Athenian Agora 2023: Preliminary Report

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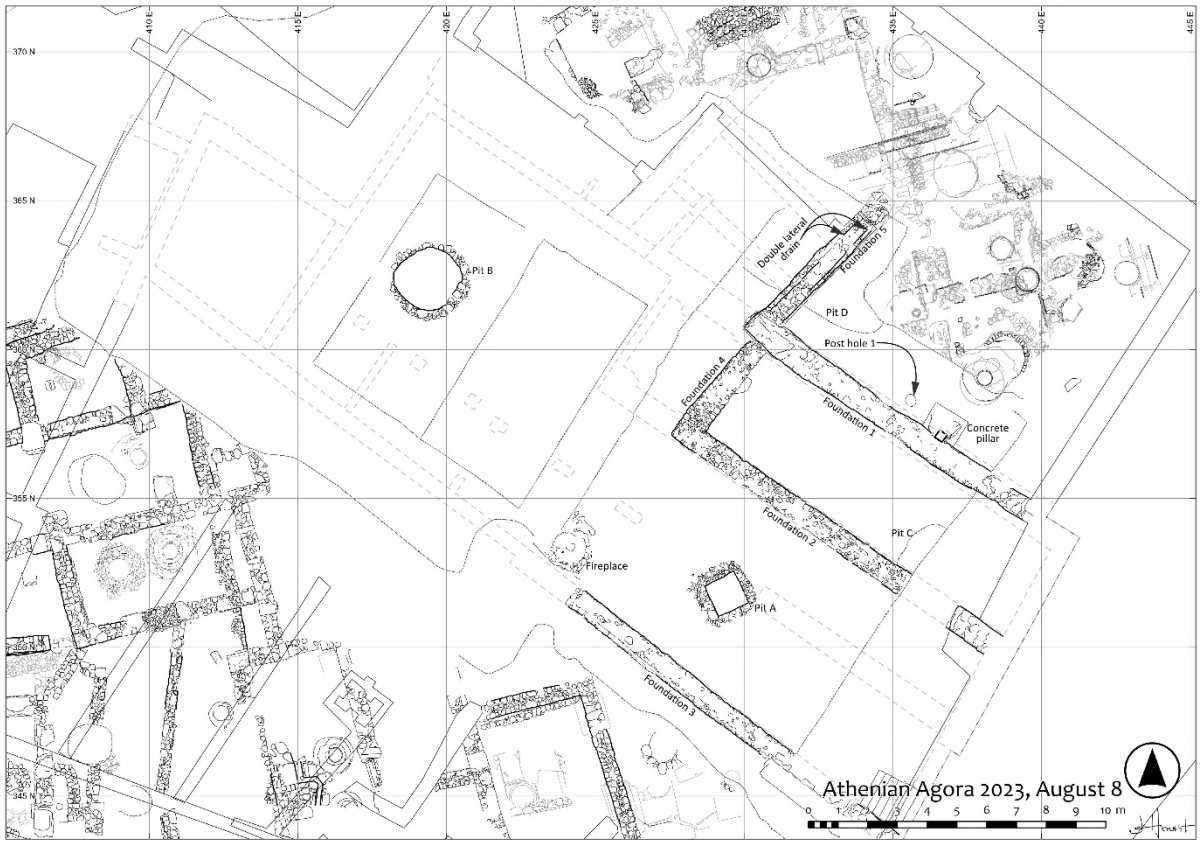
With Contributions by Ariadni Ilioglou, Nick Seetin, and Gerasimos Trasanis (excavation); James Herbst (architecture); John M. Marston and Ranran Zhang (archaeobotanical analysis and research); Adam DiBattista (faunal analysis); Brian Damiata (geophysics); Robert Kayen (LiDAR); Mary Larkum (phytolith analysis); Daniel D'Elia (resin analysis)

Excavations were carried out in the Athenian Agora from June 12 to August 4, 2023. This season marked the first excavation of the area beneath the former building at 14 St. Philip Street (Agiou Philippou 14). After nearly 15 years of negotiation over appropriation, the building was demolished in October and November 2022. The general area of the 2023 excavations is indicted in **Figure 1**. The modern building had been subdivided into three commercial properties and was somewhat more than 300 m^2 in area. Oriented east-west, the building was built in 1860, and covered much of the central portion of the Stoa Poikile (or Painted Stoa of the Stoa with paintings), as well as part of the Middle Byzantine neighborhood in this area. The entire area beneath this building was labelled section Beta Kappa (BK) (**Figure 2a-c**).

Figure 1. Aerial photograph of central Athens, showing the Acropolis, the Agora of Athens, including the Stoa of Attalos (left) and the Temple of Hephaistos (right), with the area of the current excavations outlined in red. Photo Gerasimos Trasanis.



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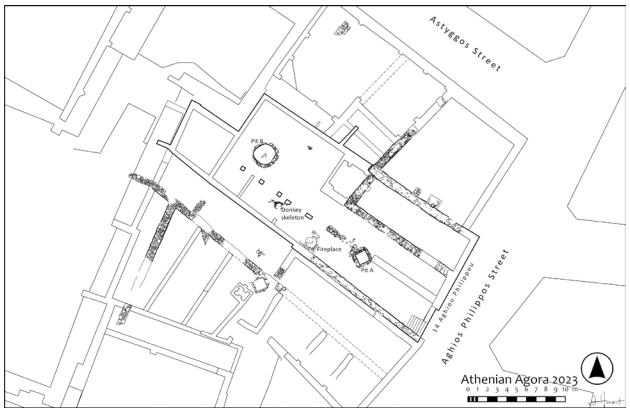

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Figure 2. Section BK at the end of the 2023 season: a) overall plan; b) ortho-rectified aerial view of the area; c) plan with the modern building superimposed. Illustrations prepared by James Herbst

Section BK was subdivided into three trenches: BK North; BK South; and BK West. The subdivision of the trenches was in part determined by the geophysical survey under the general direction of Dr. Brian Damiata (UCLA), immediately prior to the excavations (**Figure 3**). The geophysical survey (May 23-31, 2023) involved Ground Penetrating Radar (GPR), using a Malå HDR system equipped with a 450 MHz antenna, and Frequency-Domain Electromagnetics (FDEM) using a GF Instruments CMD (Multidepth Electromagnetic Conductivity Meters) Mini-Explorer 6L.

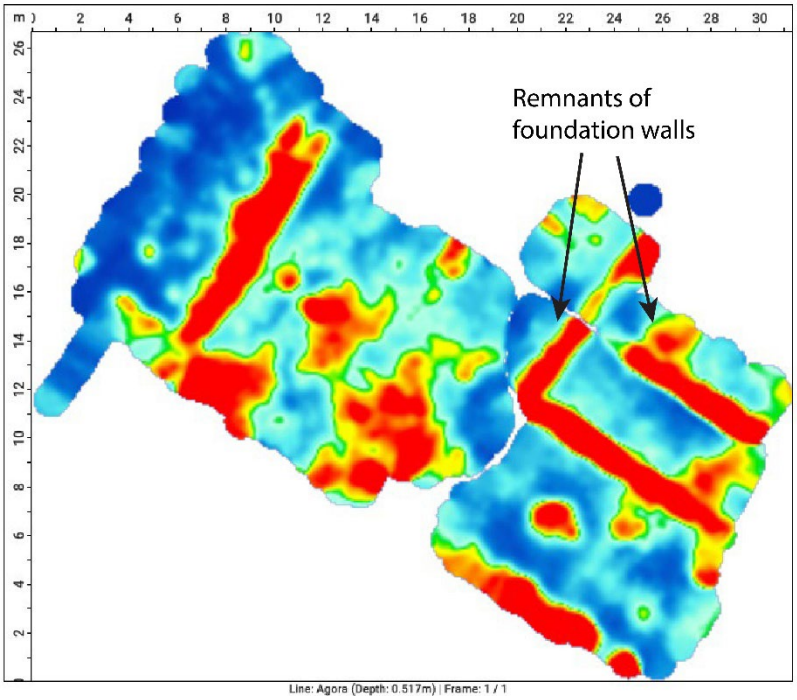


Figure 3. Representative output from GPR surveying. Depth-slice image for 0.5 m depth. Red denotes presence of a strong reflector of GPR energy. Image prepared by Brian Damiata.

In all trenches, we dry sieved 100% of excavated fill and took flotation samples and phytolith samples for each basket or context (see below). Flotation, heavy fraction sorting, and light fraction collecting were overseen by Dr. John (Mac) Marston (Boston University), with the assistance of Ranran Zhang and Owen Lannon. Dr. Mary Larkum (Washington University, St. Louis) processed and began analyzing phytolith samples using the facilities available at the Weiner Lab at the American School of Classical Studies at Athens and Daniel D'Elia analyzed pine resin from Pit B (see below), using FTIR (Fourier Transform Infrared Spectroscopy) undertaken at the Wiener Lab, together with the Raspail test.

Pottery was sorted, read, and recorded by Dr. Fotini Kondyli (University of Virginia), responsible for the Byzantine to early Modern pottery, Dr. Nicholas Hudson (University of North Carolina, Wilmington), responsible for the Roman Pottery, and Dr. Trevor van Damme (University of Victoria), responsible for the Greek, including prehistoric, pottery; they were assisted by Laura Leddy and Christine Muron. Tile for all baskets (contexts) was weighed and counted, and a representative sample kept. Animal bone and shell collection strategies were established by Dr. Flint Dibble (ASCSA) and Dr. Adam DiBattista (ASCSA) and enforced in the field by volunteer excavators Allyson Blanck and Ting-Yu Chou. Luis Rodriguez Perez (UCLA) oversaw the production of photogrammetric models, while James Herbst

(Corinth Excavations) and Gerasimos Trasanis (University of Athens) performed aerial photography. The excavations were greatly aided by the permanent staff of the Agora, Craig Mauzy (Deputy Director and Photographer), Eirini Dimitriadou (Assistant to the Director), Maria Tziotziou (Conservator), Aspasia Efstathiou (Associate Registrar), Pia Kvarnström (Database Manager), and Emy Patagia (Housekeeper).

During the first week of excavations we also conducted a Geomatics study, incorporating Terrestrial Laser Scanning (LiDAR) and UAV Structure-from-Motion, in order to produce a model of the Hephaisteion, one of the best-preserved temples in Greece and the Mediterranean, spearheaded by Dr. Robert Kayen (US Geological Survey and University of California, Berkeley), assisted by Luis Rodriguez Perez (UCLA) and Dr. Timothy Shea (University of North Carolina, Chapel Hill) (**Figure 4**). The aim was to capture a comprehensive and complete point cloud coverage of the temple using a Leica RTC 360 device.

(a)

(b)

(c)

Figure 4. Geomatics survey of the Hephaisteion: a) one of series of aerial images to capture the roof of the temple; b) the LIDAR scanner on south side of the Hephaisteion; c) pre-registration field data of the Temple of Hephaistos collected with the Leica RTC360 LIDAR system. Photo a) Timothy Shea, b) and c) Robert Kayen.

It was also during the excavation season that we initiated a collaboration with Harvard University and the Max Planck Institute, to study the ancient DNA of selected Late Bronze and Early Iron Age burials from the Athenian Agora. To this end, Trudi Frost (Harvard University) conducted a study of the relevant skeletal remains (July 3-7, 2023), and a permit for their sampling has recently been submitted.

The demography of the 29 student volunteers selected to participate in excavations this season included 16 graduate students, three postbaccalaureate students, and 10 current or very recent undergraduate students. Among the students there were 18 U.S. citizens and 11 students who listed their citizenship as: Taiwan, Canada (2), UK, Spain, Australia, Greece (2), France, Belgium, and Pakistan. Only two of the 2023 team were former Agora excavators. The institutions represented by our selected applicants include: Agnes Scott College, Boston University (2), Bryn Mawr College, College of Charleston, College of William & Mary (2), Free University of Brussels, Ghent University (2), Memorial University of Newfoundland and Labrador, National and Kapodistrian University of Athens (3), National Taiwan University, National Technical University of Athens, Simon Fraser University, Texas Tech University (2), University of Arizona (2), University of California, Los Angeles, University of Cincinnati, University of Illinois Urbana-Champaign, University of Ioannina, University of Pavia, University of Sydney, University of Virginia, and University of Washington.

As usual, the excavations were supported primarily by the Packard Humanities Institute, and it is a pleasure here to record our appreciation for the ongoing support of the Institute and its President, David W. Packard. Additional support came from UCLA and several private donors, including Jeff Barnouw, Maria Liston, and Jenifer Neils. We would also like to thank Professor John Camp for his assistance, experience, and support throughout the project, and our colleagues at the Wiener Lab, especially Dr. Panagiotis Karkanas and Dr. Dimitris Michailidis for their collaboration.

Excavation Summary

Beta Kappa North (Ariadni Ilioglou)
Covering an area of 77 square m. below the former building at 14 St. Philip Street, Section BK North was supervised by Ariadni Ilioglou. Adjoining this building was an older commercial establishment at Astingos 1 (Hastings Street 1), demolished in the early 2000s, which extended to the north of the excavation area and marked the limit with Sector BH at the corner of St. Phillip and Hastings Streets. The trench was oriented and divided according to the main axes of the modern Foundations 1, 2 and 3, which are the last visible remains of the early modern buildings. The boundary between BK North and BK South was marked by Foundation 2, and a baulk of 1 m. was kept between BK North and BK West. The general aim of the 2023 season in this trench was twofold: an analysis and understanding of the upper mixed modern layers, together with the establishment of a complete stratigraphical sequence through all periods. The broad horizons uncovered in BK North in 2023 included: Early Modern (18th-20th century); Ottoman (15th-18th century); Late Byzantine/Medieval (13th-15th century); and Middle Byzantine (10th-12th century).

This trench well represented the diversity and complexity of the Modern, Ottoman, and Byzantine contexts encountered in all trenches in the 2023 season. Four foundations dated to the 19th century or

later were uncovered (Foundations 1, 2, 4, and 5); these were constructed with stones and tile bound with mortar and they served to delimit several distinct areas within the trench. The area north of Foundation 1 was adjacent to and immediately above section Beta Eta (BH). This area of BK North was characterized as heavily disturbed, with a modern concrete pillar cutting deeply through the layers, as well as a rectangular stone feature of unclear function, which had a clean mortar layer offering some non-mixed Byzantine pottery. Within this northern area of the trench, a large dump, Pit D, contained an abundance of animals horns and sherds mixed inside different fills. Cutting Pit D and perpendicular to Foundation 1 was Foundation 5, which has an unusual mode of construction: a narrower upper course and wider lower courses (**Figure 5**). This construction method allowed space for two channels or drains running parallel to the wall alongside its upper course. Additionally, a spirally fluted column (ancient?) was reused in the construction of a lower course of Foundation 5. Two more drains were built into lower courses of Foundation 1. The function of these drains must be related to the functioning of the 19th century buildings, though their actual use is currently unknown. Finally, a post hole with stone packing within the northern area of the trench suggested another, possibly earlier construction in this area (the potential tops of several more putative post holes were encountered nearby but not further investigated).

Figure 5. Foundation 5 at left, showing the unusual construction with a narrower upper course and wider lower courses, allowing space for narrow channels on either side of the upper course.
Photo by Craig Mauzy (4 August 2023).

The western area of BK North was poorer in definable structures; the key operation here was the definition of the boundaries of Pit D and revealing the faces of Foundation 4 and Foundation 5. The southern area of BK North offered a coherent stratigraphy of modern mixed layers. Finally, the eastern part of the trench contained Pit C (**Figure 6**), which was ringed by charcoal and mortar and comprised a stony fill with burnt orange soil, tiles, and mixed material, including a fragment of an Ionic column capital that was smaller than the better-preserved Ionic capital associated with the Stoa Poikile. By the end of the season, we had some promising hints about what this pit might yield in future seasons because

it is the first context to have a bounded chronological date, the 11th to 12th centuries CE, and its finds included at least one Islamic import.

Figure 6. Southern area of BK North, showing the Middle Byzantine pit (Pit C) at lower left. Foundation 1 at right and Foundation 2 at left. Photo by Craig Mauzy (4 August 2023).

In this trench, pottery was abundant. Mixed layers included a variety of wares, both imported and local, from the Byzantine, Ottoman, and Modern periods, although some sherds were dated to the Protogeometric, Classical, Hellenistic, and Roman periods. Additional finds include animal bones (cattle, sheep and goat, and small animals); shells (including *Murex* shells, probably used in the production of dye); charcoal; glass; coins; nails and other metal objects; tap slag; and more. A Harris Matrix of Section BK North prepared by the supervisor shows clearly the complexity of the sequence encountered in this area.

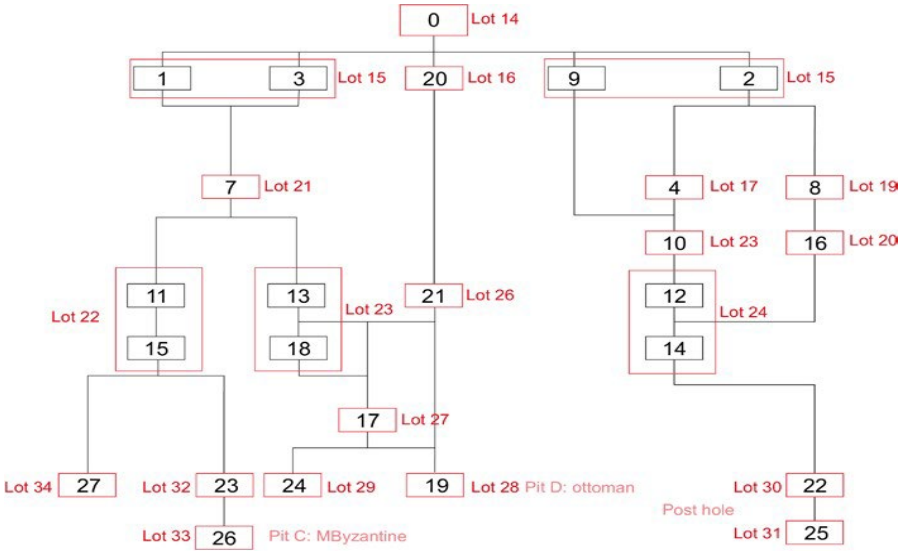


Figure 7. Harris matrix of Section BK North prepared by Ariadni Ilioglou.

Beta Kappa South (Gerasimos Trasanis)

Section BK South covered an area measuring approximately 11 x 5 m. the excavation of which was supervised by Gerasimos Trasanis. The trench was bounded on the north by Foundation 2 and on the south by Foundation 3, which belong to modern buildings (**Figure 8**). A large concrete feature in the southwest corner of the trench was identified based on building plans as the base of a fireplace for the modern building that was demolished at 14 St. Philip Street (see **Figure 2a**).

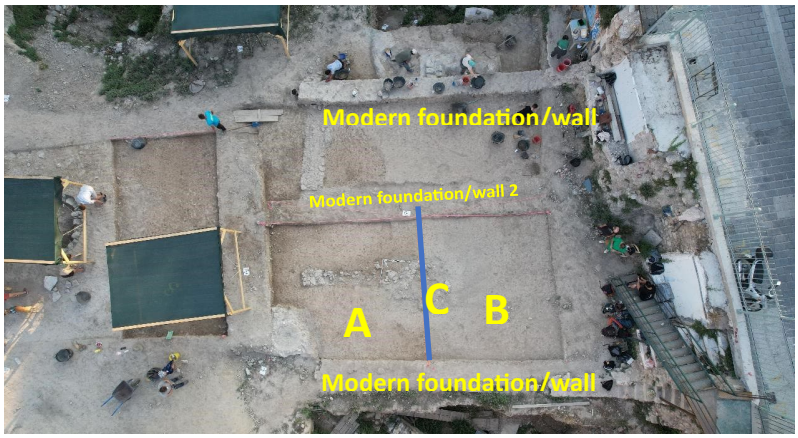


Figure 8. Aerial photo of BK South.: A: western section; B: eastern section; C: stone-constructed feature in the middle of trench. Photo Gerasimos Trasanis.

Before the season began, the geophysical survey revealed a square feature (**Figure 9**) in the middle of the trench (Pit A) and suggested that the feature extended to a depth of about 1.5 to 2.0 meters; the uppermost course of this feature was visible on the surface before we began excavations. Pit A measures about 1.85 meters by 1.83 meters (at its outer limits).

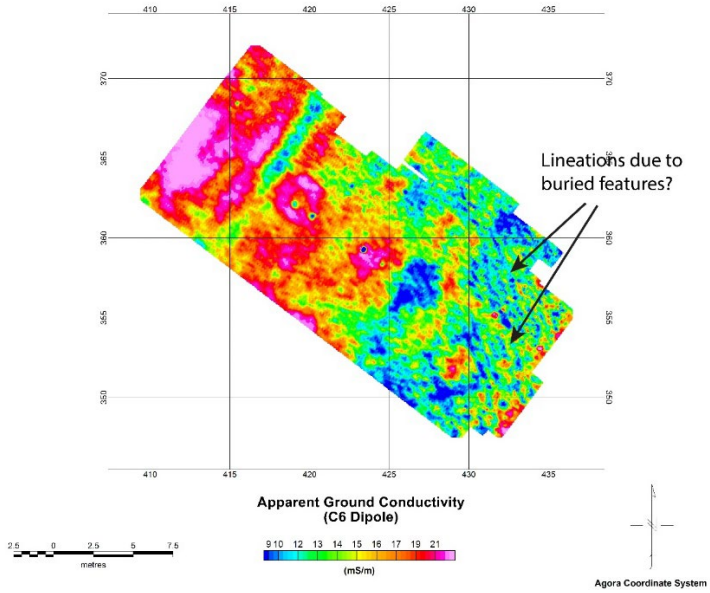


Figure 9. Representative output from FDEM surveying. Contour map of apparent ground conductivity for the longest dipole (i.e., maximum depth of interrogation of ~2-3m). Red and blue denote high and low conductivity, respectively. Image prepared by Brian Damiata.

The stone-lined square pit, which is not fully excavated by the end of the season, contained a mixed fill including copious amounts of iron slag (including hearth bottoms), along with stones (unworked fieldstones, modern marble with binding material on them, and schist slabs), gravel, modern plastics (some datable to the 1950s), and small parts of rope, together with molded bricks. We do not yet know why Pit A was originally constructed or when, but it was obviously used secondarily as a waste management pit, filled mostly with discards from metallurgical activities. A few of the various phases in the excavation of Pit A are illustrated in **Figure 10**.

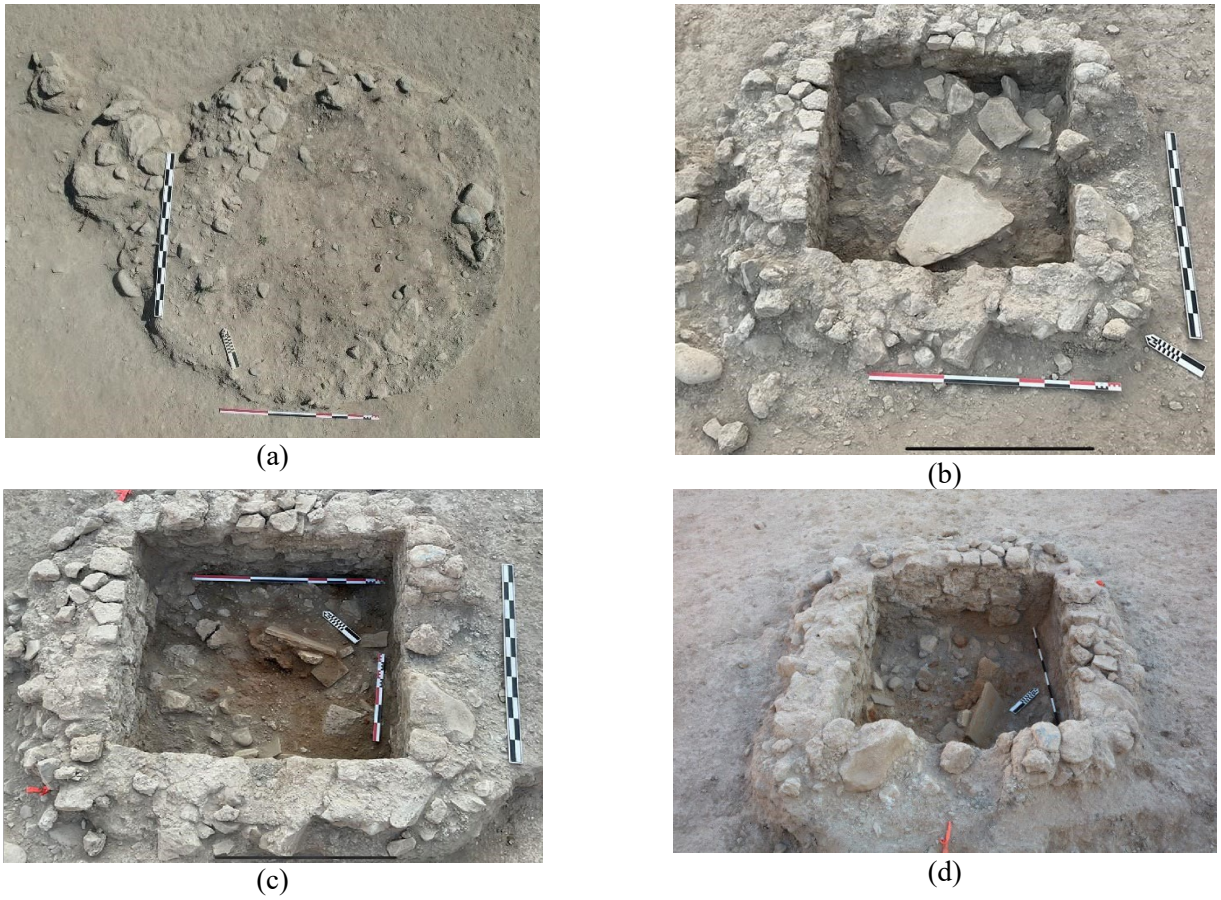


Figure 10. Various phases in the excavation of Pit A in Sction BK South: a) as the feature was first defined; b) during the excavation of basket 10 (looking northeast); c) after closing of basket 12 (looking northeast). Photos a)-c) by Gerasimos Trasanis; d) by Craig Mauzy (4 August 2023).

In this trench, pottery was abundant, dating from the Archaic period to the Modern era (and even containing some material from the Bronze Age). Additionally, we found animal bone, including goat horns; metal and glass slag; and glass fragments, including a fragment of a small, rounded handle. Coins were found, including two Greek coins dated, respectively, to the 1960s and 1982, as well as a Bulgarian coin dated to 2000. In the scarp near the northwestern side of the trench, we found a portion of a human skull, which we covered and plan to investigate next year. Finally, in the eastern area of the trench, we found significant quantities of shells, primarily *Murex*; these shells point to dye production that was apparently still active in this part of the Agora in the Middle Byzantine period (11th to 13th centuries CE).

Beta Kappa West (Nick Seetin)

Section BK West was the largest of the trenches as laid out, and its excavation was supervised by Nick Seetin. This trench was divided conceptually into two areas with the appearance of two important features. The first was Pit B in the northwest area of the trench and the second was the entire southeastern half of the trench (**Figure 11**). Across the southeastern half of the trench, we excavated primarily in mixed modern contexts, presumably the leveling fill from beneath the building demolished at 14 St. Philip Street. It was in this area that an articulated skeleton belonging to a young equid, likely a donkey, was excavated (**Figures 11** and **12**), replete with iron horse shoes, as well as the lower portion of a coarse ware vessel that was resting upright. Another equid was excavated in an earlier campaign in the area to the southeast in Section BΘ, above the Roman feature containing the reused blocks from the Leochoreion.

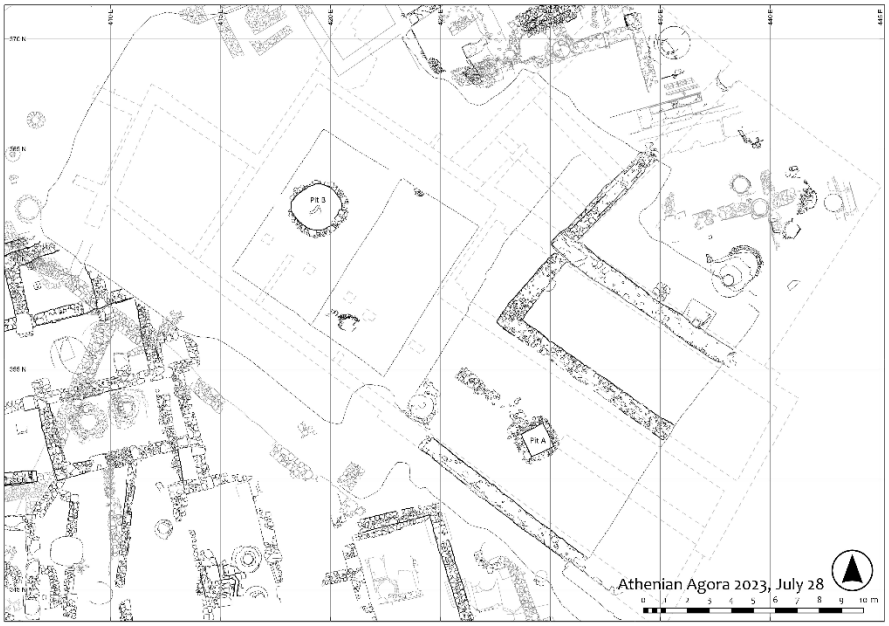


Figure 11. Plan of the excavated area showing Pit B and the small equid skeleton in Section BK West.

Figure 12. Articulated equid (donkey?) skeleton in BK West. Photo by John Papadopoulos (5 July 2023).

Pit B (**Figure 13**) was visible in the geophysical survey conducted before the excavation season began (see **Figure 9**), as well as on the surface of the trench before excavations began. This large stone-lined circular pit measures approximately 2.6 meters by 2.5 meters. It contained much modern debris in its southern half, much of which could be associated with the demolition of the building at 14 St. Philip Street, including the marble cap and stone lid of the pit from when it was integrated into the basement of the modern building. The northern half of Pit B contained approximately 0.9 meters of mixed pine resin, burned and rotted wood, and assorted tree debris, including pine needles, twigs, and pinecones (as noted above, the presence of pine resin was confirm by FTIR analysis in the Wiener Lab, as well as a Raspail test in the Stoa of Attalos). Beneath the resin was a clayey fill that, despite its depth, nevertheless contained modern material, including plastic and synthetic twine. By the end of the season, we had excavated nearly 1.5 meters deep inside the pit and had possibly exposed the bottom of the stone lining on the eastern side. Interestingly, Pit B featured a wide opening in its lining on the south side, a tunnel (natural?/constructed?) that extended horizontally approximately 2 meters through and beyond the stone lining of the pit to the south. The original purpose of Pit B remains unknown, but it may be a *bothros* or perhaps was associated with the 19th century flour mill that once occupied much of the space between Hadrian Street and Hastings Street. In the plan of the modern building it is labeled as a “well,” but it is a most unlikely well.

Figure 13. Pit B in BK West. Photo by Craig Mauzy (4 August 2023).

As in the other trenches, pottery was abundant in BK West, dating to all periods. Additionally, we found animal bone (including burnt cattle bones in Pit B), copious iron slag (including hearth bottoms), glass, coins, a fragment of a ceramic loom weight, and shells, including *Murex*, which point to the production of dye.

Archaeobotanical research (John Marston and Ranran Zhang)
Archaeobotanical research at the Agora in the 2023 excavation season was concentrated on recovering archaeobotanical materials from flotation, the processing of heavy fractions, and analysis of selected light fractions. Since this was the first year where flotation samples were systematically collected and processed at the Agora, new protocols and procedures had to be established, including but not limited to: the selection of sediments for flotation samples, phytolith sampling, flotation methods, and protocols for heavy fraction sorting, light fraction packaging, and sample recording.

By the end of season, a total of 43 flotation samples were excavated, floated, and fully processed (see **Table 1**). Additionally, preliminary analysis was done on six botanical light fraction samples, each yielding interesting results that add to our understanding of the site. A total of 77 archaeobotanical samples were excavated this season (43 light fractions from flotation and 34 charcoal samples from excavation) and will be taken to the Environmental Archaeology Lab at the University of Boston for analyses in the coming 2023-2024 academic year.

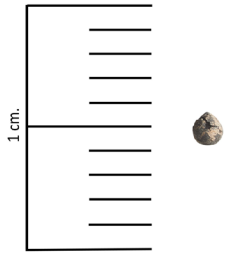
Table 1. Total samples collected in 2023.

Trench	# Samples Collected	# Samples Floated	Average Volume (L)	Total Volume (L)
BK South	11	11	28.1	309
BK North	23	23	27.3	627
BK West	9	9	24.9	224
Total	**43**	**43**	**27**	**1160**

A number of identified seeds are illustrated together in **Figure 14**, including: 1. *Hordeum vulgare* (barley, likely six-rowed, dorsal), 2. *Triticum aestivum/durum* (free-threshing wheat, ventral), 3. Ficus carica (Fig), 4. *Vitis vinifera* (Grape), immature/underdeveloped seed (left) and mature seed (right), 5. *Olea europaea* (Olive) endocarp, 6. Lens culiaris (Lentil), 7. Pisum sativum (Pea), 8. *Pistacia* sp. (Pistachio). Exterior (left) and interior (right), 9. *Vicia ervilia* (Bitter vetch), 10. Malvaceae (Malva), 11. *Medicago* sp. (mallow) pod fragment, 12. *Lolium* sp. (ryegrass). Dorsal (left) and ventral (right). Finally, **Figure 15** shows a ubiquity column graph of economic taxa (expressed as a percentage of the total sample) .

1. *Hordeum vulgare* (Barley, likely six-rowed, ssp. *vulgare*), dorsal

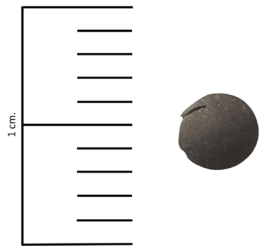
2. *Triticum aestivum/durum* (Free-threshing wheat), ventral



3. *Ficus carica* (Fig)

4. *Vitis vinifera* (Grape). Immature/underdeveloped seed (left) and mature seed (right)

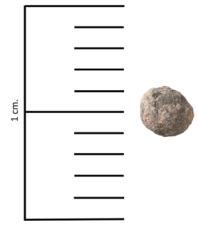
5. *Olea europaea* (Olive) endocarp



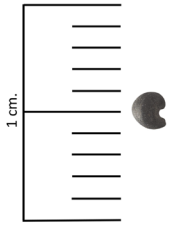
6. *Lens culiaris* (Lentil)

7. Pisum sativum (Pea)

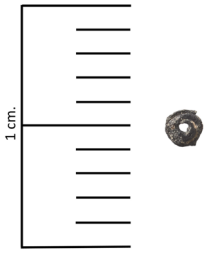
8. *Pistacia* sp. (Pistachio). Exterior (left) and interior (right)



9. *Vicia ervilia* (Bitter vetch)



10. Malvaceae (Malva)



11. *Medicago* sp. (mallow) pod fragment

12. *Lolium* sp. (ryegrass). Dorsal (left) and ventral (right)

Figure 14. Selection sample of identified seeds. Photos Craig Mauzy from different contexts.

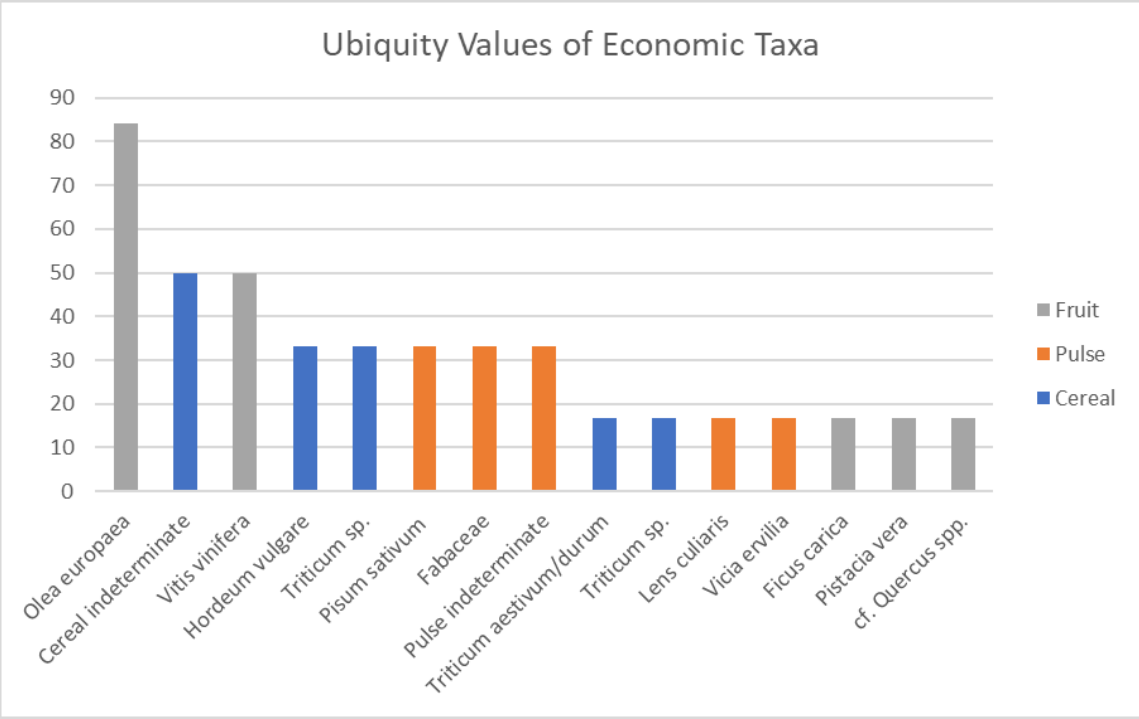


Figure 15. Ubiquity (expressed as percent of total sample) column graph of economic taxa

Phytolith analysis (Mary Larkum)

Soil samples for phytolith analysis were sub-sampled from fifty-liter flotation bags at the Agora Excavation flotation/pottery washing station by John Marston and Ranran Zhang. These samples were excavated from all three trenches, and consist primarily of modern mixed fills. A total of 43 samples was processed during the 2023 excavation season. This work was carried out in the Wiener Chemistry Laboratory during June, July, and August of 2023. After completion, soil samples and excess phytoliths were returned to the Agora Excavation for storage. An additional 75 modern botanical samples were also processed in order to create a regionally specific reference collection of phytolith morphotype specimens, which is a necessary tool for the identification of archaeological samples. The collection features many culturally and environmentally important taxa, including most of the cereal grains relevant to the archaeology of Greece. All grain plants were collected from the Wiener Experimental Garden and/or comparative collection. Many other plants were collected from the ASCSA garden and surrounding streets with helpful advice from Dr. Dimitris Michailidis. These include leaves/needles, wood, and bark from pine, mulberry, carob, olive, fig, terebinth, pomegranate, bitter orange, rosemary, lavender, myrtle, amaranth, and sage. Additionally, I purchased food products such as saffron filaments, onion, garlic, and herbs at a local supermarket. The onion and garlic were acquired to process the outer skin. All phytoliths left over from reference sample processing were donated to the Wiener Laboratory and will be added to their botanical comparative collection.

An initial examination of microscope slides shows that site samples feature numerous single cell phytoliths and few multi-cells, also called silica skeletons (articulated phytoliths). Grass, sedge, and shrub/tree cells are present. Some of the grass morphotypes, for example rondel and crenate cells, are considered redundant in that they are found in numerous genera (**Figure 16**). Others, such as bulliform, hair/hair base, and trichome cells are often diagnostic to family or genera, which will aid in plant identification. All morphotypes contribute to an understanding of the local environment. Phytoliths from *Triticum* sp. (wheat) husk are interpreted as evidence of plant processing by the flour mill that once occupied a portion of the excavation area north of Hadrian Street (**Figure 17a-c**). Arboreal phytoliths found throughout the site are conifer-like and will be compared with reference samples and published exemplars. They were accompanied by a currently unidentified taxon in a pit containing modern debris within Section BK West.

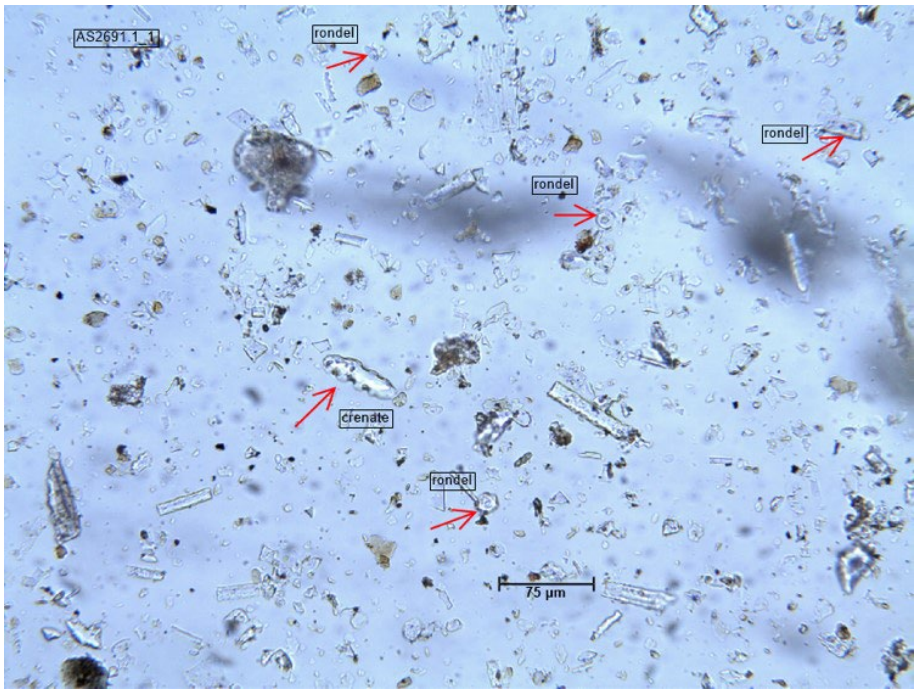
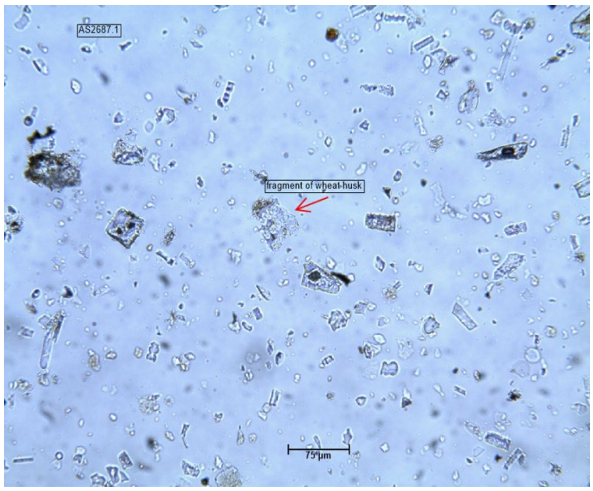
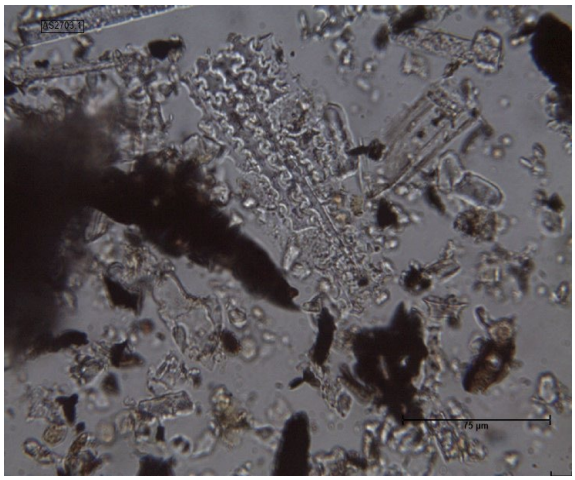


Figure 16. Redundant single cell morphotypes (20x)



(a)



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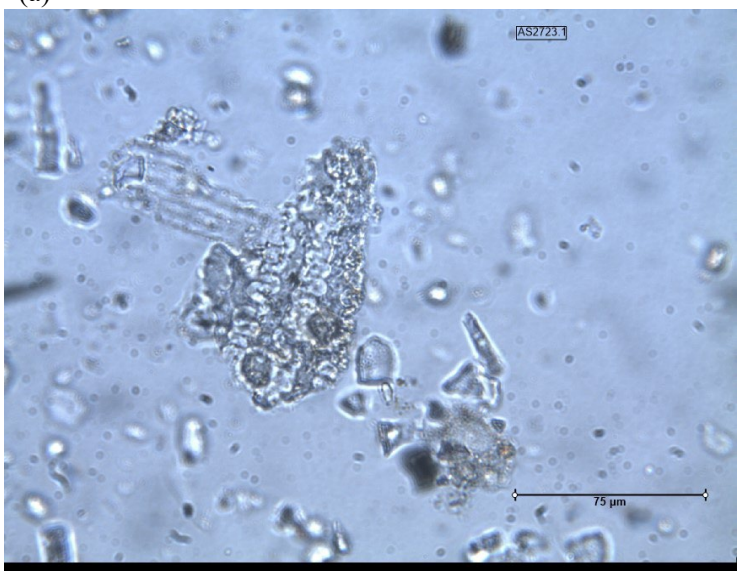

(c)

Figure 17. Fragments of *Triticum* sp. (wheat) husks: (a) 20x; (b) 50x; (c) 50x)