in the Iranian highlands, indicating that movement from the lowlands eastwards was equally rare. Among the few suggested links are a type of gold earring (Maxwell-Hyslop 1987: 22) and a group of 'harpe-swords' (Pottier 1984: nos 23–6; cf. Collon 1986: 28f., 52), both reportedly from Bactria.

Documentary evidence presents a very different picture. Sargonic and Ur III royal inscriptions indicate that substantial quantities of metalwork were taken as booty from Elam and elsewhere in Iran, and the fact that this has not survived no doubt reflects the prevalence of remelting. Recycling alone, however, would hardly account for the dearth of Iranian metalwork in Sumer-Akkad if the irregular taking of booty had been supplemented by any substantial traffic of trade. The archaeological *argumentum ex silentio* is corroborated by a similar gap in the textual sources concerning commercial exchange.

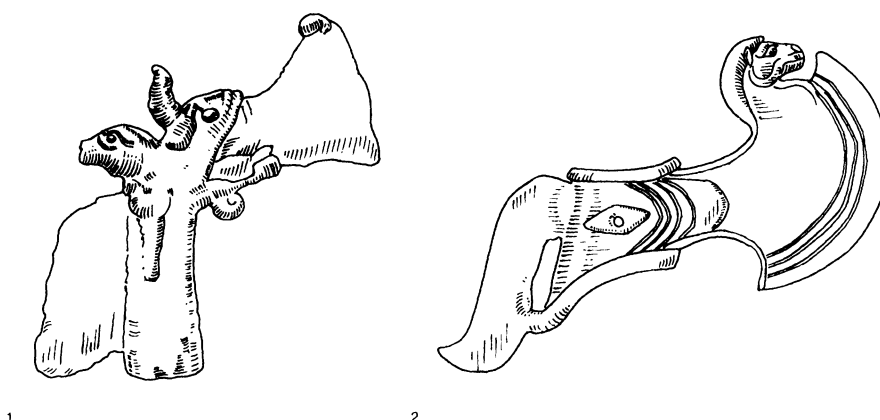


Figure 5 Iranian/Bactrian-style copper axes. Found at Susa (1); (2) unprovenanced. Not to scale.

Account texts of the later third millennium deal commonly in raw copper and other metals, but are virtually silent with regard to finished metalwork. Likewise lexical and other canonical references to metalwork of foreign origin are extremely rare (e.g. the ‘Dilmun(-type) axe (?)’ [*dilmun tùn*] in the Archaic metals list from Uruk (Englund 1983; Nissen 1986: 338), and a *za-hum* from Magan (Limet 1972: 14; Glassner 1989: 187)).

A large part of the explanation is no doubt logistical. Metal travels most conveniently and with least risk of damage as ingots. Unlike raw stone blocks, much of which would be wasted in working, all of the ingot could be used, and used according to local tastes and requirements.

Conclusions

Plausible evidence of overland trade (as distinct from booty taking) between Mesopotamia and Iran is surprisingly scarce – primarily the hard, dark stone vessels of Jemdet Nasr to Early Dynastic II burials, and Jemdet Nasr to Early Dynastic I (arsenical) copper from Anarak-Talmessi in Iran. For the rest – semi-precious stones like carnelian and lapis lazuli; copper, tin and gold; and exotic woods – textual evidence, as far as it goes, suggests that they arrived chiefly by sea via the Gulf, a conclusion confirmed in the case of mid- to late third millennium copper by analyses indicating the use of Omani ores. The dearth of Elamite and other highland Iranian artefacts from Mesopotamia is all the more telling in view of the Indus seals and other Harappan artefact types which occur in Sumer-Akkad (Ratnagar 1981) and at Susa (Amiet 1988).

Present evidence thus suggests an increasing dependence on sea-borne trade at the expense of overland links with Iran, hinging around the Early Dynastic III period. Hints of an even earlier start to the Gulf trade (‘Dilmun copper’ in Archaic Uruk texts and Jemdet Nasr to Early Dynastic II pottery in Oman) suggest that this might be less a matter of a shift to the Gulf than a falling away of the earlier (supplementary?) overland trade. Such a state

of affairs would find a ready explanation in the historical evidence of increasing Mesopotamian–Iranian hostility from Early Dynastic III on (Stolper 1984; T. F. Potts in press (2): ch. 3). From very early times, the procurement of raw materials seems to have been a complex matter involving disparate sources in various directions, the relative prominence of a particular region depending on political developments and other factors which were only partly under Mesopotamian control.

A feature which emerges with new emphasis is the importance of booty-taking as against trade in accounting for those conspicuously exotic finished products (principally stone vessels) which have been found on Mesopotamian soil. Historical inscriptions of the Akkadian and Ur III periods record large quantities of metalwork and stonework, along with various perishable items, taken as booty in campaigns against the eastern lands of Elam, Parahshum, Shimashki and Magan (T. F. Potts 1989: tables 1–2; Kienast and Gelb 1990; Rimush C6: 138–47, Manishtushu 1: 31–6, Naram-Sin 3: 37–43, Ur C2: 48–57; Pettinato 1982; Davidović 1984). It is not surprising, therefore, to find manifestly foreign stone vessels of the *série ancienne*, or calcite vases of east Iranian/Bactrian type, bearing inscriptions celebrating these victories, some explicitly labelled as booty. Nor was such booty of merely propagandistic significance. In a society where tribute and ‘diplomatic gifts’ were essential expressions of complex political relationships, and where temples and palaces were both the chief beneficiaries of institutional patronage and the primary repositories of stored wealth, the looting of a major highland capital was not only a political landmark but also an economic event of major importance. While the taking of booty was by nature unpredictable and could never have replaced regular trade as the basis of Mesopotamia’s staple needs, neither should the economic importance of war in times of aggressive imperialism be underestimated.

This raises a point of more general interest. Trade and other modes of exchange are all forms of economic reciprocity, i.e. transactions in which each party gives and receives something to and from the other. While models which take their starting point from modern economic analogies tend to assume that this covers the field well enough, such a perspective leaves out of consideration a whole other class of phenomena: viz. non-reciprocal movements where goods flow – typically under duress – in one direction only. The principal mechanisms of this type, well documented in historical periods, are booty-taking and the extraction of tribute, where goods are taken by right of conquest or suzerainty without any *quid pro quo*.

Much attention has been devoted to the study of trade in the Near East and the ancient world generally, so that ‘down-the-line trade’, ‘trickle trade’ and various other mechanisms of reciprocal exchange form standard elements in every archaeologist’s explanatory tool kit. And these have generally been the explanations of choice when artefacts of foreign material or manufacture are encountered on archaeological sites. To the extent that other options are explored, these too tend to be forms of reciprocal exchange, albeit of a less ‘commercial’ or market-driven kind (e.g. Renger 1984). Rarely is serious attention given to the possibility of some kind of non-reciprocal movement of goods.

Yet it is clear from historical sources that this was often a major – perhaps at times the principal – mechanism by which foreign materials and goods moved from resource-rich extraction and manufacturing areas to more powerful but resource-deficient imperial states. The Akkadian, Ur III and Neo-Assyrian empires are only the more obvious

instances in Mesopotamian history. The evidence outlined above suggests that such may have been the case to some extent also in earlier times, especially as regards finished goods.

The two explanations differ in some important respects. While trade is an essentially economic postulate, to suggest that foreign goods arrived at their place of discovery by some non-reciprocal mechanism is to imply that that region exercised military or political dominion over the source area. Furthermore, while neither is more probable than the other *a priori*, the circumstances in which political suzerainty can justifiably be postulated are narrower (or so it has generally seemed) than for trade. It is a natural assumption that most regions – whether central or peripheral, powerful or weak – engaged to some degree in trade with surrounding peoples. By contrast, to judge by historical evidence, relatively few regions were able to dominate their neighbours to the extent of being able forcibly (i.e. non-reciprocally) to extract the goods and materials they desired.

Against the very limited scale of direct Mesopotamian–Iranian overland trade must be set the evidence for a wide-ranging network of exchange within greater Iran documented by Amiet (1986). Metalwork, stone vessels and other items, many of distinctive, highly elaborate types, are found in closely analogous forms over vast distances from Bactria through Baluchistan and Kerman to Susa in south-western Iran. Contacts extended also across the Gulf to the Arabian peninsula, as is demonstrated by the occurrence of late third-millennium Omani pottery and stone vessels in Iran, and Iranian forms in Arabia. Clearly, the logistical difficulties of overland trade did not seriously inhibit exchange within the Iranian-Turanian highlands and even onto the lowlands at Susa. The failure of these types to penetrate further west into Mesopotamia is therefore doubly striking. One inhibiting factor was probably the cultural discontinuity which separated the Sumero-Akkadian lowlands from the eastern highlands, where Elamites, Parahshians and other non-Sumerian, non-Semitic peoples predominated. The more elaborately decorated highland artefacts embody a rich mythology which the Mesopotamians would have been little better equipped to appreciate than we are today.

The more immediate explanation for Mesopotamia's exclusion from the Iranian-Turanian circuit, however, is probably economic – viz. the greater speed, facility and economy of transporting substantial quantities of goods by boat as opposed to equid caravans. The raw materials which fed the Gulf trade came primarily from the Arabian side of the Gulf (Oman for copper and olivine-gabbro) and the Indus (lapis, carnelian, timber, gold, ?tin). None of the known commodities came exclusively from Iran and none of the known staging posts on this route was on the Iranian coast (unless Magan extended over both shorelines). Thus the opportunity for acquiring finished Iranian products was largely restricted to materials which had been transported overland to the Iranian coast and then shipped across the Gulf to entrepôts such as Bahrain and Tarut. Trade in finished goods along this route seems, in any case, to have been relatively limited, and was clearly dependent on the regularized exchange mechanisms structured around the economically primary trade in raw materials, especially metals. Many of the *série ancienne* and *série récente* vessels and other eastern exotica (including Gulf/Indus seals, cubic weights 'etched' carnelian beads etc.) which have been found in Sumer and at Susa were probably acquired casually, not to be traded or bartered but as curiosities to be kept as *momentos* or perhaps dedicated to an appropriate deity in appreciation of a safe return.

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Abstract

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Patterns of trade in third-millennium BC Mesopotamia and Iran

Southern Mesopotamia's lack of most raw materials made it dependent to an unusual degree on trade and other forms of procurement from foreign lands. The appearance of wide-ranging trading networks extending far into the surrounding highlands of Anatolia and Iran may be traced in the archaeological record of the late fourth and third millennia. From the mid-third millennium, the archaeological and textual evidence combine to suggest an increasing dependence on maritime exchange along the Arabian/Persian Gulf at the expense of overland trade with Iran. Finished goods of eastern manufacture are conspicuously rare in Mesopotamia. Among those that do occur, some stone vessels are identified by their inscriptions as booty rather than objects of trade. Evidence is reviewed which suggests that such non-reciprocal mechanisms of procurement may have been more significant than has previously been recognized.