

the area. They included Arameans, Jews and Arabs. The identity of these people is considered in a study of funerary portraiture in the form of a family tomb that reveals the appearance of individual Palmyrans. The chapter concludes with a section describing the domestic houses in Roman Palmyra where inhabitants would have lived.

'Palmyra's destiny between Rome and Persia' (Chapter 5) describes perhaps the most prominent time in the history of Palmyra from AD 252–272. A client state of Rome and already an important town on the eastern edges of the Roman Empire, it also formed a barrier to the expansionist Persian Empire. Its prosperity and importance led Zenobia, Queen of Palmyra, to declare independence from Rome in an attempt to carve out her own empire. This revolt was finally put down by the Romans in AD 272, Palmyra was taken and Zenobia and her children exiled to Rome.

The next four chapters of the book each focus on an important civic monument, describing it in detail and discussing its function within the city. These are: the temple Bel (Chapter 6), the triumphal arch and grand colonnade (Chapter 7), sacred and public spaces—including the Roman theatre (Chapter 8), and the tombs (Chapter 9). Each of these monuments was badly damaged or destroyed completely during the ISIL occupation of Palmyra so the detailed descriptions provided in the volume are an important record. Descriptions include early paintings and architectural drawings showing the state of the monuments before their destruction. Use is also made of computer models to demonstrate what the monuments may have looked like in the past.

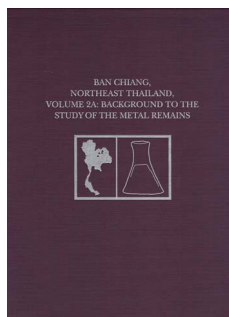
Chapter 10 considers events in the region that occurred after Palmyra was recaptured by the Roman army in AD 272. This includes changes to the city during its use as the Camp of Diocletian when it was a Roman garrison. The chapter closes with a very brief description of the much later Christian basilica and Arab citadel. The volume is concluded by an appendix detailing how a fortuitous visit to the site in 2010 by one of the authors provided a detailed photographic record of the monuments a few years before their destruction. These many thousands of images were used to create the computer models presented in the chapters, which are based on photogrammetry.

This book provides a detailed description of the site of Palmyra, documenting images of the site recorded

through the ages. It is richly illustrated with many colour photographs, and drawings that present the evidence used for reconstructions in an appealing way. This book, does not, however, as the title perhaps suggests, contain highly realistic computer reconstructions of ancient Palmyra. Although the dust jacket synopsis claims that "modern technology including photogrammetry digital imagery and 3D modelling" has been used, many of the techniques are quite dated. Images of the 3D models that appear in the book are of limited quality and not of the standard that appear in recent similar computer reconstructions of ancient sites. While this is not the right book for a computer graphics enthusiast who wants to see appealing reconstructions of past environments, it should appeal to readers interested in the history of Palmyra and the extent of the damage it has sustained in the ongoing Syrian Civil War.

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JOYCE C. WHITE & ELIZABETH G. HAMILTON (ed.).
Ban Chiang, northeast Thailand, volume 2A: background to the study of the metal remains (University Museum Monograph 149). 2018. Philadelphia: University of Pennsylvania Press; 978-1-931707-21- £48.



Once celebrated for decorated pottery and allegedly precocious metallurgy, making it the centre of disagreements about chronology, Ban Chiang is now used by White and Hamilton to argue that real discrepancies in data and interpretations demand a paradigm shift in the understanding of cultural evolution. What they highlight is the necessity of developing an approach recognising that (a) village-level metallurgical skills must (b) be integrated into the continental-scale diffusion of ideas, while (c) conceding the necessity of distinguishing social and technological history, because (d) their evidence undermines the validity of assumptions implicit in

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the evolutionary framework inherent in the ‘Three-Age-System’—as they demonstrate that advanced technical capacity does not necessarily correspond to social transformation. The application of universalist, linear, rational, technical and normative approaches contributes to the persistence in the archaeological literature of a misleading technical paradigm of social history. The gradual spread and irregular use of the potter’s wheel, for example, should have awakened archaeologists to these problems long ago.

This volume is exceptional as the theses advanced are critically examined, logically presented and evidence-driven. The presentation necessarily stresses the archaeology of early Southeast Asian metallurgy, and this narrow focus makes their argument clear—yet the theoretical significance goes far beyond this specific field.

On chronology, White confirms that Bayesian modelling “cannot correct inherently flawed data” (p. 40). The problem is deeper: calibration and Bayesian modelling rely on potentially erroneous assumptions, statistical and archaeological; chronology cannot work on probability alone, as it demands precision—as does excavation. If sherds from occupation layers and small finds from burials are well excavated, they can be assigned to specific stratigraphic and excavation units and compared with finds from other sites, allowing the analysis of chronological, typological and social features. But only if the stratigraphy and chronology is fully understood for all the excavations concerned; claims about chronology often conceal disagreement about social issues, and deserve critical attention.

Nevertheless, radiocarbon overturned Childe’s specific diffusionist scheme because he erroneously postulated a westward technical movement linked to, and pushed by, social developments in the east; it transpired that Childe’s approach obscured technical advances in the socially under-developed Balkans—innovations recently enhanced by the discovery of the Neolithic tin-bronze from Pločnik—dating to before the emergence of the Bronze Age Near East. This Balkan metallurgy was eventually incorporated into the Bronze Age civilisations emerging centuries later in the Near East and China. Now, through critical analysis, Ban Chiang presents a radically different challenge, as advanced metallurgy was introduced into a village without major social change.

Proponents of multiple spontaneous and simultaneous independent inventions fail to recognise that

materials and knowledge are generally transferred, and that the Near Eastern Bronze Age civilisations did not invent metallurgy; their superiority was in sophisticated ‘information technology’: writing, weighing, administration, craftsmanship and the like—which was not easily diffused. These urban civilisations incorporated foreign elements into their cultural systems, as the Cretan palaces reveal Near Eastern-style clay tablets and weighing systems; cultural transmission, information technology and social development went hand in hand.

Mycenaean tablets confirm that village smiths were not rare, but also that states and civilisations were rare and fragile. Bronze Age information technology did not travel farther north, was forgotten in Greece and was irrelevant to Ban Chiang; technological transfer alone does not entail uniform social developments. Diffusion brought Balkan metallurgy and the metals to China and the Near East, where a social change took place independently of the metallurgy. Ban Chiang had easy access to the metals, but only imported technology allowed the realisation of value—yet imported technology did not entail social change.

This book stresses metallurgy alone, but Bronze Age Near Eastern pyrotechnologies offer more, as prices confirm the low market value of artificial glass and faience, distinguishing them from real stones such as lapis lazuli; bronze was nice, but not as valuable as gold—but adornment was popular and people appreciated both the real thing and imitations. Through fiscal policies financing urban civilisation, Mesopotamia, Egypt and China created the wealth that enabled the purchase of foreign goods, driving cultural progress while creating interregional markets. China and the Near East mobilised cheap labour to (a) export ‘low-tech’ textiles to fund imports and (b) to produce imitations of the imports. Wealth attracted metals, metallurgy and merchants—integrating the periphery into a system whereby prices had an interregional impact; wealth and information—not technical superiority—are attributes of civilisation. Tin and copper will have been cheap in Ban Chiang, where abundant supplies of both were locally available (p. 153)—but while imported technology gave the metals value, social development failed, revealing the seeming anomaly stressed by the authors: many societies have mastered metallurgy without civilisation (pp. 137–203). This is important, yet like many who constructively tear down archaeological social theory, the

authors halt before Polanyi's framework (pp. 131–32), assuming its validity and failing to realise that Polanyi's anti-market stance blocks access to market prices as an analytical tool. Prices illuminate, but culture counts; the authors argue (p. 58) that 'ornamentation' played a role in metallurgy worldwide, and that functionality should not be given precedence—confirming that theories are out of sync with research, thereby demanding change.

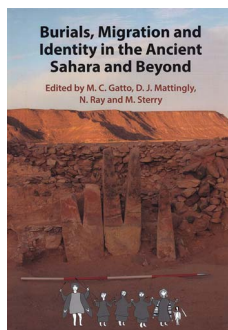
It would be novel if an archaeological paradigm shift was pushed by growing evidence, thus leading to changing interpretations. Archaeological theory hitherto has not been based on interpreting evidence, so much as forcing agendas. Previously, pseudo-paradigms endorsed by would-be authorities have been dogmatically diffused by followers; New Archaeology began as a research agenda assuming that progress and universalism could be usefully applied to prehistoric societies—but it neither worked nor failed. An evidence-based paradigm shift in social analysis—taking account of stratigraphy, typology, chronology, geology, distribution, technology, culture, diffusion, power, markets and history—would constitute a real accomplishment and a transformation in archaeological thought.

Social history cannot be written by anachronistically projecting concepts back to an age before urban wealth and political power emerged. The world of the villagers in second-millennium BC Ban Chiang had been socially and cognitively formed by changes taking place elsewhere and earlier; changes that brought metallurgy without bringing Ban Chiang into the Bronze Age.

The legitimacy of archaeological hypotheses cannot be based on anything except material evidence. The prevailing models are the problem, not an alleged lack of evidence. This book puts material at the forefront, recognising what it could mean, identifying inadequate speculation to be discarded and offering sensible thoughts to be debated and adapted.

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MARIA C. GATTO, DAVID J. MATTINGLY, NICK RAY & MARTIN STERRY (ed.). *Burials, migration and identity in the ancient Sahara and beyond* (Trans-Saharan Archaeology 2). 2019. Cambridge: Cambridge University Press; 978-1-1084-7408-5 £100.



The objective of this fine volume, the second in a planned series of four by the Trans-Sahara Project, is to present research and fieldwork on burials, migrations and issues of identity in the ancient Sahara by a varied group of archaeologists and scientists. It is divided into six parts

comprising 17 chapters, under the sub-topics of: I) 'Burial Practices in the Central Sahara'; II) 'Looking East'; III) 'Looking North'; IV) 'Looking West'; V) 'Looking South'; and VI) 'Linguistic Aspects of Migration and Identity'. The editors conclude that "there is irrefutable evidence of links and connections that served to define a Trans-Saharan zone at an early date", and that "migration and mobility created networks of connectivity and elements of a shared culture or 'koine'" (p. 525).

Fundamentally, the volume is taken up with defining terminologies, establishing typologies of burials and grave goods and the presentation of new baseline scientific, linguistic and archaeological evidence for the purpose of recovering human movement and settlement. By extension, this evidence also contributes to the understanding of cultural and identity formation across the ancient Sahara and along its frontiers. As virtually all the chapters demonstrate repeatedly, the challenging data yielded by this harsh environment make arriving at robust conclusions extremely difficult. Thus, we are informed from careful morphometric and isotopic studies, and by an object worn by a "young woman of Sub-Saharan physiognomy", that "Garamantian society included individuals of diverse geographic origin" suggestive of "a vivid trading community that maintained a resident population through centuries, and one which was enriched by multiple-sourced Trans-Saharan migrations" (p. 155). It is also revealed that osteological evidence from an excavated necropolis at Fewet (modern Ghat) in the south-western Libyan