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Were Herod the Great's Palace Gardens Unique?

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Herod the Great built palaces and complexes with innovative excellence. This article explores his success in creating unique and luxurious gardens in desert areas. It does this by discussing the interaction between Herodian architecture already excavated by archaeologists and the newer science of garden archaeology. The investigation gives a realistic knowledge, through laboratory analysis of the plants grown in Herod's gardens and how inventive he was.

Keywords: architecture, garden archaeology, plant pollen analysis

Introduction

This article explores how Herod the Great might have been influenced by the buildings and gardens that he saw when he travelled to Rome which, at the time, was going through a major building programme. It considers how gardens can be identified in the Archaeological Record and the essential need for a plentiful supply of water to irrigate them. Herod was a talented architect and designer and built palaces in difficult topographical terrain. He also created lush gardens in harsh desert climates. Garden Archaeology can advance our knowledge of Herodian gardens by identifying plants from their pollen that has endured over thousands of years. Due to a lack of pollen remains this can only be undertaken in certain areas. The Herodian palaces and complexes being examined for possible pollen remains include The Promontory Palace at Caesarea Maritima, and the complexes at Herodium and Jericho. These investigations were fruitful, and some trees, shrubs, and plants were identified. The article includes photographs, drawings, and illustrations of temples, aqueducts, and various styles of gardens.

To bring the article to a satisfactory conclusion, the author compares the Herodian gardens mentioned above with a recognised Italian garden, Villa Arianna (Stabiae), which was contemporaneous.

Herod the Great brought many Roman inventions, concepts, and designs to Judea and he made them his own. He was born in c. 72 B.C.E. and died in c. 4 B.C.E. (scholars disagree on the exact date of Herod's death). He travelled widely and visited Rome three times.

The methodology for this article is to examine the material remains of Herod's palaces from archaeological reports, to identify garden spaces, and then to explore what archaeobotanical analyses can add to the picture.

Background History

Herod fled to Rome in 40 B.C.E. to seek Roman support in Judea. Flavius Josephus recorded his journey from Alexandria to Brindisi (Brundisium). During the voyage he encountered violent storms and was forced to shelter on Rhodes and procure another ship to continue his journey to Rome. "He also built a three-decked ship,

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and set sail from there, with his friends, for Italy, and came to the port of Brentesium" (Jewish Antiquities 14.14.377-378; Whiston, 1999).

It has been conjectured that Herod disembarked at Brindisi. His journey is important to our enquiry because it suggests what he might have seen as he travelled.

The hypothesis that Herod was in a hurry to get to Rome as he had already been severely delayed, is probable. If he had remained with the ship as it sailed onwards it was likely that the prevailing headwinds would have slowed the trip down.[1] If we consider this premise to be true it is likely that he travelled by the Appian Way to Rome, which connected the two ports. He would have left Brindisi (Brundisium) and travelled across to Tarantum (Tarentum), Venosa (Venusia), Benvento (Beneventum) to Capua where the road followed the coast through Sessa (Suessa), Formia, Terracina joining the Via Appia straight into Rome.

Working on the possibility that Herod followed the route discussed above on his first visit to Italy, he could have passed near Pompeii, he may have seen the Villa Lucullus built during the first century B.C.E. on the bay of Naples but it is unlikely that he stopped here as he was in a hurry to reach Rome.

Figure 1. Map of Roman Roads in Italy (not exact).[2]

[1] Analysis of Herod the Great's 40 B.C. voyage to Rome and return. http://theos-sphragis.info/herods_40bc_voyage_analysis.html, accessed on 5.9.2023.

[2] https://commons.wikimedia.org/wiki/User:NielsF, accessed on 16.9.2023.

Herod went straight to Mark Antony, a friend and ally of his father. Realising that Herod had drive and ambition, like his own, Mark Antony championed the young man's cause with Octavian. The Senate agreed with their choice and Herod was appointed King of Judea—"Antony informed them further, that it was to their advantage in the Parthian war that Herod should be king. This seemed good to all the senators; and so, they made a decree accordingly." (JA 14.14.385) (Bergin, 2011, pp. 6-7). This began a longtime friendship between Herod and Octavian (later Augustus, first Emperor of Rome) (Gleason, 1996, p. 208) who would confirm Herod King when he was victorious after the battle of Actium.

When Herod arrived in Rome for the first time, the city was in the middle of a vibrant building programme. Herod met Marcus Agrippa, a close ally and friend of Octavian, a successful Roman commander, a statesman, and an architect whose stated aim was to rebuild the city of Rome. Through his association with Agrippa, Herod had access to construction plans and designs. The two remained friends for nearly 50 years. Their common interests encompassed a passion for building, adaptation of eastern and western architectural forms, issues around political power, and ultimately their collective legacy (Bergin, 2011, p. 13). Agrippa became the first Emperor's son-in-law, which increased his power and prestige enormously and his ability to support Herod in some of his building enterprises.

The monumental structures visible in Rome when Herod visited were the Temple of Vesta (7th century B.C.E), the Temple of Saturn (497 B.C.E.), the Aqua Appia (312 B.C.E.), the Forum Romanum (184 B.C.E.), Aqua Marcia (144-140 B.C.E.), the Amphitheatre of Pompey (75 B.C.E.), and the first all-stone Roman Theatre built by Pompey (55 B.C.E). There are photographs and drawings laid out below to give readers a pictorial idea of what was visible to the king. Included below is a hypothetical drawing of the Temple of Vesta.

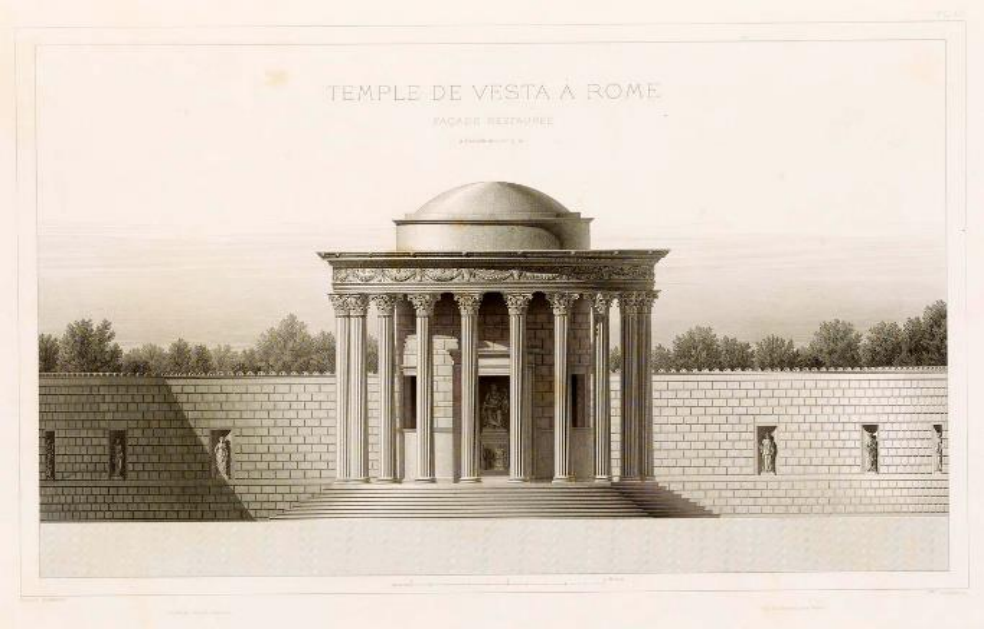

Figure 2. Hypothetical reconstruction of the Temple of Vesta, Rome.[3]

[3] https://archimaps.tumblr.com/post/188367454207/hypothetical-reconstruction-of-the-temple-of, accessed on 10.10.2023.

Figure 3. Aqua Appia.[4]

Above is a photograph of the Aqua Appia as can be seen in the landscape today.

Figure 4. Amphitheatre of Pompeii.[5]

The amphitheatre of Pompey was a colossal structure and may have been seen by Herod as he travelled to Rome.

[4] https://cayaandbreckaqueducts.weebly.com/aqua-appia.html, accessed on 10.10.2023.
[5] https://ermakvagus.com/Europe/Italy/Pompeii/amphitheater_pompeii.html, accessed on 10.10.2023.

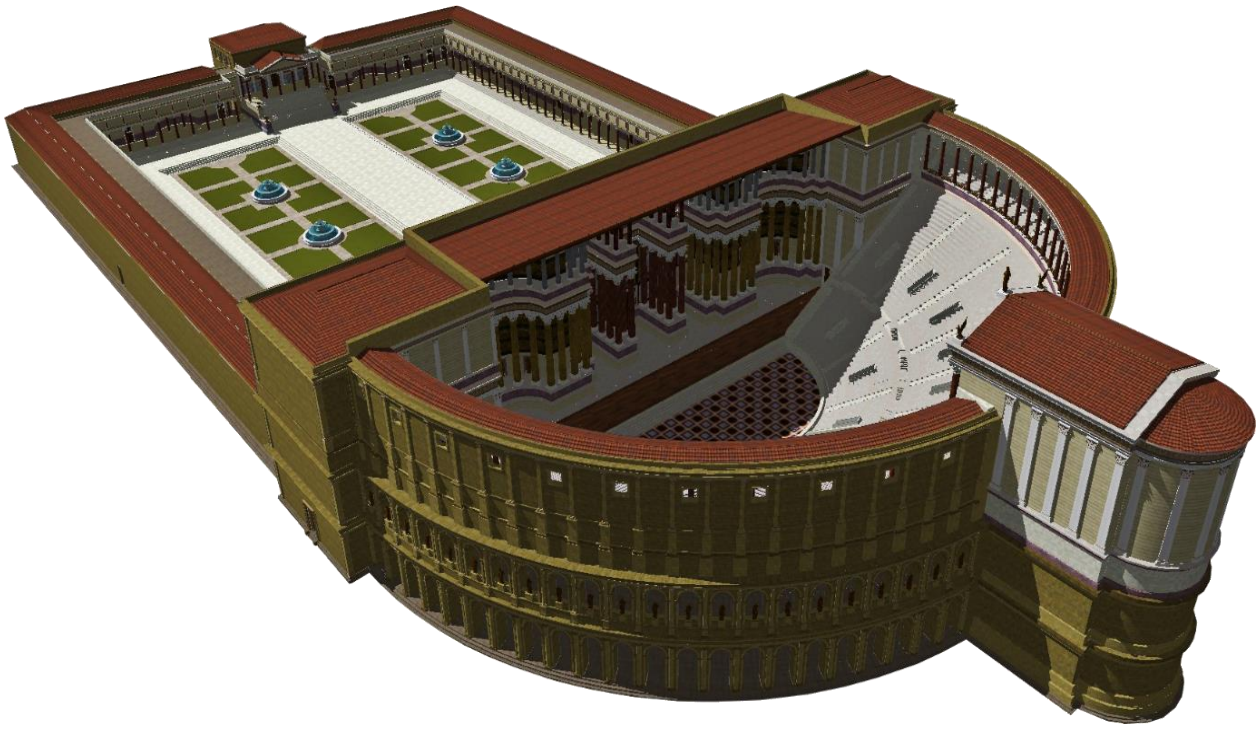

Figure 5. Computer generated image of the Theatre of Pompey by the model maker, Lasha Tskhondia.[6]

Finally, a computer-generated image of what the theatre of Pompeii might have looked like when Herod visited Rome the first time. It was located in the Campus Martius in the southwest of the city. There was an extensive colonnaded garden with fountains and statutes and at the end of the garden lay the Curia Pompey which was quite often used by the Roman Senate for their meetings (Roller, 1998, p. 35). It is likely that Herod would have visited this structure during his time in Rome. He commenced his Building Programme in 37 B.C.E. when he ultimately claimed power as King.

Are Gardens Recognizable in the Archaeological Record?

Garden Archaeology is a relatively new discipline that evolved in the 20th century. In the 1960s the methodology of exploring ancient gardens emerged in separate locations (Malek, 2013, p. 23):

- Barry Cunliffe's excavation of a Roman Villa at Fishbourne in England
- Ivor N. Hume's excavation of John Custis' garden in Williamsburg, Virginia, U.S.A
- Wilhamena Jashemski's excavation of "Foro Boario" in Pompeii and the excavation of the Nara Palace Garden in Japan.

Through these excavations, carried out independently, these archaeologists began a long process of developing methods and techniques for carrying out Garden Archaeology (Malek, 2013, p. 23).

Kathryn L. Gleason, Professor of Landscape Architecture and Archaeology at Cornell University has investigated how "acts of design" leave their marks on the land (Gleason, 2016, p. 16). In this research one of the questions being asked is: what can be seen in the archaeological record that could reveal the presence of a garden(s)?

[6] https://en.wikipedia.org/wiki/Theatre_of_Pompey#/media/File:Theatre_of_Pompey_3D_cut_out.png, accessed on 10.10.2023.

Planned gardens whether ancient or modern need definitive attributes to be designed and created (Kopsacheili, 2015, p. 175). The most recent way to help detect these characteristics is by using LiDAR (Light Detection and Ranging). It uses high resolution maps to survey the surface of the earth and give 3D representations of archaeological remains. Archaeologists continue to excavate but LiDAR is opening new possibilities for excavation around the world.

Archaeological evidence gives us the skeleton of the garden and provides the framework for study by uncovering the following—

(a) Water Supply: A ready supply of water is essential for a cultivated space. Therefore, there should be evidence of reservoirs, cisterns, pipes, or ducting that would provide the garden with the necessary water (Wescoat Jr, 2013, pp. 421-441).

(b) Boundaries: Boundaries are the method for enclosing and shaping the garden and providing the appropriate layout, fencing, terracing, water features, paths, and pools to enhance the garden (Kopsacheili, 2015, p. 176).

(c) Cultivation: Cultivation is the making of the garden in the space provided by creating planting beds, pits, planting pots, and topsoil to accommodate shrubs, trees, and plants (Gleason, 2013, p. 200).

Taking (a) and (b) above into consideration, the investigation focuses on what can be found in the archaeological record. (c) above will be covered under Garden Archaeology.

Judea has/had an arid climate and Herod knew the necessity for a constant supply of water in this desert environment. He took the necessary steps to provide water to all his palaces. He utilised all the ancient water collection techniques—garnering rainwater from roofs and providing conduits for guiding rainfall into cisterns for storage. He harvested water from the local streams during the winter and spring deluges. He built great viaducts and dug through mountains to bring water to his buildings. He utilised and extended pools built by his predecessors, and created many new reservoirs, boating and swimming pools throughout Judea. He followed Italian tradition and designed Roman bathhouses in all his residences (Bergin, 2017, p. 363; 2018, p. 386; 2019, pp. 642-646; 2020, pp. 437-449; 2023, 398-418; 2022, 609-629). Without a steady supply of water Herod would not have been able to contemplate planning gardens.

Table 1
Supply of Water to Herodian Palaces

Palace	Water source	Method of delivery	Storage	Quantity
Alexandrium	Rainwater	Runoff 3 aqueducts	15 cisterns 1 reservoir	4,700 m^3
Hyrcania	Rainwater	2 aqueducts	20 cisterns 3 pools	16,000 m^3
Cypros	Rainwater 2 springs (*Ein el Fawwar* and *En Farah)*	Runoff Aqueducts/tunnels and bridges	4 cisterns	6,000 m^3
Doq (Quarantal)	Rainwater	Conduits	9 cisterns	2,100 m^3
Machaerus	Rainwater	2 aqueducts	6 cisterns Reservoirs	3,000 m^3
Masada	Rainwater	Dams Conduits	12 cisterns Swimming pool	40,000 m^3
Jerusalem including Antonia Fortress, Herod's Palace and the Temple	Rainwater	Aqueducts	Cisterns Pools Reservoirs	1,628,000 m^3

Table 1 to be continued

Caesarea Maritima	Rainwater Spring (*Ein Shuni*)	Aqueducts	Cisterns Swimming pool	Not known
Herodium	Rainwater Solomon's pools	Aqueducts	Cisterns Swimming/boating pool	2,700 m^3
Jericho	Rainwater Springs (*Ein Poar and Ein Para*)	Rainwater Aqueducts	Cisterns Various types of pools	Not known

From the table above we can see that all the palaces collected rainwater into cisterns with runoff from roofs. Some used conduits to gather rainwater and guide it to cisterns. Aqueducts brought fresh water from springs (wadis) sometimes over great distances and through difficult terrain. There were reservoirs, swimming, and boating pools, all of which doubled as reservoirs if required. Cisterns, conduits, aqueducts, reservoirs, and pools are all recognizable in the archaeological landscape. The verification of their existence is contained in the numerous Archaeological Reports published on the Herodian buildings listed in the table above.

Having established evidence of man-made water delivery in the landscape, it is time to find out if gardens left a specific verifiable mark in the terrain. Substantial evidence of gardens in Herodian palaces has been reported (Langgut, Gleason, & Burrell, 2015, pp. 1-2; Netzer, 2006). The table below gives details of the buildings where gardens' forms were confirmed in the archaeological record.

Table 2
Gardens In/Around Herodian Buildings

Building	*Peristyle* Courtyard	External Gardens or *paradeisoi*	Terraces	Mausoleum Garden*
Machaerus	1			
Masada	1		3	
Herod's Palace in Jerusalem	1			
Caesarea Maritima	2		2	
Herodium	1	1	2	1
Jericho	3	1	2	

* The Mausoleum Garden will be discussed later in this study as it could not be described as a pleasure garden like the others described in this table.

The table above shows the various types of Herodian gardens excavated by archaeologists.

A *peristyle* was a courtyard with a floor of beaten earth or paved with stones, or in more flamboyant houses mosaics would have covered the surface (Von Stackelberg, 2009, p. 21). The *peristyle* could be described as the nerve centre of the house. It provided light and access to the rooms surrounding it, but it was not a garden (Jashemski, Gleason, Hartswick, & Malke, 2018, pp. 18-20). This area within a building was part of Hellenistic culture.

It was not until the third century B.C.E. that the Romans began to transform their use of this space into a garden with colonnades. Reception and dining rooms would have been accessed from here. Herod adopted this type of garden. Like his Roman masters his *peristyle* gardens were surrounded by colonnades where he and his guests could walk in the shade, appreciating the beauty laid out before them. Below are two illustrations of *peristyle* gardens created by Herod the Great at Herodium and Jericho.

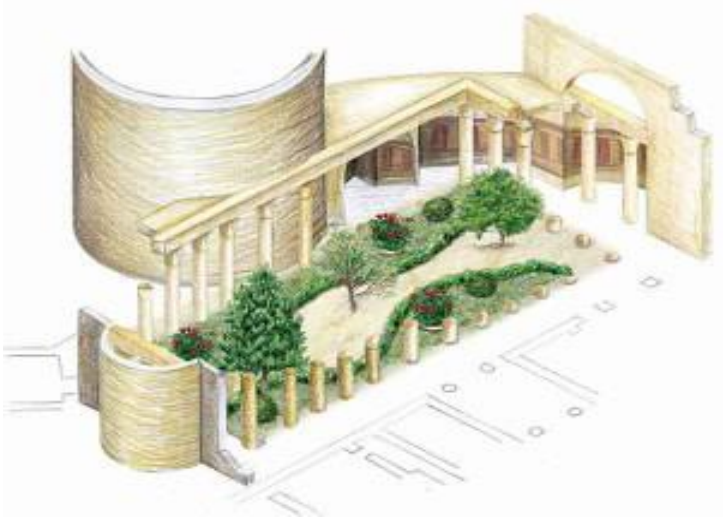

Figure 6. Peristyle Courtyard at the Fortress Palace at Herodium.[7]

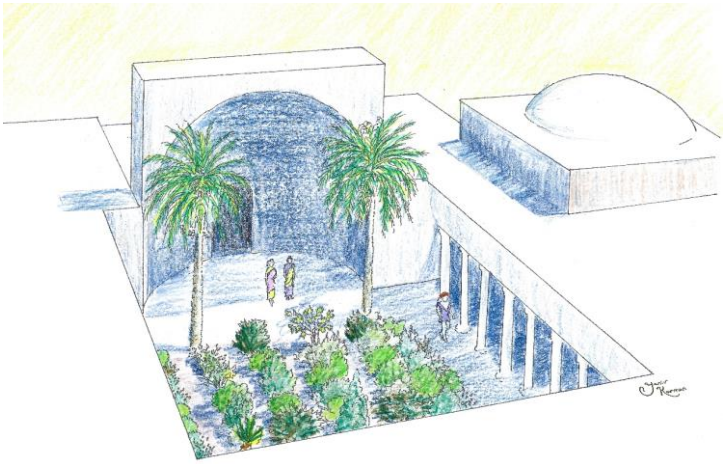

Figure 7. Peristyle Ionic Courtyard in Jericho.[8]

The fortress palace in the first illustration was divided into two equal parts by a central dividing wall. On the eastern side of the wall Herod created an enormous courtyard (40 m × 17.5 m), open to the sky and planted with a beautiful garden (Netzer, 2001, pp. 101-102). In the second drawing Herod built a formal garden (19 m × 19.5 m) in the northern wing of the third palace at Jericho surrounded on three sides by colonnades with columns of equal size (Netzer, 2006, p. 62). The archaeological remains of both gardens were excavated. Below is a copy of a photograph taken by the author of the *peristyle* courtyard at Herodium in the fortress-palace as it can be seen by visitors today.

[7] Yaniv Korman Axonometric reconstruction of the Ionic Peristyle Courtyard B64 with the location of the planting pots https://www.google.com/search?q=Jericho+third+palace+of+Herod+Yaniv+Korman&tbm=isch&ved=2ahUKEwiyuansqf2BAxV4XUEAHWAQDzgQ2-cCegQIABAA&oq=Jericho+third+palace+of+Herod+Yaniv+Korman&gs_lcp=CgNpbWcQAzoECCMQJ1CHF1jmOGCEQGgAcAB4AIABWogB6waSAQIxNJgBAKABAaoBC2d3cy13aXotaW1nwAEB&sclient=img&ei=u54uZfLvBfi6hbIP4KC8wAM&bih=919&biw=1920&client=firefox-b-d#imgrc=ld5_cwnMkdBzsM, accessed on 17.10.2023.

[8] http://herodium.org/history-and-archology/the-complexes/the-palace-fortress/the-peristyle-and-the-garden/, accessed on 13.10.2023.

Figure 8. Peristyle Courtyard at Herodium.[9]

Both the complexes at Jericho and Herodium could be described as *Paradeisoi*, defining the eastern phenomenon of luxurious royal gardens and hunting estates in Asia Minor and Persia (Jashemski et al., 2018, p. 483). After the conquest of Alexander the Great, the Hellenistic kings attributed great importance to gardens with trees, shrubs, water, and shade. This interest has been corroborated in written sources (Nielsen, 2016, pp. 42-47). When the Romans became the rulers of the Eastern Mediterranean, they adapted this type of garden to suit their needs with flowers, exotic trees, fountains, and statues attesting to the owners' wealth and position (Evyasaf, 2000, p. 197).

At Jericho, Herod built a well-designed palace laid out in a parkland. It had four wings, one to the north and three to the south of the Wadi Qelt, which was the central feature of his estate. The illustration below shows that Herod commanded nature, producing a huge palace, with two peristyle courtyards, a sunken garden, pools, and an outstanding view of the surrounding area with a raging torrent running through its midst.

[9] Barbara Bergin, Own photo taken at Herodium in 2011.

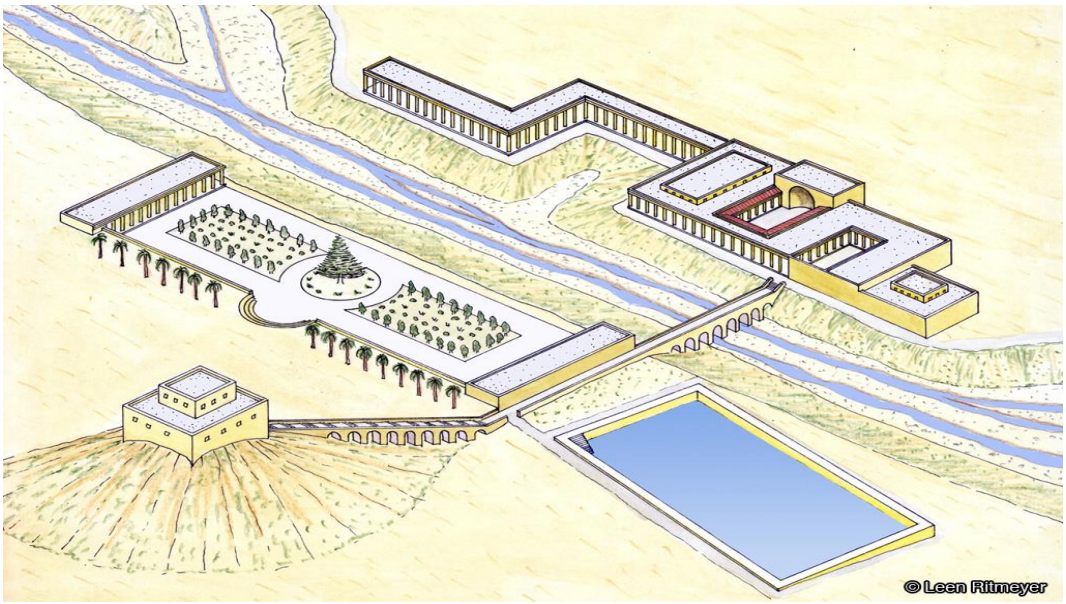

Figure 9. Drawing of the Winter Palace at Jericho courtesy of Leen Ritmeyer Archaeology.[10]

Herod defined the topographical conditions of a site once he decided to build. The northern palace at Masada was designed on three terraces, the Promontory Palace at Caesarea Maritima took up two terraces and when the Second Palace at Jericho was built, the north wing overlooked the south wing. Herod included terraced orchards and gardens in his palaces also. The second palace at Jericho had a terraced garden of trees on top of part of the ruined palace of the Hasmoneans. In the third palace he included a tiered area in the sunken garden that looked like a theatre for plants like the hanging gardens of Babylon.

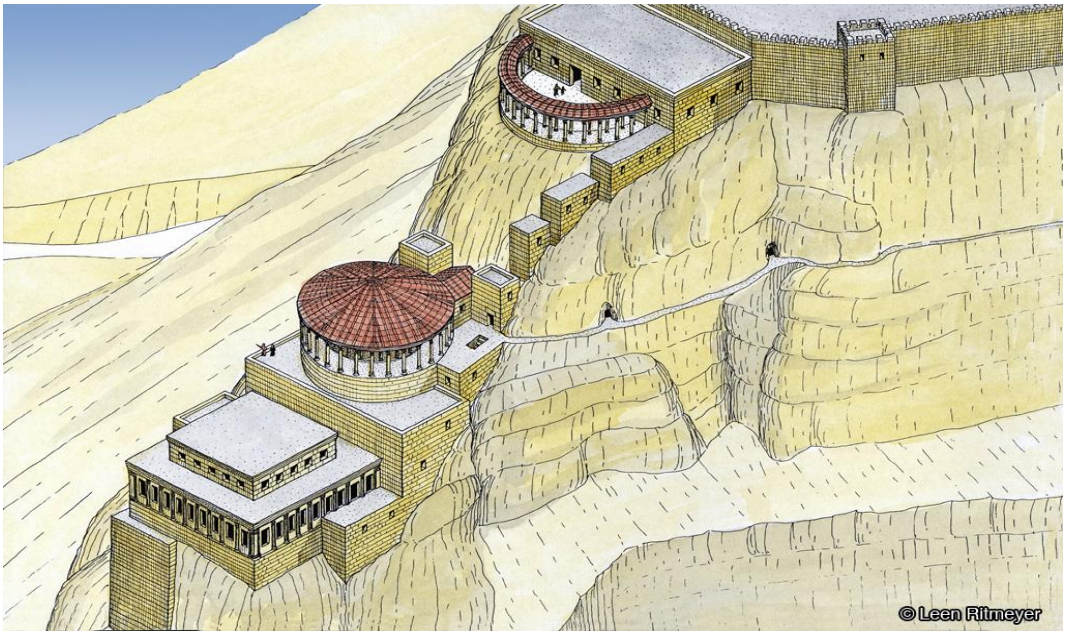

Figure 10. Drawing of the Terraced Palace at Masada curtesy of Leen Ritmeyer Archaeology.[11]

[10] Copy of the drawing of the Third Winter Palace purchased from http://ritmeyer.com, Order No. 6333 dated 17.10.2023.
[11] Copy of the drawing of the North Palace at Masada purchased from http://ritmeyer.com, Order No. 6334 dated 24.10.2023.

The drawing above of the Northern Acropolis at Masada gives an exquisite representation of Herodian terracing. The king chose a topographically difficult plateau with natural terraces on which to build this magnificent palace. The remains are still visible today.

Figure 11. Northern Palace at Masada.[12]

This photograph was taken from the bottom terrace looking up at the Northern Palace at Masada as it can be seen today. There may have been a garden on the semicircular balcony (Netzer, 2006, pp. 258-260), or it may have contained planters with vines or creepers.

Garden Archaeology

What can Garden Archaeology add to our knowledge of Herodian gardens? How has it developed? Over a period of 60 years this new science has advanced from its infancy when Wilhelmina F. Jashemski et al. (2018, pp. 2-10) started out to explore ancient gardens discovering that ancient gardens had not been thoroughly investigated as they were considered empty spaces by archaeologists. (c) Cultivation mentioned on page 6 is investigated below.

Over 25 years of fieldwork in the Vesuvian area Jashemski was responsible for generating a methodology for exploring ancient garden spaces (Jashemski et al., 2018, pp. 2-10). The framework of garden planning can be

[12] Photo taken by the author at Masada in 2011.

identified in the landscape and features such as pathways, planting beds, tree pits, planting pots, and root cavities, water structures can be excavated (Gleason, 2016, p. 12). Netzer first used these methods at Masada, Casesarea, Herodium, and Jericho ascertaining the basic designs of the gardens to be explored (Netzer, 2001).

Identifying species of garden plants, bushes, and trees in ancient gardens is difficult but valuable archaeobotanical evidence can be obtained if the conditions are conducive for collecting samples.

Macrobotanical remains such as wood, charcoal, seeds, and fruit are collectable in some gardens, but these can only provide limited information about what grew in ancient gardens. The remnants can be contaminated as they may originate from different sources, for example wood and charcoal could have come from garden furniture, fences, pergolas, and even fertilizers for tilling the garden.

Microbotanical remains such as pollen (which is durable and can last for thousands of years) and phytoliths can also be recovered. Dafna Langgut discovered that plaster can sometimes trap pollen if the external building plaster was applied when the garden was in bloom. If plasterers used water from the garden to mix the plaster, pollen could have been caught in the mix (Langgut, 2022, pp. 1-3).

Equipped with this information about what it is possible to recover in garden archaeology, the time has come to explore the gardens of Herod the Great that have been analysed. There are three palaces that have been examined in this way—the Promontory Palace at Ceasarea, the Fortress-palace at Herodium, and the third palace at Jericho.

Promontory Palace

The lower Promontory palace was built on an outcrop of rock and consequently any garden would have had to be protected from the sea. The peristyle courtyard became a colonnaded area with a rock-cut pool at its centre (35 m ×18 m ×2 m). It had substantial planted containers. Rock-cut depressions (1.4 m long and 60 cm wide) were found (Levine & Netzer, 1986, pp. 158-162). Plants in containers would have been easier to cultivate and protect from the harsh saline environment. They were discovered between the columns with additional planters built into the walls. The colonnaded courtyard created pleasant, covered walkways 2.6 metres wide (Netzer, 2006, p. 109, 259).

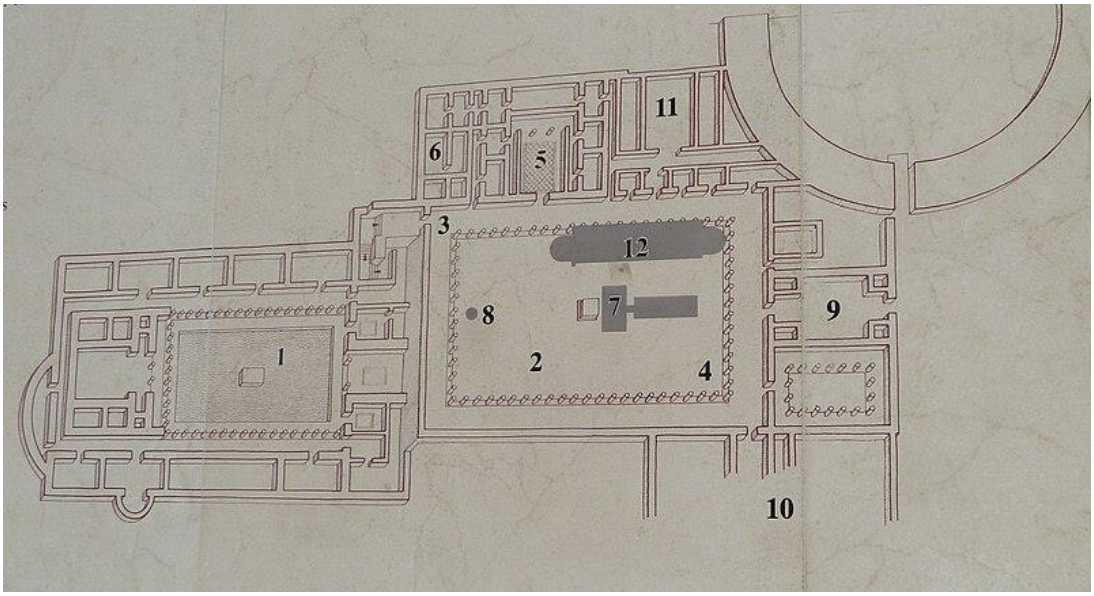

Figure 12. Remains of King Herod's Promontory Palace, Caesarea Maritima, Israel by Deror Avi.[13]

[13] https://commons.wikimedia.org/wiki/User:Deror_avi, accessed on 02.11.2023.

The upper palace was built later around 10 B.C.E. for the inaugural festivities of Caesarea Martima with a *peristyle* courtyard (42 m × 65 m) (Langgut et al., 2015, pp. 4-5). There is now tangible evidence available from this courtyard of plantings from fossil pollen analysis. Plaster evidence was collected from four column bases in this courtyard. Two samples were taken in the lower palace *triclinium* apse, which was open to the courtyard, pollen could have been carried by a breeze into the dining room when the room was being plastered. Two further examples were removed from the southside of the lower palace (Langgut et al., 2015, pp. 4-5).

It is likely that the following species were planted as ornamental trees or shrubs—*pinus* (pine), Cupressaceae (cypress/juniper), and *Olea europaea* (olive). *Corylus* (hazel) was detected which is not part of Israel's flora and could have been imported from the western Empire. Some evidence of herbs *Salvia* (sage), *Brassicaceae* (cabbage family), and small shrubs like *Cistus* (rock rose), Rosaceae (rose), were categorised. As these are pollinated by insects, and their pollen does not travel far, it is likely that these plants were cultivated in the garden (Langgut et al., 2015, p. 10).

Two unusual findings were reported: High concentrations (27.9%) of Cupressaceae pollen (cypress) and that of the non-native shrub hazelnut (*Corylus* 2.9%). Cypress was an evergreen tree, and it has been confirmed that it was used as an ornamental tree during the Roman period (Langgut et al., 2015, pp. 7-8). The hazelnut was most likely imported and was a common plant in Roman gardens. Both species were drought-tolerant, and it is probable, as the results above suggest, that they were grown in Herod's upper palace courtyard (Langgut et al., 2015, p. 9).

Plants that are common in the natural environment were also named—*Quercus* evergreen and *Quercus* deciduous, *Pistacia* sp. (terebinth), *Phillyrea* (broad-leaved Phillyrea), Poaceae (grasses), Chenopodiaceae (goosefoot family), *Artemisia* (sagebrush) (Langgut, 2022, pp. 7-9). These are wind pollinated varieties and may have been blown into the garden.

The following plants belong to the local flora of Israel—Asteraceae Asteroideae type (aster-like) Asteraceae Cichorioideae type (dandelion-like), Caryophyllaceae (pink family), Polygonaceae (knotweed family), Fabaceae (legumes), *Ephedra* (Mormon tea), Campanulaceae (bellflower family), *Apiaceae* (umbellifers), but as these are pollinated by insects it is unclear how they came to be present in the gardens.

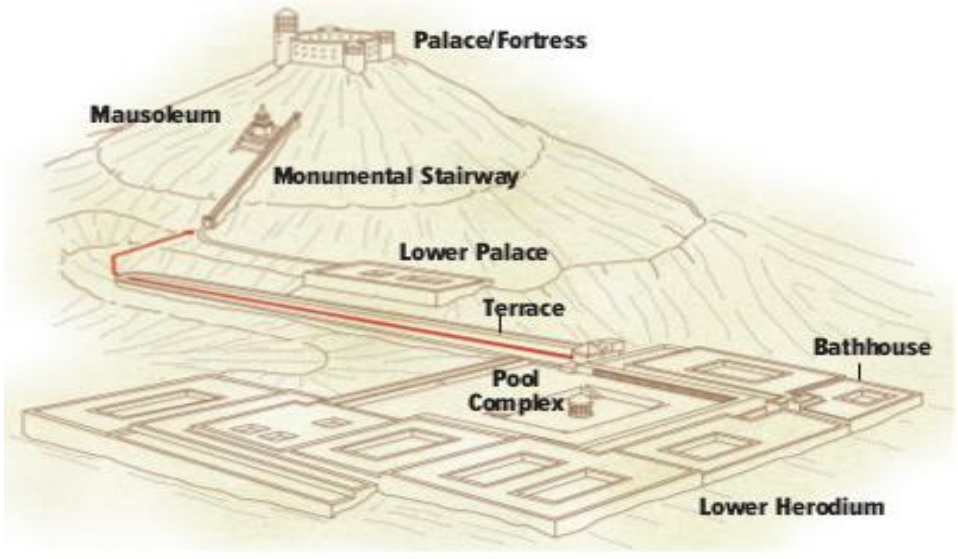

Figure 13. Schematic of Greater Herodium.[14]

[14] https://www.biblicalarchaeology.org/wp-content/uploads/herod2.jpg, accessed 11.9.2017.

In the *peristyle* garden in the palace-fortress thick brown soil was recovered which did not come from the local area which has a semi-desert environment. Plant identification was based on pollen extracted from the soil. The following plants were represented *pinus* (pine), Cupressaceae (cypress/juniper), *Olea europaea* (olive), *Phoenix dactylifera* (date palm), Rosaceae (rose), and *Salvia* (sage) which could have been planted as ornamental trees or shrubs (Langgut, 2022, pp. 7-9). The olive tree would have been a most unusual plant to cultivate in a garden in the harsh environment at Herodium but with careful husbandry and water it could have survived within the protected palace-fortress garden.[15]

Lower Herodium was an area of barren wilderness that Herod transformed into an architectural gem. One cannot but be amazed at his vision and imagination (Bergin, 2015; 2017, p. 365). Herod provided this site with a constant supply of water which was brought by an aqueduct from the supply to Jerusalem. "He brought a large volume of water from a great distance, at vast expense" (JW 1.420). It was a unique solution (Bergin, 2017, p. 365). The main garden was east of the pool with some garden spaces on the other three sides (Bergin, 2017, p. 366). Lower Herodium was exposed to the elements and as a result soil has been washed away over the centuries so no analysis was undertaken (Langgut, 2022, p. 5). Rabun Taylor suggests there could be no reason to think that the plants used in gardens around the Pool Complex in Lower Herodium would have been any different from those of other Herodian palaces (Taylor, 2015, p. 171).

Herod's Mausoleum and its garden were totally different from the other structures and gardens identified so far. The remains of a burial chamber with three stone sarcophagi have been excavated at the site (Netzer, 2013, pp. 12-15). Great stone ashlars were uncovered but scholars are divided as to whether this is truly the burial site of Herod the Great. This monumental building was partially cut into the rock, and it was surrounded by a terraced garden with evergreen trees standing out in sharp contrast to the bland desert terrain (Netzer, 2006, pp. 196-199). It would have been visible from Jerusalem, an "eternal" monument to the builder king. Netzer's supposition that the trees were evergreen can now be confirmed. The soil was analysed[16], and the following results were reported: *pinus* (pine), Cupressaceae (cypress/juniper), *Olea europaea* (olive), *Phoenix dactylifera* (date palm), Rosaceae (rose), *Salvia* (sage) (Langgut, 2022, pp. 7-9; 17-18).

Langgut has suggested that during Herod the Great's visit to Rome in 17 B.C.E he may have been inspired by a "tumulous-like burial structure, aligned along a visual axis between the Pantheon and the Mausoleum of Augustus" and then created his mausoleum along similar lines (Langgut, 2022, p. 18).

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[15] The plants of the natural habitat categorised were *Quercus* evergreen, *Pistacia* sp. (terebinth), *Tamaris* (tamarisk), *Phillyrea* (broad-leaved Phillyrea), Asteraceae Asteroideae type (aster-like), Asteraceae Cichorioideae type (dandelion-like), Poaceae (grasses), Caryophyllaceae (pink family), Chenopodiaceae (goosefoot family), Plantagaceae, *Mentha* type (Mint), *Ephedra* (Mormon tea), *Brassicaceae* (cabbage family), Malvaceae, *Carthamus* (distaff thistle), *Artemisia* (sagebrush), Fabaceae (legumes), *Apiaceae* (umbellifers), *Cyperaceae* (sedges), *Typha* (reed).

[16] Local flora were identified also including Asteroideae type (aster-like), Asteraceae Cichorioideae type (dandelion-like), Poaceae (grasses), Caryophyllaceae (pink family), Liliaceae, Chenopodiaceae (goosefoot family), Plantagaceae, *Ephedra* (Mormon tea), *Brassicaceae* (cabbage family), Urticaceae (nettle family), Polygonaceae (knotweed family), *Artemisia* (sagebrush), *Apiaceae* (umbellifers), Solanaceae (nightshades).

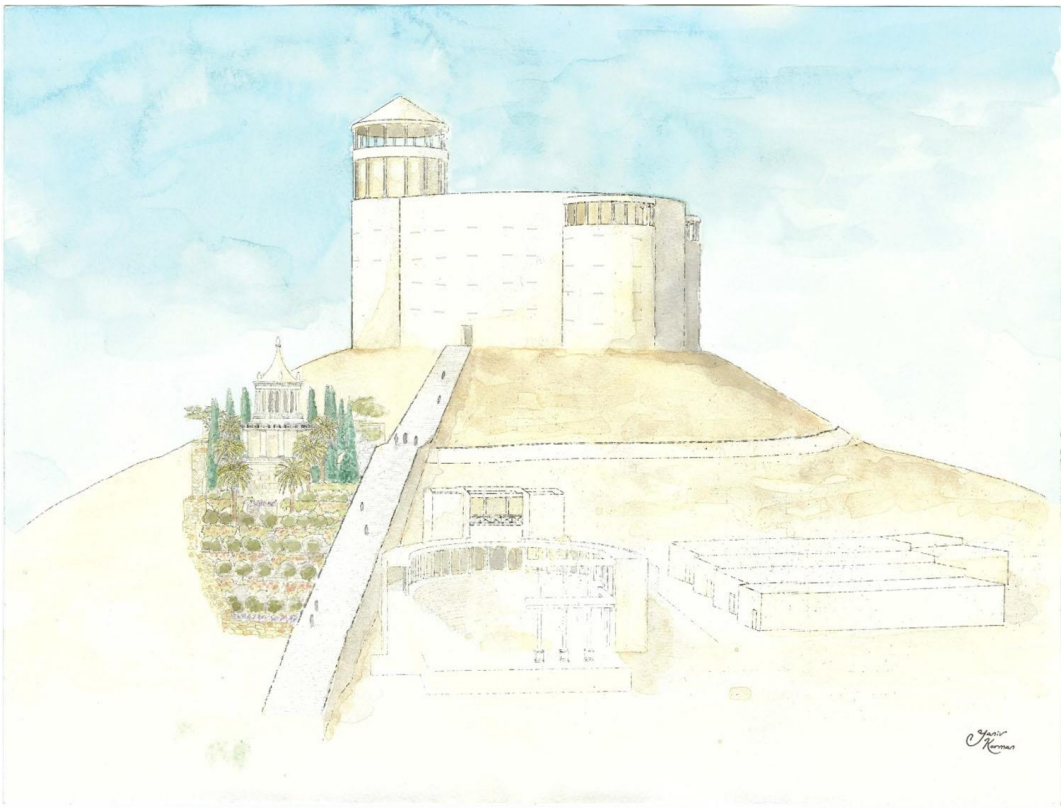

Figure 14. Reconstruction of the mausoleum garden during its early period, around 15 BCE (drawing by Y. Korman) (Langgut, 2022, p. 12).

Jericho

Herod the Great built three palaces at Jericho during his reign. The first was created before he had complete autonomy and was introverted in aspect with most of the focus inwards towards a *peristyle* courtyard which took up an area about one-third the size of the whole palace. It was overlooked by rooms on three sides. A *triclinium* opened from this courtyard which may have been surrounded by a garden.

The second palace was built on the ruins of Hasmonean palaces that were destroyed in the earthquake of 31 B.C.E. in two wings one overlooking the other with a terraced garden. The main wing in the north had a central peristyle courtyard (34 m × 28 m). It had a raised garden, a Roman innovation that Herod included. The two surviving swimming pools were united, and another garden area surrounded them. Large pools for swimming were a consistent feature in Herodian palaces.

The third palace was built after Marcus Agrippa's visit to Judea in 15 B.C.E. This palace was a rare creation encompassing the Wadi Qelt running through the centre with the two sections joined together by a bridge (not extant) (Bergin, 2022, pp. 614-617). This construction bears the hallmarks of Roman engineering and building along with traditional building techniques. The building styles were covered with plaster and stuccoed to look like marble. No one at the time would have been able to discern the two different building styles. It has been suggested that as Agrippa and Herod were close friends, he sent Roman master craftsmen to assist in the creation of this magnificent *paradeisos.*

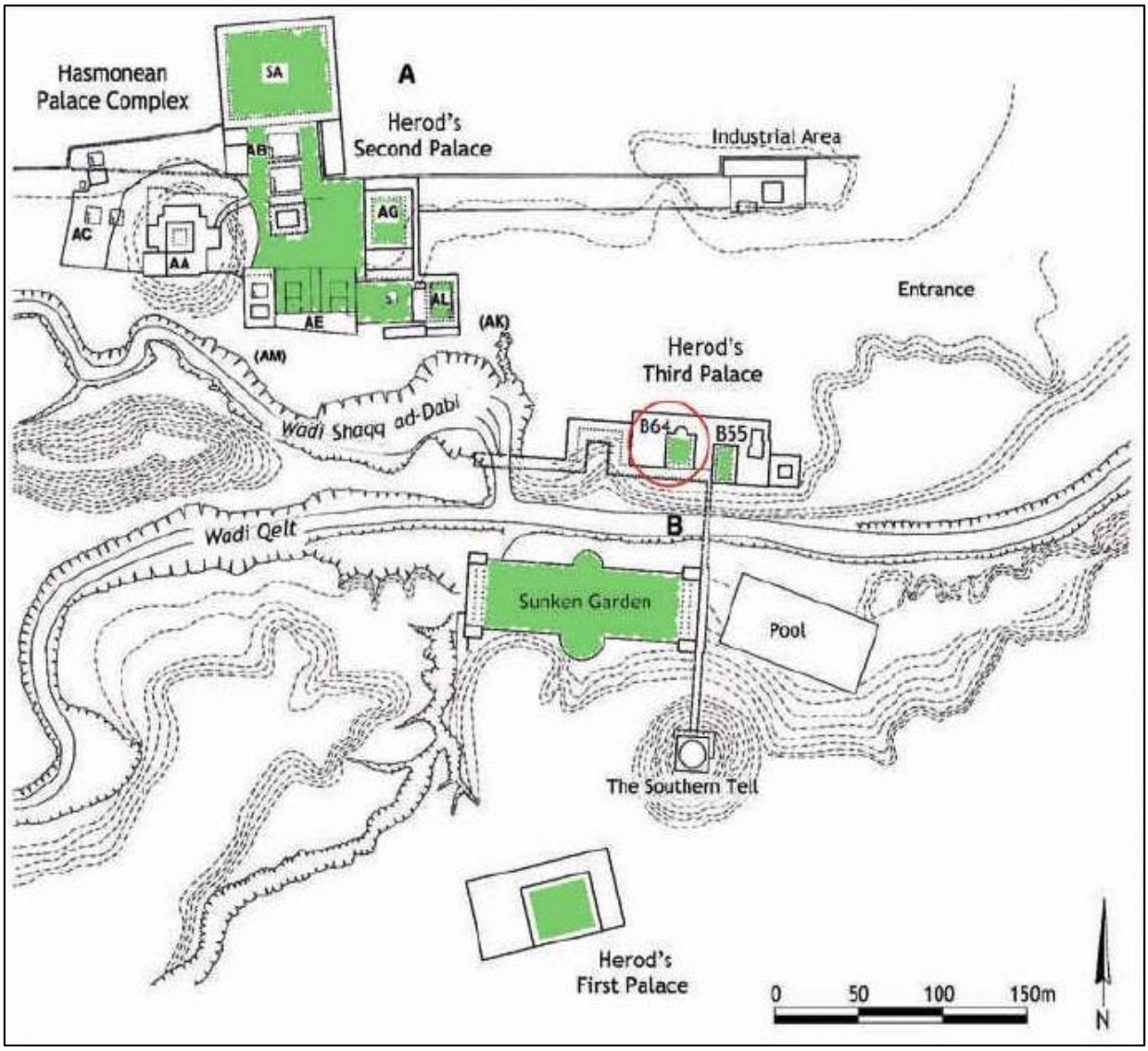

Figure 15. Location of garden areas in the Winter Palace Complex in Jericho. Image by K. Wilczak and K. Gleason, after E. Netzer 2001: plan 2 (previously published in Gleason and Bar-Nathan 2013, Fig. 16.2) (Langgut, 2020, p. 73).

In the first palace two possible garden areas were identified, the formal *peristyle* courtyard where drains entered the garden from the north alluding to a possible cultivated area and another potential garden around the *triclinium*, but no planting pots were found. No archaeobotanical remains were collected (Langgut, 2022, p. 10). In the pool complex of the second palace, on the western side of the water, 15 planting pots (*ollae perforatae*) were discovered in two rows running parallel to the pond. More pots were discovered on the eastern side. The supposition was that the pots may have contained climbing plants that were trained over a pergola or trellis (Gleason & Bar-Nathan, 2013, pp. 317-327). The *peristyle* courtyard of the main wing of the second palace had a raised central area but no planting pots were exposed. The southern wing of this palace had a swimming pool with a garden but only one planting pot was found *in situ* with two adjacent water channels. This innovative palace had been planned around its gardens and unique landscaped spaces (Gleason & Bar-Nathan, 2013, pp. 327-333).

Herod's third palace exhibited some of the finest garden remains ever excavated in the Roman world (Netzer, 2001; Rosenberg, 2008). It contained two *peristyle* courtyards (B55 and B64), a bridge connected this wing to the sunken garden, with a tiered hanging garden, flanked on two sides by raised colonnaded walks overlooking the garden and the wider *paradeisos.* In the *peristyle* B64 four planting pits and 33 planting pots were excavated. This garden provided essential information about how gardens were constructed in Herod's time. It gave the excavators an idea of site preparation particularly the shaping of the terrain to bring water to the cultivated garden. No planting pots were found in B55.

Most of the planting pots retrieved had a central hole in the bottom of the pot and two or three other holes for roots in the sides (Yellin & Gunneweg, 1989, pp. 85-90). The pots themselves range from 12-22 cm in size. A detailed pollen investigation has been carried out on both the pots and the soil (Langgut & Gleason, 2020, pp. 71-78). The results were successful allowing Langgut and Gleason to identify plants in this garden. The possible ornamental plants revealed were: *Pinus* (pine), Cupressaceae (cypress/juniper), *Ole europaea* (olive), *Cedrus* (cedar), *Platanus orientalis* (ornamental plane), *Phoenix dactylifera* (date palm), *Laurus nobilis* (laurel), and *Myrtus communis* (true myrtle) (Langgut & Gleason, 2020, pp. 71-78). These large trees and shrubs were planted in the small area of the courtyard (12.7 m × 9.3 m), therefore, it is logical to presuppose that the trees were smaller than normal and could have been miniaturized (Langgut & Gleason, 2020, pp. 80-81).

This practise was reported in the wider Roman world, but the question remains open as to whether Herod was the first to use this type of gardening or did he adopt it from elsewhere?

Comparison Between Herodian Gardens and the Villa Arianna (Stabiae)

The Villa Arianna was the largest Roman *peristyle* garden in Italy to be excavated. It is located on the western hills of Varano with a cliff top view of the bay of Naples. The Villa Arianna was covered in ash by the eruption of Vesuvius in 79 C.E. It was built in the second century B.C.E. The first excavation was carried out by Karl Webber in 1757-1762. In 2008 another excavation was undertaken revealing a very large *peristyle* garden (Gleason, 2008, pp. 8-15). This garden offers an opportunity to explore a garden in the Empire contemporaneous with Herod's palaces. Gleason used the method of recovering pollen from plaster facing the garden to collect samples (Langgut, 2022, p. 4). The pollen represented from the analysis showed *Pinus* (Pine), Cupressaceae (cypress/juniper), *Olea europaea* (olive), *Platanus orientalis* (ornamental plane), *Myrtus communis* (true myrtle), *Juglans* (Persian walnut), V*itis vinifera* (grapevine), *Tillia* (linden), *Cedrus* (cedar), *Alnus* (alder), *Corylus* (hazel), *Castanea* (chestnut), *Carpinus* (hornbeams), *Ulmus* (elm), *Picea* (spruce), *Abies* (fir), *Betula* (birch), *Salix* (willow). *Phoenix dactylifera* (date palm) was revealed by phytolith analysis.[17]

Looking at the results it is possible to identify trees and shrubs common to all the gardens under discussion—pine, cypress/juniper, olive. The Aleppo pine can be identified directly with Israel and remnants of this type of forest can be found in Galilee, Samaria, Judea, Gilead, and Mount Carmel. It grows to a height of eight metres plus.[18] Isolated remains indicate that the cypress grew wild in Israel. Wild cypress remains were found in Galilee (Kziv Stream), on Mount Hermon, Gilead, and Edom. The tree can grow to a height of c. 25 metres.[19]

[17] https://www.wildflowers.co.il/english/plant.asp?ID=285.
[18] https://www.wildflowers.co.il/english/plant.asp?ID=285, accessed on 6.11.2023.
[19] https://www.wildflowers.co.il/english/plant.asp?ID=317, accessed on 8.11.2023.

Consequently, both these trees must have been grown in Herodian gardens as ornamental plants. Olive trees grow naturally in warm, sub-tropical climates and are usually grown in orchards, consequently, they also may have been planted in Herodian palaces as a decorative element.

Pollen from pine, cypress, and hazelnut was identified at Caesarea and the Villa Arianna. Cedar (known as the prince of trees), ornamental plane, and true myrtle were common pollens analysed in both Jericho and the Villa Arianna. The identification of date palm in the peristyle garden of the Villa Arianna is unusual. Evidence of date palm pollen was reported from the fortress-palace and the mausoleum at Herodium and gardens adjacent to the Villa Ariana. Emperor Augustus is said to have loved Judean dates perhaps that could have been the reason they were introduced. These were all species found in Roman gardens in the early Roman era (Langgut, 2022, p. 4).

All the information that has come to light in the comparison between the Herodian Palaces and the Villa Arianna (as a typical Roman *peristyle*) points to an ancient plant trade that thrived (Macaulay-Lewis, 2010; Langgut, 2022, p. 4). The Romans actively sought imported plants to demonstrate their triumphs and enhance their gardens. Hazelnut and cedar were imported west to east and date palm was introduced from east to west.

Conclusion

There is evidence to suggest that Herod was inspired by Augustus and his son-in-law Agrippa. As friends they would have exchanged ideas when they met. Herod was influenced by the architecture from the east and from the west. He was innovative and the monumental building gardens explored, the Promontory Palace, the fortress-palace, and mausoleum at Herodium, and the *paradeisos* at Jericho point to his originality both as an architect and a garden expert.

The survey of the archaeological record exploring the remains of Herodian gardens showed how Herod had stamped his character on the landscape. There was ample evidence of his desire to provide a bountiful supply of water to all Herodian constructions comprising reservoirs, aqueducts, tunnels, and pools. Herod created unique structures, engineered masterpieces that defied nature, and produced unique garden enclosures. The concept of arcaded pavements with flowers is recognised as a Herodian innovation (Bergin, 2018, p. 379; Netzer, 2009, pp. 171-180).

Practitioners of garden archaeology sampled, analysed, and identified the pollen remains at Caesarea, Herodium, Jericho, and the Villa Arianna. These results provided the common species found in the gardens—pine, cypress/juniper, olive, cedar, and ornamental plane. It proved that ancient plant exchanges were transacted. Small plant pots (*ollae perforatae*) discovered in Jericho suggested that the ornamental shrubs and trees in this garden had been dwarfed. Herod may have introduced a unique gardening fashion to the Roman world (Langgut, 2022, p. 20).

Herod was inspired by what he observed as he travelled. He used this knowledge to create innovative and exceptional architectural structures. His gardens were remarkable. Plants from the local flora were selected and these were complemented with plants from the Roman world. All the gardens under discussion had one common element, they were all cultivated areas set in very harsh environments. Herod excelled at challenging nature. He moulded traditional techniques and Roman innovative ideas that produced a particular and recognisable Herodian Style. His gardens like his architecture were unique.

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