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## ANCIENT GLASS

This book is an interdisciplinary exploration of archaeological glass in which technological, historical, geological, chemical and cultural aspects of the study of ancient glass are combined. The book examines why and how this unique material was invented some 4,500 years ago and considers the ritual, social, economic and political contexts of its development. The book also provides an in-depth consideration of glass as a material, the raw materials used to make it and its wide range of chemical compositions in both the East and the West from its invention to the seventeenth century A.D. Julian Henderson focuses on three contrasting archaeological and scientific case studies: late Bronze Age glass, late Hellenistic–early Roman glass and Islamic glass in the Middle East. He considers in detail the provenances of ancient glass using scientific techniques and discusses a range of vessels and their uses in ancient societies.

Julian Henderson is Chair of Archaeological Science in the Department of Archaeology at the University of Nottingham. The author of *The Science and Archaeology of Materials*, he has published more than 200 contributions to books and journals, including in *Antiquity*, *Journal of Archaeological Science*, *Journal of Glass Studies* and *Journal of Analytical Atomic Spectroscopy*.

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**Julian Henderson**

*University of Nottingham*



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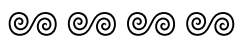
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978-1-107-00673-7 - Ancient Glass: An Interdisciplinary Exploration

Julian Henderson

Frontmatter

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## PREFACE

This book provides an integrated interdisciplinary approach to the study of a complex and fascinating ancient material. A variety of aspects of ancient glass are discussed, including principally archaeology, history, chemical analysis, materials science, geology and botany. The aim of this book is to explore these aspects by using a combination of focused studies and case studies in various ancient and historical periods. Each case study – in Bronze Age Mesopotamia, the late Hellenistic–early Roman Middle East, and the Islamic world – has been selected to incorporate contrasting social, political, economic and ritual contexts in which glass was manufactured, traded and used. The contrasting characteristics of these societies therefore influenced the ways in which glass was manufactured and used by them. There are complex relationships between the production, trade and use of ancient materials, including glass. The scale of production, involving a range of facilities and critical combinations of raw materials from a variety of sources, was characteristic of specific societies and their ideologies. Each step in the *chaîne opératoire* involved decisions, each with a social impact and significance leading to the manufacture of glass artefacts characteristic of that society. The control over each aspect of production was a reflection of the degree of social hierarchy (perhaps involving social elites) and complexity at the time.

The use of a combination of established and new scientific techniques to examine glass is increasingly providing more precise answers to questions about glass technology, provenance and trade and therefore its place in ancient societies. The results of such scientific projects are described here.

The first four chapters of this book provide an essential background for understanding the case studies. These are a definition of glass as a material (Chapter 1), the definition and sources of glass raw materials (Chapters 2 and 3)

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and a review of ancient glass chemical compositions found in a range of countries in the Eastern and Western Hemispheres. The three case studies (Chapters 5–10) have two chapters, each consisting of the archaeological background and scientific investigations. Another chapter (Chapter 11) brings together many of the issues dealt with in previous chapters. It focuses on the question of whether glass can be provenanced using a range of techniques; the provenance of glass impinges on a range of research questions. The issue of glass provenance considered here was partly inspired by archaeological and scientific investigations at al-Raqqa, Syria, which was funded with a substantial grant from the UK Arts and Humanities Research Council: the Raqqa (Syria) ancient industry project. The discovery and excavation of glass and pottery production on a large scale in an urban context led to a variety of archaeological, cultural and scientific questions, including those relating to provenance. I am grateful to the Director General of Antiquities of Syria and to his staff in Damascus and al-Raqqa, especially Dr Michel Maqdissi and Murhaf al-Halaf.

The writing of this book occurred over several years during which a range of important studies have been published. I have tried to make it as up to date as possible, but inevitably I have not been able to reference all of the most recent publications. The bulk of the time during which it was written was funded by the British Academy in the form of a Research Readership. I am extremely grateful to the British Academy for this funding and for other associated grants from them.

Overall, it is hoped that this book will fill a niche in the literature by considering ancient glass in a fully integrated interdisciplinary fashion, producing an enriched and enriching result.

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