

# PROCEEDINGS OF THE 27TH INTERNATIONAL CONGRESS OF PAPYROLOGY

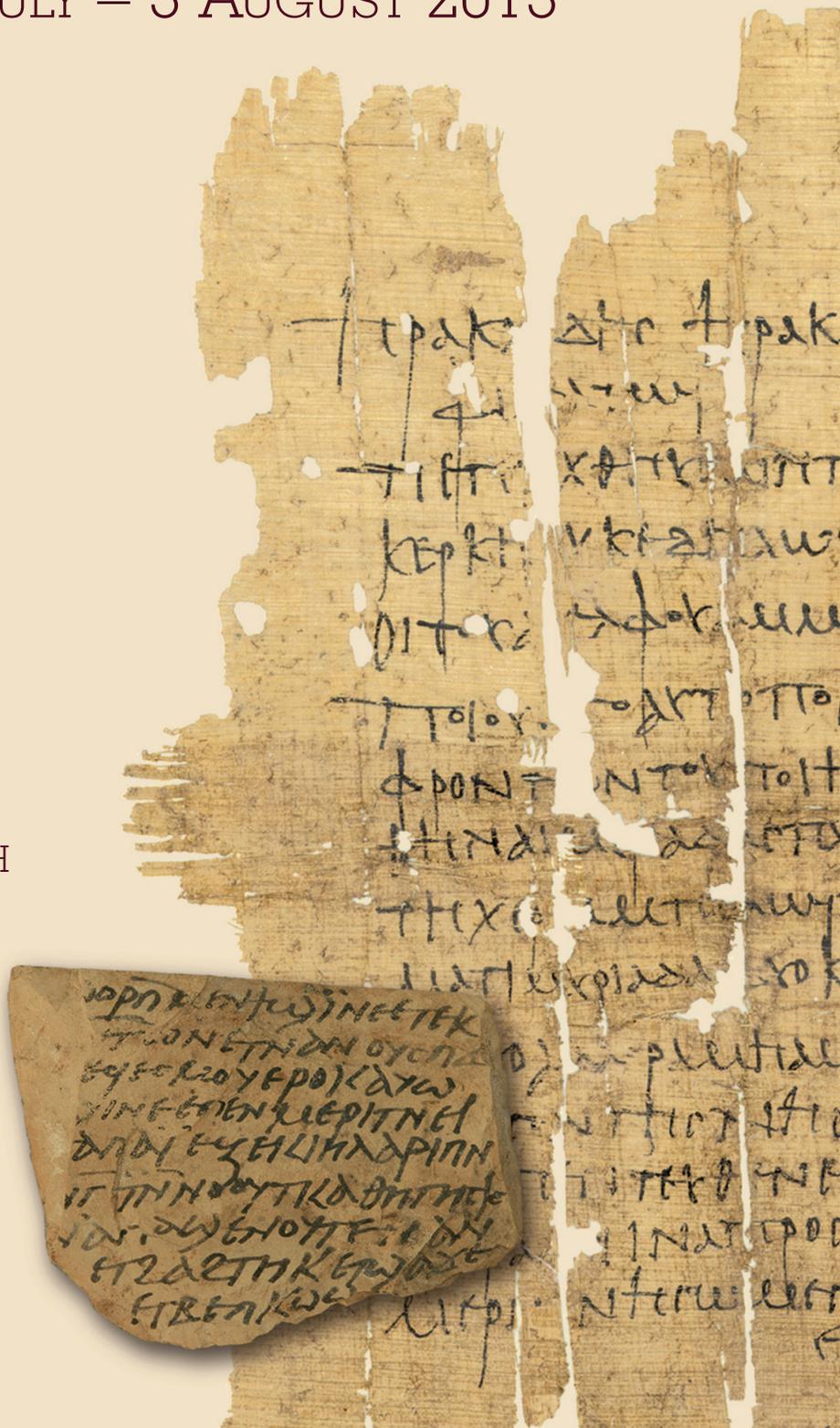
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Rodney Ast  
Paola Davoli

**OSTRAKA AND STRATIGRAPHY  
AT AMHEIDA (DAKHLA OASIS, EGYPT):  
A METHODOLOGICAL ISSUE\***

REFUSE IN DEPOSITS AND ARCHITECTURE:  
METHODS OF EXCAVATION AND INTERPRETATION

*by Paola Davoli*

**T**HE RUINS OF TRIMITHIS, modern Amheida, extend over an area of about 1.5 square kilometers, part of which is covered by sand dunes. Trimithis is an important example of an urban community on the edge of the Roman Empire, in the western part of the Dakhla Oasis.<sup>1</sup> The archaeological excavation has brought us several times, and in different contexts, to consider how important recycling and reuse of discarded mate-

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<sup>1</sup>The project, which began at Columbia University and is now under the aegis of New York University, is directed by R. S. Bagnall. P. Davoli has been the archaeological director since 2005; preliminary reports, a list of publications, and a list of collaborators are available at [www.amheida.org](http://www.amheida.org). The database of the excavation can be found at: [www.amheida.net](http://www.amheida.net).

rial was for the economy of this community, not only in everyday life, but in public and private activities of larger scale, too. Although the excavation is still limited to a few areas, our experience with refuse is quite extensive and varied, and goes beyond the usual finding of a dump.

Studies on dumps in the ancient world, and in particular on those of the Roman period, are numerous,<sup>2</sup> and they have direct implications for our understanding of disposal methods,<sup>3</sup> whether organized by the community or by private individuals, and of the recycling of materials in industrial or individual settings, such as the recasting of metal and glass or the reuse of amphorae in drainage and burials.<sup>4</sup> Archaeological methodology, both in excavation and in multidisciplinary and archaeological studies of discarded material, has improved significantly in recent years. However, in Egyptian archaeology, ‘the dump’ as a specific topic is not frequent, not because there were none, but more likely because they were not excavated or recognized as such in the course of excavations.

The subject is more familiar to papyrologists, especially after the great discoveries of papyri in the ‘monumental’ dumps at Kiman Fares (Medinet el-Fayum) and Oxyrhynchus in the late nineteenth and early twentieth centuries.<sup>5</sup> The fact that the discovery of a dump might lead to

<sup>2</sup> See: Pascale BALLET, P. CORDIER, & Nadine DIEUDONNÉ-GLAD (eds), *La ville et ses déchets dans le monde romain: Rebut et recyclages. Actes du colloque de Poitiers (19–21 Septembre 2002)*, Montagnac 2003; X. DUPRÉ RAVENTOS, J.-A. REMOLÀ (eds), *Sordes Urbis. La eliminación de residuos en la ciudad romana*, Rome 2000.

<sup>3</sup> J. Th. PEÑA, *Roman Pottery in the Archaeological Record*, New York 2007, p. 278 with previous bibliography.

<sup>4</sup> For an introduction to the subject of the reuse of amphorae in architecture see Florence C. LISTER, R. H. LISTER, ‘The recycled pots and potsherds in Spain’, *Historical Archaeology* 15 (1981), pp. 66–78.

<sup>5</sup> For an overview see E. G. TURNER, *Greek Papyri: An Introduction*, Oxford 1968, Chapter 3. See also B. P. GRENFELL, ‘Oxyrhynchus and its papyri’, [in:] *Egypt Exploration Fund. Archaeological Report 1896–1897*, London 1897, pp. 2–12. On Oxyrhynchus see now: [http://www.papyrology.ox.ac.uk/POxy/VExhibition/exhib\\_welcome.html](http://www.papyrology.ox.ac.uk/POxy/VExhibition/exhib_welcome.html). On its rubbish dumps see AnneMarie LUIJENDIJK, ‘Sacred scriptures as trash: Biblical papyri from Oxyrhynchus’, *Vigiliae Christianae* 64 (2010), pp. 217–254, but with a fragile archaeological analysis. Her extended interpretation of data collected from modern dumps to ancient ones is without any ethnographic or theoretical basis. More scientific comparisons could have been made with archaeological reports of ancient dump excavations.

uncovering discarded written material, which would likely be well-preserved due to favorable environmental conditions, is therefore well known to papyrologists.

Less obvious is the need for an appropriate excavation method that allows stratigraphic, and therefore also chronological, analysis of a dump.<sup>6</sup> Excellent recent excavations of dumps at Tebtynis and in the Eastern Desert *Praesidia* have demonstrated how useful and indispensable an accurate stratigraphic excavation method is.<sup>7</sup> In these cases, however, the dumps are readily recognizable in their morphological characteristics, and are located outside or at the edge of the settlements. They are defined as deposits formed by ‘secondary refuse’,<sup>8</sup> in which the materials were transported and discarded after being collected in the place in which they were originally used.

At Amheida a communal dump has not been identified so far, though there probably was more than one, given the size of the city and the large number of its inhabitants.<sup>9</sup> Moreover, the settlement was active for a long time, at least from the Old Kingdom until the end of the fourth century AD.

<sup>6</sup> This permits distinguishing and defining dumping phases, which may correspond to specific events linked to the life of the site.

<sup>7</sup> C. GALLAZZI, ‘Lo scavo di una discarica a Umm-el-Breigât (Tebtynis), ovvero, le sorprese del pattume’, *Quaderni Ticinesi di Numismatica e Antichità Classiche* 27 (1998), pp. 185–207; Pascale BALLET, ‘Dépotoirs culturels, domestiques et “industriels” dans la chôra égyptienne à l’époque romaine’, [in:] BALLET, CORDIER, DIEUDONNÉ-GLAD, *La ville et ses déchets* (cit. n. 2), pp. 219–230; J.-P. BRUN, ‘Le dépotoir’, [in:] Hélène CUVIGNY (ed.), *Didymoi. Une garnison romaine dans le désert Oriental d’Égypte*. 1. *Les fouilles et le matériel* [= *Fouilles de l’Institut français d’archéologie orientale* 49], Cairo 2011, pp. 115–155. On the method of excavation of dumps: J.-P. BRUN, ‘Méthodes et conditions de fouille des fortins et des dépotoirs ou les offrandes d’un Gallo-Romain en Égypte’, *ibidem*, pp. 61–71. For Mons Claudianus see at least Valerie A. MAXFIELD, J. BINGEN, ‘The southern sebakh’, [in:] Valerie A. MAXFIELD, D. P. S. PEACOCK (eds), *Mons Claudianus. Survey and Excavation 1987–1993. Excavation Part I* [= *Mémoires publiés par les membres de l’Institut français d’archéologie orientale* 43], Cairo 2001, pp. 89–125; J. BINGEN, ‘Dumping and the ostraca at Mons Claudianus’, [in:] D. M. BAILEY, *Archaeological Research in Roman Egypt* [= *Journal of Roman Archaeology Supplement Series* 19], Ann Arbor 1996, pp. 29–38. See also PEÑA, *Roman Pottery* (cit. n. 3), pp. 284–290.

<sup>8</sup> M. B. SCHIFFER, ‘Archaeological context and systemic context’, *American Antiquity* 37 (1972), p. 161.

<sup>9</sup> The south end of Area 7, a long dune covered by potsherds and debris, is almost certainly a dump with rubble.

However, it is clear that the life cycle of materials in the society that produced and used them<sup>10</sup> is more complex than is commonly believed and that refuse was re-used on a broad scale, not only in the case of organic refuse and manure for agriculture, well known but not so far attested at Trimithis, but especially in architecture. In Amheida we have encountered some examples of reuse of older materials, as in the Roman-period temple of Thoth from the reigns of Titus and Domitian, which was constructed with blocks retrieved from one or more temples already in the same area and built during the Late Period. This is a case of *reutilization*, or the use of ancient architectural material (*spolia*, as classical art historians call them) in new buildings.<sup>11</sup> The same kind of reutilization can be seen in the central residential area (Area 2), in which baked bricks from a large public bath were reused in the construction or renovation of buildings in the same area.<sup>12</sup>

In Area 2 there are also numerous examples of *reuse of objects*, in other words, the use of materials for different purposes from their original ones, such as pottery sherds abundantly used inside walls and especially in vaults covering the rooms (Fig. 1). This implies not only the sparing of ‘new’ materials, but also the prolonged ‘life’ of ceramic fragments, which then became in fact building material.<sup>13</sup> The evidence from Egypt certainly

<sup>10</sup> According to Schiffer, we can refer to this process in a cultural system as ‘systemic context’: SCHIFFER, ‘Archaeological context’ (cit. n. 8), p. 157.

<sup>11</sup> The blocks were then salvaged and reused in Islamic period buildings at el-Qasr. Cf. Paola DAVOLI & O. KAPER, ‘A new temple for Thoth in the Dakhleh Oasis’, *Egyptian Archaeology* 28 (2006), pp. 12–14.

<sup>12</sup> Paola DAVOLI, ‘Amheida 2007–2009. New results from the excavations’, [in:] R. S. BAGNALL, Paola DAVOLI, & C.A. HOPE (eds), *The Oasis Papers 6. Proceedings of the Sixth International Conference of the Dakhleh Oasis Project*, (Lecce 20–24 settembre 2009), Oxford 2012, pp. 267–277.

<sup>13</sup> Potsherds were also used in Byzantine architecture in Egypt: Françoise BONNET, ‘La datation des ermitages’, [in:] R. KASSER (ed.), *EK 8184. II. Explorations aux Qouçouir er-Roubâ’yyât. Rapport sur les campagnes 1982 et 1983*, Louvain 1994, pp. 17–19; Nessim H. HENEIN & M. WUTTMANN (eds), *Kellia. II. L'ermitage copte QR 195. Archéologie et architecture*, [= *Fouilles de l'Institut français d'archéologie orientale* 49], Cairo 2000, p. 76. According to Bonnet, the potsherds reused in the walls were contemporary with the building, while those present in the fillings were collected in dumps.



Fig. 1. Potsherds used in walls and vaults at Amheida as building material

brings fresh data to the discussion opened by Theodore Peña in 2007 on the life cycle of Roman pottery.<sup>14</sup> Potsherds remain on the site not only as *de facto refuse*, which was left behind at the time of the abandonment of the site, but also as ‘primary refuse’ (discarded at the place of use), as ‘secondary refuse’ (discarded in dumps) and, I would emphasize, as ‘tertiary refuse’ (discarded material recollected and reused). This reused refuse then became part of the architectural debris, in cases where they were used as construction material; or of the stratigraphy, when used as fillings in the

<sup>14</sup> See PEÑA, *Roman Pottery* (cit. n. 3), pp. 8–13 and 250–271; M. L. LAWALL & J. LUND (eds), *Pottery in the Archaeological Record. Greece and Beyond: Acts of the International Colloquium Held at the Danish and Canadian Institutes in Athens, June 20–22, 2008* [= *Gösta Enbom Monographs Series* 1], Aarhus 2011.

foundations of buildings; or they were reused as ‘new’ objects that at the end of their new life were again discarded in dumps. Among these reused potsherds we have also found a large number of ostraka.

An interesting aspect of this cycle frequently observed at Amheida is the reuse of dumps as filling in the foundations of buildings, an example of tertiary refuse.<sup>15</sup> In this case the refuse that had been already accumulated in dumps was collected again and used as filling that, in the case of foundations, was then sealed by the floor of the rooms of the new building. A different but similar case is the use of the material from a dump to level a building yard, an area on which new buildings or streets were built. This is what we found in the area of Serenos’ house (labelled B1),<sup>16</sup> the school (B5) and the two parallel streets (S2 and S3) that flanked the buildings (Fig. 2). These features were built on precisely this type of accumulation of dumped material, which was brought to the area and deliberately spread out in horizontal layers (Fig. 3). In these strata the foundation trenches of the house and the school were cut. And in these layers as well numerous ostraka were found.

Dumped material was also used to raise the floor in B5, during its transformation from a school (B5) to a workshop/stable (B4). In this context too ostraka have been found, but this refuse is of a later formation than those already mentioned.

The use of a strict stratigraphic method by expert archaeologists has allowed us to understand the nature of these deposits and subsequently to assess the relevance of the materials and objects found in them. It has served as an important instrument for the reconstruction of historical phases and for the accurate assessment of the contexts of written materials and other objects. Anybody who has even limited experience excavating in Egypt is well aware of the fact that quite often we have to deal

<sup>15</sup> PEÑA, *Roman Pottery* (cit. n. 3), p. 254.

<sup>16</sup> Also in this case we can refer to these refuse as a tertiary use. The editors of *O. Trim.* I argue that the house (*οικία*) that is said in *O. Trim.* 300 to be that of Serenos should be identified with Building 1. It was occupied, for some of its history at least, by the Serenos mentioned in the ostraka: R. S. BAGNALL & G. R. RUFFINI, *Amheida I. Ostraka from Trimitis*, vol. I. *Texts from 2004–2007 Seasons*, New York 2012, p. 37 (<http://dlib.nyu.edu/awdl/isaw/amheida-i-otrim-1>).

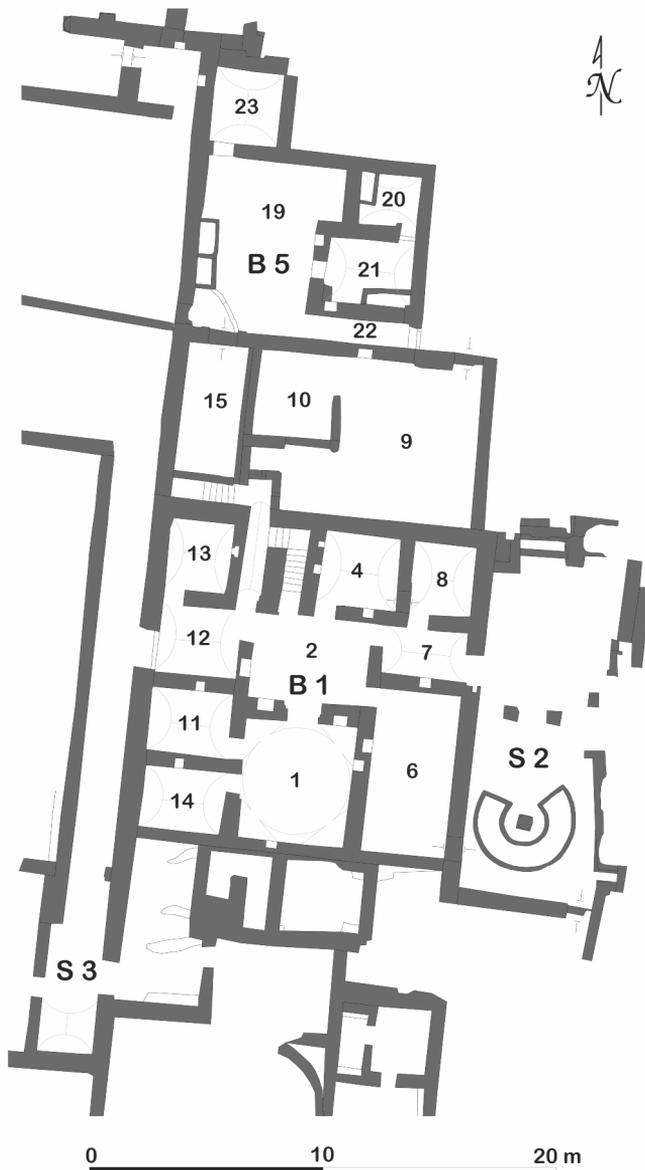


Fig. 2. Plan of Area 2.1 with B1 (Serenos' house), B5 (workshop/stable), and Streets 2, 3

with deposits that are very similar in composition, for example, with a clayish or sandy matrix. Thus, parts of collapsed mud brick walls and mud floors can be confused with deposits of different formation that are made from the same matrix, particularly when they lose their shape and compactness. Mud bricks and mud floors are basically made of compacted, dry clay and are subject to pulverization because of atmospheric agents like wind and water, or to heavy collapses that disrupt the compact clay matrix with their weight and the force of the fall. Therefore it is sometimes difficult to identify the nature and origin of deposits with the same kind of matrix. Yet the objects found in them necessarily have different provenances, and these must be recognized.

We can list some cases from Amheida as examples:

1. Objects discarded and dumped in courtyards or abandoned rooms, and thus deposited on top of floors.

2. Objects in deposits accumulated on the floor during the final phase of habitation of a house. These are the so-called *de facto* refuse, or objects left behind at the time of abandonment. The objects found in this kind of context can however be contaminated by post-abandonment materials.<sup>17</sup>

3. Objects discarded and originally collected on the roof terrace of a house, which then collapsed with the ceiling onto the ground floor.

4. Objects discarded by a family and imbedded in the mud floor (which sometimes is no longer recognizable as such because of the crumbling of the floor).

5. Objects originally incorporated into walls or roofs that subsequently collapsed (functioning in the masonry as chinking sherds, for example, and including ostraka).

6. Objects in foundation-filling deposits made of dumped material coming from dumps and reused in a tertiary mode. In this case the objects will be relevant to pre-construction phases.

<sup>17</sup> On the formation of artifact assemblages in habitational archaeological contexts see V. M. LAMOTTA, M. B. SCHIFFER, 'Formation processes of house floor assemblages', [in:] Penelope M. ALLISON (ed.), *The Archaeology of Household Activities*, London – New York 1999, pp. 19–29.

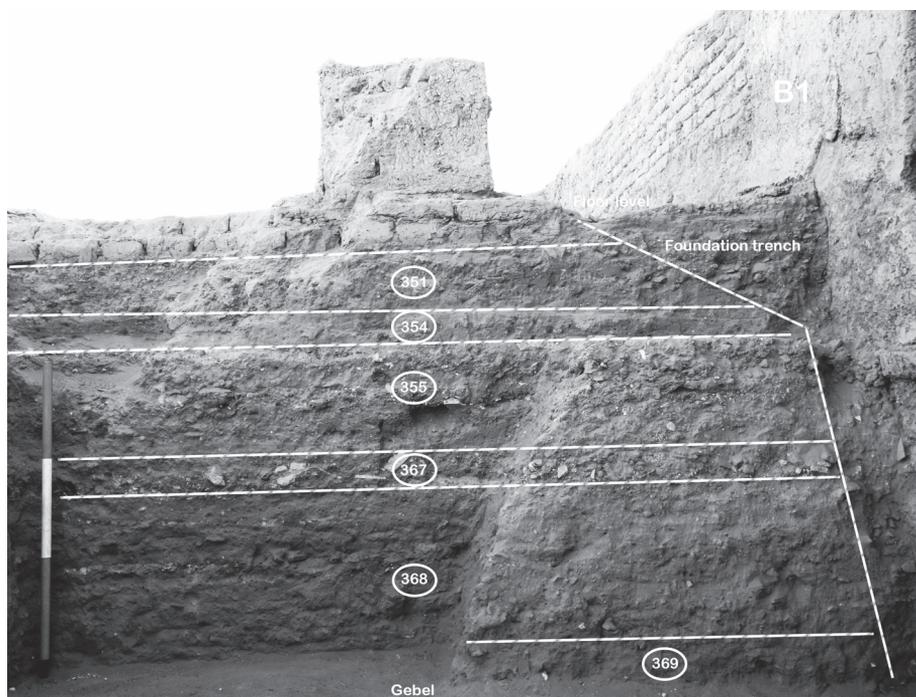


Fig. 3. Stratigraphy below street 2 floor,  
in front of Serenos' house

In complex situations like these, it is essential for an archaeologist to apply good methodology. Knowing the position and elevation of the finds is important for identifying them as materials from the floor or from deposits above or below it. A non-stratigraphic excavation will confuse these deposits during the excavation itself, mixing the finds with non-reliable and historically confused results. The experience and expertise of the archaeologist in charge of the excavation can, however, sometimes be insufficient for distinguishing the origin and nature of the deposits, especially those in rooms where the floor has crumbled. The interaction in the field between archaeologists, ceramicists, and papyrologists who can read and comment on the nature of the texts and their dating, is necessary for a proper interpretation of the stratigraphy.

So far, in Amheida Area 2 we have come to the conclusion that we are dealing with a large quantity of refuse discarded in different phases that can be summarized thus: dumped material reused as filling that comes from two main dumps, one formed before the construction of Serenos' house and one from the first living phase of the house and used during a remodelling phase of the buildings; materials reused in architecture; small dumps made of secondary refuse, and *de facto* refuse.<sup>18</sup>

One question we asked ourselves is where the pre-Serenos dump was originally located. Analysis of the materials found in the horizontal layers deposited at the bottom of streets and buildings in Area 2 suggests that the original dump was in this same area, not far from the place of its reuse. There are in fact fragile objects, such as mud stoppers that are not completely destroyed and therefore probably did not undergo transport and extensive shock in the process of being discarded. Among the refuse materials there are three main groups: debris from the demolition and construction of buildings, household garbage, and large quantities of ash from the *thermae* level.<sup>19</sup> Completely missing are organic remains, which are not preserved due to the high humidity in this area.

The area on which were built Serenos' house and the school, which later became a workshop/stable attached to the house, was originally occupied by a large public bath in the Roman tradition. The dump in question was probably formed inside its rooms immediately after its abandonment, probably at the end of the third century, as was clearly visible inside the *laconicum* (Fig. 4), where a group of bowls and other objects have been found as they were thrown. The area and the ruins were then probably sold in lots during the first 20 to 40 years of the fourth century for the construction of new buildings.<sup>20</sup> In this process, the new owners destroyed the ruined bathhouse, reusing some of its walls as foundations, recovering baked bricks and stones, and spreading the dump to level the area of the new building yard.

<sup>18</sup> We did not recognize post-occupational refuse in appreciable quantities, but it is possible that some was left in deposits found above floors.

<sup>19</sup> Given the great quantity of ash found in the stratigraphy and reused in architecture, we can assume that in Trimithis ash was not used as fertilizer in fields: PEÑA, *Roman Pottery* (cit. n. 3), p. 274.

<sup>20</sup> See more extensive discussion of chronology below.



Fig. 4. Laconicum with dumped material in situ

Parts of the bathhouse survive under the floors of the new structures,<sup>21</sup> and these were filled with refuse (Fig. 5). The dumped material found in the bath and spread over the area of Serenos' house and the school are consistent, and we can assume that the dump was formed over the course of about 30 years.<sup>22</sup>

<sup>21</sup> Paola DAVOLI, 'A public bath in Trimithis (Amheida, Dakhla Oasis)', [in:] O. KAPER (ed.), *Proceedings of the 7th International Conference of the Daklele Oasis Project. New Developments in the Archaeology of the Egyptian Western Desert and its Oases, Leiden 20-24 June 2012* (forthcoming).

<sup>22</sup> The use of dumps in foundation levels makes the refuse inaccessible and thus not exposed to weather decay and gleaning.

## OSTRAKA AND DEPOSITS IN AMHEIDA

by Rodney Ast

Since its inception, the Amheida project has uncovered a large body of written material, with *ca.* 850 mainly Greek ostraka discovered to date. Many were found in dumps, whether reused in a tertiary manner as foundation fill (no. 6 in the list above) or simply discarded as dumped material (no. 1). The rest were discovered either in occupational debris (no. 2), as surface finds (nos. 3 and 4),<sup>23</sup> or in masonry as building material, such as chinking sherds (no. 5). Analysis of the archaeological contexts in which the ostraka were found has contributed substantially to our understanding of the relative chronology of the texts preserved at the site. It has also underscored the value of these written objects as evidence for periods of occupation. Furthermore, it has revealed relationships among the ostraka that could not have been known from the texts themselves.

The corpus of textual evidence from Amheida covers a variety of text types commonly encountered by papyrologists. We have accounts of different commodities – hay, oil, vinegar, wine, cotton, bread, etc. There are letters, for the most part business in nature, and delivery orders that reveal a circle of individuals engaged in estate activities centered around the house of Serenos (House B1 in Area 2.1), the landholder and city council member who personally signs off on many of the orders and receipts. Lists have been uncovered as well, which provide important onomastic and prosopographical information. And writing exercises coupled with dipinti from the school give witness to a vibrant learning environment.<sup>24</sup> In addition to these common text types, the site preserves many small tags written in Greek. This kind of text is less frequently encountered

<sup>23</sup> Surface finds must be treated with caution, since it is not always evident whether an ostrakon found on the surface was left during a period of occupation or was, for example, a chinking sherd that ended up on the sand after the erosion of the wall.

<sup>24</sup> The dipinti have been published in Raffaella CRIBIORE, Paola DAVOLI, & D. RATZAN, 'A teacher's dipinto from Trimithis (Dakhleh Oasis)', *Journal of Roman Archaeology* 21 (2008), pp. 170–191. Writing exercises appear in both volumes of the Trimithis ostraka, BAGNALL & RUFFINI, *Ostraka from Trimithis*, vol. I (cit. n. 16) and R. AST & R. S. BAGNALL, *Amheida 3. Ostraka from Trimithis*, vol. II, New York (forthcoming).



Fig. 5. Roman thermae (laconicum and latrina)  
below B1 and B5

elsewhere, especially outside the Oasis, but at Amheida they represent about 1/3 of all the texts discovered so far. The tags are typically about the size of a small matchbox, and their purpose was to identify the source of the jars containing wine and other commodities that were sent as rent payments for irrigated plots of land leased from the central estate. Placed in mud stoppers that sealed the containers, many of them begin with the Egyptian word ‘Pmoun’, which means ‘well’.<sup>25</sup> This is then followed by the name of the Pmoun, which identifies the specific plot of land that produced the content of the jars. After the Pmoun’s name we get the name of

<sup>25</sup> The word is sometimes spelled Moun.

the tenant who leased the plot. The tag then ends with the regnal year in which the delivery occurred and, presumably, of the harvest from which the product came.

Had we known nothing about the stratigraphy of the site, the ostraka would still give us a good idea of economic activities at Amheida, as well as of personal networks and educational practice, but we would not have been able to deduce much information that the texts themselves did not yield. The archaeological data, however, allows us to make finer distinctions among the written sources. For example, it reveals that some kinds of texts survive only in certain layers, and that certain individuals must have been part of a common circle, even if they are not explicitly linked in any texts. Furthermore it supplements our knowledge of the chronology of the ostraka from the site, which is particularly welcome given the absence of unambiguously dated texts.

Dates preserved in the ostraka have been limited so far to the single years found in the well tags and to a few indictional years in other texts. The tags contain only the regnal year without accompanying regnal or other formulas, and they preserve only one year, that of the senior emperor, which is different from typical fourth-century dating practice.<sup>26</sup> In layers below floor level of the original house, before it was remodeled, the ostraka with regnal years from 1 to 7 probably come from the reign of Diocletian, although earlier reigns cannot be excluded. Higher numbers have multiple possibilities but nothing in these layers can be considered later than Constantine.<sup>27</sup> Ostraka found thus far above floor level in occupational layers of Area 2.1 date from the 340s at the earliest to the second half of the 360s, in other words, from the reign of Constantius to the early part of the reign of Valentinian. The last construction phase in the area probably began around 340. Between this date and 355 the school was

<sup>26</sup> For detailed discussion of dating in the Trimithis ostraka, see *O. Trim.* I, pp. 15, and 20–22. Aside from the tags, coins offer the only other dating information.

<sup>27</sup> For general discussion of regnal years, see *O. Trim.* I, pp. 14–22; a slightly revised assessment of the dating can be found in the introduction to *O. Trim.* II. Years in the ostraka found so far span 1 to 33, although a few years are not attested yet, and no consecutive 33 years can be attributed to a single emperor, since none served as senior emperor for 33 consecutive years.

converted to a workshop/stable, and by 370 the area seems no longer to have been occupied.

Keeping these chronological parameters in mind, we can look closely at what the archaeology tells us about the written material. The well tags offer an especially good test case for the study of the stratigraphy of the ostraka, since they dominate the written record and have been found in layers both above and below floor level. On the one hand, they attest the importance of the wells and the lands they irrigated to the local economy over the entire period represented by the written record, but they also give witness to specific typological and archaeological patterns. To illustrate this, we will survey two types of well tags found in Amheida, with particular attention paid to their findspots.

Two main formulas occur in the well tags. The most common is the so-called Pmoun formula tag, of which *O. Trim. I 125* is a representative example:

125. Well Tag, Pmoun formula. 303/4, 311/2, or 325/6. TM# 131173.  
Inv. 3203. Area 2.1, Room 9, DSU 107,<sup>28</sup> FN 73.  
6.1 x 4.2 cm; on convex side; complete. A1a. (Fig. 6)

Πμουν Τπακ(ε)  
Πετοσίρις Πετ(οσίριος)  
3 κ (ἔτους)



‘Pmoun of Tpaके. Petosiris  
son of Petosiris. 20th year.’



The name of the Pmoun, or ‘well’, is Tpaके, and the tenant who leased it is Petosiris son of Petosiris; the year in which it was leased is 20, which

<sup>28</sup> DSU refers to the Deposition Stratigraphic Unit, a unit that defines the limits of a layer of a deposition, such as the fill of a room or a foundation. It is a discrete and definable unit of stratification. Such units are determined on the basis of their position, composition or content.

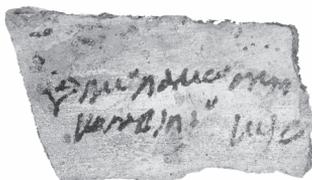
might have been 303/4, 311/2, or 325/6. The content of the jar is not specified but was presumably wine, as indicated in some cases by the vine leaf impression on the back of the mud stoppers.

The second most common type of tag is distinguished by the so-called Hydreuma-Pmoun formula. Here we find a redundancy, with the Greek word for well, ὕδρευμα, followed immediately by the Egyptian, Πμουv. Aside from the addition of the word ὕδρευμα these tags contain the same elements found in the Pmoun-formula tags:

166. Well Tag, Hydreuma Pmoun formula. 351/2. TM# 131214.

Inv. 207. Area 2.1, Room 1, DSU 4, FN 72.

4.8 x 2.7 cm; on convex side; complete or broken at top? A1a. (Fig. 7)



Traces, perhaps of υδ( ) and some earlier, washed-out writing

ὕδ(ρευμα) Πμο(υv) Παμώ(υθου) Πετεχ(ῶv)  
Κολαβίνιο(ς) κη (ἔτους)



‘Hydreuma Pmoun of Pamonthes. Petechon son of Kolabinis. 28th year.’

Most of the tags that survive were found lying alone, but a few were discovered *in situ* in mud jar-stoppers (Fig. 8). More than 30 well names are attested throughout the ostraka-yielding layers of the site.

Examination of both the Pmoun and Hydreuma-Pmoun tags reveals some interesting trends, particularly within the Pmoun formula ostraka.<sup>29</sup> In all, there were 50 Pmoun ostraka found in the seasons 2004–2007 and published in *O. Trim.* I as numbers 96–145.<sup>30</sup> But of these, and this is note-

<sup>29</sup> While our discussion focuses on these two kinds of tags, we should note that there are other types of tags, which, for example, have the name of a vineyard, sometimes identified by the word *chorion* plus a personal name (e.g., *O. Trim.* I 191, 192, 214, 233, 235) or containing just a personal name (e.g., *O. Trim.* I 196, 199, 215).

<sup>30</sup> Texts 108 and 117 exemplify the type quite well by showing the range of layouts for

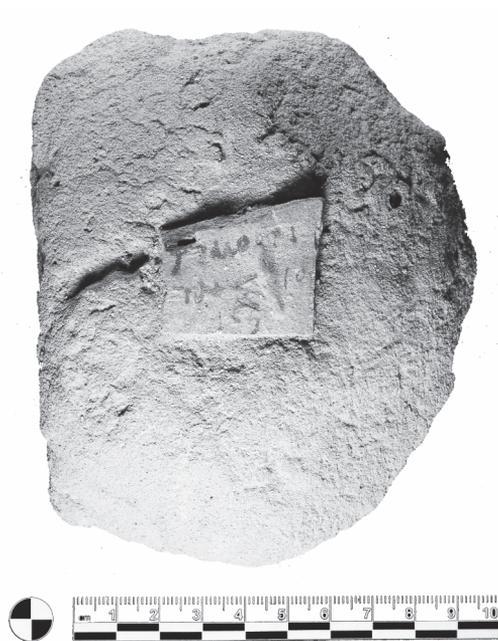


Fig. 8. Mud stopper with well tag in situ  
(*O. Trim.* II 600, inv. 14104)

worthy, only four are said to come from post-340 contexts, that is, from archaeological contexts dating to after the construction of Serenos' house – broadly speaking, the last phase of occupation in this area. Nearly all the tags are from dumped fill found below floor level. The four exceptions are *O. Trim.* I 124, 127, 138 and 145.<sup>31</sup> 127 is from Area 4, the temple hill, and lacks secure context due to the continuous plundering that has occurred there; it is assigned the later date because of the regnal year.<sup>32</sup> The three other

these tags: in one, the year symbol comes at the end of the *ostrakon*, in the other at the beginning.

<sup>31</sup> *O. Trim.* I 174 may refer to a Pmoun of Taosirat – the reading of the word 'Pmoun' is uncertain – but it is not a well tag like the others. It is dated to 350–370 on the basis of the archaeological context, but because it was found in a collapsed wall and vault, it could have been a chinking sherd and thus could be older than that.

<sup>32</sup> The date given is year 33, which seems to correspond to 356/7, see *O. Trim.* I, pp. 21–22.

Pmoun-formula texts associated with years later than 340 come from Area 2.1, and none belongs unambiguously to the Pmoun-formula group. 124, dated perhaps to 343/4, comes from Room 4 of Serenos' house (DSU 23), possibly part of a crumbled floor or the occupation deposit on top of it, and was found with coins from the reigns of Constantine (306–337), Constantius (337–361) and Valentinian I (364–378). The *ostrakon*, which was identified not *in situ* but in the process of sieving, is broken on the left where there appear to be traces of ink. Thus it is possible that the abbreviated form of *hydreuma* (upsilon with raised delta) was written at the beginning of line 2; the lessee's name is missing. The third exception is 138, identified as part of the debris from Room 13 (DSU 199) and dated to the years between 350 and 370. This *ostrakon* is unusual for recording a number of bundles (30 δέσμαι) instead of a year. The word for bundle (δέσμη) appears in 16 texts in vol. 1,<sup>33</sup> and of these all but two (*O. Trim.* I 50 and 256) are dated to years 350–370, the final occupational period of Serenos' house; among the 22 ostraka in vol. 2 that have the word,<sup>34</sup> 21 are from the later period (*O. Trim.* II 740, from B6, is the one exception).<sup>35</sup> Moreover, traces of writing consistent with an abbreviated form of the word *hydreuma* are visible on the left side of *O. Trim.* I 138. *O. Trim.* I 145, which refers to Pmoun Pakeir but gives no date, was found in the remnants of a collapsed wall on top of occupational deposit. Here it is likely that the *ostrakon* was used as a chinking sherd in the wall. A Pmoun bearing the name Pakeir is also attested in texts coming from foundation fill below Street 2 (DSU 368; *O. Trim.* II 609, 625, 631).<sup>36</sup>

Now turning to the Hydreuma-Pmoun tags, we find a more even distribution of texts. Of the 27 recovered in the first four seasons, 11 are

<sup>33</sup> *O. Trim.* I 32, 41, 50, 55, 58, 59, 63, 68, 70, 138, 254, 256, 266, 285, 286, 302.

<sup>34</sup> *O. Trim.* II 456–459, 468, 476, 484, 494, 506, 510–512, 516, 517, 521, 522, 740, 805–809.

<sup>35</sup> The stratigraphy in the room where this *ostrakon* was found is ambiguous. It seems to have been under floor level, but the floor is not preserved and so the layers could have been contaminated. Furthermore, the chronology of the construction and remodeling phases of this building is still uncertain.

<sup>36</sup> Πακειλ was given in the print edition of I 145. While the final letter of the name could be interpreted as a *lambda* with a slightly unusual initial leg that descends vertically below the line, the letter *rbo* is also possible, and the parallels cited from *O. Trim.* 2 in fact encourage reading Πακειρ instead.

assigned dates before the construction of Serenos' house, so the formula is contemporary with the Pmoun tags, and the rest are from the Serenos period.<sup>37</sup> If we look closely at the texts we see that the examples of early Hydreuma-Pmoun tags are concentrated in only a few areas. Six come from dumped material below floor level mainly in Courtyard 9, and are confined to five stratigraphic units (DSUs 104, 127, 128, 151, 167);<sup>38</sup> one comes from Courtyard 10 (DSU 191).<sup>39</sup> The contexts of these are thus very similar and their dates limited to years 13, 14 and 20.<sup>40</sup>

If we move out into areas excavated in later seasons and not included in *O. Trim.* I, the picture, especially for the Pmoun-formula tags, is quite similar. Forty-seven Pmoun tags were found in dumped material below Street 2, which pre-dates the construction of Serenos' house. Of these an astounding 34 come from a single stratigraphic unit, DSU 368;<sup>41</sup> four others come from the layer above that, DSU 367;<sup>42</sup> two are from DSU 355 above that and one from the dumped top layer, DSU 351<sup>43</sup> (Fig. 3). Material from these layers, particularly DSU 368, is clearly related to layers found below Serenos' house. For example, an *ostrakon* from below floor level in Room 4 of the house (DSU 214) is a copy of one discovered in DSU 368 below Street 2.<sup>44</sup> Furthermore, the well called Pmoun Psoi, which is the location of land leased by Pathotes son of Paraithes in *O. Trim.* I 116, a tag found below Room 9 in DSU 212, is also attested in three ostraka from below Street 2 in DSU 368 (*O. Trim.* II 616, 624, 693). Similarly, *O. Trim.* II 614, another Pmoun tag from Street 2, DSU 368, attests the same Psenamounis son of Peteuris who appears in *O. Trim.* I 142, a well tag found below Room 4 of Serenos' house in DSU 214. The Pmoun for-

<sup>37</sup> *O. Trim.* I 146–172.

<sup>38</sup> DSU 104 = *O. Trim.* I 155 (year 20) and 156 (year 20); DSU 127 = I 152 (year 14); DSU 128 = I 157 (year 20); DSU 151 = I 151 (year 14); DSU 167 = I 150 (year 13).

<sup>39</sup> *O. Trim.* I 158 (year 20).

<sup>40</sup> Of remaining pre-occupation Hydreuma-Pmoun tags, two (*O. Trim.* I 149 and 168) are very difficult to decipher and their readings open to doubt.

<sup>41</sup> *O. Trim.* II 593–626.

<sup>42</sup> *O. Trim.* II 589–592.

<sup>43</sup> DSU 355: *O. Trim.* II 587 and 588; DSU 351: II 586.

<sup>44</sup> *O. Trim.* I 123 = *O. Trim.* II 599. Cf. *O. Trim.* II 641.

mula tags and surely other ostraka used as dumped fill below the house thus likely came from the same dump as the tags found in Street 2.<sup>45</sup>

So what does this evidence tell us? The fact that the Pmoun tags, at least those that omit the word ὑδρευμα, are mainly assigned on archaeological grounds to periods before the final occupation suggests that the dumped material was brought from a common source and used to level the building yard in Area 2.1. This common source was probably the dumps located in the abandoned *thermae*, as mentioned above. Why Pmoun tags do not appear in later contexts is a mystery. It might be because they have not survived, or because this type of tag was superseded entirely by those with the Hydreuma-Pmoun formula.

The same kind of stratigraphic analysis that we have used on these tags can be applied to the ostraka in other ways as well. For example, we can look at where at the site ostraka that mention the city of Trimithis come from. Out of all the texts found to date, 19 make explicit mention of *Τρίμιθις*.<sup>46</sup> Fifteen of them are from occupational layers in Area 2.1, and the other four come from different areas. One of these is from the temple hill (*O. Trim.* II 837), where the archaeological context is highly disturbed. It mentions a man named Erabios, who is also known from a text dating to the occupation period of Area 2.1 (*O. Trim.* I 295). The remaining three (*O. Trim.* II 503, 532, and 741) were found in Area 2.3: II 503 was a surface find without secure context; II 532 was found in a construction fill and is dated to a sixth indiction, which is interpreted as year 362; II 741 was located in a DSU below but close to floor level.<sup>47</sup> As far as the ostraka from Area 2.1 are concerned, the fact that none of them that derive from foundation layers below the house and street mentions Trimithis seems significant, because it suggests that the ostraka bearing the name of the city do

<sup>45</sup> As far as the Hydreuma-Pmoun tags found in Area 2.1 since 2007 are concerned, only five survive, four from pre-occupation layers in Street 2 (*O. Trim.* II 655–658) and one from below floor level in Room 23 in Building 5, part of the school (*O. Trim.* II 654). Outside Area 2.1, 11 Hydreuma-Pmoun tags have been found so far in 2.2 and two in 2.3.

<sup>46</sup> *O. Trim.* I 249, 250, 262, 269, 273, 276, 290, 301, 309, 314, II 490, 493, 498, 500, 503, 532, 551, 741, 837.

<sup>47</sup> The stratigraphy in this area has not been fully studied, so its relationship to Area 2.1 remains to be clarified.

not share a common origin with the Pmoun texts, many of which, as we have seen, were uncovered below the house and street.

As with the ostraka attesting the toponym Trimithis, those that mention Serenos and his circle of acquaintances are quite clearly concentrated in occupational layers of Area 2.1, in particular within occupational deposits in and around Building 1.<sup>48</sup> There are 40 texts that make unambiguous reference to a Serenos, and nearly all were found above floor level in occupational layers of the house or on the surface of Street 2.<sup>49</sup> More than a quarter of them were discovered in a single stratigraphic unit, namely DSU 273 in Room 22. These texts thus reflect activities during the period of Serenos' inhabitation of the house, and they too should not be conflated with the ostraka found in the foundation fill of B1 and Street 2, such as the Pmoun tags. As far as we can tell, the Pmoun tags perhaps served no other purpose for Serenos than as building material. That is to say that the economic activity that the tags attest (that is, the landholder-tenant relationships and the plots they centered around) may not have had anything to do with him and his own business interests and transactions, although it is clear that his estate also dealt with wells and tenants.<sup>50</sup>

#### SERENOS IN THE OSTRAKA

<i>Area</i>	<i>Room</i>	<i>SU</i>	<i>Context</i>	<i>Date</i>	<i>O. Trim.</i>
1.2	0	5	Secondary dump deposit in street	ca. 240-275	36
2.1	2	13	Deposit on floor, sealed by DSU 2, which consisted of 2 meters of sand	ca. 350-370	297
2.1	2	13	Deposit on floor, sealed by DSU 2,	ca. 350-370	298
2.1	2	13	Deposit on floor, sealed by DSU 2, which consisted of 2 meters of sand	ca. 350-370	299
2.1	4	23	Top floor level	ca. 350-370	300

<sup>48</sup> B1 is here conceived of broadly as including the Courtyards 9 and 10 and the work-space rooms associated with B1 and identified in the documentation as B5.

<sup>49</sup> The most significant exception is *O. Trim.* I 36, an *ostrakon* from Area 1.2 that was found in a waste deposit. This is undoubtedly a different person, as the indicated price of wheat secures a third-century date.

<sup>50</sup> For discussion of the management of the wells and estates at Trimithis, see *O. Trim.* I, pp. 37-41.

<i>Area</i>	<i>Room</i>	<i>SU</i>	<i>Context</i>	<i>Date</i>	<i>O. Trim.</i>
2.I	4	15	Wind-blown sand between floor and collapse	ca. 350-370	287
2.I	5	213	Wall collapse at base of stairs	ca. 300-370	271
2.I	10	119	Debris layer above floor level	ca. 350-370	268
2.I	13	216	Occupation deposit on floor	ca. 350-370	290
2.I	14	233	Occupation deposit just above floor	ca. 350-370	322
2.I	15	145	Flat roof collapse on occupation deposit	ca. 350-370	281
2.I	15	152	Flat roof collapse on occupation deposit	ca. 350-370	283
2.I	15	157	Occupational and mud brick debris	ca. 350-370	284
2.I	17	153	Wind-blown sand	ca. 350-370	310
2.I	17	155	Sand and dust above floor	ca. 350-370	311
2.I	19	277	Occupation deposit	ca. 350-370	460
2.I	19	280	Occupation deposit	ca. 350-370	519
2.I	19	297	Dumped material between the last floor of the workshop and the floor of the school	ca. 350-370	462
2.I	19	297	Dumped material between the last floor of the workshop and the floor of the school	ca. 350-370	550
2.I	20	318 =308	Debris below the last floor (filling of the bath basin)	ca. 350-370	495
2.I	22	270	Windblown sand: ostraka probably belong to 273 which is below the sand	ca. 350-370	505
2.I	22	270	Windblown sand: ostraka probably belong to 273 which is below the sand	ca. 350-370	506
2.I	22	270	Windblown sand: ostraka probably belong to 273 which is below the sand	ca. 350-370	507
2.I	22	273	Occupation deposit	ca. 350-370	459
2.I	22	273	Occupation deposit	ca. 350-370	525
2.I	22	273	Occupation deposit	ca. 350-370	508
2.I	22	273	Occupation deposit	ca. 350-370	510
2.I	22	273	Occupation deposit	ca. 350-370	511
2.I	22	273	Occupation deposit	ca. 350-370	512
2.I	22	273	Occupation deposit	ca. 350-370	513
2.I	22	273	Occupation deposit	ca. 350-370	514
2.I	22	273	Occupation deposit	ca. 350-370	476
2.I	22	273	Occupation deposit	ca. 350-370	516

<i>Area</i>	<i>Room</i>	<i>SU</i>	<i>Context</i>	<i>Date</i>	<i>O. Trim.</i>
2.1	22	273	Occupation deposit	ca. 350–370	517
2.1	22	281	Occupation deposit	ca. 350–370	520
2.1	S2	342	Surface: windblown sand	ca. 350–370	521
2.1	S2	350	Occupation: floor	ca. 350–370	522
2.1	S2	358	Surface: windblown sand	ca. 350–370	523
2.1	S2	342	Surface: windblown sand	ca. 350–370	528
2.2	30	60	Dumped material from destruction of previous phase building; below floor level	4th c.?	815

Work on the Serenos texts and their archaeological context has allowed us also to identify a network of individuals engaged in common business activities, or at least commonly associated with the occupation phase of the house. These people include Nikokles, the signer of a large number of receipts and delivery orders in the ostraka published in *O. Trim.* I.<sup>51</sup> Also Domnion, the single best attested individual in *O. Trim.* I and a man connected in some way with the house, is a member of this circle,<sup>52</sup> as is Philippos, who like Serenos appears to have been a *bouleutes* on the Trimithis city council.<sup>53</sup> These common associations are based not only on the contents of the texts but also on archaeological context. Herakleios, for example, is mentioned in two ostraka, *O. Trim.* I 295 and II 529: the former is part of a receipt for wool signed by Nikokles; the latter, a letter addressed by Gelasios to Herakleios requesting that Herakleios deliver wine to Gelasios' brother Erabios. While Nikokles, Gelasios and Erabios never appear together in the same text, the ostraka in which they do appear all come from similar occupational layers in Area 2.1. Furthermore, the men have common acquaintances,<sup>54</sup> and the activities reflected in the texts are very similar. In our view, these circumstances show that the individuals belonged to the same milieu.<sup>55</sup>

<sup>51</sup> *O. Trim.* I 279, 282, 286, 288, 291, 358, 412.

<sup>52</sup> See, e.g., *O. Trim.* I 66, 69, 70, 253, 279, 287, 292, 293, 322–324; cf. pp. 37–41.

<sup>53</sup> *O. Trim.* I 286, 297, 299, 358, II 509, 531, 806–808; cf. *O. Trim.* I, p. 38 and 42.

<sup>54</sup> In *O. Trim.* I 66, for example, Gelasios is identified as an ἀδελφός of Domnion, who is in turn associated with Nikokles in I 279.

<sup>55</sup> For more about Serenos' circle, see the introduction to *O. Trim.* II.

The archaeological context also offers some greater precision to our understanding of text types at Amheida. We have seen how differences in the well tag formulas can be understood in archaeological terms, the Pmoun formula being a feature of tags from dumped material and thus earlier than objects found above floor level in occupational layers of Serenos' house. Something similar can also be said about a couple of text types. Letters, delivery orders, and memoranda are not uncommon at Amheida, but what is striking is the fact that they are predominantly found in the occupational layers of B1.<sup>56</sup> This sheds some light on survival patterns of the ostraka: the dumps from the *thermae* that were used as foundation fill below the rooms and streets in Area 2.I do not appear to have contained letters and delivery orders, but were characterized much more by well tags, accounts and lists. Moreover, texts identified as writing exercises are found almost exclusively in dumped fill, both below the school and in layers above the school but below the workshop/stable that the school was converted into, probably by Serenos' family.<sup>57</sup> What this illustrates is that, with conversion of the school to a workshop/stable, some of the writing exercises from the school were used to level the floors of the workshop/stable. But perhaps more interesting is the fact that some of the writing exercises were found below the school, suggesting that the school itself may have been built near an even earlier school.<sup>58</sup>

## CONCLUSION

Understanding the cycle that objects undergo in a society, from production to commerce to consumption and reuse is essential to comprehending the local economy.<sup>59</sup> Even more interesting from a social, cultural, and

<sup>56</sup> See, e.g., *O. Trim.* I 295–304, 309–314, 320, 323–330, II 490–500, 502–504, 531. One of the few exceptions appears to be I 317.

<sup>57</sup> See *O. Trim.* I 331, 332, 334, 335, 337, 429, II 747–749, 811.

<sup>58</sup> Ostraka found in DSUs 129, 132, 212 in Room 9 and in 255 in Room 10 predate the school, see e.g. *O. Trim.* I 331, 332, 336, and 337; it is possible that they belonged to a previous school that was located on the site. The rest of the exercises can be assigned to the remodeling phase when the school was converted to a workspace.

economic point of view is the diachronic understanding of the reuse processes of garbage in different ancient societies.<sup>60</sup> The influence of the process of reuse not only in the formation of archaeological sites, but also within the ancient society, is still not sufficiently appreciated in Egyptian archaeology. Looking forward to better understanding the dynamics of refuse disposal in Trimithis,<sup>61</sup> we can certainly say that dumps are part of the life cycle in this settlement and contributed to the construction of the city, not only to its landscape of ruins. After several years of experience excavating in Egypt, we can state that the stratigraphic excavation, albeit difficult and painstakingly slow, is essential for understanding the dynamics of construction, demolition, and formation of sites. The systematic documentation and a good collection of data are the basis of any interpretation that seeks to be realistic and historical.

The contribution of different specialists working in close collaboration and present in the field is an essential part of the methodology. We are well aware that this sounds like a truism in the world of modern archaeology, but such principles and methods are still not considered a standard in Egyptian archaeology and papyrology. We strongly believe it is time to take a decisive turn toward a more scientific and truly multidisciplinary Egyptian archaeology.

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<sup>59</sup> M. B. SCHIFFER, *Formation Processes of the Archaeological Record*, Utah 1987, p. 28: 'Obviously, the manner in which societies retain artifacts in systemic context through reuse (and discharge material to the environment through depositional processes) determines many characteristics of the archaeological record'.

<sup>60</sup> See for example Luise MARTIN & Nerissa RUSSELL, 'Trashing Rubbish', [in:] I. HODDER (ed.), *Towards Reflexive Method in Archaeology: the Example of Çatalhöyük* [= *British Institute at Ankara Monograph Series* 28], Oxford 2000, pp. 57–69.

<sup>61</sup> Cf. PEÑA, *Roman Pottery* (cit. n. 3), pp. 275–276.