



Book Reviews

METALS, MINDS AND MOBILITY: INTEGRATING SCIENTIFIC DATA WITH ARCHAEOLOGICAL THEORY, EDITED BY XOSÉ-LOIS ARMADA, MERCEDES MURILLO-BARROSO AND MIKE CHARLTON

Oxford, Oxbow Books, 2019. 200pp, 40 B&W figs, 22 col pls, 5 tables, hb, ISBN 9781785709050, £48.00

The challenge of bridging the gap between archaeological science and theory is well-established. How does one marry new and emerging scientific analyses with fluctuating theoretical perspectives? As its subtitle indicates, *Metals, Minds and Mobility* seeks to tackle this issue with a focus on the integration of archaeometallurgy and scientific techniques with other archaeological approaches to further our overall interpretations of the role of metalwork in ancient societies. Originally a session at the 21st Annual Meeting of the European Association of Archaeologists held at Glasgow in 2015, the resulting volume comprises 12 papers, plus an introduction, that are geographically, temporally and epistemologically diverse. The contributions are grouped into three parts, followed by a concluding discussion chapter.

The first part, 'Transmission of Metallurgical Technologies, Knowledge and Ideas', presents four papers each exploring how metallurgical knowledge and technology may have spread through prehistoric Europe at both a localised and a more global scale. The first, by Tobias Kienlin, is a particularly harsh critique of World Systems Theory in which he rejects the core-periphery model and stresses the variability of metallurgical knowledge exchange in the Bronze Age. His brief exploration of Early Bronze Age tell sites in the Carpathian Basin sat between the Aegean and the eastern Mediterranean emphasises the different negotiations and interactions that would have occurred in the movement of objects and the recontextualization of some objects as they entered new social spheres. One of Kienlin's key arguments is that impact as a result of interaction must be demonstrated, rather than assumed through globalised models. From this predominantly theoretical paper, we are then presented with a specific localised case study by Catalin Lazar *et al.* exploring early metal artefacts from Eneolithic Romania. Of all the papers in the volume, this contribution seems to most clearly offer a methodology for integrating science and theory, building from a traditional typological and contextual

analysis of artefacts and integrating metallurgical data, radiocarbon dates and external investigations of ore provenancing to establish ideas about how objects, people and ideas moved around the area and what it meant to those engaged in these networks. It is a clear, concise attempt to work through the data to draw grounded conclusions. The following paper by Alicia Perea examines the practice and metallurgy of goldworking in two culturally distinct arenas (Classical Quimbaya (Colombia) and Bronze Age Iberia) to investigate the ontologies of the people engaged in the production, use and treatment of artefacts. The use of scientific techniques to understand aspects of craftsmanship allows Perea to suggest that the technology used in each society emphasises strategies used to empower individuals and groups in a visible way. This first part concludes with an incredibly useful paper on bronze production and tin provenancing by Bianka Nessel and others working on the Bronze Age Tin project. The first half of this paper is given over to concisely reviewing the evidence for early tin bronze metallurgy in Mesopotamia, Anatolia, Europe and Eurasia, which in itself makes this a paper worth reading. The second half presents information and results from isotopic analysis of tin ores and bronze artefacts from different regions in Europe. However, the challenges in using tin isotopes to provenance ore deposits are clear and there is still much work to be done.

The second part, 'Prestige economies and exchange', examines the roles of high-status goods and the exchange networks that they are part of. The opening paper by Mike Rowlands should set up this section well. It is a thought-provoking argument on concepts of exchange value and a call to reintegrate aspects of Marxist approaches in our interpretations of exchange networks and the accumulation of wealth. However, without a clear case study that anchors how we might apply and integrate these concepts, nor any scientific data directly used, this piece unfortunately feels at odds with the rest of the volume. This quibble aside it is a valuable and challenging anthropological perspective of metal exchange networks. The second paper in this section is refreshingly original concerning the materiality of silver in ancient Mesopotamia. Susan Sherratt's paper tackles the basic question: 'Why was (and is) silver sexy?' Through an exploration of the material qualities of silver and the socio-cultural context in which it operated, supported by various ancient texts and a comparison with other contemporary metals (eg, copper and gold), Sherratt suggests why the relative 'uselessness' and shiny appearance of silver appealed to early societies and the symbolic properties it gained as a result. Similarly, Borja Legarra Herrero stresses the need to fully understand the social contexts in which the

production, use and deposition of gold objects operated in prehistory. Legarra Herrero convincingly argues that we should use the concept of conspicuous consumption more critically; gold artefacts in Early and Middle Bronze Age Crete occurred within and as part of a fluid dynamic of relationships and objects adorning an individual may have conveyed not only the prestige of the individual, but also an overall group.

Up until this point, many of the contributions have tackled only one or two of the key words that comprise the volume's title: metals, minds and mobility. However, the third and final section, 'Circulation of metal as commodities', most obviously fulfils the promise of the title and general remit of the volume, with contributions by Lene Melheim and colleagues and Peter Bray being two of the strongest. Peter Bray's engaging paper seeks to draw a link between archaeometallurgy and key theoretical concepts (most noticeably object biography) through his examination of Early Bronze Age metallurgy in Britain and Ireland. Bray proposes utilising prosopography to bring together partial elements of individual object biographies to construct fuller and more reliable biographies about artefact groups as a whole that can then be utilised to better understand ancient societies. Melheim *et al.* likewise reiterate the connection needed between science and theory if we are to construct accurate narratives of the past. The authors use provenancing techniques to establish the likely ore origins for the metal objects found in Scandinavia and suggest a shift in the metal supply networks around 1500 BC. Scientific analyses suggest that from this time, Scandinavia may have been supplied by metal from the Iberian Peninsula, which the authors propose is further supported by other material culture, notably similarities in rock art between the two regions. Having put forward this link, Melheim *et al.* go on to propose a series of models that may have allowed the exchange network to operate. In the penultimate paper in this volume, Núria Rafel Fontanals *et al.* explore the changing significance of lead and copper mining in Tarragona, Spain, from the period 2600–500 BC. The exploitation of these mines can elucidate the relationship between the economic appreciation of mining and the elites. In the Early and Middle Bronze Ages, Rafel Fontanals *et al.* suggest that the mines are utilised by small communities with limited hierarchical evidence, whilst by the Early Iron Age, mining and metallurgy become an important part of the territory's economy, entangled with an elite class system.

The volume concludes with a discussion by Marcos Martín-Torres, who sets the volume in the broader context of studies of archaeological science and theory. This final

chapter is much welcomed, and the editors were wise to invite Martín-Torres to contribute as it serves to draw together the variety of strands that emerge throughout the eleven papers. As with many conference proceedings that are structured thematically, it can be difficult to draw links between the different topics covered and Martín-Torres does this very well.

Reflecting on this volume, there are several aspects that are worth highlighting. The first is that this book is accessible, even to the reader who may not consider themselves an archaeological scientist. Overall, the papers are light on what one might call 'overt science', by which I mean that if one is expecting (or, depending on your persuasion, fearing) a volume overflowing with formulae, charts, tables and graphs of data, then it is pleasing to see this is not the case (Martín-Torres makes a similar observation in his concluding paper). The scientific data is undeniably there, and the conclusions drawn by the contributors could not have been made without a wealth of scientific investigation, but it is integrated in such a way that many of the links between scientific data and archaeological theory are seamless. In this respect, the subtitle of the volume lives up to its promise and it is exciting and affirming to see we are at a state of research where archaeological science is so well incorporated with theoretical approaches.

Where this volume is less successful, I feel, is in its presentation of 'mobility'. From the inclusion of this word in the title, I was expecting a greater focus on the movement of actual people in the past, perhaps linking metallurgical analyses with recent aDNA studies. This comment should not be misinterpreted though – the movements of metals and exchange of ideas are certainly discussed and explored, but there is only limited consideration of how and why people moved with these metals and ideas.

The book overall is well-presented, though in places would have benefited from an additional proofread. The papers are richly illustrated, with greyscale figures through the main body and colour plates of some of the figures at the back. In addition to communicating the lustre and colour of many of the prestige artefacts, some of the graphs that form the meat of the contributions by Nessel and Melheim particularly benefit from having colour versions. An index is also a welcome inclusion, enhancing this volume.

In sum, this volume offers a rich array of papers, which together offer some thought-provoking perspectives on how scientific data can be used to further our theoretical interpretations of metallurgical processes and practices in the past. One may not always agree with the perspectives presented, but the varied multi-scale nature of the research offered by the contributors, many of whom are at the forefront of their fields, will certainly challenge and engage any reader of this volume.

Matthew G. Knight

National Museums Scotland

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*The views expressed in this review are not necessarily those of the Society or the
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