The monumental fountain in the Athenian Agora: reconstruction and interpretation*

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Abstract

In the last ten years the architecture of and various issues regarding the monumental fountain in the Athenian agora, a building not preserved above foundation level, leaving all possible reconstructions largely hypothetical, have undergone renewed scrutiny. Brenda Longfellow has briefly reviewed its evidence in her book on Roman monumental fountains and suggests that, like the more recent reconstruction of the Olympia nymphaeum, the Agora fountain had two stories, based on the thickness of its back wall. Additionally, Julian Richard has considered the monument in terms of siting and meaning in his monograph on Roman monumental fountains in the eastern empire. These studies leave questions regarding the monument that require a fresh look at the building.

In this article I will reconsider the evidence and possibilities for the architecture and decorative program of the Athenian fountain, and the degree to which its reconstruction based on the Olympia structure is likely. Additionally, I will postulate the possible water technology utilized in the structure, a topic largely ignored in previous studies. I will also discuss the meanings behind the siting of the 'nymphaeum', its imperial connections, and how the monument and its supply aqueduct visually changed the southeastern Agora space and the important ceremonial approach to the Acropolis, the Panathenaic Way. This focused restudy will allow the building to be better understood within its context in Imperial Greece as well as within Hadrian's program of Athenian euergetism.

Keywords: Fountain, Athens, Agora, Hadrian, Antonine.

During the 1954 American School of Classical Studies' Agora excavation season the remains of a curvilinear Roman monumental fountain (Nymphaion) were investigated in the southeast corner of site. Very little above the foundations of the building remained *in situ*, and the 11th century AD Church of the Holy Apostles sits on the western portion of the monument. Homer Thompson associated a few decorative architectural elements found in various nearby locations and a statue with the fountain's superstructure but stated that no reconstruction was possible because of the scanty remains at the site. He compared aspects of the building to the Nymphaeum of Herodes Atticus at Olympia and the monumental fountain at Tipasa in Algeria, and suggested that the Agora Nymphaion was covered by a semi-dome as was postulated for those buildings. As a part of her 1979 dissertation, Susan Walker went so far as to suggest that the architect for both the Olympia and Athenian structures was the same, presenting a reconstruction that resembled the contemporary reconstruction of the Olympia Nymphaeum (Figure 1);[1] at that time Walker supported the theory that both buildings had one story and were hypaethral. Three additional statues were associated with the Athenian structure.[2]

Recently the architecture of and various other issues regarding the monumental fountain in the Athenian agora have undergone renewed scrutiny. At the outset it must be stated that since the building is not preserved above foundation level all possible reconstructions are largely hypothetical. Brenda Longfellow briefly reviewed the evidence in her book on Roman monumental fountains and speculated that, like Bol's 1984 reconstruction of the Olympia Nymphaeum, the Agora fountain had two stories based on the fact that the thickness of the foundation trench for the back wall would allow the structure to support an extra level. Additionally, Julian Richard has considered the monument in terms of siting and meaning

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[1] For the one story reconstruction of the Olympia Nymphaeum, see Yalouris 1982: 107, ill. 43.

[2] Thompson 1955; Walker 1979.

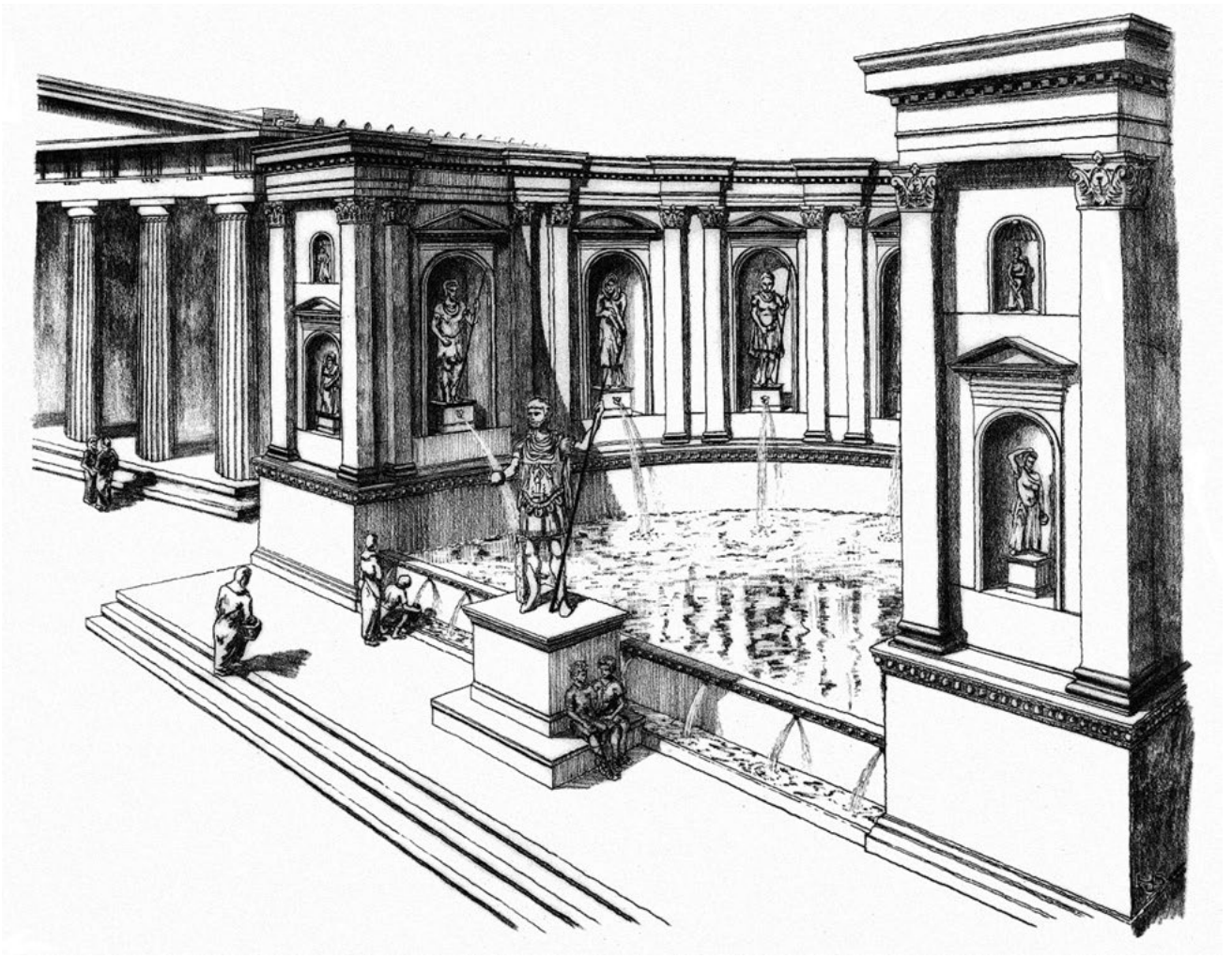

Figure 1. Restored perspective drawing of the 'nymphaion' looking southeast by Susan Walker.
(Courtesy American School of Classical Studies at Athens: Agora Excavations)

in his monograph on Roman monumental fountains in the eastern Roman Empire. These studies leave questions regarding the monument that require a fresh look at the building.

In this paper I will reconsider the evidence and some possibilities for the architecture and decorative program of the Athenian fountain, and the degree to which its reconstruction based on the Olympia structure is likely. Additionally, I will postulate the possible water technology utilized in the structure as indicated by its supply aqueduct, a topic largely ignored in previous studies. I will briefly discuss the discernible meanings behind the siting of the Nymphaion, its imperial connections, and how the monument and its supply aqueduct visually changed the southeastern Agora space, functions and the important ceremonial approach to the Acropolis. This focused restudy will enable scholars to better understand the building within the context of the major 2nd century AD water embellishments of Imperial Greece both symbolically and technologically.

The remains

In situ remains

As mentioned above, the fountain sits in the southeast corner of the Agora, which, given its high elevation compared to the rest of the Agora (66.88m above sea level on the foundation for the floor), and the location of water sources brought in from the east of the city is topographically logical (Figure 2 a). It is

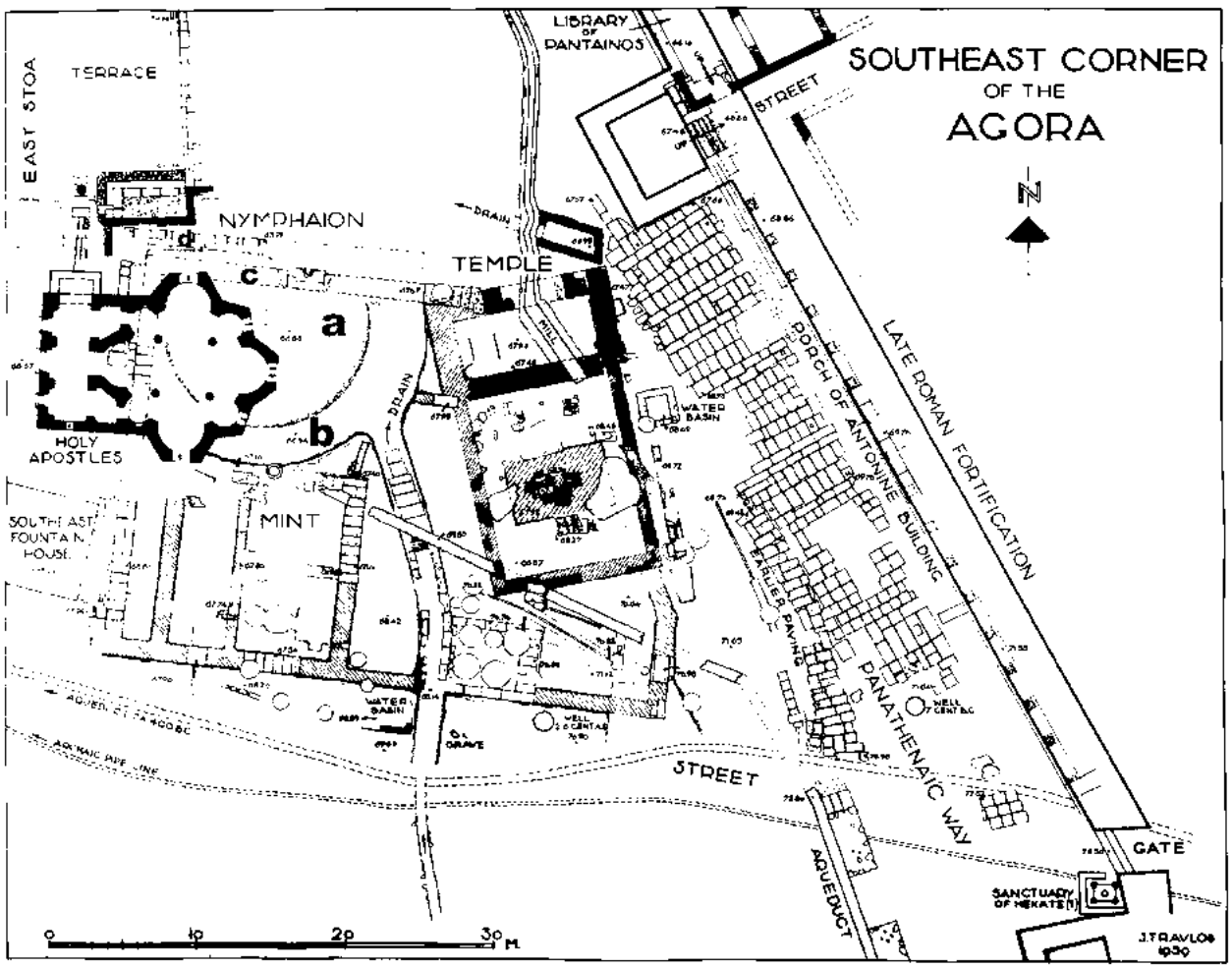

Figure 2. Actual State plan of the Southeast Corner of the Agora by John Travlos with added lettering. (Courtesy American School of Classical Studies at Athens: Agora Excavations).

the last of a series of hydraulic installations to occupy the area. For example, as can be seen in the center left side of the state plan, the building effectively blocks off access to the Southeast Fountain House, which dates to the 6th century BC (Figure 2). It is notable this Archaic structure was still functioning at the time Nymphaion was built, as was the 4th century BC fountain house in the southwest corner of the Agora.[3] Therefore the Roman building was not an attempt to renew ruined resources. Thompson's original excavation report described the foundations for the floor of the extant Roman fountain, which would have served as the bottom of the interior of the water basin (Figures 2 a; 3; 4) as somewhat larger than a semi-circle with a radius of 7.10m; Walker gives this measurement as 7.25m (Figure 5). The distance from the central axis of the rear of the flooring to the front of the basin is 8.30m. The concrete surface of the basin floor show grooves that record the locations of rectangular paving slabs. None of the slabs remain. A cutting for the foundations of the surrounding wall, 2.60m wide, bounds the outside of the floor (Figures 2b; 4). The extreme width of this trench is a point to which we will return below.

A conglomerate stretcher block topped by two orthostates remains *in situ* at the north part of the east side of the outer wall. Note that one of the blocks was cut back to allow the contemporary eastern extension of the Great Drain to pass (Figure 2, labeled 'drain' to the east of the Nymphaion). The drain did not communicate with the fountain at this point. There are also two blocks *in situ* at the western face of the outer wall near its north-east end, below the basin's floor level. The northernmost block is made of

[3] Leigh 1998: 15-17.

Figure 3. East end of the 'nymphaion' looking south.
(Courtesy American School of Classical Studies at Athens: Agora Excavations).

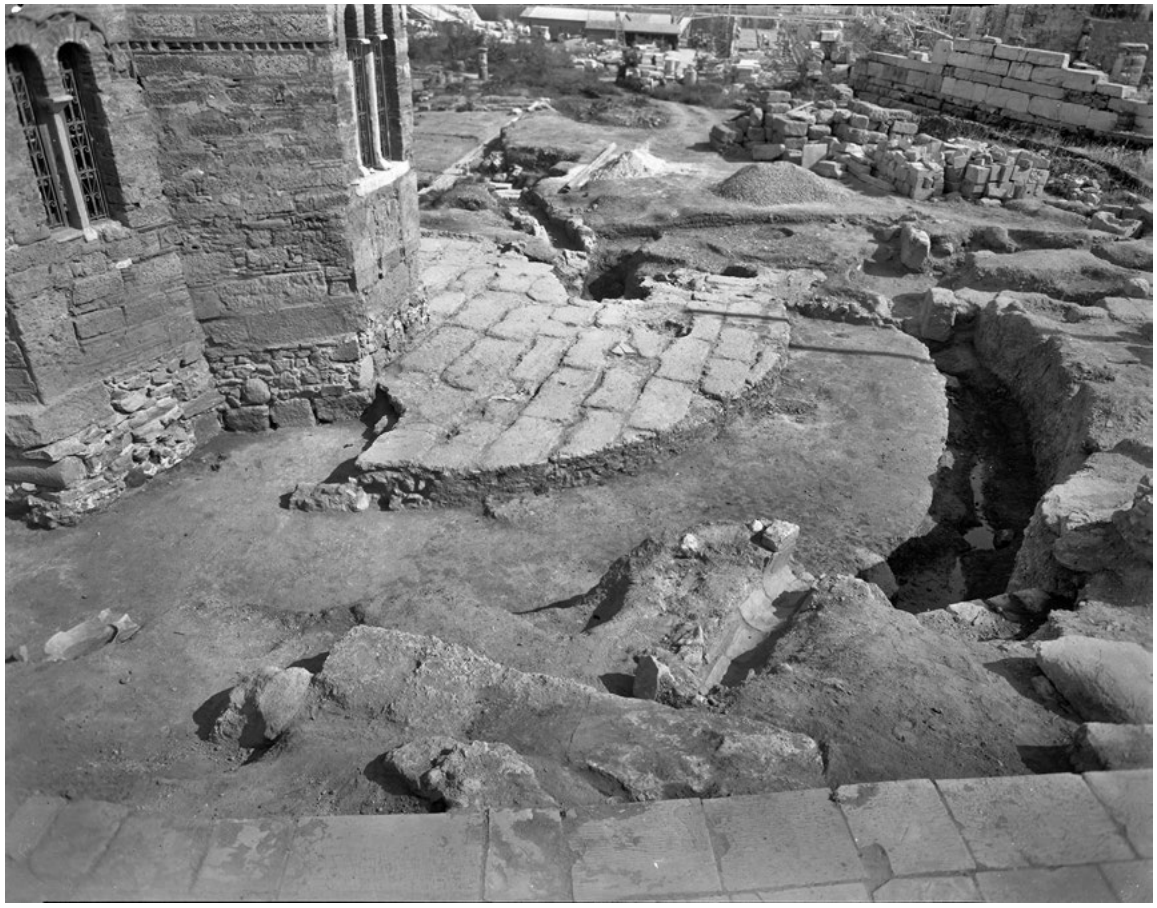

Figure 4. East half of the 'nymphaion' looking north.
(Courtesy American School of Classical Studies at Athens: Agora Excavations)

Architectural section	Measurement in meters	Measurement in Roman feet (.296m)
Concrete foundation for floor showing negatives of marble paving slabs.	7.10 m radius (Thompson); 7.25 m (Walker)	23.99 (Thompson) 24.49 (Walker)
Central axis depth of basin.	8.30m	28.04
Full building front length.	19.50m	65.88
Basin front length.	14.50m	48.99
Back wall trench width.	2.60 m	8.78
Frontal platform width.	3.60 m (Thompson)	12.16
Monument base.	1.65m x 1.70m	5.57x 5.74
Reconstructed monument base	2.20^2	7.43^2

Figure 5. Table showing the measurements of the 'nymphaion'. All dimensions from Walker 1979, except where noted.

poros and the southern one is of conglomerate. There is also a partial base slab made of blue Hymettian marble, found *in situ* on the bedding for the parapet that closed the basin, indicating the material that made up that element. A rectangular foundation for an approach to the building 3.60m wide (Figures 1; 2c; 3, right) abuts the straight, northern edge of the parapet bedding, and given the drop off of the area in front of this closing rectangular terrace, Thompson calculated that three steps led up to this level. Walker reported that part of the lowest step is preserved on the western side. (Figure 2d) At the rear of the rectangular foundation, on the central axis of the flooring, is the foundation for a base measuring 1.65m front to back and 1.70 m wide. Walker suggests that the width of the base might be restored to $2.20m^2$ without giving her reasoning. Both scholars restored a monumental imperial statue on this base. No remains of such statue have been found in the excavations.[4]

Remains associated with the superstructure

Other than the parts of the building discussed above, nothing remains *in situ*. A number of architectural elements found during the excavations, in the vicinity of the fountain and built into the Church of the Holy Apostles, have been identified as decorative pieces of the building (Figure 6). Some pieces have been associated based on their vertical curvature. Others have been joined in groups because of common dimensions and molding sequences.

Walker restored the four wall crowning moldings of the same dimensions as topping a plinth located around the inside of the basin on which an engaged Corinthian order sat. This location is implied by the water deposit on block A2552b. She considered one smaller scale crowning molding possible evidence for decorative framing niches on the interior of the back wall. Utilizing the pilaster capitals, Walker reconstructed a series of engaged Corinthian pilasters with a suggested height of 5.60m. As in the case of the restored dimensions of the monument base on the terrace, no explanation is given for this measurement. To explain the association of a similar full capital, Walker reconstructed free-standing columns fronting the ends of the wall enclosing the basin. Notably, Thompson also associated a section of curved architrave decorated with a guilloche pattern on its soffit with the building. He stated that the soffit of the piece showed that it sat on full columns and suggested that a free-standing Corinthian order fronted the fountain's enclosing wall.[5] However, Thompson had not associated the pilaster capitals with the building, thus this architrave could indicate that there were some free-standing columns inside the building. Walker used the partially preserved raking geison to postulate that there were also pediments on the wall ends. Finally, Walker assigned the entry point of the water to the center of the fountain's back wall, but this is not shown in her reconstruction (Figure 1). She stated that these elements of the reconstruction could be given 'with certainty'.[6] Note that Walker also mentioned that some marble facing plaques were found in the excavations, so there is evidence for marble veneer of the building.[7] The fact

[4] Measurements from Thompson 1955: 57-59 and Walker 1979: 151-156.
[5] Thompson 1954: 58.
[6] Walker 1979: 160.
[7] Walker 1979: 157.

Architectural Element	Dimensions	Notes
Wall crowning molding A2489	0.32m high	Found above the fountain levels immediately to the west of the building.
Wall crowning molding A2499	0.32m high	
Wall crowning molding A2552a	0.32m high	
Wall crowning molding A2552b	0.32m high	Upper surface has traces of water deposit.
Wall crowning molding A2737	0.32m high	
Wall crowning molding A2553	'Smaller scale'	
Water spout A2444		White Pentelic marble with a wreath. Curved channel cut in top with a heavy water deposit.
Water spout A2472	Maximum width of face 0.13m	White Pentelic marble lion's head. Found in the area of the fountain.
Lower piece of a plinth or pilaster carved with the upper torus of an Ionic base.	0.21m thick at base 0.41m wide at base 0.455m high Bearing surface: 0.58m by 0.31m	Found In the foundation rear wall trench of the fountain.
Corinthian pilaster capital A4073.	0.21m thick at base 0.41m wide at base 0.455m high Bearing surface: 0.58m by 0.31m	Reused in the late-Roman basilica built behind the library of Pantainos.
Corinthian pilaster capital A4474.	0.21m thick at base 0.41m wide at base 0.455m high Bearing surface: 0.58m by 0.31m at base	Reused in the late-Roman basilica built behind the library of Pantainos.
Corinthian pilaster capital uncatalogued.	0.21m thick at base 0.41m wide at base 0.455m high Bearing surface: 0.58m by 0.31m at base	Reused in the late-Roman basilica built behind the library of Pantainos.
Corinthian pilaster capital.	0.21m thick at base 0.41m wide at base 0.455m high Bearing surface: 0.58m by 0.31m	Stored in the southwest marble pile in the Library of Hadrian.
Corinthian pilaster capital.	0.21m thick at base 0.41m wide at base 0.455m high Bearing surface: 0.58m by 0.31m	Stored next to the Tower of the Winds.
Full Lotus and Acanthus capital.	Similar height to pilaster capitals	Reused in the Church of the Holy Apostles.
Fragmentary Dentil A2558.	Height restored to 0.16m	Cyma reversa and rebate on top. Found near the Church of the Holy Apostles.
Corner of a raking geison A2425.	Maximum height 0.16m Width 0.19m Angle of the cornice 14°	Recovered from the marble piles near the fountain.
Two uncatalogued undecorated bases.	0.915m on sides 0.54m high	One has a vertical cutting for a water pipe. Frantz 1971: 8 and plate 5,e.
Fragments of marble veneer.		Found in the excavations.
Curved piece of architrave with guilloche decoration on its soffit	Measurements unavailable	Associated with the building by Thompson 1954: 58. He states that the state of the soffit shows that this rested on full capitals.

Figure 6. Table with information on the pieces of superstructure associated with the 'nymphaion'. Information taken from Walker 1979, except where noted.

that some of the pilaster capitals share the same curvature as the enclosing wall of the Nymphaion does strongly suggest that they belong on the fountain, even though they were found elsewhere. But, if it does belong to the structure, the location of the corner of the raking geison could equally have been somewhere on the building's interior, perhaps crowning a niche cut into the surface of the enclosing wall.

Architectural Element	Moldings and decoration
Wall Crowns	From bottom to top: cavetto, bead and reel, egg and dart, bead nd reel, rebate. Some vertical faces are curved that would fit on the curve of the fountain's back wall.
Pilaster Capitals	On the frontal side are two palmettes with three leaves, flanking the central stem of a fleuron. The fleuron continues down the bell. Calyces sit diagonally. Helices flank the palmettes. Below the palmettes: ovolo, tongue, ovolo. Acanthus leaves appear on the bell's four corners. The sides carry diagonal palmettes.
Full Capital	Lotus and acanthus; the acanthus is the same as those on the pilaster capitals.
Fragmentary dentil	Topped by a cyma reversa and rebate.
Corner of raking geison	On top: ovolo and rebate. Below: hawksbeak
Curved piece of architrave with guilloche decoration on its soffit	Associated with the building by Thompson 1954: 58. He states that the state of the soffit shows that this rested on full capitals.
Bases	No decoration. Finished on all sides. Because of their measurements Waker does not include them in her reconstruction.

Figure 7. Table showing the decorative elements appearing on the architectural members associated with the fountain. All material from Walker 1979 except where noted.

Walker continued to suggest additional elements of superstructure based on comparison with the 2nd century AD monumental fountains at Olympia and Nikopolis. She reconstructed a total of ten Corinthian pilasters lining the enclosing wall of the water basin, presumably based on a comparison of the measurements of the internal perimeter of the curved wall and the largest width of the pilaster capitals (0.58m, see Figure 6). The width of the niches was calculated to be ca. 1m, and these were assumed to have been surrounded by architectural elements that are not preserved. She suggested that statues stood in these niches. The 2.50m width of the short ends of the surrounding wall would not give room for both free-standing columns and niches, so she stated that there were no niches at the ends of the walls, although these are shown in the reconstruction (Figure 1).Therefore, all sculpture must have been contained within the interior of the basin wall. Walker added a technical point, stating that the thickness of the back wall of the basin would allow a 'circulation channel' within its fabric, and she postulated that the water would then be divided inside the wall and exit through 'branch pipes' located 'below the level of the niches.[8] This contradicts her previous statement that the water entered the basin at the center of the back wall. This is a point to which we will return.

There is no direct evidence for the roofing of the building. While Thompson and Wycherley have suggested that the building was covered with a semi-dome,[9] Walker argues that, while such a roofing system would visually relate the Nymphaion to earlier Greek fountains located in actual grottos with religious functions, this was likely not the case. She based this conclusion on comparison with other large Roman semi-circular buildings that avoid having an apsidal form extending from their rear wall, as such a curve would normally be contained within outer walls or cut into a hill. Walker suggested two possible solutions for roofing the Athenian building. As roof tiles were found in the excavations there may have been a curved 'stoa-type' roof at the top, as that reconstructed by P. Aupert on the nymphaeum at Tipasa.[10] Alternatively, a plain attic may have topped the building. While Walker suggested that either roofing system is plausible, one must note that, unless extremely narrow, a 'stoa-type' roof would structurally need to bridge a space, presumably between the enclosing wall of the fountain and a free-standing colonnade, which does not match the engaged Corinthian order likely in the Athenian example.

From the time that the Nymphaion was excavated, Thompson associated a previously discovered 2/3 life-sized statue of the 'Venus Genetrix' type carrying a water pitcher with the decoration of the building.[11]

[8] Walker 1979: 161.
[9] Thompson and Wycherley 1972: 203.
[10] Aupert 1974.
[11] Thompson 1953: 53-54 and plate 19 a and b.

Additionally, he theorized that fragments of a similarly sized Amazon should belong to the Nymphaion and he hypothesized that the fountain displayed reproductions of 'adaptations' of famous earlier sculptures.[12] Because of the small size of the Venus statue, Walker questioned its association, as it would be difficult to place within the building. Nevertheless, given the decorative elements of other Roman monumental fountains, particularly the one at Olympia, Walker believed that an elaborate sculptural program must have adorned the building. She suggested that a statue of Hadrian, the original donor of the water supply system, would have stood on the monumental base on the Nymphaion terrace. Hypothesizing that an Imperial dedication would have featured a series of Imperial commemorative statues, Walker associated two additional sculpted heads found in the area with the building. One is a Pentelic portrait of Faustina the Younger. A larger head, possibly of Aelius Verus, was also associated with the decorative assemblage. However, Longfellow pointed out the tenuous nature of assigning these sculptures to the fountain. Her reasons are that over time, as has been demonstrated at other excavations, statues can move long distances from their original positions and that there is evidence in this area of the Agora for both marble workshops and other monuments on which such decorative elements could have been used. Longfellow also noted that the different sizes of the imperial heads imply that they did not come from the same location. She did suggest that the water pitcher that the Venus statue carries makes it the most likely of the group to have been associated with the building. She also pointed out that the under life-sized statue is too small to have occupied a niche in the same single story as Walker's reconstructed full pilaster Corinthian order, and suggests that there might have been two levels of sculptural decoration, with the upper more diminutive than that on the first level, similar to the arrangement at the Hydrekdocheion of Trajan in Ephesos.[13] This brings us to the next point of discussion – how many stories occupied the monumental fountain in the Athenian Agora?

One or two stories?

Roman construction processes

In a 1984 publication Renate Bol reconstructed a second story on the Olympia fountain based on the number of statues found in the excavations, which would fit in two rows of superimposed niches, along with the existence of supporting buttresses located at the rear of the upper basin.[14] Walker did consider the possibility of a second story for the Athenian building, although she was dubious that the resulting height would fit well within the surrounding physical context of the Athenian fountain.[15] Longfellow subsequently suggested that the Athens monumental fountain should be reconstructed with two stories based on the thickness of the back wall and similarities with the Olympia nymphaeum.[16] Indeed, Walker found the Olympia and Athenian monumental fountains to be so much alike that she suggested the earlier Athenian building influenced the design of the Olympia example, and that they might have been designed by the same architect.[17]

Before comparing the actual similarities of the two monumental fountains, some preliminary points must be addressed regarding the current understanding of the process of planning Roman structures and the functioning of Roman architectural workshops. The studies conducted on such organization have largely concentrated on major construction projects in Rome, but it is imperative this evidence be considered in relation to what may have been the situation in the province of Achaia, and in Athens and Olympia in particular. In her consideration of the Baths of Caracalla, Janet DeLaine discussed evidence for the building industry in Rome at the time of the Severans. Based on a meticulous study of the fabric of the Baths she estimates the number of both skilled and unskilled workers necessary for the various portions of the project, and concluded that there must have been a pre-existing force of workers in the city in order to make the construction feasible from its inception. To elaborate the point, DeLaine reviewed the

[12] Thompson 1954: 58.
[13] Longfellow 2011: 127.
[14] Bol 1984.
[15] Walker 1979: 162.
[16] Longfellow 2011: 126.
[17] Walker 1979: 163.

Imperial structures constructed and repaired during the 20 years before the building of Caracalla's Baths, strongly indicating that a large prepared workforce of both skilled and unskilled workers was available in the city.[18] Intriguingly for our study of waterworks outside of Rome, she also notes that a permanent group of approximately 700 slaves were responsible for maintaining the aqueducts.[19] This makes one wonder how such maintenance was carried out in the Provinces.

As a specific example of one group of workers, DeLaine considers the evidence for the population of 'firms' of wood-workers in Rome based on members of that *collegium*. Her results indicate a number of *c.* 10,400-13,000 men available for such work. There would have been of course other groups, including marble workers, iron workers, makers of pavement, etc.[20] In addition to the availability of workers, DeLaine pointed out that there was a tradition of organization for such large-scale projects in Rome that would enable them to be undertaken efficiently. Previous literature argued that there must have been use of the contract system to supplement standing forces of laborers,[21] which could help explain the organization of some of the workers.

In a particularly telling point for this study, DeLaine compares the construction apparatus in the city of Rome with the issues encountered completing large-scale building projects in the Provinces, notably the problems encountered by Nicomedia and Nicaea constructing buildings such as an aqueduct and a theater during the reign of Trajan.[22] DeLaine stated that the supply of materials for such large building projects would have required a permanent workforce, much like the situation of the *curatores aquarum.*[23] Presumably the Provincial cities lacked the resources available in Rome, such as access to the best materials and financial support. This evidence leads scholars to question what the arrangement was for both Imperial and local commissions in the Provinces.

Obviously, the mechanism of construction and the organization of workers in Athens would have differed from that of Rome in the 2nd century AD, as would that in Olympia. Athens would have been in a singular situation in the Provinces at the time when the Hadrianic/Antonine water supply and display system was being built. Camp has suggested that Hadrian might have instigated the aqueduct project in response to a drought in Greece for which he provided several pieces of evidence.[24] However, one must also consider that the Emperor inaugurated the Panhellenion in AD 131/2 with its capital in the city. This institution gathered together cities with Hellenic lineage into a cohesive and formal organization. Spawforth and Walker have discussed various architectural projects implemented in Athens as embellishing the apparatus of the Panhellenion, which they term both a 'political and cultural' body.[25] While a complete consideration of the construction processes in Athens during the initial years of the Panhellenion, of which the Agora monumental fountain was a part, is outside the scope of this paper, some hypotheses may be drawn from the scope of the building program compared with earlier Roman building in the city.

Several Roman projects had been implemented in Athens in the years between the fall of the city to Sulla in 86 BC and the reign of Hadrian from AD 117-138. These included the Odeion of Agrippa in the center of the Agora space, the Market of Caesar and Augustus to the east of the ancient Agora, and a stoa-lined street that joined the Agora and Market with an archway leading into the Agora. In addition, the Library of Pantainos was built with colonnaded stoas facing both the new street and the Agora proper. It is notable that these structures date to either the period of Augustus, or the early 2nd century AD.[26] The Library was financed by a local Athenian, while two of the earlier buildings had Roman backing. In light of the previously mentioned problems with non-imperially funded monumental building in the Provinces the divide between Roman and locally sponsored projects must have had some effect on the

[18] DeLaine 1997: 197-198.
[19] Frontinus, *De Aquaeductu Urbis Romae,* 116; DeLaine 1997: 199.
[20] DeLaine 1997: 199-200.
[21] Brunt 1980: 84-88; Pearse 1975: 36-56.
[22] Pliny the Younger, *Epistulae*, 10, 37, 39; Malacrino 2010: 118-119.
[23] DeLaine 1997: 203.
[24] Camp 1991: 108-109.
[25] Spawforth and Walker 1985: 92-98.
[26] Shear 1981: 358-372.

organization of both their planning and execution. One can only postulate how much labor, if any, in terms of designers and planners may have come to the city from Rome in these instances. The case of the Hadrianic and subsequent Antonine building in Athens was a different situation. Such a large-scale building program, which included such an intrinsically 'Roman' structure as a long-distance aqueduct, would require specialized planning not readily available in the Provinces, especially those where Roman legions, with their trained personnel, were not stationed. As there is no evidence that a Roman legion was ever posted in the Province of Achaia,[27] it is possible that a group of Roman architects, engineers and even some workmen may have been sent to work in Athens over a long period of time in order to plan and oversee the Hadrianic projects. As we have the dedicatory inscription of Hadrian's Athenian aqueduct, which states that the project was begun under Hadrian and completed under his successor, Antoninus Pius, we know that imperially funded work continued in Athens after Hadrian's death. The bulk of the work on the Agora Nymphaion and other outlets for the aqueduct's water would have taken place in the Antonine period.[28]

While the exact process of the administration of planning and building in the Roman provinces is unknown, as I have discussed elsewhere,[29] one can compare with Athens the situation of Nonius Datus in designing the construction of an aqueduct for the city of Saldae in Algeria. An inscription records that the legionary engineer stationed in another province was sent to Saldae to design the system.[30] After he had left it was requested that he return to the city twice when the actual construction process of the water supply system went awry. The aqueduct was not completed until around fifteen years after it was begun because of problems building the system's tunnel. This shows us that in the case of some projects one or more experts, probably associated with the army, would be sent to a Province to plan and oversee such an undertaking, at least until it was determined that the construction was safely underway. In Achaia, and particularly in Athens, this would lead to a two-tiered system of workers, those trained in a 'Roman' system outside of the province and those locally trained. In fact, Walker suggested that differences in the construction of the Athenian aqueduct and the Nymphaion might show a division between Imperial construction (the aqueduct) and local manufacture (the Nymphaion).[31] However, this equally might be because of differences in the date of construction, the fountain necessarily being built after the completion of the aqueduct.

Of course there was a long tradition of monumental building in Athens. We can only conjecture as to the nature of a local building apparatus during the Roman period. Given the widespread trade of building materials, especially marbles and colored stones, across the Empire, some observations regarding local practice as evidenced by the Agora monumental fountain are pertinent. Walker, in considering stone usage in Achaia, noted that in Athens there were difficulties in obtaining local marble pieces large enough for entablatures in Pentelic marble as it tends to have fissures that control the size of the blocks that can be quarried. She noted that in Athens such blocks were made from Hymettian marble or re-used materials.[32] As has been specified above, the extant stones used in the Agora monumental fountain included locally available materials: Pentelic and Hymettian marble for decorative features, and poros and conglomerate for foundations. Of course, most of the extant remains of the Nymphaion consist of concrete, the production of which would have to be introduced into the area. The methods necessary to make the quantity of concrete needed for the projects included in Hadrian's Athenian building program would have had to be taught to local workers; notably there is no evidence that the concrete as described by Walker included imported materials such as pozzolana.[33] While occasional pieces of tile have been found in the concrete mixture (as well as ground brick used to make the material waterproof), there is no

[27] Sherk 1957: 60-62; Gilliam 1965: 65-73; Leigh 1998: 79.
[28] *CIL* III, 549. The text, which appeared on the façade of the initial terminus of the aqueduct above Athens on the Lykabettos hill, gives the completion date of the system as AD 140.
[29] Leigh 1998: 79.
[30] *CIL* VIII, 2728 (=ILS 5795). See also, Cuomo 2011: 143-165.
[31] Walker 1979: 270.
[32] Walker 1979: 262; Dr Scott Pike 1993, personal communication.
[33] Walker 1979: 152-154.

evidence for brick in the superstructure.[34] The few *in situ* pieces of stone mentioned above, and sections of marble plaques found in excavation suggest a building in stone-faced concrete covered with veneer.

Comparison with the Olympia monumental fountain

A number of assumptions about the Agora structure have been made based on the better preserved one at Olympia. Without direct evidence for the reconstruction of the Athenian superstructure any consideration of this topic must be hypothetical. Walker left the question open, but, as mentioned above, she theorized the tall building that would result from a second storey would not fit the physical context of the site. As also mentioned above, Longfellow suggested that the Athenian building might have had a second story based on a comparison of the thickness of its back wall (2.60m or 8.78 Roman feet) and that of the monumental semi-circular upper apsidal basin at Olympia which varies from 1.33m-1.44m (4.49–4.86 Roman feet) thick. But we must note that this measurement excludes the seven buttresses that ring this part of the building. The buttresses extend ca. 1.15m (3.89 Roman feet) out from the face of this back wall. [35] If we accept that the buttresses plus the number of sculptures found that belong to the Olympia structure indicate a second storey, we must question whether the thickness of the wall of the Agora fountain had the same or a different purpose. Considering this issue, Walker felt that the excessive thickness of the back wall was meant to enclose a 'circulation channel' for the water to run from several points into the basin.[36] She did not elaborate as to how exactly how this would work. Since the water would have been running through closed pipes set within the concrete of the back wall it is doubtful that such a thickness would have been necessary to support the water pressure exerted on the pipes. There is no evidence for the material used to make the pipes that served the Agora fountain, but this would be true whether they were terracotta or lead.[37]

The second rational for both the initial reconstruction of the Athenian building as a single-level fountain and the subsequent suggestion for a two-story building has been a general comparison with the Nymphaeum of Herodes Atticus at Olympia, which was constructed around a decade after the completion of the Agora Nymphaion. In fact, Walker hypothesized that the Athenian building may have strongly influenced the structure at Olympia, so much so that they could have had the same architect.[38] But, as mentioned above, we must consider exactly how similar the two buildings were to determine if this is a valid strategy.

Other than the fact that they both have semi-circular basins, the extant architecture of the two structures is not all that similar. The total length of front of the Athenian fountain is 19.50m, versus the 31.20m of the Olympia building. The central axes of the two basins are similar: 8.30m for Athens, 8.45m for Olympia. But the shape of the Athens basin is greater than a semi-circle, whereas the Olympia basin is an actual semi-circle. The Olympia monument has two water basins; a long rectangular lower basin fronts the upper semi-circular basin, so that there was no frontal parapet as in the Athenian building. The upper basin at Olympia is set on a podium that elevates it above the frontal rectangular basin. Notably, while the evidence suggests that the Athenian fountain was built of stone-faced concrete, the Olympia building is made of brick-faced concrete. Some of the bricks were stamped with Herodes' Atticus' name, indicating that the material was locally made and came from one of the benefactor's properties. [39] Thus there are significant differences between the two fountains.

In her consideration of the Olympia Nymphaeum, Walker emphasized that the design of both the building and extant decorative elements was based on simple geometric principals based on multiples of

[34] Walker 1979: 152-153; Walker (1979: 268) describes brick construction in Greece as 'highly localized', but further on (1979: 171) she suggests that while the superstructure of the supply aqueduct was executed in poros, brick would have 'played a substantial supporting role'. This cannot be verified.
[35] Longfellow 2011: 126; For the Olympia Nymphaion measurements, Bol 1984: Beilage 1.
[36] Walker 1979: 161-163.
[37] Camp 1991: 109.
[38] Walker 1979: 162-163; Longfellow 2011: 125-126.
[39] For the Olympia Nymphaion measurements, Bol 1984: Beilage 1. On the architecture of the Olympia Nymphaion, Walker 1979: 185-189.

three Roman feet.[40] She points out that this would allow standard cut pieces to be ordered from marble suppliers. The building included Pentelic and Hymettian marbles that would have come from Athens, along with Cipollino.[41] The measurements of the Athenian fountain shown in Figure 5 prove that the Athenian monumental fountain was not planned in this manner as they are not exact multiples or divisors of the Roman foot. In a related type of argumentation, DeLaine considered the retention of construction plans over time in Rome. She discerned that the planning of the baths of Trajan, dating c. 100 years before the construction of the Baths of Caracalla, and that of the later building shared similar processes. Delaine also pointed out that evidence in Vitruvius and an inscription from Puteoli attest to the preservation of architectural designs over time.[42] Athens itself has an example of the retention of building plans across generations. The Arch of Hadrian in Athens was dedicated to the Emperor by 'the Athenians'. It has been dated to shortly before Hadrian's third visit to Athens in AD 131/2. This was the visit during which the ruler dedicated the completion of the Olympieion (which had been under construction for over 600 years) and inaugurated the Panhellenion.[43] The Panhellenes funded two replicas of this arch in the outer court of the Sanctuary of Demeter at Eleusis. The identity of the Emperor referred to in the dedicatory inscription is not certain. Antoninus Pius, Marcus Aurelius and Commodus have all been suggested. Spawforth and Walker accept a date in the AD 170s. Accepting this date means that the plans for these arches would have been retained for at least 30 years. This information strongly suggests that the plan of the Athenian monumental fountain would have still existed at the time of the construction of the Olympia Nymphaeum. Given the above discussion of what we can logically hypothesize about the local and Imperial construction processes in Athens and Achaia, the construction plans of the two buildings were clearly different. Thus there is no evidence that the Athenian and Olympian structures were planned by the same architect based on similarities in their design. While comparison with the many Roman monumental fountains that carried decorative architectural orders on their facades, along with the associated remains of superstructure found in the Athenian Agora and environs allows a very hypothetical reconstruction of the Nymphaion's elevation, that reconstruction should not hang on that of the Olympia building. Therefore the reconstruction of a second storey on the Athens structure is a possibility, but not a necessity. It remains to consider whether there is any other evidence that would influence the issue.

Technological evidence: the aqueduct supplying the Athenian Agora

The water supply to the Athenian monumental fountain might shed some light on the height of the building. Since its discovery, the Roman aqueduct feeding the southeast corner of the Agora has been associated with the Hadrianic/Antonine system, the main conduit of which ends in a dividing basin on the slope of the Lykabettos hill to the north and east of the city.[44] The agora branch of the aqueduct enters the area of the excavations from the east, runs under the Panathenaic Way and makes a right turn in a basin to run north along the street. At first the water channel ran on a continuous foundation wall, and then atop at least five piers, possibly connected by poros stone arches.[45] Based on some *in situ* concrete found behind the center point of the back wall of the Nymphaion Walker reconstructed an extension of five additional aqueduct piers ending at the fountain. This mass lies 1.50m south of the wall of the fountain, indicating that there was another element that connected the aqueduct channel to the building. Walker suggested that the water was supplied by an 'offset pipe' from this last pier.[46] She used the slope of the last part of the main channel Hadrian's aqueduct before it entered the Lykabettos hill basin to reconstruct the angle necessary for the water in the Agora channel to descend along the Panathenaic way before emptying into the back of the fountain, and hence to estimate the height of the

[40] Roman foot used = 0.296m (Wilson Jones 1989: 108. Note that other scholars use slightly different metric equivalents for the Roman foot, ex. 0.295m, Romano 2006: 65. The 0.296m equivalent has the advantage of being the same as the metric equivalent for the Attic foot, Senseney 2011: 107).
[41] Walker 1979: 185-186.
[42] *CIL* I, 577. Vitruvius, *De Aquaeductu Urbis Romae* 1,1,14. DeLaine 1997: 202-203.
[43] Adams 1989: 10-15.
[44] Thompson 1954: 59.
[45] Walker 1979: 163-171; Leigh 1998: 191-202.
[46] Walker 1979: 171-172.

last pier behind the building as 7.74m.[47] As I have noted elsewhere, the extant last portion of Hadrian's aqueduct before it enters the Lykabettos Hill building is a 19th century reconstruction, and therefore its slope is not applicable to the Agora aqueduct. Given the distance that the Agora aqueduct's above-ground continuous foundation and piers drop, Walker's suggested slope would result in a fall of only 0.034m across the 87m to the end of the fifth extant pier, which is probably too shallow to allow enough of a head of water to the fountain. Instead, using the steepest known slope on a short section of aqueduct, which is a ground-level loss of 28m per km in height, the final pier behind the fountain would have carried the bottom of the water channel at a height of 13.29m.[48] The full height of the water channel atop the pier would be somewhat higher. Of course, a less steep slope in the water line would result in a higher pier.[49] Logically, the level of the aqueduct channel at the point where the water would enter the Nymphaion should not be higher than the building itself, so this may give an idea of how tall the building was.

There is no evidence for the exact mechanism by which the water would pass from the Agora aqueduct's conduit into the monumental fountain. Extant archaeological evidence suggests that after the water in the main extramural tunnel of an aqueduct reached its first point of access in or on the edge of a city, known as a *castellum*, the water would continue to additional access points. The two possibilities for the Agora fountain are that either the water moved directly from the supply channel atop the aqueduct piers into the back wall of the building or that the water would be transferred from that channel into a pipe that led into the structure. These two situations would result in different hydraulic dynamics; the first is an 'open' conduit which would not run full and the water would move based on gravity. The second is 'closed', and therefore runs full and under pressure.[50] Examples of the first solution appear on the Larissa hill at Argos[51] and in the North Nymphaeum at Perge.[52] Similarly in the case of the supply to the Hydrekdocheion of C. Laecanius Bassus at Ephesos, terracotta pipes ended in a 'service room' behind the façade that would serve as a transition point for the water.[53]

Alternatively, the water could be divided in what A. T. Hodge called a 'secondary *castellum*'. This would be a basin from which pipes would carry portions of the water in different directions. Intriguingly, these basins could sit atop a pier. A number have been found at Pompeii and although there are few extant examples in Rome, Frontinus lists 247 in the city.[54] It is tempting to reconstruct such a secondary *castellum* atop the pier behind the Athenian Nymphaion. This solution would allow the water to connect directly with a vertical pipe in the back wall of the fountain, and then possibly to a horizontal pipe or channel that could have fed one set of marble water spouts, examples of which were found in the Agora excavations (Figure 6). Such a dividing basin could also accommodate the possibility that an additional supply line ran to the west behind the building, perhaps to feed the Southwest Fountain House and the industrial area beyond. Hydraulically, water running in a pressure pipe is a more satisfying solution than the earlier suggestion that a connection to the west ran between the Agora aqueduct and along the back wall of the ruined South Stoa II during the Antonine period.[55] In addition, Walker's reconstruction of the fountain shows no outlet for the water after it passed through the second set of spouts from the semi-circular basin to a low access channel in front of the parapet, although she does consider runoff in her text.[56] As there must have been a mechanism to gathering the runoff at the front of the monument, this could well have been channeled to feed structures to the north. Thus the Nymphaion itself, in addition to being a major access point in the water supply system of the city, would have itself fed other buildings. Channeling the water into a pressure pipe rather than an open drain would have allowed a better quality of water to reach higher elevations in the rest of the Agora.

[47] Walker 1979: 172 and 180, note 21.
[48] Leigh 1998: 212. Note that I use this slope to test what the shortest extant pier behind the fountain would be.
[49] Leigh 1998: 214-215.
[50] For discussions of the 'open' versus 'closed' pipe systems, see Hodge 2002: 216-245 and Richard 2012: 99-100.
[51] Walker 1979: 100.
[52] Longfellow 2011: 158.
[53] Richard 2012: 101.
[54] Frontinus, *De Aquaeductu Urbis Romae*, 2, 78-86; Hodge 2002: 291-294.
[55] Thompson 1959: 97 and plate 16. It is known that a water channel ran across the back wall of South Stoa II during the post-Herulian period, see the discussion in Leigh 1998: 215-216.
[56] Walker 1979: 172-173.

Thus, whether the Agora aqueduct's channel fed directly into the back wall of the fountain, or a secondary *castellum* communicated with the structure, the reconstructed height of the pier behind the central axis of the Athenian Nymphaion would indicate the approximate height of the back wall of the building. If the hypothetical figure of 13.29m for the bottom of the water channel is close to accurate, it indicates that the monument's total elevation was more than twice as tall as the 5.60 internal Corinthian order shown in the current reconstruction (Figure 1). Theoretically, some sort of sharp drop in water elevation between the conduit and the fountain could have existed in the Athenian example, such as that on the Larissa hill at Argos.[57] Whatever the exact system, a one-storey fountain would leave the aqueduct channel's masonry visible above the Agora building when seen from a distance. While this argument does not definitively prove that there were two stories on the structure, it adds weight to that solution. To fully appreciate the ramifications of reconstructing a second story, the visual and symbolic impact of the building must be addressed.

Roman Water display in a Greek context

While its location was controlled by access to water, few Roman buildings in Greece can claim a site as symbolically loaded as that of the Agora monumental fountain (Figure 8: 60). Previous publications have offered readings of the imagery presented by this area of the Agora. It was surrounded by colonnaded buildings, which has been interpreted as giving the appearance of the colonnaded streets known in the eastern Roman Empire or the type of forecourt that appeared in Imperial fora.[58] Notably, the fountain's orientation is not aligned with the nearby buildings or the Panathenaic way (Figures 2 and 8: 60), but rather toward the southwest corner of the Stoa of Attalos, thus giving a clear view of the building across the trapezoidal square (*plateia*) that fronts the area (Figure 8, between points 48, 52, 60 and 66). The neighboring Southeast Temple shares this orientation. The view of a fountain building that was so different from the old historic buildings in the surrounding Agora, with its curvilinear aedicular façade and probable Imperial statuary, must have drawn the eye. There were two static views of the Nymphaion when entering the space: one through the arch from the marble street between the Stoa of Attalos and the Library of Paintainos (Figure 8: 47) and one very acute view from the street between the Library of Pantainos and the Southeast Stoa (Figure 8, between points 48 and 51). However, the Roman architectural spectacle would be especially potent when one was proceeding up the Panathenaic Way and starting the climb up the path toward the Acropolis that had been followed in the Panathenaic festival for ca. 600 years.[59] Additionally the Ionic Antonine Southeast stoa ran south of the Nymphaion along the east side of the Panathenaic Way and continued the colonnaded frontage of the ceremonial street.

Richard attributed a 'high' rate of flow to the Agora monumental fountain as it received water from a 'large aqueduct' and the reconstructed method of water supply outlined above supports this conclusion.[60] As discussed above, Walker initially suggested an entry point for the water into the basin at the building's central internal axis, but in her reconstruction (Figure 1) the water is shown entering the basin through spouts in the bases of statuary standing in niches between the Corinthian pilasters. While the fact that two different types of marble water spout were found within the building makes this possible, the high rate of water flow coming out of the large aqueduct would be better emphasized by entering centrally through a cascade, or possibly with a steep drop, such as that in the Larissa fountain at Argos.[61] Such a rushing stream would add a louder and more obvious auditory experience for passersby. Of course both systems could have existed simultaneously.

Although it is an important part of this transitional space from the 'Greek' section of the Agora to the Roman-style trapezoidal platea and beyond, the plan of the Athenian Nymphaion is somewhat truncated because of its tight fit between the pre-existing Southeast Temple (Figure 8: 52), located next to the

[57] Walker 1979: 100.
[58] Walker 1979: 149-151, 278; Martin 2002; Longfellow 2011: 126-130.
[59] Leigh 1998: 219.
[60] Richard 2012: 163.
[61] Volgraff 1958: 551-554.

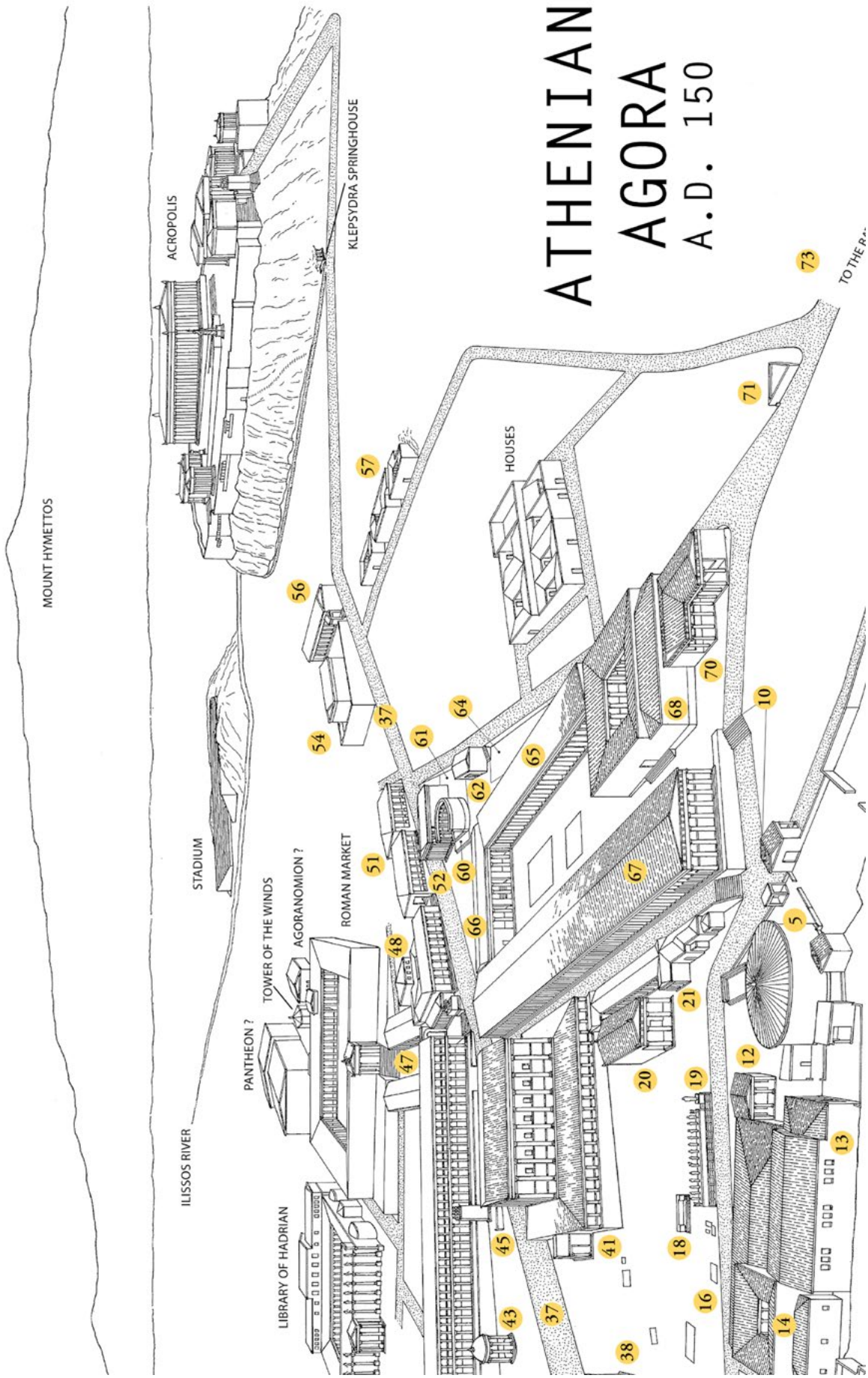

Figure 8. Partial view of the perspective drawing of the Athenian Agora c. 150 AD by W.B. Dinsmoor. Courtesy American School of Classical Studies at Athens: Agora Excavations.

Panathenaic Way and tentatively dated to the 1st century AD,[62] and the East Building (Figure 8: 66), originally constructed during the 2nd century BC and rebuilt in the mid-2nd century AD.[63] Thus the fountain completed this architectural circuit. Walker's one-storey reconstruction of the Nymphaion brings the top of the building roughly in line with the Doric frieze of the Southeast Temple (Figure 1), and while the Roman building notably differs in style, its visual impact would be somewhat lessened by the crowded area. Nonetheless, this juxtaposition of architecturally Roman and Greek styles would have been striking to the viewer, especially since the Doric columns of the prostyle Southeast Temple were actually re-used Greek-period building materials.[64] Still, should the monumental fountain have had two stories the resulting height of the display would have dwarfed everything around it. Fronted by a statue of the Emperor, and possibly holding other imperial statues the structure would emphasize the Roman gift of water to the city in a way that would be impossible to miss, underscoring the official Roman largess. Given the necessary height of its supply aqueduct and its thick back wall, it is very tempting to reconstruct a second story on the building as a truly monumental example of Hadrian and Antoninus Pius' Euergetism in Athens and an unmistakable visual commentary on the Roman control of this very potent Greek space.

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Abbreviations used

CIL *Corpus Inscriptionum Latinarum* (Berolini 1863-).
ILS *Inscriptiones Latinae selectae,* ed. H. Dessau (Berlin 1892-1916)

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[62] Thompson 1960: 343.
[63] Thompson 1972: 66, 71; Camp 1986: 177-179.
[64] Camp 1986: 186.

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