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CERAMICS, CUISINE AND CULTURE:
THE ARCHAEOLOGY AND SCIENCE OF
KITCHEN POTTERY IN THE ANCIENT
MEDITERRANEAN WORLD

edited by

Michela Spataro and Alexandra Villing

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Front cover: above, *J. Morrison producing LM I cooking pot replicas using a potting technique called "coil and wheel fashioning", photograph S. Johnson; below, cooking and stew pots (chytrai and lopades) from Classical Greece (from left, British Museum GR 1864,1007.1937, GR 1964,1007.336, GR 1864,1007.1802, GR 1999,0928.1), photograph © The Trustees of the British Museum.*

Back cover: from top, *micrograph of a thin section of an Archaic cooking pot from Miletos (German excavation inv. Z92.132.4), photograph M. Spataro; Classical Greek terracotta figure of a monkey with mortar and pestle (Tübingen, Museum Schloß Hohentübingen/Antikensammlung, inv. 5703), photograph © Museum Schloß Hohentübingen/Antikensammlung; Early Archaic Aeginetan chytra from Aegina-Kolonna, photograph G. Klebinder-Gauss; terracotta figurine, cook blowing onto embers below a cooking pot on three supports, Phoenician (?), 7th-6th century BC (Paris, Musée du Louvre AO 29576), photograph © RMN Grand Palais (Musée du Louvre)/Franck Raux.*

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PREFACE

This volume developed from the wide-ranging presentations and discussion during and after the conference “Ceramics, cuisine and culture: the archaeology and science of kitchen pottery in the ancient Mediterranean world”, held at the British Museum in December 2010 and organised jointly between the Museum’s Departments of Greece and Rome and Conservation and Scientific Research, in collaboration with the Leverhulme Trust funded ‘Tracing Networks’ Research Programme (Universities of Leicester, Exeter and Glasgow).

The idea of making this theme the topic of a conference germinated within a British Museum research project on ceramic grinding bowls from the eastern Mediterranean led by the two editors. It was in many ways a logical development of the close collaboration between archaeologists and scientists at the Museum, which highlighted the enormous potential of such interdisciplinary work. Most of all, however, it seemed timely. We realised that while the subject was only just beginning to attract attention in scholarship on the first millennium Aegean, elsewhere researchers were actively developing new approaches and investigating different types of kitchen pottery, notably from prehistoric and protohistoric assemblages in the European, Near Eastern and Mediterranean worlds. Coincidentally, food and cuisine was just beginning to crystallise as a key theme within the British Museum’s research programme for the next years.

The aims of the conference were to stimulate an interdisciplinary exchange of ideas and approaches to the study of kitchen pottery between archaeologists, material scientists, historians and ethnoarchaeologists and to set this vital but long-neglected category of evidence in its

wider social, political and economic contexts, so as to exploit it more effectively for understanding ancient societies. Out of this discourse the current volume arose, containing a cross-section of the ideas, approaches and research that were put to discussion in 2010, embedded in their wider epistemological framework by an introductory chapter, and rounded off by concluding reflections on a changing Aegean in the modern era. Rather than mere transcripts of original presentations, the chapters of this volume are the outcome of research transformed and informed by discussions and interactions which began at the conference. The topics they present were deliberately chosen for being more than just isolated case studies; they illustrate the range of approaches at our disposal today, often involving a collaboration between archaeology and science so as to address questions more in-depth.

We tried to structure the different topics discussed during the conference by grouping them under three main headings (see table of contents); of course, this is just one of a range of conceivable arrangements, as the topics are tightly interconnected and fluid, and as the *batterie de cuisine* reflects such a wide variety of interlinked aspects of ancient societies, from vernacular traditions, staple foods, and special *haute cuisine* dishes, to dynamics of change, new culinary identities, acculturation, colonialism, and trade. The individual chapters aim to capture this richness and harness the material’s heuristic potential. A range of social, economic and technological models are discussed on the basis of insights gained from the study of kitchen pottery production, use and evolution. Much discussion and work in the last decade has focussed on technical and social aspects of coarse ware and in particular kitchen

ware. The chapters in this volume contribute to this debate, moving kitchen pottery beyond the Binfordian 'technomic' category and embracing a wider view, linking processualism, ceramic-ecology, behavioural schools, and ethnoarchaeology to research on historical developments and cultural transformations covering a broad geographical area of the Mediterranean region and spanning a long chronological sequence.

The conference would not have been possible without the active support of the Keepers of our respective departments at the British Museum, Lesley Fitton in the Department of Greece and Rome, and David Saunders in the Department of Conservation and Scientific Research, as well as the collaboration of Lin Foxhall and her staff at the 'Tracing Networks' Research Programme at the University of Leicester. We gratefully acknowledge the financial assistance of the Institute of Classical Studies, London in the conference organisation and of the British Museum's Scholarly Publications Fund in the volume's production. Invaluable support was rendered by Catherine Higgitt, Trevor Coughlan, Nigel Meeks and numerous others both within the British Museum and beyond, who generously gave their time and skills to ensure the success and smooth running of the conference. Many colleagues

were instrumental to the intellectual and physical production of this volume: Vanessa Baldwin, Lesley Bushnell, Claudio Capelli, Lindy Crewe, Maria Effinger, Ian Freestone, Andrew Gardner, J. D. Hill, Elena Isayev, Carolyn Jones, Alan Johnston, Thomas Kiely, Alexander Livingstone Smith, Colin Macdonald, Aurélia Masson-Berghoff, John Meadows, Nigel Meeks, Corinna Riva, Ross Thomas, Andrew Shapland, Valerie Steele, Ben Stern, Ole Stilborg, Michael Tite and Roberta Tomber. The British School at Athens and the Athenian Ashram provided inspirational surroundings for research. Special thanks are due to Julie Gardiner, Julie Blackmore and Sarah Ommannney at Oxbow for expertly seeing the volume through to publication, and to Pam Scholefield for producing the index. Above all, however, thanks are due to the authors of the present volume and to the conference participants who – by presenting papers or posters and stimulating contributions to the discussion – provided the invaluable mix of ingredients for the preparation of the ποικιλία presented in the present volume.

Abbreviations of ancient authors follow *The Oxford Classical Dictionary* (ed. S. Hornblower, A. Spawforth and E. Eidinow, 4th edn Oxford, Oxford University Press, 2012).

London, April 2015
Michela Spataro and Alexandra Villing

AEGINA: AN IMPORTANT CENTRE OF PRODUCTION OF COOKING POTTERY FROM THE PREHISTORIC TO THE HISTORIC ERA

Walter Gauss, Gudrun Klebinder-Gauss, Evangelia Kiriati, Areti Pentedeka and Myrto Georgakopoulou

Introduction

Archaeological research on the island of Aegina and beyond during the last decades has clearly shown that Aegina was a major centre for the production, as well as the distribution, of a variety of ceramic vessels from the prehistoric to the historic era. Our contribution aims to highlight its importance as a production centre of cooking wares, firstly in the Early, Middle and Late Bronze Age and secondly during Archaic to Late Classical times.¹

Aeginetan cooking ware production in prehistoric times

Aegina was one of the major centres in the Bronze Age Aegean region. Its importance was, in part, due to its geographical position in the centre of the Saronic Gulf, at the crossroads of important routes between central mainland Greece, the northeast Peloponnese, the Cyclades and Crete. The site of Kolonna, the main settlement known on the island, thrived for almost a millennium, from the advanced Early Bronze Age (c. 2250–2100/2050 BC)² at least to the Shaft Grave period in the early Late Bronze Age (c. 1635/1600–1480/1470 BC). The regional importance of the site is illustrated by its impressive fortifications and wealth of material remains.³

During this period, two main fabric types were in use in the local ceramic industry; the first (“Macroscopic Group 1” and “Fabric Group 1”) (Gauss and Kiriati 2011, 47–49; 93–99), being coarse, red-firing and non-calcareous, was associated originally with table wares and subsequently predominantly with cooking wares (Fig. 6.1a),⁴ whereas the second (“Macroscopic Group 2” and “Fabric Group 2”), being fine to medium-coarse, buff- to orange-firing and calcareous, was used exclusively for table wares and storage vessels, usually patterned or solidly painted (Gauss and Kiriati 2011, 49–50; Kiriati *et al.* 2011, 99–104).

Macroscopic Group 1 comprised hand-made pottery with a usually unpainted surface, unburnished, burnished or polished, of dark grey, black or brown appearance.⁵ Shiny golden (mica) inclusions up to 2 mm in size and black shiny together with sparkling ones of indistinguishable colour, comprise the most diagnostic features visible on the surface in hand specimens.⁶ A fresh break shows mainly shiny black, matt chalky white and small sparkling inclusions of indistinguishable colour.⁷ The fabric is coarse and relatively porous with a non-calcareous clay matrix, containing predominantly fragments of local volcanic rocks mostly of andesitic composition. Petrographic and chemical analysis allowed a further subdivision of Fabric Group 1 on the basis of the different types of amphibole present (Kiriati *et al.* 2011, 93–99, 128–134).

The Early Bronze Age III (c. 2250–c. 2100/2050 BC)

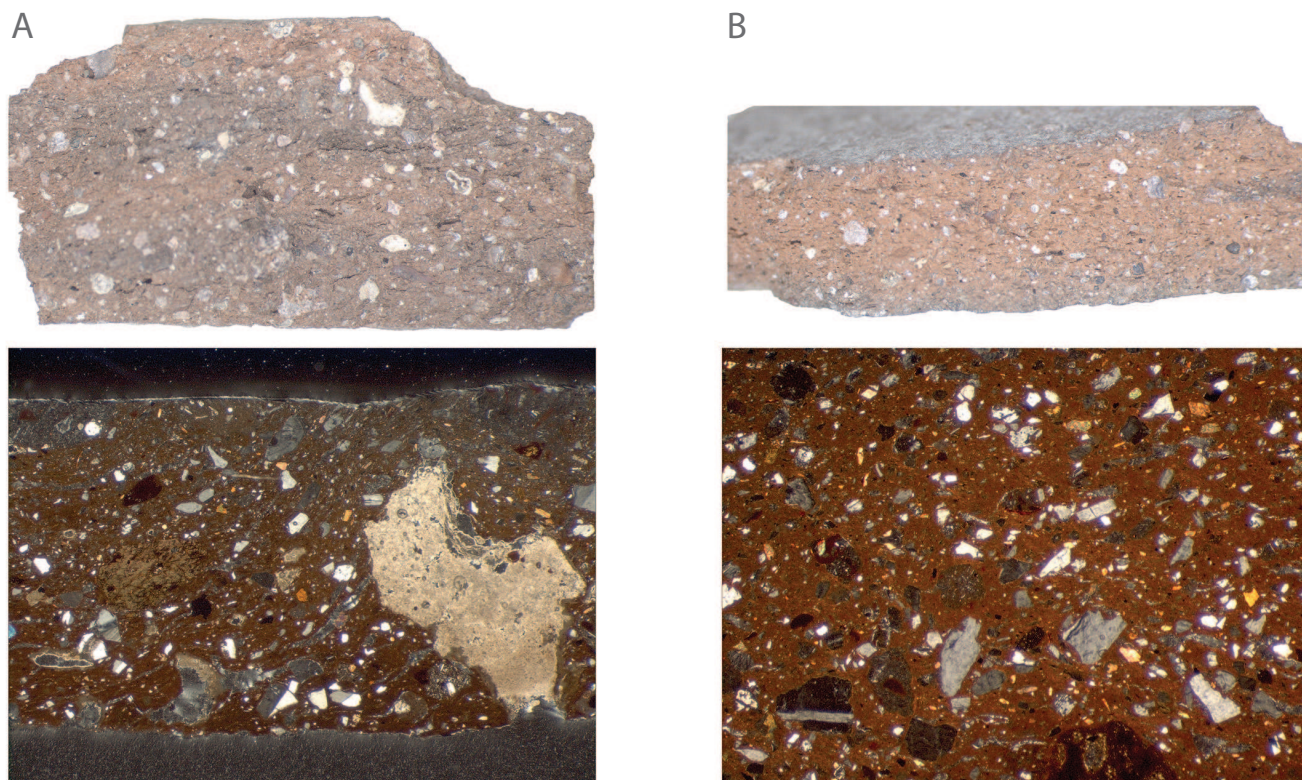


Figure 6.1. Close-ups of fresh breaks and thin sections of prehistoric and Classical Aeginetan cooking ware (XPL, field of view 5.9 mm). A: Middle Bronze Age wide-mouthed jar (Gauss and Kiriatzi 2011, 451 fig. 73 KOL 101). B: Late Classical *chytra* (Gauss and Kiriatzi 2011, 482 fig. 104 KOL 257). Photographs Fitch Laboratory British School at Athens and W. Gauss.

version of this fabric (Fabric Group 1B) contains mainly green amphibole. Outcrops of green amphibole-bearing volcanic rocks have a limited distribution on Aegina, lying mainly in the central western part of the island and around the Palaiochora area (Kiriatzi *et al.* 2011, 131–134; Gauss and Kiriatzi 2011, 249, 410 fig. 32). Interestingly, however, in Early Bronze Age III a small number of pots, particularly those associated with cooking, were made with the use of another version of Fabric Group 1 (Fabric Group 1A) containing brown amphibole. Outcrops of such volcanic rocks are located close to the coast south of Kolonna (Kiriatzi *et al.* 2011, 131–134; Gauss and Kiriatzi 2011, 249; 410 fig. 32). The use of this latter source dominated in the subsequent phases of the Middle and Late Bronze Age, thus marking a significant shift in the location of the raw material sources and possibly of the production units themselves (Gauss and Kiriatzi 2011, 249).

In Early Bronze Age III, about 2250–2100/2050 BC, almost all local pottery, except when patterned and solidly painted, was made of Fabric Group 1. The most common open and closed shapes are shoulder-handled bowls⁸ and tankards⁹ (Fig. 6.2). The main cooking vessel is the wide-



Figure 6.2. Prehistoric tankard from Aegina-Kolonna. Photograph by W. Gauss.



Figure 6.3. Middle Bronze Age wide-mouthed jar from Kolonna. Photograph by W. Gauss.

mouthed jar,¹⁰ produced in various sizes and with various kinds of handle attachments. Most vessels are dark and fired in conditions not rich in oxygen and in relatively low temperatures (not exceeding 800–850°C) (Gauss and Kiriati 2011, 248). Regarding the surface treatment, interesting differences can be observed. Early Bronze Age III pottery of Fabric Group 1 is in general intensively burnished, except for the wide-mouthed cooking jars (Gauss and Smetana 2007, 455–456 with figs. 17–18). Here the interior and exterior sides of the rims are burnished, whereas the neck and shoulder zones as well as the lower parts of the body are only partly burnished or unburnished. The lower parts of the vessels are also often heavily burnt, as if they stood very close to or actually in the fire during cooking.

In the Middle Bronze Age, about 2000–1650 BC, pottery production on Aegina continues without a sharp break with the preceding period. Pottery of Fabric Group 1 is still hand-made and is almost exclusively used for household and cooking purposes. Recent analysis has shown that the cooking ware fabric (Macroscopic and Fabric Group 1) is now associated with volcanic rocks containing brown amphibole.¹¹

Wide-mouthed jars continue to be the most popular kitchen ware vessel. The shape is usually handleless and has an ovoid body, sometimes on a raised foot. The main difference compared with their Early Bronze Age predecessors is the absence of burnishing and we also note that fewer pots show traces of burning in the lower body zones. Two interesting phenomena in Aeginetan pottery production make their first appearance in the Middle Bronze Age: the wide-ranging export of pottery, and marking with pre-firing marks, so-called pot-marks.¹² The marks are of simple design, and are most commonly found in the shoulder zone, at the handle or on the base of cooking pots (Fig. 6.3 shows a Λ -shaped incision on the shoulder immediately below the rim).

At the end of the Middle Bronze Age and the beginning of the Late Bronze Age, Aeginetan pottery production reaches its peak.¹³ Numerous vessels of kitchen ware and fine ware are produced and exported, particularly to the immediately adjacent areas of the Saronic Gulf, the northeastern Peloponnese and Attica (Gauss and Kiriati 2011, 242–245, 250–254; Lindblom 2001, 112, 116, 130). The cooking pottery is hand-made and almost all complete vessels are pot-marked.¹⁴ The most popular Middle Bronze Age cooking pot, the wide-mouthed jar, continues to be produced (Fig. 6.3). The shape developed, as it now has a distinct ovoid body, sometimes on a raised foot. But from the beginning of the Late Bronze Age a new shape, the tripod with one or two handles, becomes very popular. Pot-marks are usually found at the handle or at the junction between foot and body. Tripods and wide-mouthed jars continued to be produced and exported to distant regions (as far north as Dimini) until the 12th century BC.¹⁵

The distribution of prehistoric Aeginetan pottery shows interesting patterns, particularly regarding the distribution of the two different fabric groups (Fig. 6.4).¹⁶ So far only a few Early Bronze Age III exports have been identified outside the island, and none was of the cooking ware fabric (Gauss and Kiriati 2011, 242). This situation changes in the Middle Bronze Age, when all types of Aeginetan pottery are found in quantity in the area of the Saronic Gulf and beyond, as shown in Fig. 6.4. In the first half of the second millennium BC Aegina emerges as an important economic and political centre, comparable only to those of Crete, playing an important role in central Aegean networks. Aeginetan pottery, including cooking pots, was obviously exported as a product in its own right, and not just for its contents. This situation changed after the early phases of the Late Bronze Age with the emergence of new administrative centres on the Greek mainland. The Aeginetan potting industry now seems to concentrate mainly on the production and export of cooking pots. The organisation of the potting industry on Aegina during the Mycenaean palatial period (1420/1410–1200/1190 BC) is

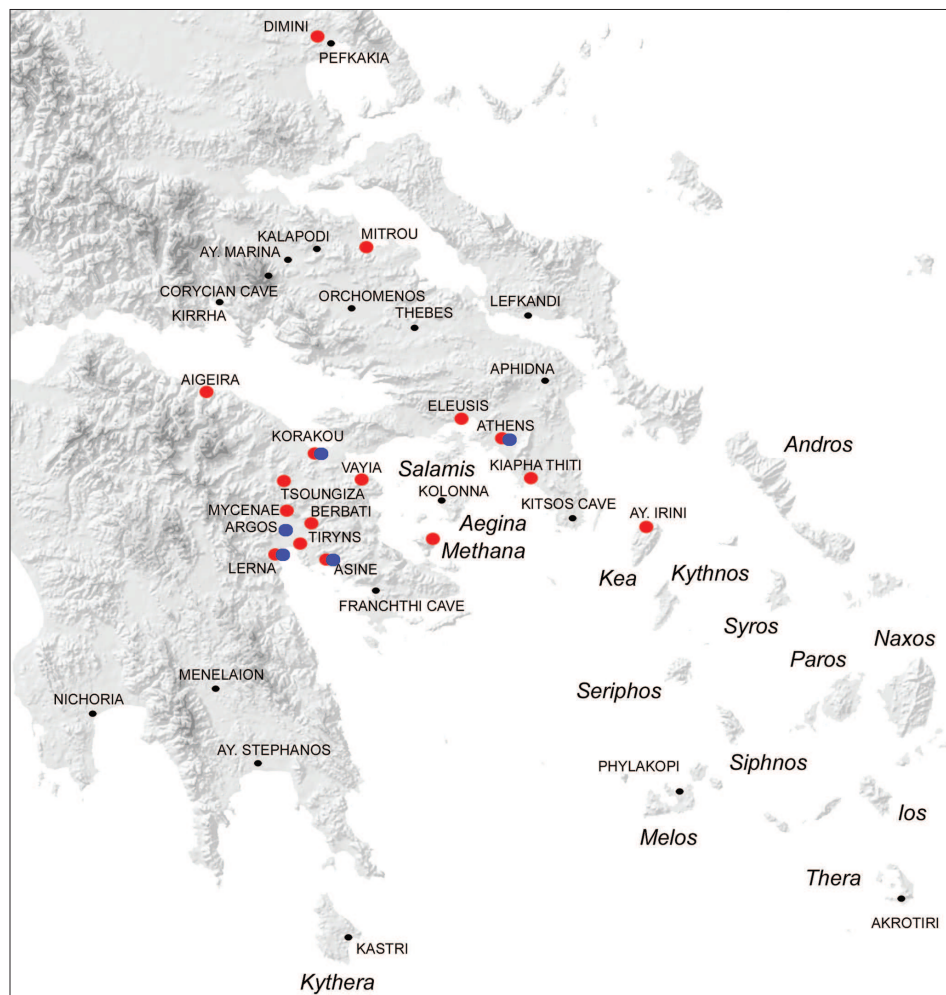


Figure 6.4. Distribution of Aeginetan cooking ware in the Bronze Age (blue MBA, red LBA) times. Image by W. Gauss based on map of Greece & Balkans © Anavasi and H. Birk.

not yet well understood and evidence is lacking for any association with (or even dependence on) the Mycenaean palatial centres of the Argolis (Mycenae, Tiryns and Midea). The export of Aeginetan cooking wares continued until the end of the so-called Mycenaean palatial system around 1200–1190 BC and even beyond, at least for a few decades, to the ceramic phase of Late Helladic IIIC Early. However, in the course of the 12th century BC Aeginetan exports and the production of cooking ware seem to cease, although the exact reasons for this are still unclear.

Aeginetan cooking ware production in historic times

In the Late Archaic and Classical periods Aegina evolved once more into an important production centre for pottery.

The numerous finds of cooking pots, pans and jars made of a red-brown coarse fabric in Kolonna and Aphaia have led, from the very beginning, to the assumption that local pottery production existed on Aegina (e.g. H. Thiersch in Furtwängler 1906, 441; Jennings 1990, 66–69; Hiller 2000, 467; Kerschner 2001, 89). This assumption is also supported by ancient written sources mentioning local clay vessels, “χυτρίδων ἐπιχωρίων” (Hdt. 5.88.2) and referring to Aegina as “pot seller”, “χυτρόπωλιν” (Pollux 7.197. Hesychios, η 1025).¹⁷ In spite of the presumed importance of the Archaic and Classical Aeginetan cooking ware production, detailed research on this subject has so far been lacking. Our recent studies on the pottery from Kolonna have provided for the first time a comprehensive picture of the range of shapes and the technical characteristics of the contemporary Aeginetan cooking wares.¹⁸

The Archaic-Classical Aeginetan cooking ware fabric is



Figure 6.5. Early Archaic Aeginetan common-type *chytra* from Aegina-Kolonna. Photograph by G. Klebinder-Gauss.

of a red-brown colour, coarse-grained and tempered with volcanic rock fragments (Fig. 6.1b).¹⁹ It was in use without major changes or shape-specific variations throughout the Archaic and Classical periods. Interestingly, this fabric is compositionally very similar to the one used in the Middle and Late Bronze Age (“Macroscopic Group 1” and “Fabric Group 1”; Fig. 6.1a), with only minor differences, indicating the use of the same raw material sources with slightly different clay recipes.

The earliest evidence so far for the use of this local cooking ware fabric in the historic era dates to the first half of the 7th century BC. It concerns round-bottomed *chytrai* (Fig. 6.5), still hand-made and already showing the burnishing of the surface that is very characteristic of Aeginetan cooking wares.²⁰ As yet, we lack any evidence from the immediately preceding centuries indicating an even earlier resumption of Aeginetan cooking ware production (or even continuity from the Late Bronze Age), but this absence may be due to the lack of good stratigraphic contexts from this period at Kolonna.²¹ It is, however, hardly imaginable that the possible advantages of the raw materials available on Aegina for the production of cooking ware – discussed below – would not have been known in the Geometric period. Future research will hopefully help to close the gap between the Late Bronze Age and the Early Archaic cooking ware production.²²

According to our present state of knowledge, the heyday



Figure 6.6. Aeginetan common-type *chytra* from Aegina-Kolonna, context c. 480–470 BC. Photograph by G. Klebinder-Gauss.

of the Aeginetan cooking ware production was in the Late Archaic period and in the first three-quarters of the 5th century BC. During this period, productivity increased dramatically, the manufacturing techniques – discussed below – were enhanced and the range of shapes was considerably enlarged. Besides one-handed common-type *chytrai* (Figs. 6.5–6.6; cf. also Rotroff this volume, Fig. 16.5 left), other cooking pots such as lidded *chytrai* (Fig. 6.7) and *lopades*, or cooking devices for roasting and baking such as pans, braziers (Fig. 6.8), sieves, griddles and ovens were now also produced on Aegina.²³ It seems to have been Aeginetan workshops that introduced shapes such as the lidded *chytra*, *lopas* and brazier to the regions adjacent to the Saronic Gulf, as they make their first appearance here in the Aeginetan fabric.²⁴ But vessels that were not specifically intended for heating, such as water containers, bowls or storage bins, were also made of the same fabric. Other fabrics hardly occur in the Aeginetan pottery production of this period. The buff Aeginetan clays that immediately recall popular local products of the prehistoric and modern period seem to have been known, but rarely used.²⁵

Towards the end of the third quarter of the 5th century BC a massive decline of the Aeginetan cooking pottery production and its export can be observed. This is probably connected with the increasing decline of Aeginetan trade power after the occupation of the island by the Athenians in 456 BC, and especially with the expulsion of the local population in 431 BC.²⁶ The latter event most likely also caused the departure of the local potters and thereby brought the cooking ware production on Aegina to a temporary end. At the very end of the 5th century BC some of the exiles returned,²⁷ and also the production of cooking ware was at some point resumed, as is well proven by a



Figure 6.7. Aeginetan lidded *chytra* from the Athenian Agora (P 5184), context c. 470–460 BC. Photograph American School of Classical Studies at Athens: Agora Excavations.

waster²⁸ from the second half of the 4th century BC, but it never again reached the status of past ages.

Consumption of Archaic and Classical Aeginetan cooking ware: a matter of quality?

The specific quality and appearance of the Aeginetan cooking ware is the result of several characteristic production techniques. These include the use of the wheel since the 6th century BC, also for round-bottomed shapes (Fig. 6.9; cf. also Rotroff this volume, Fig. 16.5 left).²⁹ Another specific feature is the scraping of the lower body's interior with a flexible small strip of wood or a similar tool, leaving angular impressions and irregularly overlapping stripes of parallel striations (Fig. 6.10).³⁰ For better accessibility of the interior, these vessels were usually made in two separate steps, with the shoulder and neck added to the body only after its interior surface had been smoothed by scraping. The exterior surface is carefully wet-smoothed and burnished, creating regular shiny stream marks (Figs. 6.5–6.6); only from the later 5th century BC onward is burnishing increasingly replaced by a cover of thin reddish wash. The appearance of burnishing marks and wash also on the (usually not visible) underside suggests that these were not simply decoration patterns, but had a certain functional purpose. All these techniques must have helped to make the wall thinner and more even and the surface smoother and denser, probably in order to improve the utilitarian performance characteristics of the cooking vessels (on which more below).³¹

Unfortunately so far we do not know enough about



Figure 6.8. Aeginetan brazier from the Athenian Agora (P 21956), context c. 460–440 BC. Photograph American School of Classical Studies at Athens: Agora Excavations.

the organisation and the location of the Archaic-Classical Aeginetan cooking ware production. However, the varied range of shapes and the high degree of standardisation in fabric and manufacturing techniques, as well as the large number of finds, also outside of the island, indicate a specialised production for local supply as well as for export.³²

The wide distribution of Aeginetan cooking ware vessels outside of the island during the 6th and 5th centuries BC is interesting not only in regard to the trade in coarse ware pottery in general, but also with relation to the island's economy. So far Aeginetan imports have been identified not only in the wider surrounding of Aegina, as e.g. in Attica³³ and Corinth,³⁴ but also in Crete,³⁵ in the North-African Cyrenaica,³⁶ in the Pontos region,³⁷ in southern Italy³⁸ and as far west as the Mediterranean coast of France.³⁹ Such a wide distribution, often over long periods, can hardly be explained along the lines of the model “cooking pots = people”; rather, we must be dealing with trade and continuous exchange. The distribution of Aeginetan cooking ware matches quite well the network of the Aeginetan fleet, which maintained trade connections with all these regions and places: as we can conclude from various sources, Aegina emerged from the 7th into the 6th and 5th centuries BC as one of the important trade centres in mainland Greece with far-reaching contacts within the Saronic Gulf and beyond.⁴⁰ As the island is too small to have sufficient resources for a substantial production of export items other than pottery, it is generally assumed that the Aeginetan ships transported mainly foreign goods, such as grain, metals and slaves (e.g. Figueira 1981, 192, 231–236; Hiller 2000, 467). Cooking ware is thus one of the island's few local products and the name of Aegina as “pot seller” may therefore primarily refer to that.

The fact that long-term and far-reaching export patterns of Aeginetan cooking ware existed indicates that the latter was particularly appreciated. This is quite well demonstrated by the example of Athens, which for more than two centuries far preferred Aeginetan fire-resistant cooking vessels to its own products.⁴¹ Nevertheless, it



Figure 6.9. Interior of a Classical Aeginetan cooking ware *chytra* with wheel marks. Photograph by G. Klebinder-Gauss.

still remains difficult to pinpoint precisely what made the Aeginetan cooking pottery so attractive for the many consumers around the Mediterranean and beyond. Interestingly, only vessels for use over the fire were exported from Aegina, whereas jars and amphoriskoi of the same fabric have so far not been found beyond the island. One might, therefore, conclude that the Aeginetan cooking ware fabric was recognised as superior in withstanding thermal shock and in conducting heat more effectively. These two demands are certainly among the most important ones that a good cooking pot had to meet in order to become popular with consumers – especially a cooking pot chosen by consumers in distant places who often had no particular affiliation with Aegina and its wares in terms of social or cultural relationships.⁴² The Aeginetan cooking ware certainly fulfils some of the physical criteria that are generally thought to be advantageous for an efficient cooking pot.⁴³ Tempering with substantial quantities of inclusions is thought to be important in order to avoid micro-crack propagation and increase toughness, while platy inclusions provide strength – both are present in Aeginetan cooking ware. Volcanic inclusions, also abundant in the Aeginetan fabric, are frequently found in cooking ware fabrics, although their specific advantages are still unclear.⁴⁴ Surface finishing, such as burnishing, has been shown to reduce permeability, thereby improving heating effectiveness and avoiding the intrusion of flavours into the vessel wall. Thin, even walls and round-bodied shapes, characteristic of Archaic and Classical Aeginetan *chytrai* and *lopades*, are supposed to have a positive effect on even and effective heating, thereby avoiding large temperature



Figure 6.10. Interior of a Classical Aeginetan cooking ware jug with scraping marks. Photograph by G. Klebinder-Gauss.

differences within the wall that might cause damage. However, the particular advantages of these respective mechanical properties and their specific interaction within the Aeginetan cooking ware require further research.

Besides potential technical advantages, consumers abroad might also have been attracted by other attributes of the Aeginetan cooking ware, such as the wide range of shapes, some of which may have facilitated cooking, or introduced new ways of cooking. Particular tactile and visual qualities of the soapy-smooth and lustrous surface of the Aeginetan cooking pots might also have appealed to consumers. Another precondition of popularity, that of ready availability, is especially well fulfilled in the case of the Aeginetan cooking ware: the intensive trading activities and the extended trade network of the Aeginetan fleet guaranteed the constant availability of Aeginetan cooking ware even in distant places.

Summary

Our research has been able to clearly define the cooking ware fabrics and manufacturing techniques used on Aegina in the Bronze Age and the Archaic-Classical period. The Aeginetan cooking ware fabric is tempered with local volcanic rock, mainly of andesitic composition, and the visibility of gold-mica and black shiny inclusions at the surface is one of its characteristic features. The close similarity of the prehistoric and the Archaic-Classical fabrics, as clearly revealed by petrographic and chemical analysis, suggests that similar types of raw materials – or even the same sources – had been used for a very long time, from the end of the 3rd millennium to at least the end of the 4th century BC.

In both periods the wide distribution of Aeginetan

cooking ware pottery is remarkable. The long tradition of export suggests a particular appreciation of Aeginetan cooking pots on the part of consumers in many areas of the ancient Mediterranean that was probably related primarily to their (actual and perceived) technological and functional qualities. In both cases the distribution seems to be connected with the far-reaching Aeginetan trade network. Pottery was surely not the foundation of the Aeginetan trade, but this network formed the basis for the constant availability of Aeginetan cooking ware; and the Aeginetans, as clever merchants, obviously understood well how to commercialise their undoubtedly much-appreciated cooking pots. Hence the study of Aeginetan cooking ware can contribute not only to our knowledge of the Aeginetan economy, but also to the general discussion of trade in coarse ware. Further studies will hopefully enlarge our understanding of the specific qualities of Aeginetan cooking pottery and its distribution beyond the island.

Notes

- 1 The results presented here are the product of a long and intensive collaboration between the Fitch Laboratory of the British School at Athens and the Austrian excavations at Aegina-Kolonna; see Gauss and Kiriati 2011 and Klebinder-Gauss 2012.
- 2 Regarding absolute dates for the Aegean Bronze Age see in particular Manning 2010; on Aegina-Kolonna see Wild *et al.* 2010.
- 3 Regarding the importance of Aegina see the recent summaries by Rutter 1993, 775–781; Gauss 2010; see also Gauss and Kiriati 2011, 19–21, 380 fig. 2.
- 4 Gauss and Kiriati 2011, 47–49; 93–99; see also I. Whitbread in the present volume, who also discusses Aegina amongst other cooking ware production centres in the Aegean.
- 5 On the method of the macroscopic description see Gauss and Kiriati 2011, 42–47. Regarding Macroscopic Group 1 see Gauss and Kiriati 2011, 170–172 (EBA III, unpainted and burnished); 172–173 (EBA III, unpainted and unburnished); 217–218 (MBA, unpainted and unburnished).
- 6 Gauss and Kiriati 2011, 49 table 13 (inclusions visible on surface).
- 7 Gauss and Kiriati 2011, 49 table 13 (inclusions visible in the fresh break).
- 8 On the range of variations of shoulder-handled bowls see in particular Rutter 1995, 354–376.
- 9 On the range of variations of tankards see in particular Rutter 1995, 281–307.
- 10 On the range of variations of wide-mouthed jars see in particular Rutter 1995, 442–454.
- 11 Kiriati *et al.* 2011, 131–134 (FG 1A brown amphibole, FG 1B green amphibole); Gauss and Kiriati 2011, 249.
- 12 On pot-marks see in particular Lindblom 2001; on the distribution of Aeginetan pottery see Rutter 1993, 777 fig. 12; Lindblom 2001, 42–44, 100–110; and Gauss and Kiriati, 2011, 241–247.
- 13 See Lindblom 2001, 112–116; Gauss and Kiriati 2011, 242–254; as well as Whitbread in the present volume.
- 14 The recent scientific analysis did not cover systematically the LBA pottery, as no appropriate pottery was available at the time of sampling. The characterisation of the LBA cooking ware fabric is the special focus of an INSTAP-funded research project by W. Gauss, E. Kiriati, M. Lindblom, B. Lis and J. Morrison.
- 15 See Gauss and Kiriati 2011, 178, 245–247 and nn. 968–973 on the distribution of Aeginetan cooking pots in the LBA (n. 966 referring to Dimini); see also Lis in the present volume, who discusses Aeginetan cooking pots found at Mitrou.
- 16 Regarding the distribution of Aeginetan pottery, see in particular Zerner 1986; Rutter 1993; Lindblom 2001; and the most recent summary by Gauss and Kiriati 2011, 241–247.
- 17 See Weilhartner 2012 with a summary and interpretation of the relevant sources. Weilhartner favours the reading *χυτρόπωλιν*, “pot-seller”, in contrast to the reading *χυτρόπολιν*, “town that produces cooking pots”, as sometimes found in recent studies; see also Weilhartner 2010, 91 no. 415, 270 no. 1200, 308 no. 1356 with a comprehensive list of these sources.
- 18 Klebinder-Gauss 2012, 89–90, 173–193 with contributions by Pentedeka *et al.* 2012, 106–115 and Weilhartner 2012. A first petrographic analysis was published by M. Farnsworth, who isolated among the cooking vessels from the Athenian Agora a characteristic fabric that she associated rightly with Aegina: Farnsworth 1964, 222–224, 226–227, nos. 2, 11, pls. 66, 67.
- 19 Klebinder-Gauss 2012, 89–90 “Macroscopic Group CMG 1” and Pentedeka *et al.* 2012, 106–115 “Red Fabric A and B”.
- 20 For this *chytra* see Klebinder-Gauss 2012, 173–174 no. 484, dated on stylistic grounds to the first half of the 7th century BC; see also *ibid.* no. 485 and Felten *et al.* 2007, 101 fig. 21 with more early examples. Other early Aeginetan *chytrai* were found in Athens, as *e.g.* examples from the Athenian Agora from the third (see Rotroff’s contribution in the present volume with n. 16) and fourth quarters of the 7th century BC (Brann 1962, 55 no. 210, pl. 11; for its Aeginetan origin see Klebinder-Gauss and Strack in prep.) and from a context dated to the 7th century BC in the Athenian Kerameikos (Kühler 1954, 256 inv. 355, pl. 155; for its Aeginetan origin see Klebinder-Gauss 2012, 182 with n. 807). For kind permission to see these pieces we thank J. Camp and the Agora Team as well as J. Stroszeck and the Kerameikos-Team.
- 21 On the lack of evidence in the Geometric period see Jarosch-Reinholdt 2009, 15.
- 22 See above note 15.
- 23 For the common-type *chytra* in Fig. 6.6 see Klebinder-Gauss 2012, 39–40, no. 50, pl. 5.75. For the lidded *chytra* in Fig. 6.7 see Sparkes and Talcott 1970, pl. 94, no. 1951; for the brazier in Fig. 6.8 see Sparkes and Talcott 1970, pl. 98, no. 2030; for the Aeginetan origin of these two examples see Klebinder-Gauss and Strack in prep. For further examples and for the development of the various shapes of Aeginetan cooking ware see Klebinder-Gauss 2012, 182–193.
- 24 Klebinder-Gauss 2012, 177; Klebinder-Gauss and Strack in prep. on the Aeginetan origin of the early examples of lidded *chytrai*, *lopades* and braziers from the Athenian Agora.
- 25 See Klebinder-Gauss 2012, 90–92 “Macroscopic Groups CMG2-4” and Pentedeka *et al.* 2012, 115–124 “Buff fabrics A and B”.
- 26 For these dramatic events in the Aeginetan history see Weilhartner 2008; for the strong impact of these developments on the Aeginetan cooking ware production see Klebinder-Gauss and Strack in press.
- 27 On the relevant written sources see Weilhartner 2010, 366.
- 28 Klebinder-Gauss 2012, 204–206 nos. 488–505.
- 29 For the small round-bottomed *chytra* in Fig. 6.9 see Klebinder-Gauss 2012, 71, no. 363, pls. 34, 100; see *ibid.* nos. 50, 51 for other small *chytrai* with regular wheel marks on the interior wall. In many cases, especially with larger vessels, wheel marks are visible only at the shoulder and neck, as the careful scraping of the interior surface has left no traces of other processes; a manufacture on the wheel also of the lower body can only be hypothesised. Continuous wheel marks can also be observed

on the whole interior wall of jars and amphoriskoi, when not smoothed by scraping. Regarding the use of the wheel in Aeginetan cooking ware production see Klebinder-Gauss 2012, 178–180 and Klebinder-Gauss and Strack in press; for the manufacture of round-bottomed vessels on the wheel see e.g. Rice 1987, 129, 132–133.

- 30 Our studies, however, did not provide evidence of a use of the “beater-and-anvil” method for the Aeginetan cooking ware, as was assumed by Farnsworth 1964, 225.
- 31 For the different techniques used with Aeginetan cooking ware, see Klebinder-Gauss 2012, 178–182 and Klebinder-Gauss and Strack in press; see also further below and note 43.
- 32 For questions of standardisation and specialisation see e.g. Rice 1991; Tite 1999, 191–194.
- 33 E.g. Athenian Agora: Farnsworth 1964, 222–225; Klebinder-Gauss and Strack in prep.; see above note 20 for some early Aeginetan imports at Athens. See also the contribution of Rotroff this volume on the high number of Aeginetan imports at the Athenian Agora during the 6th and 5th centuries BC. For a comprehensive analysis of the distribution of Aeginetan cooking ware beyond the island see Klebinder-Gauss 2012, 198.
- 34 E.g. Pease 1937, 304, 306 nos. 205, 212, 214, fig. 36. These pieces, which G. Klebinder-Gauss was able to see due to the kind help of G. Sanders and J. Tsounou-Herbst, are in our opinion Aeginetan.
- 35 For Aeginetan *chytrai* from Azoria see Haggis *et al.* 2011, 442 n. 26, 442, 447, 451, 454, 458, 460, 462, 466–447.
- 36 Tocra: e.g. Boardman and Hayes 1973, 58–61 nos. 2247–2252, fig. 24, pl. 31; Euesperides: e.g. Swift 2005.
- 37 For Histria see Alexandrescu 1978, 124 no. 816, pl. 71. We also would like to thank I. Bîrzescu for mentioning more examples from this site.
- 38 A. Quercia kindly called our attention to a presumably Aeginetan *chytra* from Incoronata: Orlandini and Castoldi 1997, 86 no. 15, figs 96, 256.
- 39 Lattara: Curé this volume, fig. 6.4; Curé 2010, 522 groupe 14, figs. 8.4; 11.24–26; 24.13–15. We would like to thank A. Curé for calling our attention to Aeginetan imports from this site.
- 40 See e.g. Figueira 1981, esp. 166–170, 264–283; Jennings 1990, esp. 5–33; Weilhartner 2008, 343–344; for the written sources on this subject see Weilhartner 2010, 384 s.v. “Wirtschaft und Handel”.
- 41 Klebinder-Gauss and Strack in press; see also Rotroff this volume.
- 42 For the various factors that might influence the production, use and import of certain cooking wares see e.g. I. Whitbread’s contribution in the present volume; on the influence of non-functional elements, such as social, ideological and cultural factors, on the production and consumption of pottery see also e.g. Rice 1987, 113; Loney 2000; Tite *et al.* 2001, 317, 322; Tite and Kilikoglou 2002, 4–5. A study on the consumption of Aeginetan versus Attic cooking ware is in preparation by Klebinder-Gauss and Strack; some of the following thoughts on the possible qualities of Aeginetan cooking ware are due to our discussions on this topic.
- 43 Characteristics of various materials and production techniques have been examined in laboratory analysis and ethnographic studies. For the thermal properties of different types of clay and temper, for the effects of smoothing, burnishing and wash, of thin walls and rounded shapes on the performance of cooking pots see e.g. Rice 1987, 227–240, 353–355, 367–369; Schiffer 1990, 377–379; Tite and Kilikoglou 2002, 1, 4; Tite *et al.* 2001; Pierce 2005; as well as the articles by Hein and Müller *et al.* in the present volume regarding heating efficiency; see also Whitbread’s contribution in the present volume on the various factors that can affect the thermal and physical properties of cooking ware, and on their interactions.

- 44 See Whitbread’s contribution in the present volume on tempering with volcanic material.

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