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Metals in LBA Minoan and Mycenaean Societies on Crete: A Quantitative Approach

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Review by

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Full View

This volume is the author's PhD dissertation, defended at the University of Helsinki in October 2013. The author examines the relationships between metal and society across Late Bronze Age Crete with a systematic quantitative analysis of bronze finds. Specifically, the metal record is quantified by weight rather than number of items, the more usual method of quantitative analysis. The author's goals are to determine whether such an analysis is a valid means for studying metals and, if so, to discover the political-economic and cultural role of metals in Minoan and Mycenaean societies in Crete and to characterise the approaches to metal use over time. The data used has been collected from published evidence on approximately 3300 items—copper-based artefacts, copper ingots and refractory materials—and compiled in a database designed by the author and titled XAAKOΣ. Hakulin estimates that her data represents 80-90% of published finds from the preserved record and stresses that the focus of the present study is the amount, volume, use and circulation of metals and the “metal cycle”, a term she uses to describe the flow of metals in each region and period.

The volume consists of three parts subdivided into 9 chapters, and two appendices. Part One, “Context of the Study” (Chapters One and Two), outlines the aims, methods, background and limitations of the study, and reviews published archaeometallurgical studies. In Part Two, “Implementation of the Study”, Chapter Three discusses the framework of the study and Chapter Four describes the study material, arranged according to finished object type (ingots and refractory materials), and summarises the data on weights. Chapters Five, Six and Seven discuss and summarise the published metal finds from the Neopalatial, Final Palatial and Postpalatial periods, respectively, with geographical subdivisions of eastern, central and western Crete. These three chapters are remarkable in terms of the amount of data and detail they encompass

and are certainly a valuable source of information for future studies in Minoan metallurgy. I am not aware of any previous scholar who has addressed the published material so comprehensively.

Part Three, “Results of the Study”, consists of two concluding chapters. In Chapter Eight, Hakulin characterises the role of metals in LBA society in Crete over the three periods under study according to what her data suggests and attempts to identify metal strategies, “...a catchword for strategies for metal import, metalwork production, metal distribution, use and deposition...” (120). To achieve this, Hakulin applies a method outlined by M.E. Smith¹ that characterises the political economy of early states by describing strategies for the accumulation, bureaucratisation and capitalisation (ABC) of economic resources. This interesting approach provides a useful means for comparing the changing role of metal use in LBA Crete. The conclusion, Chapter Nine, addresses the initial aims of the study. Appendix One presents the data collected in the database, XAAKOΣ, and used in the study, and Appendix Two lists the estimation of object weights and the data that the estimations are derived from.

Hakulin examines the weight of items alongside the parameters of function and find context in order to draw conclusions about the characteristics of metal use during the Neopalatial, Final Palatial and Postpalatial periods. The function of an artefact is classified as utilitarian, prestige or ritual; ingot functions are either raw material or ceremonial. ‘Find context’ is a term Hakulin uses to describe an artefact either in circulation at the time of its deposition or permanently deposited in a burial or as a votive. These parameters are analysed in terms of three aspects. The first, the spatial distribution of the objects and refractory materials by first and second order centres and ritual sites, may provide data on the political geography of Crete. The second aspect, divisions of metal weight, refers to (i) the amounts of metal used to make objects of different categories (utilitarian, prestige or ritual), which can inform us about the priorities for metal usage, and (ii) the amounts deposited in different find contexts (permanent deposit or still in circulation), which “...could mirror cultural habits in the society, the amount of metal lost from circulation and perhaps deliberate strategies to restrict the availability of and access to metal in the society...” (66). The final aspect considered is the point of the metal cycle at which objects were deposited. The metal cycle is a hypothetical model created by Hakulin for visualising the phases which a quantity of metal in a region passes through: supply/trade, use/circulation (which includes storage, production, use and recycling) and deposit.

The quantification of the metal record by weight is a new and interesting approach. Hakulin regards this as “...an objective measure for comparing the material value of different types of metal finds” (8). By studying metal weight, the volume of metal distributed, circulated and deposited may be elucidated. The weights of metal finds are rarely published so Hakulin has developed a series of methods for estimating the weights of object types based on dimensions of finds, the published weights of similar artefacts or artefacts of similar shape or size and information on the weights of bronze objects from Linear B archives and Near Eastern texts. Hakulin groups her weight estimations by object type and period, so we have, for example, an estimated total

weight of 10.4 kg of Neopalatial chisels, 3.6 kg of Final Palatial razors and 0.3 kg of Postpalatial sickles.

The main concern with this volume is its dependence on data that is incomplete. There is, for example, a skewing of data by depositional bias. The differences in the types of metal items recovered from the different periods is significant. For example, Neopalatial metals are almost exclusively from destructions and Final Palatial metals are primarily from graves, so we are comparing accidental Neopalatial deposition with deliberate Final Palatial deposition. It is problematic to regard these finds as comparable. Because Neopalatial burial practices are largely unknown, we do not truly know whether or not any Neopalatial metal was destined for burial. This presents problems for Hakulin's suggestions that Neopalatial metal strategies maximised the "accumulation of metals for the living" (124) while Final Palatial strategies focus on the prestige of the elite because extant metal items from the period are primarily grave goods (127). Hakulin does acknowledge this problem and a number of others regarding the reliability of the data, but is forced to ignore these in order to carry out the study (14), which seems problematic for a quantitative survey.

The quantification by weight may also be questionable. Hakulin has made an admirable effort to estimate object weights, but it seems precarious to attempt calculations of metal quantities in circulation based on the estimation of the total weights of thousands of items. There might also be some problems with her dependence on published classifications of object types (utilitarian, prestige or ritual), where there are often disagreements about the function of an object. It is often unclear, for example, whether a metal object is a finished object or a piece of scrap or billet. In some cases a single item might also function across more than one classification type. A vessel could be utilitarian, prestige or ritual, for example, and in many cases the primary function of an object is highly debatable or unknowable. Hakulin acknowledges the problem of determining function type. For practical reasons, however, she assigns each item type to one category according to an assumed primary function (30) and subsequently uses the quantities of object types to determine priorities for metal use. One is wary of the cumulative effect of so many assumptions as a foundation for quantitative analysis.

Overall, this volume presents a useful and extensive survey of metals in Bronze Age Crete. Although there are some problems with how the data is analysed, the scope of the study is impressive. As a reference book on LBA metals in Crete, it is invaluable.

Notes

1. Smith, M.E. 1991. "The ABCs of Political Economy" in *Early State Economics*, edited by H.J.M. Claessen and P. van de Velde, 31-73. New Brunswick, N.J.: Transaction Publishers.