

BOOK REVIEW

The Chrysokamino Metallurgy Workshop and its Territory. By PHILIP P. BETANCOURT. *Hesperia Supplement* 36. Princeton: ASCSA Publications, 2006. Pp. xxii + 462. Paper, \$65.00. ISBN 978-0-87661-536-2.

At first glance, this book is the stunningly timely publication of archaeological research revolving around a metallurgy workshop and its broader geographical, social and historical context in the gulf of Mirabello in East Crete. More specifically, it is the publication of the excavation of a FN-EMIII metallurgy workshop at Chrysokamino, the survey of the surrounding area (a farmstead last inhabited in LMIIIB) and the typological study of pottery from an older excavation at the neighboring cave of Theriospilio. However, there is more than meets the eye in this volume: the reader is presented with an exemplary way of designing, implementing, undertaking and presenting archaeological research; last, and certainly to the students of ancient metallurgical practices not least, all significant trends in archaeometallurgy are discussed accurately and concisely by experts such as P. Betancourt and J.D. Muhly, covering chronologically the 20th century and forward, and spanning geographically the Mediterranean and beyond.

Philip P. Betancourt oversaw the implementation of both the research project and the publication of the results. The volume is divided into three parts with chapters composed by different specialists. An extensive and useful series of Appendices follows, again the work of various contributors (pp. 281–432).

Part I, *The Chrysokamino Territory* (pp.3–46), begins with an introduction by Betancourt (Ch. 1). An interesting feature of this introduction is the discussion of modern toponyms of the area under investigation; this is uncommon in publications of archaeological excavations and surveys and makes clear the holistic approach of the project from its inception. After a brief discussion of previous research in the vicinity, Betancourt sets out the primary research goals: emphasis was given to the metallurgical workshop (its excavation established dates between the FN-EMIII); and a study of neighboring farmsteads was conducted for their potential association with the workshop, along with a survey of the area to establish a general context for the excavation finds. One notes (p. 18) how the “archaeological plan” (p. 18) is presented in a typical processual manner. Ch. 2 is a study of the climate conditions, the geology and mineralogy, and the topography of Chrysokamino in the Early Bronze Age (EBA). The summary on p. 38 is useful for those who only need to form a general idea of the environmental conditions of the region.

In Part II, the results and conclusions of the excavation of the metallurgy workshop are presented in a multi-disciplinary manner. Each chapter concerns a different aspect of research on the workshop and is composed by a different specialist (pp. 47–192).

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Ch.3 presents the excavation methodology in detail. The workshop site was excavated (after a survey in 1995) for two continuous seasons (1996 and 1997) in the grid-square system. The methodology can be described as systematic, thorough, careful and “rigorous”, in the researchers’ own words (p. 61).

Ch.4 attempts to reconstruct the history of the apsidal structure’s use. The apsidal structure was the only architectural feature unearthed on the Chrysokamino workshop site, amidst a vast slag heap and pieces of pottery and industrial ceramics; three floor layers were discovered, along with eight postholes. Sherds associated with the floors belong to the EMIII–MMIA periods. No evidence, however was found to suggest their primary use in the structure; they were carried there along with the soil that formed the floors (p. 61). The structure is interpreted as a small kitchen or storage space for the smelters (p. 63). I find the argument incomplete, due to the lack of evidence, although one cannot exclude such a possibility. The major problem is that metallurgical installations of comparable date in the Aegean remain largely unexcavated.¹ One might suggest a glance at comparative material from other times (certainly not in the form of “ethnographic parallel” or “analogy”) as a source of ideas regarding the use of the hut at Chrysokamino.² This would require more attention to the sociocultural context of EBA Aegean metallurgical practices, an understudied aspect of EBA Aegean metallurgy.³

The pottery dating between FN–EMIII–MMIA is presented in Ch. 5. No complete vessels were found. The pottery is studied in two separate groups: that from the slag pile and that from the apsidal structure. However, there seems to be no justification for this division. The pottery analysis is followed by a detailed catalogue with accurately executed drawings (pp. 73–97).

Stone tools (Ch. 6) are rare finds at the metallurgy workshop of Chrysokamino, something unsurprising in the context of EBA Aegean metallurgy. EBA smelters had no reason to abandon fully or even partially functioning tools. Indeed, such tools are more commonly associated with settlements rather than industrial sites in the Aegean (cf. n. 1, above: Ayios Sostis on Siphnos).

Ceramic fragments of smelting furnaces are treated separately (Ch. 7)—and rightly so, since their manufacture and use both differ substantially from those of clay vessels. The conclusion that the fragments were part of cylinder chimneys is convincing. Also, the drawings of reconstructed furnaces are very informative for the reader who might not be familiar with pre-industrial metallurgical practices (p. 111, fig. 7.3). In the “Implications” section (p. 113), there is a stimulating, albeit not elaborate, discussion of social issues pertaining to EBA Aegean metallurgy.

Chs. 8–10 present bellows, miscellaneous ceramics and the so-called uncatalogued metallurgy materials (slag and ore among other things), respectively. Beyond typology, all three chapters contribute to the reconstruction of the metallurgical

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process, and this is where their greatest value lies. Significant for students of ancient metallurgy is the statement (supported by adequate analytical data in the appendix) that samples were analyzed “by more than one method” (p. 140). With regard to the conclusions on p. 144, the designation “not profitable” is used as an argument to support the view that “skilled metalworkers” were not employed for the preparation (beneficiation) of the ore to be smelted. Such attributes should be used with caution, since too little is known about the sociocultural circumstances of EBA Aegean metallurgy to be able to infer who was skilled at doing what, the level of competence of the individuals involved in the metallurgical process, or even the social standing of metallurgists and their craft. (Was the art of metallurgy open to all? Or was it a privilege restricted to certain members of the community?) On p. 144, an important point is made and should not pass unnoticed: the evidence points toward the use of multiple ore sources, making identification of specific ore bodies (i.e., Kythnos; Laurion) either by lead isotope or elemental composition analysis impossible. This should suffice to put an end to the heated lead isotope analysis debate of the 1990s. On the other hand, the discussion of the (deliberate?) use of arsenic is inconclusive.

The next two chapters discuss fauna (Ch. 11), which reveals a diet pattern comprising mostly shellfish, and possible evidence of threshing (Ch. 12). Chapter 13 can stand alone and is likely to be considered seminal and crucial to Aegean metallurgy discussion for years to come. In this chapter, J.D. Muhly presents his vast knowledge and acute critical insight, re-writing the history of East Mediterranean and Balkan—not solely Aegean—metallurgy in about 25 pages. Anyone who wishes to study Bronze Age metallurgy could start with Muhly’s contribution. Especially important is his review of the research—both published and unpublished—conducted in the last two decades, as well as the compilation of a very up-to-date bibliography. Chapter 14 summarizes parts I and II, connects them with the analytical data presented in the appendices, and views the finds at Chrysokamino in their broader Aegean craft-specialization context.

Part III concerns the surface survey which formed an integral part of the Chrysokamino project. Ch. 15 lays out the methodology (cf. Ch. 3, see above). Emphasis is placed on timely publication—a crucial matter for research in the Aegean, since many projects remain unpublished, making finds inaccessible to other researchers. Ch. 16 revolves around topography, while Ch. 17 is a somewhat preliminary report of the mostly LM habitation site, awaiting its promised final publication in a separate volume. Ch. 18 lays out the history of Edith Hall’s early 20th century excavation of the cave of Theriospilio, based on her personal correspondence. (Hall never published her excavation results and finds). The catalogue of the pottery Hall found is useful for study

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purposes, since for the most part the sherds are scattered in various collections, and raises the crucial issue of chronology between the FN/EBI in the Aegean.⁴

Chs. 19–21 can be read in conjunction. In Ch. 19, Haggis reconstructs a habitation context for the metallurgy workshop, based on an earlier survey (conducted in 1989–90). Of particular importance are pp. 227–8, where the changes marked in the EMIII–MMIA period indicate increased social stratification. In Ch. 20, territorial boundaries are defined, separately for each period, based on a methodology initially developed for the study of Roman farms and estates (p. 236). A tentative outline of boundaries in the region under study is attempted. The figures that accompany the text are a great aid to the reader of this somewhat technical chapter. Ch. 21 refers to the use of land on the farmstead. It examines agricultural practices, looking into factors that affect them, such as soil types, climate changes and topographic features (i.e. availability of arable land). It presents an interesting classification of land use and proceeds to analyze the suggested categories.

Ch. 22 presents the survey conclusions. Already in the opening paragraph, all the important points of the last three chapters are presented, ending with a notable comment: “The history of Chrysokamino shows that cultural change, as others have suggested, is usually based on complex forces of formation and dissolution rather than on a strictly linear, gradual development” (p. 257)—although it is doubtful whether scholars still think of change in linear terms. The last two pages of the chapter (pp. 277–8) examine the situation of the Chrysokamino territory well into the 20th century, offering an interesting diachronic approach as well as an impromptu lesson in contemporary Greek history.

The Appendices revolve around laboratory analyses of artifacts found in the excavation of the Chrysokamino workshop and survey of the region. It is extremely important that all authors present all parameters of their work in utmost detail, not simply charts and numbers, so as to make their research results comparable and secure their reliability and scholarly and scientific integrity.

The volume is richly illustrated with photographs and drawings, accompanied by carefully composed captions, aiming at scientific and scholarly accuracy rather than impressive views of coffee-table quality. The book is very informative and written in a manner accessible to non-specialists, without compromising scholarly accuracy. A glossary of technical terms would have been a welcome addition, although such terms are certainly defined in individual chapters. This is not merely a site publication, but might also be used as a companion to the study of archaeometallurgy. Publication quality is high, with almost no typos. The bibliography (pp. 433–56) is up-to-date and complete and the index at the end of the volume is exhaustive (pp. 457–62). In short, *Chrysokamino* constitutes a publication *par excellence*.

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short, *Chrysokamino* constitutes a publication *par excellence*. One only hopes that Aegean metallurgy-related publications in the future will follow the lead of Betancourt's *Chrysokamino*.

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¹ With the exception of Agios Sostis, on Siphnos. See G.A. Wagner and G. Weisgerber, *Silber, Blei und Gold auf Siphnos: Prähistorische und antike Metallproduktion*, Der Anschnitt, Beiheft 3 (Bochum, 1985) (reference included in the Chrysokamino bibliography).

² See R.E. Tringham, "Experimentation, ethnoarchaeology, and the leapfrogs in archaeological methodology," in R.A. Gould, ed., *Explorations in ethnoarchaeology* (Albuquerque, 1978) 169–99; A. Wylie "The reaction against analogy," *Advances in archaeological method and theory* 8 (1985) 63–111.

³ See A. Hadji, *Metal technology and the human agency in the Early Bronze Age Cyclades, Aegean*, unpublished M.A. thesis (Berkeley, 1999).

⁴ See A. Hadji, *The construction of time in Aegean archaeology: archaeological time and third millennium BC Aegean chronology*, unpublished Ph.D. dissertation (Berkeley, 2004).