

The Late Roman Unfinished *Chaîne opératoire*: A New Approach to Inscribed Glass Openwork

HALLIE G. MEREDITH

Supplementary Online Appendix

Fragments of incomplete material objects, too often relegated to storage, have the potential to help uncover production processes that had been believed lost or thought permanently obscured. Traditionally, study of the *chaîne opératoire* (operational sequence) has been limited to completed pieces, excluding in-process and discarded items. This omission creates a misleading narrative. Rather than a linear process, the manufacture of sculpted objects is a multistep, protracted endeavor. Through an examination of unfinished carving among Late Roman glass openwork vessels (also known as *diatreta* or “cage cups”), highlighting in particular inscribed glass openwork vessels that were in process, this discussion offers a new approach building on previous scholarship. Unfinished carving is a rich and varied category of material culture that can, and should, be regarded as a valuable and even crucial complement to completed pieces. This freshly conceived archaeology of Roman experiments, mistakes, and fragments helps shed new light on—and even resolve—long-standing debates concerning these renowned works. This article demonstrates that expanding the *chaîne opératoire* to include the unfinished can enrich our understanding of craft production in the Late Roman world.¹

INTRODUCTION

Although often relegated to storage, fragments of incomplete material objects have the potential to expand our understanding of lost production processes. The manufacture of openwork vessels (that is, pieces that have been extensively carved from a thick blank into a two-layered vessel), for example, was the subject of centuries of debate (figs. 1, 2).² General consensus has only recently been achieved, however, largely by examining remnants of broken carving and vessels that were never completed. Together, these types of evidence offer a view of carving normally concealed. Despite the crucial

¹ Work on this article was supported by a 2020 Washington State University Research Fellowship and 2021 National Endowment for the Humanities Summer Stipend. Thank you to Ralf Grüßinger of the Römisch-Germanisches Museum in Cologne, Beáta Kulcsár of the Hungarian National Museum in Budapest, Irini Papageorgiou of the Benaki Museum in Athens, Frank Unruh of the Rheinisches Landesmuseum Trier, Julie Zeffel at the Metropolitan Museum of Art in New York, and to the Centre de Restauration et d'Études Archéologiques Municipale (CREAM) in Vienne. I am especially grateful to the Editors-in-Chief Emma Blake and Robert Schon, to Anne Duray, and to the *AJA* anonymous reviewers for their perceptive comments. I also wish to thank Royce Grubic, Constanze Höpken, Janet Duncan Jones, Dan Manwaring, Michael Sugerman, and Michael F. Thomas. The appendix is available online at <https://doi.org/10.1086/722079>.

² Meredith 2015, cat. nos. 27, 36. On the use of this technique to carve vessels made entirely of glass, precious stone, or a combination of metal and glass: Meredith 2015; see also Meredith 2009.