Appendix 3

USE OF CERAMIC AND NUMISMATIC EVIDENCE IN SITE CHRONOLOGY

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The chronology of the site was determined by means of the following procedures: [1]

1. The relative order of the creation of contexts (i.e., discreet stratigraphic entities) [2] was observed during excavation as were the relative order of creation between contexts and *in situ* architectural features, and between architectural features.

2. For each of the four sectors (Sectors A-D) a Harris matrix diagramming the stratigraphic sequence was elaborated. The separate matrices were then linked to one another to the extent possible on the basis of contexts and architectural features attested in two or more sectors, and inferred equations between contexts and architectural elements.

3. The production date of each datable specimen of pottery, ceramic lamps, glass, coins, stamped bricks/tiles, and other displaced construction materials recovered from each context was determined on the basis of the chronologies for these classes available in the literature. [3]

4. The dates of construction and/or of decorative techniques of walls, floors, and other architectural features (including plaster wall surfacings), including stamped brick/tile and/or associated datable pottery, were determined on the basis of the chronologies available in the literature.

5. A *terminus post quem* was determined for each context and architectural feature. For contexts this was equal to the beginning date of the latest datable object contained. For architectural elements this was equal to the beginning date of the latest construction/decorative technique represented or, if later than this date, the date of the latest datable stamped brick/tile or piece of pottery that they contained. Where a context or architectural element that preceded the context or architectural element in question in the stratigraphic sequence proved to have a later *terminus post quem*, this later date was taken as the *terminus post quem* for the context or architectural element in question.

6. These *termini post quem* were then reviewed for errors resulting from mistaken evaluations of stratigraphic relationships, mistaken identifications or dating of artifacts or construction/decorative techniques, and/or the introduction of artifacts postdating the creation of the context in question during deposition, excavation, processing, and/or analysis.

7. Groups of contexts and/or architectural features which, by virtue of their physical characteristics, content, and/or chronology, appear likely to have been produced by the same event, set of events, or process, and so to be related, were grouped together as sequences of features.

8. A *terminus post quem* was established for each context (feature)/sequence. This was equal to the latest *terminus post quem* for the various contexts and architectural features assigned to it.

9. More precise dates for specific contexts/features or sets thereof were inferred by identifying possible or likely relationships to dated features documented elsewhere in the environs of the Palatine East, and/or to dated events and/or processes attested in textual sources.

While procedures 1-5 and 8 are mechanical operations based on 'objective' observation, [4] procedures 6-7 and 9 are more interpretative and so 'subjective' evaluations. Several procedures require comment.

Procedure 3: The detailed study of the site pottery assemblage has to date been only partially completed. Generally speaking, the detailed evaluation of the materials recovered in contexts belonging to the portion of the site sequence extending from the late 3rd to the early 6th century AD is fairly well advanced, that of the materials recovered in contexts belonging to the portion of the site sequence extending from the mid 1st to the early 3rd century AD is somewhat less advanced, and that of the materials recovered in contexts belonging to the portion of the site sequence extending from the 9th to the 20th century AD is only little advanced. [5] Once this work has been completed it will/may be possible to revise some of the dates given here. At present, it is possible to employ the presence/absence of distinct pottery classes (including amphora classes) as chronological markers and, in the case of a limited number of pottery classes (African *sigillata* A, C, and D, African cookware, Italian *sigillata*), distinct vessel forms as chronological markers.

The approach utilized in employing this material for the elaboration of the site chronology was as follows: A diagram based on the Harris matrix for each site sector was produced for each pottery class, which indicated the contexts in which the class in question was present and, where known, the contexts in which specific forms belonging to that class were present. By evaluating these diagrams it was possible to establish for each site sector the point in the sequence of contexts at which each class or form first appears, the order in which the various classes and forms first appear, and suites of forms and/or classes that co-occur over specific segments of the sequence. In numerous instances different strings of contexts in the same matrix and/or the matrices for two or more site areas display both the same sequence of first appearances for the various classes and forms and co-occurring suites of classes/forms, confirming the reliability of the overall results. Since many contexts yielded fairly large amounts of pottery, with many pottery groups weighing in the tens or hundreds of kilograms, this method has permitted the accurate identification of the first appearance in the site sequence of even fairly uncommon pottery classes. [6] On the basis of the patterns revealed by this method it was possible to identify coeval segments of the site sequence, and, where the beginning dates for the manufacture and/or introduction into the Rome area of the relevant classes/forms are known, to date these segments with what is likely to be a high degree of accuracy.

Our knowledge of the absolute dates for the manufacture and distribution on the Rome market of most classes and forms of imperial and medieval pottery represented in PE site assemblage remains im-

[1] This summary essay reflects the state of affairs in 2000 and does not, for the most part, take into account more recent bibliography and discussion.
[2] The context or feature is thus broadly analogous to the *attività*, an analytical construct widely employed in Italian archaeology: see Carrandini 1996, 140-44.
[3] *PE II* volume will include the site coin assemblage (T. Buttrey) and glass assemblage (S. Smith), and *PE III* the site pottery and lamp assemblage (J.T. Peña and others).
[4] Even low-level operations of this sort, however, involve some degree of subjective interpretation. For a useful discussion of this issue, see Hassan 1997.
[5] During the 1992-1994 field seasons the pottery from each context was subjected to a preliminary chronological evaluation, thus providing a provisional chronological interpretation.

perfect.[7] The determination of beginning dates for the distribution of specific classes and forms, crucial information for the elaboration of site chronologies, has been hampered by the paucity of publications presenting precisely dated pottery groups from the Rome area. The current situation should, however, improve with the publication of pottery assemblages from various recent excavations in the city, as in many cases these have recovered deposits that can be dated with great accuracy due their certain or probable association with dated historical events.[8] In this connection, the PE excavations have recovered a series of massive fills in Sectors A and B that were deposited over the course of the period ca. AD 300-370 that can be dated very accurately on the basis of their coin content, and that the publication of the materials from these contexts will result in significant improvements to the Rome-area pottery, lamp, and glass chronologies for this period.[9]

Procedure 5: Inherent differences exist in the degree of accuracy likely to be associated with *termini post quem* based on the evidence of pottery, lamps, and/or glass, and those based on numismatic evidence. While we have little direct information in this regard, ethnographic and ethnoarchaeological research,[10] as well as logical considerations, suggest that most pottery, lamps and glassware produced in the Roman world had a use life of no more than a few years, with many such items probably broken and discarded after a period of only a few weeks or months.[11] The trash stream of imperial Rome should thus have contained large numbers of pots, lamps, and glass vessels produced only a short time prior their discard. Accordingly, where the relevant classes or forms of pottery, lamp types, and/or glassware forms are well dated, the analysis of these materials should furnish a *terminus post quem* that is a fairly accurate estimate for the closing date of the context in which they were found.[12] Coins, in contrast, presumably had a significantly longer use-life on average than did pots, lamps, and glass vessels, were probably recycled more intensively for their material, and, as is evident from archaeological site reports, were lost or discarded and then incorporated into the archaeological record in far smaller numbers than these other classes of material culture.[13] Further, as a significant portion of coin finds appear in the context of hoards or dispersed hoards, and coins are nearly always preserved intact (unlike pottery, lamps, and glass, which have usually been broken into numerous fragments dispersed through two or more contexts), coins also tend to be distributed through site sequences in a far more uneven fashion than are pottery, lamps, and glass. As a result, many contexts and, not infrequently, long series of contexts in a stratigraphic sequence produce no coins (much less datable coins), while a large portion of the in-phase (as opposed to residual) coins recovered at an archaeological site will have been incorporated into the context in which they were found many years after their manufacture. Thus, while the date of manufacture of individual coins can often be determined with a very high degree of accuracy, numismatic evidence tends to furnish *termini post quem* that are inaccurate estimates for context closing dates.

The site coin assemblage consists of 586 coins, one of which is gold, 42 silver, and the remaining 543 in base metal.[14] Of these, the one gold coin and 10 of the silver coins date to the post-Roman period. 27 of the remaining 32 silver coins are *antoniniani* dating to between AD 260-268 and the late 3rd century (with none necessarily dating later than AD 276-282), a period when debased silver issues had taken over most of the functions of base metal coinage. While there is nothing unexpected in these statistics, as most of the coins recovered appear to be casual losses, they do serve to underscore the fact that any consideration of how patterns in the minting, circulation, and loss of coins may condition our ability to determine the site chronology need concern itself almost exclusively with the way in which these factors relate to base metal coinage.[15]

Only a very small portion of the coins recovered in the Palatine East excavations were found in contexts belonging to the portion of the site sequence preceding a hiatus dating to the middle quarters of the 3rd century AD. This differential in the representation of coins in contexts of the early/middle empire and those of the late empire – attested at other excavated sites both at Rome and elsewhere – is no doubt due in significant measure to the relatively large size of the coins in use prior to the late 3rd century AD.[16] These larger coins presumably would have been dropped less often, and, when dropped, would have been easier to find; further, as these coins were also of relatively

[6] An example is the case of glazed fineware, a class of tableware consisting of a fine, calcareous ceramic body covered by a blue-green glaze. This class, of presumed central Italian origin, occurs in small amounts at Rome and Ostia in contexts dating from the late 1st to the mid 3rd century AD (see Martin 1992). In both Sectors A and D it consistently appears for the first time in contexts later in the sequence than those in which the earliest thin-walled forms of African *sigillata* A and the African cookware Hayes Form 197 casserole first appear, and earlier in the sequence than those in which the earliest African *sigillata* A open forms, such as the Hayes Form 8A and 9A first appear.

[7] The more important studies of pottery assemblages from Rome and its environs that help to refine the chronologies of various pottery classes and wares that have appeared in recent years include Pavolini 2000; Meylan Krause 2002; Rizzo 2003, Ikäheimo 2003; Olcese 2003; and the various contributions in Paroli and Venditelli 2004.

[8] Several projects, including the *Meta Sudans* excavations, the Palatine North Slope excavations, the *Via Nova/Clivus Palatinus* excavations, and the *Caput Africae* excavations, have recovered groups of pottery from layers associated with cleanup and leveling operations following the Fire of AD 64. For the *Meta Sudans*, see: Panella 1990, 62-64;1992, 190-193; and Panella (ed.) 1996, 46-51, 159-163. For the Palatine North Slope, see Carandini *et al.* 1992; Terrenato and Ricci 1998, 95. For the *Via Nova/Clivus Palatinus*, see Tomei *et al.* 1986, 418-419; Ciottola *et al.* (1989); Panella 1992, 193-195. For *Caput Africae*, see Pavolini (ed.) 1993, 118-119, 283. The *Meta Sudans* excavations have recovered groups of pottery from fills that post date the construction of the Domus Aurea and predate the construction of the *Meta Sudans*, hence dating to ca. AD 68-80. See Panella 1990, 74-77. The *Crypta Balbi* excavations have recovered deposits of pottery associated with construction that appears to have followed immediately upon a fire that destroyed much of the *Campus Martius* in AD 80. See Picciola 1989; Panella 1992, 195-96. The *Curia/Basilica Aemilia*/Forum of Julius Caesar/*Forum Transitorium* excavations have recovered groups of pottery from layers associated with the construction of this last monument, dating ca. AD 80-98. See Morselli and Tortorici (eds.) 1989, 215-216, 237, 271-281; Panella 1992, 196-197. The Meta Sudans excavations have recovered deposits of pottery from the foundation trenches of the Arch of Constantine, dedicated in AD 315/316. See Panella (ed.) 1996, 189-196; Zeggio and Rizzo 1998.

[9] Preliminary analyses of some of these were presented by Peña in Hostetter *et al.* 1994, 154-60. Some of the dates given therein differ from those presented here due the removal of a small number of coins now judged to be intrusive and the downward revision of the accepted beginning dates for certain forms in African *sigillata* D. For a detailed analysis of the pottery content of one of these contexts, A105, see Peña 1999.

[10] For archaeological and ethnographic studies of pottery use-life, see Kramer 1987, 293-299; Rice 1987, 293-299; Shott 1996.

[11] Transport amphoras, many of which may have been reused as containers for liquids or semi-liquids after being emptied of their original content, with some examples remaining in use for periods of up to several decades, may have been the exception. This inference is supported by evidence from Pompeii, where *tituli picti* on some amphoras in use at the time of the eruption of Vesuvius in AD 79 indicate that they were several decades old (see Laurence 1994, 5-7). Similarly, *tituli picti* on some of the amphoras from the *Castra Pretoria* deposit in Rome indicate that they were several decades old at the time of their interment (see Paterson 1982, 146-48).

[12] The accuracy of *termini post quem* based on pottery, lamps, and glassware will also be governed by the frequency and regularity with which recognizably different productions or forms were introduced into an area's market. In the case of Britannia, where our evidence is perhaps the best, there is some indication that the pottery market was characterized by alternating periods of stagnation and innovation. See Going 1992.

[13] While glass was probably recycled fairly intensively at Rome during the imperial period, it is the author's impression that the minimum number of glass vessels represented in most contexts of this period is substantially greater than is the number of coins.

[14] The author would like to thank T. Buttrey for making a preliminary copy of the coin catalogue available for this discussion. For the utilization of coins for the reconstruction of the chronology of the sequence at Roman and medieval sites, see Collis 1974, Harris and Reece 1979, and the various case studies in *La moneta* 1989.

[15] For an informative discussion of the dynamics of coin loss and their implications for site coin assemblages, see Volk 1996, 381-99.

[16] The *Caput Africae* excavations, for example, retrieved 22 coins dating to the period from AD 14-275 (ca. 1 coin for each 12 years), but at least 102 coins dating to the period from AD 270 to the end of the 5th century (ca. 1 coin for each 2.25 years) (see Pavolini (ed.) 1997, 23). For this pattern at Rome more generally, see Reece 1982, 133 and 135, table 2 b: General Deposits, Mean and Per Year. For this pattern at the excavations in the *agora* at Athens, see Volk 1996, 389.

greater value, they would have been searched for more energetically when lost.[17] This disparity suggests that coins will tend to be less useful for dating the portion of the site sequence preceding the hiatus of middle quarters of the 3rd century AD than for the portion following it. This phenomenon is in all likelihood amplified by the extremely large size of many of the contexts belonging to the post-hiatus portion of the site sequence (in both volume and quantity of artifacts), since the probability that a context will contain one or more datable coins (and one or more datable coins deposited within a few years of their minting) will increase with the size of its artifactual content.

R. Reece's study of several coin groups from Rome provides a picture of diachronic variability in coin loss from a somewhat different perspective.[18] This analysis reveals that there are certain periods between the early 1st and the early 5th century AD which contributed significantly smaller numbers of coins to the overall pool of coins entering the archaeological record than did the periods that immediately preceded and followed them. These include the blocks AD 54-69, 192-222, 275-294, and 378-402. The Palatine East coin assemblage is compatible with this pattern insofar as the period preceding the hiatus of the middle quarters of the 3rd century AD is concerned, in that it includes no coins dating to the period AD 54-69, and but two that date to the period AD 192-222.[19] It is not difficult to account for these two periods of low-contribution. The first is clearly a function of the fact that the Roman state struck no base metal coinage during the period AD 54-64. Similarly, the second is presumably determined by the fact that base metal coinage was struck only in very limited amounts during the period AD 161-215.[20] When observed from the perspective of the elaboration of site chronologies, it is evident that contexts created ca. AD 65-70 are extremely unlikely to contain a coin less than one decade old, while contexts created ca. AD 205-220 will most probably not contain a coin less than one to three decades old. *Termini post quem* derived on the basis of the coin content of contexts deposited during these periods are thus inherently inaccurate. That the Palatine East coin assemblage does contain significant numbers of coins dating to the other two periods of low contribution revealed by Reece's study, namely AD 275-294 and 378-402, is presumably due to the intensive dumping on the site of refuse generated during these two periods and/or over the course of the ensuing one or two decades.

A different, though related, issue is the impact of the several reforms to the coinage system that occurred during the imperial period on the utility of coins as dating evidence.[21] Several of these reforms, including those carried out in AD 293, 348, 354, 362, 372 395 and 425, involved the whole or partial demonetization of the base metal component of the pre-reform coinage system, and should have resulted in the more or less immediate removal from circulation of either all of the extant base metal coinage or all of certain denominations of base metal coins.[22] Coin losses in the period leading up to the next such reform thus should have consisted entirely of post-reform issues, with this pattern beginning anew with the implementation of the next such reform. In theory, then, for each context formed during the period of these reforms, the year of the reform following the date of the latest datable coin should represent a *terminus ante quem* for the loss or discard of that context's coin content. Since there appears to have been a relatively high level of coin loss during the period of these reforms (as measured in absolute numbers of coins per unit of time) and, as previously noted, the portion of the PE sequence dating to the period of these reforms contains several extremely large contexts, dates derived in this fashion may represent fairly accurate estimates for the closing date of context deposition. Conversely, in cases where the date of the earliest datable coin in a context precedes the year of a reform that is earlier than the date of the latest datable coin, the year of this reform should represent a *terminus ante quem* for the beginning of the loss or discard of that context's coin content. Here, the more than discrete possibility that a context contains one or more residual coins – that is, coins minted and lost prior to the last reform preceding the beginning of its deposition which were subsequently disturbed and redeposited, finally ending in that context – diminishes the likelihood that dates derived in this fashion will represent useful estimates for the beginning of context deposition. The reliability of both kinds of these dates will be heightened in cases where they can be established for a lengthy series of contexts, as can be done to some extent in Sector A at the Palatine East.

Procedure 6: Difficulties in the evaluation of the *termini post quem* derived for individual contexts often stemmed from the contamination of the artifactual content of a context through the infiltration of materials from overlying contexts. This phenomenon has received little attention in the archaeological literature, perhaps because contamination is widely regarded as stemming almost exclusively from inept excavation and/or careless finds processing, with the result that archaeologists are loath to acknowledge it in their site reports or to invest any effort in its systematic investigation.[23] In this regard, we note that many fills of the sort that predominate at the Palatine East probably began as loosely deposited trash tips containing significant amounts of organic material. With the decomposition of their organic component, the pull of gravity, and the exertion of downward pressure by the passage of people and animals and water over their exposed upper surfaces and/or the dumping on top of additional fills, contexts of this sort must have been subject to a significant amount of settling and compaction, with this process particularly pronounced during the years immediately following deposition. While it is difficult to evaluate the scale of this compaction without recourse to experimental or ethno-archaeology, that it was often significant may be indicated by the fact that structures such as wells and small rooms not infrequently contain a succession of deposits that appear to reflect the 'topping up' of that space's fill following the settling of previously deposited tips. It is not difficult to imagine how significant amounts of artifacts might settle downward – especially along walls or the outer edges of tips dumped downhill – in the course of this process, in some cases passing from an overlying fill into an underlying fill. It seems likely that small, relatively dense artifacts and ecofacts, such as lithics and coins (in contrast, for example, with most pottery and bone) would be particularly susceptible to this phenomenon.[24]

Most of the cases of suspected infiltration at PE occur among the fills in Sector D and Sector A West, suggesting that this phenomenon was more common in cases where trash was dumped onto exposed slopes rather than into a protected basin, such as the Sector B barrel vaults or the several small rooms in Sector A.[25] In many instances contexts containing almost exclusively pottery of late 1st/early 2nd century AD date produced a small number of 4th/5th century AD or post-Roman sherds, or contexts containing almost exclusively pottery of 4th/5th century AD date produced a small number of post-Roman sherds. In cases of this sort it was often uncertain whether these should be re-

[17] For these assumptions, see Reece 1996, 341.

[18] Reece 1982, especially 135, table 2, 141, fig. 3.

[19] Both of these coins, one dating to AD 211 and the other to AD 217/218, were recovered as residuals in post-Roman contexts, raising the possibility that to some extent the paucity of coins dating to this period at the Palatine East is the result of a low level of dumping on the site of refuse generated during the late 2nd/early 3rd century AD rather than the result of a relative low level of coins of this period in the circulation pool at Rome.

[20] The assumption that relatively few base metal coins minted during the latter part of this period circulated at Rome is supported by the composition of the Monte Testaccio hoard, a group of 802 coins closed at some point during or slightly after the period AD 253-268. For this hoard, which was not included in Reece's study, see Callu 1969, 118. Among the 610 base metal coins, there are four pieces dating to the 1st century AD, 46 dating to the 2nd century AD, 63 dating to the period AD 222-235, 493 dating to the period AD 235-253/268, and but four dating to the period AD 193-222.

[21] For an overview of these reforms, see Harl 1996, 73-96, 125-180.

[22] That the reforms of AD 348 and 354 did succeed in removing from circulation a very significant portion of the pre-reform base metal coinage is suggested by coin finds from Rome (see Reece 1982, 139-140).

[23] Schiffer (1996), for example, while containing discussions of relevant topics, such as refuse displacement, the decomposition of organic materials, graviturbation, and aeroturbation, presents no systematic account of the specific effects of these and other agents on the infiltration of artifacts from overlying deposits to underlying deposits, and a review of his bibliography reveals no studies that would appear to be concerned with this issue.

[24] Biers 1992, 19. As Harris (1979, 93) notes, however, excavators will be more apt to recognize coins that have been subject to infiltration than most other kinds of artifact.

garded as examples of infiltration, or simply contexts containing primarily residual material. Recent research has shown that post-Roman contexts containing almost exclusively late imperial material are common at Rome, and in many cases it seems likely that this is the best explanation.[26] At PE there are three clear examples of infiltrated coins, all in Sector D. These include a coin of AD 402-408 recovered in a context (D218) that can be dated by its pottery to the late 1st century AD, three coins dating to the second half of the 4th century AD recovered in a context (D219) that can be dated to this same period on the basis of its pottery, and a coin of AD 161-176 recovered in a context (D83) that can be dated to the late 1st/early 2nd century AD on the basis of its pottery.[27] Other less clear-cut cases of this phenomenon have been identified among the previously mentioned series of large slope fills of 4th century AD date deposited in Sector A (W).

Procedure 8: The postulation of more accurate dates for contexts (features) or sets of contexts through their association with closely dated features in the environs of PE and/or with events recorded in textual sources. The possibility of making such associations is unusually high at PE, as numerous closely datable features have been uncovered in both the Meta Sudans excavations, only ca. 50 m to the NE, and in the Vigna Barberini excavations, only ca. 75 m uphill to the W. Many of the results of the Meta Sudans excavations have already been published,[28] and beginning in the archaic period, some of the contexts and/or displaced architectural elements in those excavations can be associated with closely datable operations and events. The results of the Vigna Barberini excavations,[29] has revealed numerous, if often less well dated features, some of which can be associated with similar events in Sectors A-D of Palatine East. In short, the sequences of both excavations have proven to be of utility in refining of the Palatine East chronology.

[25] It is also possible that the high incidence of apparent infiltrated materials in these contexts is due in significant measure to the fact that it is more difficult for excavators to define accurately the bottom of fill deposits in areas of this kind, resulting in an increase in the inadvertent mixing of materials from two or more contexts at the moment of excavation. On the difficulty of tracing the bottom of fills of this kind at the Crypta Balbi excavations, see Rovelli and Saguí 1998, 184.

[26] See Ricci *et al.* 1992, 379-93, and several of the studies published in Guidobaldi *et al.* (eds.) 1998.

[27] The *Caput Africae* excavations appear to have encountered similar instances of the infiltration of coins. Thus *Attività* 12, dated to the AD 60s, contained a coin of AD 394-402, while *Attività* 45, dated to the second half of the 2nd or the early 3rd century AD, contained a coin of the late 3rd or 4th century AD and one of the 4th/5th century AD (see Pavolini (ed.) 1997, 12).

[28] See Chapter 1, note 5.

[29] See Chapter 1, note 4.