

First Results of Three Seasons of Excavation at Oplontis B (2016-18)

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The Oplontis Project has investigated Oplontis Villa B, located in Torre Annunziata, Italy, since 2012. The site fell victim to the eruption of Vesuvius in 79 CE together with its celebrated neighbor, Villa A, a UNESCO world heritage site also known as the Villa of Poppaea. The project's aim is to produce a comprehensive study of buildings at Oplontis B that include a Roman wine emporium and ancillary structures excavated by Italian authorities between the 1970s and 1990s. As part of this investigation, the project has carried out systematic excavations to shed light on the development of the site as well as to clean and document the standing remains. This report presents the preliminary results of the last three excavation campaigns conducted in the weeks of late May and early June between 2016 and 2018. The early results include a unique local eruptive sequence that buried the site, the discovery of a kiln, and the recovery of earlier (pre-) Roman buildings that demonstrate a dynamic development of the complex.

Between 1973 and 1991 the Soprintendenza Archeologica di Pompei excavated and largely restored the site known as Oplontis Villa B. Their aim was to create an archaeological park in the modern town of Torre Annunziata, Italy that would include the neighboring UNESCO world heritage site known as Oplontis Villa A located just a few hundred meters away. Unlike Villa A, which is now open to the public, Oplontis B has remained closed as the money for its restoration and accessibility ran out. The complex has since remained largely unpublished and little understood. Although excavators first believed that the site was a villa, the complex likely functioned as a commercial wine emporium with ancillary living and storage quarters. This assessment falls in line with the name of the site that comes from the Tabula Peutingeriana, a medieval copy of a Roman map that indicates a settlement named Oplontis in this area of the Bay of Naples.

This report presents the preliminary results of three seasons of excavation conducted between 2016 and 2018 at Oplontis Villa B. The aim of the excavations conducted by the team was twofold: 1) to gain further insight into the historical development of the complex 2) to shed light on the layout and operating condition of the site at the time of the eruption of Vesuvius. These excavations are a continuation of those begun by the Oplontis Project in 2012 that are part of a broader multi-disciplinary effort to publish the complex and its excavated materials¹. The three seasons discussed here each spanned three weeks, during which the team excavated 17 trenches in all: trenches OPB 15, 20-24, in 2016, OPB 25-30 in 2017, and OPB 31-38 in 2018². The excavation

¹ For reports on the previous seasons, see THOMAS *et al.*, 2013; VAN DER GRAAFF *et al.*, 2016; VAN DER GRAAFF 2016. For an overview of the material culture uncovered at Oplontis B, see MUSLIN 2016; PECCI *et al.*, 2017. For other excavation activity by the project at Villa A, see THOMAS, CLARKE 2009; THOMAS, CLARKE 2011.

² John Clarke and Michael Thomas co-direct the Oplontis Project housed at the University of Texas at Austin. The excavations cannot occur without the ground team including Jess Galloway, Regina Gee, Garrett Bruner, Lillie Leone, Rita Scognamiglio, and



Fig. 1. Plan of Oplontis B with investigated areas marked in red. Blue highlights the water features, whereas yellow marks the row houses and green the barrel vaulted storage spaces. Plan by J. Galloway.

team dug each trench by hand using light tools and then passed the dirt through sieves to recover the artifacts. The interpretation of the results is still ongoing and their full publication will follow an in-depth study³. The following paragraphs summarize the initial results from each excavated trench; the conclusions may be subject to change in the future.

The area of Oplontis B unearthed during previous Italian operations comprises three main sectors (fig. 1). At the center of the site stands the main courtyard that includes a two stories colonnaded peristyle with rooms opening on all sides. At the time of the eruption, it functioned as a distribution center with its stacked empty amphorae awaiting wine for transport overseas⁴. On the western side of the courtyard stand the remains of rooms that were under reconstruction when the eruption occurred perhaps because of the damage caused by the earthquake of 62 CE. Further west is the corner of a completely separate building that excavators have exposed only partially. The area to the east of the courtyard is largely unexcavated, save two trenches opened by the Soprintendenza in October-November 2007. These earlier trenches, along with coring prospection and remote sensing conducted by the Oplontis Project, have recovered traces of the coastline a few hundred me-

the volunteers and students of the Kent Archaeological Field School (KAFS) founded and directed by Paul Wilkinson. Special thanks go to Zoe Schofield, Richard Woolley, Steve Clifton, David Rider, Bartek Cichy, Beatrice Nichols, Bill Williams, Franz Plachy, Louise Fowler, Holly Champion, Susan Plumb, Stu Lillycrapp, Vincenzo Marasco, Brian Powell, David Perry, Chris Snook, Iain Sutherland, and Carol White. The Oplontis Project also thanks Grete Stefani, Michele Borgongino, Lorenzo Fergola, Adele Lagi, Antonella Bonini, Immacolata Bergamasco, Giuseppe Scarpati, and Pasquale Tarasca for their support and granting access to the site and its archives.

³ The Oplontis Project owes a particular debt of gratitude to Massimo Osanna who as director of the Parco Archeologico di Pompeii has offered steadfast support to the project.

⁴ For wine bottling activities, see THOMAS 2015: 403-15; THOMAS 2016: 160-65.

ters to the south as well as a road heading inland toward Vesuvius⁵. To the north of the courtyard is a second complex, consisting of a series of two-story town houses that lined a street composed of a beaten earth and pebbled surface. The Italian investigations excavated only the houses on southern side of the street and uncovered evidence of further unexcavated structures on its northern side. South of the courtyard stands a third complex, consisting of a series of barrel-vaulted storage spaces. On the floor above the barrel vaults workers uncovered the remains of the living quarters that may have been associated with the distribution center operating in the courtyard.

The results of the past seasons have made it clear that each of these areas witnessed a different development, with the central courtyard seeing the least change over time. The stratigraphy generally is such that the northern and western areas of the complex seem to rest on a sequence of pyroclastic layers (tephra) deposited during Somma-Vesuvius eruptive activity in the Bronze Age. These pyroclastic layers have become a marker for our excavations in order that we avoid disturbing intact Bronze Age depositions that are below them and are not part of our research agenda⁶. The top layer of pyroclastic material tends to disappear toward the southwest, where workers seem to have chopped it away during the various remodeling phases of the complex. The ancient topography also plays a role, as it naturally slopes down in a southeastern direction. Builders must have terraced out a large section beneath the barrel-vaulted rooms to create a level surface on which to build the complex.

The courtyard area

In order to understand the development of the courtyard and the adjacent spaces, the team sunk a series of targeted trenches. Some of these were inside the rooms (4, 6, 11, 12, 15bis, 16, 34) surrounding the courtyard, whereas others had the aim of looking at the phases of the surrounding colonnade (spaces 18bis and 36). Our efforts on the western side focused on understanding those spaces (18, 21, and 39) that were awaiting reconstruction at the time of the eruption.

Trench OPB 20-Room 36

The aim of this trench, opened in the 2016 season, was to understand the development of the eastern side of the peristyle. This area had particular importance because it is here that a wider intercolumniation allowed carts to enter and exit the courtyard, riding on a hard concrete surface connecting to the main regional road to the east. A number of features required further investigation. Among them was the relationship of the space with the large water collector that our previous excavations had recovered in trench OPB 3 on the southeast side of the courtyard⁷. The large water collector had channels feeding it from the west and the northeast with a yet unidentified channel transiting the area of trench OPB 20. Other aims were to understand the purpose of a low wall jutting out from room 16 as well as the reason why workers walled up the door of the space in antiquity. This trench also sought to answer questions concerning the previous architectural phases recovered in trench OPB 15, about 20 m to the south, that seemed to continue northward in the direction of area 36 of the quadriporticus (fig. 2).

The trench displayed evidence for at least five occupation events, despite the many modern interventions related to the reconstruction of the complex that disturbed some of the archaeological contexts. The last two floor surfaces, SU 20002 and SU 20014, were clear in the stratigraphic matrix. Tentative dating points to a post-62 CE development of the last surface associated with the eruption event. In places, lying in situ, the floor surface still preserved traces of fallen wall plaster that had a few painted letters on it. The presence of these fallen plaster pieces indicates that a destabilizing event, whether an earthquake or human agent, damaged the wall prior to its burial by Vesuvius.

The second occupation event (SU 20014) yielded the drainage channel that connected with the washing facility and water collector discovered in trench OPB 3. Initial results suggest a tentative Augustan date. Unlike

⁵ For the coastal setting see DI MAIO 2015; VAN DER GRAAFF *et al.*, 2016: 1-2.

⁶ See THOMAS *et al.*, 2013: 4-5.

⁷ See THOMAS *et al.*, 2013: 5-6.



Fig. 2. Overview of trenches 19 and 20. Unless otherwise indicated all photos are by Michael Thomas.

the channels recovered elsewhere in the complex, the drain was quite narrow, at about 15 cm wide, and rudimentary. The channel descended down into the peristyle from the east, continuing along the ancient access route into the courtyard adjacent to the north wall of room 16. Here it served to mark the edge of the road, composed of a mix of beaten earth and rough cruma, as it entered the courtyard. The drain was set in a concrete shell and open. It emerged partially filled in with dirt rather than eruption lapilli and ash. On its eastern edge, the drain preserved some of its stone capping that included a carved molded marble block. The rest of the capping had disappeared, perhaps removed in antiquity. The state of recovery suggests one of three scenarios: the channel was open

or covered with wooden planks that have since disappeared; the drain was abandoned in antiquity; or modern excavations disturbed the context.

Continued excavation encountered a third surface that included two postholes of uncertain architectural use. A series of fills rested below this surface, representing an ancient effort to raise and level the area. By means of a narrow sondage, the work ended upon a fourth surface layer composed of a broken-up pyroclastic deposit. A posthole pierced through it in an event that represents the earliest evidence of occupation in the area.

The area on the southern side partition wall displayed a similar development. The wall extending in an L shape in front of the closed-up door to room 16 is the last addition. In its western corner, a small basin emerged, buried beneath modern debris. The small rectangular feature lacked waterproofing, perhaps because of its removal in antiquity. Only one course of brick shaped stones defined its southern and eastern edges. The feature seems to have functioned together with the low partition wall, whose construction also led to the closing of the door to the adjacent area 36.

The lack of any further attributes and elevation to the feature make identification difficult. Given its sheltered position behind a wall and to the left of the entry into courtyard, the feature first appeared to be a shrine of sorts, perhaps an aedicula-type *lararium* standing on a high separate podium, a form that is a common in Pompeii⁸. However, the remaining courses of stonework do not seem substantial enough for this type of construction. The feature does not seem to have functioned as an oven or cooking surface as these tend to have a surface on raised masonry, and there are no traces of fire. Traces of a badly-defined small drainage channel suggest that this feature might have had seen use as a latrine or washbasin of sorts in the wider operation of the complex.

Trench OPB 19-Room 16

In 2016, the team reopened trench OPB 19 to assess the relationship of its floors with those uncovered in neighboring trench OPB 20, opened in the adjacent area 36. The exposed section of the trench focused only on the western edge of the space where any possible foundations continuing from trench OPB 15 to the south might be present. The trench did not reveal any further foundations or architecture. However, this small sondage did reveal at least two previous occupation levels, bringing the total phases in this area of the courtyard to at least four and possibly five different events. The latest two floor levels clearly were part of the current configuration of the space: each corresponded with the open and the walled-up door accessing the peristyle. The third-phase floor level, corresponding to the open door, covered a large pit filled with architectural roof debris, suggesting that some demolition event, perhaps associated with the earthquake of 62 CE, prompted the reor-

⁸ E.g. the House of Caecilius Jucundus (V.1.26) and the House of the Tragic Poet (VI.8.3), see BOYCE 1937: PL. 30.3 and 30.4.

Fig. 3. Overview of trench 22.

Fig. 4. Photogrammetric model of trench 22.

ganization of the space. A lower floor level belonging to the second phase in the space featured a leveling fill below it that contained remains of pitch, or pine resin, suggesting a continuous practice of wine bottling activities. Excavation ended on an earlier surface that displayed the remains of a posthole. Its presence, along with those recovered in the lower surface of trench OPB 20, indicates a different architectural configuration of the area in its first phase of occupation.

Trench OPB 22- Space 18bis

The purpose of this trench, excavated in 2016, was to understand the development of the pavements on the north side of the peristyle. The stratigraphy was very thin, lying just a few centimeters thick on the solidified Bronze Age pyroclastic deposit recovered elsewhere in the complex. The pyroclastic layer displayed a trove of cuts and fills associated with the development of the site. Among the most important were two foundation trenches for the adjacent northern rooms and the southern colonnade. The foundation trench for the colonnade revealed the construction technique familiar for the complex: tuff blocks supporting the columns and a concrete fill deliberately placed on top of an even earlier pyroclastic layer⁹. Among the many materials recovered from the foundation, and still under study, was a Dressel 1B amphora fragment, which tentatively suggests that construction of the colonnade occurred no earlier than ca. 130 BCE and no later than the late first century BCE¹⁰. The same pyroclastic layer revealed a series of stake holes that concentrated on the north side of the trench. Their purpose is uncertain, but they may represent stakes driven in to mark out working areas or hold up rows of amphorae (fig. 3).

The center of the trench preserved important clues to the architectural layout of the peristyle. A wide ditch of uncertain purpose ran in an east-west direction. The remains of a pier cut through it, in a similar fashion to the one recovered in previous seasons in trench OPB 11 to the west¹¹. Although the pier has now vanished, it must have served to hold up the upper floor in antiquity. It is possible that restorers omitted to rebuild it in the modern reconstruction of the complex, since another complete example is standing nearby to the east. The placement of the pier, which is not in line with the intercolumniation of the colonnade, seems to be a bit of an afterthought because it must have gotten in the way of loading operations. Perhaps this and other examples represent an emergency measure to shore up the structure after the earthquake (fig. 4).

⁹ See THOMAS *et al.* 2013: 5-6.

¹⁰ PEACOCK 1977: 262-269; TCHERNIA 1986: 309-320; HESNARD *et al.* 1989: 53-59.

¹¹ See VAN DER GRAAFF *et al.* 2016: 6.





Fig. 5. Overview of trench 27.

Trench OPB 27- Space 18bis (east)

Given the results in trench OPB 22, the project continued its focus on the north side of the peristyle in 2017 with the excavation of trench OPB 27. The aim of the trench was to clean up and recover the ancient floor level on the north-east side of the peristyle (space 18bis). With the cleanup of the stylobate supporting the colonnade, another cistern head emerged, just like the one located to the west in trench OPB 10. The original excavations had not detected its presence because workers did not return to clean the area after the reconstruction of the peristyle. This was common practice, in which modern builders kept a layer of eruption debris in place to protect the ancient floor level during the reconstruction effort. Measuring about 85 cm in diameter, the cistern head is a mirror of the one on the western side of

the colonnade, and the owner of the complex probably ordered both closed at the same time. In terms of its stratigraphic sequence, at least two floor levels recovered in the peristyle, each very thin, covered the cistern completely, indicating that it went out of use probably after the installation of the aqueduct (fig. 5)¹².

Further excavation found evidence for at least one earlier floor level. It rested upon a disturbed patch where most of the pyroclastic layer recovered in neighboring OPB 22 was dug away. This kind of large disturbance suggests that a major architectural overhaul occurred before its deposition. The foundation trench for the stylobate of the courtyard colonnade cut through the disturbance, suggesting that workers dug out the disturbance and filled it back in before the construction of the main building. Despite this disturbance, the foundation of the wall separating room 5 to the north and the peristyle sat on patches of another lower of pyroclastic deposit kept purposefully in place to ensure the stability of the building.

The presence of the cistern head and the disturbance of the pyroclastic layer indicate that a large cistern may lie below the peristyle. The layer used to equalize the area for the first occupation surface must represent the fill for the cut related to its construction. Unfortunately, the excavation did not reach deep enough to gain a better understanding of the cistern. For reasons of safety, the excavation of the shaft heading down from cistern head had to stop short of reaching the bottom. Curiously the shaft, like its counterpart to the west, featured no waterproof lining. Perhaps workers removed it in antiquity. In the shaft wall we were able to identify a sequence of Bronze Age anthropogenic and volcanic deposits akin to those recovered in trench OPB 1¹³. These deposits indicate that any cistern structure must lie about 25 cm deeper from where we left off, as the cut for its construction must pass through the eruption deposits recovered in the wall of the cistern head.

Given the presence of piers recovered in trenches OPB 22 and OPB 11, the team expected to find further evidence of such structures designed to support the upper story. Instead, the trench yielded a series of postholes cut into the earliest surface that must have accommodated some type of support structure for the floor above. Their presence suggests that the architect who designed the courtyard intended it to have a two-story colonnade in the original design of the complex and that it remained in place despite various subsequent overhauls on its southern and western sides. Such an hypothesis seems further corroborated by the large tuff block that functioned as the lowest step of the stairs leading up to the upper floor on the northern side of the trench. It displayed signs of heavy wear possible only from prolonged use.

¹² This may also be the result of bradyseism, see DI MAIO 2015: para 665; TAYLOR 2015: 9-10; VAN DER GRAAFF *et al.* 2016: 5-6.

¹³ See THOMAS *et al.* 2013: 4.

Trench OPB 31-Room 4

Investigations into the development of the northern side of the courtyard continued in 2018 with the excavation of trench OPB 31, the main goal of which was to document any construction cuts for the north and east walls of room 4. At two meters in width, the trench spanned the eastern section of the room. A series of holes cut into the surface of the 79 CE layer presented another reason to investigate the space. These features turned out to be modern cuts associated with the reconstruction of the building. The floor of room 4 (SU 31005) was no more than a thin veneer of plaster. Beneath it lay a fill layer (SU 31008) rich in artifacts, including a badly degraded and unreadable coin. This fill lay on top of a fine paleo-soil (SU 31011) composed of gritty ash-like sand and pebbles that must have been present before the construction of the space. The paleosoil is consistent with a similar deposit recovered in OPB 17, excavated in the adjacent rooms 2 and 3. With the exception of trench OPB 29, it is otherwise absent in the other trenches and ancient workers seem to have deliberately removed it elsewhere during the construction of the complex. This soil presented construction cuts for the north and the east walls of the space. In a consistent construction technique uncovered elsewhere in Villa A and B, the wall foundations rested upon Bronze Age tephra that engineers sought out as a natural foundation pad (fig. 6).



Fig. 6. Overview of trench 31.

Remarkably, the space presented a single floor level associated with the lifespan of the building. Preliminary study of the artifacts from the trench indicate an early first century BCE construction date, perhaps a little earlier, suggesting that the space remained mostly unchanged for a considerable period of time. This uneventful development is consistent with the sequences recovered in OPB 17 and OPB 22, where the excavations also recovered only one clear floor level. This picture is otherwise inconsistent with the trenches to the east and south of the courtyard that present at least three to five phases of development.

Trench OPB 37-Room 6

In 2018, trench OPB 37 aimed to explore further the development of the spaces north of the peristyle. It consisted of a two-meter strip on the eastern edge of the space, in an area expected to yield the foundation trenches for the south, north, and eastern walls. The ancient floor level was a light beaten earth matrix only a few centimeters thick. The foundation trenches for each of the walls emerged after its removal. Each one cut into an anthropogenic fill composed of a dark brown soil filled with artifacts, similar in composition to the fill layer recovered in nearby trench OPB 27. The eastern wall of the space displayed two cuts for trenches: the first associated with its construction and a second dug to repair the wall foundation. The second cut corresponded with a large masonry bulge in the foundations in an otherwise flat wall. It likely represents an intervention to reinforce the wall after the earthquake, or a new construction on top of an older foundation. The north and the south walls of the space had a single cut for a foundation trench associated with their construction (fig. 7).

Excavation continued to remove the brown anthropogenic fill layer. Unlike trenches OPB 17 and OPB 31, any trace of the early paleosoil was missing. Workers must have removed and replaced it with the brown anthropogenic deposit when they first reorganized the area. The remains of a shallow wall emerged from the deposit that must be part of an earlier structure unrelated to the current building. The wall (SU 37010) appeared damaged and truncated on both ends, with masonry consisting of a few irregular stones dry-stacked together with a block of Sarno travertine with a crude cross marking on one end. The coarse nature of the wall and its relatively narrow width suggests that it functioned as some sort of delimitation marker, perhaps for a field or



Fig. 7. Overview of trench 37.



Fig. 8. Overview of trench 23. The inset shows the stratigraphy present in the section.

some other territorial division. The excavation of the area ended upon a Bronze Age pyroclastic deposit that provided the foundation platform for the walls of the space. By contrast, the earlier truncated wall featured a foundation trench that went through the pyroclastic and continued into the earlier strata below.

Trench OPB 30-Rooms 29 and 37

In the 2017 season, a small sondage explored the unexcavated volcanic debris to the east of room 6. Its aim was to trace the top and exterior limit of the courtyard building. Unfortunately, the volcanic fill was still too deep to arrive at definitive results. A small cavity opened unexpectedly, halting

any further investigations. Excavation into the volcanic debris of 79 CE requires a different approach and planning. The void contained architectural debris from a ceiling (*incannuciata*) consisting of some unburnt wood and roof tile, which otherwise was left in place. The excavation did recover the edge of a cross wall emerging in room 37 suggesting, perhaps, the presence of a corridor that separated the spaces on the first floor.

Trench OPB 23-Room 12

In conjunction with the investigations on the north side of the peristyle, the project explored the spaces on the southern side of the courtyard with a series of targeted trenches. In 2016, trench OPB 23 sought for any earlier architecture, floor levels, and foundation trenches in room 12. Another goal was to reach any Bronze Age pyroclastic deposit, so prevalent on the north and western sides of the site, to establish the ancient topography of the area (fig. 8).

After removing the thin beaten earth floor level of the room, the team recovered a series of four deep anthropogenic fills. They reached about two meters in depth, suggesting that the southern wall of room 12 functioned as a terracing element in a rapidly descending topography. This circumstance explains the deep foundation of the southern wall delimiting the space; it continued down further than it was possible to excavate given the safety precautions. Two earlier surfaces emerged within the four fills, but it is unclear whether they were

part of the construction events associated with the room, or whether they represent occupation phases. The pyroclastic deposits were entirely missing, suggesting that workers dug them away in antiquity, or that the deposits themselves descend considerably to the south. A similar situation exists to the east in OPB 20, room 36, where the anthropogenic fills tend to thicken compared to those on the north, and west sides of the site.

Trench OPB 24-Room 34

The primary motive to excavate in room 34 during the 2016 season was to look for some of the architecture recovered in the adjacent room 49 (OPB 15) on the other side of its southern wall. After removal of the beaten earth floor of the room, an earlier ephemeral layer of white plaster emerged that probably was part of a construction surface. It featured two small cuts probably related to post-holes. After documentation, the excavation progressed with the removal of a thin fill layer that workers had brought in to support the plaster surface. Below it emerged a two-centimeter thick surface layer composed of crushed pottery sherds. Excavation then ended with the exposure of the fill layer for this floor, composed of a black sandy silt with occasional inclusions. Although the team descended about 10 centimeters deeper than the top of the architecture present in OPB 15, there were no traces of wall foundations in room 34, with the exception of the edge of some masonry that could represent the end of wall 15145 (see below) in the southwestern corner of the space. It is possible that the current wall dividing the two spaces was in place in some form to mark the edge of the foundation walls of the previous phases. In another scenario, builders took meticulous care to remove the previous architecture in room 34, suggesting a radical reorganization in the final stages of the site. The excavation may need to reach deeper to gain a better picture (fig. 9).



Fig. 9. Overview of trench 24.

Trench OPB 25-Room 15bis

The absence of any further architecture in trench OPB 24 led to the excavation of trench OPB 25 in the 2017 season to look for any traces of it in the adjacent space 15bis (fig. 10). A particular aim was to discover if the remains of one of the two drains running in a north-south direction in trench OPB 15 continued through the wall dividing the spaces. The space is narrow, and it probably functioned as closet of sorts in the final phase of the complex. This circumstance impeded any excavation in excess of 50 cm, after which the team stopped because of the lack of architectural remains and for reasons of safety. Despite these limitations, the trench yielded three separate fills dumped to level the area for the final floor.



Fig. 10. Overview of trench 25.

The fact that there were no traces of the previous drain through the area suggested that workers thoroughly demolished it when they built the rooms on the southeastern side of the complex. However, the eastern wall of the space displayed unusually shallow foundations. An explanation for this circumstance may be that builders incorporated part of the drain recovered in OPB 15 to the south into this wall. A similar situation emerged in OPB 33 in room 10 (see below) where workers incorporated an earlier drain coming from room 49 as a foundation for the rear wall. In any event, the light foundation of the eastern wall indicates that it was not a load-bearing support for the second floor above. It stands in contrast to the foundations of the western wall of the space that were deep, well-built, and securely tied into the masonry of the southern wall. The western wall clearly functioned as the load-bearing structure in this part of the building, suggesting, in turn, that the eastern wall of room 15bis is a later addition that reconfigured room 34 into a smaller space.

Trench OPB 26-Room 14

In 2017 the team decided to gain a better understanding of the southern drain that connects to the water collector, previously recovered in trench OPB 3, and to investigate its relationship to the architecture in the southern peristyle (area 20)¹⁴. The intent was to shed light on its relationship with the walls of room 14, and therefore the development of the water supply and the spaces on the south side of the complex. After an initial cleanup, the excavation proceeded to remove the *opus signinum* floor in the space—so far the only such floor documented in the spaces surrounding the courtyard. All the other floors in rooms opening onto the courtyard



Fig. 11. Overview trench 26.

have shown a beaten earth floor, suggesting that this space (14) had some sort of special function in the operations of the complex. A distinct preparation layer lay beneath the *opus signinum*, although it is possible that its surface was in use for some time before the final floor. After the removal of the preparation layer, another floor level emerged, composed of a light beaten earth. A further fill layer lay beneath it, which in turn covered an earlier floor level composed of a thin layer of white calcium that seems related to the initial construction of the drain (fig. 11).

The drain was composed of a vaulted channel about 100 cm deep and 52 cm wide set within a rough concrete casing. The drain cap, built entirely in concrete and embedded rough stones, was slightly different

from what we uncovered for the same channel in trench OPB 3 where neat squared tufa blocks functioned as a cover. A lower layer of organic material and a thick upper layer of soft volcanic ash filled the channel, indicating that it was unobstructed at the time of the eruption. The channel had a steep slope, decreasing 15 cm over the length of the room, indicating a strong flow of water. This circumstance could explain why the southern end of the drain lacked proper waterproofing since the current may have washed it away. The direction of the drain indicates that it links up with the channel uncovered in trench OPB 6 to the south. Here a modern concrete fill deriving from one of the pylons inserted during modern construction operations in the area has interrupted and filled in the channel. Unlike the part of the same drain recovered in trench OPB 3 to the north, the portion inside room 14 lacked a clear foundation cut. It seems, then, that the construction of the room heavily disturbed the stratigraphy and previous architecture in a similar fashion as in trenches OPB 20, OPB 23, OPB 24, and OPB 25.

In terms of construction, builders incorporated the drain into the northern wall foundations of room 14. Nowhere in the masonry is there an evident sign of breakage or reconstruction of the walls. The wall separating

¹⁴ See THOMAS *et al.* 2013: 5-6.

the room from the peristyle (area 20) must therefore be at least contemporaneous with its operation. The wall to the south separating room 14 from room 8bis was too shallow and the drain dives well beneath it, suggesting that this wall is a later construction associated with the barrel-vaulted room to the south. Both the foundations of the north and south walls were relatively shallow, suggesting that the eastern and western walls of the space are its load-bearing structures.

Trench OPB 36-Room 11



Fig. 12. Overview trench 36.

In order to understand the development of the western side of the courtyard, the team sank trench OPB 36 in 2018 as a two-meter-wide slot cut against the southern side of room 11. The aim was to gain a sense of the construction sequence of the walls in this area of the site. In particular, room 11 displays signs of reconfiguration after workers walled up the door to the adjacent room 18 in antiquity. After clean up the room displayed the typical beaten earth floor with a thin layer of plaster similar to those uncovered elsewhere in the rooms around the courtyard. Below it a shallow preparation layer lay directly on the first Bronze Age tephra deposit. Two large pits cut into the stratum, but we intentionally left them unexcavated for future study (fig. 12). Although the pits are indicators of anthropogenic activity, the room otherwise had a single floor during its lifetime in a similar fashion to the spaces on the northern side of the peristyle.

The Bronze Age tephra deposit helped to identify foundation trenches for the east, south, and west walls of the space. The sequence of cuts indicates that workers built the eastern wall of the space first, followed by the southern in what is likely a contemporaneous construction event. As elsewhere on the southern side of the courtyard, the eastern wall displayed far more robust foundations than the southern wall in terms of the finish of its masonry. Both of the eastern and southern walls cut through the upper pyroclastic deposit to rest on another earlier Bronze Age tephra layer. The western wall of the space came last and had its foundation on the higher (later) of the two pyroclastic deposits recovered in the trench. The reason for this circumstance is that the western wall face is a later addition to an earlier wall. Its addition was part of a reconfiguration of the room and the construction of a new door after workers walled up the entry to the adjacent room 18. For each of the walls builders actively sought out these previous volcanic deposits in a construction technique consistent with that recovered elsewhere on site.

Trench OPB 35-Room 39

The reorganization underway in the spaces adjacent to room 18 to the west led, in 2018, to the excavation of trench OPB 35 in the southern portion of room 39. Italian excavation diaries point out how the area was under reconstruction at the time of the eruption: room 18 featured a deep pit filled with eruption lapilli, in a circumstance the project verified in trench OPB 18¹⁵. The aim of trench OPB 35 was to broaden the picture of this area that began with the excavation of trench OPB 4 in 2013. This trench spanned rooms 39 and 21 to reveal sections of a floor composed of roof tiles that workers removed in antiquity, and an earlier wall foundation¹⁶.

¹⁵ See VAN DER GRAAFF *et al.* 2016: 10.

¹⁶ See THOMAS *et al.* 2013: 8.



Fig. 13. Kiln in excavation. Photo by Franz Plachy.

Two large modern concrete foundation pylons still present in the area considerably complicated the excavation.

After the removal of the topsoil, trench OPB 35 displayed the traces of a similar tiled floor. On its western edge, a large foundation wall emerged. It included a large basalt block that acted as the threshold for the entryway to the adjacent room 18. The associated wall separating the spaces was otherwise razed almost to its foundation, marking a demolition event that occurred in antiquity. Parts of this western wall are incorporated into the masonry of the later barrel-vaulted spaces built to the south. Whatever function the space had, workers clearly removed the tile floor as part of the demolition event in this area of the site. Excavation progressed with the removal of the fill that

supported the tile floor. Below it another occupation surface emerged that may be associated with the earlier foundation wall uncovered in trench OPB 4 to the north¹⁷.

A small oval kiln emerged as part of this occupation event (fig. 13). Workers cut it into the occupation level, indicating that it was of the sunken type with a partially interred chamber. The oven chamber had a width of about 30 cm (excluding the walls) at its widest and a total length of about 80 cm, including the flue¹⁸. Kiln *tubuli*, stacked three high, lined the oven chamber on three sides. Potters often use interlocking *tubuli* to create the vault on larger kilns, but here they clearly acted as the chamber wall. A thin layer of fired baked clay lined the *tubuli* on the inside of the chamber¹⁹. The dome of the oven was missing, suggesting that the kiln was not a permanent structure such as those recovered at workshops along the via Superiore and at I.20.2-3 in Pompeii. Further kiln separators and large bits of pottery, including fragments of dolia, filled the chamber. A single stack of *tubuli* formed the central support for the separation element between the fire and the vessels. The remains may indicate that the oven was an updraft kiln (*fornace verticale*) where a floor level with vents allowed heat from the fire below to rise toward the vessels stacked higher up inside the chamber²⁰. Though the presence of a baked layer of hard clay on the sides of its wall may indicate multiple uses, potters seem to have dismantled the grill and dome. They likely rebuilt the dome for each firing. Given the size of the oven, it does not seem that it had a dedicated industrial use, and it is certainly much smaller and less permanent than the brick built surviving examples recovered in nearby Pompeii²¹. Instead, it must represent a small unit dedicated to the production of vessels for local use, perhaps not even for sale considering the low profit margins and market dynamics of the period²². It did not have the capacity to produce any of the amphorae recovered on site, but the oval form suggests that it produced pottery²³.

The kiln sat in an earlier ephemeral anthropogenic layer composed of loose soil, and not on a proper pavement. This stratum probably represents an accumulation or abandonment layer on top of an earlier well-defined concrete pavement. Preliminary results indicate that this pavement is the one associated with the foundation wall recovered in trench OPB 4 to the north. The kiln in turn cut through a foundation trench that seems

¹⁷ In our US numbers the equivalence is US 35024= US 04012.

¹⁸ These dimensions are smaller even than those recovered in Morgantina: see furnace 3 in the *Officina da Vasaio*; and furnaces 4, 5 and 6 in the *Casa dell'Ufficiale*; Furnace 9 in the *Officina da Vasaio*, each with a combustion chamber of about 50-60 cm, see CUOMO DI CAPRIO 1997: 9-35.

¹⁹ On *tubuli* use see CUOMO DI CAPRIO 2007: 518.

²⁰ Type 1/a in CUOMO DI CAPRIO 1971: 410; CUOMO DI CAPRIO 2007: 508, 523-525.

²¹ See CUOMO DI CAPRIO 1976: 131-240; CERULLI IRELLI 1977: 53-72; PEÑA, MCCALLUM 2009a: 57-78; MCCALLUM 2011.

²² See PEÑA, MCCALLUM 2009b: 181-186.

²³ CUOMO DI CAPRIO 2007: 513.

associated with the eastern wall of the space that workers demolished in the final phases of the site to make way for the barrel-vaulted rooms to the south. In this sequence it seems that the kiln was in use after the construction of room 39, but before the placement of the tile floor in the space. Workers had removed this tile floor at the time of the eruption and demolished the room as renovation work was underway. Unfortunately, a thick deposit of volcanic debris still buries much of the associated space, making any further assertions on the kiln and its facility difficult (fig. 14).



Fig. 14. Overview trench 35.

On the southern side of the trench a low curved feature appeared in the lowest deposits. It appeared to curve toward the south and had a clear association with the first concrete pavement used in the space. The context was difficult to read because the eastern and southern walls in the trench truncated it and the team managed to expose it only in the final days of excavation. The slight curve and the waterproof pavement suggest that it might be part of an earlier water feature, but further excavation needs to occur to answer these questions.

The barrel-vaulted rooms on the southern side of the complex

In addition to the focus on the peristyle and its rooms, a number of trenches targeted the earlier architecture uncovered on the southern side of the site. The purpose of these earlier structures remains unclear and some may have functioned as basins, perhaps in a production capacity. At the same time, new discoveries suggest a different sequence for the destruction of Oplontis B.

Trench OPB 15-Room 49

In 2016 the team reopened trench OPB 15 to expand the work begun the previous year²⁴. The aim was to shed more light on the two main foundation walls (SU 15041 and SU 15145) and their cross walls that ran through the room, as well as the two drains (SU 15022 and SU 15024) that were demolished and put out of use in antiquity. The results reinforce our early conclusions and phasing, with the exception of new architecture that added an interim phase before the construction of the space, as well as an earlier phase in the form of two cross-walls (SU 15141 and SU 15156) that acted later as a foundation for wall SU 15131 and SU 15035 respectively (fig. 15).

After the removal of the *opus signinum* floor to the west and south of the old trench, a series of postholes appeared that cut through much of the previous architecture. Their presence throughout the trench must be associated with the scaffolding used to build the barrel vault. This large-scale operation included cutting a large foundation trench on either side of the room. Workers never properly filled in this trench, which led to the floor slumping on most sides of the space. The work to build the foundations also included the cutting of a large pit filled in with plaster that destroyed much of the previous architecture on the southeast side of the space. Like the postholes, it contained many chunks of Third- and Fourth-Style fresco that push the date of the space to af-

²⁴ See VAN DER GRAAFF *et al.* 2016: 4-5.



Fig. 15. Overview trench 15 with phases marked in color: green phase 1; blue phase 2; purple phase 3; yellow phase 4; postholes circled in red.

ter 45 CE. The final floor also featured a slight slope toward the southeast where a drainage hole in the wall served to clean the space.

The removal of the floor revealed a series of spaces (phase four) on the south side of the trench. All of these spaces were thoroughly demolished and only shallow ruins remain. Builders used the previous cross-walls of phase 2 (SU 15035 and 15147) and the wall of phase 3 (SU 15146) as a foundation for two spaces that preserved traces of plaster on the walls and a floor level. During this phase workers cut out the old drain (SU 15024) belonging to phase 3 and used its western wall to create a new foundation wall (SU 15139). Only a

small part of the drain (SU 15024) survives toward the south because it descended lower than the later architecture.

On the southern end of the trench, a thick layer of beach sand and pebbles (SU 15103) acted as a leveling fill to accommodate the final pavement of the barrel-vaulted room. This is the same context as the one recovered in OPB 28 and OPB 6. Although this layer is not substantial enough to be part of the ancient beach, its presence here nonetheless reinforces our theory that Oplontis B stood very near the sea. It is possible that a nearby beach was a convenient source to use as construction fill. In phase three, workers built a second foundation wall (SU 15145 and SU 15146) running on the eastern edge of the trench. As the team expanded the trench further to the south, a new cross wall emerged associated with this foundation, heading east (SU 15148). The main foundation wall featured a seam separating it into two sub-phases of construction (SU 15145 and SU 15146), indicating that workers built a second wall up against the western side of the foundation. In its earliest phase, the original foundation (SU 15146) featured a door threshold that workers filled in when they added the second seam (SU 15145). The door threshold led to a space of unknown function. The drains (SU 15022 and SU 15024) running through the trench belonged to this phase 3 and perhaps the earlier phase 2. The construction event of the back wall of the room 49 post-dates the drains because the wall cut and closed them.

The previous phase 2 is associated with the main north-south foundation wall (SU 15041) uncovered in the 2015 season. It included two east-west partition walls (SU 15034 and SU 15035) that designated at least two separate spaces. Of particular note was the discovery of a third partition wall (SU 15147) immediately beneath the modern steps into the room²⁵. The three walls designate at least four separate spaces, the purpose of which remains largely unknown. Any floor level associated with this phase has been lost.

Though phase one in the trench should be associated with the remains of two walls (SU 15142 and SU 15156), how they functioned is unclear and they may be no more than foundations for later phases. However, a brown silty stratum covering the two walls represents a levelling fill brought in before workers built the subsequent structures. This fill is uniform throughout the room, indicating that it represents a single event that leveled out the area. A thin band running along the edge of the main foundation wall (SU 15041) suggests the slightest of cuts for the construction of the wall.

The architectural remains indicate that room 49 was subject to a number of reorganizations. However, the absence of these remains in trenches 24 and 25 (rooms 34 and 15 bis) to the north suggest that these previous spaces were separate rooms in the complex that workers thoroughly demolished in every subsequent

²⁵ Both walls 15035 and 15147 were re-used in phase 4.

remodeling. Given the evidence recovered in the courtyard, it appears that the southern and eastern side of the building had radically different configurations. Such a shift in configurations must reflect a change in production and focus that occurred in the years before and after the earthquake with the construction of new spaces (fig. 16).



Fig. 16. Photogrammetric model of trench 15.

Trench OPB 33-Room 10

In 2018 the project removed the floor surface in a 1.5 m x 3 m area of room 10 with the aim of picking up any signs of the architecture and the drain recovered in neighboring OPB 15 in room 49. Despite its small size and limited scope, trench OPB 33 revealed the remains of the drain (SU 15022= SU 33009) and a wall (SU 15131= SU 33012) recovered in OPB 15 to the east. Workers had carefully demolished these features to make way for the later barrel-vaulted space. The drain (SU 15022= SU 33009) sits below and is encased in the north wall of the room. It represents the first phase of architecture recovered in this trench. The wall (SU 15131= SU 33012), continuing from the east, is

part of the second phase in the area and displayed some remains of plaster on it. A sliver of pavement associated with this wall survives slightly to the north, but it was no more than a layer of plaster on a beaten earth floor. Two cuts of unclear purpose and a rudimentary shallow foundation of another structure (SU 33011) are part of the third phase for the trench. This foundation wall (SU 33011) has an elusive purpose but, given its construction, it does not seem to have performed any major load-bearing function for a heavy wall. All of these phases sat just below the *opus signinum* surface and we purposefully limited the depth of the excavation. Future work in the space would be very promising for understanding the development of the area (fig. 17).



Fig. 17. Overview trench 33.

Trench OPB 28-Space 44 (east)

In 2017, the rich remains recovered in trench OPB 15 led to the search for more architectural features in trench OPB 28, located in area 44, just to the south of the threshold of room 49. The Italian excavations of the area had left about 50 cm of the eruption pumice in place, giving the erroneous impression that the ancient



Fig. 18. Overview trench 28.

although it was unclear in such a restricted space, it seems that the southern wall of the vaulted space of room 49 cut through this surface, suggesting that its construction postdates the floor.

The excavations found at least two separate surfaces (SU 28026 and SU 28018 in *opus signinum*) and three foundation walls emerged from beneath the pebble fill (SU 15013). Wall 28019, running roughly through the middle of the trench, seems to be the earliest and is a continuation of the one that also carried the post pads (SU 15041) in trench OPB 15 to the north. A floor surface (SU 28018) seems to be associated with it. In a following phase, workers built the eastern the foundation wall (SU 28021/28022) recovered in the trench. Like OPB 15 to the north, this structure has two phases (SU 28021=15146 and SU 28022=15145) where a later phase (SU 28022; 15145) attaches to an earlier version (SU 28021, 15146). Floor level 28026, although ephemeral, seems related to walls 28021 and 28022. This seems like a very thin surface perhaps related to its construction. These earlier three phases have little or nothing to do with the third wall to the west (SU 28017), which was very shallow and seems built on top of floor level 28018. This suggests that wall 28017 and floor 28018 may have functioned together, and that the floor was reused. Trench OPB 6 to the west displayed a similar sequence where a layer of beach pebbles covered an earlier *opus signinum* floor (SU 06112) that seems to be associated with a low wall (SU 06116). If this represents the other end of a structure, then the intervening space may be part of a shallow basin, perhaps a saltpan of sorts. Further excavation is necessary to understand this structure better.

OPB 34-Space 44 (west)

In order to find out more about the structures uncovered in trenches OPB 6, OPB 15, and OPB 28 to the east, trench OPB 34 set out to investigate a long strip of 2 m x 9 m on the western side of area 44 in the 2018 season. Unlike the eastern side of the space, the Italian excavations removed all of the upper eruption se-

ground level of the exterior was higher than that of the interior of room 49. Within the pumice were occasional tiles of the ancient roof collapse that we recorded and removed accordingly. As work progressed, the team encountered the remains of two concrete pylons built by modern construction crews before the discovery and excavation of the villa. Excavators truncated these pylons when conducting the restoration work in the area. Beneath the lapilli was a thin layer of hardened pyroclastic flow deposited during the eruption of Vesuvius in 79 CE. The team had recovered a similar layer in trench OPB 6 to the west where it appeared to be the floor surface on the exterior of the barrel vaulted spaces, although this hypothesis was doubtful at the time. The depositional sequence in trench 28 confirmed the opposite, and indicated instead that a pyroclastic event first hit this area of the complex in 79 CE (fig.18).

Beneath the pyroclastic deposit a surface emerged composed of a brown silty matrix, which probably represents an accumulation/usage layer for the area. After its removal another more substantial floor of hard concrete (SU 28011) emerged. It covered a leveling fill of marine beach pebbles with worn bits of amphora. This depositional sequence of beach pebbles supporting an *opus signinum* floor was present also in OPB 6 and OPB 15 (SU 15013). In trench OPB 15 this context represents the fill brought in for the final floor of the room, suggesting that these two surfaces were contemporaneous on the exterior and the interior. However,

quence and pumice in the area. Instead, the trench presented an opening layer of disturbed modern soil lying on top of the first surge deposit from the eruption. The eruption layer featured a series of modern intrusions including the remains of two concrete pylons as well as a narrow service trench cut on the western side of the excavated area. Beneath this hard surge deposit was the ancient surface, which was the same lightly beaten earth matrix with some tuff inclusions (SU 34006) uncovered in OPB 28. This is the layer encountered in most of this space and it is in striking contrast to the interior of the courtyard, where a densely packed concrete floor provided support for the carts moving in and out of the building. The presence of such a surface may explain the type of light storage occurring in the area. At the time of the eruption, the barrel-vaulted rooms contained pomegranates (room 42), wicker baskets and offered shelter to people escaping the fallout (room 10) (fig. 19).

In light of the type of surface, a series of scenarios emerge for these spaces. Perhaps the spaces were only just finished or were still being built, considering that many rooms on the western side of the complex were also under construction. Similarly, the soil matrix may represent an accumulation related to the usage of the spaces. Another scenario suggests that the barrel-vaulted spaces were in a semi-abandoned state. It could also be possible that they functioned to house lighter wares that did not require heavy pavements on the exterior.

As excavation proceeded, the first hard surface encountered barely covered the architecture of the previous phase (SU 34014). The surface is the top of a fill layer brought in to level the area; it must represent the construction event and possible use surface of the barrel-vaulted rooms on the south side of the complex. The floor level included an emerging long wall running in an east-west direction that connects to the structures uncovered in trench OPB 6 in 2015 (SU 06110 and 06115). Just as is the case in OPB 6, the wall was low, reaching a maximum height of about 50 cm. It turned a corner north at a 90 degree angle on the western side of the trench, giving us, together with the architecture in OPB 6, the complete side of an earlier structure. The wall presented a smooth and finished top, as well as an elegant face composed of fist-sized yellow tuff stones set in concrete. The corner quoin of the wall featured regular ashlar blocks built in a similar construction technique as wall 15041 in OPB 15 and OPB 28 to the west.

The team subsequently dug a small test pit to find the surface associated with the wall and assess its foundations. On the interior, the original floor associated with this structure consisted of a highly degraded surface (34021) composed of crushed pottery akin to *opus signinum* that seems to have been exposed to moisture



Fig. 19. Trench 34 seen from the east (left) and the west (right).



Fig. 20. Overview trench 32.



Fig. 21. Laminated pyroclastic deposit in trench 32 set between the modern overburden above and the crushed pottery floor below.

for a prolonged period²⁶. On the exterior side of the wall the team recovered an associated surface of crushed yellow tufa similar to the type recovered in OPB 6. A superficial cut in the upper part of the masonry suggests the presence of a shallow drainage channel. However, with the exception of the degraded *opus signinum* there was no secure sign of waterproofing on the structure. The low wall and its finish suggest that its construction is deliberate and is not part of the demolition of an earlier space. Instead, the space it delimited may have functioned as a raised garden, or in some sort of industrial capacity such as a

settling vat or tank for salt winning, wine, or garum production²⁷.

The well-finished part of the wall sat on a considerable foundation that reached a depth of about 80 cm when excavation stopped. Behind the wall was a series of anthropogenic fills composed of rubbish and debris piled up against the foundations, suggesting that it functioned as a terracing structure. This circumstance is in contrast to elsewhere on the site where Bronze Age tephra are relatively close to the surface. Instead, the terracing structure indicates that the natural topography consisted of the coastline or a terrace/small cliff that workers levelled out as the building expanded to the south.

In terms of the construction sequence for the barrel-vaulted spaces the stratigraphy indicates that workers built their foundations after covering the low wall structure. The exterior walls of these spaces have relatively shallow foundations, extending down to the same layer of highly degraded *opus signinum* (SU 34021) that represents the surface associated with the previous wall (SU 34014). Such shallow foundations seem unexpected for a two-story building were it not for a practical reason: As an arcuated structure, the load bearing component of the building fell on the lateral walls (east and west) of the barrel vaults; these tend to go much deeper (well over two meters) than the exterior wall.

As part of this construction event, workers also built a drainage sewer that emerged running in a north-south direction on the western edge of the excavated trench. The drain was typical of the Oplontis type with a waterproof concrete channel about 30 cm wide set in an *opus caementicium* mixture and capped with large tuff stones. The drain had a limited capacity and was set into the facade masonry of the building. It served to drain rainwater away toward the sea from the roof, as well as from a washbasin on the upper floor.

Trench OPB 32-Room 28

Investigations on the southern and western side of the site continued in 2018 with the excavation of trench OPB 32 in room 28 (fig. 22). Given its location at the extreme edge of the area excavated by Italian teams in the early 1990s, this room was one of the least examined barrel-vaulted spaces. The composition of its floor, for instance, remained unknown. In addition, Italian excavation journals described the presence of sedimentary strata, associated with seawater depositions that accumulated before or during the eruption in rooms

²⁶ Such a crushed surface also emerged from trench OPB 24 but it is unclear if they are related.

²⁷ For salt see, CURRAS 2017; for wine production see, BOOMS *et al.* 2016: 89-111; for garum production see, GENOVESE, MEGALE 2016. For garum production at Pompeii see, CURTIS 1979: 5-23; ÉTIENNE, MAYET 1998: 199-215. For salt winning see, MUROLO 1995: 105-23; For wine see, ROSSITER, HALDENBY 1989: 229-39; Thomas 2015; THOMAS 2016.

26, 49, and 17. The presence of unexcavated eruption debris in the back of room 28 presented one of the few places where our team could verify and examine these observations. The descriptions in the notebooks were unclear as to whether these deposits were marine, riverine, or mudflows associated with an abandonment event or the eruption of 79 CE. The excavation in room 28 promised to shed more light on these deposits as well as record its ancient floor level and retrieve any further evidence for the earlier structures recovered in the trenches on the south side of the site.



Fig. 22. Overview trench 21.

After cleaning up the modern overburden, a greenish laminated sequence of consolidated pyroclastic layers about 20 cm thick (SU 32007) emerged as covering the ancient floor inside the space (fig. 21). The individual strata of fine volcanic ash varied from a few millimeters to centimeters thick. Each stratum displayed marks of swirl depositions, current ripple lamination, convolutions, and chaotic depositions of sub-rounded pumice pebbles and occasional organic fragments of plant leaves. This kind of deposit is associated with the interaction of a high temperature Pyroclastic Density Current (PDC) combining with seawater on the shore of ancient Oplontis. In a tsunami-type event, a high-density chaotic and violent superheated wave, made of mixed seawater heavily laden with volcanic ashes and various organic debris, entered the space in the early stages of the phreatomagmatic phase of the 79 CE eruption. Sedimentation then occurred within the room at rapid but different rates, depending on particle size and consistency, to produce the laminated texture with a high degree of water retention²⁸. Early analysis of the deposits has detected an abundance of filaments and imprints belonging to *posidonia* plants (seagrass) probably ripped from the shallow seabed in front of Oplontis. The same layer emerged outside of the space and is also present beneath a residual volcanic deposit in room 17. The deposit was missing in other trenches where previous excavations must have removed it. The stratum was less stratified and more uniform in trenches OPB 28 and 34 (area 44), suggesting that it required the semi-closed space of the barrel-vaulted rooms for its laminated composition. Even room 10, where excavators recovered the skeletons, displays evidence of a similar accumulation of pyroclastic mud, as the bodies appeared embedded chaotically within such a deposit. Unfortunately, the previous excavation archives do not allow for a precise reconstruction of the event that buried the victims. However, their general disposition suggests that a considerable force violently pushed the individuals against the rear of the room before the vaulted ceiling collapsed onto them.

Beneath this sedimentary stratum, the team encountered a layer of highly degraded *opus signinum* that constituted the original floor of the room (SU 32012). The layer also covered the threshold into the space, which preserved the faint imprint of a rotted wooden beam. It is plausible to assume that this beam was the barrier that held in the superheated water deposit as it settled in the space. The highly degraded *opus signinum* floor was just a few centimeters thick and a small section collapsed during excavation to reveal the remains of an earlier posthole. The ephemeral nature of the floor remains suggest that workers were in the process of laying this floor at the time of the eruption.

The *opus signinum* deposit sealed a series of leveling fills brought in on top of an earlier floor surface (SU 32022) that must be part of the activity in the area before the workers built the room. The foundation

²⁸ Plin. *Epi.* VI.16, VI.20 describes a similar event. A tsunami also seems to have hit Herculaneum: see MAGGI 1998, 169 and MAGGI 1985; for the feasibility of tsunamis generated after pyroclastic flows hit water see, TINTI *et al.* 2003. The Bay of Naples seems to have suffered from tsunamis in previous eruptions as well see, DI MAIO, SCALA 2011: 62-83.

trenches for the western wall (SU 32035, filled by SU 32036, 32031, 32038) and the eastern wall (SU 32024 filled by 32023 and 32028) supporting the barrel vault above, cut through it. Another series of levelling fills (SU 32027 and 32041) supported the earlier activity surface and covered an architectural feature, either the edge of the wall (SU 32040) or a post pad, heading toward the north. The team exposed three well-finished sides of a structure in *opus vittatum* with blocks of tuff and lava. The top surface displayed signs of deliberate truncation, suggesting a purposeful demolition in antiquity. Its placement and alignment suggest that the feature may be a continuation of the wall separating spaces 18 and 39 to the north.

The excavation of the trench ended as an earlier wall foundation (SU 32037) emerged running in a northwest-southeast direction on its western side. Although it needs further investigation, the exposed wall top displayed a matrix of large broken dry-stacked stones laid without concrete. This construction technique is rare at Oplontis B and probably represents a much earlier construction event that may even predate the Samnite and Roman development of the complex.

The street and houses on the north side of the site

In the 2016-18 seasons, active investigations occurred on the north side of the site where a series of four two-story townhouses line an ancient Roman street. Although they share their southern partition wall with the courtyard complex there is no clear internal access between them. The north side of the street is unexcavated, but emerging wall structures and a building façade indicate the presence of further buried structures. The investigations have concentrated on three of the houses (46, 35, and 48); the fourth (47) is collapsing and too dangerous for further excavation and examination. The investigations in houses 35 and 48 discussed here follow the work conducted in house 46 in previous seasons²⁹.

Trench OPB 21-House 35

In the 2016 season, trench OPB 21 sought to clean up and record the remains of the house associated with space 35. A first cleanup exposed the floor level and basic layout of the space (fig. 22). It is a mirror to house 46 to the west. On the right of the entrance, the bottom two stone steps emerged that presumably would have continued with wooden risers heading up to the second floor. Beneath the stairs a series of upside-down flat roof tiles designated a space with a utilitarian function, perhaps for storage as uncovered in the other houses during the Italian excavations. Unfortunately, the remainder of the space was too damaged for a clear picture. The reconstruction effort in the area had heavily disturbed the stratigraphy in about two thirds of the floor space, as restorers dug a new foundation trench for the southern wall and secured the unexcavated volcanic debris on the eastern side of the space. On the southern side of the trench, excavation revealed stratigraphy that presented at least one earlier floor level and another surface that predate the architecture in the area, but too little remained to define their purpose.

Continued excavation in the surviving contexts yielded two foundation walls: one oriented in an east-west direction and the other north-south. They clearly belong to an earlier phase, but the excavation area was too small to determine their function. The space between the two walls on the eastern side of the space featured a depression that perhaps functioned as a latrine, considering that house 48 to the west had a similar facility. The masonry on the façade wall of the house displays a patch of mortar and stone brought in to narrow down a wider doorway belonging to an earlier phase. It is possible that the foundation walls are part of the previous layout of the space associated with the wider door. However, given the orientation and spacing of the walls, it seems that the foundation walls are unconnected to the later housing unit and belonged to an entirely separate structure.

The cleanup operation in the trench also extended outside into the ancient street to determine the composition of the street and sidewalk. Modern debris had accumulated since its removal in the 1980s, thereby obscuring the ancient remains. A large lead-lined storm drain embedded into the masonry of the housing unit emerged from the debris; it was designed to direct roof water to a large underground conduit later recovered in trench OPB 38. The drain, as well as the associated street surface and threshold to the house, was unrecorded

²⁹ See VAN DER GRAAFF *et al.* 2016.

despite the modern interventions in the area. An excavation photograph taken in the 1980s shows a roof tile deliberately set in front of the hole, suggesting that the cut reaching the drain is a secondary utilitarian modification for the disposal of daily waste.

Trench OPB 29-House 48



Fig. 23. Overview trench 29.

Investigations into the houses continued with the excavation of house 48 on the western edge of the site (fig. 23). The project already partially cleaned out this space in 2013 (trench OPB 5) but returned in 2017 for sub-surface investigations³⁰. Unlike house 35, this dwelling presented a complete and undisturbed stratigraphy. In order to understand its makeup, the trench consisted of two slots cut on the northern and southern side of the floor. The floor level associated with the eruption was a simple beaten earth layer that was just a few centimeters thick. A second surface emerged below it. In the southern area of the house the second surface covered a foundation trench dug in antiquity to build the

shared southern wall separating the houses from the courtyard complex to the south. The cut went through a Bronze Age pyroclastic deposit and reached a second such layer further down that ancient builders used as platform for the wall foundations, in a technique typical for the Oplontis site. The fill contained three small oil lamps, recovered side by side and aligned in an east-west direction. Such a careful deposition may indicate a votive deposit associated with the construction of the main southern wall.

A similar foundation trench emerged for the north wall of the house. It seems to have been disturbed when its owner decided to narrow the doorway in a similar fashion to house 35 to the east. During this reorganization, workers also built a shallow partition wall that separated the ground floor into two distinct areas; they also laid a new floor. It is unclear whether the latrine present on the eastern side of the trench was already in existence in the first phase, but it was clearly operational in the final configuration of the space. Given the width of the old door, the event that coincides with the narrowing of the aperture marks the transformation of the ground floor into a domestic space from a previous function, possibly that of a shop or other retail function.

After the removal of the final floor, a pit appeared cut into the earlier surface, roughly in the center of the house. The pit contained eight *ballista* balls stacked together along with a series of rudimentary stones with cut holes that may have functioned as some type of weights. The balls are consistently between 15 and 17 cm in diameter, making them fit for a 10 mina caliber weapon. This kind of ballista was on the smaller side of such weaponry, designed to throw stones roughly 4.5 kilos in weight and particularly recommended for street fighting and for actions designed to disable larger catapults³¹. The presence of this pit and its contents are an enigma that needs further investigation. Nevertheless, it is tempting to see this type of intentional burial as ritual, perhaps even a votive gift associated with the reorganization of the space into its final phase. Other possibilities are that the owner intentionally hid the balls from authorities, or, given their consistent size, used them as weights (fig. 24).

After the removal of the ballista balls, a second larger cut appeared at the entrance of the house, hidden beneath the earlier second floor. A third ephemeral surface covered it that seems to be associated with a walki-

³⁰ See THOMAS *et al.* 2013: 8.

³¹ CAMPBELL 2016: 685; Philon *Bel.* 6 (Th 51). These are smaller than those that Roman forces used in the siege of Pompeii, which are 15 mina or higher caliber and required heavier machines; see BURNS 2003/04: 2.



Fig. 24. Detail of the ballista ball pit. Photo by Steve Clifton.



Fig. 25. Overview trench 38 with the sinkhole and drainage channel below it.

ng level prior to the construction of the house. This third hard compact surface corresponded roughly with the earlier Bronze Age pyroclastic deposit that may have functioned at least temporarily as a floor level.

Trench OPB 38-Space 49bis

In an effort to complete the picture for the north side of the site, trench OPB 38 explored another section of the street surface adjacent to the previous trench OPB 7 (fig. 25)³². After clearing the modern debris, the trench displayed a small part of the roof collapse associated with the eruption that the Italian excavations had left in place on the western edge. After its removal, the street surface quickly emerged as a composite of gravel and packed earth. It had a distinct concave section, no doubt to facilitate drainage. The surface featured no sidewalks, arriving instead directly at the door of house 47.

During further cleaning operations part of the pavement collapsed on itself into an ancient underground sewer that runs beneath the street. The channel was still hollow and given safety concerns, all further excavation stop-ped. The void measured about 1.8 meters deep with the top of the sewer starting about 50 centimeters below the street level. The sewer had a segmented arch design covering a channel about 80 cm wide, making it the widest conduit uncovered at Oplontis B. The location beneath the street as well as its wide channel indicate that the sewer must

have served to clear the latrines and storm drains collecting waste in the adjacent buildings. The sewer had remained undetected and our previous excavation of trench OPB 7 in 2013 did not reach deep enough to uncover it. Instead, we erroneously interpreted the concrete cover of the drain as an earlier street surface complete with cart ruts.

³² See THOMAS *et al.* 2013: 8.

Conclusion

The initial results of the past three seasons have confirmed the presence of multiple phases of the complex. They provide a unique window into the roughly 200 years of development at the site. The rooms around the courtyard seem remarkably stable in terms of architectural changes on the northern and eastern sides. To the south, the barrel vaulted spaces present evidence for at least five phases of development, with various architectural features, including wall foundations and possible pools, perhaps related to yet unidentified artisanal production. Although the details are still under study, some of these architectural phases may relate to the process of bradyseism for which the team uncovered evidence in previous seasons³³. Fluctuations in terrain height probably led to the need for architectural adjustments and the abandonment of the cistern beneath room 17.

The earliest phases found so far relate to the foundation walls, including the one with post pads recovered in room 49 (OPB 15 and OPB 28). It is followed rather closely by the construction of a second foundation wall that displays a refurbishment in a following third phase. The evidence suggests that the water channels recovered in the area also belong to the second and third phases. Their construction, it seems, obviated the need for the cistern heads present in the courtyard that then went out of use. The small kiln recovered on the western side of the site seems to belong to this phase as well. The date of the development is still to be determined precisely, but the initial results indicate that the construction of the water system occurred in the Augustan period at the latest.

A fourth phase included the construction of shallow basins with low walls and *opus signinum* floors; they were located on the exterior of the barrel-vaulted rooms and inside room 49. So far they are of uncertain use, but they may have had some sort of function in the production of salt, garum, or wine. Whereas the new structures are part of later modifications, it is entirely possible that the architecture and foundations described for the previous phases were still part of a main courtyard building. Such modifications suggest possible shifts in production and function throughout the lifetime of the complex that need further investigation.

The barrel-vaulted spaces are clearly the latest phase of the building. The fragments of Fourth-Style frescos recovered beneath the floor of room 49 indicate that their construction was a late event dating to after 45 CE. The lack of a surface capable of supporting heavy cart traffic suggests that builders intended the spaces for a different kind of storage and processing than the wine activities in the courtyard. The presence of large wicker baskets in room 10 and pomegranates in room 42 at the time of the eruption seem to corroborate such a hypothesis. The construction of the barrel-vaulted spaces also led to a reconfiguration on the western side of the complex. Here heavy construction work was underway in 79 CE, perhaps as part of a post-earthquake recovery effort.

The houses on the north side of the excavated area display their own development. The excavations revealed earlier structures for which our investigation was too limited to define with further certainty. The houses that stand there now belong to a later phase, perhaps datable to the third and fourth phases of the complex to the south. As we refine our results, a tentative date for the spaces begins in the colonial period of Pompeii or to the Augustan period at the latest. In their first configuration, the houses had wide doors probably resembling the kind of retail establishments present in Pompeii and Herculaneum. The spaces then changed and the owners narrowed the doors once the retail function of the lower spaces changed to a domestic one. The presence of *ballista* balls and the possible weights suggest a similar shift in function. It is tempting to associate this change with the redevelopment of the southern wing of the courtyard complex where the barrel-vaulted spaces indicate a new emphasis on temporary storage and shipping.

Finally, evidence from these recent excavations suggests that Oplontis B underwent a unique destruction because of its proximity to the sea. This sequence differs from that of Pompeii or Herculaneum during the volcanic event of 79 CE. The phreatomagmatic eruption generated clouds of superheated gas and ash that sped down the mountain slopes toward Oplontis B. The impact of such a cloud on the sea surface led to the violent entry and deposition of a unique water heavy facies inside the barrel-vaulted spaces similar to the deposit that buried the skeletons on the ancient shore of Herculaneum. Those individuals seeking shelter at Oplontis B succumbed beneath a mixed mass composed of superheated gas, ash, and water. This scenario explains the highly stratified deposit uncovered in room 28 and elsewhere on the southern side of the complex. The violent

³³ See note 12 supra.

impact of the wave likely also caused the collapse of the barrel-vaults. Successive pumice and ash deposits punctuated by pyroclastic surges then covered the complex until its rediscovery centuries later.

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