

The Casa della Regina Carolina (CRC) Project, Pompeii: Preliminary Report on 2018 and 2019 Field Seasons

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Questo articolo presenta i risultati delle prime due campagne di scavo (2018-2019) condotte nel giardino della "Casa della Regina Carolina" a Pompei (VIII.3.14) nell'ambito di un progetto scientifico multidisciplinare che investiga la relazione tra cultura materiale, ruoli sociali e cambiamenti storici. La domus oggetto di studio fu scavata nel XIX secolo, ma il giardino, tra i più ampi giardini domestici di Pompei, non fu investigato e questo ha consentito di effettuare vari saggi stratigrafici mirati, da un lato, ad individuare la superficie coltivata in antico e dall'altro a chiarire come lo spazio fosse utilizzato e vissuto da parte dei vari 'utenti' dal diverso ceto sociale (ad es. il padrone di casa, lo schiavo-giardiniere, etc.). Lo scavo ha restituito non solo dati interessanti sulla natura del giardino distrutto nel 79 d.C., ma ha anche rivelato i resti monumentali di una domus a peristilio di età sannitica. Il diverso orientamento di questa domus che, date le dimensioni e vicinanza al foro probabilmente apparteneva ad un membro di spicco della Pompei repubblicana, indica che l'intera insula subì un drastico rimaneggiamento. I dati attualmente a nostra disposizione suggeriscono che tale rimaneggiamento risalga al periodo successivo al terremoto del 62 d.C.

Introduction

This report summarizes the first two seasons of archaeological fieldwork (June-July 2018, June-July 2019) in the garden of the large Pompeian house known as the Casa della Regina Carolina (VIII 3.14)¹. The

¹ Excavation, documentation, and export of selected samples for laboratory analysis was carried out with the kind permission of dr. Caterina Bon Valsassina, Direttore Generale per l'Archeologia, le Belle Arti e il Paesaggio del MiBACT (Ministero dei Beni e delle Attività Culturali e del Turismo), and of prof. Massimo Osanna, Direttore Generale del Parco Archeologico di Pompei. We would like to thank them as well as the Parco officials with whom we worked most closely at Pompeii, especially dr. Giuseppe Scarpati, dr. Francesco Muscolino and dr. Laura D'Esposito. Institutional support for this project was provided by the Department of Classics at Cornell University; the Cornell Institute for Archaeology and Material Studies (CIAMS); the Department of Landscape Architecture at Cornell University; and the Department of Classics at the University of Reading.

The 2018-2019 seasons of this project were made possible by generous funding from the following national and international institutions: the European Research Council, the Rust Family Foundation, and the Society for Roman Studies. We also received financial support for the 2018-2019 fieldwork, as well as associated laboratory analyses in 2019-2020, from multiple institutions at Cornell University (Cornell Institute for Archaeology and Material Studies, the Cornell Institute for European Studies, Department of Classics, the E. Gorton Davis Traveling Fellowship, the Hirsch Fund, the Lewin Gift Fund, the Mario Einaudi Center for International Studies, the President's Council of Cornell Women, and the Society for the Humanities) and the University of Reading (the IMAGINE Campaign). Support for the LIDAR surveys was provided by the University of Wisconsin at Milwaukee and the Layton Echo Group LLC. In 2020, we were fortunate to receive additional funding from the National Geographic Society and the Garden and Landscape Studies Program at Dumbarton Oaks, and while the COVID-19 pandemic made it impossible to go into the field in summer 2020, this funding is to be applied, with its granters' generous permission, to our upcoming field season.

Our project co-directors are prof. Caitlín Barrett, prof. Kathryn Gleason, and prof. Annalisa Marzano, with prof. Gleason also serving as field director. The project manager is dr. Kaja Tally-Schumacher, and dr. Girolamo Ferdinando De Simone serves as con-

Casa della Regina Carolina (CRC) Project investigates relationships between domestic material culture, social performance, and historical change. The site of Pompeii is central to any account of Roman households and daily life, as well as to the history of household archaeology more broadly. However, much of the archaeological record at Pompeii results from early excavations conducted before modern field methods and recording practices. This study brings a wide range of contemporary recording methods, stratigraphic excavation, and scientific analyses to an elite Pompeian dwelling that was originally uncovered, with minimal recording, in the 19th century (figs. 1-3). We are grateful to the Ministero dei Beni e delle Attività Culturali e del Turismo (MiBACT) for granting us a three-year permit, with the full support of the Parco Archeologico di Pompei, to survey the house and excavate the garden area.



Fig. 1. Location of the Casa della Regina Carolina garden. Figure 1a shows the location of the house within Pompeii (adapted from a map created by the Pompeii Bibliography and Mapping Project); the Casa della Regina Carolina is outlined in red. Figure 1b is an aerial photograph of the Casa della Regina Carolina showing the location of the garden within the house. The house is outlined in red; yellow fill marks the garden area. The house plan derives from LiDAR data collected by Layton Echo Group LLC for the Casa della Regina Carolina Project. (Source for background map in fig. 1b: Google Earth; composite image created by Juliana van Roggen.

sulting archaeological director. Our geophysicist and GPR director is prof. Larry Brown. The project palynologist is dr. Dafna Langgut. The project micromorphologist is Laura Mathilde Magno. William Krueger and Taylor Layton direct the LiDAR surveys. The total station survey was conducted by prof. Thomas Noble Howe and Juliana Van Roggen; Juliana Van Roggen also coordinates the project GIS. The lead architect is Michele Palmer. The finds supervisors were Evan Allen in 2018 and Diana Blumberg in 2019. Dr. Vincenzo Castaldo is our project ceramicist. Dr. Simon Barker studies mosaic and other lithic decorations. Prof. Michael MacKinnon is the project zoologist, prof. Jennifer Ramsay is the lead archaeobotanist, with Jessica Feito and Meredith Hood serving as flotation supervisors. Joseph Nigro is our digital coordinator and managed the database, together with dr. Kaja Tally-Schumacher, in 2019; dr. Kaja Tally-Schumacher and Nils Niemeier managed the database in 2018. The project photographers were Kaja Tally-Schumacher in 2018 and Danielle Vander Horst in 2019, with Fawzi Doumaz conducting photogrammetry in 2018. Our finds conservator is Selene Zacchino. Trench supervisors in 2018–2019 were Evan Allen, Olivia Angsten, Lee Graña, Rachael Lane, dr. Samuli Simelius, and dr. Kaja Tally-Schumacher. Additional consulting specialists were dr. Yukiko Kawamoto, dr. Divya Kumar-Dumas, and dr. Naomi Miller.

Finally, for making all of our findings possible, we are very grateful to all of our volunteers. In 2018-2019, these included a geomorphology team (Sahar Farmand, Houston Harris, Jane Suhey, and dr. Divya Kumar-Dumas), a LiDAR team (Hannah Maier, Maleeha Taqi and Tate Kahabka), an architecture and drawing team (Li Bai, Michael Chang, Sahar Farmand, Houston Harris and Yuhuan Ji), and an excavation team (Marina Bainbridge, Aksel Breistrand, Anna Brew, Robyn Cooper, Madeline Crawford, Sahar Farmand, Grace Gibson, Houston Harris, Joshua Johnson, Paul Oberheim, Kayla Peterson, Sam Ross, Elizabeth Wickersham, and Isaac Younglund).

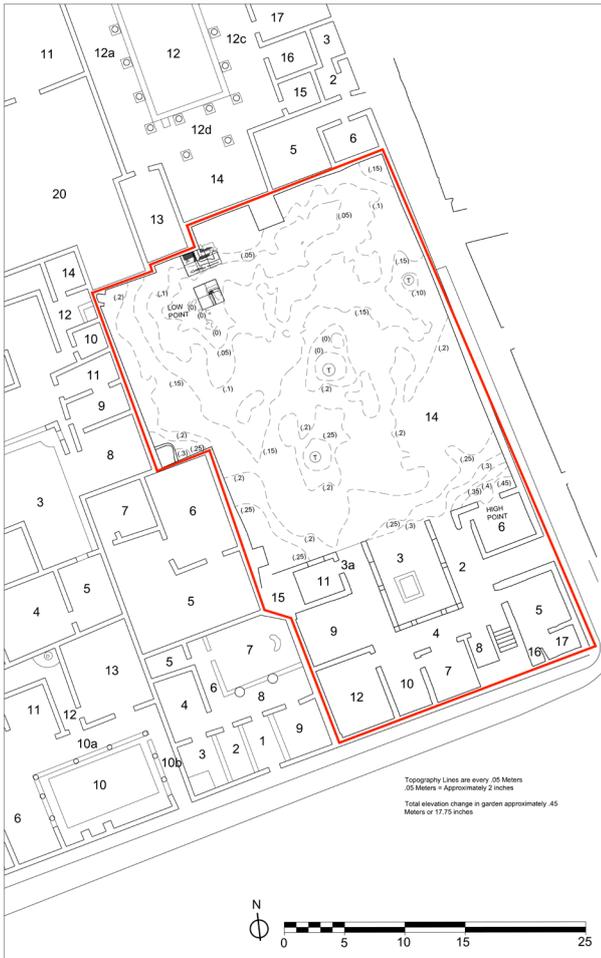


Fig. 2. Plan of the Casa della Regina Carolina (outlined in red) and adjacent dwellings in 79 CE. The large open space (Room 14) is the 79 CE garden area. The topographical map records the contours of the garden prior to excavation in 2018. The squares in the northwestern quadrant illustrate the locations of the test trenches excavated in 2018 (and subsequently subsumed into Trench A in 2019; see fig. 5). The CRC house plan and garden topography derive from LiDAR scanning conducted by Layton Echo Group LLC for the CRC Project. This new map is here shown embedded within an older insula map from the Pompeii Bibliography and Mapping Project, positioning the house within its local neighborhood.



Fig. 3. Standing architecture at the Casa della Regina Carolina (Pompeii VIII 3.14) in 2019: looking to the southwest, with the atrium in the foreground. (Photo: Pasquale Sorrentino; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompei; any further reproduction or duplication of this image, by any means, is strictly forbidden).

The Casa della Regina Carolina must have belonged to a wealthy family; its 1069 m² area puts it in the top 5% of houses at Pompeii for size, and its location near the *Forum* may suggest political and social significance². The house was also once impressively decorated, even though much of that decoration is lost today. Marble architectural cladding still appears *in situ* in Room 11, which also had an *opus sectile* floor (subsequently removed at an uncertain date³). The house also originally contained impressive wall paintings whose quality was celebrated in the 19th century, although these are now almost entirely faded⁴. The garden, also among the largest private gardens of the city, featured a marble-clad shrine and statuary as well as stuccoed walls⁵.

Through a multidisciplinary study of domestic activities at this house, we seek to place Roman archaeology in dialogue with recent theoretical and comparative research on households, dwelling, and daily practice, with a particular focus on the the relationship of the house to its garden. A long-standing focus on households and domestic life at Pompeii has provided crucial new perspectives on everyday dwelling practices in the Roman world, as well as families' and individuals' interactions with larger social and cultural structures⁶. Through-

² For the surface area of the house, see KASTENMEIER 2007: 147. The 5% figure is derived from comparative figures provided by Wallace-Hadrill (who does not reference the Casa della Regina Carolina specifically). In a sample of 234 houses at Pompeii, Wallace-Hadrill lists only 11 houses of a size equal to or greater than the Casa della Regina Carolina (WALLACE-HADRILL 1994: 49, 77).

³ BRAGANTINI 1998: 405 suggests the floor may actually have been removed already in antiquity.

⁴ BRAGANTINI 1998. The paintings had faded substantially by 1852 (GELL, GANDY 1852: 139) and were largely gone by 1871 (DYER 1871: 316).

⁵ SCHULZ 1841: 121; FIORELLI 1862: 372-374, 1864: 153-155; BRAGANTINI 1998.

⁶ A full bibliography of the vast literature on houses and households from Pompeii is beyond the scope of this paper, although some useful introductory sources include CLARKE 1991; WALLACE-HADRILL 1994; LAURENCE 1996; DOBBINS, FOSS 2007, and convenient collections of recent bibliography can be found in DOBBINS, FOSS 2007 (esp. the papers published in Part III) and GREGG 2015. ZANKER 1995 remains influential but must now be read in conjunction with more recent publications and current approaches.

out the discipline of archaeology more broadly, the study of ancient households continues to reshape the ways we understand lived experiences of social hierarchy, religion, gender, ethnicity, and identity⁷. A close look at Pompeian domestic assemblages reveals the power of the everyday: the importance of quotidian experiences, objects, and images in shaping people's lives⁸. The household emerges not simply as a bystander to history, but as a laboratory for social, political, economic, and religious change. Accordingly, at the Casa della Regina Carolina, we seek to investigate the ways in which domestic material culture actively shaped ancient experiences, values, and practices. Our excavations within the garden of this house are enabling us to expand definitions of "domestic material culture" to engage more fully with domestic gardens, including the materiality of garden construction, cultivation, and labor⁹. Archaeological research on Roman gardens can thus provide valuable new perspectives on the ways that people constructed, negotiated, and performed social identities within the household, as well as the ways that domestic material culture helped to shape those performances.

In order to better understand how daily life changed over time in Pompeian households, there is a pressing need for new stratigraphic excavations that practice comprehensive finds collection and make use of recent advances in microarchaeology, bioarchaeology, and recording methods. Substantial portions of Pompeii were excavated before the development of modern stratigraphic archaeology, and even after Fiorelli's institution of stratigraphic methodology in the 19th century, the primary focus of most excavations was on uncovering the city as it existed in 79 CE. Only in the past 20 years have systematic stratigraphic excavations of pre-Roman Pompeii become much more common¹⁰. Additionally, early excavators at Pompeii were less interested in quotidian objects of daily life that lacked perceived artistic value or metal content, so their discovery was rarely recorded¹¹. As a result, reconstruction of complete household assemblages is impossible for many houses at Pompeii, including the Casa della Regina Carolina. Existing contextual studies of Pompeian household assemblages therefore often focus on permanent immovable features, such as architecture, wall paintings, and mosaics, rather than "small finds"; and those studies most commonly focus on assemblages as they existed in 79 CE, rather than in earlier periods¹². Recent research by Berry, Allison, and others has demonstrated the potential of archival research to help partially reconstruct domestic assemblages¹³, but a fuller understanding of those assemblages still necessitates new stratigraphic excavations that collect and record all categories of finds. Also necessary is the treatment of environmental remains, or ecofacts, as a central component of domestic assemblages. In particular, the study of ancient botanical remains from domestic gardens should serve not

On finds and find assemblages from Pompeian houses, see ALLISON 2004, 2006; BERRY 1997, 2007; COOL 2016; BARRETT 2019. Other crucial resources include the book series *Häuser in Pompeji* (a series of monographs, published by the Deutsches Archäologisches Institut, compiling detailed documentation on a selection of elite houses from Pompeii) and *Pompeii: Pitture e mosaici* (with detailed photographic documentation of domestic decoration; CARRATELLI, BALDASSARRE 1990-1995). On Samnite Pompeii, see, inter alia, PESANDO 1997, 2010. For recent work associated with the Grande Progetto Pompei, see OSANNA 2019.

⁷ For explicitly multi-regional and comparative approaches to household archaeology, see within the past approximately 20 years ALLISON 1999; TRINGHAM 2001; WESTGATE, FISHER, WHITLEY 2007; PARKER, FOSTER 2012; MADELLA, KOVÁCS, BERZSÉNYI, BRIZ I GODINO 2013; FOGLE, NYMAN, BEAUDRY 2015; MÜLLER 2015b. On the concept of "dwelling," see INGOLD (2000: 172-188); Ingold's "dwelling perspective" treats buildings not as fixed and immovable containers for human activity, but as dynamic and socially embedded structures whose form and meaning are constituted through daily practice.

⁸ On everyday life, see DE CERTEAU 1984; LEFEBVRE 1987, 1991; HIGHMORE 2002; on the archaeology and materiality of everyday practices, see recently ROBIN 2002; MULLINS 2012; NAUM 2012; OVERHOLTZER, ROBIN 2015.

⁹ On the archaeology, material culture, and visual culture of Pompeian gardens, see JASHEMSKI 1979, 1993; CIARALLO, LIPPI 1993; GRIMALDI, FATIBENE, PISANO, RUSSO 2010; GRIMALDI, BUONDONNO, CARANNANTE, CIARDIELLO, COLUCCI, COTUGNO, DE LUCA, DI DOMENICO, FATIBENE, FUSCHINO, GIORLEO, LUONGO, PISANO, PICILLO, RUSSO, LOMORIELLO, TABACCHINI, TROJSI 2011; GRIMALDI 2014; JASHEMSKI, GLEASON, HARTSWICK, MALEK 2018; ANGIUSSOLA, IADANZA, OLIVITO 2020.

¹⁰ See, e.g., FULFORD, WALLACE-HADRILL 1999; GUZZO, GUIDOBALDI 2005, 2008; PESANDO 2010; WALLACE-HADRILL 2010: 417; COARELLI, PESANDO 2011; LAIDLAW, STELLA 2014; COOL 2016; ELLIS, DEVORE, in preparation; MCCALLUM, MANFREDI, ELLIS, in preparation. Cool's publication of artifacts from the Anglo-American Project at Pompeii provides a rare synthetic discussion of "small finds" from stratified contexts as evidence for changing practices at Pompeii (COOL 2016: esp. 277-287).

¹¹ E.g., ALLISON notes that "fragmentary glass and pottery were largely ignored prior to the 1930s" (2004: 32).

¹² Some important examples of such assemblage-oriented studies include the work of John Clarke on "decorative ensembles" (e.g., CLARKE 1991) and Bettina Bergmann on the relationships between painted images and larger built environments (e.g., BERGMANN 2002a, 2002b; see now also BARRETT 2017, 2019).

¹³ BERRY 1997; ALLISON 2004, 2006. The dataset from Allison's archival work has become an important resource for subsequent research on Pompeian household assemblages: see most recently BARRETT 2017, 2019.

simply to provide a plant list for the gardens, but to reconstruct daily practices of Mediterranean life outside as well as within the house¹⁴.

Furthermore, it is only recently that the development of new microarchaeological techniques is making it more feasible to study *activities and activity areas* within pre-79 CE levels at Pompeii. While the 79 CE eruption preserved many artifacts *in situ* (despite the well-documented limitations of the so-called “Pompeii premise”¹⁵), the artifacts found in earlier levels typically appear in secondary contexts such as leveling fill, making it difficult or outright impossible to associate them with activity areas. However, recent innovations in microarchaeology now offer new ways to connect domestic space with dwelling practices. Microstratigraphic and microdebris analysis, which can uncover tiny artifacts and ecofacts trodden into the ground, and residue analysis of ground surfaces can all provide evidence for ancient activities¹⁶. Additionally, recent advances in palynology have now made it more feasible to determine what plants were grown in Roman domestic gardens, by investigating not only soil pollen but also pollen grains preserved within wall plaster¹⁷. This project represents the first use of some of these techniques at Pompeii, and the first use of floor residue analysis in a Pompeian household context¹⁸.

Finally, the archaeological investigation of the garden of this Pompeian house is revealing information on the specific changes that occurred in this part of the *insula* after the earthquake of 62 CE. These findings provide significant insights into urban resilience in the aftermath of natural disasters, as the choices that people make when rebuilding can serve as evidence for their priorities. The changes that individual owners made, radically transforming the appearance of this section of the *insula*, provide a window onto the values of society as a whole.

The CRC Project, therefore, is working both at the micro-scale and the macro-scale: employing new technologies to better understand the finds from the Casa della Regina Carolina itself, and then putting those finds in dialogue with the vast comparative dataset produced by nearly three centuries of exploration at Pompeii. We aim to understand the Casa della Regina Carolina not just as a static, passive container for the people who lived there, but as a dynamic, interactive assemblage that actively shaped the lives of its inhabitants.

History of Work at the Site

The first published excavations at the Casa della Regina Carolina took place in the early 19th century¹⁹. However, the archaeologists removed only the volcanic deposits, leaving the floors and garden largely unexcavated below the 79 CE ground level. Furthermore, and partly because of the early date of the initial excavations, the house has seen very little systematic academic study. Aside from a few brief mentions in specialist publications, little detailed discussion of the house as a whole has appeared since the 19th century²⁰. Additionally, the house’s pre-79 CE phases remain entirely unstudied.

The house was largely exposed during the periods of Bourbon and Napoleonic rule and takes its name from Queen Caroline Bonaparte Murat; her patronage supported the excavation, as well as the production of an accurate plan of the house by the project architect, François Mazois²¹. Writing in 1824, Mazois refers to the house as partially excavated, and Gell and Gandy say that Queen Caroline “instituted an excavation” in this street in 1813²². However, it seems that house VIII.3.14 had already been partially investigated by the Bour-

¹⁴ On Jashemski’s retrieval of ecofact assemblages see MALEK 2013: 41-51, but Jashemski was able to carry out this work on only a limited number of gardens at Pompeii. For continued methodological and interpretive advances in the study of Pompeian gardens, see ROBINSON 2002; CIARALDI 2007; CIARALLO 2012.

¹⁵ See discussions in ALLISON 2004a: 21-26, 30-36; BERRY 2007: 292-294; DICKMANN 2015.

¹⁶ E.g., HODDER, CESSFORD 2004; TERRY, FERNÁNDEZ, PARNELL, INOMATA 2004; MATTHEWS 2005; ULLAH 2012; BANERJEA, BELL, MATTHEWS, BROWN 2015; multiple contributions in MÜLLER 2015a; and PECCI, DOMÍNGUEZ-BELLA, BUONINCONTRI, MIRIELLO, DE LUCA, DI PASQUALE, COTTICA, BERNAL-CASASOLA 2018.

¹⁷ LANGGUT, GADOT, PORAT, LIPSCHITS 2013; see further discussion below.

¹⁸ Residue analysis has previously been successfully applied at the Garum Shop at Pompeii (PECCI, DOMÍNGUEZ-BELLA, BUONINCONTRI, MIRIELLO, DE LUCA, DI PASQUALE, COTTICA, BERNAL-CASASOLA 2018). For previous uses of the palynological technique presented here, see discussion below.

¹⁹ E.g., SCHULZ 1841: 120-121; DYER 1870: 314-317; FIORELLI 1875: 326; see further bibliography in BASSANI 2008: 229.

²⁰ Later publications briefly describe the garden shrines (e.g., BOYCE 1937: 75, nos. 350, 351; BASSANI 2008: 228-229; GIACOBELLO 2008: 282) and garden (JASHEMSKI 1993: 211). The most recent synthetic discussion of the house, in *Pompeii: pitture e mosaici* (BRAGANTINI 1998), focuses primarily on the architecture and wall paintings.

²¹ DE CARO 2015.

²² GELL, GANDY 1852: 139; MAZOIS 1824: 49.

bons in the 18th century. Engravings and paintings from the first decade of the 19th century, depicting paintings in the central rooms, suggest that this portion of the house had indeed been exposed even before Queen Caroline's excavations²³. Two engravings in *Le Antichità di Ercolano esposte* reproduce a scene with Apollo, Chiron and Aesculapius, now at the Museo Archeologico Nazionale di Napoli (MANN), as well as a scene from the same room featuring nymphs crowning a seated female figure, and give the date of discovery as the 20th October 1763²⁴. It is apparent from Mazois' published plan and description of the site that the majority of the house had been exposed by the 1820s, but the garden still remained unexcavated²⁵.

The initial excavation of the garden took place over a decade later, in 1839. The Casa della Regina Carolina was one of multiple structures excavated at this time, as recorded in a preliminary field report in *Bullettino dell'Istituto di corrispondenza archeologica*²⁶. Within this publication, the discussion of the Casa della Regina Carolina occupies less than a page. However, the author, Heinrich Wilhelm Schulz, does make reference to the excavation of "un vasto giardino quadrato"; briefly describes several now-lost paintings of pygmies, centaurs, and Bacchantes; and notes that the garden contained two shrine structures, two marble herms, a fragmentary marble candelabrum, a statue of Diana, a marble head of Jupiter, and an unspecified quantity of bronze vessels²⁷. Further information from the 1839 excavations appears in the excavation daybooks published by Fiorelli in *Pompeianarum antiquitatum historia* (1862)²⁸.

No further formal campaigns of excavation are published, although conservation measures have been taken over the decades. The latest program of restoration work took place in 2016, when the European Union provided conservation funding to reopen Regio VIII to the public as part of the Grande Progetto Pompei.

Two of the co-directors, Barrett and Gleason, carried out initial reconnaissance at the Casa della Regina Carolina in summer 2016. That initial visit confirmed that while modern plantings had disturbed some areas of the garden, it was likely that much of the garden contained intact stratigraphy. In 2017, we applied for and received a three-year permit for excavation and survey in the garden. We therefore conducted an initial feasibility study with a small team in June-July 2018 and held a full-scale season in June-July 2019. We intend to hold an additional field season in 2021 or 2022²⁹, to be followed by a study season.

Goals

This project's overarching goal is to ask how domestic material culture shaped life at Pompeii. The original domestic assemblage from the house interior is now largely lost, and in its absence, the garden provides one of our best opportunities to investigate some of the *activities, practices, and performances* associated with this household – from elite activities of daily business, household management, and leisure (e.g., strolling, outdoor dining, viewing and discussing art, or admiring ornamental horticulture) to practical activities likely performed by enslaved laborers (e.g., garden construction, maintenance, and irrigation). Much recent art-historical and literary research interprets Roman gardens as liminal spaces that mediated between the household and the wider world outside³⁰. However, the excavation of actual garden space enables us to turn from *representation* (the image of the garden in literary and artistic sources) to *performance* and *experience*. What activities actually took place in this garden, and what can they tell us about Roman gardens as spaces for social, economic, and ritual performance?

Based on the evidence from our initial visit and feasibility study, some more specific questions concerning activities within the Casa della Regina Carolina garden include the following:

Domestic consumption, social activity, and elite display: Much evidence suggests that gardens of the Roman urban *domus* were, among other things, spaces in which to interact with invited guests through strolling,

²³ See BALDASSARRE 1995: 89-91 for paintings by F. Morelli.

²⁴ MANN inv. nos. 8846 and 9127; see BAYARDI, CARCANI 1779: 217-221, pl. 50.

²⁵ MAZOIS 1824: 49-50, pl. XII.

²⁶ SCHULZ 1841.

²⁷ SCHULZ 1841: 121.

²⁸ FIORELLI 1862: 372-374, 1864: 153-155.

²⁹ This final field season was originally scheduled for June-July 2020, but the COVID-19 pandemic necessitated postponement to 2021. Should conditions remain unsafe for excavation in 2021, then we intend to conduct this projected work in summer 2022.

³⁰ Gardens as liminal spaces: HALES 2003: 153-162; PAGÁN 2006: 20-21, 36; VON STACKELBERG 2009: 53, 122; MARZANO 2014: 198; BARRETT 2019; cf. GRIMAL 1969: 440-442.

reclining and dining outdoors, enjoying various forms of entertainment, and other activities³¹. The elegant shrines and stuccoed walls of the Casa della Regina Carolina garden suggest that the owners were interested in using this space for display and self-presentation. Additionally, Schulz's report from 1841 refers to bronze vessels, possibly attesting to the consumption of food in the garden³². We therefore seek to better identify the nature of the social and commensal activities that took place within this part of the house, and to ask what roles those activities might have played within the house owners' broader social, personal, and political strategies.

Domestic production (horticulture and cultivation): In addition to their roles in social performance, gardens could also serve as spaces for practical economic activity. The production-oriented and display-oriented functions of elite gardens were often simultaneous, rather than mutually exclusive³³. Roman gardens frequently served as urban food sources, generating produce for the household's own use and sometimes also for the market³⁴. At the Casa della Regina Carolina, the presence of a water basin in the southwest corner and the large expanse of open ground suggest that this garden could have supported economically-oriented activities³⁵. Accordingly, we ask whether domestic production took place within this garden; what forms such production, if present, may have taken; and how any such economically productive activities may have intersected with the garden's display and social functions.

Domestic labor and non-elite experience: Evidence suggests that enslaved workers and freedmen were typically responsible for much of the actual work of creating and maintaining elite gardens such as this one³⁶. Accordingly, the excavation of such a space provides opportunities to investigate the experiences not only of elites (such as the house owners and their guests), but also non-elites, whose perspectives are often much harder to access historically or archaeologically³⁷. We therefore ask what forms of labor were involved in the creation and maintenance of this space, and what the evidence of that labor can tell us about social relations and non-elite experiences in Pompeii.

Ritual performance: The garden also furnishes evidence for ritual activity, including two aedicular shrines, an altar, and two (now-lost) statues of divinities identified as Diana and Jupiter³⁸. The shrines indicate that the garden was a site for interaction not only between householders and guests, but also between humans and gods. Shrines are common in Roman gardens, and recent finds may also attest to the performance of offering rituals; Mark Robinson has interpreted burnt deposits in a Pompeian domestic garden as the remains of ritual sacrifice³⁹. Another of our goals, therefore, is to identify any surviving material evidence for ritual practices and offerings connected with the shrines in the Casa della Regina Carolina garden.

Urban development: A final research goal is to document an important but still poorly understood house at Pompeii and position that house within its local, regional, and imperial context. While understanding the phasing of a site is always a goal of stratigraphic excavation, the importance of this goal was starkly underlined during the feasibility study in 2018, which immediately revealed that the garden was built over the remains of an earlier house. The excavation of this garden therefore promises to provide important new evidence on the history of this neighborhood, which is one of the oldest at Pompeii, and centrally located near the Forum.

In pursuing these questions at the Casa della Regina Carolina, we aim to shed new light on the interrelationships between social, economic, and ritual activities within domestic contexts at Pompeii; the embeddedness of seemingly "special" activities (e.g., religious rituals, or elite socializing) within the daily life of the

³¹ On the uses of Roman gardens, see (*inter alia*) GRIMAL 1969; JASHEMSKI 1979, 1993; VON STACKELBERG 2009; JASHEMSKI, GLEASON, HARTSWICK, MALEK 2018; ANGISSOLA, IADANZA, OLIVITA 2020. On social display and ornamental horticulture, see JASHEMSKI 1979-1993; LANDGREN 2013; MARZANO 2014. On viewing and discussing art in gardens, as well as outdoor dining, see BARRETT 2017, 2019.

³² SCHULZ 1841: 121.

³³ As in, e.g., the Casa dell'Efebo (Pompeii, I.7.10-12): see BARRETT 2017: 300; 2019: 150.

³⁴ JASHEMSKI 1979: 167-199, 233-243, 267-288; JASHEMSKI 2018; VON STACKELBERG 2009: 10-16; BARRETT 2019: 148-150, 171, 277.

³⁵ See BARRETT 2017: 300 for a discussion of a similar water basin in the garden of the Casa dell'Efebo, Pompeii.

³⁶ LANDGREN 2013: 80-81; GLEASON, PALMER 2018: 376; TALLY-SCHUMACHER 2020.

³⁷ On the material culture of Roman slavery, see GEORGE 2013 (on the Roman world generally), 2015 (on Pompeii in particular); BIELFELDT 2018. On freedmen, see PETERSEN 2011 (providing an important corrective to earlier orthodoxies about how freedman status might, or might not, manifest in material culture).

³⁸ For sources, see discussion above, "History of Work at the Site".

³⁹ Garden shrines: GRIMAL 1969: 42-46; JASHEMSKI 1979: 115-140; GIACOBELLO 2008: 252-287. Offering rituals in gardens: ROBINSON 2002; PETERSEN 2012: 328-329, 332.

household; the ways domestic space shaped, and was shaped by, the lived experience of non-elites as well as elites; and the urban history of Pompeii. Furthermore, the excellent preservation conditions at Pompeii have produced fine-grained comparative data from the rest of the site. Such comparanda enable a multi-scalar perspective on household behavior: how did activities at this house relate to the surrounding neighborhood, the larger Pompeian community, the broader Campanian region, and the Roman empire?

Methodology

Survey, Mapping, and Below-Ground Sensing

We have completed a full LiDAR scan of the house and garden (begun in 2018 and finished in 2019) in order to create a 3D digital survey of the house and to document the topographic surface of the garden (fig. 2). The terrestrial-based remote scanning units (RSU) used were a FARO Focus S350 3-Dimensional Laser Scanner and a FARO Scanner Freestyle X. These data are currently being processed at the University of Wisconsin at Milwaukee School of Architecture to create 3D virtual models, as well as drawing tools for future excavation and architectural analysis.

In both 2018 and 2019, we also used a Total Station to map the extent and location of standing architecture in the garden area, create a topographical map of the garden (coordinated with the LIDAR scan), and plot a site grid.

We have additionally completed a Ground-Penetrating Radar (GPR) survey of the garden (fig. 4). The surveys in 2018 were carried out using a Sensors and Software PulseEkko Pro system equipped with 100Mhz and 200Mhz antennae. The team explored the garden from 0.5m–6.0m in depth, using a set of parallel transects to determine the extent and character of buried cultural deposits, soil surfaces, and root cavities. Preliminary test profiles indicated that the 200MHz antenna was more effective at imaging the shallow depths of interest. Subsequent analyses of the PulseEkko data confirmed that while this frequency was very effective at penetrating to depths as large as 2m, the resolution of features in the upper 0.5m was poor. Therefore, based on the findings in the 2018 test trenches, the 2019 survey deployed a higher frequency system, the Sensors and Software Noggin⁴⁰, to focus on a shallower range of 0.0 to 1.0m, using higher frequencies (250 MHz, 1000 MHz) and denser coverage (line spacing of 0.25m) with data collected in overlapping, mutually perpendicular grids. The geophysics team processed the data in the fall of 2019 at the Cornell Department of Earth and Atmospheric Sciences. The results indicate a number of anomalies, which future excavation in 2021 will investigate, along with a detailed recording of the root systems of the site's extensive vegetation.

Excavation

The first field season, in 2018, saw the excavation of nine 1x1m square units. This initial season confirmed the presence of intact stratigraphy; provided some initial indications of the preservation of root cavities and the use of ceramic planting pots in the first century CE garden; and identified earlier Samnite or Republican domestic structures beneath the 79 CE stratum.

In summer 2019, we excavated five 5x5m units in locations that were either (1) adjacent to the Hellenistic-period finds uncovered in 2018 or (2) identified in GPR survey as containing potentially significant anomalies (see fig. 5 for trench locations). In 2019, the 2018 units (fig. 2) were subsumed within one of these larger 5x5m areas, Trench A (fig. 5).

The CRC Project strictly follows modern stratigraphic excavation techniques. Field methods emphasize careful recording of stratigraphy, complete cataloguing of finds by stratum, and point proveniencing finds from secure contexts with Total Station. Excavated soils are processed using flotation⁴¹ and dry sieving in order to

⁴⁰ We would like to thank prof. Elena Pettinelli of the Università degli Studi Roma Tre for use of this equipment.

⁴¹ In 2018-2019, we used bucket flotation by necessity because of problems with access to running water; however, we have a flotation tank and hope to be able to use it in our next field season.

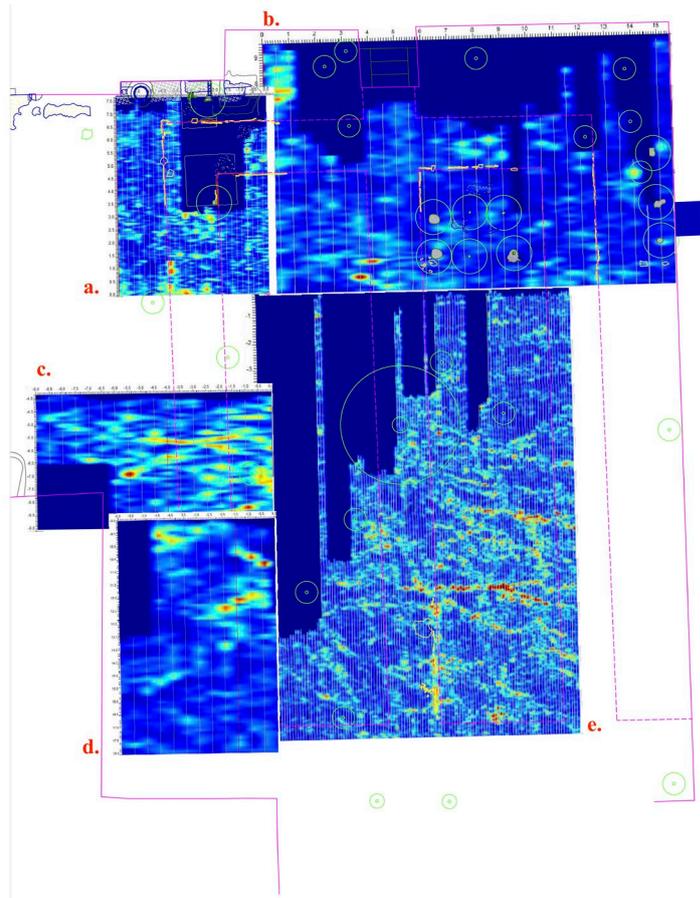


Fig. 4. Selected 2019 GPR results overlaid on a Total Station-generated plan of the CRC garden, showing the relationship of GPR anomalies to standing architecture, excavated features, and vegetation. Pink lines show the location of the garden perimeter walls and the Phase 5 walkways, while green circles show the locations of ancient and modern plantings: both ancient root cavities and modern (21st-century) trees. The image is a composite of depth slices at the following depths and frequencies: (a) 0.000-0.025m, 1000 MHz; (b) 0.600-0.700m, 1000 MHz; (c) 0.300-0.400m, 250 MHz; (d) 0.300-0.400m, 250 MHz; (e) 0.300-0.400m, 250 MHz.

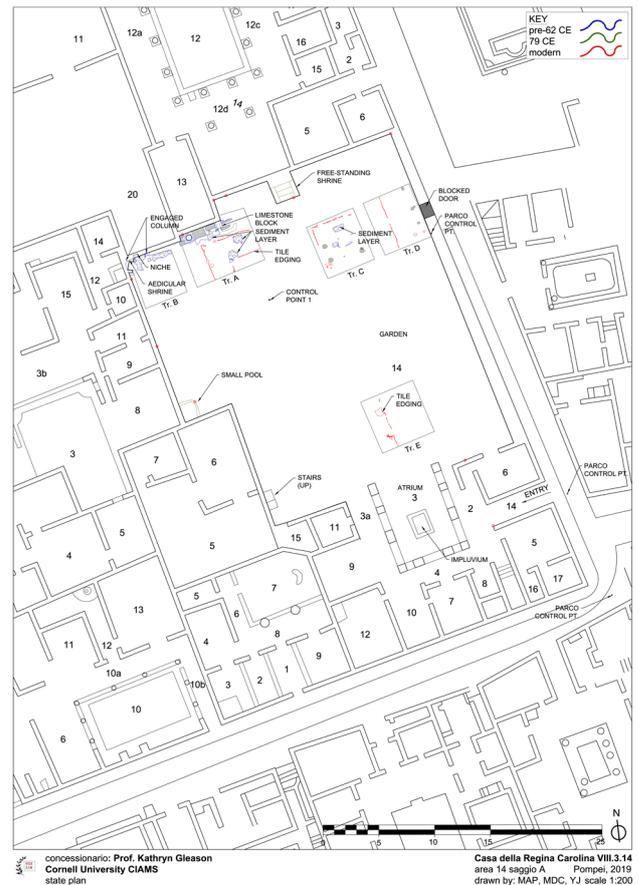


Fig. 5. Plan of the Casa della Regina Carolina garden, showing the locations of the 2019 excavation trenches (A–E) and the major features excavated in 2018–2019. The smaller test trenches opened in 2018 (fig. 2) were located within the area of Trench A. Features predating the 62 CE earthquake (Phases 1, 2) are blue; features from the last phase of ancient activity (Phase 3) are green; and features associated with early modern activities (Phases 4, 5) are red. The garden plan, derived from the CRC Total Station survey, is shown embedded within an older house and insula map from the Parco Archeologico di Pompei. (CRC garden plan drawn by Michele Palmer, Michael Chang, and Yuhuan Ji).

recover the smallest artifacts, bones, and plant matter. All sediments are sieved with 5mm mesh box screens. Soil samples are collected from all features, floors, and closed contexts for flotation and collection of botanical, faunal, and microartifactual remains. Buried root cavities are excavated, tested, documented, and cast, so that we can use them to reconstruct ancient plantings.

Documentation

Our documentation practices are “born digital.” In 2018-2019, we used iPads for initial data entry, entering all catalogued data and photographs daily into a FileMaker database. An architecture and drafting team draws all floor deposits, sections, and selected artifacts, using AutoCAD to render final plans, sections, and architectural reconstructions. This documentation enables us to precisely situate our finds within their original contexts. Finally, we are entering all excavation data into a GIS database. The resulting coordination of all strati-

graphic, artifactual, paleobotanical, faunal, geological, and spatial data facilitates the identification of activity areas and changing patterns of site use.

Micromorphology, Microstratigraphy, and Residue Analysis

In 2019, we took 13 sediment samples for microstratigraphic analysis and residue analysis of ancient surfaces and obtained permission for their export and study⁴². These samples are currently undergoing analysis at the Wiener Lab in Athens⁴³. Microstratigraphic and micromorphological analysis of trench baulks will investigate the effects of ancient human activities (e.g., dumping, trampling, collapse, or abandonment) on stratum formation⁴⁴. Residue analysis of excavated walkways and garden surfaces may help identify ancient activity areas.

Palynology

We are analyzing samples of wall plaster for preserved pollen, using a recent technique developed by project palynologist dr. Dafna Langgut, in order to help identify what plants grew in the garden by recovering plaster trapped in the plaster of the surrounding walls. The identification of available plant resources within a domestic garden can shed light on the ecology of the garden, the activities that took place there, and the economic and social circumstances of the house's occupants. As these analyses are still ongoing, their results will be reported in subsequent publications. However, since this method for extracting pollen from wall plaster is relatively new and has promise for wider application, we take this opportunity to present that method here and to note that we have successfully recovered ancient pollen from the samples. The Casa della Regina Carolina is one of only a few ancient garden sites, and so far the only garden at Pompeii, where this method has so far been applied⁴⁵. Our project may thus serve as a pilot study for wider application of this promising new technique at archaeological sites throughout the world.

Since pollen grains are the "fingerprints" of many plant taxa, they are extremely helpful in reconstructing ancient vegetation⁴⁶. Pollen cell walls are made of sporopollenin, the most durable natural organic substance, and can survive as fossils for hundreds of thousands of years. Such fossils are archaeologically attested in garden soil and plaster⁴⁷.

However, even though numerous gardens around the Roman empire have been excavated, it is often difficult – if not impossible – to use soil pollen to identify their exact botanical components. While soil pollen can provide important information on newly excavated gardens⁴⁸, the recovery of pollen from the soil is most successful when conducted soon after the garden is exposed. At Pompeii, ancient pollen is best preserved in soil still covered by a protective layer of lapilli from the 79 CE eruption; sites that have been exposed for a longer period of time are less likely to produce much palynological evidence⁴⁹. The Casa della Regina Carolina garden has been stripped of its lapilli cover for almost two centuries now, and its surface has been replanted since excavation, so the potential for recovering ancient pollen from the soil is limited.

⁴² Samples exported with permission of the Parco Archeologico di Pompei (protocollo n. 8329, dated 11 July 2019).

⁴³ We are grateful to dr. Panagiotis Karkanis, at the American School of Classical Studies in Athens, for making the facilities of the Malcolm H. Wiener Laboratory available for micromorphological and microstratigraphic analysis by our project micromorphologist Laura Magno. Thin sections for microstratigraphy were initially processed by the Sbrana Lab at Piombino.

⁴⁴ See, e.g., MATTHEWS 2005; for a call to apply these techniques more widely in ancient Mediterranean and Near Eastern household archaeology, see MÜLLER 2015b.

⁴⁵ Other gardens where this technique has been applied include sites at Ramat Rahel, Jericho, Caesarea, and, within the Vesuvian region, the Great Peristyle of the Villa Arianna: see LANGGUT, GLEASON, BURRELL 2015; LANGGUT, GLEASON in press; LANGGUT, GLEASON, TALLY-SCHUMACHER in preparation.

⁴⁶ BRYANT 1989; FAEGRI, IVERSEN 1989.

⁴⁷ *In garden soil*: e.g., LIPPI 2000; DIMBLEBY 2002; GRÜGER 2002, 2013; ERMOLLI, MESSEGER 2014; LANGGUT, GLEASON in press. *In plaster*: LANGGUT, GADOT, PORAT, LIPSCHITS 2013; LANGGUT, GLEASON, BURRELL 2015.

⁴⁸ For analyses of soil pollen in the Vesuvian region, see, e.g., CIARALLO, LIPPI 1993; LIPPI 2000; ERMOLLI, MESSEGER 2014. Pollen has also been collected successfully from Pompeian roof tiles (LIPPI, BELLINI 2006).

⁴⁹ See most recently the comments of MURPHY 2015: 32.

Langgut's new method for extracting fossil pollen grains from ancient plaster⁵⁰, rather than soil, is exciting because it opens up a new path to recovering the plant record of such long-exposed or even destroyed gardens. Since most of the gardens known at Pompeii fall into one or both of these categories, this technique has the potential to provide much new information about the vegetation and ecology of Pompeii.

A longstanding problem with the use of palynology in gardens is the relative abundance of windborne pollen in soil samples. A key consideration, when analyzing palynological data, is whether the pollen comes from wind-pollinated or insect-pollinated species. Pollen from wind-pollinated plants might have blown in from a source some distance away from the garden, so it is less useful for determining the plants of the garden itself⁵¹. However, pollen from insect-pollinated plants typically does not travel far from its source, so these plants are more likely to have actually grown in the garden where their pollen was found. Another strong indicator of local origins is the presence of clumps of pollen (that is, several pollen grains attached to each other) embedded in some of our plaster samples. Even for wind-pollinated species, large clumps must have fallen close to the plant that originated them. For example, our preliminary results indicate the presence of *Vitis* (grape), which is insect-pollinated, as well as many clumps from the wind-pollinated tree *Olea* (olive), within the palynological spectra recovered from the plaster samples. These results may suggest that grapes and olives were cultivated within the garden of the Casa della Regina Carolina.

The garden at the Casa della Regina Carolina was surrounded by walls apparently once decorated with painted plaster, although only small plastered areas remain *in situ* and none of those have surviving pigment. This decorative plaster was laid in successive rough and fine layers on masonry walls. If any of the garden-facing plaster layers were applied when the garden was blooming, the wet surface of the plaster could have trapped airborne pollen grains. Analyzing different layers of plaster from the same location enhances the chances of identifying garden flora. Additionally, if water from the garden (e.g., water channels, pools, or gutters) were used to mix the plaster, pollen would have become incorporated into the subsurface plaster layer⁵². Careful attention must be given, however, to the interpretation of water sources.

In 2019, we took ten samples of plaster from walls and other structures in the Casa della Regina Carolina garden⁵³. Dr. Langgut is currently studying these samples at the Laboratory for Archaeobotany and Ancient Environments, Tel Aviv University. We also took several soil samples from areas identified as ancient garden soil, and these will be subjected to analysis at the Wiener Lab in Athens.

The extraction and identification of pollen follows the technique published by Langgut, Gadot, Porat, and Lipschits⁵⁴. First, each sample surface is cleaned with compressed air to prevent contamination by recent pollen. Then the sample (usually less than 10 mm wide) is divided into two sub-samples: the outer part (<0.3 mm), which is peeled away with a sharp razor blade, and the second sub-sample, including only the inner filling material. In order to calculate pollen concentrations, one *Lycopodium* spore tablet is added to each sample⁵⁵. Next, the samples are treated with 10% HCl to remove the carbonates, and then a density separation is carried out using a ZnBr₂ solution (with a specific gravity of 1.95) together with sieving (150 µm mesh screen). Then the samples are subjected to an acetolysis process. Later, unstained residues are homogenized and mounted onto microscopic slides using glycerine. A light microscope with magnifications of 200x, 400x and 1,000x (immersion oil) is used to identify pollen grains. All extracted pollen grains are counted and identified, using a comparative reference collection (Steinhardt Natural History Museum) and pollen atlases⁵⁶.

Preliminary results from these analyses have been highly promising, with multiple wall samples containing significant quantities of ancient pollen from many different plant taxa. Further data collection in our next field season will help contextualize these results, enabling us to take additional samples from other locations in order to serve as a control on the garden samples. A full publication of our results will follow those analyses.

⁵⁰ LANGGUT, GADOT, PORAT, LIPSCHITS 2013.

⁵¹ GRÜGER 2013: 375-381.

⁵² LANGGUT, GADOT, PORAT, LIPSCHITS 2013.

⁵³ Exported with permission of the Parco Archeologico di Pompei (protocollo n. 8315, dated 11 July 2019).

⁵⁴ LANGGUT, GADOT, PORAT, LIPSCHITS 2013.

⁵⁵ BRYANT, HOLLOWAY 1983; FAEGRI, IVERSEN 1989.

⁵⁶ E.g., BEUG 2004; REILLE 1995, 1998, 1999.

Results from 2018 and 2019 Field Seasons

Immediately below the surface *humus*, we found the remains of the 79 CE garden surface (see fig. 5 for major features from all excavated phases). Although the upper surface of the ancient garden has been heavily disturbed by modern activities since its initial exposure, many of its major features are still preserved. Beneath this garden were earlier structures, probably domestic. At least two phases of earlier building are detectable beneath the 79 CE garden: an initial construction phase in the second or first century BCE (Phase 1), and a subsequent phase of rebuilding and renovation, possibly Augustan in date (Phase 2). Between these earlier structures and the later garden is a layer of earlier first century CE fill. At some point in the first century CE, people covered the remains of the earlier structures with fill and constructed the garden. Since the latest datable material in the fill is Neronian (54-68 CE), this destruction and rebuilding may relate to the earthquake that devastated Pompeii in 62 CE. The owners of the first-century Casa della Regina Carolina may have used this rebuilding as an opportunity to acquire an adjacent house plot and convert it into a large garden (Phase 3).

Following initial excavations in the 19th century (Phase 4), the garden was replanted for the benefit of tourists (Phase 5). Our excavations have allowed us to reconstruct the layout not only of the ancient garden but also of this early modern garden, whose design may in fact preserve some clues about its ancient predecessor as well.

Phase 1 (2nd/1st Century BCE Peristyle House)

The structures of Phase 1 include a Hellenistic (Samnite or Republican period) courtyard and adjacent interior rooms (fig. 6). Our excavations have uncovered part of the northern wall of the courtyard, which featured two engaged masonry columns on a stylobate (fig. 7). The columns identify the courtyard as a peristyle or

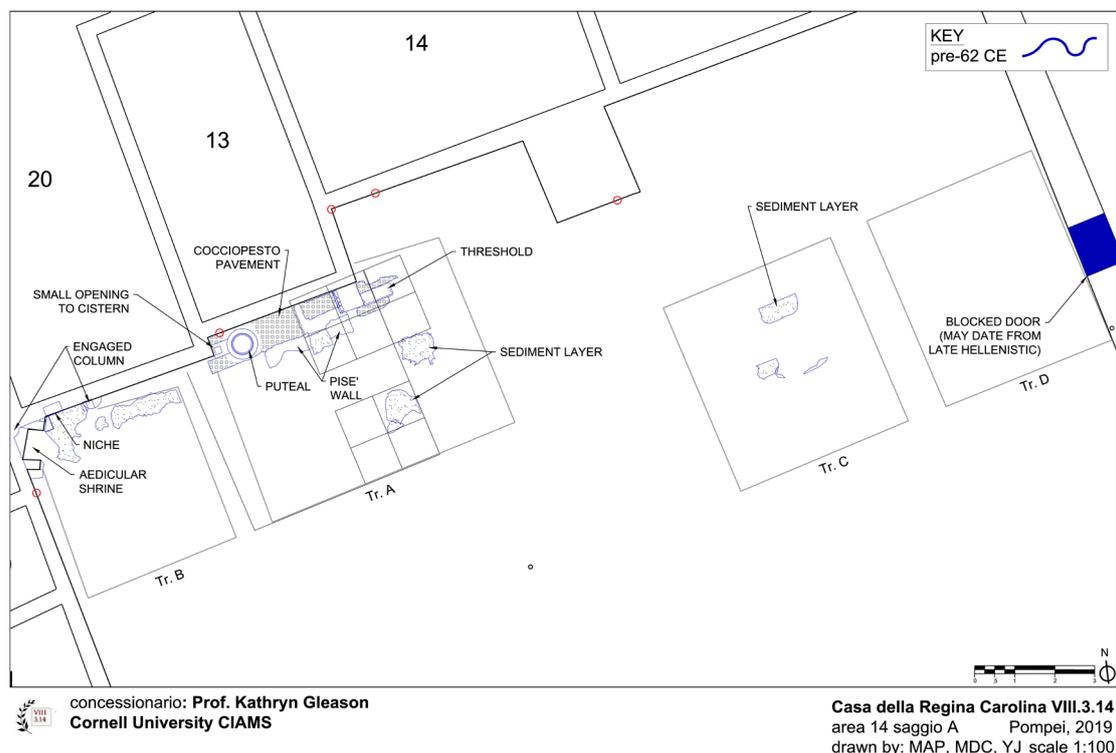


Fig. 6. Plan of the northern half of the Casa della Regina Carolina garden, showing excavated architecture and features associated with Phases 1-2. The door at the east of Trench D was blocked and partially buried in Phase 3, but was likely functional in Phases 1 and 2. The garden plan, derived from the CRC Total Station survey, is shown embedded within an older house and insula map from the Parco Archeologico di Pompei. (CRC garden plan drawn by Michele Palmer, Michael Chang, and Yuhai Ji).

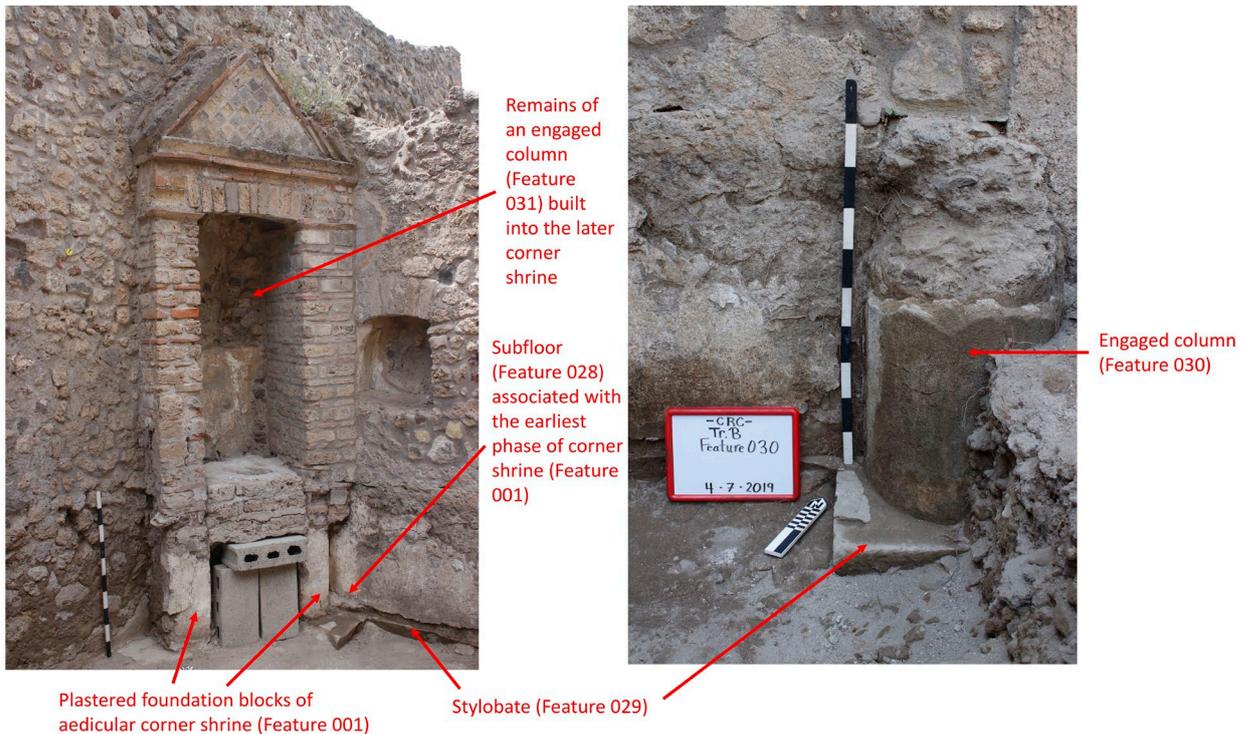


Fig. 7. Architectural features of Phases 1 and 2 in the northeast corner of the garden. Figure 7a shows the Phase 1 stylobate; Phase 1 engaged column embedded within the later Phase 3 aedicular shrine; Phase 2 foundation blocks underneath the Phase 3 shrine, testifying to the existence of an earlier version of that shrine; and Phase 2 subfloor associated with the foundation blocks. Figure 7b shows the eastern extension of the Phase 1 stylobate and the remains of a second engaged column from Phase 1. (Photo credits: Danielle Vander Horst; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompeii; any further reproduction or duplication of these images, by any means, is strictly forbidden).

partial peristyle. The courtyard also contained a basalt cistern and puteal, and its portico was paved with *opus signinum* floors stylistically datable to the second or first century BCE (fig. 8). A basalt threshold separates this outdoor space from an interior room, also paved with *opus signinum* (fig. 9).

Possibly also to be associated with Phase 1 are an *opus signinum* floor surface in the northeast quadrant of the garden (fig. 10) and a blocked door in the eastern perimeter wall of the garden (fig. 11). The floor surface is poorly preserved as a result of later disturbance (probably associated with the first-century constructions that transformed a former interior space into the garden that existed in 79 CE). If the floor and blocked door in the northeastern quadrant are indeed contemporary with the courtyard features above, then we may tentatively reconstruct an earlier Hellenistic house that was oriented east-west, in contrast to the north-south orientation of the later Casa della Regina Carolina. The blocked door could be the original entrance of this house, and the poorly preserved floor in the northeast quadrant might belong to an *atrium* or other interior space. However, further excavation will be necessary to clarify these relationships.

Possibly also to be associated with this earliest period of activity are several deposits of hard-packed clay, found within the fill layer, which may represent the degraded remains of fallen *pisé* walls⁵⁷. If these deposits do come from the collapse of *pisé* walls, then we might hypothesize that those walls would have predated, and been toppled by, the 62 CE earthquake. However, we have not yet found the bases or any other remains of such walls *in situ*. Accordingly, we cannot say for sure whether they would have been contemporary with the First Style floors and associated features, or whether they would have come from a later pre-earthquake phase. Additionally, because of their extremely poor state of preservation, the interpretation of these features as remains of collapsed *pisé* walls must currently remain tentative.

⁵⁷ On *pisé* construction at Samnite Pompeii, see PESANDO, GUIDOBALDI 2018: 466; for some recently excavated examples, see PALLECCHI 2018: 3; PALLECCHI, SANTORO 2019.



Fig. 8. Phase 1 basalt puteal, with Phase 3 masonry extension to raise the cistern access point up to the height of the Phase 3 garden surface, and Phase 1 opus signinum floor. Figure 8a shows the opus signinum floor in the foreground, with the puteal (largely covered by its Phase 3 extension) in the background. Figure 8b looks down from above at the masonry extension atop the puteal; the basalt interior of the puteal is visible underneath this later extension. (Photo credits: Danielle Vander Horst; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompei; any further reproduction or duplication of these images, by any means, is strictly forbidden).



Fig. 9. Basalt threshold and portions of two First Style opus signinum pavements, following excavation in 2018. (Photo credit: Kaja Tally-Schumacher; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompei; any further reproduction or duplication of these images, by any means, is strictly forbidden).



Fig. 10. The edge of an opus signinum floor, probably to be associated with Phase 1, is just barely visible in the wall of a later, probably Phase 3, cess pit. The later cess pit has cut through the Hellenistic-period floor. (Photo credit: Danielle Vander Horst; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompei; any further reproduction or duplication of these images, by any means, is strictly forbidden).

The Hellenistic peristyle courtyard appears to have extended further to the west than did the 79 CE garden. One of the engaged columns is built into a shrine in the corner of the 79 CE garden (fig. 7a), indicating that the corner shrine – as well as the western perimeter wall of the 79 CE garden, which forms one of the edges of that corner shrine – must belong to a later phase. The footprint of the Hellenistic structure was thus significantly different from that of the Casa della Regina Carolina as we know it today. This alteration further suggests that the layout of the entire VIII.3 *insula* may have been significantly different in the Hellenistic period.



Fig. 11. Two views of the blocked door in the eastern perimeter wall of the garden. Figure 11a shows the lower portion of the blocked door within the larger context of the wall and the trench, following the excavation of the Phase 3 root cavities. Figure 11b is a closeup of the blocked door as it appeared at the end of the 2019 season. Further excavation in 2020 will be necessary to reach the bottom of the door. (Photo credits: Danielle Vander Horst; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompeii; any further reproduction or duplication of these images, by any means, is strictly forbidden).

Phase 2 (Renovations Pre-62 CE)

Phase 2 includes a number of subsequent constructions and alterations before the 62 CE earthquake. These features predate the use of the garden as it existed in 79 CE (as indicated by their stratigraphic relationship to the rubble fill layer), but postdate the earliest constructions described above. It remains unclear how many of these alterations are contemporary with each other, or whether they represent multiple sub-phases of destruction and construction activity. They include (1) the construction of the north-south perimeter wall of the garden; (2) the construction or rebuilding of a shrine in the corner of the garden; (3) the installation of a floor abutting that shrine; (4) the partial rebuilding of the east-west wall between the columns, and construction of the niche within it; (5) the patching of one of the *opus signinum* floors; (6) a cut into the edge of that same *opus signinum* floor; and (7) the possible installation of a planted space (as evidenced by a compacted surface that parallels examples of garden soil elsewhere at Pompeii), which partly fills the cut in the *opus signinum* floor and thus must be subsequent to that cut. Possibly, but not definitely, attributable to Phase 2 is the rectangular cut into the stylobate. However, this cut might alternatively be later in date, and associated with the post-earthquake renovations. Also later in date than the First Style features are a number of Third Style fresco fragments (fig. 12), stuccoes, and pieces of flooring, although these come from a leveling fill and cannot be securely associated with the architecture in this location.

Many questions about phasing thus persist. However, the Phase 2 developments clearly testify to a major renovation event: a subdivision of the large Phase 1 house. The construction of the north-south perimeter wall dramatically truncated the earlier Hellenistic courtyard, leaving only two columns of what must once have been a much longer engaged colonnade. The motivations for the cuts in the stylobate and *opus signinum* floor currently remain obscure, although further excavation may help clarify this aspect of the renovations.



Fig. 12. Fragment of painted plaster from a Third Style fresco, depicting what appears to be part of a candelabrum on a dark ground. The fragment comes from a stratum of architectural debris that served as a leveling fill beneath the Phase 3 garden. (Photo credit: Kaja Tally-Schumacher; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompeii; any further reproduction or duplication of these images, by any means, is strictly forbidden).

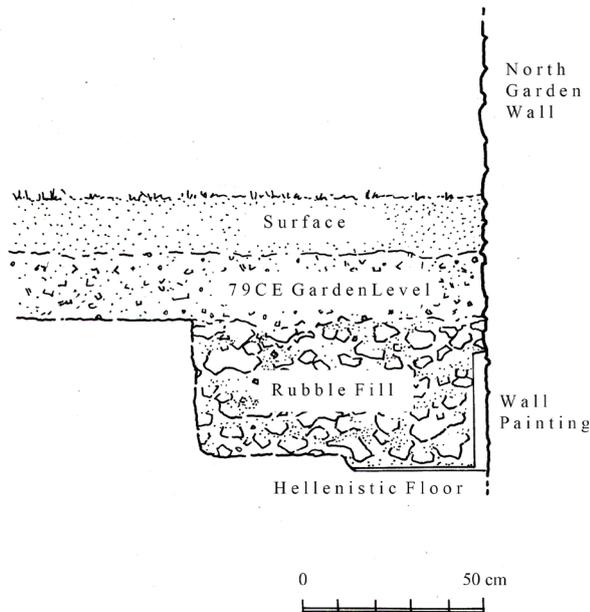


Fig. 13. Section drawing of one of the 2018 excavation units (balk wall), showing several strata: surface soil, 79 CE garden soil, first century CE rubble fill, and First Style floor. Drawing prepared by K. Gleason.



Fig. 14. Visible stratigraphy in the western baulks of two excavation units from the 2018 season (from top to bottom): surface soil, 79 CE garden soil, rubble fill containing datable material of the Augustan through Neronian periods, and First Style *opus signinum* floor. The rubble fill has been removed in the northern, but not the southern, of the two units. Both of these 2018 excavation units were subsequently incorporated into the 2019 Trench A (see fig. 5). (Photo credit: Kaja Tally-Schumacher; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompeii; any further reproduction or duplication of these images, by any means, is strictly forbidden).

Finds in the post-62 CE rubble fill may perhaps provide information about the decoration of the Phase 2 house. Much of this layer may consist of the remains of the destroyed house. The fragments of frescoed walls, stuccoes, and *opus signinum*-paved flooring may thus come from the Phase 2 house. If so, the quantity of Third Style decoration may suggest an Augustan date for the Phase 2 renovations. However, this suggestion must remain tentative for now. We cannot be certain that all of the fill originated on site. Also, as discussed above, we cannot rule out the possibility of subphases within Phase 2, so some of the renovations might in fact have different dates.

The chronology of Phase 2 thus requires further investigation, as does the phasing of the garden perimeter walls. The westernmost segment of the garden's northern perimeter wall is contemporary with the Hellenistic courtyard, but to the east of that oldest preserved section is a subsequent "jog" in the wall that overlies many of the Phase 1 features. This jog must therefore postdate Phase 1. Further excavation and architectural survey will be necessary in order to clarify the complex phasing of the walls.

Phase 3 (Roman Garden, 62-79 CE)

Phase 3 appears to represent a major renovation following the 62 CE earthquake that devastated much of Pompeii. A sizeable rubble layer, up to 80 cm deep in some areas, lies underneath the garden belonging to this final phase (figs. 13, 14). This fill layer also includes destruction debris (stone blocks and possibly also the remains of degraded *pisé* walls), much of which likely derives from collapsed walls and other structural elements from the Phase 1-2 house, as well as numerous decorative elements from domestic structures (fragments of frescoes, *opus signinum* flooring, and stuccoes) and objects of domestic material culture (e.g., household ceramics). The latest datable objects in this stratum are Neronian (fig. 15), suggesting a connection with the 62 CE earthquake. This fill layer thus probably contains a mixture of destruction debris used as leveling fill. The Casa della Regina Carolina is located in one of the most central and densely occupied areas of Pompeii, and when standing architecture in this part of the city was destroyed or demolished, it would have been easier



Fig. 15. Selected ceramics from the leveling fill of the Phase 3 garden. Figure 15a shows the neck and handle of a Dressel 2-4 amphora of Campanian production, dated by the ceramicist Dr. Vincenzo Castaldo to the Neronian period. Figure 15b shows the neck, handle and part of the shoulder of a Cretan 3 amphora, datable to the Roman imperial period. (Photo credits: Vincenzo Castaldo; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompei; any further reproduction or duplication of these images, by any means, is strictly forbidden).

for the inhabitants to raise the ground level and build on top of the earlier remains than it would have been to remove the rubble from the site. Large architectural remains (e.g., collapsed walls) were thus left to lie more or less where they fell. Additional material, potentially including some of the smaller and more portable finds in this stratum, would then have been brought from elsewhere in order to serve as leveling fill for new construction on top of the older collapse. The creators of Roman gardens often used different types of leveling fill, not to create a truly level surface, but to create a planar surface that could then be easily shaped to drain well, distribute irrigation water effectively, and accommodate human activities⁵⁸.

On top of this leveling fill is a garden space belonging to a house completely different in plan from the pre-earthquake dwelling (fig. 16). It was this garden space and this house – the “Casa della Regina Carolina” as we know it today – that were in use at

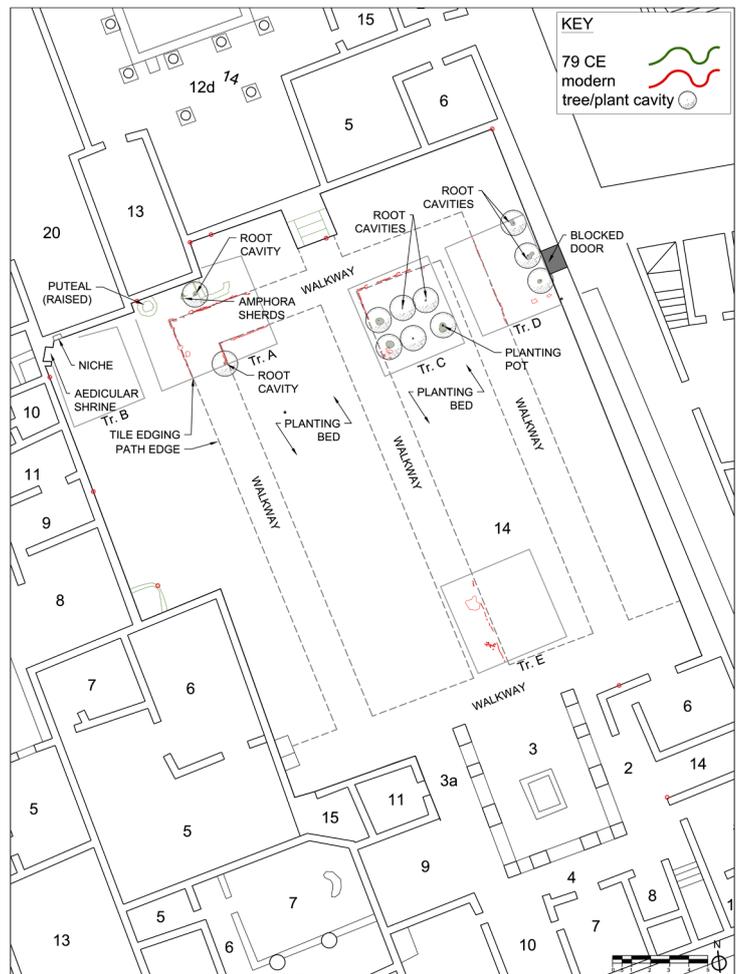


Fig. 16. Plan of the Casa della Regina Carolina garden, showing major features associated with Phase 3 (62-79 CE), in green, and Phases 4-5 (19th-20th centuries), in red. The garden plan, derived from the CRC Total Station survey, is shown embedded within an older house and insula map from the Parco Archeologico di Pompei. (CRC garden plan drawn by Michele Palmer, Michael Chang, and Yuhan Ji).

concessionario: Prof. Kathryn Gleason
Cornell University CIAMS
plant/root cavity diagram plan with modern tile edging

Casa della Regina Carolina VIII.3.14
area 14 saggio A Pompei, 2019
drawn by: MAP, MDC, YJ scale 1:200

⁵⁸ PALMER 2016: 60-62; GLEASON, PALMER 2018: 386-399.



Fig. 17. Aedicular shrine in the northwest corner of the Casa della Regina Carolina garden, photographed in June 2019 before the commencement of excavation. (Photo credit: Danielle Vander Horst; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompei; any further reproduction or duplication of these images, by any means, is strictly forbidden).



Fig. 18. Free-standing shrine at the center of the north wall of the Casa della Regina Carolina garden, photographed during the 2018 field season. (Photo credit: Kaja Tally-Schumacher; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompei; any further reproduction or duplication of these images, by any means, is strictly forbidden).

the time of Pompeii's destruction in 79 CE. The Casa della Regina Carolina is oriented north-south, not east-west like the Phase 1-2 dwelling, and the space formerly occupied by the Phase 1-2 dwelling had become a massive garden – one of the larger private gardens at Pompeii. The new garden also included multiple monumental and display-oriented features. The corner shrine was rebuilt, in aedicular form, at a higher elevation (fig. 17). A second, free-standing shrine, featuring cipollino-clad steps flanked by brick columns, was constructed at the center of the north side of the garden (fig. 18). This central shrine is on axis with the atrium of the house (fig. 3), which, unusually for a Pompeian house, opens directly onto the garden. A masonry extension was constructed on top of the older basalt puteal in order to maintain access to the cistern at the new ground level (fig. 8). The north, east, and west sides of the garden were surrounded by high walls. A masonry basin along the west wall of the garden (fig. 19) likely played a role in garden irrigation. Surviving documentation from the 19th century indicates that the garden also originally contained an altar, a *thymiaterion*, a marble head of Jupiter, and bronze vessels⁵⁹.

An exciting result of our 2019 field season was the discovery of the original plantings of this garden, which were previously completely unknown. Although modern activities in the garden (see Phase 4) have dis-

⁵⁹ SCHULZ 1841: 121.



Fig. 19. Masonry basin adjacent to the western perimeter wall of the Casa della Regina Carolina, photographed in 2016 before the commencement of the CRC Project. (Photo credit: Caitlín Barrett; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompei; any further reproduction or duplication of these images, by any means, is strictly forbidden).

turbed the upper zone of the Phase 3 topsoil (especially in the south and northwest of the garden), much of the lower levels of the garden soil and its associated plantings have nonetheless survived, especially in the north-east of the garden. We excavated 12 lapilli-filled root cavities (fig. 16), one planting pit that contained an intact planting pot (*olla perforata*) (fig. 20), and one planting pit that lacked lapilli. The root cavities were carefully cleared of their lapilli using special tools (long-handled spoons and rods); drawn in plan and section; and cast with cement⁶⁰. While only one planting pit contained a planting pot still *in situ*, other such pots were likely originally present. The finds from 2018 included a perforated sherd from another planting pot (fig. 21).

These finds have enabled us to reconstruct the basic layout of the garden. The root cavities/planting pits are laid out in distinct rows of plantings, oriented in east-west lines running parallel to the northern wall of the garden, as well as being aligned north-south (fig. 16). The spacing between the rows is similar to that of excavated vineyards, strolling gardens, and produce gardens. We can narrow down those options further based on the find of the *in situ* planting pot, which provides further valuable evidence about what was grown here.

This planting pot (fig. 20), which had four pre-firing holes in its body, indicates the use of labor-intensive horticultural practices. Ancient sources indicate that these pots were used for aerial layering, in which a pot is slipped over a young branch of the parent tree or shrub, packed with earth, and left to root for up to two years⁶¹. The potted plant was then cut off the parent plant, transported to a garden, and replanted – still inside its pot – in the garden soil. This practice is thought to have retained familiar soil around the plant and facilitated irrigation. Recent studies suggest that the pots may also have played a role in miniaturizing trees and shrubs by constraining the roots and preventing robust annual “water shoots” from springing up and affecting the fine pruning of the plant⁶². The result would have been a dwarfed tree, intensively pruned, perhaps akin to Japanese bonsai or *niwaki* in the intensity of effort required. Ancient textual references to *nemora tonsilia* (literally, cut-off trees)⁶³ may refer not only, as is commonly assumed, to topiary in the sense of plants cut in shapes, but

⁶⁰ We tested the use of silicone rubber (GLEASON, SUTHERLAND 2016: 31-33), but the cavity walls were too soft to permit a detailed casting.

⁶¹ Theophr. *Hist. pl.* 4.4.3; 6.7.3; Cato, *Agr. Org.* 52, 133; Plin. *HN*, 12.7.15-16; 17.11.64; 17.21.97- 98; 25.102.160; Palladius 3.10; 3.25; 4.10; 6.6; 10.14. See further MACAULAY LEWIS 2006: 216.

⁶² MACAULAY LEWIS 2006: 216; GLEASON 2019; additional work on this subject by Dafna LANGGUT is in preparation.

⁶³ See especially Pliny (*HN* 12.6), who credits the invention of *nemora tonsilia* to the equestrian Gaius Matius, a friend of Augustus.



Fig. 20. Complete flowerpot (*olla perforata*) from the 79 CE garden stratum, found in situ in 2019: (a) side view, (b) view from above, showing a preserved root cavity, and (c) profile and section drawings (prepared by K. Gleason) depicting the contents of the pot, including root cavities and lapilli. The soil has been retained for microbotanical, palynological, and microdebris analysis (ongoing). (Photo credits: Danielle Vander Horst; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompei; any further reproduction or duplication of these images, by any means, is strictly forbidden).

also to miniatures of this type. Because such plantings required skill and time to create, they would have testified to the homeowner's control of multiple resources, including the labor of the – often enslaved⁶⁴ – gardeners whose skill was required for their production. While it remains common practice to classify both ancient and modern gardens as *either* ornamental *or* productive, these two aspects were closely interconnected in most Roman gardens. Displays of horticultural productivity, exotic plants, or new varieties of fruit were important elements of elite self-representation, and such displays helped to shape how residential garden spaces were conceptualized. Upper-class gardens were places where one would walk with friends while admiring the plants and fruit trees that the owners, thanks to their resources, could afford⁶⁵.

The pot was excavated in laboratory conditions at the conservation lab of the Parco Archeologico di Pompei. We carefully removed and mapped the lapilli channels (fig. 20c). The pot contained a dry, humic-rich soil that no longer supported a firm root cavity wall. A central channel, 2 cm wide, appears to confirm the use of the pot for air layering. Lapilli were removed from root cavities along the pot wall, and 2-3 cm of lapilli filled the bottom of the pot. These finds appear to indicate that the plant was root-bound. While this phenomenon is common in planting pots of all time periods, it is also consistent with the use of the pot for the production of *nemora tonsilia*.

Ongoing palynological research may shed further light on the vegetation of the Phase 3 garden. In 2019, we took pollen samples from (1) the soil around the flowerpot and (2) plaster and mortar from structures inside the garden. Additionally, all excavated garden soils underwent flotation, enabling us to retrieve a quantity of carbonized plant remains. Most often, such carbonized remains indicate the components of fertilizers used in the gardens⁶⁶, but on occasion they include the remains of garden plants burned *in situ* or clippings burned by gardeners. These ecofacts are under study by our project archaeobotanists.

Ongoing micromorphological research may shed further light on activities in the Phase 3 garden. In 2019, our project micromorphologist took soil samples from the area of the planting pot as well as other areas of preserved garden soil. As discussed above, these samples are currently undergoing analysis at the Wiener Lab in Athens to assess the soil chemistry and check for microremains.

Further information about the layout and design of the Phase 3 garden may perhaps come from the reconstruction carried out in the early modern period (Phase 5), although this suggestion currently remains hypothetical and requires further testing; see further below.

Phase 4 (19th-Century Excavation)

As discussed above, the first excavations at this garden were conducted in 1839. As in the rest of the house, the early excavators sought to reach the 79 CE ground level but not to dig beneath it; they were not



Fig. 21. Fragment of an olla perforata found in the leveling fill of the Phase 3 garden. (Photo credit: Vincenzo Castaldo; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompei; any further reproduction or duplication of these images, by any means, is strictly forbidden).

⁶⁴ On *topiarii* as frequently slaves or freedmen, see LANDGREN 2013: 80-81; GLEASON, PALMER 2018: 376. On the forms of labor (both skilled and unskilled) involved in the construction and maintenance of Roman gardens, see more generally LANDGREN 2004: 185-190; GLEASON, PALMER 2018; TALLY-SCHUMACHER 2020.

⁶⁵ E.g., see Plin. *HN* 17.5 about Caecina Largus, who used to point out and show off to his guests the *lotus* trees in the garden of his house, which had once belonged to Licinius Crassus (MARZANO 2014; MARZANO forthcoming).

⁶⁶ Plin. *HN* 17.50; Columella 2.14.5; MILLER, GLEASON 1994.



Fig. 22. Terracotta smoking pipe, stylistically datable to the 17th or earlier 18th century, found in the baulk of Trench B. (Photo credit: Danielle Vander Horst; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompei; any further reproduction or duplication of these images, by any means, is strictly forbidden).

interested in earlier phases of Pompeian history. However, they may in fact have dug (intentionally or otherwise) beneath the 79 CE ground level in some parts of the garden, especially in the northwestern quadrant adjacent to the corner shrine and in the southern area near the atrium. Schulz's brief excavation report makes no reference to such activities, but Fiorelli, writing several decades later, refers to the Casa della Regina Carolina garden as showing "le tracce delle fabbriche quivi prima esistite"⁶⁷. Fiorelli does not provide any further information about these "masonry structures that existed there before" or give us any more details about what he means by "before": before the garden? Before the eruption? However, this enigmatic reference to earlier structures may help explain some finds in the northwest and southern areas of the garden (Trenches B and E), where the leveling fill for Phase B appears to have been disturbed and redeposited in some places. A terracotta tobacco pipe (fig. 22), stylistically datable to the 18th or early 19th century, may tie at least one of these episodes of disturbance to the approximate time period of the early excavations. It is thus probable that in at least two areas of the garden, the 19th-century diggers excavated below the Phase 3 garden

surface and may have encountered some structures of Phase 1 or 2. However, any such digging was neither systematic nor complete, as indicated by the survival of intact Phase 3 garden soil and plantings elsewhere in the garden.

Phase 5 (Modern Garden, 19th/20th Centuries)

At some point after its initial excavation in 1839, the garden was replanted for the benefit of tourists. Just below the humic level, our excavations revealed a system of tiles set vertically on edge, in order to define the edges of walkways and planted areas in the garden (fig. 23). The restored arrangement of these tiles features a long path down the central axis of the garden flanked by wide garden beds, which were delineated by paths on all sides (fig. 16). More garden beds would have lined the enclosing walls.

The edging separating the pathways and garden beds includes both ancient tiles and more modern tiles, one of which bears the stamp of Gaetano Campagna, whose ceramic workshop was in business in Naples from 1890–1932 (fig. 24)⁶⁸. The reuse of ancient tiles is consistent with Fiorelli's directive to stockpile bricks, tiles and other materials for restoration⁶⁹. The modern tile provides a possible date range for the construction of the walkways, although we cannot be certain whether this tile dates to the installation of the walkways or to their subsequent maintenance in later decades.

While the tile edgings in the Casa della Regina Carolina garden appear to be a modern installation⁷⁰, there is a chance that they may outline ancient garden beds and paths that were still visible in the 19th century but no longer survive today. The Italian authorities of the late 19th century frequently sought to restore Pom-

⁶⁷ SCHULZ 1841: 121; FIORELLI 1875: 326.

⁶⁸ On the workshop of Gaetano Campagna, see BIGNARDI 2003: 56; COPPOLA 2019; and see also the workshop's listing in the 1896 *Annuario d'Italia, Calendario Generale del Regno*: 1906.

⁶⁹ DE CARO 2015: 17 n. 69.

⁷⁰ Only one possible ancient parallel for ancient tile edging appears in the northern peristyle at the Casa dei Capitelli Colorati (VII.4.31/51; JASHEMSKI 1993: 179-180).

peian gardens along ancient lines, not only rebuilding the architecture but also attempting to replicate the art and put the fountains back into operation⁷¹. When this garden was excavated in 1839, the excavators would have seen any original contours of the garden beds upon removal of the last of the lapilli. The presence of root cavities and a planting pot suggests that the Phase 3 garden must have featured such soil contours. Surviving 19th-century documentation includes no notes or records of such features on the garden surface, but we would not necessarily expect to find such records at the time; soil con-

tours were inconsistently recorded in the 19th century⁷², and the documentation of the CRC garden excavations was minimal even by the standards of the era. Additionally, guidebooks of the 19th century neither depict nor describe the overall appearance of the garden. To date, the earliest depiction of the restored garden is a balloon photograph taken sometime between 1920 and 1930⁷³.

The layout of the ancient Phase 3 garden features is compatible with the possibility of earlier antecedents for the Phase 5 arrangement of walkways and planting beds. The early modern paths share the same alignment and orientation as the rows of surviving root cavities (fig. 16). In Trench A, one root cavity intrudes on the modern path, but the intrusion may pertain to the fill of a root rather than the center of the plant, as this cavity has not yet been fully excavated.

At present, we do not yet have enough evidence to demonstrate a direct relationship between the ancient and early modern garden designs. The similar alignment of features may conceivably represent a shared response to the same physical context (an approximately rectangular garden space with a clear visual focus in the central free-standing shrine), with both ancient and modern planners choosing to align the plantings with the garden walls. Additionally, the near-absence of root cavities within the walkways may simply indicate that the construction of the walkways destroyed any root cavities originally present there; absence of evidence for plantings does not necessarily constitute evidence of absence. More excavation will be necessary in order to test the possibility of a relationship between the ancient and early modern gardens.



Fig. 23. Phase 5 tile edgings in situ in Trench C (see Figure 5 for trench locations). (Photo credit: Danielle Vander Horst; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompeii; any further reproduction or duplication of these images, by any means, is strictly forbidden).



Fig. 24. Phase 5 tile edging in situ, showing a tile stamped by the workshop of Gaetano Campana (active in Naples from 1890-1932). (Photo credit: Danielle Vander Horst; under concession from the Ministro per i Beni e le Attività Culturali e per il Turismo – Parco Archeologico di Pompeii; any further reproduction or duplication of these images, by any means, is strictly forbidden).

⁷¹ DE CARO 2015: 18-19.

⁷² For some examples, see JASHEMSKI 1993: 125-127, 280-281 (houses VI 5.7, VI 6.1, Villa of Diomedes).

⁷³ GUAITOLI 2003: 422. We would like to thank dr. Sophie Hay, FSA, for directing us to this image. Although blurry, it appears to show the paths edged with vegetation and the garden reconstructed in a quadripartite form, which is rarely attested in antiquity but common in modern restorations. On garden restorations at Pompeii, see ASCIONE 1992.

Conclusions

The first two field seasons of the CRC Project have produced multiple significant results. We have discovered what appears to be a previously unknown grand peristyle house of the Hellenistic period, whose further excavation promises to rewrite the history of one of the oldest and most politically prominent neighborhoods in Pompeii. The form and orientation of this house's remains suggest that the entire VIII.3 *insula* was once differently configured. Furthermore, the apparent scale of the house indicates that it must have belonged to a prominent member of Pompeii's Samnite or early Republican elite. Our findings thus shed light on the history, not just of this house, but of the entire *insula*. Because of its proximity to the *Forum*, the *insula* VIII.3 occupies one of the most politically and socially important locations in Pompeii, and its history may be closely bound up with that of the city as a whole.

We have also been able to reconstruct a first century CE garden in fine-grained detail, shedding light on the experiences and activities of people at multiple levels of society: both the elite individuals who owned this garden, and the other individuals – non-elite and likely unfree – who actually constructed and cultivated it. The *in situ* planting pot suggests that the garden likely contained rows of miniature trees, whose dwarfing was the result of skilled and time-intensive gardening practices. The display value of those plantings thus came not only from some inherent aesthetic appeal or horticultural interest of the plants, but from the evidence they provided for the homeowner's power to command the work of other people: the specialist *topiarii*, ornamental garden makers, who were often enslaved or freedmen, as well as supporting gardeners and laborers needed for ongoing cultivation and maintenance⁷⁴. As a result, the Casa della Regina Carolina garden testifies today not only to the social strategies of its former owners, but also to the lived human experience of those workers whose forced labor, time, and bodies were responsible for that garden's creation and ongoing maintenance.

Additionally, our findings offer new insights into urban resilience following a natural disaster. The choices that people make when rebuilding after a disaster, such as the earthquake that struck Pompeii in 62 CE, tell us a lot about their priorities: both what individual homeowners prioritized, and what society as a whole valued. In this particular case, the earthquake appears to have provided an opportunity for one family to expand their landholdings by combining two adjacent houses (the Phase 2 house and its neighbor to the south), demolishing one of those structures, and turning its plot into a massive garden. Yet together with this major change, there are also some elements of continuity: for example, a version of the corner shrine continued in use after the rebuilding. These choices are rich with implications for the social, cultural, and economic value of Roman gardens. In the first century CE, gardens could be sites for both social display (e.g., dining outdoors with guests, exhibiting ornamental horticulture, viewing and discussing art) and practical economic activities (e.g., growing produce). By turning the necessity of rebuilding after the earthquake into an opportunity to construct an enormous garden, the house owners may thus have sought both to improve their perceived status and also expand their household's economic productivity.

Future Research

For our final excavation season in 2021⁷⁵, we plan to excavate another five 5x5m units, conduct archival research, collect additional wall plaster samples for palynology, and collect additional sediment samples for micromorphology and residue analysis. In the 2021–2022 academic year, we intend to analyze these samples at the Laboratory for Archaeobotany and Ancient Environments, Tel Aviv University (for palynology) and at the Wiener Lab, Athens (for micromorphology and residue analysis). We will also use our LiDAR data to create a GIS-integrated 3D house model, in order to model ancient individuals' embodied experiences of navigating the dwellings that existed in Phases 1, 2, and 3. Finally, in summer 2022, we intend to hold a study season focused on finds analysis. Following this study season, we will complete an edited book presenting our final results and interpretation of the Casa della Regina Carolina site, finds, and significance.

⁷⁴ See *supra*, n. 37, n. 64.

⁷⁵ The projected dates of this upcoming work are dependent on the progress of global efforts to address the COVID-19 crisis, which remains ongoing at the time of this writing; see *supra*, n. 29.

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