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Preliminary Notes on Two Seasons of Research at Oplontis B (2014-2015)

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The complex known as Oplontis B lies in the shadow of Vesuvius, about 3 kilometers west of Pompeii and 300 meters from the well-known Villa A. Since its first excavation and reconstruction in the 1970s and 1980s, Oplontis B has languished in abandonment —virtually unstudied. The Oplontis Project, led by John Clarke and Michael Thomas, began investigating the site in 2012 after completing its work on Villa A. The documentation of the complex is a primary task. In the past few years members of the Project team have cataloged the previously excavated materials, recording over 1200 wine amphorae as well as a variety of other artifacts. At the same time, Marcus Abbott has laser-scanned the building to produce a detailed plan of the site. The excavations have similar aims: to record the 79 CE level of the complex and to investigate its development. This paper discusses the preliminary results of the last two seasons of excavations and cataloging efforts which build on our previous work conducted in 2012 and 2013[1].

For Oplontis B we stress the word complex because the site is much more than a single building. The plan in figure 1 gives a sense of its layout. In the center is a courtyard surrounded by a two-story colonnade that appears to have been largely dedicated to the commerce of wine[2]. It contained most of the 1200 amphorae that our team has cataloged so far. On the north side are four two-story townhouses (row houses) that lined a street. The south side preserves the remains of barrel-vaulted storage rooms opening onto a porticus. To the west is a partially excavated and completely separate two-story building. On the eastern side, surveys conducted in 2012 have recovered evidence for a road that connected the hinterland with the ancient coastline located a few hundred meters to the south[3]. This arrangement suggests that Oplontis B was an ancient settlement or a suburban quarter of Pompeii.

A major component of our efforts in the past few years has been to map the excavated area. In order to provide an accurate ground plan of the complex, we partnered with Marcus Abbott who laser-scanned the entire site (fig. 2). As opposed to the laborious conventional method used for Villa A, where our Project architects used Total Station data to correct the existing electronic plan provided by the Superintendency, the laser scan produced al most immediate results. Whereas the total station measures a few dozen individual points in the course of an afternoon, the new scanner processes many million. It allowed Project architect Jess Galloway to

[1] THOMAS, VAN DER GRAAFF, WILKINSON 2013: 1-9. The Oplontis team wishes to thank the Soprintendenza Speciale per Pompei, Ercolano e Stabia and the Superintendent Massimo Osanna for the generous support. Dottoressa Antonella Bonini, Dr. Lorenzo Fergola and Pasquale Tarasca for granting access to the material and facilitating and providing the Oplontis team with a digitized copy of the old finds register. Their help has been essential to the continued progress of the project. The Oplontis team thanks Grete Stefani, Elaine Gazda, Regina Gee, Jess Galloway, Timothy Lidell, Vincenzo Marasco, Richard Woolley, Mike Robson, Zoe Schofield, Lillian Leone, Michael Kilgore, Gretel Rodriguez, Robert Bylett, Johannes Eber, Brian Powell and the other volunteers of KAFS for their work on this project.
[2] See THOMAS 2015: 403-412.
[3] THOMAS, VAN DER GRAAFF, WILKINSON 2013: 3-4.

Fig. 1. Plan of Oplontis B with trenches 1-19 outlined in red. The barrel vaulted storage spaces are marked in green; the townhouses in yellow; a separate building to the west in purple. Water features are marked in blue, whereas first phase architecture is highlighted in orange and second phase is colored grey. Plan by J. Galloway.

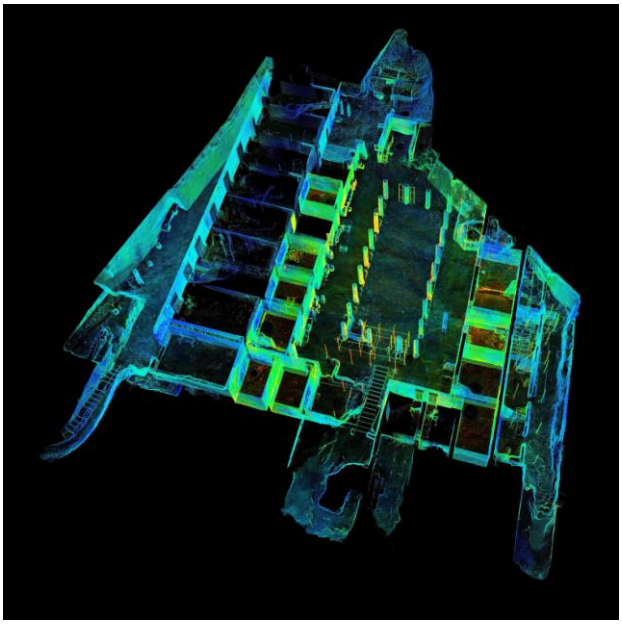

Fig. 2. Oplontis B scan of the lower floor. Image Marcus Abbot.

create exact plans, sections, and elevations, accurate to within 3 mm. The 3D scans also serve to record the positions of objects as left by the Italian excavations in 1991. For example, they show us, in three dimensions, the current disposition of the skeletons left in the north area of room 10. Equally important is the fact that the scans of individual spaces stitch together without error. They will allow us to produce a fully navigable 3D virtual model of Oplontis B similar to the one we have produced for Villa A but at a fraction of the labor. In this manner, we are able to address an important conservation aspect for the project; we can digitally preserve the current state of the complex for future generations.

The Excavations

Since 2012, our project has conducted a survey—including electro-resistivity and ground penetrating radar. In addition, the project has excavated eighteen trenches, which are currently in the process of study (fig. 1). Though our first trenches were mostly part of an evaluation effort, during the last two seasons of excavations we have pushed further to understand the development of the complex over time. In the process, we have used our survey results and the archival

materials from the original excavations to examine ten trenches, each placed to gain the maximum amount of information with a minimum amount of intrusion. In order to present our work fully, we have arranged our results in this report into broad phases of development.

Fig. 3. Overview of unit 6. The sewer runs through the center of the unit and cuts through the previous architecture.

Trench OPB 6

We start in 2013 with trench OPB 6 located on the south side of the complex (fig. 3). Our principal aim was to understand the original layout of the area in front of the barrel-vaulted spaces. Part of it remains unexcavated beneath the lapilli of 79 CE. We returned in the summer of 2015 to continue the investigation of what we believed to be a drainage system lying beneath a pre-eruption surface[4]. Our initial conclusions were wrong. Although we did find a sewer, a large portion of what we believed to be the drainage system turned out to be three earlier wall foundations set at right angles.

The foundation walls mark a series of spaces probably associated with the first phase of the courtyard complex, which, as suggested by our initial results, dates roughly to the mid second century BCE. Given their characteristics—squat *opus incertum* (concrete) socles—it is possible that they are contemporary to a similar foundation wall recovered in 2013 in unit OPB 4 to the west[5]. Of interest were the various floors associated with the spaces in unit 6. Most spaces had a floor composed of a relatively soft light brown *battuto* resembling a highly degraded tuff. By contrast, the pavement of the eastern space was composed of concrete sloping sharply down in an eastward direction. Unfortunately, as with the other spaces, we were unable to determine its original function, but the impermeable characteristics of the concrete suggest that it was part of a shallow channel or basin.

In a second phase, builders carefully demolished these spaces, razing the walls to an equal height. They then built the sewer, which runs in a north-south direction toward the coast. Unlike the other water features recovered on site—usually rectangular channels set within *opus incertum* masonry and capped with tuff boulders—this sewer had a flat, shallow channel covered with a low barrel vault. After it was built, workers filled in the area and laid a hard *battuto* (beaten earth) pavement usually associated with a utilitarian use. The various spaces had different types of fill layers: the eastern space with the concrete pavement had a fill layer composed of basalt beach pebbles; the others had a rubble and soil matrix. The reason for this difference remains unknown, but it may relate to the impermeable nature of the concrete or the function of the space during its lifetime.

It is only in the third phase, that the owner of the site decided to add the barrel-vaulted storage spaces visible today. Our initial interpretation of the excavated materials suggests that the space dates roughly to the mid-first century CE. If we follow Frölich's recent re-evaluation of the masonry style, then the quoins of some of the doorways opening into the storage spaces composed of *opus vittatum mixtum* seem to substantiate this date[6]. The new rooms cut through the sewer, rendering it unusable. Nevertheless, the main floor level on the exterior of the new spaces remained unchanged. Unlike the modern layout of the area, we discovered that in antiquity the pavement on the interior of the storage spaces was about 10 centimeters higher than that of the exterior. This setup seems consistent with the function of storage spaces. The height difference would have contributed to keeping out moisture and it allowed for easier cleaning. A series of burn patches on the exterior pavement signal the transition to the fourth and final phase, marked by the deposition of a new floor level. The artifacts recovered in the fill place its use and formation to the last phase of the site before the eruption.

[4] THOMAS, VAN DER GRAAFF, WILKINSON 2013: 7-8.
[5] THOMAS, VAN DER GRAAFF, WILKINSON 2013: 7.
[6] See FRÖLICH 1995: 153-159.

Fig. 4. Overview of unit 15. Note the foundation walls running though the center and the east of the unit.

Fig. 5. Unit 15 viewed from the south with the parallel foundation walls. Note how the foundation on the right (east) cuts through the perpendicular cross-walls associated with the previous architecture (left).

Fig. 6. Unit 15 viewed from above with the postholes circled in red.

Trench OPB 6 also examined the threshold of space 8bis. This narrow space was an ancient stairway leading up to the upper floor of the main building. We recovered the remains of two supports for a double-batten door that once closed the stairs. However, instead of a clearly defined first step at the bottom of the stairs, we only found the rough concrete of the wall foundation. The threshold has disappeared. The individual stairs were probably composed of perishable materials that have also since disappeared.

Trench OPB 15

A sequence of four phases as visible in trench OPB 6 is present also in unit OPB 15, excavated in the nearby barrel-vaulted room 49. A concrete foundation wall running in a north-south direction through the middle of the unit marked the first phase (fig. 4). The foundations, included three squat square piers composed of mortared tuff bricks. Spaced roughly 2.5 meters apart, they probably supported column shafts, suggesting that the foundations were once part of a portico-like structure oriented toward the west. Two of these piers were at the head of cross-walls that designated separate spaces whose purpose for now remains unknown.

In a second phase, workers built a rough *opus incertum* foundation wall that clearly cuts through the remains of the previous cross-walls (fig. 5). The foundations included a seam running through the center of the masonry, which may indicate two separate phases or construction events. Nearby, we recovered two contemporary water channels. A main conduit, complete with a closing mechanism, was aligned in a north-south direction, whereas a subsidiary channel diverted water to the west at a right angle. Both channels were narrow and lacked capping stones (fig. 6). This layout suggests that the channels were open in antiquity and therefore prone to collecting waste from the surrounding environment. Rather than supplying drinking water, their primary purpose may have been to supply water used for utilitarian purposes, or drainage. Although we are still investigating the architectural remains of the second phase, the combined evidence suggests they were once part of a building with a utilitarian purpose.

Whatever this space was, it ceased to function in the following third phase when the north and east walls of the current room blocked both channels. The remains of an ornamental stucco cornice on the north wall suggest that it functioned as some sort of living space, but not for long. Six postholes mark the following fourth

Fig. 7. Unit 15 view of the two water features on the left.

Fig. 8. Overview of unit 17. Room 2 is on the left and Room 3 on the right.

phase; they cut through the previous architecture (circled in red in fig. 7). Their arrangement, three aligned down the center with three outliers at right angles, suggests that the posts held up scaffolding associated with the construction of the barrel vault. Workers took it down when they finished the room with a thick *opus signinum* (concrete) floor, thereby converting the room into a storage space in its final fourth phase. Above it, the owner then renovated the second floor with the addition of a new space embellished with a simple Fourth-Style fresco.

The Peristyle Area

Given the preliminary nature of our results, it is hard to definitively connect the sequence of phases recovered on the south side of the complex with the courtyard building. Nevertheless, for now it seems plausible to associate the first two phases recovered in units 6 and 15 with an early version courtyard building before it was refurbished to its current configuration. In the past two seasons, we excavated 5 trenches in the peristyle to understand its development. In particular, trenches 11, 17, and 19 examined four of the twenty-two excavated spaces that open onto the courtyard, whereas units 9 and 10 examined the entrance and an ancient well-head.

Trench OPB 17

Unit OPB 17 straddled the remains of a partition wall to examine rooms 2 and 3. Surprisingly, we encountered only a single floor associated with both spaces, suggesting that they existed unaltered in their current configuration for a considerable length of time (fig. 8). Only a thin layer of concrete composed the floor level. It rested on an organically rich stratum with sporadic small and rounded pottery inclusions, suggesting that it represents a cultivation layer pre-dating the courtyard building. The lower level in figure 8 represents a pyroclastic flow from a Bronze Age eruption, cut by pits and the partition wall. In a pattern now familiar for Oplontis A and B, the foundations of the partition wall rested on an earlier solidified pyroclastic flow dating to a late Bronze Age eruption of Vesuvius. This circumstance suggests that Roman builders at both Oplontis sites actively sought out these geological strata for construction purposes because of their stability.

Trench OPB 19

By contrast, evidence from trench OPB 19, opened in space 16 to the east, indicates a more complex history (fig. 9). We chose to excavate this room because of its somewhat unusual layout. The door that once opened onto the courtyard was walled up in antiquity; only an opening through the adjacent room offered access to the space. Our excavations revealed at least two earlier floors that coincided with the threshold of the previously open door. Each surface was relatively thin, composed of a slim layer of *battuto* with patches of plaster lying on top of an earth fill just a few centimeters thick. We also recovered a shallow pit filled with discarded roof tiles that cut through both earlier floors. Such a debris dump reflects a substantial demolition event leading

Fig. 9. Overview unit 19.

Fig. 10. Overview unit 9. Note the pavement into the courtyard and the channel on the upper left.

Fig. 11. Overview unit 11. Note the basin and the two water-channels on the left and top center.

up to the final configuration of the room. Although the provenience of the tiles remains obscure, it is likely that they belonged to one of the earlier spaces recovered in trenches 6 and 15 to the south.

Trench OPB 9

Our investigation of the courtyard's eastern side continued with unit OPB 9 (fig. 10). We chose its location because a wider intercolumniation marks the passageway where carts transporting amphorae entered and exited the complex. After a first clean-up we encountered a street surface composed of a hard concrete-like *battuto*. We were able to discern deep rut marks and at least two successive pavements, suggesting prolonged periods of heavy usage. We also recovered the remains of a closing mechanism and built-in guard stones set to protect the columns from cart traffic. Nearby, a small and shallow undocumented water channel came to light from beneath the modern overburden. In similar fashion to the channels recovered in unit 15, it lacked capping stones. The purpose of this channel was to supply water for what may have been an amphora-washing facility in the southeastern corner of the peristyle[7].

Inside the courtyard, we documented the same unique pavement composed of the identical matrix that we recovered in the center of the courtyard in 2012: a concrete mixed with large basalt boulders and pieces of wine amphorae[8]. In order to fully understand the relationship between the courtyard with the amphora washing facility we cleaned to the Roman floor in the southeastern corner of the courtyard. We were able to uncover a small masonry funnel set into the pavement, designed to convey rainwater from the roof and the open courtyard through the channel of the amphora washing facility into a nearby drain recovered previously in unit OPB 3 (see below). This kind of heavy surface and drainage system was undoubtedly designed to support the traffic in and out of the area at all times.

Trench OPB 11

Unit OPB 11 targeted space 22 and the floor of the peristyle on the opposite western side of the courtyard (fig. 11). Like space 16, the room's architecture indicates a change in orientation: its original door was

[7] For a description of this facility see THOMAS, VAN DER GRAAFF, WILKINSON 2013: 6.
[8] THOMAS, VAN DER GRAAFF, WILKINSON 2013: 4-5.

closed with masonry in antiquity, whereas its eastern wall was demolished to open the space onto the courtyard. Despite these changes, the archaeology was remarkably shallow. A thin floor level in space 22 rested directly upon the same pyroclastic layer recovered in unit 17. The "cultivation" layer recovered in unit 17 was entirely missing, implying that workers removed it during construction or that it represents a fill brought in to raise the floor level specifically for the rooms on the northern side of the courtyard. The pyroclastic layer may therefore have functioned as the principal surface of room 22 for an unspecified period of time or during its construction.

The floor of the peristyle displayed a similar development, with little or no accumulation of strata. In two places we were able to recover the shallow foundations of piers composed of concrete faced with tuff blocks. Similar and completely re-built modern piers are present on the northern side of the courtyard, where they support the second floor; they span the width between the rooms and the colonnade. Until our discovery, no other such piers were known for Oplontis B. It seems plausible to assume that similar piers also supported the second floor on the southern and eastern sides of the peristyle, but they were never re-built or recorded in the initial excavation and reconstruction of this area (1974-1991). The steel beams utilized in the building's modern reconstruction rendered such structural supports unnecessary. The recovery of foundations of piers in the western peristyle supplies invaluable insight into how the ancient architect was able to span such wide spaces using concrete piers and wooden beams.

Beneath the floor in both the room and the peristyle we recovered a small settling tank and two water ducts running north-to-south and east-to-west at a perpendicular angle. At about 40 centimeters wide, each channel was set into a wide *opus incertum* foundation and sealed with large quasi-rectangular tuff boulders fixed together with mortar. Unfortunately, we were unable to examine their connection because large architectural pieces belonging to the ancient building are stored in the area. Nevertheless, we were able to confirm that both channels were filled in and abandoned by the time of the eruption. The north-to-south channel in particular had its cap removed and was filled in with soil and large pieces of tuff boulders. The settling tank even had its bottom knocked out to prevent any kind of water accumulation. The basin was then filled with large fragments of broken Dressel 2-4 amphorae, some with sealing pitch still adhering to their inner walls. Such a deliberate infill suggests a sudden closure of this portion of the water system in antiquity.

These channels provide with us further clues to the development of the complex. Because of our previous work, we know that the east-west channel in unit 11 once drained into a larger basin recovered in unit 3 on the southwestern side of the peristyle (see fig. 1)[9]. The basin was a T-shaped intersection of two channels: one coming in from unit 11, whereas the second served to drain the courtyard and the amphora-washing facility. The drains cut through at least two previous floor levels, indicating that workers built the system well after the peristyle colonnade. At this point, it would be easy to associate this system of channels with the Serino aqueduct built in the Augustan period to supply Pompeii and the Bay of Naples. However, unlike the Serino Aqueduct, this system at Oplontis B seems to have partially survived the disruptions of 62 CE. Although the evidence indicates the abandonment of the western channel, the second drain and the supply line feeding the amphora washing facility seem to have functioned right up to the eruption. Certainly, we cannot discount the recent debate concerning the water supply to Pompeii, which suggests that engineers patched up the Serino aqueduct until seismic activity finally cut it before the eruption. This debate also suggests that a separate aqueduct from Vesuvius may have supplied Pompeii[10]. The evidence we recovered at Oplontis surely complicates this discussion further.

The connection of the complex to a system of running water must have stimulated its development in ways that we are just beginning to understand. Such a system would supply most buildings in the complex with their own running water. For instance, each townhouse on the north side had its own latrine. The example that we documented in townhouse 48 had its channel filled with eruption lapilli, suggesting that it was still operating in 79 CE[11]. The upper story of the main building had large a water fountain complete with a basin and faucet to shut the water off. Even the upper floor of the partially-excavated building on the western part of the site had a bronze pipe and a faucet that excavators recovered in situ in the 1980s. Although we cannot pinpoint the location and source of the aqueduct, this collective evidence and the water ducts in the trenches strongly suggest

[9] For a report on unit 3 see THOMAS, VAN DER GRAAFF, WILKINSON 2013: 5-6.
[10] See KEENAN-JONES 2015: 191-215.
[11] See THOMAS, VAN DER GRAAFF, WILKINSON 2013: 8.

Fig. 12. Overview unit 10.

Fig. 13. Overview of the unit 14 with the cistern below.

that Oplontis B had an active water supply up until the time of the eruption. Perhaps it was connected to a local water system or even an aqueduct drawn from the slopes of Vesuvius above.

Trench OPB 10

Trench OPB 10 displayed further evidence concerning the construction and abandonment of a water feature. The unit examined a wellhead on the north side of the peristyle (fig. 12). The well was undoubtedly part of the original courtyard. Workers deliberately carved the tuff blocks of the stereobate supporting the colonnade to match the curvature of the shaft. Safety reasons prevented us from fully excavating the well; it simply continued too deep for us to keep working. Nonetheless, we were able to show that the well was filled up in antiquity, mostly with soil and occasional fragments of architectural debris and pottery. The absence of any sort of lining suggests that workers may have removed it, or that it was fashioned in perishable materials that have since decomposed. The closing of the well may signal the construction of the running water system, or something entirely more dramatic.

Trenches OPB 13 and 14

In 2014 we examined two undocumented holes cut into the floor of the southern storage rooms that open onto the remains of a large underground barrel vaulted cistern. We designated the largest hole in spaces 41 and 17 as trench 14 (fig. 13); a smaller void in space 26 became unit 13. Trench 14 marks the spot where according to the Italian excavation dairies the floor and walls above had collapsed into the cistern during the eruption, whereas unit 13 marks an evaluation trench dug during the reconstruction effort in the 1980s. Today a thick ancient earthen deposit fills much of the cistern, surmounted by a layer of modern concrete. When the construction works for a school in the 1970s first discovered the remains of Oplontis B, the company responsible for preparing the site bored a series of holes to fill with concrete as foundation pylons. Workers accidentally bored through the ceiling of the cistern and inadvertently filled in part of the remaining void with concrete, making any sort of further excavation difficult.

Despite these limitations, we were able to document a large part of the structure. At 2 meters high and 1.5 meters wide, the cistern is massive. Beginning beneath space 41 it runs past unit 13 to end some thirty meters to the west in an unexcavated portion of the site. To build it, workers cut a large trench through the undisturbed stratigraphy and assembled the structure from the bottom up. Built entirely in *opus incertum* and sealed with *opus signinum*, the bottom of the cistern is still watertight. A reused amphora neck wedged in its western wall acted as the nozzle of a feeder pipe. It is roughly in line with the channel recovered in unit 15 to the east. A wellhead gave access to the cistern through a small side channel to the south. Clearly a structure this large could have held a significant amount of water, but it was abandoned and partially filled in antiquity. The partition wall dividing spaces 41 and 17 above it cuts through a portion of the cistern, indicating that it went out of use in the third phase of the site.

The evidence we have sketched out so far suggests a partial disruption of the water system and a shift in function of the complex with the construction of the barrel-vaulted storage rooms. The reason for this change is probably associated with the earthquakes and geological phenomena that devastated the area after 62 CE. Bradyseism in particular may be to blame. This is a well-known occurrence in volcanic areas, where the filling or emptying of magma chambers can lead to landscapes shifting several meters in a relatively short period of time. At Oplontis B our geologist Giovanni di Maio has documented such a drastic lowering of the topography by about two meters as a result of such activity in 62 CE or soon thereafter[12]. Similar ground movements seem to have finally cut the water supply to Pompeii in the years before the eruption. Bradyseism probably lowered Oplontis B—which already was close to sea level—so much that the cistern and nearby aquifers became contaminated with seawater, rendering it unusable. The subsequent barrel vaults seem to be a response to the changing environment, and signal a renewed economic development in the years leading up to the eruption.

Fig. 14. Overview unit 16. Note the traces of the demolished partition wall on the left and the exposed cuts on the right.

Trench OPB 16

Nonetheless, despite the continued operation of the courtyard building, the complex also preserves areas that were recovering from the aftereffects of geological activity. The townhouses to the north in particular revealed evidence of ongoing work. We focused on this area in order to understand more about the function of these unique structures. Each building is no more than a lower room accessed directly from the street with an upper room used as the sleeping quarters. The buildings also stand out because they follow a coherent and repetitive design in a similar fashion to the so-called *case a schiera* (row houses) recovered in Regio I insula 11 at Pompeii[13]. Their layout resembles the typical tabernae or shops, such as Taberna V 17.18 in Herculaneum, where the lower floor was dedicated to commercial activities whereas the upper floor above held the sleeping quarters[14]. Although it is likely that those at Oplontis initially had a similar design and function, both floors in each of the buildings seem to have worked as domestic spaces in their subsequent final phase.

In previous seasons we recovered evidence that the street upon which the houses faced had at least two phases of use[15]. We therefore decided to excavate a unit in house 46 because it displayed a door that was walled-up in antiquity (fig. 14). A large hole cut into its western wall suggests that a common owner, in the phase just preceding the eruption, united it with the adjacent house 47 to the west. We recovered corresponding evidence for two earlier phases, including the foundations of a demolished partition wall that once functioned to designate separate spaces in house 46. Townhouse 48 further to the west displays the remains of a similar wall, suggesting that such partition walls were a common feature in the townhouses at Oplontis B. The expansion of the two houses (46 and 47) into one dwelling likely led to the demolition of the partition wall. Nevertheless, it is unclear whether the intended reconstruction reached completion. In its final phase, house 46 lacked a defined floor. Instead a series of pits dug through the floor in antiquity indicate that the space was undergoing refurbishment at the time of the eruption.

[12] DI MAIO 2015: para 665, 683, 691-92; similar events also affected nearby Herculaneum, see WALLACE-HADRILL 2011: 18-25, 249; for the effects on the aqueduct at Pompeii see KEENAN-JONES 2015: 191-215; for a broader discussion on the Bay of Naples see TAYLOR 2015: 9-10.
[13] HOFFMANN 1979: 111-113; NAPPO 1993-1994: 77-104, PESANDO 1997: 211-215, GUZZO 2007: 91. The authors are conducting a continuing separate study of these housing units.
[14] See for instance PIRSON 1999: 71
[15] See THOMAS, VAN DER GRAAFF, WILKINSON 2013: 8.

Fig. 15. Overview unit 18. Note the large pit cut in the center of the unit and the shallow foundation wall on the left.

Trench OPB 18

The western area of the site suggests a similar situation where several rooms display evidence of continuing work. In particular, Trench 4, excavated in 2013 in spaces 21 and 39, revealed a floor that was heavily damaged and partially removed in antiquity[16]. We therefore chose to locate trench 18 in the adjacent space (room 18 on the plan, fig. 1) because one of its main doorways opening onto the courtyard was walled up in antiquity (fig. 15). Like the spaces examined in unit 4, room 18 displayed a robbed out floor. Only a small portion of the original pavement was still in situ. It was composed of re-used amphora fragments covered by a layer of concrete, suggesting that this once was a simple floor associated with a utilitarian use. The unit also contained a large pit filled with eruption lapilli that, as the site's original excavators reported, was never fully excavated. Notably, the pit cut through an earlier shallow foundation wall similar to those uncovered in trenches 4 and 6 nearby, confirming that also here the courtyard building saw some reorganization. Although the precise function of the pit is undetermined, its presence suggests ongoing construction work in the area at the time of the eruption.

The Previously Excavated Assemblages at Oplontis B

One of the primary goals of the Oplontis Project's investigation of the Oplontis B complex is to document, analyze, and preserve its rich material culture. To achieve this end, we created a research design and organized a plan of action that began with a complete inventory of the massive amount of artifacts and ecofacts recovered during the excavations of the Archaeological Superintendency of Pompeii. Our goal is to analyze these materials using autopsy and compositional analysis methods that record all possible information. Finally, our plan seeks to preserve the finds digitally through photography, photogrammetry, and laser scanning. A team led by Jennifer L. Muslin initiated the first phase of this tripartite plan during the 2014-15 field seasons.

Our first priority was to catalogue all of the un-inventoried finds from the previous excavations currently stored in Oplontis B. Between 1973-1991 the original excavators uncovered a vast quantity of ceramic, organic, metal, and architectural material, including amphorae, cooking and tableware, wooden fencing, pomegranates, pitch, coins, jewelry, and bronze vessels, wall painting fragments, and marble flooring and revetments[17]. Due to a shortage of storage space, the bulk of this material sits in two locked rooms on the east side of the Oplontis B peristyle and in four exterior-facing rooms on the building's southern side. While this was clearly a temporary solution devised for overflow storage, the result is that the material and its labels have begun to degrade from exposure to humidity and other destructive elements; thus, it is of the utmost importance to document and analyze these finds before they disappear. To facilitate this endeavor, the Oplontis team completed the inventory of this previously uncatalogued material during the 2014-15 field seasons. In this regard, we were conducting what one might call archaeology of archaeology. In order preserve any additional information associated with any original placement of the *cassette* that might be unknown to us, we made sure to put them back into storage in precisely same order in which we found them. We photographed all original labels and tags and transcribed onto the new Oplontis Project tags to allow for more legibility, easier cross-referencing in the field, and to preserve the information for posterity.

Working with the Oplontis B dataset has presented challenges (fig. 16). The sheer quantity of material is quite overwhelming: there are 702 *cassette* (crates) full of finds and 165 free-standing amphorae housed in the

[16] See THOMAS, VAN DER GRAAFF, WILKINSON 2013: 8.
[17] See MUSLIN 2016: 166.

complex along with many more amphorae and special finds from Oplontis B housed in Villa A and its *magazzino* (storage room). Another challenge has been working with legacy data that the Oplontis team did not excavate and attempting to understand and locate the provenience of the stored assemblages. Fortunately, we have been able to cross-reference the *giornali di scavo* (excavation diaries) of the original excavators and their finds inventory for Oplontis B with the information and dates on the un-inventoried material. In addition to the archival written material, we have also had the gracious cooperation of one of the original principal excavators of Oplontis B, dottoressa Adele Lagi De Caro, who has given the project valuable eyewitness information regarding the positioning of the amphorae and other finds when they were originally uncovered.

Fig. 16. Amphorae laid out for cataloging in the courtyard of Oplontis B.

Methods

When we began the analysis of the old finds housed in Oplontis B, we were surprised to at the variety of materials in the *cassette*. In order to address the specific needs of the Oplontis B assemblages, Muslin created a form for recording information about each *cassetta* or free-standing object. These included fields for the new Oplontis inventory number, storage location, provenience information evidence for residue or organic material, the presence or absence of epigraphy (stamped, painted, or incised), and the numbers of the associated photos of the *cassetta* contents or object. For ceramic material, additional fields included functional group, form, fabric, total number of sherds, diagnostic sherds, Minimum Number of Vessels Represented, and evidence and location of corks or residue.

The decision was made not to include weight as a diagnostic category when evaluating the *cassette* contents and free-standing amphorae for two reasons. First, most of the transport amphorae in the assemblage had largely been complete when they were discovered but broke when they were removed from the volcanic deposits which encased them. Second, several of the more complete specimens were encrusted with lapilli and ash from the eruption. In order to conservatively quantify the number of ceramic vessels present with regard to amphorae, we created the Minimum Number of Vessels Represented category instead of EVEs (Estimated Vessel Equivalents). Our rationale was that their degree of completeness was mostly caused by modern human intervention rather than long-term formation processes[18]. For this field, we counted the number of singularly occurring diagnostic sherds (bases/spikes or complete necks) and tabulated them to achieve the Minimum Number of Vessels Represented figure.

Architectural and organic material had different parameters for cataloguing. Ceramic building material was catalogued in a similar manner to the pottery with the exception of the functional group, Minimum Number of Vessels Represented, and the residue and cork categories. Wall painting fragments were brushed, described (colors, patterns, incisions, the presence or absence of impressions of reed backing indicating ceiling), photographed in groups and then replaced into their *cassette*. Marble architectural elements were treated in the same manner but were occasionally cleaned with water. Organic material not associated with ceramic finds (wooden fencing posts, carbonized wood, pomegranate skins, and hay) that was kept in *cassette* received Oplontis project inventory numbers and a brief description[19]. Any loose cork or residue was placed in plastic

[18] For a useful discussion of the benefits and detriments of using EVEs in pottery quantification, see ORTON, TYRES, VINCE 1993: 171-173. For a discussion on the usefulness of Minimum Number of Individuals in pottery quantification, see VOSS, ALLEN 2010: 1-9. For a comparison of these two methods, see VERDAN 2011: 165-171.

[19] There are also a number of *cassette* containing animal and human bones that the Oplontis team has not yet analyzed.

bags that remain with the objects with which they were found with the Oplontis number and any label information written on the bag. As the previous excavators had done, we left the large quantities of loose organic material (pomegranate skins, hay) *in situ* on the floor in room 42. The team recorded all descriptive information for the finds on paper forms that were later digitized into spreadsheets.

This brief report describes the Oplontis B assemblage research in its early stages and as such will likely change after we conduct more in-depth analysis. Future directions for the project include conducting a detailed and exhaustive compositional analysis of the fabric of the Dressel 2-4 amphorae in the assemblage to create a more nuanced understanding of the subtypes represented at Oplontis B (Central Tyrrhenian, Pompeian, Sorrentine, etc.) We will also take more digital photographs and scans of the amphorae in order to create 3D models that will preserve them for posterity and future study. Regina Gee and Zoe Schofield will undertake the study of the wall painting fragments and Alessandra Pecci, Gaetano di Pasquale and Mauro Buonincontri will conduct residue analysis and dendrochronological studies of the pitch and wood[20]. Finally, we will connect and correlate the assemblages from the recent Oplontis Project excavations with the Archaeological Superintendency of Pompeii's Oplontis B assemblages in order to understand the complete picture of the life and material culture of this unique complex in the *suburbium* of Pompeii.

Preliminary Conclusions

The preliminary results of our analysis of the previously excavated materials have been intriguing: they reveal new information about greater quantities and varieties of extant material than mentioned in the published literature on Oplontis B while at the same time confirm long-held suspicions about the nature of its artifact assemblage. The Oplontis B amphorae provide a useful illustration of these results. Using the Minimum Number of Vessels Represented method outlined above, we quantified 929 amphorae either loose or in *cassette* in addition to the 412 amphorae already known from the Archaeological Superintendency finds register[21]. The team also found many more *tituli picti* (painted or stamped inscriptions) in red, black, and white pigment painted on the shoulders and necks of the Dressel 2-4 amphorae that were previously obscured by dust and pyroclastic material. Most of these *tituli* were not legible in the field but further analysis should provide more information on their letters, allowing for the possibility of connecting the contents of the amphorae with traders and points of origin and sale.

The theory that the majority of the amphorae present in Oplontis B were Dressel 2-4s from Central Italy is borne out by our research, with that form accounting for over 90% of the total amphora types represented in the assemblage. Many of these amphorae still had full or partial corks inside them as well as residue patterns indicating the direction in which they were stacked, a piece of evidence that had previously gone undetected and needs further investigation. Dottoressa Lagi informed the team that a group of long wooden poles currently housed in room 43 are in fact ancient and were positioned in between the columns in square niches on the west side of the peristyle as bracing to support rows of amphorae stacked there.

The team also documented a series of *tegulae mammatae* along with other roof tiles and brick that suggest the presence of a bath or heated room in the complex. The discovery of Luna marble wall revetments, door- and windowsills, and lozenge-shaped flooring, as well as *rosso antico* pilasters decorated with an acanthus leaf motif, suggested that the upstairs apartments in the warehouse section of Oplontis B were more luxuriously appointed than previously considered[22]. Another tantalizing piece of evidence among the Archaeological Superintendency excavation assemblage is the corner of a Luna marble sign with spaces for inset bronze letters, sadly illegible in its current fragmentary state.

As far as the excavations are concerned, although our interpretation is still tentative, the combined evidence of the past two seasons points to a dynamic site that flourished with at least three phases of development between the second century BCE and 79 CE. The first phase is the most enigmatic. Many spaces on the south side of the courtyard building vanished to make way for an extensive re-development which probably in-

[20] The Project has already carried out an initial sample analysis of the amphorae in the fall of 2014, the results are being processed. Pecci et al. in preparation.
[21] This count does not include the unexcavated stacks of amphorae that sit in the northeast corner of room 4 and upside down in rows in room 17.
[22] See MUSLIN 2016 for a more detailed discussion of the finds and their connections to local, regional, and Mediterranean trade networks.

cluded the construction of the townhouses to the north. This second phase saw the later addition of a water system, whereas the barrel-vaulted storage spaces to the south appeared in the third.

If we briefly compare these results with our work in neighboring Villa A, we find a similar development: a first core, followed by the addition of a new water system, and the subsequent construction of a new luxury wing[23]. At this point, it is still too early to connect the progression of both sites as simultaneous events; the two have very different histories and functions. Nevertheless, in a striking parallel development, the construction of a new luxury wing at Villa A and the barrel-vaulted storage facilities at Oplontis B seem to be roughly contemporaneous events. If we expand our context further, the development of Oplontis B occurred in a period when the Bay of Naples became increasingly urbanized with the construction of numerous luxury villas and the expansion of settlements. This was also a time of upheaval: Samnite Pompeii became a Roman colony and the Republic would give way to Empire. The evidence of the past two seasons suggests a settlement in flux that responded to these changes.

Two further final observations are of particular importance. Geological phenomena such as Bradyseism seem more widespread in the Bay of Naples than previously assumed, dramatically affecting the local landscape within the space of a few kilometers. In addition, Oplontis B may have enjoyed its own running water system despite the proximity of the Serino Aqueduct. These factors complicate our view on the development of suburban Pompeii, an area that remains largely unexcavated and threatened by rapid urban development. As we continue to work through the evidence, some of the observations we have made so far will be subject to change. Our initial interpretation of Trench 6, published in a previous article in 2013, is an eloquent example of the process. Our future task is to refine our phasing and chronologies, and further analyze the assemblages as we work to understand the function and relationship between Villa A, Oplontis B, and along the Bay of Naples.

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[23] For an overview of the excavation work at Villa A and Oplontis B see VAN DER GRAAFF 2016: 66-71, see also THOMAS, CLARKE 2007: 222-232; THOMAS, CLARKE 2009: 355-64; THOMAS, CLARKE 2011: 370-381.

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