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AT-RISK CULTURAL HERITAGE: NEW EXCAVATIONS AND FINDS FROM THE MYCENAEAN SITE OF KASTROULI, PHOKIS, GREECE

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ABSTRACT

The paper presents the excavations of 2016 season at the Mycenaean site of Kastrouli, Phokis. The site has been looted in the past decades and excavated in a very limited scale by the Archaeological Service. It is located on the top of a rocky hill and delimited by a fortification wall, probably constructed in two phases, the earliest of which could be Mycenaean. A hybrid rock-cut and built chamber tomb, excavated at the westernmost part of the fortified area, contained an undisturbed commingled burial of at least fifteen individuals. The main pottery shape is the stirrup jar, and the small finds include *Phi* and *Psi* figurines, steatite beads, and fragments of gold foil. The period of the original use of the tomb falls between the LH IIIA 2 and the LH IIIC Early or Advanced. There is some evidence that the tomb has been reused in the Middle Geometric Period.

KEYWORDS: Late Helladic, Mycenaean, figurines, excavation, Phokis, ceramics, commingled burial, Antikyra, Cyber archaeology, tomb, Late Bronze Age

1. LOCATION

The site of Kastrouli lies in the center of the peninsula of Desfina, 11 km SE of Delphi (all distances in bird's flight), in the small plateau called Mesokampos in the Phokis region of central Greece (Fig. 1a,b).



Figure 1a,b. Map of the region of Kastrouli, in southern Phokis, with other important sites in the area from GoogleEarth map (processed by A. Sideris).

It is situated on a small rocky promontory, at 548 m above the sea level, 4.7 km SE of the modern village of Desfina, between the shoreline of the Gulf of Itea and the Gulf of Antikyra. The easiest access from Kastrouli to the sea, and a considerably shorter distance, is towards the Steno Bay, near Antikyra, on the Gulf of Corinth (5.1 km, Fig. 2), where Mycenaean pottery and a possible fort have been registered already by Mastrokostas (1956, 24-25; also Sideris 2014, 35-36, figs. 3, 13-14 - Fig. 3).

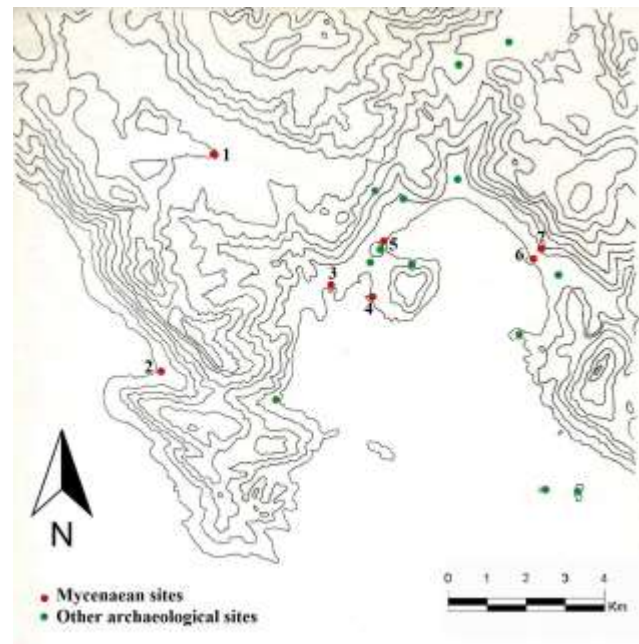


Figure 2. Map of the area of Kastrouli. Red dots represent Mycenaean sites while green ones other ancient sites. 1 Kastrouli; 2 Sykia; 3 Steno; 4 Vroulia; 5 Antikyra/Kyparissos; 6 Medeon acropolis; 7 Medeon cemetery. Map drawn by A. Sideris.



Figure 3. The rocky promontory (fort?) of Steno from the NE. Photo A. Sideris.

On the Gulf of Itea the closest site with some Mycenaean presence is Sykia (7.5 km), where Dasios (2005 and 2015) identified a fortified settlement and excavated a chamber tomb (Fig. 4). The site of Kastrouli is delimited by an ellipsoidal rough stone wall only partly preserved (Fig. 5). A smooth neck connects the Kastrouli hill with other promontories on its west, while the remaining three sides are surrounded by the Mesokampos plateau below. To the north the site is overlooked by Mount Kirphis (Neraidolakoma) at 1265 m, while further in the east, south and west the terrain evolves with successive low rocky promontories and hills alternating with small valleys.



Figure 4. The entrance of the chamber tomb in Sykia. Photo to EAPh (F. Dasios).



Figure 5. The Kastrouli site. The fortification wall is visible by the line of vegetation in most of its periphery. The red arrows show the areas of investigation: a) W-NW wall section. b) Tomb A. c) S wall section. From b to opposite little circle is 144 m. GoogleEarth photo.

2. HISTORY OF THE RESEARCH

The site falls under the authority of the Eforia of Antiquities of Phokis (hereafter EAPh, formerly 10th Eforia of Prehistoric and Classical Antiquities), based in Delphi. It was identified by Fotis Dasios (1992, 84, no. 109; also Sideris 2014, 39, fig. 2), who reported pottery sherds from Late Helladic to Roman periods. The fortification wall and three tombs attributed to the Mycenaean period were reported by Sotiris Raptopoulos (2005, 2012 and 2012a), who also undertook a cleaning of the tombs and partially excavated the northern one, (hereafter Tomb A). According to information provided by the local shepherds, collected by Raptopoulos and again later by the first author of this report, the tombs were looted in the last 50 years, most probably in two phases. The earliest phase reportedly goes back to the 1970s, while the later one would have occurred in the early 2000s.

This influenced the intervention of the EAPh and the declaration of Kastrouli as an archaeological site protected by the Greek law for Antiquities. At the beginning of the 2016 excavations, based on these earlier reports, our team assumed that Tomb A was completely looted.

Raptopoulos' investigation, according to his published reports, provided further confirmation that the Tomb A dates in the LH III period, and specifically in the LH III B 2 on the basis of a few pottery sherds, a fragment of a clay figurine, a bronze spiral wire, a grey-bluish stone bead, and a fragmentary bone pin (Raptopoulos 2012, 1072, figs. 8-9). The four small finds have been collected on the roof and the dromos of the tomb (Raptopoulos 2005, 463). The shape and plan of the tomb were only partly understood, since it was not excavated in its entirety. Accordingly it has been tentatively ascribed to the barrel-vaulted variant of tholos-type tombs. As we will see further it is actually a hybrid type of chamber tomb, not a tholos tomb.

The fortification wall has been tentatively ascribed by Raptopoulos (2012, 1072) to two different phases: one earlier, possibly Mycenaean, with larger stone slabs in the lower courses, and one later phase, possibly Classical or later, with smaller stone slabs on the upper courses. There have been no pottery finds reported from the foundations of the wall, nor any other dating method applied at the time.

3. THE KASTROULI PROJECT BY THE UNIVERSITY OF THE AEGEAN

The excavations at Kastrouli are a focal and integral part of a broader project initiated by the University of the Aegean, Department of Mediterranean Studies (Rhodes, Greece), which includes physical survey of the site and its immediate vicinity, geophysical survey, topographical mapping and georeferencing with GPS, analysis of finds with various techniques and methods, and further palaeoenvironmental research in the eastern part of the gulf of Antikyra¹. Prof. Sotiris Manolis and his team (National and Kapodistrian University of Athens) has studied the skeletal remains, and we have retained samples for isotopic and DNA analysis (Chovalopoulou et al. 2017)².

¹ Prof. Ioannis Liritzis has been entrusted by the University of the Aegean with the direction of the entire project, while Dr. Athanasios Sideris has been appointed director of the archaeological excavations and physical surveys. Different parts of the geophysical research have been accomplished by Prof. Grigoris Tsokas (Aristotelian University of Thessaloniki) and Prof. Andreas Georgopoulos (National Technical University).

² Funding for the 2016 expedition was provided by the UC San Diego team led by Prof. Levy.

The excavation was based on the Cyber-Archaeology workflow developed by Levy (2013) and co-researchers³. A Holocene marine environmental study was also carried out⁴.

4. METHODOLOGY AND DOCUMENTATION

4.1 SURVEY AND EXCAVATION

To facilitate high spatial accuracy for all recorded finds, the 2016 excavation season at Kastrouli began by establishing reliable control points throughout the site. A network of nine control points has been created (numbered T1-T9) which were referenced to the Greek (Hellenic) Geodetic Reference System (GGRS'87 - ΕΓΣΑ'87).

The locations for control points were selected based on the need to avoid any perceivable interventions at the archaeological site, to lay out the points within view of each other, and to ensure the permanence of their position not only during the measurements but also for the future needs of the work. The nine points were permanently marked with concrete pillars, 10 cm diameter and 10-15 cm height, equipped with steel marks to enable centering of the instruments (Total geodetic stations, GPS etc.). The coordinates of these locations were collected with GPS and verified with a Topcon GPT 3003 total station.

Excavation at the site was based on an arbitrary site grid, consisting of 5 m x 5 m squares, covering the entire site. Squares were named based on their position in the grid by counting squares in the x and y directions, respectively, and separating these values with a slash (e.g. Square 4/20 is the fourth square east and the 20th square north from the arbitrary origin to the southwest of the site).

During the 2016 season, excavation occurred in three areas: Area A, consisting of excavation in Squares 5/19, 6/19, and 7/19, and two small wall section samples in unnamed areas. One sampling of the Northwestern fortification wall of the site occurred in squares 5/21 and 5/22, while a sampling

of the southern fortification wall occurred in square 21/2. During excavation in Area A, a 100% sieving strategy was adopted in order to ensure the collection of material culture missed in excavation or smaller finds not immediately apparent (1 cm mesh for loci outside the tomb, and ~3 mm mesh for those within the tomb).

Tomb A was selected for excavation as its structure was relatively undamaged, compared to the other two tombs, which were razed to the ground, probably by a bulldozer. The expectation was that it would be possible to define the architectural layout and typology of the tomb and that it would serve as an excellent introduction to LH archaeology for the student participants in the project. As will be shown below, the tomb was not completely disturbed leading to the discovery of some remarkable findings.

4.2 SPATIAL/CONTEXT RECORDING

Excavations at Kastrouli employed the fully digital archaeological recording system developed by the Edom Lowlands Regional Archaeology Project (ELRAP) directed by Thomas E. Levy and Mohammad Najjar based on software developed by Dr. Neil Smith (Smith and Levy 2014) called *ArchField*, which is a data interface software allowing for real-time data recording and review in the field. The ELRAP on-site digital archaeology (OSDA) 3.0 system (Levy et al. 2010) melds together off-the-shelf technologies and custom computer programs/hardware developed for 'real-time GIS' (Geographic Information Systems) data recording specifically for solving archaeology/cultural heritage problems that researchers face worldwide. During excavations at Kastrouli spatial data was collected with a Leica TS02 total station and *ArchField*. All artifacts collected and recorded with *ArchField* were given a unique basket number and barcode to facilitate entry into the *ArchaeoSTOR* artifact database, a custom-developed web-based geospatial database allowing for the categorization and sorting of artifacts and site data in the field and in the lab, along with spatial visualization and statistics applications (Gidding et al. 2011; Gidding et al. 2014). Following field data collection, spatial data linked with artifacts through their basket number/barcode were processed into *ArchaeoSTOR* along with all relevant artifact information (weights, counts, material type, etc.).

In addition to the recording of point finds and locus outlines using *ArchField*, the excavation team also adopted an intensive Structure from Motion (SfM) recording campaign in order to document the site in 3D over the course of excavation (Howland et al. 2014b; Levy et al. 2014). SfM is a software technology allowing for the creation of highly accurate

³ The 2016 excavations at Kastrouli were part of a joint University of California, San Diego (UC San Diego) - University of the Aegean one year project to investigate at-risk cultural heritage on sites from the late Mycenaean period around the time of the collapse of Late Bronze civilizations in the eastern Mediterranean. The work was part of a Memorandum of Understanding (MoU) between the University of the Aegean and the UC San Diego. Accordingly, Prof. Thomas E. Levy brought a team of collaborators and students to participate in the field research and co-direct the digital documentation of the site.

⁴ Prof. Tom Levy and Prof. Richard Norris of the UC San Diego Scripps Institution of Oceanography in collaboration with Prof. George Papatheodorou and Dr. Maria Garaga of the University of Patras and Prof. Ioannis Liritzis. This research is in progress and will be reported on in another publication.

and photorealistic 3D models through photogrammetric techniques. The team adopted a two-part approach to SfM data capture: terrestrial and aerial SfM photography (Howland et al 2014a). In both approaches, overlapping photographs encompassing the area of interest are captured with complete coverage to facilitate the construction of a 3D model. Furthermore, SfM was used for section drawing the walls in the dromos and tomb; orthophotos provided a base for digitization within in GIS rather than hand-drawing in the field.

5. EXCAVATIONS AT KASTROULI. FIRST SEASON: JULY 20 – AUGUST 3, 2016

The first season took place between July 20 and August 3, 2016. The team, composed by the above-mentioned individuals plus three graduate and eleven undergraduate students of the University of California – San Diego, was based in the village of Desfina and the municipality of Desfina enthusiastically supported the expedition and provided an abandoned meteorological station building on the outskirts of the village for the expedition team. Based on the plan of research activities for the first season, submitted to and approved by the EAPh, we investigated the Tomb A and two small sections of the fortification wall situated in different parts of the site.

5.1 STRATIGRAPHY

The 2016 excavations at Kastrouli are preliminarily divided into four strata. Surface materials and loci clearly disturbed by looting and/or the previous excavations are attributed to Stratum I. The site's fortification wall is believed to be later in date than the tombs based on its close (potentially cutting) construction to the dromos entrance of the Tomb A. As such, loci associated with the wall section excavations are assigned Stratum II. Undisturbed loci from within the tomb itself (Loci 112 and 121) are attributed to Stratum III. These loci (112 and 121) are associated with the human remains and seem to be the only undisturbed contexts within the tomb. Further undisturbed loci from square 7/19 (Wall 116, Fill 114, and Ashy-Feature 115) have been initially also attributed to Stratum II, as it seemed likely that they were later in date than the Tomb A. However, the preliminary study of the pottery recovered from these loci indicates that they are rather earlier than or partly contemporary with the Tomb A, and thus they should be designated as Stratum IV.

5.2 TOMB A: ARCHITECTURE

The work in the Tomb A, which is located in immediate vicinity of the western part of the fortification wall (Figs. 5b, 6), started with cleaning the vege-

tation and the earth around the two still visible openings of the tomb.



Figure 6. View of the Kastrouli hill from N. The red arrow shows the position of the entrance of the wall and the Tomb A. Photo A. Sideris.

The thin wire-net, placed earlier by the EAPh above these openings and secured with large nails in order to prevent livestock from falling inside the tomb, was already rusty and entirely damaged, leaving thus free entry to the tomb by the two unprotected openings. After removal, we documented its deepest occurrence, which provided a secure reference for the depth and extend reached by the pre-views official investigation of the tomb.

The tomb is oriented with its longest axis in the W-E direction. The excavated part consists of a dromos in the W (Fig. 7a), an entrance with monumental lintel (Fig. 7b), a small chamber (Fig. 7c) and a niche or rather extension on the chamber's southern side, again covered with a monumental slab of stone. The investigated portion of the tomb is ca. 4.80 m in length and 1.70 m in maximal width. The dromos consists of two lateral walls made of five courses of rough stones each, slightly converging westwards (Fig. 8).

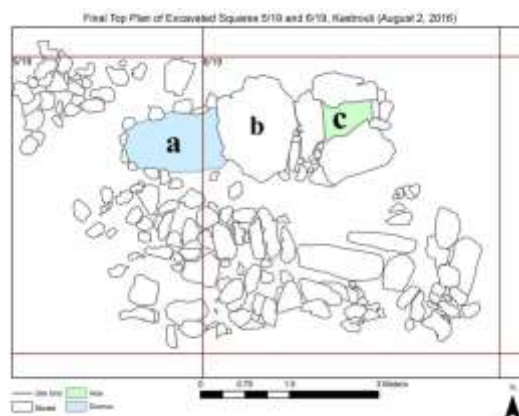


Figure 7. Plan of the Tomb A and the stone slabs at its South. a) Dromos; the two westernmost stones which create the illusion of a closed dromos may have been found there accidentally, since there is no other course of stones underneath them. b) Monumental lintel. c) The hole on the roof of the chamber. Ground plan produced by M. Howland and B. Liss.



Figure 8. Tomb A: the dromos and the entrance with the monumental lintel. Photo A. Sideris.

The westernmost end (or rather start) of the dromos, lies only one meter from the edge of the fortification wall and has not been investigated this season, for safety reasons and more efficient work procedure. Further investigation is needed in order to determine the original length and the form of the dromos start (lateral walls joining in a curved edge? steps? free gradually lowering lateral walls?). The monumental lintel over the entrance, made of the same local limestone as all other parts of the construction, measures 1.80 m x 1.35 m, and it is approximately 15-20 cm thick (Figs. 7a, 8). Such massive lintels would have required considerable human-power to place them. The threshold to the tomb is carved in the bed rock, which continues in the chamber floor, lowers with two irregular steps and joins the back wall of the chamber (again carved in the bedrock) in the form of a narrow transversal groove (NE-SW). The northern wall of the dromos continues in the chamber and joins the carved bedrock, which forms there its lower part (Fig. 9). The southern dromos wall after the entrance turns right, to form the southern extension of the chamber (Fig. 10).

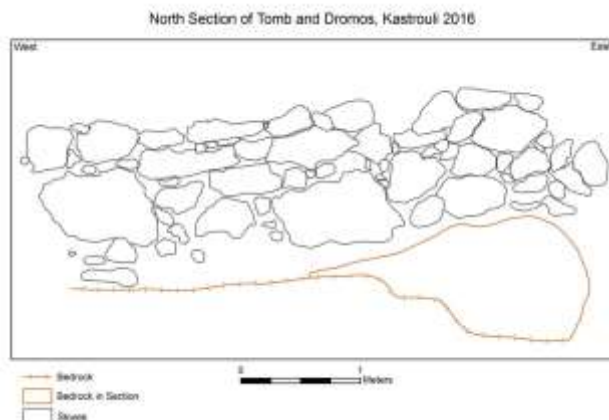


Figure 9. Tomb A: West-East section of the dromos and the chamber, northern face. Drawing by B. Liss and M. Howland based on orthophoto by A. Johnson.

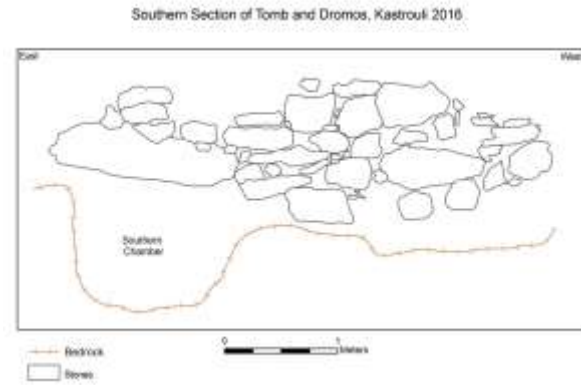


Figure 10. Tomb A: East-West section of the chamber and the dromos, southern face. Drawing by B. Liss and M. Howland based on orthophoto by A. Johnson.

This rather small chamber was initially covered by at least five large stone slabs (two with the long axis N-S, and three with the long axis E-W). The central E-W slab, still documented in place by a photography taken by the EAPh in 2005 (Raptopoulos 2012, fig. 5), had in the summer 2016 already fallen inside the tomb. We removed it carefully and placed it several meters away, in the SW vicinity of the tomb (Figs. 7c, 11). The covering of the chamber with large slabs makes partly use of the ekforic building technique⁵, but there are only two layers and only one over the southern part of the chamber. Besides, the small size of the construction and the large size of the slabs used for the roofing are not typical for a tholos tomb. They could only pertain to a chamber tomb, such as the one excavated in the nearby Sykia, and known elsewhere too (e.g. Aegina, Achaea; Daios 2005; Polychronakou-Sgouritsa & Eustratiou 2017, drawings 6, 8, figs. 10-11, 14-15; Petropoulos 2000, 73-74, figs. 8, 10).



Figure 11. Tomb A: view from SE. On the left upper corner the red arrow shows the relocated roof slab fallen in the chamber and removed during the excavation. Photo A. Sideris.

⁵ Ekforic building technique: That is the tholos or dome is built with large plates arranged in layers in such a way that each layer protrudes slightly more inwardly of the dome from the lower one (ekforic system).

Tomb A is special and represents a mixed type combining technical and morphological features of both the rock-cut chamber tomb and the built chamber tomb (Papadimitriou 2001, 2). Rather unusual is the extension, which projects in the entire width of the southern side of the chamber. The eastern and western walls of this extension are cut in the bed rock, while its southern side is half rock-cut and half using a large rectangular carved slab (Fig. 12). On top of all sides of the extension there is a row of rough stones. This part of the chamber is roofed with a large stone plaque of dimensions comparable to those of the entrance lintel, above which projects inwards another smaller plaque.



Figure 12. Tomb A: the southern extension with its monumental roofing slab and another large rectangular slab in its southern wall. Photo A. Sideris.



Figure 13. Tomb A: view from the dromos of the entrance with its monumental lintel, and of the partly rock-cut chamber. Photo A. Sideris.

When we began the excavation work in 2016, the tomb was filled with sediment to a height approximately 25 cm under the entrance lintel, and approx. 40 cm under the roofing slabs of the chamber. At the end of the excavation the height of the entrance from the rock-bed threshold to the lower part of the lintel measures approximately 1.55 m; the chamber from the bottom of the floor groove to the lower part of the roofing slabs measures approximately 1.65 m

(Fig. 13). While the upper ca. 40 cm of sediment was disturbed by grave robbers and the earlier excavators, to our surprise, the lower deposits had not been disturbed since the Late Bronze Age, when they were initially created by the successive burials.

5.2 TOMB A: FINDS

The lower 30 cm of the chamber (50-60 cm at the southern extension) were filled with human bones in a densely commingled burial layer of sediment, numerous pottery sherds, a few small finds, a few bones of domestic animals, and recent vegetation roots (Fig. 14). The excavation of the commingled human burial was a difficult and lengthy process, since most of the bones were desiccated, very fragile and disintegrated into small chips just after being exposed. The long bones (humerus, femur and tibia, and more rarely radius and ulna) were relatively better preserved (Fig. 15). Skull and facial bones, as well as teeth (free or still attached on fragments of the maxilla or mandible) were also collected. According to the anthropological report (Chovalopoulou et al. 2017) the skeletal remains from the commingled layer of the tomb belonged to at least fifteen adult individuals (both sexes represented), plus some subadult individuals including an infant and an unborn child. They all have been placed in this secondary burial with only a poor fragment of their original grave-goods inventory, which has most likely accidentally escaped cleaning (and possibly looting already in antiquity).

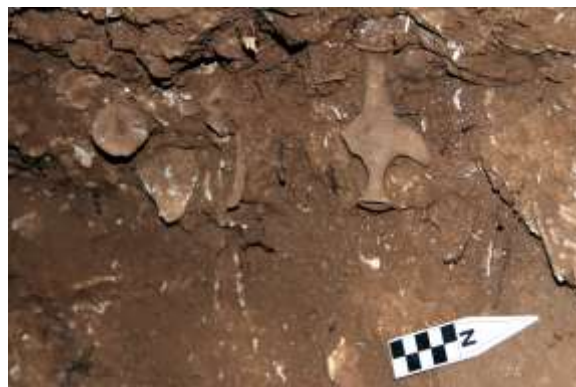


Figure 14. Tomb A: the commingled layer; a Psi figurine and the spout of a stirrup jar in situ. Photo A. Sideris.

A single bone (right femur), collected from the tomb before the excavation started, is not related to the commingled layer. We thought it could come from the latest burial in the tomb, the one disturbed by the looters. And this assumption has been confirmed by the ^{14}C dating conducted by the center INNOVA in Italy, under the sample code DHS6605 (Liritzis et al. 2016, 247). The calibrated dates for this sample are 810-760 BC, corresponding to the later part of the Middle Geometric Period.



Figure 15. Tomb A: the commingled layer with several long bones placed together. Photo A. Sideris.

Several dozens of fine painted pottery fragments from various Mycenaean shapes and a several of plain vases were collected from among the bone cluster. However, they only rarely represent matching fragments, and there is not a single entire vase. The most characteristic type is the stirrup jar. They are typically of small dimensions, more often almost globular than ovoid or squat in shape, and they bear simple linear motifs on the belly, and other geometric decoration on the shoulder and on the false-neck top disk. The latter is almost uniformly decorated either with a spiral or with concentric circles. The commonest motifs on the shoulder are chevrons (Fig. 16), and concentric arcs. Some less common motifs include a circle with a row of dots around it, scales and tongues, and two versions of simplified cable pattern. Most of the handles are entirely paint with only a reserved triangle on their top. The bands on the belly are either of equal width, or larger bands frame a cluster of thinner lines alternating with empty bands (Fig. 17). This latter arrangement may date to the period of transition from LH IIIB 2 to IIIC Early (Petropoulos 2000, 75, fig. 30; Paschalidis & McGeorge 2009, 84, fig. 6). Among the latest finds is a base of a large-size stirrup jar, which probably belongs to a specific type known from Achaia (Mountjoy 1999, 427-428, fig. 150:96; Christakopoulou-Somakou 2010, 76, pl. 15.6) and dated to the LH IIIC. Unfortunately its surface is badly preserved.



Figure 16. A sherd of a stirrup jar, decorated with chevrons on the shoulder and concentric circles on the disk, from the Tomb A. Photo A. Sideris.



Figure 17. Sherds of various shapes from the Tomb A. Spirals, scales, vertical lines, and pairs of bands framing thinner lines are the main motifs. Photo A. Sideris.

Other shapes include deep and shallow bowls (some with "S" profiled rim), high stemmed cups, amphorae, pear-shaped jars with three horizontal handles, "loaf-shaped" and angular alabastra. Scales, rhomboid patterns, and simplified cables (or "sequence of imbricate S") decorate the shoulder of the jars and alabastra (Fig. 18). Such vases with rhomboid pattern seem to represent one of the earliest types in our tomb (Fig. 19), dated to the LH IIIA 2 (Christakopoulou-Somakou 2010, 40, 101, pls. 3.23, 23.3; Polychronakou-Sgouritsa & Eustratiou 2017, 79, fig. 62). Rare were the sherds of coarse pottery; seventeen of them come from a very large vase, probably a pithos (average thickness 2 cm).



Figure 18. Sherds of an alabastron, with simplified cable pattern, from the Tomb A. Photo A. Sideris.

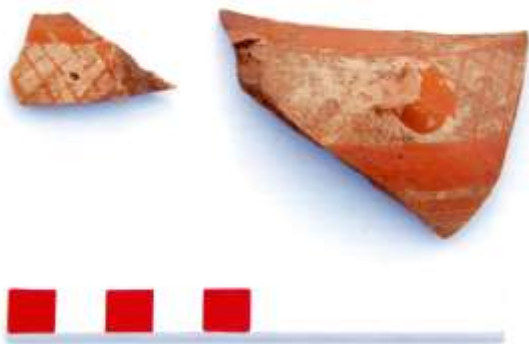


Figure 19. Sherds of a pear-shaped jar or of an alabastron, with net pattern, from the Tomb A. Photo A. Sideris.

Among the small finds that are especially interesting are one almost intact and three fragmentary clay female figurines. One fragmentary exemplar belongs to the type *Phi B* and has the body covered with vertical red-orange lines on the front side, and similar slanted lines on the back (Fig. 20d). The space between them is decorated with small red dots. It may date from the LH IIIA 2 (French 1971, 109, figs. 1, 13-15), but it has been argued that this type continues well into the LH IIIB 2 (Weber-Hiden 1985 & 2009). The remaining figurines belong to three different variants of the type *Psi*. One, missing one arm and the head, has added pellet breasts, linear decoration, and a cross painted under the base (Fig. 20a). It may date from the LH IIIB 2 to IIIC Early (Tzonou-Herbst 2002, 35-36). The second *Psi* exemplar, missing the tips of the schematic arms, has the front of the body covered with red arching lines (Fig. 20b). The space between them is filled with small red dots (tinier than on the *Phi* exemplar). On its back side vertical lines on the torso combine with horizontal lines on the arms. Its date may range from LH IIIB 2 to IIIC Developed, but given the similarity of decoration with the *Phi* exemplar we would rather date it no later than LH IIIC Early (Tzonou-Herbst 2002, 36-37). The last *Psi* exemplar, missing one arm, has lost all painted decoration, or, more probably, never had any (Fig. 20c). Its form corresponds to the second *Psi* figurine and a similar date is very much likely.



Figure 20. Three *Psi* and one *Phi* figurines from the commingled layer of the Tomb A. Photo A. Sideris.

Once the restoration of pottery and figurines completed and all the profiles drawn, it will be possible to date more accurately more of the collected sherds, and perhaps to infer a pattern of the use-intensity of the tomb through time. Among the remaining small finds there is a biconical spindle weight (or a large bead?) made of black steatite (Fig. 21a), and another similar but smaller, which is more likely a bead (Fig. 21b). We found also a conical bead of greenish steatite (Fig. 21c), and a smaller cylindrical bone bead (Fig. 21e). Lastly, there is a lentoid black steatite bead (Fig. 21d), plus the oblong grey-bluish stone bead found by Raptopoulos (2005, fig. 12; 2012, fig. 9). Three small and seven really miniscule pieces of gold foil have been found, all but one, during the sieving of the sediment from the commingled layer (Fig. 22). One of them, after unfolding in the laboratory of the EAPh at the Delphi Museum, exhibits a central small hole and small dots carefully punched around it (Fig. 22 middle).

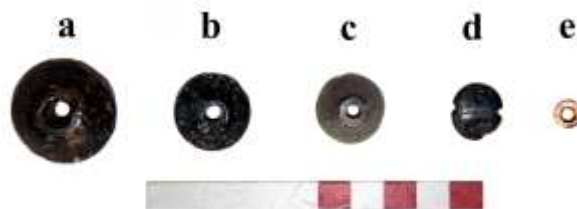


Figure 21. Biconical, conical, and lentoid beads of steatite, and a cylindrical bone bead, all from the Tomb A. Photo A. Sideris.



Figure 22. Small fragments of gold foil from the Tomb A. The central one bears some dotted decoration. Photo A. Sideris

It probably belonged to an ornament sewn on to the garments of the deceased. The two larger pieces are composed of multiple crumpled layers of gold foil, but their state of preservation does not allow full unfolding.

Finally, we should also mention a tiny fragment of a sea-shell identified as *Hexaplex trunculus* (earlier denomination: *Murex trunculus*, Fig. 23).



Figure 23. Small fragment of sea shell (*Hexaplex trunculus*) from the Tomb A. Photo A. Sideris.

Another fragment, possibly from the very same shell, has been collected by Raptopoulos (2012a, fig. 10). Its presence in the tomb can be accidental since *Hexaplex* is an edible species, and some kitchen debris may have found their way into the tomb, especially because a hearth has been excavated a few meters on its East. However, one should not exclude the intentional deposition of the shell either as food, or, more significantly, as a token of luxury, since *Hexaplex trunculus* was one of the three shells used in antiquity for the extraction of purple dye (Sideris 2014, 57, fig. 30; Sukenik *et al.* 2017; Kalaitzaki *et al.* 2017).

5.3 TOMB A: DATING AND DISCUSSION

The Tomb A in Kastrouli represents a hybrid between the rock-cut chamber tomb and the built chamber tomb types, and it must have been constructed in the beginning of LH IIIA 2 or slightly later. Successive burials were interred in it for approximately two hundred years. To make room for the new burials the bones of the previous ones were put aside, most often in the southern part of the chamber, a practice well known for that time and especially for chamber tombs (e.g., Petropoulos 2000, 66; Dasios 2005). However, the space was limited and the burials were so frequent that soon the entire floor of the chamber was covered with a thick layer of bones (ca. 40 cm deep), damaged grave goods, and soil. The last burial took probably place in the LH IIIC Early or Advanced. Then, for some three hundred years or slightly more, the tomb was not used. Subsequently, a new burial took place in the Middle Geometric Period. It is quite possible that during this time most of the valuable grave goods were removed from the tomb. Along with the valuables, most of the broken pottery sherds were removed too, presumably for no other purpose than to create more

room for the new burial. Further looting, possibly in ancient and certainly in recent times, has also removed the evidence of the Geometric burial (except just one femur, and some smaller bones collected by Raptopoulos 2012a, figs. 15, 20), but these activities did not touch the Late Helladic commingled layer, which remained at its original state, when the Geometric period disturbance happened. It is noteworthy that the chamber tomb in Sykia presents exactly the same characteristics (Fig. 4). It was originally used from LH IIIA 2 to LH IIIC Middle, and then reused in the Protogeometric period (Dasios 2005, 459). The predominant pottery shape during its Mycenaean use was also the stirrup jar. Another LH IIIA-C tomb use with multiple burials is also reported for the new tholos tomb discovered in 2014 in the location Ablianos, near Amphissa (Petrochilos 2014; Kountouri 2016). In this case, however, no reuse in the Geometric period has been reported thus far.

The existence of at least two more tombs in the immediate vicinity, in the south of the Tomb A, and surface indications for yet another tomb further to the north, all of which are inside of and almost in contact with the fortification wall, pose several questions. The most obvious is “do the tombs antedate the fortification?” We worked under the assumption that they do, but since there is no formal proof thus far, we hope to obtain some confirmation through optical luminescence dating of samples from the wall foundations. The results will inescapably affect our understanding of the role of Kastrouli in the regional defense system, as well as the interpretation of its history and function.

5.4 THE AREA TO THE EAST OF THE TOMB A (SQUARE 7/19)

The initial geophysical survey indicated an anomaly on the East of the Tomb A. We started excavating an area of approximately 3 x 1.5 m and soon (i.e. in a depth of ca. 10-20 cm) it proved to be a large stone or bedrock outcrop, whose edges were not excavated once it has been realized that it was not directly related to any human intervention. The excavation of this area (Square 7/19), however, revealed a wall of rough stones in a NE - SW direction (Fig. 24). While only a small part of the wall has been excavated, it appeared to be in line with several large stones to the southwest of the square suggesting both the wall and possible structure continued in that direction. An ashy feature surrounded by five stones of mostly ellipsoidal shape (some possibly worked) has been tentatively identified as a hearth or fire pit. All the stones were fire-cracked and some pottery sherds were still among them (Fig. 25).

Final Top Plan of Excavated Square 7/19, Kastrouli (July 30, 2016)

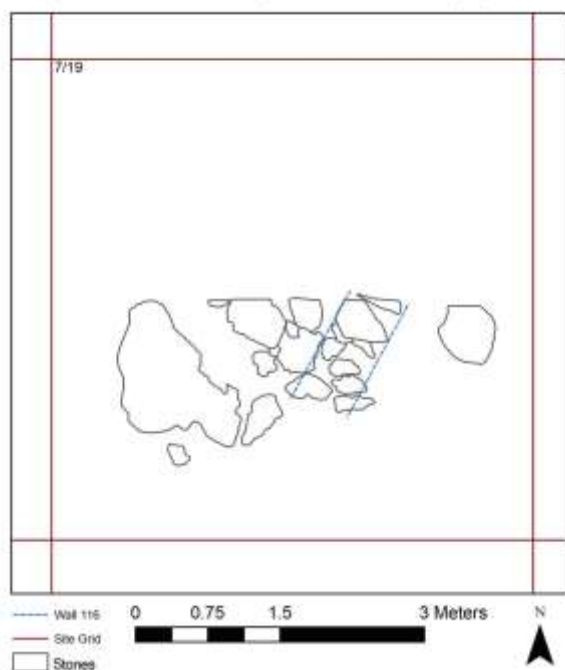


Figure 24. Plan of a wall excavated in the E-SE of the Tomb A. Plan produced by M. Howland and B. Liss.



Figure 25. Stones from a feature tentatively identified as a hearth, on the E-SE of the Tomb A. Photo A. Sideris.

One of the most characteristic sherds is the discoid base of a high stemmed cup mad of yellow clay with three concentric bands painted with brown on its upper surface (Fig. 26). It has been apparently imported from Argolis and dates from the LH IIIA (Gikaki 2011, fig. 23, Heath Wiencke 1998, 133, fig. 6, pl. 22). Worthy mentioning is a pear-shaped artifact made of now very brittle clay, probably damaged by excessive heat (Fig. 27). It seems to be a loom-weight common in LH IIIA 2 and IIIB contexts, but found also in Pylos with Pre-palatial material (Heath Wiencke 1998, 142, 174, figs. 11, 29, pl. 30). The evidence seems inconclusive for the time being; thus we cannot ascertain if the structure of the Square 7/19 antedates the Tomb A, or if they are partially contem-

porary. What is clear is that the structure is not later than the tomb.



Figure 26. Disk base of a ceramic high-stemmed cup, found among the stones of the hearth. Photo A. Sideris.



Figure 27. A pear-shaped clay artifact tentatively identified as a loom-weight from the hearth area. Photo A. Sideris.

5.5 THE FORTIFICATION WALL

The top of the Kastrouli hill is fortified with an ellipsoidal, relatively well preserved wall in most of its periphery, and measuring approximately 170 m in the NS axis diameter and 140 m in the EW axis diameter. The maximum preserved height attains ca. 3 m. on some sections of the N and NW areas. To test the stratigraphy of the fortification wall, two small excavation trenches were made on a W - NW and a S section of the wall. (Fig. 5a,c). The work entailed more cleaning than proper excavation and we simply removed the collapsed stones in order to uncover the wall face down to its foundation. Just in front of the present entrance to the site (West side) the remains of a rectangular construction are still visible for one or two courses in height. In all probability this represents part of the foundation of a defense tower related to the protection of the ancient gate, which may also have been located at this area. The wall in this section was erected directly on the bedrock. Samples of the structure have been taken for optically stimulated luminescence (OSL) dating, which is currently ongoing by Prof. I. Liritzis and his team. The two lower courses are made of large stones, which would qualify as "Cyclopean", while those above them are from considerably smaller stones, the result of later repairs (Fig. 28, Classical/Hellenistic? Modern?).



Figure 28. The W-NW section of the fortification wall erected upon the bedrock. It shows, at least, two phases of construction. Photo A. Sideris

Among the few sherds collected from the foundations of the wall there is one of coarse pottery decorated with an added-clay band bearing fingerprints, and belonging to a pithos or some similar large container.

Another OSL sampling trench in the S section of the defensive wall offered a similar picture with the lowest course lying again –at least in part– directly on the natural bedrock. The exposed wall consists of 5 courses of large (ca. 50 cm diameter) stones, with smaller stones placed into the gaps between the large stones (Fig. 29).



Figure 29. The S section of the fortification wall erected partly upon the bedrock. All five preserved courses belong to the same phase (Photo by T. Levy).

This wall appears to have been constructed in one phase, and it represents probably the original construction without any posterior intervention. Its preserved height attains ~2.40 m. The wall's width has not been securely established and it will require further investigation. Some similarities are traceable with the fortification of the neighboring Krissa, that was destroyed at the end of the Palatial period (Kase 1970, 9-16, figs. 6-11).

6. KASTROULI IN ITS REGIONAL CONTEXT

The position of Kastrouli between the gulfs of Kirrha and Antikyra was strategic for the control of the Mesokampos plateau, as well as of the entire peninsula of Desfina (Fig. 1). From these gulfs run the two most important routes connecting, already since the Late Bronze Age, Peloponnese with the Central and Northern Greece. The first route is the famous Great Isthmus Corridor, which starts from Kirrha, crosses the highland neck between Mount Parnassus and Mount Ghiona, then another between Mount Oeta and Mount Kallidromo, and leads to the Spercheios valley (Kase *et al.* 1991). The second route, less used because longer, starts in Antikyra, detours Parnassus via Daulis, and leads to Pylaea. It is of course much longer, but considerably easier and much safer in the

winter. Kastrouli controls the last 'interchange' between these two routes, before the obstacle of the Parnassus mountain (if one comes from the South) or before reaching the sea (if one comes from the North). The need for a choice of harbor, only a few kilometers before reaching the shore, is entirely meaningful given the East-West directions of navigation in the Corinthian Gulf and the difficult, still today, circumnavigation of the Cape Pagalos, on the tip of the Desfina peninsula. Thus, Kastrouli was in connection not only with Kirrha and Krissa in the West, and Antikyra/Kyparissos and Medeon in the East, but also with the smaller fortified Mycenaean settlements of the peninsula: Steno, Vroulia, and Sykia (Fig. 2). Especially with the latter seems to share the same occupation period and funeral practice. According to the Homeric *Catalogue of Ships* (Iliad 2.517-518) the Phokians have contributed 40 ships in the Trojan expedition, and this navy had no doubt a main harbor. This could be Antikyra itself, identified by Pausanias with the Homeric Kyparissos, or one of the smaller bays on its West. Actually, one of them is named Naulochos (or Nolochochum in the Latin version) in much later inscriptions, which means ship-shelter or harbor. (Sideris 2014, 24-26, 32-36). Thus, Kastrouli was part of an extensive Late Bronze Age network of small forts and fortified settlements, which connected and effectively protected the population of Phokis, despite the strong relief of the land and the disruptive presence of Parnassus in its heart (Philippon & Kirsten 1951, 414-415; McNerney 1999, 303-306, 345-347, map 8). As suggested by Tartaron (2013, 1-6) scholars know little about where Mycenaean anchorages and harbors were located, or how indeed they were used. While researchers know quite a lot about long distance Late Bronze Age trade around the eastern Mediterranean, we know little about the local networks of maritime relations in the Mycenaean world. The Gulf of Corinth, and sites like Kastrouli and the neighboring coastal zones provide an ideal 'open-air' land and sea context for investigating this problem.

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When later, in the early Historical period, Delphi grew in importance and controlled the pastures of the entire peninsula of Desfina, under the umbrella of *Sacred Land*, Kastrouli became a border-fort on the borders with the city of Antikyra. It was doubtlessly also controlling the route from Antikyra to Delphi. However, in all probability it had already declined by the Late Hellenistic period when an official delimitation of the borders took place between Antikyra and the Sanctuary of Apollo, as attested on Delphic inscriptions (Plassart 1970, 11-14, 55-60; Ager 1996, 238-247; Rousset 2002, 91-93, 102-105, 120-128, 149-154, 168-69; Sideris 2014, 98-100).

7. CONCLUSION

Although Tomb A was disturbed in antiquity and by more recent tomb robbers, the discovery of the commingled grave in an undisturbed context, begins to shed new light for understanding the nature of smaller Late Helladic III settlements on the periphery of the large Mycenaean 'mega sites' such as Mycenae, Pylos, and others. The discovery of imported ceramic vessels and especially gold foil that probably adorned garments worn by Kastrouli elites suggests that this small site played a more complex economic role in the Mycenaean Phokis than previously assumed. How Kastrouli, which dates from at least the LH IIIA 2 to at least LH IIIC Early, fits into the collapse of Late Bronze Age civilization in Greece is a primary goal of our research team. The areas of Phokis and Western Locris have been hitherto considered as peripheral to the Mycenaean Palatial world. The recent discovery of the important tholos tomb near Amphissa, however, as well as the ongoing identification of a network of smaller fortified settlements and forts in the southern and eastern Phokis, dating from the Mycenaean period, may soon provide sufficient grounds for a reevaluation of this periphery and its special significance for the continuum between LBA and EIA on the Greek mainland.

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REFERENCES

- Ager, S.L. (1996) *Interstate Arbitrations in the Greek World, 337-90 B.C.*, Los Angeles - Berkeley.
- Chovalopoulou, M.-E., Bertsatos, A. & Manolis, S.K., (2017) Identification of skeletal remains from a Mycenaean burial in Kastrouli-Desfina, *Mediterranean Archaeology and Archaeometry*, 17(1), pp. 265-269.
- Christakopoulou-Somakou, Y. (2010) *Mycenaean Cemetery in Mitopolis of Achaia (Μυκηναϊκό Νεκροταφείο Μιτόπολης Αχαΐας)*, *Phaidimos* 2, Patras (in Greek).
- Dasios, F. (1992) Contribution to the topography of ancient Phokis (Συμβολή στην τοπογραφία της αρχαίας Φωκίδας), *Fokika Khronika* 4, pp. 18-97 (in Greek).
- Dasios, F. (2005) Sykia Desfinas, location Katafygi, field of Ch. Chiropoulou (Συκιά Δεοφίνας, θέση Καταφύγι, αγρός Χ. Χηρόπουλου), *Arkheologiko Deltio* 60, p. 459 (in Greek).
- Dasios, F. (2015) Fortified settlement of the Mycenaean - Geometric periods in the Bay 'Sykia' of the Itea Gulf (Οχυρωμένος οικισμός των Μυκηναϊκών - Γεωμετρικών χρόνων στον όρμο «Συκιά» του κόλπου της Ιτέας), *Arkheologiko Ergo Thessalias kai Stereas Elladas* 5 (2012-2014), Volos 2015, (forthcoming, in Greek).
- French, E. (1971) The Development of Mycenaean Terracotta Figurines, *Annual of the British School at Athens* 66, pp. 101-187.
- Gidding et al. (2011) Gidding, A., Matsui, Y., Levy, T.E., DeFanti, T., & F. Kuester, 'e-Science and the Archaeological Frontier', in 2011 *IEEE Seventh International Conference on eScience*, pp. 166-172.
- Gidding, A., Levy, T.E., & DeFanti, T.A., (2014) ArchaeoSTOR: The Development and Utilization of a Web-Based Database for the Field and Lab. *Near Eastern Archaeology* 77(3), pp. 198 - 201.
- Gikaki M. (2011) Mykenische Keramik im Spiegel der Sammlung des Martin von Wagner Museums, in Röhr, F. (ed.), *Hochkultur Mykene. Eine Sonderausstellung zum 20-jährigen Bestehn der Museumsinitiative*, Würzburg, pp. 75-80.
- Howland, M.D., Kuester, F., & Levy, T.E., (2014a) Photogrammetry in the Field: Documenting, Recording, and Presenting Archaeology. *Mediterranean Archaeology and Archaeometry* 14(4), pp. 101-108.
- Howland, M.D., Kuester, F., & Levy, T.E., (2014b) Structure from Motion: Twenty-First Century Field Recording with 3D Technology. *Near Eastern Archaeology* 77(3), pp. 187 - 191.
- Heath Wiencke, M. (1998) Mycenaean Lerna, *Hesperia* 67.2, pp. 125-214.
- Kalaitzaki, A., Vafiadou, A., Frony, A., Reese, D.S., Drivaliari, A. & I. Liritzis (2017) PO-PU-RE: workshops, use and archaeometric analysis in pre-roman central eastern Mediterranean. *Mediterranean Archaeology and Archaeometry*, 17(1), pp. 103-130.
- Kase, E.W. (1970) *A Study of the Role of Krisa in the Mycenaean Era*, MA thesis in the Loyola University, Chicago.
- Kase, E. W., Szemler, G.J., Wilkie, N.C. & Wallace, P. W., (1991) *The great Isthmus corridor route: explorations of the Phokis-Doris expedition (1974-1980)*, vol. 1, Dubuque.
- Knabb, K., Schulze, J.P., Kuester, F., DeFanti, T.A., & Levy, T.E. (2014) Scientific Visualization, 3D Immersive Virtual Reality Environments, and Archaeology in Jordan and the Near East. *Near Eastern Archaeology* 77(3), pp. 228 - 232.
- Kountouri, E. (2016) The tholos tomb in the location Ablianos of Amphissa: The first results of the research (Ο θολωτός τάφος στη θέση Άμπλιανος Άμφισσας: Τα πρώτα στοιχεία της έρευνας). In Polychronakou-Sgouritsa N., Tournavitou I., Banou A. & Chasiakou A. (eds.), *Mycenaean Seminary. University of Athens, 24 November 2016*, Athens (forthcoming, in Greek).
- Levy, T.E., Petrovic, V., Wypych, T., Gidding, A., Knabb, K., Hernandez, D., Smith, N.G., Schlulz, J.P., Savage, S.H., Kuester, F., Ben-Yosef, E., Buitenhuis, C., Barrett, C. J., Najjar, M., & T. DeFanti, (2010) On-Site Digital Archaeology 3.0 and Cyber- Archaeology: Into the Future of the Past – New Developments, Delivery and the Creation of a Data Avalanche, in Forte, M. (ed.), *Introduction to Cyber-Archaeology*, Oxford, pp. 135-153.
- Levy, T.E. (2013) Cyber-Archaeology and World Cultural Heritage: Insights from the Holy Land. *Bulletin of the American Academy of Arts & Sciences* 66, pp. 26-33.

- Levy, T.E., Vincent, M.L., Howland, M., Kuester, F., & Smith N.G., (2014) The Art of Implementing SfM for Reconstruction of Archaeological Sites in Greece: Preliminary Applications of Cyber-Archaeological Recording at Corinth." *Mediterranean Archaeology and Archaeometry* 14(4), pp. 125-133.
- Liritzis, I., Jin, Z., Fan A., Sideris, A. and Drivaliari, A., (2016) Late Helladic and later reuse phases of Kastrouli settlement (Greece): preliminary dating results, *Mediterranean Archaeology and Archaeometry* 16(3), pp. 245-250.
- Mastrokostas, E. (1956) Prehistoric settlements in Western Locris, Phokis and Boeotia (Προϊστορικοί συνοικισμοί εν Εσπερία Λοκρίδι, Φωκίδι και Βοιωτία), *Arkheologiki Ephimeris*, pp. 22-22 (in Greek).
- McInerney, J. (1999) *The Folds of Parnassus. Land and ethnicity in Ancient Phokis*, Austin.
- Mountjoy, P.A. (1999) *Regional Mycenaean Decorated Pottery*, Leidorf.
- Papadimitriou, N. (2000) *Built Chamber Tombs of Middle and Late Bronze Age in Mainland Greece and the Islands*, BAR-IS 925, Oxford.
- Paschalidis, C. & McGeorge, Ph.J.P. (2009) Life and death in the periphery of the Mycenaean world at the end of the Late Bronze Age: The case of the Achaea Klaus cemetery, In Borgna, E. & Cassola Guida, P. (eds.), *From the Aegean to the Adriatic: Social organizations, modes of exchange and interaction in Post-palacial times (12th - 11th B.C.)*. *Proceedings of the International Seminar, Udine, 1-2 December 2006*, Rome 2009, pp. 79-113.
- Petrochilos, N. (2014) The Mycenaean tholos tomb in the location Ablianos of Amfissa (Ο θολωτός μυκηναϊκός τάφος στη θέση Άμπλιανός Άμφισσας), *Arkheologiko Deltio* 69, (forthcoming, in Greek).
- Petropoulos, M. (2000) Mycenaean cemetery in Spaliareika Lousikon (Μυκηναϊκό νεκροταφείο στα Σπαλιάρεια των Λουσικών), in Rizakis, A.D. (ed.), *Paysages d'Achaïe II : Dymé et son territoire*, Athens, pp. 65-92 (in Greek).
- Philippson, A. & Kirsten, E. (1951) *Das Östliche Mittelgriechenland und die Insel Euboea. Die Griechischen Landschaften*, vol. I, part II, Frankfurt am Main.
- Plassart, A. (1970) *Les inscriptions du temple du IV^e siècle. Fouilles de Delphes vol. III, issue IV (nos 276-350)*, Paris.
- Polychronakou-Sgouritsa, N. & Eustratiou, K. (2017) The Mycenaean Cemetery at Lazarides on Aegina (Το μυκηναϊκό νεκροταφείο στους Λαζαρήδες Αίγινας), *Arkheologiko Deltio* 65-66, 2010-2011 A' Meletes (2017), pp. 1-162 (in Greek).
- Raptopoulos, S. (2005) Phokis (Φωκίδα), *Arkheologiko Deltio* 60, pp. 463-464 (in Greek).
- Raptopoulos, S. (2012) Mycenaean tholos tomb in Desfina of Phokis (Μυκηναϊκός θολωτός τάφος στη Δεσφίνα Φωκίδος), *Arkheologiko Ergo Thessalias kai Stereas Elladas* 3, 2009 (2012), pp. 1071-1078 (in Greek).
- Raptopoulos, S. (2012a) The material of the excavation of the Mycenaean tomb at Kastrouli Desfinas (Το υλικό της ανασκαφής του μυκηναϊκού τάφου στο Καστρούλι Δεσφίνας), online presentation of additional material from the Kastrouli tomb, not included in the printed publications of the same author: <https://www.academia.edu/27072160/> (in Greek).
- Rousset, D. (2002) *Le territoire de Delphes et la terre d'Apollon*, Paris.
- Sideris, A. (2014) *Antikyra. History and Archaeology*, Athens.
- Smith, N.G. & T.E. Levy (2014) ArchField in Jordan: Real-Time GIS Data Recording for Archaeological Excavations." *Near Eastern Archaeology* 77(3), pp. 166 - 170.
- Sukenik, N., Iluz, D., Amar, Z., Varvak, A., & Bar S., (2017) New Evidence of the Purple-Dye Industry at Tel Shiqmona, Israel." *Archaeometry*: <http://onlinelibrary.wiley.com/doi/10.1111/arcm.12290/abstract?campaign=wolearlyview>
- Tartaron, T. F. (2013) *Maritime networks in the Mycenaean world*, Cambridge - New York.
- Tzonou-Herbst, I.N. (2002) *A Contextual Analysis of Mycenaean Terracotta Figurines*, PhD thesis in the University of Cincinnati, Cincinnati.
- Weber-Hiden, I. (1985) Zur Datierung mykienischer Idole, *Archäologische Korrespondenzblatt* 15, pp. 307-312.
- Weber-Hiden, I. (2009) The Stylistic Development of Mycenaean Terracotta Female Figurines, in Schallin, A.-L. & Pakkanen, P. (eds.), *Encounters with Mycenaean Figures and Figurines (Colloquium, Athens, Arpil 2001)*, *ActaAth-8^o* 20 (2009), pp. 23-36.