
Book Section:
Sherratt, S. (2018) Why was (and is) silver sexy? Silver during the 4th-3rd millennia in the Near East and Mesopotamia. In: Armada, X.-L., Murillo-Barroso, M. and Charlton, M., (eds.) Metals, Minds and Mobility: Integrating Scientific Data with Archaeological Theory. Oxbow Books , Oxford , pp. 97-106. ISBN 978--1-78570-905-0

AN OFFPRINT FROM

METALS, MINDS AND MOBILITY

INTEGRATING SCIENTIFIC DATA WITH ARCHAEOLOGICAL THEORY

Edited by

XOSÉ-LOIS ARMADA, MERCEDES MURILLO-BARROSO

and

MIKE CHARLTON

Hardback Edition: ISBN 978-1-78570-905-0
Digital Edition: ISBN 978-1-78570-906-7 (epub)

OXBOW | books
@oxbowbooks2018
Oxford & Philadelphia
www.oxbowbooks.com

Chapter 7

Why was (and is) silver sexy? Silver during the 4th–3rd millennia in the Near East and Mesopotamia

Susan Sherratt

Shininess and colour

For some time now I have been thinking about why silver has had the history it has in the Old World – from its first regular appearance in the 4th millennium BC in western Asia, to its adoption by Mesopotamia, in particular, as a standard of value and, indeed, a medium of payment in the 3rd millennium, to a full-blown currency and material for coinage in the 2nd and 1st millennia, and to its continuing role as a medium and symbol of wealth accumulation and storage (as well as of social ostentation) today. In this paper I want to concentrate on the early part of this very long period, and think about silver particularly in the 4th millennium: what it meant to the inhabitants of the newly urbanising centres of Mesopotamia at that time, and has continued to mean, increasingly globally, in a number of respects ever since. As a result, I have been centring my thoughts around a number of questions:

1. What was (and is) the appeal of silver?
2. Why did Mesopotamia, in particular, start to take up silver in such a determined way in the 4th–3rd millennia BC?
3. Why was silver relatively late in appearing on the scene, by comparison, for example, with gold?

Each of these questions has several sub-questions nested within them, and I shall try to raise some of these as I go along.

Let us start with the first one: What was the appeal of silver? Part of the answer is probably the obvious one: silver, like other metals, including copper and gold, is shiny – either bright whitish shiny, like the polished silver we are more accustomed to seeing today, or gleaming black or grey shiny, as it is when left unpolished. The etymologies of words for silver in some Indo-European languages, at least, seem to confirm this. For instance, the Greek ἄργυρος (from ἀργός), Latin *argentum* and Armenian artsat' probably come from a Proto-Indo-European root *arĝ-, r̥ĝi-, whose basic meaning is probably 'shining, bright, glistening or gleaming' (Pokorny 1959, 64–65; Frisk 1960, 132–33 s.v. 1. ἀργός and ἄργυρος); and it has been suggested that there might have been a Hittite word from the same root (Hoffner 1968, 41–42; Giorgadze 1988). Something similar may well be the case in Sumerian and Egyptian, which I shall come back to a little later.

Humans, rather as magpies are traditionally supposed to be, were presumably originally attracted to metals – first copper, then gold – by their shiny appearance; and for the first few thousand years or so of metal use they used them almost exclusively for personal ornaments. The people buried in the 5th millennium Varna necropolis on the western coast of the Black Sea made lavish use of gold bodily ornaments to emphasise their personal assets (like the famous gold penis sheath: *e.g.* Slavchev 2010, figs 9–11; *cf*. Renfrew 1986, 148) and no doubt to make them more attractive to potential mates, just as male bower birds use bright colourful and sometime shiny items to make their nests more alluring to females (Gilliard 1956). Silver, I do not need to emphasise, like gold, is a spectacularly *impractical* metal, in the sense that one cannot make functionally useful objects, like tools or weapons, out of it;[1] and this, I suppose, makes it an example of a luxury as opposed to a necessity, in the common vernacular sense of something that is desirable but not indispensable.[2] In fact, this appears to be precisely the sentiment of the sadly very fragmentary 'Dispute between silver and copper', one of a series of later 3rd millennium Sumerian disputation texts, in which copper, who claims to be strong and powerful and to produce abundance by

his labours with his copper hoes, adzes and axes, accuses silver of finding a home only in the palace, without which he would have no existence, of being buried away in the darkest spots of the private home, where men make strong boxes for him, and of being of no use whatsoever when it comes to irrigation, ploughing, cutting firewood or the harvest (Kramer 1963, 265). In other words, silver is a metal for gods, kings and lesser mortals to show off with and to hoard, rather than to do useful things with. As a result it is a metal particularly well suited, in default of any other use, for accumulating and storing wealth (or in other words 'capital', whether social, symbolic or ultimately economic), just as it is. Sadly, however, from a purely archaeological point of view, unlike copper and most copper alloys and especially unlike gold, silver often tends to corrode quite badly when left unprotected in the ground for any length of time. This means not only that its forms, when deposited in the ground, are often difficult to reconstruct, but also that its unappealing condition, in the days when excavations were carried out with the primary purpose of recovering visually attractive artefacts for museum collections, sometimes led to it being overlooked or ignored.

Medieval alchemists associated gold with the (yellow) sun, and silver with the moon – an idea that can be traced back as far as the Orphic Hymns of around the 2nd or 1st century BC (*The Hymns of Orpheus* [transl. Taylor] nos. 7 [To the Sun] and 8 [To the Moon]), and that possibly goes considerably further back than this. This could only have happened once silver had joined the regular metal repertoire, and probably only in circumstances where it habitually had a pale, polished rather than darker unpolished surface appearance. This seems to have been the case in both Egypt and Mesopotamia. For example, in Egyptian hieroglyphs the word 'hedj', meaning 'white' or rather the 'absence of colour', along with the determinative for 'gold' in the form of a necklace, was used to denote silver, showing that silver was regarded as white or colourless gold (Gardiner 1927, 492, 576, 586, 591). In 3rd millennium Mesopotamia the logogram for silver often includes the sign transliterated by the word 'babbar', meaning 'white' (KÙ.BABBAR), which together literally mean 'white precious/noble metal' (Joannes 2010, 486–87; Helwing 2014, 417; Warburton 2016, table 1; *cf*. West 1997, xxi); this adjective, interestingly, was also used for the sun god, Utu, who lived in the 'white house' (E. BABBAR) (Black and Green 1992, 184), suggesting that a contrast between golden sun and silver moon was not a concept current at least at that time and in that part of the world (where the sun at the height of the day often appears white).[3]

However, this brings us to another aspect of metals in general and silver in particular: the importance of colour, and especially of colour contrasts – which, in our ethnocentric utilitarian attitude to metals, which privileges their technological or other capabilities, we sometimes have a tendency to overlook. The potential for these contrasts, even if not apparent in early Mesopotamian vocabulary, becomes beautifully clear from the silver inlays on arsenical copper swords from the large Late Uruk influenced 'palatial' complex at Arslantepe in Central Anatolia, dating to around 3400 BC (Frangipane 1997, 49; Frangipane and Palmieri 1983, 400, figs 58:5, 59:5–6, 62:1). And indeed, it was probably the search for colour variations and contrasts which led to an explosion of experimentation with more complex copper ores and different copper alloys from early in the 4th millennium, as seen most spectacularly in the hoard from Nahal Mishmar in the Judean desert, where alloys of arsenic, antimony and copper, and of arsenic, copper and nickel were used to produce some striking variations in colour of the finished objects (Shalev and Northover 1993; Philip and Rehren 1996, 141).[4] At Nahal Qanah near Tel Aviv, a hoard of eight ring-like objects, also of 4th millennium date, are made of a mixture of gold and varying proportions of silver (Gopher *et al*. 1990; Philip and Rehren 1996, 140–41). Although they may, from their facetted, unfinished appearance, have been intended as ingots rather than ornaments, it also seems likely that their composition was deliberately manipulated to produce particular surface colours.

The 4th–3rd millennia: Mesopotamia's love affair with silver

Silver was relatively late in appearing on the scene, probably because native silver is particularly rare and because it took some time to work out how to produce it by cupellation from lead ores, so that, unlike copper or even to some extent gold, this gave it a certain appeal of novelty in the 4th millennium. In addition, copper by this time was increasingly used for tools (the casting of heavy copper tools, including shafthole tools, had been around since the earlier 5th millennium; Sagona and Zimansky 2009, 139),[5] implying that not only was copper ubiquitous by the 4th millennium, but it had lost much of the perception as a metal for ornaments, for social display and for exchange rather than practical use, which it undoubtedly had when it initially started. With the exception of a few silver ornaments, such as three silver beads from 6th millennium Domuztepe in southern Anatolia, which are probably made of native silver (Carter *et al.* 2003, 125, fig. 14; Campbell 2011, 22), it is only in the 4th millennium that silver begins to appear regularly. In northern Mesopotamia, at sites like Hacinebi, Brak and Hamoukar, silver artefacts appear in the form of ornaments (such as earrings, beads and pieces of silver wire) early in the millennium (Özbal *et al.* 1999, 60, 64; Emberling and McDonald 2002, 949, fig. 3; Reichel 2007–08, 80, fig. 8; Helwing 2014, 415, fig. 3a). A few silver artefacts, mainly ornaments, also occur at Uruk in the south in the earlier part of the 4th millennium (Helwing 2014, 415, fig. 3a), and

later in the millennium we also find silver animal figurines (some of them also cast by a lost wax process: see *e.g.* Hamilton 1967) and a few fragments of silver vessels or vessel attachments, some of them badly corroded, in the early Eanna temple (Heinrich 1936, 41, 47, pls 6, 17a–b, 30c, 35; *cf.* Moorey 1999, 235).

Silver is already found in the first written proto-cuneiform records from Uruk IV around 3300 BC, and Uruk III around 3100 BC, where it is denoted by the Sumerian sign kug or ku, whose semantic field seems to have the sense not only of metal but also of precious, pure or noble (Green and Nissen 1987, 233 no. 301; Falkenstein 1936, 55; Joannes 2010, 487; Guichard and Marti 2013, 50–51, 62). There are some indications that it may have been offered to the goddess Inana already in this early period; and it certainly was offered to her as 'morning Inana' (*i.e.* Inana associated with the sunrise) during the 3rd millennium (Szarzyńska 1993, 16–21 with table 2, fig. 4; Meador 2000, 13; Evans 2012, 98). The notion of 'pure' is perhaps especially interesting – not only maybe in relation to gifts to deities, but also possibly in relation to the fact that Mesopotamian silver was probably mainly obtained through cupellation of argentiferous lead ores. Litharge – the residue left after the extraction of silver from silver-rich lead minerals by cupellation – has been found at various places on the Iranian plateau in the earlier part of the 4th millennium (corresponding to the early Uruk period), including Tepe Hissar, Sialk and Arisman, and also at Fatmalı in eastern Turkey (Hess *et al*. 1998; Helwing 2011; 2014, 415, figs 2–3a; Nezafati and Pernicka 2012); and in the later Uruk period (at around 3300 BC) in the Uruk colony and trading post at Habuba Kabeira on the Euphrates bend, where a suite of lead objects was accompanied by a number of litharge cakes, which clearly came from the bottoms of cupellation hearths (Pernicka *et al.* 1998; Helwing 2014, 415, fig. 3b). There thus seems absolutely no doubt that, by at least the middle of the 4th millennium, Uruk period cities (including the city of Susa in what is now southwest Iran) were making use of cupellated silver, with the silver itself coming either from Anatolia, where silver sources could be found in the Pontic mountains, in the Taurus or in the Erganı region of the Upper Euphrates, or from the Iranian plateau, or from all of these (Lehner and Yener 2014, 531–32, fig. 20.1). By the Jemdet Nasr and Early Dynastic 1 periods from around 3100 BC into the early 3rd millennium, impressive quantities of lead vessels are found at southern Mesopotamian sites (Potts 1997, 176; Moorey 1999, 235, 294), an index, it could be suggested, not only of the scale of cupellation but also probably of the numbers of more precious silver vessels which, unlike the lead ones, were not abandoned to the ground in the urban southern Mesopotamian environment, where few graves are known.[6]

I want to come on now to the question of why southern Mesopotamia adopted silver in particular as an elite metal of choice during the 4th millennium, and in the 3rd millennium went on to elevate it into a standard of exchange equivalence and a medium of payment, especially for transactions of greater value. One reason, as I have suggested, is silver's novel status in the 4th millennium, but it also seems to me that just as important is probably the balance between relative rarity and relative availability. Southern Mesopotamia has no metal resources of its own, and this of course includes silver. However, as we have already seen, silver *was* available on the Iranian plateau to the east, through which another highly desirable material, lapis lazuli from Badakhshan, had begun arriving in the Early Uruk period in the early 4th millennium (Potts 1994, 213–14). Silver was also available in various parts of Anatolia, some of them a considerable distance from southern Mesopotamia (see above); and, as will be discussed further below, it was also available around the distant Caucasus. In other words, unlike gold, it was available in considerable quantities in surrounding regions, but it was not *too* available, meaning that it remained exotic, involved considerable effort and expense to acquire, and that not everyone could get hold of it easily – a factor which probably contributed to its desirability in the eyes of gods, kings and other important or powerful individuals. This is likely to be reflected, for example, in Sargon of Akkad's boast of having conquered the 'upper region' around 2300 BC, in which lay the famous and romantically named 'silver mountain', variously identified with Bolkardağ in the Taurus or the Keban region of the upper Euphrates, both hundreds of kilometres away from Akkad (Hirsch 1963, 3 Sargon b2, 38 ll. 22–28; Joannes 1987, 487; Moorey 1999, 234–35). As to why silver became a Mesopotamian standard of exchange equivalences, and indeed a form of currency, from around the middle of the 3rd millennium (Marfoe 1987, 34; Powell 1996; Moorey 1999, 237; Peyronel 2010, 927; Helwing 2014, 418), the answer probably lies in just this balance between relative availability and relative exoticness, in addition to the ability of silver to be stored indefinitely and its inability to be used for anything obviously practical. In respect of this fine balance between availability and rarity, Mesopotamia, where in the late 3rd millennium silver was typically one-tenth of the value of gold (Garfinkle 2008, 63, 67), can be contrasted with Egypt, which had no easy access to silver but good access to gold from Nubia, and where silver was usually roughly twice the value of gold during much of the New Kingdom, but where at various times gold, rather than silver, formed the main standard of exchange (Moreno García 2016, 21; Muhs 2016, 75–76). Another factor that may have promoted the use of silver as a currency in 3rd millennium Mesopotamia is the existence of separate city-states which needed some common means of carrying out transactions both within and outside their individual territories, and particularly the role of private merchants in working with the palaces and temples to

acquire and distribute commodities both locally and over long distances (Van de Mieroop 2014, 26).

The Caucasus and the wider Near East

I would like at this point to broaden attention to two quite separate regions: one in the north, where silver objects already occur on either side of the Caucasus in the earlier part of the 4th millennium (Rezepkin 2010; Ivanova 2013, 90; Helwing 2014, 415, fig. 3a; Courcier 2014, 615–26); and the other in the Levant, where silver is found in the later part of the millennium, at the same time as it first turns up in Egypt (Prag 1978; Philip and Rehren 1996; Philip 2002, 219). It has been pointed out for many years that there appear to be links between Mesopotamia and the Caucasus, in the form for instance of the engraved imagery on a couple of silver vessels from the so-called 'Royal Tomb' at Maikop, north of the Caucasus, first excavated in the 1890s (*e.g.* Rostovzef 1920, 15–17, fig. 20, pl. iv:1–2; Chernykh 1992, 72–73; *cf*. Sherratt 1997, 461–64, fig. 18.3).[7] Such links are also apparent in Transcaucasia, south of the Caucasus (Courcier 2014, 617; 2010, 88; Bobokhyan *et al*. 2014, 284, 293–94). The Maikop and other north Caucasian tombs contain a wealth of silver and other metal vessels from around 3800 BC (Chernykh 1992, 67–72; Courcier 2010, 79, fig. 3; 2014, 615–18; Hansen 2014), presumably because it served local social or political aspirations well to make lavish statements by depositing them in tombs (*cf*. Wilkinson 2014, 195). What are perhaps less well known, however, are the similarities between some of the North Caucasian ceramics and Middle Uruk ceramics (for example, from Tell Sheikh Hassan, a Middle Uruk colony on the Euphrates bend and from Tell Rubeideh on the Tigris, dating to around the middle of the 4th millennium) (Rezepkin 2010, 95–97, figs 1–4). These have the effect of making the two regions seem even more firmly linked and perhaps in certain respects, as I shall suggest below, culturally entwined. In particular, it seems worth calling special attention to the spouted vessel and ladle from the Klady kurgan near Novosvobodnaya[8] (illustrated in Rezepkin 2010, fig. 4:4,7), which, like their Mesopotamian counterparts (Rezepkin 2010, fig. 4:1–3,5–6 from Tell Rubeideh), were clearly used for the serving and consumption of liquids.

How much Mesopotamian silver metallurgy might have owed to Caucasian metallurgy in the 4th millennium is an interesting question. There is currently a certain amount of debate as to which way influences went in general, and Mariya Ivanova (2012; 2013, 108–29) has recently argued that the North Caucasian links, including the style of the decorated silver vessels from Maikop and the wheel-made ceramics, actually relate more to the Iranian plateau and southern Central Asia to the southeast than to Mesopotamia to the south. I, for one, do not see this as necessarily a problem. In the mid-4th millennium there was an increasing communality of material cultural features which linked Mesopotamia with Iran and south-eastern Anatolia, which can be symbolised by the distribution of mass-produced bevelled rim bowls (see *e.g.* Roaf 1990, 64–65; *cf*. Goulder 2010, table 1), which possibly represent the spread of leavened bread-making from the Uruk urban centres (Goulder 2010). This also extended to other similarities to suggest that networks traversed this entire area throughout much of the millennium (Sherratt 1997, 468, fig. 18.4; Wright 2001; 2013, 57–69; Rothman 2013; Petrie 2014), so that it is difficult to point to any one part of it as a source for links with the Caucasus region. In the case of Caucasian and Mesopotamian silver metallurgy, I do not see why it should not have been a two-way process. The Caucasus was clearly a precocious metal-working region, in which the production of vessels in different metals, including silver, and the use of the lost-wax technique of casting (Piotrovsky 2003, 292), was well advanced in the middle and later 4th millennium. On the other hand, the paucity (so far) of metal vessels in contemporary southern Mesopotamia need not mean that they did not exist there. They were possibly not putting them in graves, as they were in the Caucasus region (although in fact we do not have southern Mesopotamian graves in this period), but already it seems that they may have had better things to do with them.

At any rate, it seems likely that by the mid-4th millennium silver had already acquired, or was fast acquiring, considerable status and value in the urbanised social, cultural and resulting economic value system of Uruk Mesopotamia. And in these circumstances, the further one is willing to go outside this value system to acquire silver, the lower the exchange costs. This is because those not entirely integrated into the cultural and economic value system have no reason to put the same premium on it, and are willing to exchange it with those within the system for less in terms of the system's internal exchange value. The Maikop and general north Caucasian habit of piling silver and other metals into graves suggests that, although silver may have had high social and cultural value in a local context, it had not yet acquired the same kind of economic value as it was rapidly acquiring in southern Mesopotamia, or, rather, that, unlike in southern Mesopotamia, it was not used there at this time as a medium for the accumulation and storage of wealth. In southern Mesopotamia this at least partly resulted from its relative rarity and the effort involved in its acquisition, for which other (particularly manufactured) goods had to be provided in return;[9] while in the Caucasus region, close to a number of nearby sources of silver, silver was presumably not seen as either rare or difficult to get hold of. This sort of difference in values is beautifully summed up by Diodorus Siculus in the 1st century BC, who, speaking of the first Phoenicians in Spain (whom we now know reached there by around 900 BC), tells us that 'since the natives there were ignorant of the real value of silver, the Phoenicians,

experts in commerce, were able to acquire silver from them in exchange for other goods of little value' (Diodorus Siculus 5.35). If, as has been suggested (Sherratt 1997, 466), the otherwise unexplained links between Mesopotamia and the Caucasus were due to a search for metals (particularly silver) in the latter region, then it is an early example of a process that we can see repeating itself over the millennia, in the case of early 2nd millennium Old Assyrian merchants setting up an extensive trade network centred on Kültepe-Kanesh in central Anatolia to pull in silver from western Anatolia and the Aegean and transport it back to Assur in exchange for tin and fancy textiles (Veenhof 1997; Barjamovic 2008); in the case of Phoenicians going as far as Spain in the early 9th century BC to acquire silver (when there were sources much closer to home) (González de Canales, Serrano and Llompart 2006); and also in that of the Spanish going all the way to the New World in the 16th century AD for the same purposes.[10]

Silver and wine: the Levant and the Caucasus

I would like now to move southwards to the Levant in the later 4th millennium, in order to introduce another desirable aspect of silver. At the sites of Tell-esh-Shunah in the northern Jordan valley and Tell el Far'ah near Gaza we have the remains of sheet silver drinking vessels, in the former case in association with grape pips (Philip and Rehren 1996; McGovern 2003, 213). What is particularly interesting is that analysis of the Tell-esh-Shuna silver fragments suggests that they were made of recycled silver, suggesting that there was already much more silver around than was left in the ground. These silver vessels can be dated at roughly around the same time as a new grey burnished ware, with a limited range of forms, including drinking vessels, appears in Palestine and Trans-jordan. Philip and Rehren (1996, 144–47) have suggested that this grey burnished ware, which is mainly found in graves, echoes silver vessels (in which case we should probably want to think in this region at this time in terms of greyish, unpolished silver), and that it, too, is an indication that silver vessels were already more common in the southern Levantine visual environment than the archaeological record, taken at face value, would lead us to believe. More importantly, however, both silver vessels and their ceramic counterparts may have direct or indirect connections with elite wine drinking rituals. Silver was and is an ideal metal to drink wine out of. Unlike copper, it does not react with the tannins in wine to leave a metallic taste (Sherratt 1995, 20, 40, n. 58), which is why silver (and gold) communion and kiddush cups are still associated with wine-drinking in many religious, symbolic or ceremonial contexts today. What could have greater cachet in the 4th millennium Levant than to be wealthy or important enough to be able to drink wine in formal, ceremonial fashion out of a silver cup?

While some of our earliest circumstantial evidence for this subsequently very long-lived association between silver and wine drinking occurs here in the southern Levant, it is perhaps worth pointing out that so far our earliest organic residue evidence for grape wine, in the form of tartaric acid, comes from the site of Hajji Firuz Tepe in the northern Zagros in northwest Iran, and dates to the later 6th millennium (McGovern 2003, 64–68). Wine residues have also been found in large jars at Godin Tepe, further south in the Zagros, dating to the later 4th millennium (McGovern 2003, 43–55). The whole area of northwest Iran and eastern Anatolia, including the Caucasus, falls within the modern distribution of wild grapes (see McGovern 2003, 2, map 2), and it seems very probable that, if they were drinking wine at Hajji Firuz in the later 6th millennium they were also drinking it over a much wider area stretching northward right up and over the Caucasus. Indeed, a number of ceramic jars from late 6th–early 5th millennium sites in Georgia have decoration which has been interpreted as showing people dancing under what look like bunches of grapes, while further residue traces of wine have also been claimed from the early 6th millennium Georgian site of Shulaveri (McGovern 2003, 75–76, fig. 4.2). Was it therefore in or around the Caucasus, part of a wine- producing area from very early on, with plentiful access to silver and with some highly developed metallurgy in the 4th millennium, that the happy and lasting conjunction of wine and silver was first appreciated?

Silver as currency, silver as bullion and silver hoards

During the 3rd millennium, when we have clear textual evidence for silver as a regular standard of exchange equivalence in greater Mesopotamia from at least Early Dynastic IIIa around the middle of the millennium, it is used increasingly as bullion as a means of accumulating and storing wealth, or as currency in circulating and transacting, including paying tribute, as texts from Ebla in north-west Syria around 2300 BC make clear (Archi 1988; 1996; Michalowski 2003, 461–62). Yearly palace accounts of silver and gold were headed by a record of the spending of 1 mina of silver for the silver head of the god Kura, and with the records of gold described in terms of their equivalents in weights of silver. The total amount of silver expended according to one text (75.2429: Archi 1996, 91; *cf*. Michalowski 2003, 461–62, no. 324a) comes to 369 minas (or around 173 kg), with 1109 minas (521 kg) remaining. On another tablet (75.1271; Archi 1988, 47–49; Michalowski 2003, 461–62, no. 324b) is a record of silver (34 minas and 37 shekels) paid in tribute by the palace at Ebla to the King of Mari.

Perhaps not surprisingly, from around this time on, most of the silverwork found archaeologically (and thus

deliberately deposited) in the Mesopotamian heartland consists of personal ornaments (Moorey 1999, 236), and it is only really around the edges of this region that a wider variety of silver objects is found in deliberate contexts of deposition, including vessels (for example in Anatolia and the Aegean), with the weights of these vessels probably originally based on standard weights of silver (*e.g.* Sherratt 2000, 37; cf. Peyronel 2010, 926–27; Bobokhyan 2010, 192–96; Rahmstorf 2015, 164–66). Silver ingots (or parts of ingots) and ingot moulds are found in hoards over a wide arc of Anatolia, northern Syria and northern Mesopotamia at the time (Peyronel 2010, with fig. 1; Antonova *et al.* 1996; Bachhuber 2015, 171–77), largely coinciding with the geographical reach of Vasif Şahoğlu's 'Anatolian trade network' in the later 3rd millennium (Şahoğlu 2005),[11] and also to a large extent with David Wengrow's 'sacrificial economy' zones (Wengrow 2011; *cf.* Wilkinson 2014, 194–98, figs 5.34, 5.35). Balance weights are found at much the same time over a similar wide area (Rahmstorf 2006, 67–79, fig. 11).

Summary remarks

Going back to the beginning in the 4th millennium, the appeal of silver, particularly as far as the newly emergent urban centres of Mesopotamia were concerned, depended, it seems to me, on several things:

1. Its uselessness for any strictly practical purposes (as nicely brought home in the 3rd millennium 'Dispute between silver and copper'). This presents a strong contrast with copper, which by the end of the 5th millennium was beginning to be seen as a metal above all for utilitarian objects, like tools and weapons, which had the effect of undermining its earlier value as a metal primarily for ornament and display and exchange. In other words copper was now for *functional use*, rather than accumulating as a form of social (or indeed sexual) capital, or wealth.
2. Silver's shiny appearance. In this of course silver did not differ much from other metals (particularly copper and gold) already in use, but what it did do was offer the possibility of colour contrasts (as seen for instance in the swords from Arslantepe, or in the silver inlays added to other copper objects). In this respect it fits into a context in which more complex ores and different alloys were being experimented with (as in the Nahal Mishmar hoard) in order to jazz up copper objects by giving them a variety of different colours.
3. In the case of the southern Mesopotamian urban centres, its relative rarity in a region which had no metal resources of its own. However, this was only relative, and it was acquirable from adjacent regions (particularly the Iranian plateau, various places in Anatolia and possibly up as far as the Caucasus). The fact that silver was accessible (but not too accessible), probably mainly in exchange for manufactured goods like fancy textiles and the urban technologies involved in making yeast-based products like beer and leavened bread, or mass-produced wheelmade pottery, struck a crucial balance in this respect. It was exotic, and therefore desirable, but nevertheless possible to get hold of for those with the means to organise this.
4. Its late appearance in the sequence of take up of different metals, which meant that when it did appear in the 4th millennium it had the cachet of novelty.
5. Finally, the classic conjunction of silver and ritualised wine drinking – a conjunction possibly first discovered in northeast Anatolia, the Caucasus or northwest Iran, which had plenty of both silver and wine, but which perhaps first becomes archaeologically visible in the southern Levant, where silver had originally to be imported probably from much further north. This was a conjunction which still persists to this day, particularly in certain religious rituals.[12] That silver and wine together, curiously enough and in yet a different way, can still arouse the passions of hard-headed investors in the globalised financial world of today for several of the same reasons as silver appealed to the movers and shakers of early Mesopotamia is shown by the enthusiastic recommending of both, along with art and gold, as transportable and easy to store physical assets, which attract no income tax, and whose performance is unrelated to the more unpredictable performance of equity markets. Arguably just like silver in 4th millennium Western Asia, these appeal because of their scarcity, desirability, durability and stability (Roseman 2011; *cf.* Peyronel 2010, 927). In other words, they in general, and silver in particular, appears to excite just as much desire now as silver did almost 6000 years ago.

Notes

1 'Weapons', like the silver dagger from Nalchik in the north Caucasus of around 3000 BC (Hansen 2014, 395, fig. 9), should probably be seen more as personal ornaments or items of display than as strictly functional objects.

2 It also fulfils several of A. Appadurai's five characteristics of luxuries (Appadurai 1988, 38).

3 One of the names of the moon god, Nanna, was Ašimbabbar (Black *et al.* 2004, 126).

4 Several of the Nahal Mishmar objects were also produced by lost-wax casting (Moorey 1988, 174).

5 Heavy shafthole tools particularly in south-east Europe (see *e.g.* Zachos 2007, 175–76, 179–80; Renfrew 1970), but other shafthole objects, especially maceheads, seem also to have been current in Anatolia (Moorey 1999, 255).

6 Before the end of the millennium, in the so-called 'Final Neolithic', silver ornaments also appear in the Alepotrypa

cave in southern Greece (Zachos 2007, 172, fig. 11.2: b–g; Maran 2000). It is assumed that this silver was also derived by means of cupellation, on the grounds that litharge has been found in Final Neolithic contexts in Attica and on Thasos (Rahmstorf 2015, 164, fig. 12; Nerantzis and Papadopoulos 2013, 185–86). If so, in view of the developments which had already taken place in the Near East earlier in the millennium, it would seem curious that the Aegean should have thought of obtaining silver by cupellation quite independently at this time, as Rahmstorf (2015, 164) points out.

7 The Maikop 'royal tomb' and comparable kurgan burials in the Kuban region of the North Caucasus were, until relatively recently, traditionally dated to the later 3rd millennium (*e.g.* Rostovzef 1920, 15; Piggott 1968, 81–82; *cf*. Sherratt 1997, 461). However, it is now clear, on various grounds, including C^{14} dates from contemporary cultures and comparisons between the ceramics and those of sites such as Tell Rubeideh in northern Mesopotamia, that they belong no later than the middle centuries of the 4th millennium, starting around 3800 BC (Shishlina *et al*. 2003, 331; Sherratt 1997, fig. 18.2; Rezepkin 2010; Ivanova 2013, 54; Courcier 2014, 601–04). The links should thus be with the Middle to Late Uruk periods rather than the 3rd millennium. For a concise history of the chronological interpretation of Maikop, see Izbitser (2003. 289–90; Ivanova 2013, 53–55).

8 For the contemporary or overlapping nature of Maikop and Novosvobodnaya, whether or not one wants to divide them into two separate 'cultures', see Shishlina *et al*. (2003); Sherratt (1997, fig. 18.2).

9 See Shishlina *et al.* (2003) for the possibility of Mesopotamian or Mesopotamian-influenced cotton and woollen textiles at Novosvobodnaya sites.

10 Possible objections to the idea that southern Mesopotamia was acquiring silver, either directly or indirectly, from the Caucasus may lie in the argument (Ivanova 2013, 90 citing Galibin 1991 [*non vidi*]) that most examples of north Caucasian silver objects analysed (to date solely from the Klady cemetery) contain little or no lead, which speaks against the large-scale exploitation by cupellation of argentiferous lead ores in the Caucasus, as (she argues) does the absence of lead objects (though see Chernykh 1992, 73) and of deposits of litharge from sites in the North Caucasus and Transcaucasia. Helwing (2014, 415 n.14) also suggests that the Maikop silver objects were probably made of native silver. On the other hand, argentiferous lead ores certainly exist in the Caucasus (Courcier 2014, 622; Hauptmann *et al*. 2010, fig. 1); and see also Courcier (2014, tables 22.7 and 22.10) for silver beads and rings from the earlier part of the 4th millennium in Transcaucasia, some at least of which have a lead content that might suggest the silver was derived from argentiferous galena (*cf*. Moorey 1999, 233). Hansen (2014, 398), acknowledging the very limited number of analyses so far undertaken on early silver objects, suggests that there is no reason to suppose that the cupellation process was not widespread in the Near East in general in the 4th millennium.

11 For the wide circulation of metals and metal objects (including those of silver) in the late 3rd and early 2nd millennia in the Near East and western Central Asia, see Wilkinson (2014, 168–76).

12 230 years ago this conjunction of wine and silver could also still be expressed in a context of romantic longing, in Robert Burns' love song to Mary Morrison:
'Gae fetch tae me a pint o' wine and fill it in a siller tassie,
That I may drink, afore I gae, a service tae my bonnie lassie…'
(R. Burns, *My Bonny Mary*, 1789: Quiller-Couch (ed.) 1919, no. 496).

References

Antonova, I., Tolstikov, V. and Treister, M. (1996) *The Gold of Troy*. London, Thames and Hudson.

Appadurai, A. (1988) Introduction: Commodities and the politics of value. In A. Appadurai (ed.) *The Social Life of Things: Commodities in cultural perspective*, 3–63. Cambridge, Cambridge University Press.

Archi, A. (1988) *Testi amministrativi: Registrazioni di metalli e tessuti (Archivio L. 2769)*. Rome, Missione archeologica italiana in Siria.

Archi, A. (1996) Les comptes rendus annuels de métaux (CAM). *Amurru* 1, 73–99.

Bachhuber, C. (2015) *Citadel and Cemetery in Early Bronze Age Anatolia*. Sheffield, Equinox.

Barjamovic, G. (2008) The geography of trade: Assyrian colonies in Anatolia *c*. 1975–1725 BC and the study of early interregional networks of exchange. In J. G. Dercksen (ed.) *Anatolia and the Jazira during the Old Assyrian period*, 87–100. Leiden, Nederlands Instituut voor het Nabije Oosten.

Black, J., Cunningham, G., Robson, E. and Zólyomi, G. (2004) *The Literature of Ancient Sumer*. Oxford, Oxford University Press.

Black, J. and Green, A. (1992) *Gods, Demons and Symbols of Ancient Mesopotamia*. London, British Museum Press.

Bobokhyan, A. (2010) '*Sicle caucasien*': Zur Frage der bronzezeitlichen Gewichtssysteme im Kulturgebiet zwischen Kaukasus und Taurus. In S. Hansen, A. Hauptmann, I. Motzenbäcker and E. Pernicka (eds) *Von Majkop bis Trialeti: Gewinnung und Verbreitung von Metallen und Obsidian in Kaukasien im 4.-2. Jt. v. Chr.*, 179–203. Bonn, Habelt.

Bobokhyan, A., Meliksetian, K., Gasparyan, B., Avetisyan, P., Chataigner, C. and Pernicka, E. (2014) Transition to extractive metallurgy and social transformation in Armenia at the end of the Stone Age. In B. Gasparyan and M. Arimura (eds) *Stone Age of Armenia*, 283–314. Kanazawa, Center for Cultural Resource Studies – Kanazawa University.

Campbell, S. (2011) Domuztepe 2011. *Heritage Turkey* 1, 21–22.

Carter, E., Campbell, S. and Gauld, S. (2003) Elusive complexity: New data from late Halaf Domuztepe in south central Turkey. *Paléorient* 29 (2), 117–133.

Chernykh, E. N. (1992) *Ancient Metallurgy in the USSR. The Early Metal Age*. Transl. S. Wright. Cambridge, Cambridge University Press.

Courcier, A. (2010) Metalliferous potential, metallogenous particularities and extractive metallurgy: Interdisciplinary research on understanding the ancient metallurgy in the Caucasus during the Early Bronze Age. In S. Hansen, A. Hauptmann, I. Motzenbäcker and E. Pernicka (eds) *Von Majkop bis Trialeti: Gewinnung und Verbreitung von Metallen und Obsidian in Kaukasien im 4.-2. Jt. v. Chr.*, 75–93. Bonn, Habelt.

Courcier, A. (2014) Ancient metallurgy in the Caucasus from the sixth to the third millennium BCE. In B. W. Roberts and C. P. Thornton (eds) *Archaeometallurgy in Global Perspective*, 579–664. New York, Springer.

Emberling, G. and McDonald, H. (2002) Recent finds from the northern Mesopotamian city of Tell Brak. *Antiquity* 76, 949–950.

Evans, J. M. (2012) *The Lives of Sumerian Sculpture. An Archaeology of the Early Dynastic Temple*. Cambridge, Cambridge University Press.

Falkenstein, A. (1936) *Archaische Texte aus Uruk*. Berlin, Deutsche Forschungsgemeinschaft.

Frangipane, M. (1997) Arslantepe-Malatya. External factors and local components in the development of an early state society. In L. Manzanilla (ed.) *Emergence and Change in Early Urban Societies*, 43–58. New York, Springer Science.

Frangipane, M. and Palmieri, A. (1983) A protourban centre of the Late Uruk period. In M. Frangipane and A. Palmieri (eds) Perspectives on Protourbanization in Eastern Anatolia: Arslantepe (Malatya). An interim report on 1975–83 campaigns. *Origini* 12, 287–454.

Frisk, H. (1960) *Griechisches Etymologisches Wörterbuch, Band 1: A-Ko*. Heidelberg, Carl Winter.

Galibin, V. A. (1991) Особености состава находок из цветного и благородного металла из памятников Северного Кавказа эпохи ранней и средней бронзы. In V. M. Masson (ed.) Древние культуры Прикубанья, 59–69. Leningrad, Nauka.

Gardiner, A. H. (1927) *Egyptian Grammar*. Oxford, Clarendon Press.

Garfinkle, S. (2008) Silver and gold: Merchants and the economy of the Ur III state. In P. Michalowski (ed.) *On the Third Dynasty of Ur: Studies in honor of Marcel Sigrist*, 63–70. Exeter, University of Exeter Press.

Gilliard, T. (1956) Bower ornamentation versus plumage characters in bower-birds. *The Auk* 73 (3), 450–451.

Giorgadze, G. G. (1988) On the word for 'silver' with reference to Hittite cuneiform texts. *Altorientalische Forschungen* 15 (1), 69–75.

González de Canales, F., Serrano, L. and Llompart, J. (2006) The pre-colonial Phoenician emporium of Huelva ca 900–770 BC. *Bulletin Antieke Beschaving* 81, 13–29.

Gopher, A., Tsuk, T., Shalev, S. and Gophna, R. (1990) Earliest gold artifacts in the Levant. *Current Anthropology* 31 (4), 436–443.

Goulder, J. (2010) Administrators' bread: An experiment-based re-assessment of the functional and cultural role of the Uruk bevel-rim bowl. *Antiquity* 84, 351–362.

Green, M. W. and Nissen, H. J. (1987) *Zeichenliste der archaischen Texte aus Uruk*. Berlin, Mann.

Guichard, M. and Marti, L. (2013) Purity in ancient Mesopotamia: The Paleo-Babylonian and Neo-Assyrian periods. In C. Frevel and C. Nihan (eds) *Purity and the Forming of Religious Traditions in the Ancient Mediterranean World and Ancient Judaism*, 47–113. Leiden, Brill.

Hamilton, R. W. (1967) A Sumerian cylinder seal with handle in the Ashmolean Museum. *Iraq* 29, 34–41.

Hansen, S. (2014) Gold and silver in the Maikop culture. In H. Meller, R. Risch and E. Pernicka (eds) *Metalle der Macht – Frühes Gold und Silber*, 389–410. Halle, Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt.

Hauptmann, A., Bendall, C., Brey, G., Japariże, I., Ġambašiże, I., Klein, S., Prange, M. and Stöllner, T. (2010) Gold in Georgien. Analytische Untersuchungen an Goldartefakten und an Naturgold aus dem Kaukasus und dem Transkaukasus. In S. Hansen, A. Hauptmann, I. Motzenbäcker and E. Pernicka (eds) *Von Majkop bis Trialeti: Gewinnung und Verbreitung von Metallen und Obsidian in Kaukasien im 4.-2. Jt. v. Chr.*, 139–160. Bonn, Habelt.

Heinrich, E. (1936) *Kleinfunde aus den archaischen Tempelschichten in Uruk*. Berlin, Deutsche Forschungsgemeinschaft.

Helwing, B. (2011) The small finds from Arisman. In A. Vatandoust, H. Parzinger and B. Helwing (eds) *Early Mining and Metallurgy on the Western Central Iranian Plateau. Report on the First Five Years of Work*, 254–327. Mainz, Philipp von Zabern.

Helwing, B. (2014) Silver in the early state societies of Greater Mesopotamia. In H. Meller, R. Risch and E. Pernicka (eds) *Metalle der Macht – Frühes Gold und Silber*, 411–421. Halle, Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt.

Hess, K., Hauptmann, A., Wright, H. T. and Whallon, R. (1998) Evidence of fourth millennium BC silver production at Fatmalı-Kalecik. In T. Rehren, A. Hauptmann and D. Muhly (eds) *Metallurgica Antiqua. In honour of H.-G. Bachmann and R. Maddin*, 57–67. Bochum, Deutsches Bergbau Museum.

Hirsch, H. (1963) Die Inschriften der Könige von Agade. *Archiv für Orientforschung* 20, 1–82.

Hoffner, H. A. (1968) A Hittite text in epic style about merchants. *Journal of Cuneiform Studies* 22 (2), 34–45.

The Hymns of Orpheus, trans T. Taylor. London, 1792.

Ivanova, M. (2012) Kaukasus und Orient: Die Entstehung des 'Maikop-Phänomens' im 4. Jahrtausend v. Chr. *Prähistorische Zeitschrift* 87 (1), 1–28.

Ivanova, M. (2013) *The Black Sea and the Early Civilizations of Europe, the Near East and Asia*. Cambridge, Cambridge University Press.

Izbitser, E. (2003) The North Caucasus. In J. Aruz (ed.) *Art of the First Cities. The third millennium B. C. from the Mediterranean to the Indus*, 289–290. New York, The Metropolitan Museum of Art.

Joannes, F. (2010) Silber (argent). A. In Mesopotamien. In S. Ecklin and S. Pfaffingen (eds) *Reallexikon der Assyriologie, Band 12:5/6*, 486–491.

Kramer, S. N. (1963) *The Sumerians: Their history, culture, and character*. Chicago, University of Chicago Press.

Lehner, J. W. and Yener, K. A. (2014) Organization and specialization of early mining and metal technologies in Anatolia. In B. W. Roberts and C. P. Thornton (eds) *Archaeometallurgy in Global Perspective*, 529–557. New York, Springer.

Maran, J. (2000) Das ägäische Chalkolithikum und das erste Silber in Europa. In C. Işik (ed.) *Studien zur Religion und Kultur Kleinasiens und des ägäischen Bereiches. Festschrift für Baki Öğün zum 75. Geburtstag*, 179–193. Bonn, Habelt.

Marfoe, L. (1987) Cedar forest to silver mountain: Social change and the development of long-distance trade in early Near Eastern societies. In M. Rowlands, M. Larsen and K. Kristiansen (eds) *Centre and Periphery in the Ancient World*, 25–35. Cambridge, Cambridge University Press.

McGovern, P. E. (2003) *Ancient Wine. The Search for the Origins of Viticulture*. Princeton, Princeton University Press.

Meador, B. de S. (2000) *Inanna, Lady of Largest Heart: Poems of the Sumerian High Priestess Enheduanna*. Austin, University of Texas Press.

Michalowski, P. (2003) The earliest scholastic tradition. In J. Aruz (ed.) *Art of the First Cities. The third millennium B. C. from the Mediterranean to the Indus*, 451–478. New York, The Metropolitan Museum of Art.

Moorey, P. R. S. (1988) The Chalcolithic hoard from Nahal Mishmar, Israel, in context. *World Archaeology* 20 (2), 171–189.

Moorey, P. R. S. (1999) *Ancient Mesopotamian Materials and Industries. The Archaeological Evidence*. Winona Lake, Eisenbrauns.

Moreno García, J. C. (2016) Economies in transition: Trade, 'money', labour and nomads at the turn of the 1st millennium BC. In J. C. Moreno García (ed.) *Dynamics of Production in the Ancient Near East, 1300–500 BC*, 1–39. Oxford, Oxbow Books.

Muhs, B. (2016) *The Ancient Egyptian Economy, 3000–30 BCE*. Cambridge, Cambridge University Press.

Nerantzis, N. and Papadopoulos, S. (2013) Reassessment and new data on the diachronic relationship of Thassos island with its indigenous metal resources: A review. *Archaeological and Anthropological Sciences* 5, 183–196.

Nezafati, N. and Pernicka, E. (2012) Early silver production in Iran. *Iranian Archaeology* 3, 37–44.

Özbal, H., Adriaens, A. and Earl, B. (1999) Hacinebi metal production and exchange. *Paléorient* 25 (1), 57–65.

Pernicka, E., Rehren, T. and Schmitt-Strecker, S. (1998) Late Uruk silver production by cupellation at Habuba Kabira, Syria. In T. Rehren, A. Hauptmann and D. Muhly (eds) *Metallurgica Antiqua. In honour of H.-G. Bachmann and R. Maddin*, 123–134. Bochum, Deutsches Bergbau Museum.

Petrie, C. A. (2014) Iran and Uruk Mesopotamia: Chronologies and connections in the fourth millennium BC. In A. McMahon and H. Crawford (eds) *Preludes to Urbanism: The Late Chalcolithic of Mesopotamia*, 137–156. Cambridge, McDonald Institute for Archaeological Research.

Peyronel, L. (2010) Ancient Near Eastern economics. The silver question between methodology and archaeological data. In P. Matthiae, F. Pinnock, L. Nigro and N. Marchetti (eds) *Proceedings of the 6th International Congress on the Archaeology of the Ancient Near East, May 5th-10th 2008, 'Sapienza' – Università di Roma* (Volume 1), 925–948. Wiesbaden, Harrassowitz.

Philip, G. (2002) Contacts between the 'Uruk' world and the Levant during the fourth millennium BC: Evidence and interpretation. In J. N. Postgate (ed.) *Artefacts of Complexity: Tracking the Uruk in the Near East*, 207–235. Warminster, Aris and Phillips.

Philip, G. and Rehren, T. (1996) Fourth millennium BC silver from Tell esh-Shuna, Jordan: Archaeometallurgical investigation and some thoughts on ceramic skeuomorphs. *Oxford Journal of Archaeology* 15, 129–150.

Piggott, S. (1968) *Ancient Europe from the Beginnings of Agriculture to Classical Antiquity*. Edinburgh, Edinburgh University Press.

Piotrovsky, Y. (2003) The Maikop (Oshad) kurgan. In J. Aruz (ed.) *Art of the First Cities. The third millennium B. C. from the Mediterranean to the Indus*, 290–296. New York, The Metropolitan Museum of Art.

Pokorny, J. (1959) *Indogermanisches Etymologisches Wörterbuch, I. Band*. Bern, Francke Verlag.

Potts, D. T. (1997) *Mesopotamian Civilization. The Material Foundations*. Ithaca, Cornell University Press.

Potts, T. F. (1994) *Mesopotamia and the East: An archaeological and historical study of foreign relations ca. 3400–2000 B. C.* Oxford, Oxford University Committee for Archaeology.

Powell, M. A. (1996) Money in Mesopotamia. *Journal of the Economic and Social History of the Orient* 39 (3), 224–242.

Prag, K. (1978) Silver in the Levant in the fourth millennium B. C. In P. R. S. Moorey and P. J. Parr (eds) *Archaeology in the Levant: Essays for Kathleen Kenyon*, 36–45. Warminster, Aris and Phillips.

Quiller-Couch, A. (ed.) (1919) *The Oxford Book of English Verse: 1250–1900*. Oxford, Clarendon Press.

Rahmstorf, L. (2006) Zur Ausbreitung vorderasiatischer Innovationen in die frühbronzezeitliche Ägäis. *Prähistorische Zeitschrift* 81, 49–96.

Rahmstorf, L. (2015) The Aegean before and after c. 2200 BC between Europe and Asia: Trade as a prime mover of cultural change. In H. Meller, H. W. Arz, R. Jung and R. Risch (eds) *2200 BC – A Climatic Breakdown as a Cause for the Collapse of the Old World?*, 149–180. Halle, Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt.

Reichel, C. (2007–08) Hamoukar. *Oriental Institute Annual Report 2007–2008*, 76–82.

Renfrew, C. (1970) The autonomy of the south-east European Copper Age. *Proceedings of the Prehistoric Society* 35, 12–47.

Renfrew, C. (1986) Varna and the emergence of wealth in prehistoric Europe. In A. Appadurai (ed.) *The Social Life of Things: Commodities in cultural perspective*, 141–168. Cambridge, Cambridge University Press.

Rezepkin, A. D. (2010) Metallfunde der Majkop- und der Novosvobodnaja-Kultur. In S. Hansen, A. Hauptmann, I. Motzenbäcker and E. Pernicka (eds) *Von Majkop bis Trialeti: Gewinnung und Verbreitung von Metallen und Obsidian in Kaukasien im 4.-2. Jt. v. Chr.*, 95–102. Bonn, Habelt.

Roaf, M. (1990) *Cultural Atlas of Mesopotamia and the Ancient Near East*. Oxford, Equinox.

Roseman, J. (2011) SWAG: the industry's latest acronym. *Investment Week*, 23rd September 2011.

Rostovzef, M. I. (1920) L'Age du cuivre dans le Caucase et civilisations de Soumer et de l'Egypte protodynastique. *Revue Archéologique* 12, 1–37.

Rothman, M. S. (2013) Interpreting the role of Godin Tepe in the 'Uruk expansion'. In C. A. Petrie (ed.) *Ancient Iran and its Neighbours: Local developments and long-range interactions in the fourth millennium BC*, 75–91. Oxford, Oxbow Books.

Sagona, A. and Zimansky, P. (2009) *Ancient Turkey*. London, Routledge.

Şahoğlu, V. (2005) The Anatolian trade network and the Izmir region during the Early Bronze Age. *Oxford Journal of Archaeology* 24 (4), 339–361.

Shalev, S. and Northover, J. P. (1993) The metallurgy of the Nahal Mishmar hoard reconsidered. *Archaeometry* 35 (1), 35–47.

Sherratt, A. (1995) Alcohol and its alternatives. Symbol and substance in pre-industrial cultures. In J. Goodman, P. E. Lovejoy and A. Sherratt (eds) *Consuming Habits. Drugs in History and Anthropology*, 11–46. London, Routledge.

Sherratt, A. (1997) Troy, Maikop, Altyn Depe: Early Bronze Age urbanism and its periphery. In A. Sherratt, *Economy and Society in Prehistoric Europe: Changing perspectives*, 457–470. Princeton, Princeton University Press.

Sherratt, S. (2000) *Catalogue of Cycladic Antiquities in the Ashmolean Museum: The Captive Spirit*. Oxford, Oxford University Press.

Shishlina, N. I., Orfinskaya, O. V. and Golikov, V. P. (2003) Bronze Age textiles from the North Caucasus: New evidence of fourth millennium BC fibres and fabrics. *Oxford Journal of Archaeology* 22 (4), 331–344.

Slavchev, V. (2010) The Varna Eneolithic cemetery in the context of the Late Copper Age in the East Balkans. In D. W. Anthony (ed.) *The Lost World of Old Europe. The Danube Valley, 5000–3500 BC*, 193–210. Princeton, Princeton University Press.

Stech, T. (1999) Aspects of early metallurgy in Mesopotamia and Anatolia. In V. C. Pigott (ed.) *The Archaeometallurgy of the Asian Old World*, 59–71. Philadelphia, University Museum, University of Pennsylvania.

Szarzyńska, K. (1993) Offerings for the goddess Inana in archaic Uruk. *Revue d'Assyriologie et d'Archéologie orientale* 87 (1), 7–28.

Van de Mieroop, M. (2014) Silver as a financial tool in ancient Egypt and Mesopotamia. In P. Bernholz and R. Vaubel (eds) *Explaining Monetary and Financial Innovation*, 17–29. Berlin, Springer.

Veenhof, K. R. (1997) 'Modern' features in Old Assyrian trade. *Journal of the Economic and Social History of the Orient* 40 (4), 336–366.

Warburton, D. A. (2016) Ancient color categories. In R. Luo (ed.) *Encyclopedia of Color Science and Technology*, 24–31. Vienna and New York, Springer.

Wengrow, D. (2011) 'Archival' and 'sacrificial' economies in Bronze Age Eurasia: An interactionist approach to the hoarding of metals. In T. C. Wilkinson, S. Sherratt and J. Bennet (eds) *Interweaving Worlds: Systemic interactions in Eurasia, 7th to 1st Millennia BC*, 135–144. Oxford, Oxbow Books.

West, M. L. (1997) *The East Face of Helicon. West Asiatic Elements in Greek Poetry and Myth*. Oxford, Clarendon Press.

Wilkinson, T. C. (2014) *Tying the Threads of Eurasia. Trans-regional Routes and Material Flows in Transcaucasia, Eastern Anatolia and Western Central Asia, c. 3000–1500 BC*. Leiden, Sidestone Press.

Wright, H. T. (2001) Cultural action in the Uruk world. In M. S. Rothman (ed.) *Uruk Mesopotamia and Its Neighbors*, 123–147. Santa Fe, School of American Research Press.

Wright, H. T. (2013) A bridge between worlds: Southwestern Iran during the fourth millennium BC. In C. A. Petrie (ed.) *Ancient Iran and its Neighbours: Local developments and long-range interactions in the fourth millennium BC*, 51–73. Oxford, Oxbow Books.

Zachos, K. (2007) The Neolithic background: A reassessment. In P. M. Day and R. C. P. Doonan (eds) *Metallurgy in the Early Bronze Age Aegean*, 168–206. Oxford, Oxbow Books.