Exploring Prehistoric Pottery in Japan

Exploring Prehistoric Pottery in Japan

A Study of Organic Inclusions, Adhering Materials, and Impressions of Woven Items

Edited by
Hiroki Obata

Archaeopress Archaeology

Archaeopress Publishing Ltd
13-14 Market Square
Bicester
Oxfordshire OX26 6AD
United Kingdom

www.archaeopress.com

ISBN 978-1-80583-344-4
ISBN 978-1-80583-345-1 (e-Pdf)

Cover: Pottery with cord marks from a Jōmon site placed on a mat.

This book is available direct from Archaeopress or from our website www.archaeopress.com

Contents

Chapter 3: Macrobotanical Remains on and Inside Pottery Fabrics and Their Uses

Chapter 4: Various Impressions Found on Pottery

Chapter 5: A Comprehensive Analytical Approach to Prehistoric Pottery

List of Figures and Tables

Prehistoric pottery in the Japanese archipelago and its dating: The beginning of pottery and paddy-rice farming

Pottery and the spread of agriculture in Japan

The emergence of cultivated plants in Japan: Seed impressions and carbonised seeds

Vegetal-tempered pottery in the Jōmon Period – Eastern Japan

Vegetal-tempered Pottery in the Jōmon Period -Western Japan

Vegetal-tempered pottery of the world

Plant temper identification methods

Examination of vegetal temper through phytolith analysis

Identification of plant materials tempered in Jōmon pottery

Identification of woven baskets, mats and cords

Woven items as pottery impressions

Identification of materials adhering to pottery surfaces

Fishing nets in Jōmon Pottery

Detected seed impressions on pottery and their significance

Various insect impressions

'Hidden' shell middens and discoveries from shell impressions on pottery

Proposal for 'a pottery-impression house pestology': Reconstructing prehistoric life and food from insect impressions

Artificial intelligence and pottery studies: Advancing classification approaches

Pottery studies and comprehensive analytical approach

Conclusion

Acknowledgments

This book is based on the results of research conducted by the research project supported by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) in Japan, Grant-in-Aid for Transformative Research Areas (A), 'Excavating earthenware: Technology development-type research for construction of 22nd century archaeological study and social implementation' (Area Number: 20A102) and, JSPS, Grant-in-Aid for Scientific Research (A) 'Elucidation of the history of plant use using charcoal embedded in pottery and research on the spread of X-ray CT for the DX era' (Project Number: 24H00107) led by representative Hiroki Obata, editor of this book. The research project was supported by the significant contributions and cooperation of archaeological institutions in Japan and around the world, in which the surveys were conducted. The publication of this book was also made possible by the generous cooperation and efforts of Mike Schurer, the book's editor, and the rest of the Archaeopress team. Above all, we would like to express our sincere gratitude to Archaeopress for understanding the value of this innovative yet emergent research method and for deciding to publish the results. Finally, we would like to thank Editage (www.editage.com) for their English writing and proofreading. We would also like to note and express our appreciation to Shuichi Noshiro, one of the project members, for improving our English papers.

Preface

Hiroki Obata

In prehistoric archaeology, pottery or earthenware functioned as a measuring tool of human time-space. In Japan, numerous rescue excavations by administrative bodies are undertaken before development projects and pottery analysis plays a significant role in building a chronological framework through the entire archipelago. A drastic decrease in rescue surveys in Japan in the last two decades, however, has terminated that process of numerous rescue excavations and their reports.

In this situation of a decreasing number of excavations, a new field arose in Japanese archaeology – the study of information 'buried' within pottery clay, such as seeds and insects closely linked to human activities. By combining X-ray analysis with AI technology, previously invisible organic materials buried in earthenware came to be visualised, and this flowered into cooperative studies with related fields of natural science, i.e. botany, entomology, agriculture, pharmacy, and chemistry. With this technology we can also extract information about the history of plant cultivation and its impact on human life (agriculturalisation and sedentarisation).

The research proposal presented in this study is based on the research project 'Excavating Pottery: Technology Development Research for the Establishment and Social Implementation of 22nd-Century Archaeological Research' (Grant-in-Aid for Scientific Research, Innovative Research Area A [Project Number: 20A102]), which began in 2020 and concluded at the end of the fiscal year 2024. In this project, we advocate Earthenware Comprehensive Analysis to reconstruct society, subsistence, and spirituality in higher resolution than previous studies by developing the analytical methods and demonstrating their effectiveness. We hope that this research, with its innovative approach, will serve as a model to enhance archaeology/anthropology in countries where pottery has been used as a proxy for dating or in spatial studies, as in Japan's past archaeological studies. This research proposal is a pioneering initiative with a global interest, and besides the methods developed during this project, we plan both to develop new techniques to re-evaluate existing archaeological materials using various methods of advanced science and technology, and to establish a 22nd-century study of archaeological resources. We also plan to transform the society surrounding science and archaeology. This book introduces new results obtained from these practical studies and includes innovative results that cannot be revealed via traditional methods of Japanese archaeology.