GRAFFITI, WINE SELLING, AND THE REUSE OF AMPHORAS IN THE ATHENIAN AGORA, CA. 430 TO 400 B.C.

ABSTRACT

Graffiti on transport amphorases of the 5th century B.C. record volume, weight, price, and abbreviations that may refer to the jar’s contents. The graffiti often appear in the southeast corner of the Agora excavations. While some price marks may have been applied outside Athens, many graffiti resulted from retail practices in the Agora, such as refilling jars from local suppliers, decanting from jars in the shop, and selling different products such as honey or meat. Most of the graffiti date between 430 and 400 B.C. Political and economic conditions at this time encouraged the use of graffiti on an unprecedented scale.

Of the many classes of evidence from antiquity, artifacts with writing should “speak for themselves” the most clearly. As the massive volume of epigraphic and philological scholarship makes very clear, however, speaking and being understood are two very different phenomena. The same gap between the evidence and our understanding holds true for graffiti on pottery. The graffiti on 5th-century transport amphorases from the Athenian Agora, the topic of this article, have been thought by many to speak clearly in comparison with more debated scratchings. Reexamination of this material, however, highlights difficulties with the previously accepted interpretation.

1. Reviews of Agora XXI are fairly representative of the general acceptance of the interpretations of these graffiti: Oliver (1977) has some criticisms of the interpretations of other classes of graffiti but writes that “Lang is at her best . . . when she edits the commercial and tax notations, which are worthwhile” (p. 210). Of the reviews I have seen, only Johnston (1978a) takes issue with the interpretations of the amphora graffiti. Others, who do suggest different readings for other graffiti, do not comment on the numerical notations (e.g., Jordan 1978; Oikonomides 1986 and 1988).

My research on amphorases found in the Athenian Agora, including the graffiti discussed here, has been facilitated by permissions from T. Leslie Shear Jr. and John McK. Camp II. The graffiti drawings are by the author, prepared for publication with the assistance of Craig Mauzy (all graffiti are illustrated at scale 1:1). The photographs are by Craig Mauzy and are reproduced here by permission of the American School of Classical Studies, Agora Excavations. The plans were prepared by Richard Anderson. This article developed gradually out of my dissertation (Lawall 1995), a subsequent paper delivered at the 1997 Annual Meeting of the Archaeological Institute of America (abstract in AIA 102 [1998], pp. 401–402), and a much shorter version initially submitted to Hesperia in December 1998. Improvements over the course of the article’s life are due to feedback from various people, but especially from the anonymous Hesperia reviewers and from discussions with Carolyn Kohler, Molly Richardson, Lynn Snyder, and Malcolm Wallace. Thanks are also due to the funding agencies and institutions that supported periods of research in Athens: the University of Michigan, the University of Manitoba, the Social Sciences and Humanities Research Council of Canada, the Solow Art and Architecture Foundation, and the M. Aylwin Cotton Foundation.
terpretations, and in doing so reveals many new aspects of daily life in the Athenian Agora.

Any difficulties remaining in the interpretation of graffiti from the Agora are not for lack of scholarly interest. Ever since Lucy Talcott’s publication of “Attic Black-glazed Stamped Ware and Other Pottery from a Fifth Century Well” in 1935, graffiti on pottery at the Agora have received frequent attention. Mabel Lang stands out in this regard, having published two major studies, “Numerical Notation on Greek Vases” in 1956 and Graffiti and Dipinti in 1976, and a volume in the Agora Picture Book series.

Lang’s publications offered readings and interpretations of hundreds of markings, including many numerical marks that are likely to be related to buying and selling in the Agora. These marks often appear on transport amphoras, and Lang suggested that some such graffiti resulted from recording the measured capacity of the jars for their reuse. Lang read other, far less frequent numerical marks as price labels; rarer still for the 5th century are notations of weight. Virginia Grace and Malcolm Wallace both connected the appearance of the many volumetric markings to uncertainties arising from a change in the standard Chian amphora capacity, from 7 to 8 Chian choes, to become commensurate with 7 Attic choes. Grace saw this change as being in accordance with the Athenian Standards Decree. This mid- to late-5th-century decree dictated the use of Athenian standard measures (including standards for coinage) among all members of the Delian League. These earlier studies thus associated the graffiti not only with specific actions related to the sale of the amphoras but also with a specific historical circumstance.

This picture, however, was developed with minimal attention to the contexts of the graffiti: which amphora types carry which sorts of graffiti? What are the dates of the marked jars? Where are the graffiti found in the Agora? Inquiry along these lines reveals very clear patterns. First, not only Chian jars but many amphora types carry graffiti. Second, although such graffiti do appear sporadically throughout the 5th century B.C., most numerical markings on amphoras appear in the last third of the century. Finally, while examples have been found across the Agora, most amphora graffiti were excavated in the southeast corner (Figs. 1–2).

These patterns are difficult to reconcile with either the postulated use of graffiti in checking the capacity of jars for personal reuse or the proposed implications of the Standards Decree. If graffiti were applied when confirming amphora capacities, then marked amphoras should be distributed across the Agora, wherever amphoras were found in large numbers. This is not the case. Moreover, the connection to the Standards Decree

6. For discussions of the date of this decree, see, among many others, Lewis 1987, Mattingly 1993 and 1999; for the intentions and impacts of the decree see Finley 1973, pp. 168–169; Mattingly 1981; Schönhammer 1993, p. 190; and Figueira 1998, whose discussion of the goals of the Athenians emphasizes, even more so than that of Lewis (1987), the range of dates of copies of the decree.

Figure 1. The Agora ca. 400 b.c. with findspots of 5th-century commercial graffiti on amphoras
GRAFFITI, WINE SELLING, AND REUSE OF AMPHORAS

AGORA EXCAVATIONS
ATHENS

PLAN SHOWING DISTRIBUTION OF
5th CENTURY B.C. AMPHORAS
WITH GRAFFITI

KOLONOS AGORAIOS

AREOPAGOS
Figure 2. Restored plan of the *kapeleion* area around well R 13:4, with other late-5th- and early-4th-century wells
and Chian amphoras raised the expectation of a limited period of uncertainty and, therefore, of intense marking just after the initial promulgation of the decree (perhaps ca. 449 B.C., perhaps ca. 425 B.C.). Instead, roughly thirty-five years are indicated by the range of dates for the amphoras carrying the marks. Furthermore, a connection to the decree might prompt the expectation that the marks would appear primarily on those amphora types whose capacities changed in accordance with the decree. It is still a matter of debate as to which, if any, types were modified, but the fact that volumetric graffiti are not limited to specific types casts doubt on this element of the interpretation as well. Finally, while some commentators argue that the decree was meant to facilitate collection of taxes, tribute, and other payments, whether in money or other products, the graffiti indicate instead some sort of difficulty arising in later-5th-century sales in Athens.

If such contexts of the graffiti require us to question, or even abandon, earlier explanations, new interpretations are needed. The following reconsideration of the 5th-century amphora graffiti from the Agora excavations begins with a detailed survey of the markings themselves, reviewing Lang’s readings and taking into account other examples. In this review I emphasize the wide range of topics addressed by the graffiti and consider problems of interpretation not discussed by Lang. After types of markings are described and the findspots, dates, and amphoras carrying the graffiti are presented, first in the catalogue and then synthesized in the text, it will be possible to consider what activities and transactions resulted in the application of the graffiti. The third and final step to be taken here is to explain why graffiti appear so frequently on amphoras datable to the later decades of the 5th century B.C. in Athens.

7. If Figueira (1998) is correct to emphasize multiple promulgations of the decree, then perhaps an ongoing sense of uncertainty concerning standards should be expected. Grace, however, saw the graffiti as connected to a single decree ca. 449 B.C. (Grace and Savvatianou-Petropoulakou 1970, pp. 359–360; Grace 1979b, pp. 121–122). Wallace (1986, p. 88, note 8) places the decree “somewhere between 449 and 414 B.C.” and notes the possibility that the change in capacity was not related to the decree. It should be noted that Grace’s date for the new amphora type with the higher bulge on the neck and the proposed larger capacity was based entirely on the date of ca. 449 for the decree. The jars themselves do not appear in Agora contexts or elsewhere before deposits closed after 440. In terms of the archaeological evidence, ca. 440 and not ca. 450 is the apparent date for the introduction of the high-bulge Chian jars (type C/3 in Kerameikos IX, pp. 23–24; and see Lawall 1995, pp. 99–102).

8. Published arguments concerning these changes are based on a very limited number of examples, far too few to make a case one way or the other (e.g., Grace and Savvatianou-Petropoulakou [1970, p. 360, note 4] cite only two capacities of Chian jars of 7 Chian choes dating before 450 B.C.). On the difficulties of measuring amphoras see Wallace Matheson and Wallace 1982, pp. 302–320; Wallace 1984, p. 13; and Koehler and Wallace 1987, p. 57. In connection with Wallace’s (1984, p. 13) comment that “nobody, so far as I know, has doubted that [Chios] changed her wine export capacity from 7 to 8 Chian choes,” see Brashinskiy 1984, pp. 98–99, suggesting no significant change in the Chian standard amphora capacity.

9. See Martin 1985, pp. 196–207. Martin opposes Finley’s view of minting as a symbol of a state’s autonomy, arguing instead for “economic” motives: the decree, in his view, facilitated collection of tribute and port taxes. Finley, while explicitly acknowledging the decree’s facilitation of tax and tribute collection, called that a “political element” (1973, p. 169). Finley’s main concern was to deny any Athenian policy to benefit Athenian merchants at others’ expense. Martin implies that merchants would benefit from the uniformation of standards (p. 199, note 7, and p. 204), but never addresses Finley’s contention that all Aegean merchants—not only Athenians—would find such a situation easier.

10. Johnston (1978a, p. 218) criticized the incompleteness of Agora XXI, noting that much of the Agora graffiti known to him had not been included. I present here all numerical amphora graffiti of the 5th century known to me. While there are more graffiti published here than had been published earlier, there are still bound to be further pieces that I have not found.
THE GRAFFITI

The graffiti in question were applied to jars before they were broken and not to discrete sherds. Some marked jars are still nearly complete; markings preserved only on fragments never fit neatly on the sherd, in contrast to the case with ostraka. With one exception, the marks were incised after the jars were fired, so the graffiti were applied at some time during the jar’s period of use.

Most of these graffiti involve a series of symbols, sometimes letters, often repeating. Since vertical strokes are common and since some letters are best read as Π for “5” and Δ for “10,” many graffiti appear to be numerical notations. These notations include tallies of vertical and/or horizontal strokes often with acrophonic numerals, tallies using letters to abbreviate units of measure, and price marks involving monetary symbols or abbreviations. If we assume that these graffiti refer to the vessels on which they are found and often to their contents, the marks should relate in some way to the production, filling, distribution, and even refilling of the amphoras. Hence, these marks are safely considered economic graffiti—at least if one includes in a definition of “economic” the production and distribution of goods and services.

There is, too, a second broad class of graffiti that is of less certain economic relevance: short abbreviations commonly found on amphoras. The letters could simply abbreviate names: perhaps an owner of the amphora, perhaps a merchant, and so on. On the other hand, the repeated occurrence of some of these marks across many different sites and amphora types suggests that the letters refer to some activity common to amphora use.

There are, of course, other kinds of graffiti on amphoras. These include names, other abbreviations, or simply letters of uncertain significance. Since these marks are not repeated over many amphoras, their significance for the production and distribution of the jars may have been limited to naming an owner during the “lifetime” of the jar. Such marks are included here only when they appear in the same context as examples of economic graffiti. They are not considered in detail nor were examples from other parts of the Agora studied.

11. Price labels or accounting ostraka differ distinctly from the graffiti discussed here. The graffiti on such ostraka often follow one or more edges of the sherd. Even if the sherd has broken across the original graffiti, it is often clear that the graffiti on these ostraka originally followed the lines of a sherd. They were not applied to a complete vessel. Amphora fragments used for accounting ostraka are not covered in this article.

12. Some have argued that this definition is too narrow and that it excludes the element of risk and choices in allocation at the core of economic study (e.g., Burling 1962). Production and distribution, however, are two very visible behaviors in the archaeological record and may have involved the sorts of allocation issues attended by more traditional economic historians and anthropologists. On problems of defining economic studies, see Lowry 1987, pp. 8—9.

13. I collected the graffiti presented in this article from a handwritten and largely up-to-date list of all inventoried graffiti in the Agora, and by searching for uninventoryd graffiti from closed deposits and stratified fills throughout the Agora as part of the research for both my dissertation and, more recently, a typological study of Classical and Hellenistic amphoras in the Agora. I thank John Camp for alerting me to graffiti finds in the building fill of the late-5th-century Mint.
Earlier Readings

Lang assigned most of the numerical graffiti involving repeated symbols to two categories, capacity and price. She interpreted the symbols as follows:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1 chous, kotyle, or drachma</td>
</tr>
<tr>
<td>†</td>
<td>1 drachma</td>
</tr>
<tr>
<td>—</td>
<td>1 kotyle or 1 obol</td>
</tr>
<tr>
<td>K</td>
<td>1 kotyle (1/2 chous)</td>
</tr>
<tr>
<td>O</td>
<td>1 oxybaphon (1/4 kotyle)</td>
</tr>
<tr>
<td>X</td>
<td>1 chous</td>
</tr>
<tr>
<td>H</td>
<td>1/2 chous, 1 hydria, or alphabetic “8”</td>
</tr>
<tr>
<td>Π</td>
<td>5 chos or 5 drachmas</td>
</tr>
<tr>
<td>ΠΗ</td>
<td>monogram</td>
</tr>
<tr>
<td>ΠΧ</td>
<td>monogram</td>
</tr>
<tr>
<td>Δ</td>
<td>10 chos, 10 drachmas, or 10 staters</td>
</tr>
<tr>
<td>Δχ</td>
<td>monogram</td>
</tr>
<tr>
<td>Σ</td>
<td>stater</td>
</tr>
</tbody>
</table>

Lang was thereby able to read graffiti as indicating that certain amphora types held between 7 and 8 Attic choes (defined as 3.2 liters/chous), figures matched by measurements of complete jars. The price graffiti, according to Lang, involve either fairly clear monetary symbols (the drachma symbol or the Σ for stater) or a series of less explicit tally marks exceeding the likely capacity of the given jar. Lang noted that a price of 2 drachmas per chous of wine, as she read in some of the price graffiti, fit well with other epigraphic and literary evidence for 5th-century wine prices.

Alongside these general practices, Lang highlighted certain idiosyncrasies. She interpreted the letter E as abbreviating either ἥμυ- or ἥζε (4, 13, 25, 64), the aspirate omitted. In her discussion of 4, in which she read an E for ἥμυ-, Lang noted that E also replaced the ἦ- in the name Hegestatos on two graffiti from the Agora. In the case of 64, where the h is dropped from E abbreviating ἥμιζουν, Lang writes: “The writer, being psilotic or an h-dropper, was probably not Athenian.” For 13 and 25, Lang attributed this psilosis more directly to Chios. Lang identified another example of “foreign” graffiti in the possible indication of the non-Attic monetary unit, staters, in two examples (19 and 26). Finally, Lang suggested that certain tallies of measurement were based on a Chian, not an Athenian, unit of measure (22).

Lang acknowledged that there was “an element of uncertainty” in some readings, and this is not surprising given the informal nature of the markings. To what extent, however, are other readings of the graffiti possible? Are subjects other than volume and price indicated with any frequency by the graffiti? While many of the readings require detailed, individual discussion (see catalogue), some comments pertain more generally to the types of numerical graffiti. These are discussed in the following order: volumetric notations, notations of weight (?), price marks, abbreviations, summations, and combined notations.
Volumetric Notations

(1, 7?, 9, 10, 11, 12, 13, 25, 26, 27, 28, 29?, 30?, 33, 34, 35, 36, 37?, 38, 39, 40, 41, 42, 45?, 46, 48, 49, 50, 51, 52, 53, 63, 64, 65, 67, 68, 70, 71?, 72, 73, 93?, 94, 95, 96, 97)²²

With forty-five entries in this catalogue, volumetric notations comprise the largest group among the numerical graffiti. The markings here range from simple strokes and the acrophone numerals Δ and Π to more explicit notations using abbreviations for the units of measure. Following Lang’s analysis, the acrophone numerals and the vertical tallies may be read as whole choes; horizontal strokes may indicate kotylai.²³ As noted above, Lang found that graffiti read in this way matched amphora capacity measurements quite well. Even markings indicating just over 10 choes fall within the range of possible capacities for 5th-century amphoras. Amphoral of such a large size are rare, however, as are graffiti that necessarily indicate more than 8 choes. When simple tallies exceed indications of 10 units, or even 8, they are unlikely to be volumetric notations.²⁴ In some such cases, Lang suggested that the notations might be better read as price marks, and for a very few examples she proposed the identification as weight notations; both possibilities will be considered below.

Far less ambiguous are the many graffiti read by Lang as including abbreviations of chous (X), hemichous (H or E), and kotyle (K).²⁵ In many cases, this sequence of abbreviations results in quite reasonable and likely readings. These readings, like the simpler tallies described above, rarely give values beyond 8 to 10 choes.

In one detail, however, Lang’s interpretation of these graffiti should be corrected. She suggested that the use of E for ἡμι- or as an abbreviation for ἡςις indicated an h-dropping speaker as the writer. Such a writer, according to Lang, would not have been Attic but probably Chian (where the dialect did not use the aspirate).²⁶ A Chian, however, would presumably spell ἡμι- starting with an Ionian eta, ἱμι-; and Athenians sometimes dropped the aspirate in words beginning with epsilon.²⁷

The E/H marks in numerical graffiti present still further problems of interpretation. When the H or E follows whole-unit symbols (e.g., X for chous), only one H or E is usually present, and this single letter often precedes a series of even smaller unit symbols. In such cases, the E/H is read

22. Numbers followed by question marks in these lists indicate that the classification of the graffito as to reference (e.g., volume, weight) is uncertain.

23. Similarly, horizontal lines can indicate obols on monetary inscriptions. Tod (1911–1912, p. 101) notes that a vertical line is most common for obol in Attic inscriptions, but elsewhere he lists numerous examples of the horizontal line for obol (1911–1912, passim); see, too, Johnston 1979, fig. 12: c, 14F, 15(E).

24. Brashinskiy (1984, pp. 170–204) lists hundreds of capacity measures for Archaic through Hellenistic amphora types. Of these only sixteen exceed 30 liters.

25. The readings of H or E for half-metretes and Η for hydria are discussed further below. Although the Greek term for half a chous is τὸ ᾇμιέχον, I use the term “hemichous” here as being a more straightforward, English halving of chous.


27. Collitz and Bechtel 1905, p. 703, no. 5653b, line 5 (ἥμερηςιν) and line 16 (ἥμερην); p. 712, no. 5664, line 8 (ἀλφίτων ἡμιον). I owe this observation to the comments of one of Hesperia’s anonymous reviewers, who very generously pointed out this difficulty in Lang’s interpretation. Lang, indeed, mentions other Agora graffiti where the aspirate is dropped from names (see note 17, above). The aspirate is left out in various other stone, ceramic, and numismatic inscriptions; for examples see Guaducci 1970, p. 694; Patitucci 1991, p. 249, no. 5; Blonde 1989, p. 518, no. 170; Buck 1955, pp. 156, 159; and Tod 1911–1912, p. 118.
as half of the preceding unit. In other cases the meaning of E/H is more ambiguous. In 25, EE follows a Π, and the Es are read as acrophonic numerals abbreviating heξις (with the h dropped). Along the same lines, the EEEE graffito, 29, might be read as four of some unit, but that unit is uncertain (perhaps shoes, perhaps mnas; see below). E might also serve as an alphabetic numeral, 5, and H as 8. The alphabetic use of H is most securely read in summation notations (see below). When E/H stands as the first symbol in a numerical list, the letter may indicate a half-metretes (6 shoes) (13, though the interpretation is uncertain; 24; 70). This seems especially likely when the E/H and subsequent marks allow a reading of something less than 8 shoes (but see discussion of solitary E/H marks below). E/H, therefore, might stand for various half-units, alphabetic numerals, or—very rarely, and only with E—as an acrophonic numeral for εξις.

Multiple instances of E/H rarely appear on amphora graffiti; there are three among the graffiti considered here (29, 6, and 65). The first, 29, with EEEE (with the possibility of more letters on either side of the preserved fragment), is from the Mint construction fill. If, from a practical standpoint, it seems unlikely that multiple half-units (e.g., hemichoes) would appear on numerical notation, perhaps this graffito should be read as 4 (sc. shoes). This reading, however, depends on the rare acrophonic use of E. If E is read as an alphabetic numeral, then we might have 20 units recorded here, a large volumetric notation but possibly a weight notation (see below). Finally, reading E as an acrophonic numeral for 100, as paralleled on numerical ostraka,29 would create an unusually large number for reference to the amphora. The fragment does not seem to be an ostrakon since the writing does not follow any particular edge of the sherd. On balance, the readings either of E for εξις, or of E for heξις, despite the rarity of the former and the apparent impracticality of the latter, seem most likely.

A second multiple E/H graffito in this collection, 6, may well be an ostrakon; the marks do fit neatly across the sherd. A reading of 300 for the ΗΗΗΗ, however, would be difficult to reconcile with the subsequent T, which is most often used to express a fraction or a talent,30 the latter being most unlikely here. If this graffito was applied to, and therefore referred to, a complete vessel, the Hs might stand for ηηώτους, followed by the T for one-fourth (or one-third), and then a series of 4 kotylai. Alternatively, the T might summarize the four following strokes (see below, “Summation Marks”). Such decreasing sizes of units occur throughout these numerical graffiti. The use of multiple half units, however, might seem odd when more than one whole unit was used (why not ΧΗΤ..., for example?). A further alternative, to read the H for εξις, is unparalleled in this collection.

The third and last multiple Η graffito, 65, bears a much closer resemblance to the other volumetric notations in terms of syntax or arrangement of the letters. Instead of Χ being used in a monogram with Π to indicate 5 units, Η is used, and a further Η precedes two Κs. Lang rightly rejects the possibility that the ΠΗ monogram indicates 500, and she rejects the possibility here that Η would stand for hemichoes, doubting especially “that five hemichoes would be used as a unit at all.”31 Whether the
presence of the ΠΗ monogram requires there to have been a 5-hemicchos unit in use seems to be an open question. Perhaps 5 hemicches were poured in or out before the writer felt the need to note down smaller amounts. Lang ends her discussion of this piece with the suggestion that the Η stands for hydria. This unit of measure is known in two contexts: Epiphanius’s treatise on weights and measures, from which it may be equated to 7.29 liters; and the lexicographer Hesychius, who defines the term as half of an Attic metretes (s.v. οὐδρατία). In both cases, 65 is read as a tally of hydriae, the total far exceeds the likely capacity of the amphora (more than 44 liters by Epiphanius’s definition; more than 115 (l) liters by Hesychius’s definition). As with the previous two multiple E/H graffiti, the difficulties here with interpretations other than hemicchus encourage the acceptance of the use of multiple half-unit measures.

These particular examples notwithstanding, the volumetric notations tend to be the most straightforward of the numerical graffiti. The data from measured amphora capacities clearly define the most likely upper range for such markings, and many of the graffiti, especially those using the abbreviations Χ and Κ, indicate figures well within this range. Once tallies exceed the number 8, however, the possibility of a nonvolumetric notation must be considered.

Notations of Weight?
(3, 5, 7?, 14, 15, 16, 17, 18, 29?, 43, 45?, 74, 79?, 80, 98)

Graffiti and dipinti recording the empty and gross weights of amphoras from the Hellenistic period through Late Antiquity are published from the Agora and elsewhere. For the 5th century B.C., however, such readings of the graffiti or any explicit connection between clay vessels and mnas are very rare. Lang published one example: a small table amphora whose graffito reads (AM ligature, MΔ ligature, M M) “ΑΜ(φοφέως) M(ναι) Δέχα M(ναι) M(ναι)” and (MΔ ligature MΔ ligature) “M(ναι) Δέχα M(ναι) Δέχα.” Lang proposed that the first marks refer to the weight of the empty jar (tare weight) of 12 mnas (approximately 5.5 kg) and that the second group refers to the net weight of the jar’s contents, 20 mnas (just over 9 kg), the equivalent of roughly 9 liters of wine, just under 3 choes. Given the postulated weight of the empty jar, and the weights of intact amphoras of various sizes (see below), this jar is likely to have held more than 3 choes, and this weight notation should record a partial empty vessel alone would weigh much less). It is also possible that the lagynos actually contained 10 mnas of silver.

32. Lang’s suggestion (1956, p. 11) that the graffito was written by a slave misspelling the initial sound of chous certainly seems possible but would require further support of parallel examples of misspellings.
33. See Hultsch 1882, p. 574 for interpretation of Epiphanius.
34. Lang 1956, pp. 17–18; Agora XXI, pp. 64–72 and pp. 77–81, passim.
35. Tolstoi (1953, p. 97) published a lagynos graffito of the 2nd or 1st century B.C. from Pantikapion that reads: μνάς αργυρίου δέκα (Α)ηιταίου Μενεδόρος with ΔΥΣ written on a line above the main graffito above the end of the name Αηιταίου. There are problems interpreting the ΔΥΣ, but the present interest is the possibility that this clay vessel was weighed as 10 silver mnas. By the 2nd century B.C. in Attica this would be the equivalent of ca. 6.5 kg. This figure might indicate the weight of the vessel and its contents (the

36. Agora XXI, p. 76, He 3 (= P 23948).
37. The conversion factor for much of the 5th century B.C. is 1 empirc mna to 105 coin drachmas or 0.457 kg/mna; see Agora X, pp. 4, 19, and 20. For the definition of an empirc mna as opposed to a monetary mna, see Agora X, pp. 2–4.
filling of the jar. Another very similar example (3) appears on a transport amphora of the mid-5th century B.C.: AM ligature with MΔ written out, which may be read as indicating an empty amphora of 10 mnas.

Despite the rarity of graffiti referring explicitly to mnas in the 5th century B.C., these examples raise the possibility that tallies indicating large numbers are measures of weight. For example, Lang read a 3rd-century B.C. amphora fragment with ΔΔΔΔ as 26 mnas, arguing that the number is too large to indicate the volume of the jar. She used the same argument to read four other Late Classical or Hellenistic graffiti as weight measurements but suggested such a reading for only one of the larger 5th-century tallies: a Chian jar, 14, with a graffito ΔΔ as indicating a tare weight of 20 mnas. Might other 5th-century graffiti pertain to weight as well?

Weights of well-preserved jars may suggest a possible range of tare weights for late-5th-century amphoras in emporic mnas. Weights of intact amphoras are rarely reported since sufficiently well preserved jars are not very common. Published weights (converted to 5th-century emporic mnas of 105 drachmas, 0.457 kg/mna) range from 6.7 mnas to 37.2 mnas. Other weighed amphoras listed by Lang in *Agora* XXI are of much smaller, Late Roman types. David Peacock and Dyfri Williams list a series of weights for major earlier Roman amphora types (note that all of these later forms are much larger with thicker walls than their Classical counterparts). I review the averages here: Dr 1B, 25 kg (54.7 mnas); Dr 2–4, 15 kg (32.8 mnas); Haltern 70, 18 kg (39.4 mnas); Dr 20, 28.42 kg (62.1 mnas); Africana Grande, 17.83 kg (39 mnas); and Tripolitanian, 15.86 kg (34.8 mnas).

I weighed four intact 5th- and 4th-century B.C. Greek amphoras using a simple spring balance to determine a range of possible empty weights for the amphoras carrying the graffiti (none of which are intact themselves). An early-5th-century jar (P 23750), likely to be from northern Greece, weighs ca. 5 kg (11.0 mnas); a late-5th-century jar (P 30685), perhaps from Thasos or the surrounding area, weighs ca. 6.5 kg (14.2 mnas); an unidentified jar (P 27420) of similar size as the late-5th-century Chian type weighs ca. 7.5 kg (16.4 mnas); and a larger jar, possibly Mendean, of the mid-4th century (SS 14826), weighs ca. 10.5 kg (23.0 mnas). This small sampling of Classical amphora weights, suggesting a general range of 5 to 10 kg or 10 to 20 mnas, fits well with the range of weights of

38. *Agora* XXI, p. 66, Hb 1 (= Lang 1956, p. 17, no. 73). Here Lang uses an emporic mna standard of 0.654 kg/mna (150 coin drachmas), but this standard was legislated in the late 2nd century B.C. as replacing a standard of 0.60168 kg/mna (138 coin drachmas), which itself must have replaced the earlier 0.457 kg/mna (105 coin drachmas); see *Agora* X, pp. 19–20 for the history of fluctuations in this standard.

39. *Agora* XXI, p. 66, Hb 2, Hb 3; Lang 1956, p. 18, nos. 75 and 76 are the other 4th and 3rd-century weight notations. Lang 1956, p. 17, no. 72 = 14 (note that Lang’s conversion of these 20 mnas to kilograms here is based on a coin mna of 100 drachmas [0.436 kg/mna]; the conversion should be based on an emporic mna of at least 105 drachmas).

40. Johnston and Jones 1978, p. 104, Attic SOS amphora, 17 kg (37.2 mnas); Bertucchi 1992, p. 102, type 6 Augus-


42. Lang (1956, p. 17, no. 72) cites a weight of 8.640 kg for a Chian jar, but the jar is restored with plaster, which may have added considerably to its weight.
amphorae of comparable size from other periods and regions. With wine
or oil added, a large Classical amphora could reach or exceed 50 mnas
(over 20 liters). A full jar could weigh over 70 mnas.

The larger numerical graffiti might, therefore, refer to aspects of weight.
Figures indicating between 10 and 20 mnas, for example, could record the
empty weight of the jar. An early graffito, 5, shows a Δ followed by two
rows of four vertical strokes each. Lang’s reading of 10 choes, 8 kotylai as
the capacity of the jar is possible, but unusually large.43 A slightly later jar,
15, shows a similar graffito, ΔΔΔΔΔΔΔΔ. If the similarity between these two
graffiti indicates a similarity of meaning, both the earlier and the later
graffito could record tare weights (18 mnas for the earlier, 17 mnas for the
later).

On the other hand, if the empty weight was apparent simply from
observing the balance, then the tallied figures might record either the num-
ber of weights added to determine the net weight of the jar’s contents or
the total number of balancing weights present once the liquid was added
(gross weight of jar and contents). Graffiti clearly indicating amounts over
30 units (74 and 81) may indicate either net or gross weight.

Other markings less clearly indicate such large numbers. Some gra-
ffiti are composed of stacked, short, horizontal marks along the first or
final of a series of vertical strokes (16, 18, and possibly 45).44 By compari-
son with graffiti in which Ks (abbreviating kotylai) are stacked on a single
vertical stroke (35, 36), the horizontal strokes could be small units or frac-
tions in relation to the vertical strokes. Given that 10-mna units have been
postulated for other weight graffiti, it is possible that the verticals here
indicate units of 10 and the horizontal strokes indicate single mnas. By
this process, 16 would be read as 50 mnas, and 18 indicates 28 mnas.
A third such graffito, 45, preserves the ends of seven short horizontal
segments followed by six verticals arranged in pairs. If the verticals do
refer to units of 10, 67 mnas would be indicated. On the other hand, it
seems odd to have the smaller units before the larger ones. Here, only the
ends of the horizontal are preserved, and it cannot be determined whether
they were stacked on a single stroke as in the other graffiti just discussed.

The use of horizontal lines to indicate 10 drachmas is attested in mon-
etary inscriptions, so here the graffiti may use the horizontals to account
for 70 mnas followed by 6 more mnas, for a total, perhaps gross, weight of
76 mnas.45

All of the possible weight notations considered so far involve quite
ambiguous and simply rendered tallies. The only likely abbreviations for
units of weight so far encountered are the two ΜΑ monograms treated
above. The two multiple E/H graffiti, 6 and 29, could be read as indicating a
hemistater, the equivalent of 1 mna, thus obviating their interpretation
as multiple half-unit marks. In support of such a reading of multiple E/H
marks, a 4th-century amphora graffito with ΠΠΠΠΠΠ [ | ΔΔΔΔ] was read by
Lang as a tare notation, perhaps with 8+ mnas as empty weight and 25+ mnas
as the gross or net weight (Lang does not provide a specific inter-
pretation).46 There is no clear evidence, however, that the term hemistater
was used as a synonym in Athens for mna even though the mna was de-
finied in terms of the stater.47

43. Lang 1956, p. 6, no. 16.
44. Johnston (1979, pp. 30–31) discusses tallies “tied” or “bundled”
together in this same way; a particularly close parallel is provided by ARV 666,
no. 13 (Boston 01.18, unpublished) with six short marks coming off a single
longer one. There is no clear indication what the bundled units refer to,
whether numbers of vessels in a batch, price, or some other factor. See also
45. For inscriptions with horizontal
lines for 10 drachmas, see Tod 1911–
1912, pp. 104 (Epidauros), 113
(Euboea); 1936–1937, p. 241 (Epi-
dauros). Tod (1926–1927, pp. 149–150
and 1936–1937, pp. 255–257) discusses
the use of a horizontal bar for 1 mna at
Cyrene. Johnston (1979, p. 31) also
notes the use of the horizontal line for
“10” on fine ware graffiti.
46. Lang 1956, p. 18, no. 76.
47. Agora X, pp. 2–3.
The use of the term stater in the Athenian system of weights raises the possibility that Σ-graffiti (19 and 26), which Lang read as prices, might refer to weights of the jars or their contents. 26 has ΔΣ (10 staters) on one side of the neck and a clear abbreviation for 10 choes, 2 kotylai (ΔX monogram KK) on the opposite side of the neck. Ten staters (20 mnas) is unlikely to be the weight of the recorded volume of contents since it is difficult to imagine what material would give such a low weight for more than 30 liters; even 30 liters of barley would weigh 19.2 kg or ca. 42 mnas. 48 The 10 staters could, however, describe the weight of the empty jar to which the 10 choes, 2 kotylai were added or whose measured capacity was 10 choes, 2 kotylai. With 19, the seven staters recorded would equal 14 mnas, a very likely weight for an empty jar of this type. Along this line of thought, however, the 14 staters I interpret as the reading of 25, following the volumetric note of 7 choes, seem unlikely to indicate the empty weight of the jar; 28 mnas seems high for a jar of this type. If the staters (?) on 25 are taken as an indication of price, then the other stater notations are perhaps also better considered as prices. The possibility that they refer to weight requires more evidence from weighed intact jars of precisely the same types as those marked.

None of these possible amphora weight graffiti juxtaposes a notation of the tare weight with either the net or gross weight. Lang wrote that without the tare weight, weight graffiti referring to contents alone would be meaningless. 49 This is true, however, only if the weighing did not occur in a face-to-face context. If the customer sees the empty jar balanced by the weighing device, then the customer knows that any further weight added—and perhaps recorded by marks on the jar—is the weight of the added goods.

**Price Marks (19, 25, 26, 30?, 44, 56, 69, 79?)**

Among the many numerical graffiti discussed here, there are very few markings attributable to price. The most securely interpreted price marks are those that carry either the common epigraphic symbol for drachma, ₯, or Σ abbreviating stater. Lang interpreted other tally marks as prices, often in cases where the numbers exceeded the expected figures for volumetric notation (7–8 choes). Since, however, those tallies give no indication of being price marks, and given the presence of more explicit monetary symbols when prices are certainly intended, it seems more reasonable to read these larger tallies as notations of weight (as above). Calculating both weight and volume might involve some process by which units are successively recorded and so are especially appropriate for tallying. Price, on the other hand, would more likely have been conceived of as one figure and recorded using symbols for the largest units of the figure (e.g., Δ for 10 instead of ten vertical strokes) followed by smaller units. 50

Perhaps surprisingly, given Athenian use of drachma coinage instead of staters, the Σ abbreviating stater occurs nearly as often as the symbol for drachma. In the case introduced above, 26, we have an apparent juxtaposition of price and volume—10 staters and 10 choes, 2 kotylai—on opposite sides of a Mendean neck. Lang noted that a price of 10 staters for just over

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50. This is the practice generally followed in fine ware price marks, although there are exceptions; see Johnston 1979, fig. 14:f.
10 choes would fit well with the generalization that “two drachmae per chous was the standard price for wine.”

Similarly, for 19, a Chian jar likely to have held ca. 7 Attic choes, ΠΠΣ may be read as 7 staters. Later, in the early 4th century, a jar of unidentified type carries the letters ΠΠΣ on its neck in black paint (or charcoal?); this relatively small jar may have held 6 choes. In discussing the first two pieces, Lang noted that staters in Chios and Mende were considered as didrachms, so the prices in the Athenian Agora would indicate a price of 2 drachmas per chous for both Mendean and Chian wine. Alan Johnston notes that if the graffito were applied in the places of export, the writer may have been thinking in terms of local coin standards, thereby casting considerable uncertainty for us now as to the intended price in Attic drachmas. Nevertheless, the Σ in all cases seems to indicate stater.

Graffito using the standard epigraphic symbol for drachma (ﾘ) are much simpler to read as price marks, but they are rare. Drachmas were so indicated on only two 5th-century pieces published by Lang. The first, 44, has two clear drachma signs preceded by a difficult symbol read by Lang as two deltas sharing a common side, giving a total of 22 drachmas. The arrangement of the deltas, however, is not paralleled elsewhere. Reading the symbol as a monogram ΠΔ, for 50, has parallels in many fineware and pithos graffiti. On this interpretation, the price would read 52 drachmas. Such a price might seem high, but the total number of known wine prices (if that is even the material being priced) is not so great that we can claim any certainty as to what is a normal price. The second price in drachmas published by Lang is a dipinto, which partly covers a volumetric (?) graffito (56). The price reads 16 drachmas, certainly at the lower end of prices associated with amphora contents. The only other securely read amphora price graffito known to me from the 5th-century Agora, 69, gives a price of 27 or 28 drachmas on a Chian jar. Depending on the volume of liquid in the jar, this graffito might indicate a price of 3 or 4 drachmas per chous.

51. Lang 1956, p. 13. Papadopoulos and Pasaplas (1999, p. 177) remind us of Pritchett’s comment (1956, pp. 202–203, note 112) when writing about the Attic Stelai prices, that amphoras carried more than just wine or oil (perhaps their intended primary contents), so that the prices marked on amphoras only indicate the price of their contents—whatever those may have been. While Lang is right to place emphasis on the fame of Chian wine and hence the strong likelihood that the jars contained wine, the many possibilities of other contents and of the prices being inscribed at any of various points in the life of the jar should be borne in mind (see below on interpreting the graffiti).

52. P 30714, with a fully preserved rim, neck, handles, and part of the shoulder. The type is not published but is found extensively in late-5th- and early-4th-century contexts in the Agora. See Lawall 1995, p. 167, note 212.

53. Johnston 1996, p. 82.

54. The rarity of these graffiti is particularly notable in contrast to the many examples of ﾊ used on Attic fineware graffiti.

55. Lang 1956, p. 15, no. 65, pl. 3.


57. Prices in literary and epigraphic references and from graffiti such as the ones discussed here give a range from 4 obols per chous to 50 obols per chous; for studies of wine prices see note 16 above. Bagnall (1989, pp. 70–71) highlights the variability of commodity prices in papyri of the 4th century a.C.

58. Agora XXI, p. 59, Ha 5. Johnston (1978a, p. 218) notes that this piece “allows a number of interpretations.” For further discussion of the relationship between the graffito mark and the price dipinto and the possible interpretations of the graffito itself, see the catalogue entry below.

59. This fragment is cited in Papadopoulos and Pasaplas 1999, p. 177, note 78.
Commercial Abbreviations
(8, 20, 21, 54, 55, 66, 76, 77, 78)

The letters and other marks in the graffiti discussed above all appear in groups, and it was this circumstance that led to their identification as numerical graffiti pertinent to units of measurement. A much more common form of graffiti—for any sort of vessel—is an isolated letter or short abbreviation often thought to indicate an owner or maker of the pot. The ambiguity of these marks and the fact that they are found on so many different kinds of vessels make them hazardous to study solely in terms of graffiti on amphoras.

Certain letters, however, often appear on amphoras in deposits with numerical graffiti.60 The letters E and H, already discussed above with other symbols, often appear as isolated letters. A second common graffito of this type is the letter Μ, sometimes contained in the abbreviation ME. While it is possible that these abbreviations, E/H and M/ME, are simply owner’s marks, their repeated presence on amphoras sets them apart from other isolated-letter graffiti and raises the possibility that they refer to aspects of the amphora or its contents other than ownership.

E/H Graffiti

As noted above, the letters E and H often appear as components of numerical graffiti. It is tempting to transfer some element of their meanings in that context to instances in which they stand alone. Given the frequent appearance of volumetric graffiti on the amphoras studied here, a reading of the E/H graffito as a half-metretes (ἡμιμετρητής) seems reasonable. However, there is no single term in ancient Greek for half-metretes (ἡμιμετρητής does not exist), so it is more likely that the H here stands for hydria, defined by Hesychius as half of an Attic metretes.61 The letter might indicate that the jar contains only a half-metretes,62 which may be considerably less than its full capacity.

If H, when found alone, stands for hydria, however, it is no longer so readily interchangeable with E. Indeed, the two cases where E stands alone, 54 and 66, differ from the H graffiti in terms of the type of amphora on which they are found. Both 54 and 66 are found on Solokha I ampho-

60. One further such abbreviation (κλ) is seen in 84 and, possibly, 85 in Q 15.2. The same abbreviation may be restored on amphoras at other sites and may, therefore, fall into the same class as the E/H and M/ME marks here, i.e., not simply owner’s marks but related to amphoras in a broader sense. Given the scarcity of these marks, however, in comparison with the abbreviations discussed in this section, I have left the discussion of their possible meanings to the catalogue entries. For examples of κλ graffiti outside Athens, see Samothrac II.2, p. 100, no. 246, and Solomonik 1984, nos. 172 and 175.

61. Hesychius, s.v. οὐδραία, and see p. 12, above.

62. The assumption that an Attic metretes held 12 choes is supported by only one papyrus document, to my knowledge: P Ryl. 4, document 564rp, cfr. 17, line 5; but even here, δωδεκάχοιοι is restored (though with good parallels where metretes is modified, but not with the specific label of “Attic”). Otherwise, “Attic metretes” is expressed only in Hesychius’s definition of 1 hydria (see note 61). Modern authors have defined the term assuming a duodecimal system for the relationships between units of measure and using comparisons with Roman units of measure; see, e.g., Hultsch 1882, p. 101, note 6, which begins: “An einem direkten Zeugnisse über die Einteilung des attischen Metretes fehlt es. . . .” Epiphanius (Treatise on Weights and Measures, 43) distinguishes between a “sacred chous” as a twelfth of a metretes and a “complete” or “greater” chous as a “ninth of a metretes; see Dean 1935, p. 56.
ras, a type that is rarely resinated. If one follows the *commenis opinio* that resinated jars were for wine and some nonresinated jars more likely for oil,63 then perhaps the E here specifies that these contain oil, ἕλαιον.

A few Solokha I jars are known, however, with fairly small capacities, so the E could serve as an abbreviation for half-metretes (in the longer form ἡμισοὶ μετρητοῖ, which would allow the E to abbreviate ἡμισοῖ). Lang suggested half-metretes as the reading for the E followed by two vertical strokes on 13.64 As discussed in the catalogue entry below, however, such a reading does not fit the possibilities of dialect associated with reading E for ἡμι- nor the measured capacity.

**M/ME Graffiti**

Given the argument above for H abbreviating hydria/half-metretes, the most direct reading for M or ME would be as a single complete metretes. Such a reading certainly finds support in the large size of the Solokha I jars on which these letters are often found (8, possibly Solokha I form; 55; 77; and 78, Samian jar in Solokha I form); some jars of this form can hold slightly more than 1 Attic metretes, 12 choes.65 Problematic for such a reading, however, is the repeated presence of M-graffiti on necks that belong to much smaller jars (20 and 21). On these two amphoras, both from the same deposit, a letter M is found on either side of the neck. All four letters are very carefully and visibly inscribed. It seems unlikely that the writer would feel the need to be so emphatic about the fact that the amphora contained 1 metretes.

One possible reason that the Ms are so clearly inscribed is that it was very important for the jars' contents to be known to the buyer. Here the absence of resinous coatings on jars with the M/ME graffiti at the Agora seems relevant. As noted above, a lack of resin is sometimes taken to indicate oil as the primary contents of an amphora. It is difficult to reconcile M with a term related to oil given cases where the abbreviation is lengthened to ME;66 had the abbreviation been lengthened to MY, then perhaps perfumed oil (μύρον) might have been the meaning. The presence of ME, however, suggests reading the M as signifying μέλι, honey.

An unresinated amphora would seem to be quite an appropriate container for honey. Honey weighs much more than an equivalent amount of oil.67 If honey was sold from reused oil containers or reused, unlined wine jars, it would not be surprising to see the containers in which it was sold very clearly marked as such. Later amphora dipinti clearly identify am-

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63. Koehler (1986, pp. 50–52) collects many of the ancient references relating resin/pitch to wine amphoras, and (p. 52) lists wax, gum, and the dregs of olive oil production as possible lining agents for oil amphoras. Dupont (1998, p. 182, note 257) questions the exclusion of other products including oil from resinated jars. Resin was also transported in amphoras, according to G. Bass (pers. comm., November 1996).

64. Lang 1956, p. 9, no. 30.
65. Brashinskii (1984, p. 124, with chart on pp. 198–199) lists capacities for Solokha I amphorae of 39,700, 32,200, 17,500, and two at 14,000 cm³. In addition, an ME graffito appears on a Corinthian B type shoulder from deposit B 13:5 (Lawall 1995, pp. 342, 384, CrB2), which is not included in the catalogue here since it is not found with any other numerical graffiti; such a jar would have a capacity of much less than a complete metretes.

66. See, too, ME (as monogram) ΔΙ, Solomoniak 1984, no. 341.
67. Lang, in *Agora* XXI, p. 80, He 29, notes that ancient metrological writers considered honey to weigh one and a third times the equivalent volume of wine or water.
graffiti, wine selling, and reuse of amphoras

Perhaps to be cited in support of this reading is a fragmentary beehive reported among the finds from well R 13:1,\(^6^9\) a well immediately adjacent to deposits containing examples of the M/ME graffiti (see catalogue and “Findspots,” below) and containing many amphora graffiti, although none with the M/ME markings.

A related reading for the M/ME graffiti could be a label for honeyed wine (μελιτής οἶνος, wine prepared with honey, or μελίχρωος οἶνος, honey-sweetened wine).\(^7^0\) Such wine is mentioned both in the medical authors and in later Roman amphora dipinti from the Agora.\(^7^1\) While the lack of resin does not fit quite so well with this reading, here too the seller of the jar might be concerned to indicate very clearly that the jar contains honeyed wine, not normal wine.

**Summation Marks**

(2, 4, 6?, 22, 23, 24?, 46?, 56, 57, 80?, 91, 98?)

In a few cases, a simple tally of vertical strokes is accompanied by an acrophonic or alphabetic numeral, which can be read as the summary of the tally.\(^7^2\) These summation marks occur in three different patterns: 1) simple vertical strokes are summarized by a single alphabetic or acrophonic numeral; 2) the summarizing numeral follows a combination of single-unit strokes and larger unit symbols; and 3) the summation occurs midway through the tallying process and is followed by further notations.

The first pattern is the most common here with perhaps as many as seven examples catalogued: 2, 22, 23, 56, 57, and possibly 46 and 80. The tally marks are sometimes more sketchily cut than the summation marks, but more often all marks are cut in roughly the same fashion. The fact that the number of strokes equals the alphabetic or acrophonic numeral suggests a summation. The tallies might stop one unit short of the total if the summation mark was intended also to include the final small unit.

The second pattern only occurs twice and both examples are open to question (24, 98). In 24 an Η might be read as a half-metretes (6 choes) followed by four vertical strokes to give a total of 10 choes. Below this graffito is an incised delta that could be read as an acrophonic 10 recording the total indicated by the smaller units. For 98, the largest numeral, a delta, may have been inscribed first, then the series of four very sketchy strokes cut as the writer worked his way up to the “5” indicated by Π. This piece is unusual among the summation marks as it seems to indicate a measurement of weight rather than volume.

The third pattern is also fairly rare (4, 6, and 91). Here the summary is inscribed part way through the counting process and is followed by symbols for additional, usually smaller units. Lang read these graffiti as the result of pouring in a certain number of small units of liquid and then noting the total before adding more to top off the jar.\(^7^3\) It may be significant that two of the three examples of this pattern, 4 and 6, are earlier than the bulk of the graffiti and the third example, 91 (which comprises two graffiti), may have a slightly different interpretation. High on the shoulder near the base of the neck is the volumetric notation ΠΠΙΙΙ. Lower on the shoulder is another marking of five vertical strokes. Following the third pattern of summation graffiti, the five verticals would be read as being
summarized by the $\Pi$. After these 5 choose, another three were added, for a total of eight. Alternatively, the eight may have been noted first, and the five strokes noted later to account for removed contents.\footnote{74. Lang (1956, p. 6, no. 17) suggested that the five strokes might indicate kotylai if there were only two strokes following the fl. This reading is not well supported by other examples. Kotylai tend to be listed with the rest of a notation. It is unclear to me why an indication of only 7 choose in the main part of the graffiti would recommend the simple tally to be read as kotylai.}

This last example raises the question of whether the summaries record liquid poured in or poured out (decanted, for example, into a customer's smaller jar). In examples of the third pattern, especially in 4 and perhaps 6, in which larger to smaller and more precise units of measure are used, it seems likely that Lang is right to see the jar on which we have the graffiti being filled and topped off. For most of the other examples, however, it is possible that the summation represents the known quantity of liquid in the jar and that the smaller tallies result from liquid being poured out or decanted into smaller containers (for more on such processes, see discussion of practices, below).

**Combined Notations (25, 26, 56)**

Jars carrying more than one type of notation are quite rare among the graffiti treated here. In later periods, among finds from across the Agora excavations and elsewhere, combined notations are much more common.\footnote{75. *Agora* XXI, pp. 75–81. A word on the possible roles of combined notations:} It is possible that had more fragments preserved both sides of the amphora neck or broader parts of the shoulder, more combinations of markings might have appeared. The three combined notations that are preserved all involve volume and price. In two of these cases, 25 and 26, the volume is likely to represent the complete filling of the jar and the price indicates the cost of the contents (probably with the jar as well).\footnote{76. For 98, Lang (1956, p. 15, no. 64) suggests a separate price for the jar and for the contents. It is conceivable that jars were sold separately, given that much of the wine might have been decanted and sold in smaller units (see below). 98, however, would be the only example here of a price for contents separate from the price of the jar.} As noted above, the $\Delta \Sigma$ on 26 might instead be an indication of the weight of the empty vessel. If so, the marks on 26 would indicate the specific capacity of the vessel of the marked weight. For the reasons presented earlier, however, an indication of price on 26 is more likely. 56 seems to reflect at least two stages of marking. The graffiti on the jar is a summation mark of 5 choose, with the simple pattern of a series of strokes summarized by a numeral (in this case a three-letter abbreviation) for the total. This graffiti, however, is then covered by a red stripe. Further to the side on the same neck fragment is a dipinto that may be read as 16 drachmas, also in red paint. It seems likely that the graffiti and the red dipinti represent two occasions of marking. First, 5 choose (unlikely to be the full capacity of the jar) were poured in or decanted. This graffiti was then painted over, perhaps to cancel its message, and the price mark was painted. There is no need to see the price as related to the 5 choose; these may have long since left the jar by the time the price was marked.

**Summary**

Broad patterns in the nature of the graffiti may be summarized as follows. Volume does seem to be the point of information predominant among the graffiti, but the marks do not always record the full capacity of the amphora. The differing implications of those markings that might account for the complete capacity of the jar and of those that record smaller amounts are considered below. Notations of volume appear occasionally with price marks and in the format of a summation of smaller measures by a single larger unit.
Notations of weight are, at best, moderately explicit on a very few Classical amphoras. Even these, where M is read as abbreviating mna, are open to question. The other markings interpreted here as notations of weight come as tallies that seem to surpass the likely volume of the amphora and fall within the range of the possible empty weight of the jar and the gross weight of the filled jar.

Price markings are generally rare on these amphoras. The same holds true to some extent with fine ware graffiti: in relative terms, general “trademarks” are far more common than price marks in particular. A second significant feature of the amphora price marks is that they often seem to involve reference to staters even though Athens did not use that particular unit of coinage in the 5th century. The rarity of price marks and this use of “foreign” terminology are useful factors in identifying likely contexts for the application of price marks (see below).

Isolated letters of abbreviations are fairly common on amphoras and other pottery, and in most cases it is not at all certain whether they have any particular commercial significance. On the other hand, two sets of abbreviations, E/H and M/ME, recur sufficiently often on amphoras—both within the major graffiti-bearing deposits in the Agora, considered here, and at other sites—that they seem to have some particular meaning related to amphora use. E/H for half-metres, or H alone for hydria, E for elaion (oil), and M/ME for metretes, meli (honey), or honey-flavored wine seem to be the most reasonable interpretations given the nature of the amphoras on which the marks appear.

Summation markings, as noted above, tend to involve notations of volume, but in one anomalous case weight may be the topic of the graffiti (98). By far the most common pattern for these is also the most simple, a series of single strokes for counting up to or down from an overall total. Indeed, the primary issue of interpretation for these marks is whether they attest to decanting from or to filling the marked amphora (see below).

The scarcity of combined notations has also been noted. In the few cases found here, the focus seems to be on volume and price. While both price and volumetric notations often occur in isolation, it is noteworthy to find this juxtaposition of information. Such paired notations may help determine which stage in the distribution of the amphoras might be referred to by the price inscriptions.

Above all, in considering the readings of individual markings and determining why these marks were applied, it is important to emphasize the difficulties of interpretation and the limits on our certainty. At best, support of parallel syntaxes in other graffiti provides reasonable security in approaching individual problems, but many uncertainties and possibilities remain. On the other hand, the fact that so many graffiti, especially those that use abbreviations for units of volume, may be read as matching or approximating measurements of preserved, contemporary amphoras strongly suggests that we are on the right track. Readings of weight notation are more problematic. They are suggested here as an alternative to the difficulty in reading tallies as price marks when more recognizable monetary symbols are commonly used on amphoras, pithoi, and finewares. On the whole, it seems useful to make suggestions as to readings and to explore where those readings lead in terms of interpreting the graffiti.
CATALOGUE OF GRAFFITI ON 5TH-CENTURY AMPHORAS

The pieces illustrated here include both previously unpublished or un-illustrated graffiti and previously published graffiti of debated reading. Lang provides illustrations of most pieces not shown here.77

The deposits are listed in approximate chronological order. All findspots are indicated on Figure 1; a detail of the walls and Classical well deposits in the vicinity of grid unit R 13 is illustrated in Figure 2. Within each deposit, the entries are presented in the following order: volumetric notations; notations of weight (?); prices; abbreviations E/H and M/ME; summations; and others.

Within each entry, the following information is provided: catalogue number, Agora inventory number, general type of graffito present, amphora type, previous publication, preservation of the amphora fragment, description of the graffito, discussion of the reading of the graffito, and the likely date of the amphora type.

The description of the cuttings as light, moderate, or heavy—referring to the force applied in creating the graffito—is admittedly subjective but is meant to give some impression of the variation among the markings. In discussing the readings of each marking, I have tried to consider different possibilities; in many cases I see no way of confirming one interpretation over the others, and the reader may have even further interpretations. Comments on the dates of the amphora fragments and the deposits containing the graffiti are based on my current research on Late Archaic through Hellenistic amphora typologies. Since many of the better-preserved pieces and larger deposits will be discussed in depth in a future publication, I do not consider chronological issues in detail here.

Early Examples of Numerical Graffiti

The following graffiti are from deposits closed before ca. 425 B.C. These pieces are listed in roughly chronological order, as dated by either the findspot or, when possible, the amphora carrying the marking.

1 (P 11068). Volume. Chian C/1. Fig. 3

D 15:1; well filled during cleanup after the Persian sack in 480 B.C. (Shear 1993, pp. 434–435).
Lang 1956, p. 3, no. 2.
Preserves half of rim, neck, and one handle.
Seven horizontal, parallel incisions across handle, each cut quite deeply.
Lang interprets this graffito as indicating 7 Attic choes, assuming that early Chian jars held 8 Chian choes. Brashinskiy (1984, p. 171, nos. 20–23 and 30–33), however, cites a range of sizes from less than 7 to nearly 10 choes.
For the form of this jar and all three of the major 5th-century Chian forms (C/1, C/2, and C/3), see Kerameikos IX, pp. 23–24; the C/1 form is datable between 520 and 480 B.C.

77. Lang 1956; Agora XXI.
Figure 3. Graffiti from deposits closed before ca. 425 B.C.
2 (P 9340). Summation. Unclassified type. Fig. 3

Section Φ grid 65/MB, notebook p. 279, context dated to late 5th or early 4th century, just south of South Stoa I.


Unclassified handle fragment. Preserves only lower part of handle.

Graffito at the base of the handle: HIIIII. Very short, small, carefully cut symbols.

Lang reads a final alphabetic numeral for “8,” created by linking the sixth and seventh verticals, after 7 individual choes were poured into the jar. The vertical tallies may record subtraction from the total of 8 choes as each chous is poured out. The careful cutting of the letters may suggest a single marking occasion for the filling or decanting.

Neither the form nor the fabric is precisely datable, but the fragment is likely to date to the late 6th or early 5th century.

3 (P 5176). Weight. Northern Greek, possibly Thasian. Fig. 3

H 6:5, well found under the Stoa of Zeus, cut through Persian destruction level (Talcott 1936, p. 333, note 2).

Talcott 1936, pp. 344 and 352.

Nearly complete jar with minor restorations.

AM ligature on shoulder with MA written out in full. Placement of AM relative to MA not indicated on Figure 3. Lightly incised, large letters.

Following Lang’s reading of a similar ligature on a small table amphora (Agora XXI, He 3), this graffito may be read as “amphoreus 10 mnas.” Talcott (1936, pp. 344, 352) discusses graffiti on two other amphorae from the same well. One (P 5174; Agora XXI, p. 33, F 60 = PAA 122810) carries the graffito AMA; the other (P 5175; Agora XXI, p. 34, F 61) is marked XAP. By comparison with P 5174, the AM monogram on 3 may be simply an owner’s mark.

Lang (Agora XXI, p. 33) notes that names starting with AMA tend to be either “heroic or later than the 5th century.” Cf. PAA 122818, possibly ca. 400 B.C. 3 was chosen for inclusion in this catalogue on account of the MA mark incised higher on the shoulder, near the AM; MA seems unlikely to abbreviate a name.

The fabric of this amphora type bears some resemblance to later stamped Thasian amphorae, and the form is widely paralleled across the north shore of the Aegean (Lawall 1997).

Date ca. 460.


Section Ψ; surface find in the area just south of the Mint.

Agora XXI, p. 59, Ha 7, pl. 32.

Preserves only the lower part of handle.

IIIIZEKK running toward the shoulder along the outer face of the handle. Deeply cut symbols, with tally strokes cut more deeply than the following letters.
Lang reads as 7 choes, summed up by the Z (7) followed by half a chous and 2 kotylai. Although it is difficult to establish whether this was a roughly 7-choes jar (few capacity measures are published from this period), there is no ready alternative to Lang’s reading.


5  (P 21965). Weight? Unknown type.

N 7:3, well just northwest of the north end of the later Stoa of Attalos, published in full by Boulter (1953) with catalogue of amphoras by Grace (1953).

Boulter 1953, p. 100, no. 140, fig. 4; Lang 1956, p. 6, no. 16.

Preserves only a small, poorly diagnostic body fragment of a relatively thin-walled vessel.

Graffito ∆ followed by two rows of four vertical strokes, one row above the other. Lightly cut.

Lang (1956, p. 6, no. 16) considers that this would be “an unusual price inscription” and suggests instead 10 choes, 8 kotylai. While such a large capacity is possible, the large number indicated could record the empty weight of the jar, 18 mnas (ca. 8.2 kg).

Date before ca. 440 B.C.

6  (P 30085). Summation? Type uncertain, possibly northern Greek.


Rotroff and Oakley 1992, p. 125, no. 356, fig. 22, pl. 60.

Neck sherd only.

Graffito in small, carefully cut letters: HHHT IIII. The vertical strokes are set slightly apart from the preceding letters.

The T might sum up the four individual tallies: perhaps then we have 3 hemichoes and 4 kotylai. Alternatively, the T might indicate a third or quarter of a chous following the accounting of the 3 hemichoes. While it is possible that this sherd was inscribed after breaking, the T is more likely to indicate a fraction than either the numbers 30 or 40; and 300+ talents seems like a large sum to inscribe on a simple ostrakon.

Although Rotroff and Oakley (1992, esp. pp. 53–57) suggest a closing date for the deposit around 425, the diagnostic amphora pieces and many of the other ceramics are no later than ca. 450. The graffito may also be much earlier than ca. 425.

7  (P 17124). Volume or weight? Chian C/3.  

Fig. 3

A 20–21:1, deep cutting for drain. The latest datable piece in the fill is a bell krater, P 17000, ca. 400–397 B.C. See Young 1951, pp. 254–257. Full rim, neck, both handles, part of shoulder.

Large red-painted ∆ on neck; below this is a graffito: ∆I. The
dipinto does not cover the area of the graffito, so it is not certain which mark was applied first. The incised letters are fairly large in comparison with other pieces in this catalogue, and the incisions are of moderate depth.

Eleven choes would be fairly large for a jar of this type; 11 mmas is a possibility though this would be fairly light for such a thick-walled and tall jar (no intact jars were available for more precise estimation of the range of weights for this particular type).

The jar form is late in the bulging neck series, either just before or very early among the pieces found in well R 13:4 (see below); see Kerameikos IX, pl. 64:4 and 8. Date ca. 440–430 (much earlier than the bulk of the deposit, which seems to date late in the 5th century).

8 (P 25896). M-graffito. Possibly Solokha I.

M 17:7, a pit just south of South Stoa I.
Preserves only handle.
ME cut heavily on outer surface of handle; the letters are very visible.

On the basis of this handle and ME graffiti from other sites, it is likely that the M graffito abbreviate a word beginning with ME rather than MY. Although it is possible that this is a noncommercial initial, the common appearance of M or ME in Athenian graffiti suggests the reading of μετρητής or μετρητός (measured). Another possibility, however, is that the M/ME stands for μελά (honey). It seems noteworthy that neither this piece nor any of the amphoras marked with M have a resinous coating on the interior surface.

The profile and fabric of this handle are best identified as belonging to the Solokha I type, mushroom-rimmed jar (cf. Lawall 1995, p. 346, NG 22). For this type, see Lawall 1995, pp. 218–233; Zeest 1960, pp. 91–92; and Mantsevich 1975. The amphora material and other pottery are datable early in the third quarter of the 5th century and clearly earlier than the latest finds in R 13:4.

Well R 13:4
Well R 13:4 is just south of the later Stoa of Attalos, perhaps associated with very poorly preserved 5th-century walls. The well was filled ca. 425 and the datable contents range from 440 to 425 (for complete publication, see Talcott 1935). Rotroff and Oakley (1992, p. 56) propose a link between this deposit and the earthquake of 425 B.C.


Preserves shoulder only.
Graffito ΠΠΠΙ. The second leg of the Π is shorter than the first; the vertical strokes vary in length; marks lightly cut.

A tally of 9 choes might indicate the use of Chian units, and, if one follows the 9:8 ratio for Chian to Athenian units (Barron 1986, p. 98, note 49; Wallace Matheson and Wallace 1982, p. 300, note 21;
Figure 4. Graffiti from well R13:4
Wallace 1986, p. 88, note 7, citing a ratio of 50:56, which gives 8.03 Attic choes for 9 Chian), then this marking would indicate a “convenient” match to Athenian standards (less convenient if one uses the 8:7 ratio proposed by Lang 1956, p. 3; Grace and Savvatianou-Petropoulakou 1970, p. 360; and Mattingly 1981). Nine Attic choes would be an unusually large capacity for this amphora type; indeed such a figure is unattested. For this reason, 9 and 10, if they are to be read as volumes, must have been inscribed before the jars reached Athens.

The identification of this fragment as probably being from a straight-neck Chian jar is based on the wide shoulder with a sharp outer edge and somewhat finer fabric than is commonly seen in the latest of the bulging neck jars of Chios datable to the third quarter of the 5th century; see, e.g., Grace 1979a, figs. 44–45. The closing date of this well limits this fragment’s date to ca. 430–425.

10 (P 33413). Volume. Probably Chian straight-neck. Fig. 4

Shoulder only.

Nine vertical strokes remain—the sherd breaks off without leaving enough blank space to guarantee that the tallies did not continue. Lightly cut marks; uneven lengths and spacing. Resinated interior.

As with 9 above, 9 choes could be indicated.

Same type as 9 above. Date ca. 430–425.

11 (SS 1845). Volume. Chian straight-neck. Fig. 4

Talcott 1935, p. 496, no. 85, fig. 17 (jar only), and pp. 514–515.

Restored jar with both handles preserved, nearly complete rim, and complete toe; large areas of neck and body restored with plaster.

Graffito of six vertical strokes. Lightly cut, low on neck between handles. The neck is broken immediately left of this graffito, raising the possibility that there were originally more strokes.

A reading of 6 or more choes seems mostly likely. It is unfortunate that the beginning of the graffito is not preserved with certainty. Were it possible to know that only 6 choes were marked as the capacity of this jar (if one reads these marks as necessarily checking the full capacity of the jar, as need not be the case), then the attendant stamp would not guarantee even a minimum capacity of the “standard” 8 Chian choes. The kantharos stamp here reappears on other Chian jars of roughly the same period and somewhat later; the same stamp appears on 69, below, and SS 14080 from R 11:3 (closed ca. 420–410).

Date ca. 430–425.


Lang 1956, p. 6, no. 15, pl. 6; Grace 1979a, fig. 45, far left.

Mended and restored to complete amphora form, missing only parts of body (restored in plaster).
Graffito on neck: Π with two vertical strokes followed by three horizontals. Very lightly cut marks.

Lang reads 7 choes, 3 kotylai.

Jar carries sphinx stamp at the base of the handle (see Grace 1979a, text with figs. 48–49, and Zeest 1960, p. 77, pl. 3).

Date ca. 430–425.


Talcott 1935, p. 516, fig. 28f.

Heavily restored jar, missing handles, large part of shoulder, fragments of body; toe in very poor condition from salt damage.

Graffito EII. Fairly light strokes but larger letters than many in this series.

Talcott reads this mark as an alphabetic numeral E indicating 5 choes, followed by two more for 7 choes. Lang (1956, p. 9, no. 30) reads ½ metretes and 2 choes, and this is equivalent to the measured capacity of the jar of 8 Chian choes. Lang proposed that the use of E for ½ indicates Chian psilosis, but E would not be used by an Ionian Chian to abbreviate a word beginning ἴματ-. An Athenian or other non-Chian-based writer would not record volume by Chian standards. Talcott’s reading of 7 choes fits both the measured capacity (8 Chian choes = 7 Attic choes) and the requirements of dialect, but such a use of E instead of the very common Π might have been confusing. The E could also stand for either 1 or ½ chous, followed by 2 kotylai. Such a tally would not describe the full capacity of the jar, and the E for “ἐξ” would be unusual (though not without parallel; see 25, below).

Date ca. 430–425.


Lang 1956, p. 17, no. 72.

Preserves three-quarters of rim, both handles, and complete toe, but much of the body is restored in plaster.

Graffito on neck: ΔΔ. Light to moderately deep incisions.

Lang reads as a bare weight of 20 mnas with supporting evidence of the weight of the jar. The large amount of plaster used in the restoration of the vessel renders the weight measurement of the jar itself of uncertain value. Nevertheless, weighing intact jars without plaster restorations indicates that 20 mnas is a possible weight for an empty vessel.

Date ca. 430–425.

15 (P 33412). Weight? Chian C/3 or very early straight-neck  

Preserves only fragment of neck and shoulder.

Graffito on lower part of neck: ΔΙΙΙΙΙΙΙ. Light to moderately deep incisions.

The marks indicate 17, perhaps a price, just over 2 drachmas per chous; 10 choes and 7 kotylai would seem too large a capacity for a jar of this type. Without the standard drachma symbol a price
interpretation is uncertain. Seventeen mnas (ca. 7.5 kg) might correspond to the empty weight of a large, heavily built Chian C/3 type amphora.

Both the Chian C/3 amphoras and the earliest straight-neck jars have a coarser fabric, as is the case here, than is usually associated with the fully developed straight-neck type.

Date ca. 440–430.

16 (P 2367). Weight? Very late variant of Chian C/3.

Talcott 1935, p. 516, fig. 28c; Lang 1956, p. 14, no. 63.

Preserves rim, neck, and one handle.

Graffito on neck: five vertical strokes, on the fifth of which are ten short horizontal marks. Fairly coarse strokes, each one trailing off at the ends. Resinated interior.

Lang reads as 14 drachmas. The use of such a long, complex symbol for 10 drachmas seems unnecessary, and it is unusual to place the larger unit of price after individual marks indicating, by Lang's reading, smaller units.

An alternate reading would be 4 choes and 10 kotylai. As each kotyle was removed, another would be added to the short stroke tallies; decanted choes would be accounted for with the longer strokes. With this reading, only part of the complete potential volume of the jar was decanted in the recorded operations.

The verticals could also be read as units of 10 mnas to reach a total of 50 mnas for the marking. Once four 10-mna weights were balancing the jar with its contents, single-unit weights were added until the jar was filled, and each of these was marked along the fifth vertical stroke. Fifty mnas of wine would be equivalent to ca. 22 liters, a common capacity measure for Chian jars of this period.

Short strokes tied together by a single line are discussed by Johnston (1979, pp. 30–31) without clear indication of whether price is being recorded or simply numbers of vessels in the batch; Tod (1911–1912, pp. 108 and 116) presents epigraphic examples of verticals linked by a single horizontal as indicating multiple drachmas, but in these cases the practice of linking drachma signs seems to begin only in the 3rd century b.c.

Date ca. 440–430/25.

17 (SS 1840). Weight? Chian straight-neck.

Lang 1956, p. 4, no. 8, pl. 1.

Mended and restored to nearly complete amphora form; missing toe and minor fragments of the body.

Graffito on neck: three horizontal strokes over two circular marks, followed by seven vertical strokes. Coarsely and clearly cut graffito.

Lang reads 7 choes, 3 kotylai, 2 “smaller units.” The horizontals preceding the verticals may indicate units of 10, with the dots below as single units, and the verticals—despite their greater
length—as smaller units. This system is used on the early-4th-century building accounts from Epidauros; see Tod 1911–1912, pp. 103–105, in which the markings refer to drachmas and obols. It seems odd, however, to list 7 obols instead of another drachma and 1 obol. A listing of 32 mnas and seven smaller units seems more likely.

The amphora has a sphinx stamp at the base of the handle. This stamped Chian type is the same as 12 above, date ca. 430–425.

18 (SS 1842). Weight? Chian straight-neck. Fig. 4

Restored jar missing one handle, parts of rim and neck, and fragments of the body.

Graffito on the neck: two verticals followed by a third from which there project eight short horizontals. There is a trace of a horizontal line between the first two vertical tallies, but this may not have been deliberate. Light vertical strokes, slightly coarser and clearer horizontals.

It is difficult to apply Lang’s method of reading a price mark on 16 to this mark (8 drachmas on the vertical plus two more marked with the larger strokes to give 10 drachmas). A volumetric notation might be read as follows (corresponding to a possible reading for the similar 16): the verticals indicate 2 chous and the shorter, horizontal tallies refer to 8 kotylai. Such a reading has two implications: 1) the graffito does not “check” the actual capacity in light of the stamp since there are too few marks; and 2) given that there was still far more than 1 chous remaining, the kotylai were not added to top up the capacity measurement. The vertical strokes might, therefore, account for chous of decanted wine with the bar of horizontals used to keep track of smaller amounts (kotylai). The weight-mark reading method, which worked well for 16, would give us 28 mnas for this marking. Such a weight falls between the likely empty and gross weights of amphoras, but the mark could indicate either the net weight of the added liquid partly filling the jar or the net weight of a grain like barley filling the jar (20 liters barley = 12.8 kg = 28 mnas).

Amphora with sphinx stamp at top of neck, date ca. 430–425.

19 (P 2372). Price mark. Chian straight-neck. Fig. 15

Lang 1956, p. 14, no. 62; Talcott 1935, p. 516, fig. 28e.

Nearly complete jar missing only small bit of the rim and parts of the body.

Graffito on shoulder near the base of the neck: ΠΠΠΣ. Very light strokes.

Lang reads a price of 7 staters. The use of a non-Attic unit of currency supports the view that many of the price marks seen in these graffiti were applied for use at the Peiraieus (or another Attic port), where merchants would be accustomed to moving between many different currencies, or before reaching it; see below, p. 75.

Date ca. 430–425.
20  (P 11384). M-graffito. Possibly Chian straight-neck. Fig. 4

Preserves part of rim, neck, one handle.
Neck with graffiti: one M on either side of neck. The position of each M relative to the other is not indicated on Figure 4. Moderately coarse strokes. No resin.
As in 21, the writer seems to have wished to make the M very clear and visible, from either side of the jar. Perhaps the contents were honey or honeyed wine, not some lighter liquid or standard wine.
Possibly an overfired Chian straight-neck; however, the grayish surface color and the quite short neck are somewhat unusual for Chios. The form, whether Chian or another similar type, is unlikely to date much before 430–425.

21  (P 11385). M-graffito. Possibly Chian straight-neck. Fig. 4

Preserves rim, neck, upper attachment of one handle.
Same graffiti as 20 with same arrangement of one M on either side of the neck, moderately coarse strokes.
The jar type is the same as 20, but the neck here is slightly taller; date ca. 430–425.


Talcott 1935, pp. 515–516, fig. 28b; Lang 1956, p. 5, no. 10.
Jar restored, missing a few bits from handles, neck, and shoulder.
Graffito consisting of an enigmatic ligature (see Talcott 1935, fig. 28b) followed by eight vertical strokes; a bit further from these, set above them, is a smaller H. Moderately deep to deep markings with the initial ligature being especially carefully cut.
Talcott suggests a false start writing an alphabetic 6 to explain the ligature, then a difficult time of counting up to eight before inscribing the H, giving a total of 14 (drachmas) as a price. Lang reads the tally as 8 Chian chous, summarized by the alphabetic numeral H, but does not comment on the preceding ligature.
Date ca. 440–430/25.

23  (P 11386). Summation. Chian handle. Fig. 4

Lang 1956, p. 5, no. 12.
Preserves only the lower half of the handle to the point where it attaches to the shoulder.
Graffito on the outer surface of the handle near base: H set over seven vertical strokes. The marks are exceptionally small and care- fully cut, but the H is cut much more deeply than the vertical strokes.
Lang reads as seven single-chous measures poured in and the summation 8 (H) inscribed after the eighth chous was poured in. Given the difference in weight between the verticals and the H, Lang’s reading of relatively less formal tallies followed by a final, formal summation
seems very likely. A chous-by-chous emptying of the jar would result in the same pattern of markings.

The form and fabric of the handle require a Chian identification; the relative fineness of the fabric suggests the later straight-neck type, ca. 430–425.


Lang 1956, p. 8, no. 26, pl. 1.

Preserves only neck and a bit of the shoulder.

Graffito on lower part of neck: ΗΗΗΗ, with Δ below, closer to the shoulder. The incisions are very light and tend to become fainter from left to right, perhaps evidence that the tallies were all cut at one time. The Δ, however, is cut in an even more sketchy manner, so it may not have been cut at the same time as the other marks. Very slight traces of resin inside.

Lang reads as 10.5 choes, 4 kotylai. Alternative readings include a half chous and 4 kotylai decanted against a total of 10 choes; or a half metretes (hydria) and 4 more choes for a total, recorded by the Δ, of 10 choes. The Δ might also simply be an initial, unrelated to the capacity, cost, or weight of the jar.

Date ca. 430–425.


Lang 1956, p. 12, no. 58; *Agora* XXI, p. 76, He 2, pl. 42; Talcott 1935, p. 516, fig. 28a; Johnston 1996, p. 82, fig. 1.1.

Most of rim, both handles, much of body, and most of toe preserved; large parts of lower neck restored in plaster.

Graffito: ΠΕΕΧΔΕΧΑΣΤΗΡΟΣΣΣ. I restore as "πέντε εἶς εἶς χόες δέχαστήρος στατήρος" (see discussion below). Small letters fairly carefully cut vertically down the neck and onto the shoulder. Deep strokes; letters tend to increase in size further along the graffito.

Lang reads ΠΕΕΧ as πέντε εἶς εἶς χόες. She notes (1956, p. 12) that the jar measured the equivalent of 7 Attic choes. The use of epsilon as an acrophonic numeral for εἶς is not securely paralleled among the graffiti studied here; however, the alternative of ἕμι—seems unlikely with two epsilons (one-half and one-half) on such a formally inscribed graffito. Johnston questions Lang’s reading of 7 choes by citing the use of Ε for 100 at Olbia. That graffito, however, seems to have been written on a sherd rather than an amphora (for similar use of multiple Ἐs on an ostrakon, see Blondé 1989, p. 518, no. 170). The δέχαστήρος, 14, when considered with the dropped aspirates implied by the epsilon abbreviations earlier in this graffito, provides some limits to the possible dialect of the writer. Buck (1955, pp. 154–160) places -τήρος in his West Greek and Northwest Greek groups. Few members of these groups, however, drop the aspirate. Those that do include Delphi (at times, p. 156) and Elis (p. 159). The final, poorly preserved letter that I restore as a sigma introduces another significant area of debate concerning this graffito. Lang
The jar's wine (see also Lang 1956, p. 13), with the drachmas implied but not abbreviated or written. Johnston wonders whether drachmas or staters should be supplied as the unit of currency. The upper angle of the sigma supports the restoration of στατήρες, either abbreviated or written out. The surface of the jar is worn below the preserved area of the graffito. Further along is an X, but this might not be a deliberate mark. Had στατήρες been written out, especially given the varying size of letters as preserved in this graffito, the word may have fit before the X. The X, however, could have been cut after στατήρες was inscribed. Given the poor preservation of the initial Σ of στατήρες, the reading cannot be considered secure, but the mark interpreted here as the upper angle of a Σ encourages the reading of staters rather than the implied drachmas.

Date: ca. 440–430.


Lang 1956, p. 10, no. 44; Agora XXI, p. 76, He 1, pl. 42; Johnston 1996, p. 82, fig. 1.2.

Preserves rim, most of neck, and both of the upper handle attachments.

Graffiti on either side of the neck: Δ KK with X in the Δ, and opposite, ΔΣ (three-bar sigma); also a red-painted stroke behind one handle. The ΔX KK are incised with slightly heavier lines than the ΔΣ, whose strokes are quite light and sketchy.

The ΔX KK graffito resembles 27 from R 13:12, but that piece lacks the additional price mark. Lang (1956, p. 10, no. 44) reads as 10 chous, 2 kotylai with a price of 10 staters, making Mendean wine have the same 2 drachmas per chous price read elsewhere for Chian wine (see p. 16 above). Johnston (1996, p. 82) points out the ambiguities of this mark: “whose chous and whose staters?” Staters often appear on amphora price marks, and these foreign currencies may have been applied by wholesale shippers. Such marks seem too ambiguous for any role in facilitating retail commerce in the Agora. The stater notation here could indicate the tare weight of the precisely measured jar (10 staters equal 20 emporic mnas, or just over 9 kg). The figure cannot be read as an indication of the weight of the jar’s contents, since no contents likely in a volume of just over 10 chous (over 30 liters) would weigh only 20 mnas.

The amphora neck is fairly short, but even so it is not any more closely datable than the general range of the contents of the well: ca. 440–425.

Well R 13:12

R 13:12 is a well deposit east of R 13:4. The amphora forms are similar to those in R 13:4, but the finewares and plainwares were not reexamined for the present study. Camp (1977, p. 220) suggests a date for the contents of the well in the third quarter of the 5th century.

Complete neck, both handles, part of shoulder.

Graffito on neck: Δ with X inside, followed by three kappas, two set above the third. Very light incisions, small carefully cut letters. Resinated.

Very similar arrangement of letters as in 26, but the particular styles seem a bit different (the range of allowable variation in such graffiti in terms of hands and letter forms is uncertain). A reading of 10 choes, 3 kotylai seems required. It seems possible that some Mendean (?) shipper marked his jars with specific capacity notes. It will be interesting to see how similar to 26 and 27 is the example from Kommos cited by Johnston (1996, p. 82, “a graffito similar as far as it is preserved”).

Profile of the jar shows no significant difference from material in R 13:4, date ca. 425.

**Construction Fills for the Mint Building**

The pottery lots listed below are all from construction fills of the late-5th-century Mint building (the topic of a forthcoming study by John Camp and John Kroll). The pottery in these fills continues into the last decade or so of the 5th century (Camp, pers. comm., June 1998), but the diagnostic amphora fragments are uniformly datable to the third quarter of the century. It seems possible that the rubbish used to fill under the Mint floor was the same that was also used to fill well R 13:4.

28 (P 3346). Volume. Chian C/3. Fig. 6

Lot ΠA 294A, section ΠA, grid ΜΓ, ΜΔ/104, 105, construction fill under the floor of the Mint.
Preserves only neck wall.
Graffito ΜΜΜΜΜ. Lightly cut, with uneven length and spacing.
Eight choes is a likely interpretation. The unevenness of the lines could be the result of either one hasty filling or measurement, or successive decantings.
Date ca. 440–430.

29 (P 33415). Volume or weight? Possibly Solokha I. Fig. 6

Lot PA 294A.
Preserves neck fragment only; break at left of graffito.
Graffito ΕΕΕΕΕ. Deeply but unevenly cut small letters.
The two most likely interpretations of this graffito seem to be either 4 or more choes, reading the Ε for εξς, or 4 or more hemichoes. If the Ε is read as an acrophonic numeral for εξς the units of measure could also be mnas, thereby making this a notation of net weight (probably only partially filling the vessel). Another reading for weight would involve reading the Ε as an alphabetic numeral, 5, and thereby reading 20 or more mnas.
Poorly diagnostic, but other amphora material in this context is datable ca. 425 or slightly later.
Figure 6. Graffiti from Mint construction fill

30 (P 3420). Volume or price? Possibly northern Greek.

Lot ΠΑ 293, section ΠΑ, grid Μ, ΜΣΤ/101, 102, construction fill under the floor of the Mint.
Preserves lower part of neck and shoulder.
Graffito X (or ι) III. Cleanly cut lines breaking though the grayish surface of the sherd to the red core.
Unfortunately the graffito is not sufficiently preserved to determine whether the initial sign refers to choes or drachmas. If choes, then we have 1 or more choes and 3 kotylai. If drachmas are indicated by the first sign, the subsequent verticals might indicate obols.
Poorly diagnostic fragment; pre-425?
GRAFFITI, WINE SELLING, AND REUSE OF AMPHORAS

Lot ΠΑ 294A.
Preserves neck and one handle; fairly low-slung handle.
Graffito on lower part of neck: MOI. Deeply cut large letters.
First part of the word missing. Uncertain commercial significance.
Poorly diagnostic fragment; pre-425?

32a–b (P 33419, P 33417). Unclassified graffiti.
Lot ΠΑ 294A.
Lot includes two poorly diagnostic sherds, one (a) with EV graffito, another (b) with O.
Apart from their findspot, there is no reason to see these as commercial graffiti.

WELL R 13:1

Well R 13:1 is located north of R 13:4, and south of the later Stoa of Attalos. The well was closed at the end of the 5th century, with the range of dates for the bulk of the fill being ca. 430–400 B.C. (Agora XII, p. 398). The amphoras in this deposit are very fragmentary; no complete vessels were ever assembled from these finds. The amphoras here show some development beyond the forms in R 13:4, and the best parallels occur in deposits closed ca. 410. None of the R 13:1 amphoras necessarily dates beyond ca. 410.

Lang 1956, p. 4, no. 5.
Preserves large portion of neck.
Graffito on neck of four parallel strokes. Strokes of moderate depth.
Resinated interior surface.
Lang reads at least 4 choes.
Form is unlikely to be much before ca. 425–410.

Lang 1956, p. 4, no. 6.
Small bit of rim, bit of handle, and neck.
Six parallel marks on the neck, closer to one handle. Lightly cut incisions.
Lang reads as 5 or more choes. By my reading, 6 or more choes.
The form need not be any later than the straight-neck Chian jars in R 13:4, ca. 425.

Lang 1956, p. 7, no. 21, pl. 1.
Preserves handle fragment only.
Graffito on the outer face of the handle shaft, moving from top to bottom: three horizontal strokes, followed by a fourth on which
Figure 7. Graffiti from well R 13:1
are stacked three kappas, with a single larger kappa at the bottom of the preserved fragment. The fragment is broken at the top, leaving open the possibility of more strokes, and at the bottom. At this lower end there is enough uninscribed preserved surface that it is unlikely that there were further related markings. Very coarsely cut incisions. There are extra cuts over the middle of the stacked kappas as though for the correction of a mistake.

Lang reads some amount greater than 3 chous and 4 kotylai. Despite the apparent mistake in incising the series of aligned kappas, the intention may have been as Lang reconstructs it, or perhaps (see 36) we are only meant to read the two unaltered kappas atop the vertical along with the last sign, to give 3 or more chous and 3 kotylai.

The handle form could date anytime in the last third of the century, to ca. 410.


Lang 1956, p. 7, no. 22.

Preserves only the lower part of the neck and shoulder.

Graffito on lower part of neck, just above shoulder: three kappas facing left one above the other, followed by three vertical strokes. Very coarsely cut marks. Resinated interior.

Lang reads as 3 or more chous and 3 kotylai. It is not common to find retrograde inscriptions among these late-5th-century amphora graffiti; it is possible that this graffito is meant to be read from above. This graffito and 35 are the only ones that I know with stacked kappas. The two fragments are of very similar fabric, the graffiti show a similar style of cutting, and the handle (35) clearly carries a mistake. Perhaps the handle belongs to the same jar as this neck, and the neck graffito offers a cleaner, correct version of the marking.

The fragment is not sufficiently diagnostic to narrow the date beyond the general date for the contents of the deposit, ca. 410.


Lang 1956, p. 13, no. 59, pl. 3.

Preserves lower neck and shoulder.

Graffito on lower part of neck: Ν (or Ι Ι) ΙΙΗΟΟΟ. Coarsely incised letters. Lang reads four verticals before the Η to give 4+ chous, ½ chous, and 3 oxybapha (= ¾ kotyle); however, she notes the problematic reading of the initial signs. The diagonal of the possible Ν could be an extraneous mark.

Context date ca. 425–410.

38 (P 9244). Volume. Chian or Solokha II.

Lang 1956, p. 11, no. 49.

Preserves lower neck wall.

Partially preserved Π with an X inside, with two horizontal lines below. Wide, but not especially deep, strokes. The second leg of the Π is much shorter than the first. Resinated interior.
Lang reads as “five chous or more” perhaps referring to the two horizontals below the Π. Interpretations of either 7 chous or 5 chous and 2 kotylai would take account of the lines below the ΠΧ.

Fragment is poorly diagnostic. The Solokha II type amphora is related in form very closely to the straight-neck Chian types. This is particularly true of the rim and upper parts of the handles. The differences lie in the lower parts of the handles, the shapes of the toe, and the somewhat darker red-brown fabric of the Solokha II amphoras; for illustrations and discussion, see Doulgéri-Intzessiloglou and Garlan 1990 (identifying Peparethos as at least one production area for this type) and Mantsevich 1975.

Context date ca. 425–410.

39 (P 9249). Volume. Possibly Solokha II.

Lang 1956, p. 12, no. 54, pl. 3.
Preserves lower neck and shoulder fragment.
Graffito on lower part of the neck, close to the transition to the shoulder: ΠΧΙ followed by a vertical stroke that could be one side of another Η. Shorter second leg of Π. Moderately coarse but clean strokes (similar coarseness as in 46). Some resin preserved on interior.

Lang reads “6 ½ chous and ?” The last vertical mark suggests a reading of 6.5 chous and 1 or more kotylai; however, the break in the sherd allows for the possibility of another Η instead of a simple vertical stroke.

The Solokha II attribution is based on the fact that the fabric here seems consistently redder than is common on Chian amphoras of the same time. The piece is not sufficiently preserved to give much indication of date.

Context date ca. 425–410.

40 (P 9250). Volume. Possibly Chian. Fig. 7

Lang 1956, p. 9, no. 33.
Preserves lower neck.
Graffito XXΗΙΙ. Lightly cut incisions.
Lang reads 2.5 or more chous and 1 or more kotylai on the basis of reading K after the Η. In either case, we seem to have 2 or more chous, ½ chous, and one or more fractions, probably kotylai.

Context date ca. 425–410.

41 (P 9251). Volume. Mendean. Fig. 7

Lang 1956, p. 10, no. 42.
Preserves shoulder and small bit of the neck.
Graffito over transition from neck to shoulder: ΠΧ monogram created by a horizontal line crossing the short second leg of the Π. Two incompletely preserved vertical strokes follow this monogram. Light incisions.

Lang reads two 5-chous signs. If Lang intended the two free-standing verticals as the legs of the second Π, the X for this monogram
is not preserved. This interpretation gives the second Π legs of equal length, while the first Π has legs of different length. Such a difference in orthography seems unlikely, and most Πs among the graffiti here have uneven leg lengths (cf. 42). If Lang intended the first freestanding vertical to be the right leg of the first Π, then only the left leg of the second Π is preserved. With so little indication of the second 5-chous sign, and given the common pattern among the graffiti studied here of single units following the 5-chous symbol, I suggest a reading of 7 choes: ΠΧ II. A possible parallel for this arrangement of the ΠΧ monogram is offered by 53, unfortunately also incomplete. Lang’s reading does create a volumetric notation for this jar that is in keeping with the two 10-chous notations on 26 and 27. Around 400 B.C., however, Mendean amphora capacities are known to have fallen closer to 7 choes; see Eiseman and Ridgway 1987, p. 52, table 7.

Poorly diagnostic fragment, context date ca. 425–400.


Lang 1956, p. 10, no. 43, pl. 2.
Preserves small bit of neck wall.
Graffito: a faintly preserved vertical stroke followed by X and four vertical strokes. The third vertical after the X has a short diagonal angling down to the right from the point where the stroke breaks off. This diagonal does not appear deliberate to me.

Lang reads the graffito as a ΠΧ monogram (using the verticals on either side of the X, with equal leg lengths for the Π) followed by ΗΙ. The Η, if the diagonal stroke was deliberate, would have an unusually sloping crossbar. Without the Η, but keeping the rest of Lang’s reading, we have 8 choes, a common enough capacity for late-5th-century Chian jars. The initial 5-chous sign, however, is also problematic as it would require a Π with equal leg lengths, which is rare among these graffiti. Reading a Π before the X would find a parallel in 96 and would give a reading of 6 choes, 4 kotylai.

Poorly diagnostic fragment, context date ca. 425–410.

43 (SS 6918). Weight? Possibly Solokha II.

Preserves small amount of rim and neck wall with small four-spoked wheel-stamp near rim.

Graffito on neck: Δ followed by one vertical and two poorly preserved diagonal strokes. Light to moderately cut strokes. Resinated interior.

Given that this vessel type is of roughly the same size as late-5th-century Chian amphoras, a reading of 11 choes and 2 kotylai seems unlikely. Without explicit drachma signs, 11 drachmas, 2 obols, is also problematic. A tare weight of 11 mnas and two fractions, just over 5 kg, seems the most likely interpretation.

Poorly diagnostic fragment, context date ca. 425–410.

Lang 1956, p. 15, no. 65, pl. 3.
Preserves neck wall only.
Graffito ΠΔ (monogram) followed by _SIGNAL_. Fairly light but uneven incisions. Some resin preserved on interior.
Lang reads as a price of 22 drachmas with two deltas sharing a common side. The bottom line of this parallelogram monogram of ΔΔ is not as clearly incised as the other lines, and I do not consider it a deliberate stroke. I read the numeral 50, which is quite commonly found among ceramic graffiti (e.g., Lang 1956, no. 68, pl. 3, and no. 99, pl. 5; Jefremov 1998, passim; Solomonik 1984, nos. 284–286). The price then should be read as 52 drachmas. This price seems high in comparison with other known late-5th-century wine prices, but the commodity referred to is not known, nor are enough wine prices known to say with any certainty what is a high price and what is not (as emphasized in Johnston 1996).
Poorly diagnostic fragment, context date ca. 425–410.

45 (P 9247). Volume or weight? Mendean.

Lang 1956, p. 5, no. 9, pl. 1.
Preserves neck, rim, one upper bit of handle.
Graffito on neck: the ends of seven horizontal marks followed by six vertical marks arranged in pairs of two. Fairly light incisions but consistent depth throughout. Resinated interior surface.
Lang reads 6 horizontals with the interpretation of 6 choes, 6 kotylai. The seventh horizontal is visible at the bottom of the stack in the photograph published by Lang. With the reading of a seventh short mark, 6 choes, 7 kotylai seems likely. As in other examples with more than 6 kotylai marked, the short marks could record small amounts poured out. Mendean jars from the later Porticello shipwreck measured between roughly 6 and 7 Attic choes (Eiseman and Ridgway 1987, pp. 51–52). While the volumetric reading works reasonably well, a weight reading would give either 67 or 76 mnas depending on which unit is assigned to each set of strokes; the latter seems more likely since the horizontals precede the verticals. This weight would be the gross weight of a jar weighing ca. 5.5 kg with 24.5 liters of wine.
The short neck suggests that this piece may not be any later than the R 13:4 pieces, ca. 425; but the short neck does continue into the last quarter of the 5th century (see Brashinskiy 1976 and Lawall 1995, pp. 121–122).


Fig. 7

Lang 1956, p. 6, no. 18.
Preserves lower neck wall and bit of shoulder.
Graffito on neck: three vertical strokes on the first line, Π on the line below. Moderately deep and clean strokes. Second leg of Π shorter than first. Resinated interior.
Lang reads as 8 choes. The Π may, however, represent a summation of the vertical tallies above, as is more clearly the case in other examples where the larger number is on a separate line (22, 23, possibly 24).

Poorly diagnostic fragment, context date ca. 425–410.


Lang 1956, p. 8, no. 23.
Preserves neck wall only.
Graffito K lying horizontally. There may be a horizontal mark below the K, but its identification as a stroke is uncertain. Deep clean strokes. Resinated interior.

Lang includes this piece (“for completeness’ sake”) with other kotylai graffiti, but the isolation of this letter makes any interpretation very difficult. This is not a letter that is frequently encountered alone on amphoras.

Poorly diagnostic fragment, context date ca. 425–410.

**Well S 16:1**

Well S 16:1 was discovered in R. R. Holloway’s excavations in the Kolletis House garden and lies roughly 50 m southeast of R 13:4, on the east side of the Panathenaic Way. This fill is generally dated ca. 425–400 and is noted for the many amphora fragments found (Holloway 1966, pp. 83–84; *Agora* XII, p. 398). Closer study of the amphoras in the fill, however, places them with R 13:1 as no later than ca. 410 B.C.


*Agora* XXI, p. 59, Ha 3, pl. 32.

Preserves part of rim, one complete handle, neck, shoulder with tightly rounded outer edge.
Graffito on neck: four vertical lines of moderate depth. Resinated interior surface.

Lang (*Agora* XXI, p. 59, Ha 3) reads four units “measured as they were poured in,” but she notes that Chian jars held more than 4 choes, so “this might not be a permanent record of the total capacity but a temporary note about a smaller quantity put in (or taken out).” The parenthetical suggestion would certainly fit the kinds of activities described below that have concentrated these graffiti in the area.

The tall neck and sharply turned shoulder of this jar clearly place it after the jars in R 13:4 and probably near the end of the 5th century.


*Agora* XXI, p. 59, Ha 4, pl. 32.

Preserves complete rim, one handle, and part of neck and shoulder.
The markings here are quite irregular and may not all be deliberate strokes. Near the base of the neck are seven vertical strokes, lightly incised; they fit well with the graffiti discussed here and are surely deliber-
ate. Above this, starting just below the rim, are the following marks:
1) a relatively large Λ lying on one side immediately under the rim;
2) two very irregular horizontal marks below the Λ; 3) then, under
the horizontals, two very short and accidental-looking verticals; and
4) under these verticals, two more, somewhat more regular, horizontal.
The longer strokes here seem more deliberate and more likely to be
part of an intended graffito than do the very short marks. Resinated
interior surface.

Lang reads a temporary accounting of 7 choes (the upper markings,
leaving aside the Λ) followed by the more permanent, formal 7 tallies
below. The Λ is not a common abbreviation in this group of graffiti
and is best left aside as unrelated. The short strokes in the upper group,
however, seem too informal and accidental to be connected to the tally-
ing process. What remain, therefore, are the three horizontals and the
seven, more regular, verticals. Perhaps the two sets of marks pertain to
two or more activities in the use of the jar, e.g., a partial decanting (or
filling) and a more complete decanting (or filling).

The thick rim of this jar, both rounded outward and thickened
inward, places this jar fairly early in the Chian straight-neck series,
ca. 430–420.

50 (P 27516). Volume. Chian straight-neck. Fig. 8

Preserves much of rim, upper parts of handle, neck, and small bit of
shoulder.

Graffiti low on the neck near the shoulder: five stacked horizontal
lines. The upper two lines are less heavily and carefully cut than those
below. Resinated interior.

This variation in cutting may suggest multiple occasions for
making the marks. Five choes may be indicated (though more may
have been incised originally). If these five were all that were inscribed,
then this only accounts for a portion of the total possible capacity of
the jar. These strokes seem likely to record goods decanted over a period
of time.

The neck is fairly short but could still fall anywhere between the
constraints of the starting date for the type and the likely closing date
of the context. Date ca. 430–410.

51 (P 27519). Volume. Chian straight-neck. Fig. 8

Preserves part of rim and neck.

Graffito on neck: stack of four horizontal lines, with no trace of
further lines above or below. Some end cleanly and others taper more
gradually.

The differences among the strokes may imply separate occasions
for their cutting. Assuming that the jar originally held at least 7 choes,
this partial accounting may attest to material taken out over a period
of time.

Context date ca. 425–410.
Figure 8. Graffiti from well S 16:1

_Agora_ XXI, p. 59, Ha 6, pl. 32.
Preserves small bit of rim, both handles, much of neck, large part of shoulder.

The graffiti appear around the transition area between neck and shoulder. On one side of the jar is the marking ΠΧ (monogram) XXXH; below these on the same shoulder is the abbreviation ΛΕ; then in the thumbprint at the base of one handle is an incised X (or Κ); finally, on the other side of the neck are 8 vertical tallies. The vertical tallies are very lightly and unevenly incised; the tally of abbreviated choes is heavily cut as is the letter in the thumbprint. The ΛΕ is cut very lightly and sketchily. The ΠΧ monogram is unusual for lacking the second leg of the Π altogether. Heavily resinated interior.

Lang reads an informal tally of the vertical strokes—8 choes—formalized in the more complex notation and made more precise with the additional hemichous. It is equally possible that the deeply cut ΠΧ XXXH may be the permanent total count against which decanted choes have been recorded as simple, irregular vertical strokes. There is no clear indication of whether the letter in the thumbprint is meant to go with either of the other marks. The ΛΕ seems likely to be an owner’s graffito.

The shortness of the neck and very rounded shoulders could place this jar very early among those seen in well R 13:4, ca. 440.


Preserves neck wall sherd only. Possible traces of resin inside.

Graffito ΠΧ (monogram). Probably created by crossing second leg of the Π with a horizontal bar, but it is possible that the second leg of the Π is not at all preserved and the X is freestanding under the Π. Small and carefully cut graffito, very much like that of 65 in well O 19:4.

A volumetric notation of 5 (and probably more) choes seems most likely.

Possible Mendean or northern Greek amphora, but the identification by fabric alone is uncertain.

Context date ca. 425–410.

54 (P 27418). E-graffito. Solokha I.

Holloway 1966, p. 84, pl. 28:h (jar only).
Complete jar preserved.

Graffito E on shoulder. Moderately deep strokes. The size of the letter and its prominent place on the shoulder make it quite visible.

The E here may replace the H found in other graffiti (cf. 75, 76); however, if that H is read as indicating 1 hydria instead of the clumsier ἕμισο μετρητοῖς, then E cannot abbreviate the unit of measurement. Furthermore, the Solokha I type tends to be quite large, so it is difficult to see these single letters as referring to a half-metretes; both 54 and 66
were cut on Solokha I jars. Such jars are rarely resinated and seem, therefore, to have been used at least in part as oil jars. The abbreviating ἐλαυν (oil) is a possible interpretation of these marks.

At this point the dating of the jar cannot be narrowed beyond the context date, ca. 425–410, but it does seem fairly early in this range.

55 (P 27526). M-graffito. Solokha I. Figs. 8, 21

Preserves complete rim, neck, one complete handle, part of other handle, part of shoulder.

Graffito M at middle of neck on one side; irregular stroke on opposite side of neck of uncertain significance. M-graffito cutting is heavy with clean ends to each stroke.

See discussions at 8 and 20 above.
Context date ca. 425–410.


Agora XXI, p. 59, Ha 5, pl. 32.

Preserves neck, rim, both handles, part of shoulder. Resinated interior surface.

Graffito on lower part of neck: ΠΕΝ. These marks—both the letters and the vertical tallies—are heavily incised, with careful stops to each stroke. The marks seem to have been applied at one time. The second leg of the Π is shorter than the first. The first three letters are partly covered by a wide vertical stripe of red paint. Further around the neck, starting behind one handle, is a price mark dipinto also in red: ΔΠΙ. Below the main graffito is a sketchily incised Δ.

Although the price mark itself does not cover the main graffito, the vertical red stripe may have been applied at the same time as the price mark dipinto, thereby making the price mark necessarily later than the graffito. Lang suggests that the dipinto attests to the original price in reference to the common 7–8 choes size of these amphorae (with the common 2 drachmas per chous), but this reading does not fully explain the graffito and its functional relationship to the dipinto. Various explanations are possible. The ΠΕΝ may summarize the five tallies from a decanting operation of 5 choes; then the jar was refilled; the vertical stripe cancels the graffiti; and the new contents’ price was set by the price mark. More in line with Lang’s belief that the graffito refers to fillings, the jar may have been filled with 5 choes and then had its price set at 16 drachmas. As in other cases examined here, the sketchy single letter, Δ, need not be part of the numerical notation and may refer to an owner of the jar or to its contents at some point in the use of the jar.

The form of the jar could fall anywhere between the constraints of the starting date for the type and the likely closing date of the context. Date ca. 430–410.
Preserves only the transition area from neck to shoulder. Resinated interior.

Graffito on the shoulder at the base of the neck: IIIIIT. Lightly incised, uneven strokes. Multiple occasions of cutting may be indicated here.

The verticals could refer to 4 choes decanted, then summed up by the \( \Pi \) when the fifth was poured out; the \( \Pi \) could also represent a total from which the four tallies are subtracted. Finally, a total filling of 9 choes could be described. Retrograde graffiti, such as this one, are not commonly encountered in the pieces published here.

Not a diagnostic fragment; context date ca. 425-410.

Preserves rim and part of neck. Resinated interior.

Graffito on neck: \( \Pi ? \). Light uneven cutting; unusually tall and narrow letter. It is uncertain how deliberate this marking was or whether it is of a numerical nature.

Context date ca. 425-410.

Preserves part of rim, neck, and one handle.

Graffito on one side of the neck: \( \Pi T \) nearly touching one another. The \( \Pi T \) graffito is unevenly cut, with shallow to moderate depth, but the \( T \) is clearly cut as a letter separate from the \( \Pi \).

The meaning of this abbreviation is quite uncertain. Five talents would bring this abbreviation closest to epigraphic parallels, but it is hard to imagine placing 5 talents in this amphora. Any other reading would require assuming more vagueness as to the units involved than is typical for these amphora graffiti (5+4?, 5 and \( \frac{1}{4} \), 5 and \( \frac{1}{3} ? \)).

The height of the extant portion of this neck places it late in the 5th century, well after the closing of R 13:4. Date ca. 410.

60  (P 27527). Unclassified graffito. Solokha I.

Complete rim, part of neck, one complete handle, part of other.

Graffito on neck: \( \upnu ? \). Lightly cut.

Uncertain if these are deliberate strokes.

Context date ca. 425-410.

Complete rim, neck, handles, part of shoulder.

Graffito \( \Lambda K \) or \( NK \) monogram. Graffito sits behind handle; moderate depth of strokes, carefully cut.

Of the markings listed here, only 66 has a similarly hidden position near or behind the handle. Uncertain if either of these are commercial graffiti.
Dark redware jar with very heavy handles. The type develops through the 5th century, but it is not certain if the date of this piece in particular can be narrowed further than the context date, ca. 425–410.

62 (P 27540, P 27541). Unclassified graffito. Fig. 8

Unclassified body sherds. Graffito X A. There is room for a letter between the two preserved, and a large portion is missing at just that point. The scantiest trace of this possible letter is present. Light to moderate depth of cutting, and these letters are larger than most of the graffiti seen here. Resinated interior.

Such size and carelessness of cutting is common among possible owner’s marks. When such letters appear on fragments with numerical graffiti, the numerical notation is more carefully cut (e.g., 52, 93, and 98). Context date ca. 425–410.

Well O 19:4

Well O 19:4 is roughly 60 m south of South Stoa I and the Mint, on the northern slope of the Areopagus; ca. 140 m southwest and upslope of R 13:4. The fill is generally dated to ca. 425–400. None of the graffiti fragments is necessarily later than ca. 425, but there is only one that is sufficiently preserved to allow an independent suggestion of its date. Other amphoras in this deposit are datable to the end of the 5th century (see Agora XII, p. 396; Lawall 1995, pp. 332–333).

63 (P 12635). Volume. Possibly northern Greek. Fig. 9

Lang 1956, p. 9, no. 36. Preserves lower neck fragment.

Partially preserved graffito XXXXX. Heavy incisions.

Lang reads 4 or more choes. There is a trace of a fifth X at the end of the preserved graffito.

The very micaceous fabric suggests the possibility of a northern Greek origin for the jar, but it is not an otherwise diagnostic fragment. Context date ca. 425–400.

64 (P 12657). Volume. Unidentified type.

Lang 1956, p. 9, no. 29, pl. 2. Preserves rim, upper part of one handle, neck, and part of shoulder.

Graffito on neck: poorly preserved tips of perhaps three horizontal lines (see below) followed by XEIII. Uneven incision of strokes, from light to moderate.

Lang reads “at least 1 chous, ½ chous and 3 kotylai.” If all of the three horizontals before the X are from deliberate cutting, then we have another E or at least three horizontal lines preceding the X; either mark would be difficult to explain. The middle stroke of these
three horizontals, however, is the best preserved and may be the only deliberate mark. If so, another X is unlikely since the extant X is composed of diagonals rather than a vertical and a horizontal. One possibility is that the line is from the horizontal crossbar of a ΠΧ monogram, 5-chous mark (see 41 and 53). Six and a half choes and 3 kotylai would match common late-5th-century amphora capacities. The use of E instead of H recalls 4 and, perhaps, 13.

The white slip of the fragment, the short neck, and the very narrow, outwardly rounded rim all seem unusual for a Chian amphora; otherwise 64 might have been identified as such. The low height of the neck, however, makes possible a date of ca. 425.


Fig. 9

Lang 1956, p. 11, no. 46, pl. 2.

Preserves only shoulder and bit of neck.

Graffito ΠΗ (as monogram) ΗΚΚ. Lightly incised markings though very small and carefully cut. Shorter second leg of Π. Break in the sherd allows for the possibility that there were more Ks following those preserved.

Lang reads 6 hydriae and 2 kotylai, questioning the idea of a 5-hemichous measure. Reading hydria here, however, is problematic if one accepts Hesychius’s definition of the hydria (s.v. ὀδρεῖα) as one half-metretes. In this case, the graffito would represent 36 choes and 2 kotylai (even 12-chous amphoras are very rare in the 5th century B.C.). Six hemichoes would, by contrast, at least fit in the jar.

The fabric of the vessel is dark red-brown, very hard and compact, but any attribution of the place of manufacture of this jar would be uncertain.

Context date ca. 425–400.
**GRAFFITI, WINE SELLING, AND REUSE OF AMPHORAS**

66 (P 12658). E-graffito. Early Solokha I.  
Preserves rim, neck, one handle, and part of shoulder.  
Graffito E (retrograde) on lower part of neck wall nearly behind the handle. Moderate depth of strokes.  
For the interpretation of single E graffiti, see 54. Here, however, the somewhat hidden letter may have a different significance than that proposed for 54, where the letter is much more visibly inscribed.  
The form of the jar is best paralleled in well N 7:3, closed ca. 440 b.c., so this piece may be earlier than others in this group.

**WELL R 13:5**

Well R 13:5 is immediately adjacent to and west of R 13:4, but the fill is somewhat later, with material datable as late as 390 (Agora XII, p. 398). The amphora material in this fill most closely resembles that of O 19:4 and the later material in Q 15:2, so a date at or just beyond the end of the 5th century seems quite likely.

Lang 1956, p. 12, no. 55.  
Preserves transition from neck to shoulder only.  
Prefiring marking $\Delta X$. The break of the sherd allows for further letters following those preserved, and there does appear to be a bit of a vertical line preserved. Small, very carefully cut letters.  
Lang reads as either 11 or 12 choes (or more). Long-standing criticisms of the theory that stamps guaranteed the capacity of the jar are 1) that the guarantee was applied before the vessel was fired and, presumably, shrunk in the process, and 2) that an unfired jar, especially one with only partly dried clay, would be difficult to measure. This is the only apparently volumetric marking we have that must have been applied before drying was complete (stamps may be volumetric marks in a manner of speaking, but this has yet to be proven). Perhaps the mark was applied to remind the potter or someone else of the *intended* volume. Unlike many other graffiti published here, this was clearly not inscribed in Athens.  

68 (P 2067). Volume. Solokha I.  
Lang 1956, p. 11, no. 50, pl. 3.  
Preserves lower neck and bit of shoulder.  
Graffito on the shoulder at the base of the neck: $\Pi KH$ and a further symbol, possibly $A$, $H$, or $K$. The letters are fairly small, unevenly incised, and lightly to heavily cut. The last letter is covered with further scratchings, perhaps intended to efface it. Further to the side, fully on the shoulder is a second graffito, $AEON$, in very faint, small, neat letters.  
Lang reads $\Pi KHKK$, as 6.5 choes and 2 kotylai. Lang notes that the kappas are not clearly legible. The secondary cuttings make it difficult to know if there are even two letters intended after the $H$. It is possible that
the last letters and scratches attest to a mistake, and that the 6.5 choes are all that were intended. The second graffito presumably represents the name of an owner or someone otherwise associated with the jar at some point in its use.

The amphora type is identified on account of the sharpness of the neck–shoulder join, which is not seen to this degree on other late-5th-century amphora types of similar fabric. Context date ca. 425–390.


Cited by Papadopoulos and Paspalas 1999, p. 177, note 78.

Complete rim, part of neck, one complete handle and upper part of second, bit of shoulder; with circular kantharos stamp near rim.

Graffito running from neck to partly behind handle: ΔΔΠΙΠ with one further vertical stroke preserved. Light strokes, as is the case in other price graffiti published here. Slight traces of resin inside.

The graffito can be read as 27 drachmas and 1 obol or as 28 drachmas (the lower part of the last vertical, where the short horizontal to create the last Π may have been inscribed, is not preserved). A 7- or 8-chous jar would make the price of wine contained in the jar, if that was its contents, between 3 and 4 drachmas per chous. The same stamp appears on 11 and SS 14080 from R 11:3 (closed ca. 420–410). The stamp might date early in the last quarter of the 5th century, but there is no certainty as to how long the image was used on Chian stamps.

The form of this particular amphora seems somewhat more developed than those in R 13:4. Date early in the last quarter of the 5th century.

Well Q 15:2

Well Q 15:2 is just west of the Panathenaic Way, north of the Mint, ca. 40 m southwest of R 13:4. The fill contained some debris possibly attributable to the Mint operations and two bronze official measures, perhaps from the metronomoi offices in South Stoa I (Thompson 1955, pp. 69–70; Camp 1977, p. 218), but the fill also contained large quantities of animal bone, both from food and from the bone-working industry (Lynn Snyder, pers. comm., October 1999). The lower parts of this fill include late-5th-century material comparable to finds in R 13:1 and S 16:1; the higher parts of the fill more closely resemble finds in O 19:4 and R 13:5 and may be datable into the first decade of the 4th century. The lower part of the fill also contained an unusual series of five plainware oinochoai with comic scenes (Crosby 1955).
Preserves shoulder fragment only. 
Graffito: possibly HX or simply two verticals followed by a horizontal. Very little of the third stroke is preserved and perhaps only the upper part of the first and second. Large letters of light to moderate depth. 
The latter reading is better paralleled in this collection. It is unusual among the graffiti discussed here to see a smaller unit (hemichous) before a larger unit (chous). Alternatively the H might stand for one hydria (six shoes), followed by a seventh chous; this would be a common size for a late-5th-century Chian amphora. 
Poorly diagnostic, context date ca. 425–390. 

Preserves neck wall only. 
Base of neck wall graffito: IIII. Uneven spacing and depth of line, with lines trailing off unevenly. 
Such uneven and irregular tallies tend to be either volumetric, here indicating 4+ shoes, or to refer to the weight of the jar. The former seems more likely here, with an incomplete tally accounting for only part of the total capacity of the jar. 
Context date ca. 425–390. 

Preserves part of rim, neck, and one handle. 
Graffito at the base of the neck: the upper parts of two vertical strokes and K. Moderately deep strokes, with the K set slightly higher than the other marks. Resinated interior. 
On analogy with other Mendean jars (26, 27) there may have been another K below the one preserved. Perhaps 2 shoes and 1 kotyle; however, the verticals could also be the tops of an H as a hemichous sign, after a tally of shoes (not preserved), or it might stand for hydria (half-metretes). This tally (at least as far as it is preserved) only accounts for a portion of the total capacity of the jar; if no other markings were ever inscribed, an accounting of dispensed wine seems a more likely interpretation than a complete refilling of the vessel. 
Height of neck suggests a date of ca. 400 or later. 

Preserves neck sherd only. 
Graffito X followed by a second possible X, incompletely preserved. Light cuttings. Resinated interior. 
Uncertain which side of the sherd points toward the rim, so this could be either the start or the end of a multiple shoes count. 
Context date ca. 425–390.
Figure 11. Graffiti from well Q 15:2
74 (P 24194). Weight? Unattributed type. Fig. 11

Neck fragment only, and fairly worn.

Graffito: one vertical stroke present along the break at the left side of the sherd, followed by ΔΔΔIII. Moderate to light incision, uneven spacing.

The trace of a letter before the first Δ and the presence of three deltas raise the comparison with 81. The first vertical may be the right-hand leg of a Π whose upper bar is not carefully joined to this right leg. A ΠΔ monogram would create a reading of 84 for this graffito. 84 mnas could record the gross weight of the amphora and some heavy contents.

Context date ca. 425–390, but the wear on the sherd could indicate that it was used even earlier.

75 (P 23946). H-graffito. Northern Greek. Fig. 11

Preserves complete rim, handles, neck, and much of shoulder.

Graffito H fully on the shoulder. Light, but fairly neat, incision.

A half-metretes, or hydria, as Lang (1956, p. 11, no. 46) interpreted another H-based graffito (65), seems unlikely in this case at least as a measure of the complete jar. The jar, however, could certainly hold 6 choes (a half-metretes or a hydria), partially filled. Alternatively, the mark could refer to 8 choes as in certain summation marks seen in these graffiti. Without any accompanying tallies, however, it is unclear if this letter has commercial significance.

Height of neck suggests a date of ca. 400 or slightly later.

76 (P 26355). H-graffito. Unattributed type. Fig. 11

Preserves neck wall only.

Graffito on middle part of neck: H. Smaller letter than 75, but similarly neat.

For interpretation see 75.

Context date ca. 425–390.

77 (P 23990). M-graffito. Solokha I. Fig. 11

Preserves lower part of neck and part of shoulder.

Graffito M on shoulder just below the neck. Similar size of letter as on 20 and 21, but the style is slightly different; moderately deep strokes.

Sharp turn at neck suggests Solokha I identification.

Context date ca. 425–390.

78 (P 24003). M-graffito. Possibly Samian, Solokha I form. Fig. 11

Shoulder fragment only.

Graffito on shoulder: M. Heavily incised letter with extensions beyond the apices.

Dark brown fabric with much fine mica, possibly a Samian jar of the Solokha I form (see discussion by Grace 1971, pp. 67 and 78, note 68).

Context date ca. 425–390.
79 (P 23979). Weight or price? Mendean. Fig. 11

Preserves fragment of neck and shoulder only.
Graffito at the transition from neck to shoulder: two vertical strokes followed by an upward pointing arrow. A preceding diagonal line does not appear to be part of the graffito and may not even be a deliberate mark. Very heavy, thickly cut lines, with cleanly rendered endpoints. Traces of possible resin on interior.

The upward pointing arrow, an “arrow delta,” is interpreted as indicating 10 by Johnston (1979, pp. 29–30; and 1982, pp. 208–209). The graffito here may indicate 12 units, which is a bit low for a mna weight notation for a late-5th-century Mendean amphora, and certainly high for a capacity measure. This could be a vague price notation. The upward pointing arrow mark occurs on finewares fairly often, but to my knowledge this is the only occurrence on amphora graffiti from the Agora. A series of arrow deltas all sharing the same line appears on a fine ware graffito published by Yailenko (1980, p. 92), where he refers to earlier publications of such graffiti on Ionian cups (rejecting the earlier numerical interpretation, preferring instead to see the stacked arrows as a tree or three-barbed arrowhead).

Context date ca. 425–390.

80 (P 26378). Summation or weight? Chian straight-neck. Fig. 11

Preserves part of shoulder, larger part of neck, but no rim.
The top edge of a graffito on shoulder near where the neck rises: four vertical strokes followed by A or Δ (only the tops of each symbol preserved); preceded by a much longer diagonal that does not appear to be part of the same graffito. To the extent that they are preserved, the lines of the graffito are cut lightly and unevenly. Resinated interior.

If the last letter is a Δ, then the graffito could read 4 choes with the alphabetic 4 (Δ) as a summary mark off to the side. Alternatively, the graffito may be a retrograde tally of 14 mnas, a possible empty weight for a jar of this type; however, there are few necessarily retrograde graffiti among the graffiti discussed here.

The piece is darkly fired but seems more like Chian than Solokha II. Context date ca. 425–390.

81 (P 23949). Numerical graffito. Possibly Solokha I. Fig. 11

Preserves neck and shoulder only.

Graffito on neck, well above shoulder: very uncertain monogram, perhaps combining Π and Π or Π and X, followed by ΔΔΔ. The letters are fairly small and moderately to deeply cut. The horizontals of the deltas form a continuous line, which was perhaps cut first to carry the deltas.

The reading of the monogram as ΠΧ does not suggest 5 choes here on account of the deltas following. The closest parallel for the
monogram is a counting-table from Naxos (IG XII.5 99) on which a very similar monogram signifies 500 (Tod 1911–1912, p. 116). Either a combination of \( \Pi \) and \( \Pi \) or a \( \Pi \Pi \) monogram gives a very large number: 580 or 530. There is no unit of measure that can fit such a large number to this jar alone, so perhaps this graffito should be seen as having been applied prior to importation, indicating something about the production or exportation stages.

The sharp transition from shoulder to neck suggests a Solokha I form amphora, but the jar is not datable more narrowly than to the late 5th or early 4th centuries.

82 (P 23942). Unclassified numerical notation. Possibly Solokha I, though very uncertain. Fig. 11

Preserves neck and shoulder only.

Graffito on shoulder near neck: \( \text{TPIH} \) followed by an upright stroke at a slight angle, perhaps the vertical line of a \( \text{K} \) missing the lower part of the letter.

Various interpretations are possible: \( \tau \mu \alpha \alpha \zeta \) for 30 or a division of 30; \( \tau \rho \chi \sigma \sigma \tau \alpha \zeta \) for (a duty of?) \( \frac{1}{30} \)th; or \( \tau \rho \chi \sigma \sigma \tau \alpha \zeta \) for “30-days” as an adjective (e.g., wine that is 30 days old). The eta replacing the alpha could indicate an Ionian writer.

The fabric of this fragment is very micaceous and very bright orange on the interior surface, yellower tan on the exterior. The fabric very closely resembles that of a later-4th-century water jar (P 30802, which also happens to carry a numerical graffito: \( \text{A above } \text{HKKKK} \)). There is a possibility then that this is not an amphora but a local (?), large water jar.

Context date ca. 425–390.

83 (P 23991). Owner’s graffito? Possibly Chian straight-neck. Fig. 12

Preserves shoulder only.

Graffito on shoulder near neck: \( \Xi \) followed by two shorter strokes angling up toward each other, and a bit of a third stroke angling up away from these first two. Perhaps to be restored as \( \Xi \text{AN} \).

Clean incisions with moderate depth. Resinated interior.

\( \Xi \alpha \nu \) appears as a possible owner’s mark on two other late-5th-century pots: see Agora XXI, p. 37, F 106, P 24774, a lekanic rim of the late 5th century; and F 109, P 3736, a black-glaze bowl of the second half of the 5th century. The letter forms involved are all similar. \( \Xi \alpha \nu \theta \nu \) is an adjective sometimes used to describe honey (Agora XXI, p. 80, He 36, 4th century a.C.). While the \( \text{M-} \) graffito here may label some amphoras as honey amphoras, none of those so marked had resinated interiors as this sherd does. For this reason, it seems unlikely that this graffito refers to “yellow honey.”

Context date ca. 425–390.
Preserves part of rim, much of neck, one upper handle segment.
Graffito $KA$ on middle of neck wall between the handles. Light to moderate, uneven incisions; fairly large sloppy letters. Resinated interior.

Various possibilities exist for the meaning of this abbreviation. Κλυστέως, washed out or washed over, might indicate that this jar has been rinsed out and is ready to be refilled. One example of a $KA$ graffito, from Samothrace (Samothrace II.2, p. 100, no. 246), is inscribed upside down near the toe of the jar—a likely place to note that a jar, now perhaps draining, has been washed out. On the other hand, the Delian temple inventories mention waterproofing jars, possibly for oil, using wax (IG XI.2 219A, line 40 “... ἐλαιίου χρόνος Ἡλιὶ τὴν ἡμέραν Δεξιών στε[γρώσαν]τι καὶ κηρών κλύσαντι ἠ...”). Finally, in style of cutting, this graffito tends to resemble other appar-
ently noncommercial marks that are adjuncts to commercial markings; so this may be an owner's mark. Other examples of this graffito are published by Solomonik (1984, nos. 172 and 175).

As is expectable in a late-5th-century deposit, the neck of this piece is taller than most in R 13:4. Date ca. 400.

85 (P 26387). Unclassified graffito. Uncertain type. Fig. 12

Preserves only shoulder and part of neck.

Graffito on shoulder near the rise of the neck; possibly reading ΚΛ, ΚΓ, or ΠΓ. Large, lightly incised letters.

ΚΛ graffito is better preserved in 84. In terms of the possible reading ξυστέος or ξυσοντος, it may be significant that the previous example had a resinated interior whereas this one does not. ΠΓ may refer to 3+3 choes, but such a use of alphabetic numerals is otherwise unparalleled. ΚΓ could stand for 23, perhaps a record of the weight of the jar's contents—but only of a partial filling of the jar. The sloppiness of the letters is paralleled by 84.

Context date ca. 425–390.

86 (P 26343). Unclassified graffito. Possibly Mendean. Fig. 12

Preserves bit of neck and shoulder only.

Graffito on the transition from neck to shoulder: ΠΙ (possibly Η) on first line, Β on second line beneath the Π. Uneven, fairly light incisions. Resinated interior.

Five and a half choes (and more) is a possible reading of the first line, but the second line is of uncertain significance (perhaps not even a deliberate graffito?).

Context date ca. 425–390.

87 (P 33422). Unclassified graffito. Unidentified type. Fig. 12

Fragment preserves roughly half of rim and part of neck wall. Very similar fabric and rim form in another set of fragments from the same container; however, the rim here does not actually join the larger set of fragments.

Graffito on neck just below the rim: Μ followed by three vertical lines. All very lightly incised.

All of the cuttings after the Μ seem to be the upper parts of further letters or other symbols. This piece was kept out of the Μ/ΜΕ series since the graffito is more complex than those in that series. Without more of the symbols following the Μ, it is unclear what was intended here.

Context date ca. 425–390.

88 (P 26389) Black-glaze fragment.

_Agora_ XXI, p. 39, noted with F 131.

Body fragment only.

Graffito: [.]σκος.
89 (P 23821). Black-glaze oinochoe.

_Agora_ XXI, p. 39, F 131, pl. 16.

Complete profile preserved but very fragmentary; includes complete handle with a small bit of the rim and shoulder.

'Ανδρόσκο εἰμὶ δικαίως and [. . .]λλος. The owner's graffito runs along the handle; the [. . .]λλος is on the shoulder.

90 (P 23835) Lekane.

_Agora_ XXI, p. 39, F 132, pl. 17.

Two-thirds of rim preserved, one handle, upper parts of the bowl.

[δὶ]ακιος 'Ανδρόσκο [εἰμὶ] around the top surface of the rim; uses omicron instead of the omega in 89 above.

** Deposits with Single Examples of Late-5th-Century Numerical Graffiti **

**Well C 19:9**

Well C 19:9 is in the northeast room of House K in the Industrial Quarter (Young 1951, pp. 242–243, pl. 77:a). Much of the fill is dated to the late 5th century with a supplementary fill, topping up the settled initial fill, laid down in the early 4th century (suggested by a red-figure oinochoe, _Agora_ XXX, p. 245, no. 726, pl. 77, P 18556, ca. 400). The late-5th-century fill seems unlikely to date much beyond ca. 410. The well and its contents are thought to stem from domestic use of the building before its lower floor became a marble-worker’s building in the early 4th century.

From C 19:5b, floor fills associated with the phase of marble working, comes a water jar amphora (P 18609) with graffito ΠΚ (monogram) ΚΚΗ (_Agora_ XII, no. 1463). The fill and this piece could date to the late 5th century, but the closest published parallel for the jar is _Agora_ XII, no. 1462, from a context starting ca. 375. It seems more likely that this small water jar also dates well into the 4th century.


Lang 1956, p. 6, no. 17, pl. 1.

Preserves upper part of jar only, less than half of rim, missing parts of neck and shoulder.

Graffito Π followed by three verticals; another five verticals lower down on the shoulder on the same side of the amphora. Moderate weight of cuttings; all strokes appear fairly carefully cut.

Lang reads either 8 or 7 choes and 5 kotylai, depending upon whether two or three strokes are understood to follow the Π. There is room for even more verticals after the Π in terms of the spacing of the extant strokes. In keeping with the summation practice seen elsewhere among these graffiti, the Π could summarize the five tallies, then further decanted or added choes could have been added after the summation.

Date 440–430/25.
Figure 13. Graffiti from several late-5th-century deposits
92 (P 18620). Chian straight-neck.

_Agora_ XXI, p. 36, F 97, pl. 15.
Preserves shoulder fragment only.
Possible owner’s graffito—Ἀνδρίκου—on shoulder with tops of letters pointing away from the neck. Large letters, moderate to heavy cutting.

For other references to Andriskos, see 89–90. Cf. 88.

Form of shoulder and fabric suggest straight-neck Chian form datable anytime after ca. 430/425 to ca. 390.

**Other Deposits Closed ca. 430–400 B.C.**


G 18:1, well in the domestic area on the north slope of the Areopagus, closed ca. 400 B.C.; see _Agora_ XII, p. 391.

Lang 1956, p. 8, no. 27, pl. 2.
Preserves shoulder and part of neck.

Graffiti: (1) Η' monogram graffito on neck and (2) ΔΖ (with Z written as Η on its side) II on the shoulder. Shoulder letters are moderate in depth and cleanly incised; the break allows for the possibility of one more vertical stroke between the Z and the II.

Lang reads (2) as 10.5 choses and 2 kotylai. This reading, however, does not account for the use of Z instead of Η (unless this is simply a mistake on the part of the inscriber). Ζ read as 7, plus 3 more units (choes?) could add up to the 10 indicated by the delta, though this would entail switching between numeral systems, alphabetic to acrophonic, in the same graffito (this may occur elsewhere; see 4 and 24).

There is no necessary connection between the neck graffito (1) and the shoulder mark (2).

Date ca. 425 or later.

94 (P 18923). Volume (with possible summary notation or weight?). Chian straight-neck.

B 19:7, household context in the Industrial Quarter southwest of the Agora proper, closed ca. 410.

Lang 1956, p. 16, no. 66.
Preserves neck and small bit of shoulder.

Graffito at transition between neck and shoulder: ΔΙΙΙΙ followed by a horizontal stroke breaking off at the right side. Fairly light, uneven strokes.

Lang reads as perhaps 14 drachmas or 10 choses 4 kotylai. The horizontal mark, largely ignored by Lang as “merely a concluding dash,” might shift the reading to any of the following: 14 drachmas, 1 obol (perhaps least likely since it lacks the standard Φ for drachma); or 10 choses, 4 kotylai, and 1 or more fraction; or 14 mnas and 1 fraction (a weight drachma?) as the empty weight of the jar. A further possibility is that the Δ records the amount present (4 choses), against
which the tallies are recorded as that quantity is emptied (followed by the concluding dash).

Context date late 5th century.


Well B 13:6, at the southernmost tip of the slope of the Kolonos Agoraioi; late-5th- or early-4th-century context.

Lang 1956, p. 9, no. 32, pl. 2.

Preserves shoulder fragment only.

Graffito: first line XX, second line HK. Neat but uneven strokes, ranging from lightly to moderately deep.

Lang reads 2.5+ choes and 1+ kotylai.

Context date late 5th or early 4th century.

96 (P 17010). Volume. Mendean. Fig. 13

Section NN, grid 110–111/KE–KH fill notebook; p. 2375, at the southernmost tip of the excavated domestic and industrial area, late 5th century.

Lang 1956, p. 12, no. 57.

Preserves rim, one handle, neck, and shoulder.

Graffito at the transition from neck to shoulder: ΠXXXXT

and on second line TE. Heavily cut into the friable Mendean fabric. TE is cut more lightly and neatly as though from a different stage in the marking process. The legs of the Π are of roughly equal height—the only time this is observed with certainty in the graffiti here. Scant traces of resin on the interior.

Lang suggests either 8½ choes with another quarter-chous added to complete the filling process, or 8¼ choes with the Τ in the first line explained by the TE in the second. In another example (ΛΕ, no. 52), the abbreviation on the lower line is in a different hand than the numerical graffito whereas 96 has nearly the same style of marking on both lines. The Τ is quite ambiguous, and the need to clarify such ambiguity certainly supports the quarter-chous interpretation.

The neck is somewhat taller than those from R 13:4, suggesting a date in the last quarter of the 5th century.

97 (P 15053). Volume. Chian straight-neck. Fig. 13


Lang 1956, p. 13, no. 61.

Preserves rim, neck, both handles, shoulder.

Graffito near middle of neck: TP (monogram) IIIIIIIII. Lightly incised.

Lang (1956, p. 13, no. 61) reads as “nine tryblia of the choinix variety (i.e., three choes).” While I doubt that this is the complete
capacity of the vessel, Lang’s reading could be taken as a partial filling.

The height of the neck places this piece late in the date range provided by the finewares in the pit, and very close to the later date suggested by Moore (Agora XXX, p. 236, no. 657). Date last quarter 5th century.


E 14:14, a cutting in the bedrock, disturbed in antiquity; perhaps originally a grave. The cutting included 98 as well as a nearly complete red-figure hydria in the manner of the Kleophon Painter (Agora XXX, p. 229, no. 603, P 6053, dated ca. 430).

Lang 1956, p. 15, no. 64, pl. 3.

Preserves rim, one handle, neck and shoulder.

Graffito ΔΠ ΙΙΙΙ ΔΠ (monogram) on one side of the shoulder. Another Π graffito appears on the other side of the jar. The ΔΠ is cut with clean but light strokes, the following tallies are even lighter and quite irregular, the final ΔΠ is also very light and sketchy. The Π on the opposite site is heavily cut in sharp contrast to the more complex markings.

Lang (1956, p. 15, no. 64) reads another ΔΠ after the four tallies, interpreting as 15 drachmas, with 4 obols “perhaps added as the price of the jar.” The addition of the cost of the jar is not otherwise attested. The lightness and sloppiness of the cutting of the verticals encourage reading them as four single units summed up by the Π once the fifth was added. In no instance is a securely interpreted price mark built up in such informal tallies. The four sketchy verticals could be counting up to or down from either of the two Πs; however, they seem most likely connected to the ΔΠ just preceding the strokes. Reading an empty weight of the jar at 15 mnas seems therefore more probable than a price reading. As for the reading of the monogram, the cuttings are in a style different from the preceding ΔΠ, and the resulting monogram seems better read as ΑΠ, paralleled in its sketchiness by other possible owner’s marks.

Date of form ca. 420, later than the date suggested for the hydria.


Lot Ψ 161, “ca. 9/ΔΓ,” fill of the 5th century B.C. south of South Stoa I and the Mint.

Preserves lower part of neck and shoulder.

Graffito Δ. Lightly incised. Break removes area for further possible signs.

This could be simply someone’s initial; however, given the prevalence of numerical graffiti in this region, it seems possible that this piece belongs in this study.

Date late 5th century.
INTERPRETING THE GRAFFITI

“The graffiti and dipinti were not meant for posterity, and the idea of our trying to understand them today would no doubt be wryly amusing to their writers.”78 This comment by David Jordan, reviewing *Agora* XXI, stands as a suitable caution and necessary addition to Eugene Vanderpool’s comment cited in the preface to *Agora* XXI: “It is easy to read if you know what it says.”79

If the readings are open to various possibilities, as discussed earlier in this article and in the catalogue, then the broader understanding of the graffiti in terms of Athenian and Aegean social history is not made any easier. For this reason it seems appropriate to bring as much evidence as possible to bear on the interpretation of the roles of these graffiti in Aegean trade. The process followed below for interpreting the graffiti moves through three broad steps. First, I consider the graffiti in terms of various contexts: dates, findspots, amphora types involved, and the nature of the incisions themselves. Second, this contextual evidence and the contents of the graffiti themselves inform interpretation of how the graffiti may have functioned at various stages in the amphorae’s use. Such stages include activity at the port, refilling jars from local wholesalers, selling wine from the amphorae, and selling other commodities as part of the reuse of the amphorae. In addition, at this stage I consider the situations in which weighing was likely to have been a part of an amphora’s use, why price marks are so rare among these graffiti, and why only in R 13:4 is there such a preponderance of graffiti on Chian amphorae. Third, and finally, I attempt to place these practices leading to the graffiti in the broader context of Athenian and Aegean trade and political history in the 5th century B.C.

**Contexts for Analysis**

**Dates**

Despite the many finds of numerical and other commercial graffiti in the Agora, the 5th-century occurrences of these graffiti are surprisingly restricted in chronology. Only eight examples are datable before ca. 440/435 B.C. One early graffito (1) appears on a Chian amphora datable to ca. 500, and a later Chian fragment (7) is datable by its form to ca. 440–430. Three pieces (2, 5, and 6) are on poorly diagnostic sherds, for which either what little there is of the form or the closing date of the findspot suggests a date before ca. 440. One other mid-century graffito (3) was found on a well-preserved northern Greek amphora of the second quarter of the century. Finally, a mushroom-rimmed, Solokha type I amphora fragment (8), probably from the southern Aegean, should be dated, on the basis of the jar’s form and its findspot, not later than ca. 430. Indeed, seventy-four of the eighty-two known examples of commercial graffiti (just over 90%) are datable to the last three decades of the 5th century.

The chronology of the period of frequent amphora marking is indicated both by the closing dates of deposits containing multiple examples of graffiti and by dates attributable to the amphorae themselves. Previous

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studies of the finewares in deposits containing multiple graffiti, along with my current study of amphora fragments from these and many other Agora deposits and stratified fills, support the following closing dates: ca. 425 for well R 13:4; ca. 410 for wells R 13:1 and S 16:1; and ca. 400 or into the first decade of the 4th century for construction fills for the Mint and wells O 19:4, R 13:5, and Q 15:2.80 The amphoras, too, in these deposits show differences in form attributable to their morphological changes over time. R 13:4 contained fragments both of the latest stage of the Chian bulging neck form (produced ca. 440–430) and early examples of the Chian straight-neck form (produced ca. 430–400) (Figs. 14–15).81 The later deposits contained taller and later straight-neck Chian jars (Fig. 16) with very few, if any, examples of the earlier bulging neck type. Likewise, R 13:4 contained well-preserved examples of a quite rounded jar with a short neck from the region of Mende (Figs. 17, 18), while R 13:1, R 13:5, and the other later wells contained the more angular form with taller neck of the late 5th and early 4th centuries (Figs. 19, 20).82 The later wells also contained more examples of the Solokha I, mushroom-rimmed form (Fig. 21), which be-

80. For the evidence for the dates and references to published contents of these deposits, see the deposit indices in Agora IV, Agora XII, Agora XXI, Agora XXIII, and Agora XXX. The dates suggested here, where they differ from the dates published in these summaries, are based on my current research.

81. Grace 1979a, fig. 44, far right, illustrates the latest configuration of the bulging neck form; fig. 45 shows the subsequent straight-neck form. Lawall (1995, pp. 91–93 and 99–103) discusses the development and its chronology.

82. See Brashinskiy 1976 and Eiseman and Ridgway 1987 for summaries of the chronological sequence of Mendean jars after ca. 450 B.C.; with specific reference to the Mendean chronology of the period in question, see Lawall 1998b.
Figure 18 (left). Mendean amphora P 2377, without commercial graffito, from well R 13:4

Figure 19 (center). Mendean amphora P 23864, without commercial graffito, from well Q 15:2. Ht. 0.651 m.

Figure 20 (upper right). Mendean amphora 72 (P 26349) from well Q 15:2

Figure 21 (lower right). Solokha I amphora 55 (P 27526) from well S 16:1

gins to appear in Athens around 450 and is only common at the very end of the century. The graffiti, therefore, appear predominantly on amphoras whose dates spanned the last three decades of the 5th century and entered the 4th century.

As is clear from Table 1, the types of graffiti are not restricted within shorter periods in the last decades of the 5th century; all types appear in both early and late contexts. In all deposits, the volumetric notations of either simple tallies or tallies including abbreviated units are the most common. Summations, weight notations, price marks, and the isolated abbreviations E/H and M/ME are far less common but do appear both in early and later deposits. Specific idiosyncrasies among the R 13:4 graffiti also recur in later wells. For example, the practice of occasionally combining multiple-letter abbreviations with single letters or tallies is seen in both R 13:4 (25) and S 16:1 (56). In addition, the practice of aligning small tallied units along a vertical line appears twice in R 13:4 (16, 18) and reappears in R 13:1 (35, 36, and possibly 45). Finally, the use of E instead of H for “half” may occur in R 13:4 (possibly with 13) and, with more certainty, in the later deposit O 19:4 (64). Even if there may not have been continuity in the sellers’ identities from ca. 440 to ca. 400, these similarities of practice over time suggest some familiarity with the earlier activity.

Some practices in the graffiti tend to appear in the later deposits. The most noticeable of these is the method of rendering 5 choes using Π with a short horizontal line cutting the right leg of the letter. This practice is seen in both R 13:1 and S 16:1 (both closed ca. 410): see 41, possibly 42,
TABLE 1. DISTRIBUTION OF AMPHORA GRAFFITI TYPES IN DEPOSITS NEAR R 13:4

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Volumetric</td>
<td>10 (1)</td>
<td>1</td>
<td>3 (2)</td>
<td>12 (1)</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td>5 (2)</td>
</tr>
<tr>
<td>Simple tally</td>
<td>5</td>
<td></td>
<td>1</td>
<td>3 (1)</td>
<td>4</td>
<td></td>
<td></td>
<td>1 (1)</td>
</tr>
<tr>
<td>Abbreviated units</td>
<td>2</td>
<td>1</td>
<td>2 (2)</td>
<td>8 (1)</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Summation</td>
<td>3 (1)</td>
<td></td>
<td>1</td>
<td>1 (1)</td>
<td>2</td>
<td></td>
<td></td>
<td>1 (1)</td>
</tr>
<tr>
<td>Combined with price</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>5</td>
<td>1</td>
<td>1 (1)</td>
<td>2 (1)</td>
<td></td>
<td></td>
<td></td>
<td>3 (2)</td>
</tr>
<tr>
<td>Price</td>
<td>3</td>
<td></td>
<td>1 (1)</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1 (1)</td>
</tr>
<tr>
<td>E/H, M/ME</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Parenthetical numbers indicate uncertain attributions in each group (see catalogue). Deposit Q 15:2 includes two numerical graffiti, 81 and 82, that do not fall into the graffiti types listed here. This column, therefore, includes two fewer graffiti than the column for Q 15:2 in Table 2. The two markings “combined with price” in R 13:4 include abbreviated units for volume and, for this reason, are also listed under “abbreviated units” for the deposit.

52 (modifying the idea by leaving out the second leg of the Π), and possibly 53. This may be seen as a development in the practice of placing the chous designation, X, fully inside the acrophonic numeral (as is seen in 26 and 27 with 10 choses, and in 38, which may be contemporary with the 5-chose monogram pieces, or may be slightly earlier), but there is no indication here of a sharp break in practice.

Findspots

Most of these commercial graffiti are found in the southeast corner of the Agora excavations (Figs. 1–2). Deposits R 13:4 (18 examples), R 13:12 (1), Mint construction fill (3), R 13:1 (15), S 16:1 (10), R 13:5 (3), Q 15:2 (13) account for sixty-three of the seventy-four known late-5th-century examples (85%). Wells R 13:1, 4, 5, and 12 all lie just southeast of the junction between the Panathenaic Way and the road leading west toward the later Roman Agora. S 16:1 is also east of the Panathenaic Way, about 50 m southeast of the R 13 wells. Q 15:2 lies just west of the Panathenaic Way, north of the Mint building, and 40 m southwest of the R 13 wells. The fill under the Mint itself lies just across the Panathenaic Way from the R 13 area. The distances between these deposits are sufficiently small to suggest a very limited area as the source of the debris. A more distant deposit, along the southern side of the Agora, O 19:4, contributes another four examples. Eight other late-5th- or early-4th-century graffiti are found scattered across the Agora.

In contrast to this concentration of the commercial graffiti in the southeast part of the Agora, other classes of graffiti (e.g., lists, owner’s markings, or other names) are much more generally scattered throughout deposits of the Agora region.83 The concentration of numerical graffiti appears even more striking in view of the fact that many other large deposits of amphoras of the same period, located elsewhere in the Agora excavations, contained few or no examples of commercial graffiti.84

This uniqueness of the spatial and temporal patterning of the 5th-

83. *Agora* XXI, passim.
84. For example, deposits A–B 21–22:1, B 13:5, G 16:1, M 20:3, and B 15:1, all of the late 5th century, have revealed no numerical graffiti (among inventoried and noninventoried sherds); deposits C 19:9, G 18:1, U 13:1 (early 4th century, see discussion below); and B 13:6 have very few examples of numerical graffiti.
century amphora graffiti in the Agora is further emphasized by the rarity of similar graffiti outside the Agora. One very early example is found on an amphora of ca. 500 B.C. in the Kerameikos. Similar graffiti have been published from sites along the north coast of the Black Sea, but even there, where many graffiti have been published, numerical graffiti on amphoras are not common. Although such graffiti were clearly used outside Athens, the Athenian finds are noteworthy for the large number of examples found in one area of one site.

This particular region of the Agora has been connected with wine selling in earlier publications, especially by Lucy Talcott and T. Leslie Shear Jr. The unusually dense concentration of graffiti here allows various further details to be proposed as to the commercial history of this part of the Agora.

Well R 13:4 was the first of the major graffiti-bearing deposits to be published. The well’s many amphoras, drinking cups, a few mixing bowls, a limited range of cookwares, and the many examples of graffiti on amphora fragments prompted Talcott to propose the existence of a tavern, which “flourished near the borders of the Agora in the years around 440. Apparently it met with some disaster, which caused its abandonment and discarding of its paraphernalia somewhere about 430.” The well’s contents were the only significant evidence for such a building until excavation under the Library of Pantainos in 1970–1974 revealed modest structures datable to the end of the 5th century, continuing through the 3rd century B.C. The better-preserved structures, mostly of the 4th century and later, lie east of R 13:4, but other, possibly 5th-century foundations appeared closer to the well (Fig. 2).

With so little architectural evidence or occupational debris immediately associated with R 13:4, it is difficult to distinguish between a substantive break in the wineshop’s activity and periodic cleaning up of the area’s trash. Susan Rotroff and John Oakley drew attention to an earthquake in 425 B.C., which Thucydides (3.89) described in some detail, and they reasonably connect this disaster with a large number of fills around the Agora whose closing dates might fall near 425. They include R 13:4 in the list of earthquake deposits. The earthquake clearly created a consid-

85. Kerameikos IX, p. 173, E 14, fig. 47; reads 173XXXXXXXXXXX < with an H above. The amphora is datable to the early 5th century and is likely to have come from northern Greece. Johnston 1990, p. 52, note 30, no. 129, p. 53, fig. 12 is of a similar date, perhaps slightly earlier, and northern Greek.

86. For the rarity of amphora graffiti of this sort outside Athens, see collections by Babinov et al. 1978, Solomouk 1984, Tolstoi 1953, and Brashinskiy 1984. Particularly striking is the scarcity (one graffiti out of fifty-five published) of numerical graffiti from excavations at Cape Zyk in the Sea of Azov. The site is quite small but included an extensive deposit of amphoras precisely contemporary with those carrying so many of the Agora amphora graffiti; see Maslennikov 1987 for the graffiti and Abramo and Maslennikov 1991 for the amphoras. A possible exception to the rarity of volumetric graffiti is Gordou (see Roller 1987), though only one of the published volumetric marks is from a Greek amphora possibly of the 5th century B.C. (Roller 1987, p. 67, 3B–27, fig. 49, a Mendean shoulder, broadly datable between ca. 400 and 350 B.C.); the vast majority are local (?) pithoi.

87. Talcott 1935; Shear 1975.
90. The better-preserved 5th- and 4th-century structures are illustrated in Shear 1975, fig. 5. Davidson (1997a, p. 56) mentions the better-preserved structures, claiming that they resemble what a tavern should look like; they are, however, simply rectangular rooms.
erable amount of debris, but it does not seem to have stopped the practices of wine selling involving graffiti. Instead, closer study of the graffiti and amphora types present in both R 13:4 and the other nearby wells indicates that the break in graffiti-writing practice occurs somewhat later.

Changes in practice in the region seem to begin with the filling of well Q 15:2. Like the other wells, Q 15:2 contained many numerical graffiti. The amphora finds in this deposit differ, however, from those in the other graffiti-bearing wells by including more numerous Corycian and Lesbian amphoras, two types that are rare in late-5th-century Agora deposits. One possible explanation for this anomaly is that Q 15:2 may have been filled shortly after the arrival of new shipments of Corycian and Lesbian jars. These jars may have been discarded before normal distribution activities reduced their numbers near Q 15:2 to better reflect their general presence in the city’s wine supply ca. 400 B.C. A sudden clearance of the shop (or shops), with many jars still on hand, may have resulted from a business failure or other catastrophe.

On the other hand, there are reasons to conclude that this well was filled gradually, perhaps even over a decade or more. Preliminary study of masses of animal bone found throughout the fill of this well revealed no evidence of weathering or gnawing by scavengers, which would be expected of debris that accumulated above ground before being deposited. There also seems to be far too much bone material to be the result of a single occasion, so the trash must have been deposited periodically. The length of time involved may be indicated by the amphora finds. Excavation of the lower depths of the well brought up fragments whose best parallels occur in deposits closed ca. 410. The higher levels produced fragments paralleled at the very end of the 5th and the beginning of the 4th century. The other wells in this area do seem to have involved single mass fillings, and this difference in deposition alone might explain the anomalous presence of Lesbian and Corycian amphoras. Alternatively, the apparent difficulty in obtaining such jars as indicated by their rarity in late-5th-century Athens may account for their being rarely discarded, and the larger number of examples in Q 15:2 may represent some (unknown and short-lived) change in practice.

The situation in Q 15:2 is the first indication of a change in the R 13 wineshop area. Slightly later, more certain evidence of a change in practice appears in the finds from well U 13:1, to the east of the R 13 wells (Fig. 2, Table 2). Like its neighbors, U 13:1 was full of amphora sherds, and these are datable to the early years of the 4th century (slightly later than Q 15:2). Around 390 B.C., a bedrock collapse of the walls ended the use of faunal evidence I probably would not have thought to reconsider the amphora fragments for the possibility of a longer period of deposition.

92. Debris that seems contemporary with the material in R 13:4, i.e., “earthquake debris,” forms the vast majority of the fill under the Mint and under South Stoa I, both buildings with construction dates later in the 5th century.

93. For Lesbian jars, see Clinkenbeard 1982; for Corycian/Corinthian B, see Kochler 1978 and 1992. For the rarity of these jars in late-5th-century Athens, see Lawall 1995, p. 291.

94. Lynn Snyder, pers. comm., October 1999. I am very grateful for Snyder’s comments on this material. Both Grace and Talcott, in studying the pottery from this well, concluded that it was a single dumped fill. Without the
TABLE 2. ESTIMATED NUMBERS OF AMPHORAS AND MARKED AMPHORAS BY TYPE

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chian</td>
<td>26/17</td>
<td>6</td>
<td>17/8</td>
<td>8/5</td>
<td>3</td>
<td>7/1</td>
<td>20/3</td>
<td>25</td>
</tr>
<tr>
<td>Solokha I (South Aegean)</td>
<td>—</td>
<td>3</td>
<td>6</td>
<td>7/2</td>
<td>7/1</td>
<td>11/1</td>
<td>38/4</td>
<td>52</td>
</tr>
<tr>
<td>Solokha II (Peparethan)</td>
<td>2</td>
<td>—</td>
<td>3/3</td>
<td>—</td>
<td>3</td>
<td>4</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Northern Greek</td>
<td>14</td>
<td>8</td>
<td>19</td>
<td>62/1</td>
<td>16/1</td>
<td>25</td>
<td>74/2</td>
<td>24/1</td>
</tr>
<tr>
<td>Mendean</td>
<td>21/1</td>
<td>4/1</td>
<td>8/5</td>
<td>14/1</td>
<td>8</td>
<td>12</td>
<td>40/2</td>
<td>22</td>
</tr>
<tr>
<td>Outpointing Rim</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>—</td>
<td>5</td>
<td>—</td>
<td>15</td>
<td>22/1</td>
</tr>
<tr>
<td>Corinthian A</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Corinthian B</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>5</td>
<td>22</td>
<td>1</td>
</tr>
<tr>
<td>Lesbian</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Unknown</td>
<td>18</td>
<td>2</td>
<td>6</td>
<td>9/1</td>
<td>4/2</td>
<td>14/1</td>
<td>30/2</td>
<td>16</td>
</tr>
</tbody>
</table>

*The first figure represents the total number of amphoras; the number following the slash represents the amphoras with commercial graffiti; and the parenthetical number indicates uncertain attributions of amphora type.

U 13:1 as a source of water, and the well was filled with amphoras and other pottery and animal bones until perhaps 380. In its large quantities of amphoras and its location, U 13:1 resembles the other deposits discussed here. What sets U 13:1 apart from these earlier deposits, however, is the rarity of numerical graffiti. One Thasian jar, of the ca. 180 vessels represented in the fill, carried a numerical graffito: ΔΠ followed by perhaps another letter or mark. A smudgy black dipinto, ΠΙΣ, appears on the neck of another jar. This marking recalls the earlier graffito 19 from R 13:4, ΠΠΣ, so it may be a numerical dipinto. On the whole, the sudden shift away from marking numerical graffiti as seen in U 13:1 should indicate a hiatus in wine selling in the R 13 area. The large number of amphoras in U 13:1, however, seems to indicate the brevity of this interruption and the subsequent continuation of wine selling, though with graffiti marking the amphoras not nearly so often. Numerical graffiti on amphoras only appear sporadically in later deposits of the 4th century and the Hellenistic period.

**Amphora Types**

Despite the chronological and topographical limits of these frequent finds of amphora graffiti in the Agora, there is considerably less restriction in the range of late-5th-century amphora types carrying the graffiti. Chian, Mendean, other northern Greek, Solokha I (South Aegean), Solokha II (Peparethan), and other unidentified types are all marked after firing with such graffiti. Table 2 summarizes estimates of the numbers of amphoras of specific types represented by the fragments found in the wells that included numerical graffiti. Table 3 shows the distribution of graffiti types over these amphora types.

Two points of context that will be helpful in later explaining these numerical graffiti arise from these tables. First, there is very little direct correlation between type of numerical graffiti and type of amphora carrying the graffiti. There are, however, certain amphora types that tend not to
TABLE 3. DISTRIBUTION OF GRAFFITI TYPES ACROSS MAJOR AMPHORA TYPES

<table>
<thead>
<tr>
<th></th>
<th>Volume</th>
<th>Weight</th>
<th>Price</th>
<th>E/H</th>
<th>M/ME</th>
<th>Combined</th>
<th>Summation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chian</td>
<td>25 (5)</td>
<td>7 (1)</td>
<td>5 (1)</td>
<td>—</td>
<td>2 (2)</td>
<td>2</td>
<td>7 (2)</td>
</tr>
<tr>
<td>Solokha I (South Aegean)</td>
<td>2 (1)</td>
<td>1 (1)</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>4</td>
<td>—</td>
</tr>
<tr>
<td>Solokha II (Peparethan)</td>
<td>2 (1)</td>
<td>1 (1)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Northern Greek</td>
<td>4 (4)</td>
<td>2</td>
<td>1 (1)</td>
<td>1</td>
<td>—</td>
<td>—</td>
<td>3 (2)</td>
</tr>
<tr>
<td>Mendean</td>
<td>10</td>
<td>2 (2)</td>
<td>2 (1)</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>Unknown</td>
<td>3</td>
<td>2</td>
<td>—</td>
<td>1</td>
<td>—</td>
<td>—</td>
<td>2</td>
</tr>
</tbody>
</table>

Parenthetical numbers indicate uncertain attributions of graffiti or amphora type. Not included in this table are 81, 82, and 99, which do not fit into the graffiti types listed here.

carry numerical graffiti: Corinthian types A and B (the latter also, or even primarily, produced along the Adriatic coast of Greece) and Lesbian. A second point to take from these tables is that there is some correlation between the frequency of an amphora type and whether or not it tends to carry graffiti: the more common amphora types are more likely to carry graffiti. In the Mint construction fills, not included in these tables since they are a different sort of deposit, the graffiti appear on the common Chian, northern Greek, and Solokha I (South Aegean) amphora types. It may be, however, that with more amphorae of these types present to be marked, the number of marks they carry simply reflects their greater numbers overall.

In deposit R 13:4, however, the dominance of marked Chian jars cannot be explained in terms of the generally large number of Chian fragments in the deposit. Northern Greek fragments are also very common, yet they carry only one graffito. In later deposits, the distribution of the graffiti better reflects the frequency of each amphora type. While earlier studies of these graffiti had perhaps overemphasized the frequency of marking Chian jars overall, the overrepresentation of marked Chian jars in R 13:4 requires further explanation in terms of the practices resulting in the graffiti (see below).

A further exception to the general pattern that graffiti types are spread over various amphora types is the case of the M/ME and E marks. The tendency for these marks from the late-5th-century Agora to occur on Solokha I amphoras, often on or near the neck, and rarely in association with a resinated interior was noted above (pp. 17–19). Readings of meli and elaiion for these marks, respectively, fit these associations between the use of the marks and the characteristics of the amphoras. This consistency of amphora-type context for these graffiti encourages the view that they refer neither to people's names (i.e., as owner's marks) nor, in most cases, to metretes or half-metretes. Other markings more securely associated with volume are not as restricted in type of amphora.

Other amphora markings, such as stamps, prefiring incisions, and painted marks, are more closely associated with specific amphora types. Such type-specific markings are best attributed to actions at the point of exportation. In the case of the numerical graffiti from Athens, however,


102. It should be noted as a preface to this discussion of the Chian amphoras in R 13:4 that there is some doubt, as noted in the catalogue entries, as to whether all of the pieces are, in fact, Chian. Chian amphoras have a wide range of appearances of fabric and a daunting range of morphological details. Furthermore, other securely non-Chian amphoras carry similar rims with fabrics that could be argued to be close to Chian in appearance. Nevertheless, despite the fact that my identification of some of these jars as Chian is somewhat uncertain, it seems important to address issues raised by the possibility that such a large portion of Chian amphoras in R 13:4 are marked.

103. For example, for northern Greek markings of the 5th century, see Lawall 1997, pp. 118–120.
the fact that amphoras from many different sources carry similar graffiti supports the assertion that the graffiti were applied at or near the spot where they were found. Had they been applied before or during shipment, it is difficult to imagine how such a concentration would appear in one area of the Agora and not simply wherever large deposits of amphoras are found.

**Style and Clarity of the Graffiti**

The M/ME graffiti bring a further pattern to consideration beyond their appearance on Solokha I amphoras and nonresinated amphoras. These graffiti are always very carefully or deeply cut. Other single letters or isolated abbreviations, at least among those studied here, may or may not be so carefully cut. Again, some unique meaning seems to pertain to the M/ME graffiti, distinguishing them from volumetric marks and hence mitigating against a reading of metretes for these abbreviations.

Among the types of numerical graffiti there is no apparent correlation between the weight or clarity of cuttings and the type of marking. Capacity marks, whether using simple numerical signs or abbreviated units of measure, may be cut very cleanly and carefully, though more often they are lightly and somewhat sloppily cut. Markings on friable amphora fabrics are often cut quite deeply—an understandable strategy for legibility—but even this is not a consistent pattern. Graffiti interpreted here as weight and price marks are also inconsistent in terms of the style and clarity of the graffiti.

**Summary**

In sum, the numerical and other proposed commercial graffiti are best attributed, spatially, to activity near Agora grid square R 13, in the southeast corner of the Agora excavations, and, temporally, to activity of the late 5th century B.C., from ca. 435 to 400. The intensity of the practice seems to end in the early 4th century, soon after which time, perhaps after a brief hiatus of activity, the area does continue its wine-selling function. The marks appear on a wide range of amphora types and, perhaps, especially on those that are more commonly imported to Athens in the late 5th century. Most of the graffiti types show variation in the clarity and style of the marking. Among the graffiti, only the nonnumerical, but still likely commercial, M/ME graffiti are of restricted context in terms of graffiti style and associated amphora type. These must, therefore, derive from some activity that is different from that which resulted in the more common numerical notations.

**Graffiti and Practice**

The search for explanations for why these graffiti appear in the southeast corner of the Agora in the late 5th century B.C. involves two lines of inquiry. First, what practices related to selling wine in late-5th-century Athens created the graffiti? Second, what broader social, economic, or political phenomena at that time encouraged the adjustments to practice resulting
in the apparent temporal and spatial concentration of the graffiti? I begin
with the practices, the explanations for which are explored below.

The geographic restriction of the graffiti and the rarity of any direct
relationships between amphora and graffiti types must be accounted for
when considering the practices that prompted the graffiti. The distribu-
tional evidence is particularly at odds with the current explanation of prac-
tices resulting in the graffiti—a way of confirming the capacity of amphor-
as when they were refilled for personal use. Following such an explanation
we would expect a wider spread of numerical graffiti wherever amphorae
appear. This is clearly not the case. To propose alternative practices, I turn
to literary and representational evidence for wine selling for possibly rel-
levant, graffiti-generating activities. At the same time, however, there are
other activities not attested in ancient sources that we might imagine as
part of the operation of a wineshop.

The Port

There is only scant textual evidence relating to the specific activity of bulk
purchases at Peireneus or any other merchants’ port. One point that may be
drawn from literary and papyrological sources is that the concern portside
was primarily with numbers of jars and not the specific quantity of con-
tents of any one jar.104 Had there been such a concern, an individual jar
would have had to be emptied for the specific volume of its contents to be
checked. Then the original liquid would have been poured back in, the jar
resealed, and the shipment taken away. After all that, the one or few mea-
sured jars could not certify the accuracy of the others. The assumption on
the parts of the buyers and sellers must have been that roughly the ex-
pected quantity of liquid would be present in any given jar (of a known
type, and whether that jar was a half- or third-size jar, as such amphorae
clearly existed).105 It would not be in the seller’s interest to gain a reputa-
tion as a merchant who sold half-empty jars. For the most part, the nu-
merical graffiti indicating volumetric measures or even weight measures
seem unlikely to have been applied during bulk purchases at the port. Had
such graffiti been applied at or before the amphorae reached Peireneus, we
would not expect to find the topographical concentration of markings in
the Agora that we do.

The only two amphora graffiti types that may have been applied at
the port or at some point before the jars’ arrival in Athens are price marks

104. This point is made by Grace
(1949, pp. 175–176), who argues from
this that stamps must have provided the
necessary guarantee that the jars held
the proper amount. That such a
guarantee was needed seems doubtful
given the rarity of stamped amphora
types in general. For further examples
of an interest in jars, not measures of
volume, see Yardeni 1994, pp. 70–72
(Elephantine customs document ca.
475 B.C.); Dem. Against Lacites 10, 19,
and 20, referring to shipments in terms
of numbers of keramia of wine; and
Larsen (1938, pp. 394–395), who
provides an appropriately cautious
discussion of whether and when we
should translate keramion as referring
to a specific unit of measure. In this
regard, it is noteworthy that refer-
ces to xeróma in papyri some-
times specify their size in numbers of
choes (e.g., P Entex, 001, document
34r, r, 4; P Ryl, 4, document 556r, r,
8). In one case (P Ryl, 4, document
564r, ctr. 17), a series of keramia at

6 choes each on the Arsinoean standard
are then converted into numbers
of Attic metretai of 12 choes.
The 12-choe definition of an Attic
metretes is a restoration.

105. The acceptable or anticipated
range of variation remains to be
determined, and this range is likely to
have varied by producer and time
period. On more recent expectations
concerning the size of ceramic vessels—
extpectations that were not always
matched in reality—see Blitzer 1990.
and volumetric marks in non-Attic units. A surprising number of the price marks discussed above were read as using stater for the monetary unit. In the Athenian market, such a notation would require knowledge of which non-Athenian stater was intended and what the proper equivalent would be in Attic coinage. These graffiti, therefore, would not facilitate sales in the Agora. On the other hand, such marks may have been inscribed by the shipper either as a price tag for buyers in the port, who presumably would be accustomed to a wider range of currencies and commercial standards, or as a reminder to the shipper of the price per jar he would have to seek for that particular shipment. Clearly, with so few price graffiti, neither scenario was especially common. The use of stater notation, however, does seem to point toward importers and activities that took place at or before reaching the port rather than Athenian (even resident alien) retail merchants in the city.106 In two cases where staters are indicated, 25 (though note the uncertainty of the use of staters here) and 26, the price mark is accompanied by a presumably complete tally of the volume of contents in the jar. The initial filling of the jar by the exporter would provide a context in which to apply both notations. Tracing these graffiti to the exporter also explains why non-Attic units of money are used and why the same volumetric notation on 26 also occurs on two other Mendean jars (27 and on an example cited by Johnston found at Kommos).107 The few drachma labels could, of course, have been applied at any point in the jar’s use.

On the whole, with so few price marks in this collection, it seems unwise to tie these particular graffiti to activities in the southeast corner of the Agora. While price marks seem often to have been applied before the amphorae reached the Agora, the rarity of these markings is striking on vessels that one might assume to be the quintessential commercial containers in antiquity. I return to this question of the rarity of price marks below, after considering other possible contexts for the application of the amphora graffiti.

The second group of marks that might have been applied before the jars reached Athens are the rare volumetric marks that may record non-Attic units. There are only two suggested here: 9 and 10. In both cases the number 9 is indicated by a simple tallying on Chian straight-neck jars of ca. 425. This jar type is not known with a capacity of 9 Attic choes, and even 9 Chian choes would be large, though more likely. For this reason alone, I suggest that these two graffiti may have been applied while the jars were still in Chian hands. Even if a Chian sold wine in Athens, it would be surprising to see Chian units of measure in use.

Local Suppliers

Apart from purchases at the port, amphorae might also have been brought into the wineshop from a local stockpiler/supplier of either local or imported wine or other products. The processes followed at such places are not detailed in the ancient sources, but some evidence points toward the existence of such suppliers.

Two different terms refer to places where wine might be purchased: κατηλεία and οἶνοι. The former term tends to refer to places where wine

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106. This statement changes my earlier view (in Lawall 1995) that these prices were also written locally. At that time I had not yet seen Johnston’s very convincing discussion (1996) of these graffiti raising the problem of converting foreign currency. I thank the anonymous Hesperia reader who directed me to this article.

is dispensed for drinking on the premises, often a common bar of relatively low reputation; wine might have also been sold from such places for home consumption. Talcott’s description of the contents of well R 13:4 matches what one might expect in a bar: many drinking cups, equipment for preparing “fast food” (a restricted range of cookwares), some plainware storage or mixing vessels, and of course the amphoras. Oinoi, on the other hand, functioned solely as wineshops, as opposed to places for eating, drinking, and socializing. Two representations in vase painting of wine purchases seem to illustrate oinoi: the wine in the amphora is being tasted with a sponge by the customer rather than simply from a handy cup as must have been done in kapeleia. Amphoras, wineskins, and pithoi are represented in these paintings, and all of the activity is focused on the purchase of wine—and not on other activities appropriate for the kapeleia. While no oinoi have been identified in the Agora, it seems possible that some of the large assemblages of amphoras turned upside down at other sites may indicate the cellars for such establishments. Although pithos fragments have been found in wells associated with the wine-selling area described here (S 16:1 and R 13:1), on the whole the contents of these deposits and the scanty associated architecture are not extensive enough to indicate a large oinos where only wine was sold.

If some, or even many, of the amphoras in the R 13 kapeleia (or perhaps it was only one?) were purchased directly from merchants at Peiraeus, it seems equally likely that as those vessels were emptied, they were refilled from local suppliers (oinoi) who could keep a larger ready supply of

108. Davidson 1997b, pp. 393–394, with references and illustrative quotations.
109. Talcott 1935, p. 497. Shear (1975, p. 357), in discussing the fill of U 13:1, not far from R 13:4, describes the mass of domestic pottery as too great for “the kitchen of a private house” and proposes instead the presence of a tavern nearby. He adds that “perhaps in association with the tavern, perhaps under separate management, was a wine shop which also made heavy use of [U 13:1] to dispose of its empty and broken amphoras.” Shear’s separation of the tavern and wineshop is certainly possible. It is also possible that both functions existed under one roof.
110. CVA Belgium 2, III He, pl. 16:5 = ARV² 299, no. 20, Princeton Painter Type B amphora. Beazley calls this a scene of the sale of oil, but the wineskin makes it more likely to be a scene from an oinos (cf. Immerwahr 1992, p. 127, suggesting that at least the side with the wineskin is a scene of wine selling). Immerwahr (1948, p. 190; and 1992, p. 127) calls the Princeton Painter amphora a scene of a kapeleion, but the exclusive focus on wine selling, especially in one scene showing a wineskin, seems more appropriate for an oinos. Furthermore, Immerwahr’s comment that sales of smaller quantities of wine on the Princeton Painter amphora identify that scene as being in a kapeleion, while supported by the depiction of small jugs held by some of the patrons, is not supported by the amphora seen on the shoulder of one of the men. The second image of an oinos is on a red-figure stemless cup tondo by Douris is illustrated and discussed by Buitron 1972, pp. 102–103 (= CVI USA 8, pp. 35–36, pl. 19:2; ARV² 445, no. 252).
111. Davidson (1997b, p. 393) identifies the Douris scene as illustrating a kapeleion. Buitron (1972, p. 103) considers the scene to be that of a wineshop where merchants might buy their wine (citing Forbes 1955, p. 118). Forbes, however, does not make a clear distinction between kapeleia and oinoi (he does not use the latter term). Immerwahr (1948, p. 190) argues for a “wine cellar” as opposed to a kapeleion.
112. Agora III, p. 199, no. 660 (= Isaios 6.20), refers to an oinos near “the postern gate.” Such a gate, dating early in the 4th century, is found near Building Z in the Kerameikos excavations next to the Sacred Gate. While it may be tempting to see Building Z as the συνοικία (tenement house) in the passage, the third period of occupation there is later than the date of the passage (see Knigge 1991, p. 93).
113. There is, however, considerable uncertainty as to when these collections represent wine cellars and when they represent drainage or foundation layers for their associated buildings. For various sides of this argument, see Koehler 1986, pp. 62 and 66 with references; Empereur and Garlan 1992, p. 213, no. 158, and 1997, p. 165, no. 18 and p. 190, no. 131; and, although dealing with later constructions, Mattioli 1998.
114. Boggess 1973, from S 16:1, p. 46, no. 66; p. 73, nos. 116–117; from R 13:1, p. 73, no. 118.
ported and local wine. A fragment of Aristophanes’ *Heroes* might describe something like the transactions between *kapeleia* and *oinoi*. A slave is told the following:

τρέχεις τὸν οἶνον ἁμφορέα κενὸν λαβὼν / τὸν ἔνδοθεν καὶ βύσμα καὶ γευστήριον, / κάπετα μίσθοι σαυτὸν ἁμφορεῖον.

... run to the wine market taking an empty amphora from those inside and a lid and a taster, and then hire yourself out as an amphora-carrier.\(^{115}\)

The passage itself may have more to do with private households’ cellars in need of restocking, but the general action of taking an empty jar to the *oinos* may provide a context for the application of the graffiti we find among the *kapeleia*.

Unlike in the port, where one imagines multiple jars being purchased with no opportunity to check the specific volume of wine in each jar, purchases at the *oinos* provide just the opposite situation. Individual jars are clearly the subject of attention in the representations in vase painting of these establishments. When a single jar was filled and the wine purchased, a general expectation of the size of the amphora being filled probably would not have sufficed. Individual jars have quite a wide range of actual capacities. Over a batch of a hundred such jars, for example, the small jars might be expected to be balanced by the large. With a single jar, however, expectations might come up short by 1 or 2 choes out of an expected 7 or 8.\(^{116}\)

Following Lang’s reconstruction closely, the graffiti might have served to keep track of the wine being poured into the jar from a wineskin, pithos, or even another amphora.\(^{117}\) Volumetric graffiti accounting for 7 or more choes could result from restocking the *kapeleion* with imported or local wine from a local supplier.\(^{118}\) Large units noted initially fit such activity.

115. For this fragment see Kassel and Austin 1984, III.2, no. 310. A visual image of a similar idea is seen in a Thasian amphora stamp (Th 11903, illustrated on the cover of Garlan 1988). An Attic red-figure oinochoe shows a man carrying a small jug, standing facing another figure among various amphoras shown in stands (Boulter 1963, pl. 49, no. 13, also discussed in Koehler 1986, pp. 61–62, fig. 13). Boulter suggests (p. 131) that the man with the jug might be a merchant about to pour out a sample for the customer. A similar interpretation, with the jug used to decant wine into the purchaser’s container and with the quantity decanted marked down by the merchant, would easily reconcile the vase painting with the graffiti. Koehler (1986, p. 57, fig. 8) also illustrates a symposiast carrying a garlanded amphora and a smaller oinochoe or pitcher. Although clearly not illustrating a commercial transaction of the sort described here, the illustration is reminiscent of the passage from Aristophanes and the Thasian stamp.


117. For a graphic and textual representation of sales of 5 and 3 choes from wineskins, see Immerwahr 1992, especially p. 126 and pls. 29:a and 30:a.

118. The possibility that *oinoi* were the primary suppliers of local vintage should not be underestimated. Identified Attic amphoras are very rare after ca. 475 (see Lawall 1995, pp. 37, 38, 42; cf. Grace 1953, p. 102). Local produce could be sold out of wineskins or pithoi or even reused imported jars, and sold into reused imported jars. A plentiful supply of imports might obviate the need for a local amphora production. A parallel phenomenon is proposed at Berenike in Libya where local amphora production ceases once imports become common; see Riley 1979, p. 120: “The dramatic decline in the occurrence of [local amphora production] after the Augustan period is likely to be related to a shift in economic emphasis, with an increased reliance on imported products.”
well, if the filler used gradually smaller measures as the jar was filled (e.g., a 5-chous measure, followed by 1-chous, ½-chous, and 1-kotyle measures).

If we accept Lang’s connection between some of the volumetric graffiti and the act of refilling the jars, it should be emphasized that the graffiti are used by kapeloi (barkeepers), and not by the general public. The reasons for this distinction are unknown, but the difference in practice is unquestionably attested by the distribution of the Agora graffiti. A related phenomenon may be the appearance of two volumetric graffiti on small pitchers from the Agora excavations, neither of which was accompanied by amphora graffiti, and one of which is certainly from a noncommercial context. While too rare to allow certainty, finds of these pitchers suggest that households may have kept on hand a measured pitcher for wine or oil shopping, whereas exchanges at the kapeleia depended on knowing the precise quantity in the refilled amphora.

**Selling Wine**

Since so many graffiti are found in wells thought to belong to kapeleia, I turn next to activities, again both attested and expected, in the kapeleia themselves. These establishments, and particularly their proprietors, were the frequent target of jokes in Attic comedy; the barkeeper is often portrayed as an untrustworthy cheat. This reputation is so ingrained that the term kapelos is sometimes translated as “huckster,” and the adjectival form καττηλικός is translated as “cheating, knavish.” The cheating, at least as portrayed in comedy, can involve the chous and kotyle measures used in serving wine. The following two passages are taken from Aristophanes (Plut. 435–436 and Thesm. 346–347):

> Ἄρει ἐστίν ἡ κατηλίκης ἡ κτῖνον / ἡ ταῖς κοτύλαις ἀεί με διαλυμαίνεια;
>
> Is it the barmaid from the neighboring taps who always cheats me with the kotylai?

> κεῖ τις κάτηλος ἡ κατηλίκης τοῦ χοῦ / ἡ τῶν κοτυλῶν τὸ νόμισμα διαλυμαίνεια;
>
> Or, being a barman or barmaid, cheats with the standard for the chous and the kotylai . . . .

Regardless of whether these jibes at wine sellers were deserved, the significant point about these passages is the close relationship between choes and kotylai and retail sales of wine. This connection continues in the verb κοτυλίζειν. The word is often read as describing sales in kapeleia, but the term also has a wider range of meanings, from wholesale transactions that break a ship’s cargo into multiple sales to the more literal translation of selling by the cup.

Against this background of terminology and bad reputations, it seems likely that some of the amphora graffiti appeared as part of the process of “selling by the kotyle.” As each kotyle was dispensed from the kapeleion’s jar into the customer’s container, the kapelos may have jotted a note on the

119. There are only two examples so far known to me. One of the pitchers (P 18609) is from a 4th-century, noncommercial context, C 19:5b, not far from well C 19:9, which contained one outlying example of numerical amphora graffiti (91) and the shoulder fragment marked by Andriskos (see 92 and Appendix). P 18609, however, probably dates well within the 4th century and comes from activity significantly postdating the fill of C 19:9. The second water jar, P 30802, was found in well R 13:11 from the late 4th century. Despite the proximity of this well to the earlier graffiti-laden wells, there are no other graffiti found in this well. Whether this pitcher comes from a strictly domestic context or from a kapeleion where graffiti were not used in transactions is open to question.

120. LSJ, s.v. κάτηλος and κατηλικός. Lucian, Hermot. 59, continues to characterize kapeloí as cheating in the 2nd century a.C.: οἱ κάτηλοι—κερασασμένοι γε οἱ πολλοί και δολωσαντες και κακουμετρούντες (“barkeepers—most of them adulterating and cheating and giving false measures”).

121. On the reputation of kapeloi, see Kurke 1989.

122. For the use of the term to describe sales of cargo in parts rather than as a single batch, see Arist., Oec. 1347b8 and IG XII Suppl. 347 II lines 11–13. Davidson (1997b, p. 394) reads the latter as referring to activities of kapeloí but this reading is not at all required by the text.
jar—perhaps under the suspicious eye of the customer. Such action would result in some of the smaller volumetric notations seen in the Agora collection. Graffiti using larger units (1- or 5-chous units instead of kotylai) might have resulted from customers buying wine in smaller jugs for home consumption or for drinking and dining by a larger group at the kapeleion.

The graffiti read as summing up a series of smaller unit markings may also fit into this activity. Perhaps the amount ordered was marked on the jar, and then the smaller unit marks were struck as each amount was dispensed toward the total. It is possible, too, that the process worked in the opposite direction with the larger summation recording the completion of an order. Either process would result in the same arrangement of graffiti. The practice suggested here, then, would keep the graffiti in the area of the kapeleia even if the wine itself is destined for outside consumption.

The marking of the storage vessel (i.e., the amphora in the kapeleion) rather than the receiving vessel (the customer’s cup, jug, or amphora) may be indicated in a late-5th-century Thasian law:

"Ος δὲ ἄν ἐμ πίθοις οἶνον πρῆγμα, τὴν ωὔνην κυρήν ἔναι, ἄν τὸς πίθος σημάνῃται.

The one who buys the wine in the pithoi: the sale is legitimate if he marks the pithoi.124

Although this inscription has been interpreted as referring to amphora stamps, Juri Vinogradov argues that the inscription refers 1) to storage pithoi, not transport amphoras; 2) to markings on the vessels after firing, not to stamping; 3) to markings on a pithos to be taken away by the buyer; and 4) to an accounting of the amount filling the pithos. François Salviat argues, instead, that the action is the covering of the pithoi with some perishable material and applying a seal to this covering so that the wine cannot be tampered with once purchased. Salviat’s reading is supported by various later ancient sources using very similar Latin terminology, dolium signare, to describe proper sales of wine in dolia (pithoi). While Salviat’s argument is persuasive, Vinogradov’s reading is supported by the many volumetric graffiti found on the rims of pithoi.127

Perhaps, roughly following Vinogradov, the law is meant to stipulate that decanted quantities must be indicated on the storage vessels. The pithoi belong to the seller, not the buyer (cf. Vinogradov). The wine being sold is “in the pithoi”; it is neither being sold into another’s pithos, nor does the purchase necessarily involve the pithos itself. If these interpretations of the law are correct, then this official Thasian practice might be similar to certain practices resulting in the Athenian graffiti, marking the source container with the amounts dispensed for smaller purchases.

Other Commodities

A further reuse of emptied imported amphorae appears to have been as containers for altogether different commodities. As noted above, the reuse of some jars to hold honey (perhaps even made in the same area on the
evidence of the beehive fragments from R 13:1) or oil may have required labeling the reused jars with M/ME and E to warn customers and perhaps even a harried salesperson that the particular amphora did not contain wine. Examples of such graffiti, especially M/ME, are found with some frequency outside the southeastern area of the excavations, so it is possible that these amphorae, once reused and labeled in this fashion, were sold to customers to take away, unlike the other marked jars discussed here. On the whole, these marks show various differences in characteristics when compared with the other graffiti. The fact that they are found at other sites as well, again on amphoras, might suggest their more widespread use with amphoras than the numerical notations and other abbreviations.

**Measurements of Weight**

The weight graffiti are among the more difficult, both in terms of reading or interpretation and in terms of identifying the locus of activity. Some of the proposed weight notations may indicate the empty weight of the jar (3, 5, 7, 14, 15, 29, 43, 79; 80, 98); others might refer to the weight of added contents or the gross weight of the jar with some partial filling (16, 17, 18); and some seem to refer to the weight of the jar completely filled (45, 74). Building on the discussions of circumstances for applying the price and volumetric graffiti, above, and considering what products might have been sold by weight, it is possible to propose loci for the use of these weight graffiti.

On many later, Roman-period amphora dipinti from the Agora, wine, oil, and honey are all described, and so presumably sold, in terms of weight (litrai) rather than volume. These dipinti raise the possibility that the same practice held true earlier; however, references to wine and oil that are more contemporary with the late-5th-century amphora graffiti tend to speak of volumetric units or simply numbers of jars. Papyri of various periods, including both Hellenistic and Roman documents, refer to meat, wax, glue, ochre, wool, and cloth in terms of mnae. Aristotle also describes the use of steelyard balances for sales of meat and dye (presumably in solid form). Of these items, only meat is known to have been shipped, stored, and perhaps sold out of amphoras.

Indeed, the sale of meat—presumably chopped to manageable chunks—out of amphoras would fit some of the evidence and conditions offered by the amphora weight graffiti. An old jar might have been used to weigh out meat, and this would provide either the markings for the empty weight of the jar or the marked weight of a partially or completely filled jar. The meat would easily be removed from the jar again and given to the customer without necessarily losing any pieces adhering to the interior walls of the jar. Similarly, wine, oil, or other liquids could be sold by weight in this fashion with a minimal loss due to liquid staying behind in the jar. Honey, on the other hand, would not be an expected product for sale by weight from one amphora into another container.

On analogy with the argument offered above for restocking the *kapecion* from other merchants’ stockpiles of goods, it is possible that weight graffiti indicating a completely filled vessel may have figured in the sec-

129. As above, numbers followed by question marks in these lists indicate uncertainty in reading the graffiti as a weight notation.


131. The degree to which the Agora graffiti and dipinti illustrate a drastic shift from measuring liquids by volume to measuring by weight depends in part on how the problematic, early graffiti here are read; cf. Lewis 1979, p. 126, and see below, note 135.

132. For products referred to in terms of mnae, see, for example, from the Zenon archive of the 3rd century B.C., Edgar 1931, nos. 38 (referring to glue), 58 (wool), 61 (wax and wool), and 120 (cloth); *P Oxy*. 108 (A.D. 215) refers to meat; and *P Oxy*. 2144 (3rd century A.D.) refers to ochre, glue, and wax.


134. G. Bass, pers. comm., October 1999; and see Williams 1979, pp. 117–118, pl. 46, for fish in Punic amphoras at Corinth. A thick deposit of red pigment was found coating the interior surfaces of an amphora with only the lower half preserved (from R 12:1, closed ca. 480 B.C.). This may be evidence that ochre too was sold from amphorae, or this may be an amphora reused as a paint pot.
ondary use of that vessel in supplying the *kapeleion*. In such a case, the marked jar would not leave the store; its contents would be sold off gradually. The weight notation was only needed in the initial purchase from the stockpiler. Perhaps honey or processed meat was involved in such transactions since wine and oil in the late 5th century were more commonly sold by volume.

The scarcity of the possible weight notations relative to the large number of volumetric marks may indicate that the usual products of the *kapeleion* were not sold by weight. Alternatively, while weight could be used as a unit for sales, perhaps sales by weight were not common practice. This scarcity of weight notations might, indeed, mark an important point of distinction between Classical Aegean commerce and later Roman-period practices.\(^{135}\)

**Sarcity of Price Marks**

If the sample of late-5th-century amphora graffiti offered here is representative of general practice, then another scarcity in the corpus is particularly striking: there are very few price graffiti. Many of the prices that do appear are likely to have been written outside Athens for earlier stages of wholesale transactions.

This scarcity of price marks on amphoras becomes less surprising when considered against the general nature of ceramic graffiti. Prices on finewares rarely refer to the individual pot. Instead, prices are given for lots or groups of pots.\(^{136}\) Price graffiti are similarly rare among pithos graffiti, where, as with the amphora markings discussed here, notation of volume is much more common.\(^{137}\)

These patterns of scarce price marks fit well with a view of Classical Aegean retail economies as involving prices created by negotiation and influenced by any number of economic and social factors.\(^{138}\) While a wholesaler might mark some vessels with prices as a reminder of what price had to be gained for a successful venture, the actual prices paid later at the retail level might vary considerably. Such a view of ancient retail prices makes their study quite difficult, but it fits the extant material evidence.

**Chian Amphoras and Graffiti**

As noted in the previous section, the Chian amphoras in R 13:4 carry an unusually large portion of the graffiti in that deposit. Chian amphoras were the focus of previous interest in the Agora volumetric graffiti for their possible link to the Athenian Standards Decree.\(^{139}\) Given existing debates as to the date of the decree, it is unclear whether the marked amphoras are sufficiently close in date to the decree for the marks to be attributed to uncertainties caused by the decree. Most of the marked jars in R 13:4 date fifteen to twenty years after the earliest proposed date of the decree (ca. 449 B.C.). Furthermore, a wide range of graffiti types appear on the Chian jars in R 13:4, including volumetric notations (not all accounting for the complete capacity of the jar), but also including price marks, possible weight notations, and isolated letter abbreviations.

\(^{135}\) Lewis (1979, p. 126) notes "a clear shift from measuring to weighing [in the Roman period]." Lang (Agora XXI, p. 64) characterizes this difference as follows: "Tare notations from the Greek period are both fewer and less standardized than those from the Roman period."

\(^{136}\) See Johnston 1979, p. 33, table; and Johnston 1978b on batch price marks.

\(^{137}\) Johnston 1984.

\(^{138}\) On the importance of individual negotiation and bargaining in ancient, and sometimes modern, price creation, see Lowry 1987, pp. 210–211 and 237.

\(^{139}\) See notes 5–9 above.
Various possible contexts in which these graffiti may have been applied were presented above. For the few price marks and combinations of price and volume graffiti, which seem likely to have been applied before the jars reached the wine-selling area in R 13, simply the large number of Chian amphoras in R 13:4 might raise the chances of such marks occurring on them. These marks thus need not be explained in terms of the dominance of Chian jars among the R 13:4 graffiti. The graffiti related to the use of the jars in the wine-selling area—the volumetric notations, weight notations, and isolated abbreviations—do require further consideration as to why they are so commonly found on Chian jars in this particular deposit.

The often-cited high reputation and value of Chian wine may be of some importance here. If graffiti noting partial volume or weight, which I attribute to sales of wine in the kapeleio itself, are concentrated on one type of amphora, it is reasonable to assume there was considerable activity surrounding that type in particular. Frequent decantings from those jars is the most likely activity. If these Chian jars were rapidly emptied due to the popularity of that particular wine, then it follows that graffiti recording complete capacity and related to their refilling at the oinos would be more common on these jars than others. Similarly, graffiti such as weight notations and isolated abbreviations, relating to the reuse of jars for products other than wine, would be most often applied to these rapidly emptied Chian jars.

**Summary**

In the foregoing review of situations and contexts for the application of the amphora graffiti, I proposed the following links between practices and graffiti. First, the only graffiti that are at all likely to have been applied at or before the arrival of a shipment at Peiraeus are price marks and the two volumetric notes that might be in non-Attic units. This is especially true of marks involving staters. The scarcity of price marks on amphoras and other vessels suggests that such marking was not a common practice in retail sales. Volumetric notations and perhaps some weight notations accounting for the complete capacity of the jar may be attributed to restocking the kapeleio from an oinos or other local stockpiler of agricultural products. Such a restocking with quantities marked on the jar seems to have occurred primarily in kapeleia, not in private houses in general. Only in this way can we account for the narrow distribution of amphora graffiti around the Agora. Sales of wine at the kapeleio itself may have resulted in a wide range of markings: volumetric notations using small units or only accounting for part of the jar's capacity; summations of simple strokes; and possibly weight measures indicating either partially filled jars or the tare weight of the jar. Sales of other commodities, such as oil, honey, or hon- eyed wine, might have led to the very visible use of the single abbreviations M/ME and E. It is also possible that processed meat was sold by weight and hence resulted in some of the weight notations.

I couch these suggestions in the most qualified terms because such informal practices are very difficult to reconstruct with any certainty. The

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proposals here are at best working hypotheses to be continually tested and refined against further contextual studies of amphoras and their graffiti.

Indeed, a few more points of qualification should be noted. First, the uses of the jars as described above need not always have entailed the use of graffiti. Many amphoras and even some types of amphora (see Table 2) from the southeastern part of the Agora excavations carry no graffiti at all, and yet it seems likely that they too were involved in the processes just described. Second, we tend to have only one graffito per jar as preserved. Lang was probably correct to suggest that once the capacity of a jar was checked, the volumetric graffiti would serve as a reminder for future such uses. For the partial volumetric and partial weight graffiti, proposed here to have been used in sales within the kapeleion itself, it is surprising not to have more than one set of markings for the quantity dispensed. The summation graffiti, however, might well have accounted for multiple small decantings in the kapeleion. Even if these contradictions to the models of practice proposed here eventually require the adoption of new models altogether, any new proposals will also have to take into account both the wide range of possible uses of the graffiti and the constraints of the contextual evidence.

**Graffiti, Economics, and History: The Late-5th-Century Aegean**

In the preceding section, I suggested activities that might have resulted in the application of the graffiti and considered why the graffiti clustered in the southeast corner of the Agora. None of the activities, however, is tied to the restricted chronological range of the graffiti. While a few examples of numerical amphora graffiti can be found from the late 6th century on, the concentration of graffiti in the last thirty years or so of the 5th century is striking and requires explanation. The activities themselves do not seem inherently limited in terms of chronology (oinoi are illustrated on a 6th-century black-figure vase and a 5th-century red-figure vase; cheating kapeloī appear widely in Greek literature; and references to sealing and marking pithoi are found in law codes from the Classical period [Thasos] through later Roman times). Perhaps there are elements of the environment in which the actions took place that encouraged more frequent use of graffiti.

Given that the graffiti coincide in date very closely with the Peloponnesian War, from 431 to 404 B.C., wartime conditions in Athens should offer the most probable explanation for the rise in the use of graffiti in these decades. The Periclean strategy of abandoning the Attic countryside in the face of seasonal Spartan raids is one likely cause of the changes in daily activity, changes of which these graffiti are one reflection. The overcrowding of Athens during the time the countryside was abandoned is vividly attested by both Thucydides (especially 2.17 and 2.52) and archaeological evidence. Most immediately related to the graffiti in terms of their dates and topographical distribution is a mass of scrappy walls found below the Stoa of Attalos, i.e., north of the R 13 wells. Rhys Townsend quite reasonably suggests that these are the walls of huts for wartime refugees; they were cleared away for more substantial buildings ca. 410 B.C.
In this suddenly crowded city, the earlier marketing and accounting practices may have no longer sufficed, and so the use of graffiti on amphoras, which had been rare, became more common practice. Such an increase in the complexity of economic and other organizational practices in the face of increased scale of activity has been noted in a wide range of archaeological, historical, and ethnographic contexts. The amphora graffiti of the late 5th century would fit into this pattern very easily.

While the later 5th century was in part a time of great prosperity for Athens, it also included times of considerable hardship. Most importantly for the purpose of explaining the rise in the use of graffiti is the possibility of fluctuating access to imported, seaborne goods through Peiraieus. Athenian strategy, both during the Peloponnesian War and at other times, depended very much on imported supplies. Fluctuations in the actual volume of imports are difficult to document in the archaeological record; however, it seems likely that Peiraieus was not a smoothly functioning harbor, especially in the last decade of the century. While imports could enter Attica from other sites (e.g., Thorikos, Sounion, Rhamnous), disturbances of peace at Peiraieus were certainly a recognized cause of economic hardship for Athens.

The connection between such likely, but archaeologically invisible, drops in the volume of imports and the amphora graffiti is as follows. One practice that may have resulted in numerical graffiti was refilling amphoras from a local oinos once the original imported contents were used up. If there were periods, even as short as a few months, when new imported amphoras were in shorter supply, we would expect to see an increase in precisely this dependence on local stockpilers (oinoi). In the archaeological record, brief events taking place over many years may be obscured; nevertheless, the increased use of graffiti broadly visible across the war years could result from these periods of greater dependence on local products. Hanson, Foxhall, and others have proposed that Attic local agriculture, especially olive production, would not have been seriously disrupted by the hostilities. There is some disagreement as to the stability of grape crops during wartime, but it is probable that local oil and perhaps wine would have been available when imports were in shorter supply.

Both factors, the overcrowding of the city and the drop in availability of imported amphoras, coincide very well with the appearance of increased graffiti use on the Agora amphoras. It is difficult, and unnecessary, to place one factor over the other in explaining the rise in graffiti use. Both helped create an economic milieu in which the graffiti was clearly seen as necessary on a much larger scale than had ever existed before or would later; indeed the two factors never recur together in Athenian history.

If wartime conditions help explain the general concentration of the graffiti in the last three decades of the 5th century, the specific concentration of graffiti on Chian amphoras in well R 13:4 but not in later deposits remains troubling. I proposed in the preceding section that the popularity of Chian wine provided a possible explanation for the clustering of the graffiti. Yet, this reputation, as far as we know, did not decline after ca. 425, so why do other amphora types take on a greater share of the graffiti in later deposits? As is clear from the estimated numbers of jars of each

145. It is possible to study the relative presence of one amphora type compared with others.  
146. See Garland 1987, pp. 10–57 for the historical survey of Peiraieus. For specific references to troubles at Peiraieus, see, e.g., Xen. Hell. 2.9, Lysander closing access to Peiraieus in 405; 2.3.11, destruction of the Long Walls and the “walls around Peiraieus” (τὰ [τεῖχα] περὶ τὸν Πειραιάδο) in 404; 2.3.21, attacks on metics ordered by Theramenes. On the importance of a smoothly managed Peiraieus and comfortable facilities for merchants, see especially Xen. Poroi 3; and on the importance of peace, see Poroi 5.  
147. See Hanson 1998, pp. 49–71 on the hardiness of crops to resist hostile human destruction; Foxhall (1993, pp. 138–139) proposes that vines would have been particularly endangered (cf. Hanson 1998, pp. 223–224).  
148. Interruptions to Athenian access to Peiraieus do recur in Athenian history but not in conjunction with unusual overcrowding of the city; see Garland 1987, pp. 37–57.
major type for the wine-selling area (summarized in Table 2) and as indicated in broader studies of these and other Agora deposits, the percentage of Chian amphoras relative to other types declines considerably between ca. 425 and the end of the century.\(^{149}\) Despite this decline, Chian amphoras did still receive graffiti, perhaps attesting to the continued popularity of that wine, which quickly drained the fewer Chian jars in circulation. Other amphora types, however, were also being emptied, reused, and marked with graffiti.

The phenomenon of these many graffiti in late-5th-century Athens should, finally, be considered in an even broader context. Economic conditions in later-5th-century Athens and in the Aegean more generally, down into the 4th century, include a wide range of developments of which the intensive use of graffiti on amphoras in Athens should be considered as one, very tangible, symptom. In terms of the broader study of the Aegean amphora trade, the last third of the 5th century saw the emergence of consistent amphora-marking practices in major production regions on a scale not seen earlier, and this pattern of development continues through the 4th century and the Hellenistic period.\(^{150}\) The new monetary wealth of Athens in the second half of the 5th century has been highlighted by some scholars as contributing to a more entrepreneurial and commercialized economy, one in which, not surprisingly, the novelty of such developments and wealth received a mixed reception.\(^{151}\)

These changes, taken together, set up a context in which the amphora graffiti are not unexpected. Imagine an Athenian, recently displaced from the Attic countryside, going to the \textit{kapeleion} with his jury pay. He, like Dikaiopolis in the opening of \textit{Aischylos}, is dismayed by the unfamiliar jostling of the markets where people he has never met before and may never see again want his obols. He reaches the \textit{kapeleion} and, remembering all he has heard of the dishonesty of \textit{kapelo\i}, asks to have his jar filled with 2\(\frac{1}{2}\) chous. He is relieved to see that the \textit{kapelos} marks each chous and kotyle on the side of the amphora as they are poured. “Quite an honest man!” he thinks, though he still longs for his country deme where he need not have been so apprehensive procuring wine.

\(^{149}\) Lawall 1995, pp. 290–292 and 1998a, p. 87, fig. 5.1.

\(^{150}\) From ca. 430 B.C., Mendean jars are labeled with small painted letters, reflecting local practice. Near the beginning of the 4th century, Thasos adopts a very consistent stamping program, and this change coincides with the apparent expansion of Thasian production and exportation. For discussion of when in the 5th century different amphora producers use consistent marking systems, see Lawall 1995, passim.

\(^{151}\) Burke (1992) places the major increase in scale and therefore “dissembaliess” in the 4th century; however, like Crane (1992), Burke also notes the influx of wealth, trickling down to the urban population in the later 5th century. Olson (1990) on Aristophanes’ \textit{Plutus} and Kurke (1989) on \textit{kapeleia} both highlight the suspicions with which some of these novelties were viewed. Seaford (1998) and von Reden (1997) address issues related to the ethics surrounding increasing monetization of an economy, both acknowledging the broader literary and ethnographic research on this question as discussed in Bloch and Parry (1989).
APPENDIX
ANDRISKOS, A KAPELOS OF THE ATHENIAN AGORA?

The latest of the 5th-century deposits with graffito, Q\textsuperscript{15}:2, also contained possible evidence for identifying the personnel involved in the wineshop. The deposit contained three owner's graffiti, each restorable as bearing the name Andriskos (88–90, 92).\textsuperscript{152} As it happens, Andriskos spells Δικαίως with an omega in one instance and an omicron in another. He may simply be a poor speller; however, it is notable that the inscriber(s) of the commercial graffiti here at times uses variable spellings for the same information (e.g., E or H for half). Furthermore, the same name, Andriskos, can be reconstructed for another owner's graffito, found in C 19:9, on the shoulder of a Chian straight-neck amphora. C 19:9 is the furthest outlying of the deposits with the numerical graffiti and is slightly later than R 13:4. The fact that this name occurs four times in the same findspots as numerical graffiti may suggest a significant relationship between the name and the commercial activity implied by the amphoras and the graffiti.

The name Andriskos has a widely scattered distribution and is well represented both in Athens and in the areas producing the amphoras discussed above.

Athens examples

Name on red-figure psykter, ca. 510–500 B.C. (PAA [Suppl.] 127823)
Cleruch on Lemnos, 450–430 B.C. (PAA 127825)
Dedicatory inscription from Eleusis, ca. 350–300 B.C. (PAA [Suppl.] 127827)

Macedonian examples

EAM, no. 86, late 2nd century A.C., son of Neikolaos and father of Neikandros
Paus. 7.13.1, son of Perseus

Examples from the Aegean islands (cited in LGPN I, s.v. Andriskos)

Telos, 2nd century B.C., as father of Xenotimos (SEG XXV 857) and father of Aristandridas (SEG III 725 and IG XII.3 34, line 26)
Chios, SEG XVII 388, 3rd century B.C.
Naxos, RE (5), Ath. 3.78c, citing a Naxian historian Andriskos, possibly of the 4th or 3rd centuries B.C.
Rhodes, I. Lindos 344.27, 47 B.C.

With such widespread occurrences of the name, there can be no certainty as to the most likely origins of the Andriskos from Q\textsuperscript{15}:2. Some non-Attic dialect in the amphora graffiti and the significant presence of amphoras from both the Ionian islands and northern Greece allow for seeing Andriskos as a foreign merchant, but this is only a possibility. Andriskos could be of a long-standing Athenian family.

152. Possibly suggestive for the question of whether these are all inscribed by the same person, in both 89 and 90 the Σ of ΑΝΔΡΙΞΚΟ has a compressed lower angle between the bottom two bars.
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