Annabelle Collinet: Precious Materials, The Arts of Metal in the Medieval Iranian World, 10th-13th Centuries

(Edited and translated by Annabelle Collinet and Melanie Gibson.) 336 pp. London: Gingko Press, 2023. ISBN 978 1 914983 12 2.

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This book is the English translation of *Précieux Matières. Les arts du metal dans le monde iranien médiéval* by Annabelle Collinet and David Bourgarit, published in Paris in 2021. It is the first step in the completion of the ISLAMETAL research programme, carried out by teams at the Musée du Louvre and the Centre de Recherche et de Restauration des Musées de France (C2RMF) led by Annabelle Collinet and David Bougarit with the support of the Roshan Cultural Heritage Institute. It focuses on Iranian metalwork from the tenth to thirteenth centuries in the Département des Arts de l'Islam in the Louvre. A second volume will cover material from the thirteenth to the end of the fifteenth century.

The ambitious goals of the book are summarized in the Foreword. This is not a traditional catalogue but "an analytical study that proposes a global perspective on medieval production (Chapter 1); the first complete technical analysis of the collection (Chapter 2); a presentation of the collection in light of the centres and regions of production that were revealed via archaeometallurgical studies (Chapters 3 and 4); and through the possible socio-cultural contexts of the objects' use and their significance (Chapter 5)".

The most innovative contribution of the book is the technical analyses of chapter 2 (its conclusions are presented visually in graphs and tables in 34 appendices at the end of the book). It includes a thorough review of materials and alloys in the textual sources, analyses of different copper alloys, patterns of impurities in their metals and in the metal inlays, shaping techniques and surface treatments. The final section outlines the organization of production so far as is known from textual and material sources. This chapter provides an excellent introduction to the study of metalwork and its decoration from Iran and elsewhere and should be essential reading for anyone interested in the field.

Interesting discoveries by the authors include the prominence of wax casting, the role of black material as an adhesive, the identification of specific alloys for particular purposes, and the complex mix of surface treatments. Scholars have long hoped that scientific analyses would help identify the provenances of objects divorced from their original context in museums and collections, and the authors distinguish at least five different copper alloys and claim that "their impurities as well as those detected in the metal inlays, especially copper, reveal several supply routes for materials and distinct metallurgical signatures from which emerge variations and different centres of production" (p. 296). This is promising work, but I am not convinced that the material analysed here, even with the analyses already done at the British Museum and elsewhere (Appendix 9), includes enough objects with historical information, such as inscriptions stating where they were made, to allow firm conclusions about the provenance of individual items. We know from an inscription on a ewer in Tbilisi, that inlaid ewers with high spouts were a speciality of Herat in the second half of the twelfth century. Prestigious objects travelled great distances as diplomatic gifts and for trade. So is the findspot in Ghazna of an almost identical ewer strong enough evidence to assign it to Ghazna and



attribute other objects with similar alloys and/or impurities to Ghazna also? Could it not be another, slightly inferior, vessel from a workshop in Herat? The analyses of several objects give conflicting results. For example, the inkwell (no. 17) is linked to Ghazna by its copper inlays and to Herat by its silver inlays (see p. 66). Two similar ewers (nos 7 and 8) have copper inlay impurities linking them to objects from Herat, but their silver inlay relates to that on an inkwell found in Ghazna (no. 12) and attributed to that city. The authors regret (p. 95) the current impossibility of analysing copper ores from mines in Khurasan that would "allow precise determination of its sources". One possible way forward is the analysis of dated copper coins from known mints. Without some fixed comparisons, technical studies can inform but cannot yet replace traditional art historical methods.

After the technical analyses, the objects are presented in catalogue format according to their provenance, as defined by the previous chapter (this arrangement has the unfortunate result of beginning with no. 2, as no. 1 is illustrated with a brief caption in the section on alloys some 50 pages earlier). Nos 2-11 are attributed to Herat, nos 12-24 to Ghazna, nos 25-37 to non-identified sites in Khurasan/Afghanistan. The remaining objects, nos 38-84, are presented in the final section which discusses the context of the objects, and how they were perceived and used. Despite the authors' protestations, this substantial part of the book (more than 50% of the total) is as thorough a catalogue of the objects as one could wish for. Each entry includes an excellent summary of the object's manufacture and decoration, including its inscriptions in Arabic, transliterated Arabic and English, discussion of its provenance and history where called for, and relationship to similar objects in the Louvre and other collections. X-rays and fabulous details illustrate the entries and clarify the technical descriptions. The microscopic examination and illustrations take you way beyond what it would be possible to see even if you had the objects in your hands. For example, the two pouring vessels, nos 60 and 61, are very similar in appearance, but microscopic examination reveals that one had most of the decoration executed on the wax model with limited coldworking to finish, whereas the decoration on the other was entirely cold-worked.

The volume must have been challenging to edit, translate and produce but Gingko has done a magnificent job. *Precious Materials* is a superb achievement and has set a very high standard for future books and catalogues of Islamic metalwork. I look forward to volume 2.

doi:10.1017/S0041977X24000454

Matthew T. Kapstein (ed.): Tibetan Manuscript and Early Printed Books. Volume I: Elements

xxxi, 329 pp. Ithaka and London: Cornell University Press, 2024. £39.30. ISBN 978 1 50171621 8.

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With this publication a first comprehensive overview of Tibetan book studies is delivered to students of Tibetan literary traditions. The flourishing interest in Tibetan written