

as easily as some have argued – surely obscure the familiar continuity of older sites by burying their quite plausibly modest earlier occupation under many centuries of subsequent settlement activity.

In this regard, the supposed decline or collapse of Cypriot society towards the end of the second millennium BC presupposes that the LBA was more complex, and certainly more monolithic, than it actually was. It might be heresy to take down the period by a few pegs, but archaeologists have for far too long modelled the Cypriot LBA using inappropriate models (and uncritical reading of limited written sources) derived from undoubtedly more complex neighbouring societies in the Middle East. It has likewise been seduced into thinking that major settlement shifts – including abandonment – presuppose disaster rather than canny human adaption – a cliché of Cypriot archaeology, perhaps, but no less true to some degree – not least given the imprecise chronologies of so many of these supposed catastrophes or transformations. This is another legacy of older and conventional schemes which forces the material evidence into an interpretive procrustean bed, obscuring both longer-term processes and indeed the possibility of multiple trajectories for changes (and indeed changes in direction) in human society throughout the Late Bronze Age – and not just at its artificially defined ‘end’. Regardless of the specific affect and dynamics of environmental decline – itself an explanatory turn becoming as insidious as older invasionist models – Cyprus did not succumb ‘to the smaller scale, more competitive, politico-economic conditions of the Early Iron Age’ (p. 54) but rather formed an integral part of the revolution, or rather transformation, across the region which remains materially elusive. Scholars of Cypriot archaeology will doubtless find this work as a useful summary of some current ideas, and recent fieldwork, but will surely yearn for a more substantial reassessment. It certainly provides a spur to the community of scholars working in this field to reassess both the general and the granular in order to push Bronze Age Cypriot studies well into the 21st century.

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Toby Wilkinson and Susan Sherratt, (eds) *Circuits of Metal Value. Changing Roles of Metals in the Early Aegean and Nearby Lands*. Sheffield Studies in

***Aegean Archaeology*, 14. Pp. 214, with black and white illustrations. Oxford: Oxbow books. 2023. ISBN: 978-1-78-925-961-2, paperback £ 42.**

In April 2016 a Round Table was held at the University of Sheffield, almost a decade after the seminal 1997 conference *Metals Make the World Go Round*, organised by Christopher Pare, which was a landmark survey of Bronze Age metallurgy, already highlighting the scope and importance of metals in influencing social and political dynamics. This new volume emerging from these discussions brings together seven of the twelve papers presented, coherently reunited around discussions concerning the movement of raw metal materials, the transmission of technical knowledge, and the evolving composition of metal alloys, overall presenting a fresh re-evaluation of archaeological research on metal technology. A key theme running through the contributions is the idea that the adoption of new methods is contingent upon the presence of interactive factors and a conducive social context, such as changing needs, or reconfigurations of the existing relationships within certain segments of the community. The result is a well-structured and accessible 214-page volume illustrated with monochrome images throughout, offering a stimulating reassessment of the role of metallurgy in shaping ancient economies and societies while engaging with broader debates on technological and cultural transmission in the wider Mediterranean as well as the Near East.

Toby Wilkinson, co-editor of the book, explores in the first chapter (*Precious metal values: Reflecting on colours, agency and domination*) how the value of precious metals, i.e., gold, silver, and others, was constructed, mediated, and expressed within various cultural and historical contexts. His chapter is particularly rich in comparative perspectives, drawing parallels between the Old and New Worlds. By challenging utilitarian narratives, he emphasises the relational and symbolic dimensions of metals, arguing that their adoption was often driven by aesthetic and socio-political motivations rather than purely functional or technological imperatives. One might quibble with the occasional statement: ‘tin-bronze was not adopted because it made better cutting or killing tools but because of its aesthetic qualities which created desire and a tool for persuasion’ (p.15). While there is certainly more awareness towards the multiple issues behind the choices made by craftspeople and the consumers, which are not simply a matter of optimising the physical properties of materials and the stages in the production chain, but also include aesthetic, social

and traditional criteria, we should not by default reject the mechanical, technological, and practical advantages offered by alloying compositions, such as malleability, brittleness, casting quality, in metal production and consumption preferences. Other statements could have deserved more nuance, such as '(...) investigations into the range of colours that can be produced by various alloys remains something of an underexploited field' (p.19), yet some work has already been done. The recent study by Marianne Mödlinger *et al.* in *Journal of Archaeological Research* (2017) could have been cited, with earlier bibliographic work dating back to 1975 (!).¹ On the map provided (p.29), numbered sites are not identified in the legend, which would have been informative.

Borja Legarra Herrero's chapter (*Interaction, Gold and Power: Contrasting Stories from Tombs across the East Mediterranean ca. 2000–1800 BC*) seeks to move beyond simplistic economic or prestige-oriented interpretations of gold consumption, instead positioning it within the complex interplay of social organisation, ritual practice, political negotiation, and connectivity across the East Mediterranean. One of the most commendable aspects of the approach of the author is his emphasis on *variability*. He rejects the notion of a uniform, monolithic interpretation of gold across cultures, instead highlighting how different societies at the beginning of the second millennium BCE, i.e., Egypt, Byblos, and Crete between 2000–1800 BCE, engaged with the material in distinct ways. In Egypt, gold was primarily a symbol of the divine authority of the Pharaoh, with strict control over its circulation and usage within elite funerary contexts. By contrast, in Byblos, there is evidence of emulation of Egyptian burial customs, but it remains unclear whether this was intended to legitimise local rulers by connecting them to the power of the Egyptian court, or was instead a reflection of broader diplomatic and economic entanglements. Crete, however, presents a strikingly different case: rather than reinforcing a strict hierarchy, gold appears to have played a role in a more fluid, competitive negotiation of social status within the larger community. Herrero's comparative approach, which juxtaposes burial contexts across the region, effectively dismantles static, deterministic models of wealth display and elite control in favour of a dynamic one. His recognition that gold does not necessarily function as an unambiguous marker of elite status across cultures is particularly important. He avoids anachronistic assumptions that economic value and social significance are always coterminous, instead

interrogating the local social conditions that shaped the meaning and function of the yellow metal.

Susan Sherratt in *Greek Silver Before Coinage: Medium of Exchange, Means of Wealth Accumulation, or Commodity?* revisits perhaps a least-known aspect of pre-monetary economy, namely the role of silver in the Aegean prior to the advent of coinage in the sixth century BCE and the processes leading to the emergence of all-purpose money. Taking over long-standing debates shaped by scholars such as John Kroll and David Schaps, the author critically assesses whether silver in the Early Iron Age (around the 8th–7th century BCE) was used transactionally as a medium of exchange, particularly in the form of *hacksilver*, weighed pieces of silver, in a manner analogous to coinage, or whether it primarily served as a medium for wealth accumulation. She is rightly sceptical of attempts to impose modern economic frameworks onto the ancient world, instead demonstrating the extent to which functions of silver were context-dependent and fluid rather than fixed. While weight-based transactional systems have been well articulated for the evidence in the Near East, the author is appropriately cautious in extrapolating this model to Greece, where there is no proof for Kroll's assumption that silver was used as a monetary material before the Archaic period. Instead, Sherratt argues that, like gold and iron, silver may have been used as a means of payment in barter transactions, as well as within systems of gift-exchange and recompense.

In the next chapter, *The Sword and the Axe: Symbols of Value in the Bronze Age Social and Economic Exchange Networks Linking the Aegean to Italy within a Diachronic Perspective*, Elisabetta Borgna introduces multiple perspectives on Aegean-Italic metal exchange, arguing, firstly, that Aegean influence in Italy was primarily craft-based rather than driven by direct access to raw materials, secondly, that contact with Mediterranean market-based economies led to the subversion of local Italian value systems, particularly in Sicily and southern Italy, and thirdly, that, by around 1100 BCE, transformations within Italian communities reshaped Mediterranean exchange networks, which would warrant further comparative analysis with contemporary upheavals in the Aegean and Levant. Important and dense observations are made regarding the commoditisation of bronze in the later stages of the Late Bronze Age, especially in the 13th and early 12th centuries BCE, when the increasing demand for metal led to the transformation of these objects into more easily convertible forms, as the author argues. In that scheme, swords and axes represented distinct but interwoven economic

¹ Mödlinger *et al.* 2017: 14–23.

circuits, the former linked to Mediterranean and Aegean networks and the latter to Alpine and sub-Alpine metallurgical traditions, though this could have benefitted from a more nuanced approach to material agency and depositional contexts. The interpretation of hoards as evidence of a shared understanding of value between the Aegean and Italy (p.93) is thought-provoking, though it could be further clarified. A few minutiae: Fig. 4.3:2 should be read 4.2:3 (p.86); *chaîne...* instead of *chaîne opératoire* (p.95).

Joanna Palermo (*The Development of Ironworking in the 12th and 11th Centuries in Cyprus*) then offers a comprehensive examination of the emergence of ironworking in Cyprus, focusing on the transition from bronze to iron production around the 12th century BCE. The author particularly examines how shifts in the choices and strategies of miners and craftsmen allowed ironworking to develop alongside the copper industry, rather than replacing or competing with it. The discussion of iron as a by-product of copper smelting is particularly interesting, reinforcing the notion that Cypriot metallurgy evolved through industrial pragmatism (via a strategy of diversification, and efficiency in iron smelting) rather than through technological transfer from regions where ironworking was already mastered, such as the Caucasus, western Anatolia, or the Levant, though employing distinct techniques. The author proposes also a reassessment of the value of iron, which was, as she argues, not inherently a prestige material, but instead contingent upon context. This is particularly evident in the case of iron knives, which constitute the majority of the early Cypriot iron corpus. Here, value was derived in combination with other materials, such as carved ivory or bone in high-value items, or when integrated into specific assemblages, particularly those associated with warriors. Perhaps one might be surprised to first read the statement 'iron... was completely absent from the island in the Bronze Age' (p.116), and then find exceptions cited by Christopher Pare in the following chapter (p.162) thus wondering whether these early occurrences were isolated anomalies, or tentative steps towards ironworking before its widespread adoption. Additionally, the idea that wood was more abundant than bone and thereby significantly cheaper (p.126) may not hold in all contexts. As a by-product of livestock economies, bone can also be labour-intensive based on processing requirements, and certain types of bone, especially dense compact bone from larger animals, may be functionally superior to softer woods for tools. It was often a readily available material, and its use in knife handles could perhaps have been examined within a

broader framework of craft preferences rather than strict economic constraints.²

Christopher Pare somewhat carries the theme of the precedent chapter forward in a parallel path in a diachronic re-evaluation of early iron metallurgy further to the east, across the Near East and beyond (*Provinces of innovation. On the introduction of iron in the Near East*) to explore how and why it actually spread. The central argument is that the adoption of iron should be understood through 'provinces of innovation' where different regions developed and adapted ironworking independently. A rich array of local adaptations and varying rates of adoption are superbly presented with particular focus on written sources. For example, the author observes a 'ring horizon' to describe a widespread phase in the early adoption of iron, dating to the 13th and 12th centuries BCE, as the earliest iron objects found in the Near East, particularly in Luristan and areas around Lakes Urmia and Van, take the form of ring jewellery, including finger-rings, bracelets, and anklets. Initially, iron rings retained a high status, as seen in bimetallic examples from sites such as Tell es-Sa'idiyeh (iron/bronze), Megiddo (iron/gold), and Timna (traces of gilding). However, the broader distribution of plain iron rings in non-elite burials indicates that iron quickly lost its exclusivity as a royal or luxury material. The widespread presence of iron rings in the Near East and eastern Mediterranean leads the author to hypothesise that mobile or semi-nomadic groups played a role in disseminating iron technology. He suggests that early ironworkers operated at a decentralised level, rather than within palace-based economies, which may have contributed to the rapid diffusion of iron use. Intriguingly, the author briefly notes a possible correlation between early iron rings and double-pithos burials, but does not develop this connection further (p.164) which might give directions for future research.

Martina Massimino closes the book with a compelling study of the funerary practices in the Caucasus and south-eastern Anatolia during the late fourth and early third millennium BCE, stressing the circulation of luxury materials including metals, as well as questioning the modalities of circulation of elite strategies and ideologies. Metal objects, in that regard, given their typological, technological, and material similarities across the regions, provide some of the most striking evidence for these interactions, pointing towards long-distance networks. Particularly noteworthy are objects of apparent northern Caucasian origin that appear

² Maier *et al.* 2009: 41–68.

in Anatolian sites, including tripartite spearheads with leaf-shaped blades, daggers with cast handles, and ribbon-shaped diadems. These artefacts first appear in Maikop kurgans before being found in large numbers at Arslantepe and Başur Höyük, and later in various funerary contexts along the Upper and Middle Euphrates valley throughout the third millennium BCE. Massimino further advances that techniques such as lost-wax casting and silver inlay decoration indicate that technological knowledge moved alongside prestige goods, which alludes to the role of mobile groups in sustaining these networks. On the social and economic systems that facilitated the circulation of metal between the north-western Caucasus and the upper reaches of the Euphrates and Tigris valleys further research could yield tantalising results.

This collective work, which sets out the many avenues of research still open on the inexhaustible theme of the thousand-year-old uses of metal – on which we can debate, agree and disagree with certain arguments, is a fine example of what the history of techniques can contribute to our knowledge of ancient societies. Lying between the limits of current knowledge, as one of the contributors reminds us (Pare, Chapter 6), it is also a period piece, pointing the way forward for future research. The richness of perspectives it presents, nevertheless, ensures that archaeologists and historians in different fields will find it of interest, which is always a welcome feature of a scholarly work.

Mödlinger, M., Kuijpers, M.H.G., Braekmans, D. and Berger, D. 2017. Quantitative Comparisons of the Color of CuAs, CuSn, CuNi, and CuSb Alloys, *Journal of Archaeological Science* 88 (December):14–23.

Maier, A.M., Horwitz, L.K. and Greenfield, H. 2009. Macro- and Microscopic Aspects of Bone Tool Manufacture in the Levantine Iron Age: A 9th Century BCE Workshop from Tell Es-Safi/Gath, Israel, in Rosen, S.A. and Roux, V. (eds) *Techniques and People. Anthropological Perspectives on Technology in the Archaeology of the Proto-Historic and Early Historic Periods in the Southern Levant*: 41–68. Paris: De Boccard.

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CLASSICAL

Michael Loy, *Connecting communities in archaic Greece: exploring economic and political networks through data modelling*. British School at Athens studies in Greek antiquity. Pp. xv+ 331. Cambridge – New York: Cambridge University Press, 2023. ISBN: 9781009343817, hardcover \$130.

Michael Loy's monograph is an innovative and intriguing contribution to the growing body of work using computational methods in archaeology. It takes advantage of the vast – and often unwieldy – datasets produced by more than a century of excavations in Greece, especially by the foreign schools, analysed by Loy through Social Network Analysis and spatial modelling to make sense of economic and political interactions across the Aegean in the seventh and sixth centuries BC.

The central idea is fairly straightforward: that there is analytical potential in treating communities as nodes and patterns of shared material culture as indicators of interaction (a recent parallel for this kind of approach is S. Murray, *The Collapse of the Mycenaean Economy*, Cambridge 2017). Loy focuses on four types of evidence – sculpture, pottery, coins, and inscriptions – and uses these to generate visual models of connectivity over time. The chronological span (700–500 BC, broken into fifty-year periods) and geographical range (the wider Aegean basin) are both sensible choices, and the sheer scale of the undertaking is impressive.

After an informative introduction – particularly excellent in explaining how the modelling used in the book actually works, Chapter 2 takes up the question of marble transport for the production of kouroi and korai. Drawing on existing catalogues, Loy compiles a dataset of 305 kouroi and 174 korai, reconstructing their original dimensions (often from fragmentary remains) to estimate their total marble volume. His calculations suggest that roughly 90,000 tonnes of marble were quarried and moved across the Aegean over the course of 150 years. If these calculations are accurate, this would have required around 200 ships annually at least partially loaded with heavy marble. To visualise how this material might have travelled, Loy turns to Proximal Point Analysis, mapping probable shipping corridors from quarry to sanctuary or city. He identifies four main maritime routes: one threading through the