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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

FROM COOKING POTS TO CUISINE. LIMITATIONS AND PERSPECTIVES OF A CERAMIC-BASED APPROACH

Bartłomiej Lis

Introduction

It is a rather recent trend in ceramic studies to use an in-depth analysis of pottery to elaborate upon issues of social and political developments. Most notably, throughout the last decade the field of Aegean archaeology has been flooded with contributions utilising the concept of feasting in the interpretation of the archaeological record (*e.g.* Wright 2004; Hitchcock *et al.* 2008). Cooking pots were not excluded from this discussion, yet it would be an exaggeration to claim their study contributed a lot to the interpretation of the evidence, even though preparation and consumption of food is a fundamental constituent of many feasting events. Leaving the issue of feasting aside, I will try to present a few approaches to cooking pots, mostly deriving from my own research on material from the site of Mitrou (Central Greece),¹ and to show their perspectives and limitations. Naturally, the discussion offered here cannot exhaust the vast number of ways in which one can approach cooking pots.

Limitations

In accordance with the title of my contribution, I will discuss both the perspectives and limitations of ceramic analysis, beginning with the latter. The major limitation is the nature of archaeological contexts. We know all too well that ideal circumstances rarely occur and one would

wish that finds such as the house at Papadiokambos (Morrison *et al.* this volume), where we can look at the cuisine in a kind of freeze-frame, were the archaeological staple. More often, however, we are faced with only partially excavated contexts, mixed fills, or dumps. These circumstances impose serious limitations, which led me to turn my own study of Late Bronze Age cooking pots from Mitrou (Lis 2010; 2012a) into a more technological and less culinary one. Nevertheless, the archaeological context, while often limiting, is also our greatest perspective. The amount of information one can retrieve from both ideal and “imperfect” contexts is unlimited, and it is dependent mainly on one’s use of various methods and their combinations. What follows here is a discussion of various approaches to cooking pottery, grouped under common headings.

Morphology

Looking at the morphology of any vessel is the simplest way to disclose some of its functional properties. By analysing single forms, we can look at their features – such as spouts, legs, handles – and better understand how the cooking pots were used. General proportions can be meaningful as well. Wide mouths, for example, enable fast evaporation and easy access and are thus suitable for dishes requiring thickening of liquids and frequent stirring. It seems this was not desirable to Mycenaean cooks, since really wide

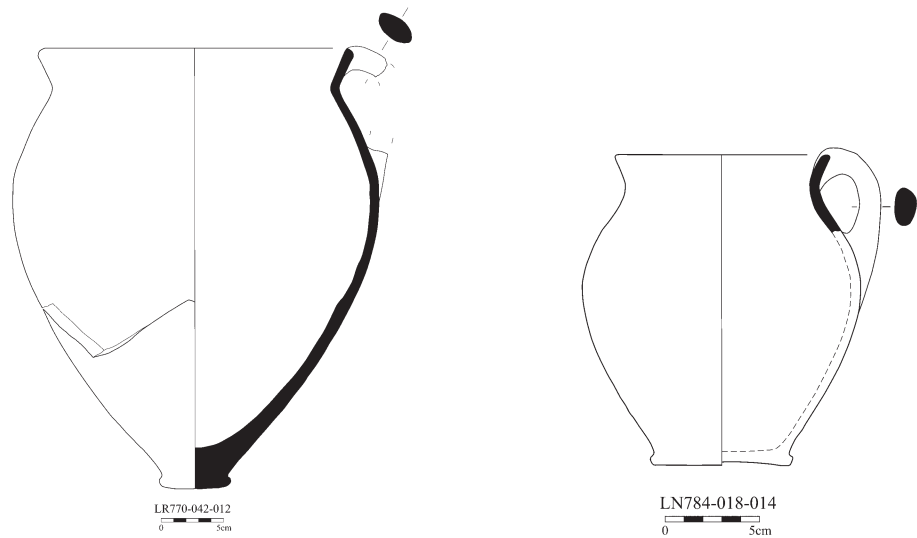


Figure 9.1. Stability of cooking pots: Early Mycenaean period (LR770-042-012, LH I-II) and Late Mycenaean period (LN784-018-014, LH III C). Drawing T. Ross, inking K. Górka.

mouths are rare. Shallow and wide-open shapes, like some of the tripod cooking pots or tripod trays, appear suitable for frying and frequent interference into the cooking process. Deep capacious shapes favour low evaporation, and seem to require a longer cooking process and liquid content, as stirring of thicker substances placed in such pots might be difficult.²

Considerations of a vessel's stability disclose a lot of data about how they were used for cooking. For example, many of the early Mycenaean cooking pots are not particularly stable and some would not even stand on their own. Their narrow but splaying bases seem to have acted as stabilisers only if the pot was submerged in embers (Fig. 9.1a). Also, sometimes the bases of otherwise only wiped cooking pots show a certain lustre. This unexpected feature was probably an effect of rotating the base against hot embers. Their conical lower bodies, as opposed to more baggy and globular shapes, might have come in quite handy when there was a need to add more coals around the pot for faster cooking. Nevertheless, control over temperature must have been limited with the use of such cooking pots. Later on, the centre of gravity of Mycenaean cooking pots moves down as their bases increase in size and the bodies become more globular (Fig. 9.1b). More need for stability was probably related to new ways of cooking and possibly a new arrangement of cooking installations, such as hearths. It seems that during this time pots were placed at the edge of hearths, and not directly in embers. This is confirmed by more localised burning marks, as examples from 12th-century BC Lefkandi illustrate (Fig. 9.2). One-handed cooking pots have their burning marks opposite the handle, the two-handed specimens between

the handles on both sides. Control over temperature was in this case much simpler as one could easily place the pot closer to or further from the fire.

Tripod cooking pots offer great stability without the need for a fixed hearth, as coals may be easily placed underneath the base. In this respect, it is interesting to invoke early examples of tripod cooking pots on the Greek mainland. Contrary to their counterparts (and possibly prototypes) from Crete, they are equipped with very short legs (Fig. 9.3). Thus, one of the main advantages of a tripod cooking pot, the opportunity to place coals underneath, is almost entirely wasted. This betrays two important characteristics of Mycenaean culinary practices. Firstly, they were willing to accept a novel form, although they continued to use it in the same way as they would use a standard flat-based pot. This attitude is additionally emphasised by the addition of a flat base to the tripod cooking pot, which is redundant and thermally less effective. Secondly, the more frequent use of tripod cooking pots confirms a growing concern with the stability of the pots, another sign of changed cooking practices discussed in the case of flat-based cooking pots. Both phenomena, the increased popularity of tripod cooking pots and the appearance of more stable jars, seem to overlap chronologically, although at sites like Mitrou, the first amassed appearance of tripod cooking pots seems to predate the popularity of more stable pots. With respect to the morphology of tripods, the late Mycenaean (from Late Helladic [hereafter LH] IIIA2 onwards) Aeginetan tripod cooking pots deserve to be mentioned.³ They were widely traded all over northeastern Peloponnese and central Greece and constitute one of the few Mycenaean tripods that take full advantage of the potential this form has to



Figure 9.2. Lefkandi one- (65-P89) and two-handled (65-P139) cooking pots showing localised burning marks. Photo B. Lis. Reproduced with the permission of the British School at Athens.

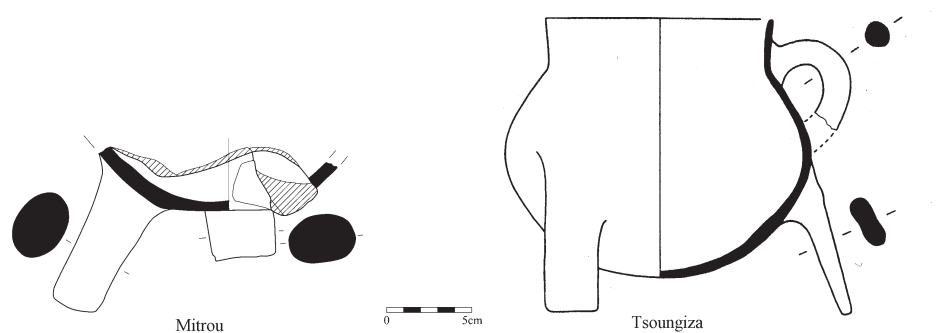


Figure 9.3. Examples of Mycenaean tripod cooking pots with only slightly raised bases, LH II Mitrou (LG790-027-011) and LH IIIB1 Tsoungiza (228-2-235). Fragment from Mitrou: drawing T. Ross, inking K. Górka. Cooking pot from Tsoungiza: after Thomas 2005, 522, fig. 31.1, reproduced courtesy of the Trustees of the American School of Classical Studies at Athens.

offer. Their legs are very sturdy and long in comparison to other contemporary tripod legs, often measuring more than 10 cm in length, thus providing a lot of space between the base and the ground.⁴ The bases of late Mycenaean Aeginetan tripod cooking pots were invariably rounded, which is particularly efficient in terms of thermal shock absorption and heat distribution.

Burning marks

The burning marks present on almost every cooking pot that was used on a regular basis give ceramicists an almost direct contact with the process of cooking and cuisine. Both

interior and exterior marks are important. The interior ones inform us not only about failures of ancient cooks, being traces of charred food, but they also indicate spots where the highest temperature was applied, which charred the organic matter that infiltrated the walls of the vessel. As the experiments of J. M. Skibo show, a black horizontal line that may be visible in the interior informs us about the level up to which the pot was filled with content (Skibo 1992, 149). Exterior marks, as already shown on cooking pots from Lefkandi, are most informative about the way of cooking and the relation of fire to the pot. Naturally, the better the pot is preserved, the more information one can retrieve from its burning marks. Single sherds are usually the least informative.



Figure 9.4. Brazier and dippers from Mitrou with burning marks. Drawing R. Doscsan and T. Ross, inking K. Górká, photos B. Lis.

Combined analysis of morphology and burning marks can provide great results and help to overcome preconceived interpretations. Studying one of the deposits from Mitrou, I was able to redefine previous functional ascriptions and identify two specialised pieces of kitchen equipment. First, a vessel initially described as a brazier (Fig. 9.4) was thought to be a utensil for carrying embers; however, both the burning marks and the vessel's morphology point to

an alternative use. The burning marks are more evident on the underside than on the interior, something not expected from a vessel used to carry coals. Those on the interior are concentrated at the edges and not in the centre of the vessel. Furthermore, the handle is not attached below the raised wall of the bowl, but just at its edge, offering no proper protection for the hand. The heat from coals would flow directly onto the hand of a person carrying the

brazier. Examples of canonical braziers from Pylos (Blegen and Rawson 1966, 412, figs. 395, 396) and Zygouries (Thomas 1992, 332, 333, figs. 89.1–3) pronounce the morphological differences in terms of the proper placement of the handle. Taking all these observations into consideration, I would like to interpret this vessel as a frying pan, and not a brazier. More specifically, the context suggests that this pan could have been used to cook shellfish (Vitale 2008). The other specialised shape from the discussed deposit is the dipper. Dippers executed in cooking pot fabric constitute a rarity on the Mycenaean mainland. The immediate functional association of that shape is as a vessel to remove hot contents from a cooking pot. However, unpainted dippers made in a semi-fine fabric are more than appropriate for this aim. Moreover, the dippers in cooking pot fabric are larger than the fine ones and cannot be used with most of the cooking pots, as they would not fit into them. Finally, the examples from Mitrou display burning marks, which are not to be expected if their function was just to remove the content. Therefore it seems more plausible that these dippers constituted independent cooking utensils used to warm up small amounts of food or liquid, which were probably removed from a larger cooking pot or other vessel.

Analysis of the cooking assemblage

Analysis of single forms is important, but it is essential to look at the entire cooking assemblage in order to understand how particular forms were used together. We can ask a variety of questions concerning formal composition, variety, size distribution and ratios of different shapes to each other. Looking at these variables at Pylos, I was able to reconstruct two sets of vessels (Lis 2008b, 17). The first one is made up of small tripods and braziers, which were found in corresponding numbers, possibly accompanied by flat-based jars. Shallow pans and lids might have constituted a second one. These two sets could hypothetically have been merged into one set used by a few people. Food of more fluid consistency could have been prepared in a large flat-based cooking pot and then shared between several groups of consumers. It could have been kept warm in a small tripod cooking pot. Meat would be either grilled on the fireplace or fried on a pan with/without lid and served using the shallow angular bowls. The liquid food from the tripod cooking pot could have been poured over the meat, using small spouts present on some of the examples, or the meat was dipped in it. It is a purely speculative reconstruction, but it shows how an unsophisticated set of vessels can be used for preparation of a quite elaborate cuisine.

Whenever different deposits dating to the same period are available for study, one can compare them and draw

conclusions on the differences in cooking assemblages used in diverse households or at different social occasions. The latter was possible for early 14th-century BC deposits from Mitrou. The deposits include both household rubbish (deposit from trench LP785) and remains of non-ordinary meals with ritual connotations (deposits in trenches LL784/785 and LN784, for which see the discussion in Vitale 2008). Contrary to expectations, there was no significant difference in the size of the vessels. The difference was more in the composition of the assemblage, and, rather surprisingly, in their technological aspects. Non-ordinary consumption included two rare vessel types, the brazier and the dipper, discussed above as specialised cooking equipment. In terms of technology, there was a dichotomy of “wheel-made” versus “hand-made” vessels. It can be argued that the specialised utensils were used for more elaborate culinary practices, not performed in households on an everyday basis. The technological dichotomy may be accidental, resulting for instance from slight chronological differences. Another explanation, however, is possible provided that these technological differences were features apparent to consumers and that they were important to the hosts of the event documented in the trenches LL784/5 and LN784.

By comparing different households one can single out and interpret those that stand out with respect to their cooking equipment. At 12th-century BC Lefkandi (Evely 2006), there are households which display large cooking potential, apparently bigger than that attested in other households. Room 11 of the West House alone yielded cooking pots with an overall capacity of 37 litres, which is much more than the overall capacity of cooking pots found in other houses. At Tiryns (Stockhammer 2008), a single household of Phase 2 contained as many as 11 cooking pots, some of which had a capacity exceeding 10 litres. Although no other household is available for comparison from the same site, the total capacity must have exceeded the everyday needs of the inhabitants. At least on the Greek mainland, substantial capacity is due to a large number of two-handled cooking pots, with a low variety of accompanying cooking utensils. This might suggest that during the 12th century BC it was not the variety but the quantity of food that was important. The largest cooking pots at each site reach c. 15–17 litres, an amount appropriate to feed many people, yet with the same meal. The accumulation of cooking pots in some of the households may reflect their inhabitants’ particular involvement in feasting activities (Clarke 2001, 156).

Comparison of cooking equipment between ordinary households and Mycenaean palatial contexts does not reveal great differences in terms of composition. The only notable difference is that some specialised pieces of equipment, such as the griddle (Hruby 2008; Lis 2008a), are found in greater

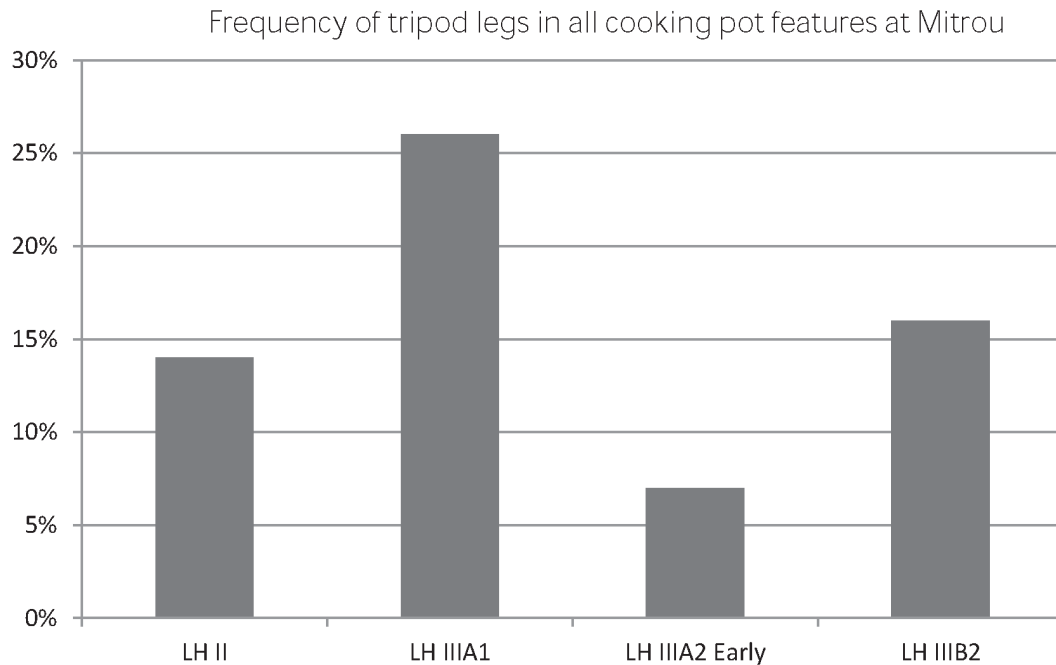


Figure 9.5. Frequency of tripod cooking pot legs at Mitrou. Graphic chart B. Lis.

quantities at the palatial sites (Pylos, Tiryns). These only slight differences may be striking at first glance, but it is plausible that the main dichotomy between palaces and ordinary settlements is indicated by the use of a category of cooking equipment that is preserved only in rare cases, namely metal vessels (Matthäus 1980). If haute cuisine⁵ was ever developed in Bronze Age Greece (Hruby 2006; Isaakidou 2007), it may well have been metal cooking pots that were primarily used for preparation of the elaborate dishes. L. Bendall speculated on different qualities of drinking vessels used at Pylos, which were linked to different status of their users. The metal ones would be most prestigious, used in the megaron of the palace (Bendall 2004, 122–123), and such a distinction may as well have applied to the cooking equipment. Metal tripods are depicted on a fresco fragment from above Hall 46 (Lang 1969, pl. 122), and they are recorded on Linear-B tablets, for example on the Ta series at Pylos, which list various equipment used at ceremonial events (Palaima 2004, 233, 235). An indirect hint of the presence of metal tripods is the existence of their clay imitations (see below). All in all, clay vessels are, in my opinion, not the most informative material to shed more light on the problem of haute cuisine.

Diachronic perspective

A diachronic perspective is particularly advantageous

in the study of cooking pots and cooking assemblages, because changes in the culinary sphere are usually slow, although dramatic turns are not unknown. At Mitrou, I was able to follow the local history of tripod cooking pots, with their appearance in the LH II period, their peak around the end of the 15th century BC (LH IIIA1 period) and a sudden decline some decades after (LH IIIA2 Early period, Fig. 9.5). The first appearance of tripod cooking pots at Mitrou, already in respectable amounts, during the LH II period is a unique phenomenon. No other site on the Greek mainland, which was not under Minoan influence, yielded substantial numbers of tripods at such an early date. The tripod cooking pot becomes a standard constituent of a Mycenaean repertoire only a century later. This attests to a certain innovativeness of local society, probably its elite. The decline of tripods' popularity in LH IIIA2 Early period may be interpreted as a sign of a shift in preferences towards more traditional forms during the final days of the local elite, right before the onset of the palatial period (beginning of the 14th century BC).⁶ Interestingly, the decline of tripod cooking pots at Mitrou is contemporary with their sudden popularity in the feasting deposit from Tsoungiza, where they appear for the first time in considerable numbers (Dabney *et al.* 2004; Lis 2008a). There, the political situation was much different, because the elites from Mycenae were trying to subdue the settlements in their hinterland through feasting. Part of their strategy was to impress, and the introduction of

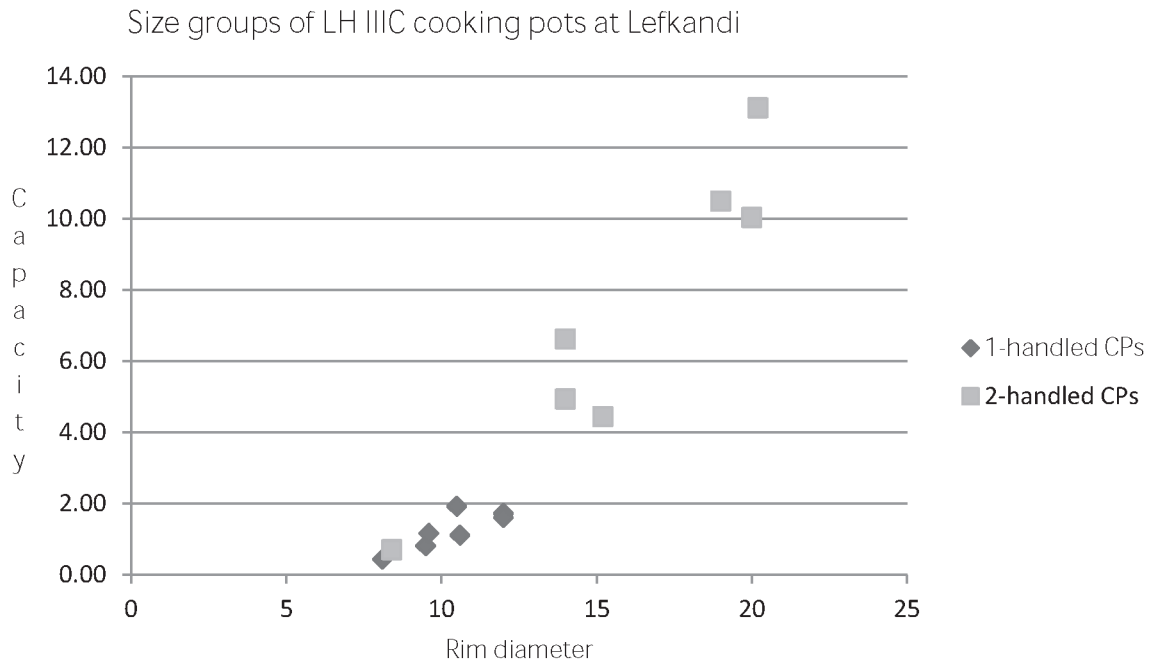


Figure 9.6. Size groups of LH IIIC cooking pots from Lefkandi. Graphic chart B. Lis.

novel cooking utensils (for the Argolid and Corinthia) fits this concept very well.

A diachronic perspective combined with a calculation of cooking pots' capacities is able to demonstrate how the average volume of a cooking pot changed over the centuries. For such an analysis a large number of complete pots from a single site would be preferable. Nevertheless, even from a limited number of measurements from different sites,⁷ I was able to deduce that apparently the average size of the cooking pot decreased over the LBA, and was accompanied by the appearance of standardisation of sizes and shapes. By the late LBA, standard one-handled cooking pots' capacity measures between 1 and 2 litres and the standard two-handled ones are double that size (Fig. 9.6). In comparison, early LBA cooking pots are on average much larger,⁸ although smaller examples were also present, and do not show signs of standardisation. This might suggest that the variety of meals and frequency of their preparation increased. It is, of course, only a very general pattern subject to strong regional and even inter-site variations.

One can also look at a diachronic frequency of imports. Apart from illustrating trade connections, this may shed some light on the taste of consumers, at least for the choice of their cooking pots. We know very well from modern accounts that cooking pots of particular origin, like the *tsoukalia* from Siphnos, were thought to be the best for preparing certain recipes (see Whitbread this volume; Kyriakopoulos this volume). This might have

been the case in prehistory as well. At Mitrou, the very end of the palatial period (c. 1200 BC) seems to have been a particularly cosmopolitan time for local kitchens. About 50% of cooking pots came from Aegina (Fig. 9.7a; Lis 2012b), reversing the usual relation of local to imported material, especially in the realm of cooking pottery. In addition, part of the assemblage consisted of wheel-made, high-quality, thin-walled and burnished cooking pots (Fig. 9.7d), almost giving the impression of bronze vessels, which probably came from areas located north of Mitrou. Similarity to the metal vessels is evident also in other cooking pots. Two of the tripod cooking pots (Fig. 9.7b,c), each of different shape and executed in different fabric of still unknown provenance, imitated the metal prototypes plausibly used by the palatial elites. One is a carinated tripod cooking pot (Fig. 9.7c), a type that shows up immediately before the fall of the palaces and is very popular in the first stages of the LH IIIC period (Lefkandi, Evely 2006, 148, 210, figs. 2.35.4–5). It has no predecessors in clay forms, but is a well-known form of a metal cooking vessel (Matthäus 1980, 102–107, figs. 74–76, 78). The second one has the form of a cauldron (Fig. 9.7b), which is another form found among metal vessels, with the best example coming from the House of the Tripod Grave in Mycenae (Onassoglou 1995, 56, fig. 2). On the preserved handle there is a small protrusion that may allude to a metal rivet. Also this type of tripod cooking pot becomes popular in the first stages of the LH IIIC period.

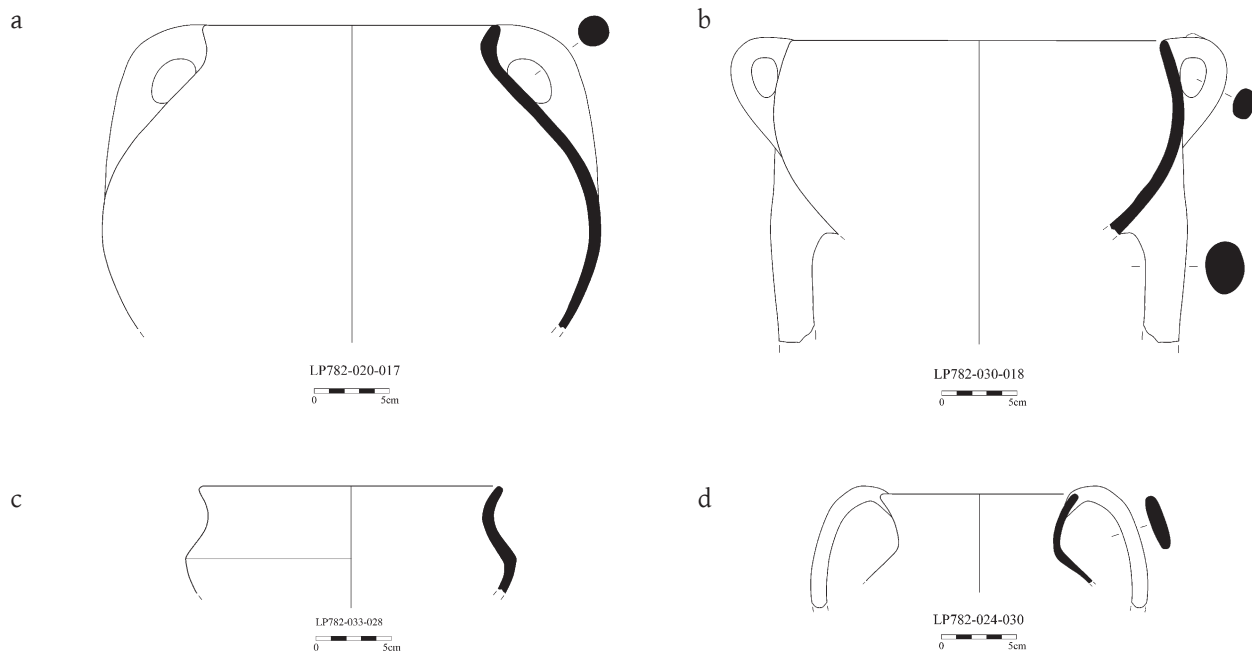


Figure 9.7. Cooking pots from LH IIIB2 Late deposit at Mitrou. Drawing and inking T. Ross.

Context

Another way of analysing cooking pots in the quest for ancient cuisine is by a thorough examination of the context. Looking at other pottery found in the same context as the cooking pots can be helpful for understanding their use. In his dissertation, P. Thomas analysed an assemblage of the so-called Potter's shop at Zygouries (1992), where masses of pottery were recovered, including many hundreds of cooking pots, in particular a shape with a wide mouth – a rarity for the Mycenaean mainland. As the name of the building suggests, it was previously thought to be a potter's workshop. Thomas' excellent study demonstrated that the piles of pots were utensils used in the perfumed-oil industry and that cooking pots were destined for the first stage of manufacture, called *stypsis*, *i.e.* the boiling of aromatics in olive oil. Other unusual pots in combination with their capacities fit this model very well (Thomas 1992, 283–300). Identical cooking pots were found in Room 60 at the palace of Pylos, whose interest in production of perfumed oil is well documented (Shelmerdine 1985). Nevertheless, although both the assemblage of this room and the involvement of the palace in perfumed oil production have been widely discussed, the connection between the two has never been strongly suggested.⁹ The two-handled cooking pots, together with all the other unusual pots found in that room, helped me to contest theories interpreting Room 60 as a storage room for equipment used for feeding the palace staff (Hruby 2006) or lower-ranked participants in feasting

episodes outside of the palace (Bendall 2004). I put forward another hypothesis that at least part of the assemblage had some industrial use, possibly in connection with perfumed oil production (Lis 2008b). Although the particular pots are different from those found at Zygouries, their morphology and capacities suggest that they might have served, as a set, similar functions. These examples are an important warning to us to remember that not all cooking pots were necessarily used for food preparation.

Naturally, cooking installations should be one of the main foci of a contextual study. In this respect, it is quite striking that ovens are rare on the Mycenaean mainland, in contrast to Crete. Either we are missing or misinterpreting something in the record, or baking was not frequently practised by the Mycenaeans.¹⁰ Also large lids, which could have been used as ovens (*cf. e.g.* Kyriakopoulos this volume; Hruby 2006, 148–150), are not frequent either. Yet it is undisputable that they must have somehow baked their bread. Griddles, an enigmatic form which could have been used for baking flatbread, are mostly attested during the LH IIIB period and thus cannot entirely fill the gap. This example clarifies how much there is still to establish about Mycenaean food and cuisine.

Scientific analyses

Another source of information about cuisine, seemingly inexhaustible, are archaeozoological and archaeobotanical

analyses, which can provide further “food” for our investigations (see *e.g.* Schörner this volume). This part of discussion goes well beyond ceramic analysis, but my intention here is to discuss how these analyses can be integrated with the data recovered from cooking pots. In this respect, V. Isaakidou rightly pointed out that “discussion has scarcely gone beyond ‘shopping lists’ of ingredients” (2007, 5). Nevertheless, she made a successful attempt in the study of animal bones from Knossos. Isaakidou was able to show that the portions of meat used for further culinary processing decreased with time, suggesting that not only roasting, but also boiling, frying or stewing appeared as possible ways of meat preparation. Moreover, on goat, sheep and pig bones she detected peculiar more or less equidistant cut marks, inflicted transversely across the shaft, which may constitute traces of sophisticated methods of preparation (marinating) or presentation of meat. Such studies, if carried out on a larger number of sites with deposits covering longer stretches of time, can greatly contribute to our understanding of cuisine development and can be successfully integrated with analogous studies of cooking pottery. Yet, as Isaakidou notes, this still remains to be done.

Not only animal bones, however, can be a source of dietary information. Human bones can be subjected to stable isotope analyses, which can provide information about the kind of proteins consumed. These analyses disclose long-term diets on a general level, showing consumption of marine versus terrestrial proteins and plant versus animal foods. Human teeth provide another set of data on their owner’s diet; for example, dental micro-wear and oral health analysis can be applied, revealing additional data on ancient diet. When it comes to data incorporation, two important limitations are revealed. Firstly, results pertain only to particular individuals, and a large sample is needed to reveal patterns. Secondly, these patterns comprise general dietary data of a far lower resolution than anybody studying cuisine would wish. Nevertheless, data recovered from skeletons can be quite helpful in elaborating differences in subsistence between various societal strata.

The residue analysis of pottery is a potentially powerful and recently very popular method in Aegean archaeology, which can bring together ceramic and archaeobiological evidence in search for the cuisine of the past. For an archaeologist without a background in chemistry, it might appear as if now prehistoric cuisine is finally forced to disclose its recipes. However, before this can happen, one needs to be aware of some serious limitations that apply to such a use of residue analysis. First of all, the result of residue analysis is only a list of components deriving from substances which were present in the pot at any given point throughout its whole life (see Cramp

and Evershed this volume, with relevant literature). In the case of cooking pots, which were in all probability used to prepare different dishes, we receive a list of ingredients, but by no means recipes. Moreover, the list is incomplete, as some of the substances will probably not be detected. A second serious limitation is the question of representativeness. Residue analysis is often applied to a wide array of pots and not many examples of the same form (in-depth research on Roman mortaria by Lucy Cramp [see Cramp and Evershed this volume] is a notable exception). This was, in my opinion, the main shortcoming of the programme behind the exhibition “Minoans and Mycenaeans – Flavours of their Time”.¹¹ A wide array of pottery forms has been analysed, yet only a few were represented by more than one or two examples. The results, while certainly interesting and widely referred to, cannot be considered as representative for more than the specific vessels surveyed. Especially in respect to cooking pots, in which many different ingredients were cooked, dozens should be analysed to achieve reliable results suitable for interpretation. Interpretation is also a difficult issue because certain components can derive from a number of different products (Cramp and Evershed this volume). Is tartaric acid, for example, evidence for wine, or maybe only of grapes being stored or processed in a vessel? All this illustrates the fact that even the use of technologically advanced methods does not necessarily make the leap from cooking pots to cuisine any shorter or easier.

Of course there remains experimental archaeology. It can be very useful to verify considerations about the way certain vessels were used and to realise some practical issues (see Morrison *et al.* this volume). When it comes to recipes, this method becomes more problematic. Constructing (and not re-constructing, as in the case of Papadiokampos) ancient recipes is a subjective process, and criteria for evaluating the results must remain ambiguous.

Final remarks

In conclusion I would like to stress the obvious. The best results can be achieved through gathering and integrating information from as many different methods of analysis as possible. Although probably every archaeologist would put his/her signature to this statement, successful attempts at reconstructing ancient cuisine are still scarce and remain in high demand for the future. The major obstacle to arriving at such holistic studies, apart from financial constraints, is the fact that the results of different analyses are rarely available for comparison and joined-up comprehensive interpretation. In order to amend this situation, project directors should enable and encourage direct interaction and exchange of ideas between various

specialists during the study of ancient remains before publication. Such temporal coordination could be a key to the success of future archaeological programmes aimed at fruitfully integrating a variety of scientific approaches with archaeology.

Regarding the study of single groups of artefacts, such as cooking pots, one should approach them from as many possible angles as possible. I hope to have shown at least a few such avenues. Conferences such as the conference out of which the present volume arose, or the symposium held in November 2010 in Nicosia (Karageorghis and Kouka 2011), clearly show that the coming decades will bring more in-depth studies of cooking pottery and cuisine than the preceding years.

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Notes

- 1 The site, located on the coast of East Lokris, provided stratigraphic evidence for apparently uninterrupted habitation from the Early Bronze Age IIB to the Late Protogeometric period. For a general introduction, see Van de Moortel and Zahou 2005; Van de Moortel and Zahou 2012; Van de Moortel 2007 and Van de Moortel 2009.
- 2 For an example of such a functional analysis of morphology, see Yasur-Landau 2003/2004 [2006]; Lis 2008b.
- 3 Lindblom 2001, 37–38, fig. 52.1050, 1052; for earlier examples of Aeginetan tripod cooking pots, see Gauss *et al.* this volume.
- 4 The longest recorded Aeginetan leg so far measured by the author was 17.5 cm.
- 5 It is important here to stress the difference between *haute* and *differentiated* cuisine. According to the seminal book by J. Goody (1982), *haute* cuisine is characterised by use of rare ingredients, creation of elaborate recipes, introduction of exotic/foreign recipes, and presence of specialised personnel, in particular those responsible for inventing and executing elaborate recipes. Differentiated cuisine, as understood here, is simply a different type of cuisine used by higher social strata, and as such this type of cuisine probably existed in the later Mycenaean times.
- 6 These ideas were first presented by myself, Salvatore Vitale and Andrew Koh in a paper titled “Wining and dining at Mitrou, East Lokris. Diet, consumption, and socio-economic changes in a ‘peripheral’ site of the Mycenaean mainland, circa 1375 to 1190 BC” held at the conference “Subsistence, Economy and Society in the Greek World. Improving the integration of archaeology and science” in March 2010 at Athens.
- 7 For my calculations I used well-preserved cooking pots from sites in Central Greece and Northeastern Peloponnese.

- 8 Two Early Mycenaean cooking pots from Mitrou had a capacity of 11.1 (LR770-042-012, LH I-II) and 7.2 litres (LE792-018-012, LH I). Three LH I cooking pots from a household in Tsoungiza (Rutter 1989) had a capacity of 6.4 (no. 9-2-8), 8.1 (no. 9-2-9) and 11.0 litres (no. 1116-2-1).
- 9 Only certain shapes from Room 60 were considered appropriate for perfumed oil production (Foster 1975, 173f; Shelmerdine 1985, 48), but not most of the assemblage stored there.
- 10 Cooking dishes, which, as shown by Morrison *et al.* (this volume) could have been used to bake bread, are entirely missing from the Mycenaean repertoire of cooking utensils.
- 11 Tzedakis and Martlew 1999; for the exhibition’s scientific background see Tzedakis *et al.* 2008.

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