



# Deposit 39 of the prehistoric cemetery at Tsepi (Marathon, Greece): preliminary results from the petrographic analysis of the pottery

P. Pomonis

Assistant Professor, Faculty of Geology & Geoenvironment, University of Athens, Panepistimioupolis 15784, Athens, Greece.

## INTRODUCTION

The prehistoric cemetery at Tsepi (Marathon) belongs to the Early Helladic I period (3<sup>rd</sup> millennium BC). Deposit 39 is a big pit (~2.60 x 3.00 m wide and 1.20 m deep) filled-up with crashed pottery grouped in small piles (Pandelidou-Gofa, 2005). The repertoire of shapes is rather limited, comprising primarily jars and pithoid jars, bowls, basins and fruitstands. There are coarser and finer fabrics and the surface treatment varies from plain to slightly and heavily burnished. This study encompasses 120 samples representative of the shapes and wares present in the assemblage. The aim of the analysis was to investigate the raw materials used for pottery manufacture, characterize and group the ceramic fabrics according to their mineralogical composition and texture, suggest potential provenance, and examine the technology of manufacture.

## GEOLOGICAL SETTING

Tsepi is located on the outskirts of the Marathon plain to the south-eastern foothill of Kotroni (Fig. 1). The Marathon plain is part of the Attic Cycladic Belt (ACB). The tectono-stratigraphy of the ACB in Attica is represented by a lower tectonic unit (LTU), where the Marathon plain belongs to and an upper tectonic unit (UTU) (Fig. 2). The LTU comprises mainly metaclastic rocks with intercalations of marbles and subordinate tectonic slices of metagranitoids, metamorphosed ultramafics and metabasites ('Kaesariani schists') sandwiched between ultramylonitized marbles ('Upper' and 'Lower' marbles). The sedimentation time of the marbles' protolith is probably Triassic to Jurassic according to fossil evidence (Katsikatsos, 1977 and references therein). The broad area of Tsepi cemetery is structured by the lithologies of Kaesariani schists and the Upper marbles (Fig. 1).

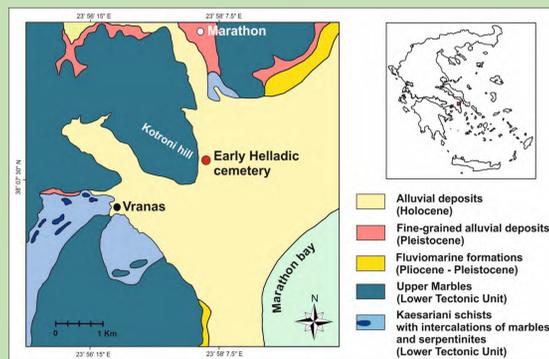


Fig. 1. Geological map of the Marathon plain.

## PETROGRAPHIC ANALYSIS

The petrographic analysis resulted in the establishment of five fabric groups, according to their mineralogical composition and textural characteristics. All groups are homogeneous in composition and texture. In some cases subgroups are formed due to textural differences within a compositionally coherent group. There are also a few loners.

### FABRIC GROUP 1: CALCITE TEMPERED

Samples: 22

Fabric: coarse

Matrix: orangish- to reddish-brown, optically active to moderately active (low-firing temperatures <750°C)

Monocrystalline nonplastic components: large angular calcite, quartz, alkali feldspars, biotite, epidote, zoisite, muscovite and rarely plagioclase  
Polycrystalline components: angular-subangular fragments of muscovite schist, epidote schist, quartzite and subrounded fragments of micritic limestone

Voids: elongate, parallel to the vessel walls

Shapes: pithoid jars, bowls, mostly plain, some with light wash

Comments: The size, shape and poor sorting of the angular calcite fragments (Fig. 2) indicate that they have been added on purpose in the clay mix by the potter. The elongate voids present in almost all samples of this group are indicative of tempering with organic matter. The regular presence of the above nonplastic components indicates a common provenance for all the samples of this group and links its origin with the lithologies of the Kaesariani schists.

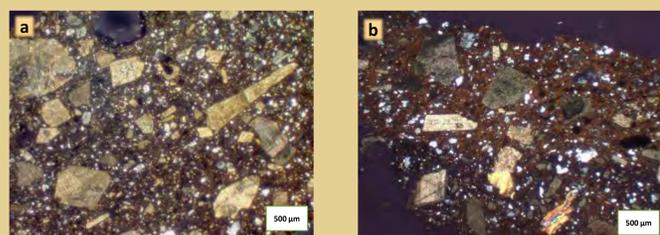


Fig. 2. Photomicrographs of the studied samples: (a) Fabric group 1, tempering with calcite (TSP 13/21, XPL), (b) Fabric group 1, tempering with calcite and a phyllite fragment at the lower part (TSP 13/118, XPL).

### FABRIC GROUP 1A: CALCITE TEMPERED, MICA-RICH

Samples: 2

This group is very similar to fabric group 1 in terms of composition and texture. The main difference is the increased amount of muscovite in the matrix giving the vessels a shiny appearance (Fig. 3).

Shapes: bowls, some with light wash

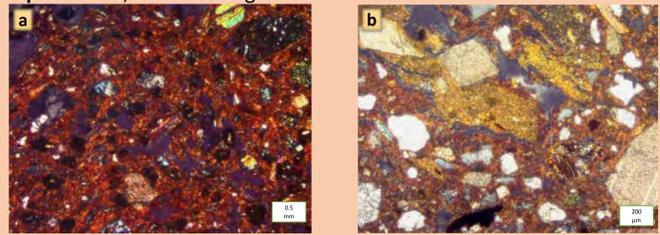


Fig. 3. Photomicrographs of the studied samples: (a) Fabric group 1A highly micaceous (TSP 13/104, XPL), (b) Fabric group 1A with angular calcite and striations indicative of clay mixing (TSP 13/18, XPL).

### FABRIC GROUP 2: MICA-RICH

Samples: 15

Fabric: coarse

Matrix: orangish- to reddish-brown, optically active to moderately active and orangish-brownish to greyish optically moderately active to inactive

Monocrystalline nonplastic components: muscovite, biotite, quartz, alkali feldspars, epidote, zoisite, muscovite and rarely plagioclase

Polycrystalline components: angular-subangular-lensoid fragments of mica schist, epidote schist, phyllite, marble and subrounded fragments of micritic limestone

Voids: elongate, parallel to the vessel walls

Shapes: pithoid jars, amphorae, some with light wash

Comments: The great proportion of muscovite in the matrix (Fig. 4) results in a macroscopically silvery shine of the vessel surface. The elongate voids present in almost all samples of this group are indicative of tempering with organic matter. Occasionally optically active and inactive areas coexisting in the same sample could be attributed to uneven redox conditions during firing. The regular presence of the above described nonplastic components indicates a common provenance for all the samples of this group and links its origin with the muscovite gneiss and mica schists of the Kaesariani schists and the Upper marble unit.

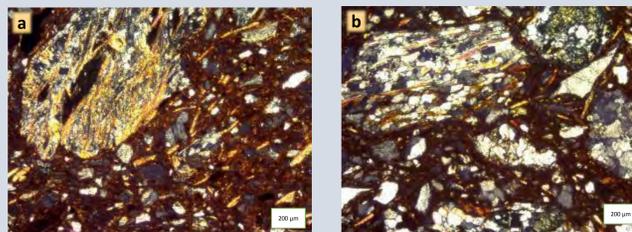


Fig. 4. Photomicrographs of the studied samples: (a) Fabric group 2 highly micaceous (TSP 13/107, XPL), (b) Fabric group 2 with subangular fragments of muscovite schist and epidote schist (TSP 13/117, XPL).

### FABRIC GROUP 3: FINE WITH ELONGATE VOIDS

Samples: 41

Fabric: fine

Matrix: yellowish- orangish- to reddish-brown, optically active to moderately active (low-firing temperatures <750°C)

Monocrystalline nonplastic components: angular-subangular quartz, alkali feldspar, calcite, biotite, epidote, muscovite and amphibole  
Polycrystalline components: angular-lensoid fragments of mica schist, epidote schist, chert, subangular micritic to sparitic limestone, fossiliferous limestone

Voids: increased amount of elongate voids parallel to the vessel walls

Shapes: amphorae, basins, vessels, jar-shapes, fruitstands. All pottery surfaces bear a light wash, occasionally burnished

Comments: The dominant characteristics of this group are the fine fabric and the regular presence of elongate voids present in all samples (Fig. 5a & 5b) The latter are indicative of tempering with organic matter. The regular presence of the above described nonplastic components indicate a common provenance for all the samples of this group and links its origin with the epidote-amphibole schists and mica schists lithologies of Kaesariani schists.

### FABRIC GROUP 4: QUARTZ-RICH

Samples: 30

Fabric: coarse

Matrix: orangish- to reddish-brown, optically active to moderately active and orangish-brownish to greyish optically moderately active to inactive

Monocrystalline nonplastic components: angular-subangular quartz, alkali feldspar, epidote, zoisite and rare plagioclase

Polycrystalline components: angular-lensoid fragments of quartzite, mica schist, epidote schist, phyllite, subangular micritic limestone and marble

Voids: elongate voids parallel to the vessel walls

Shapes: amphorae, small amphorae, basins, jars and fruitstands. Almost all bear a light wash on the surface.

Comments: The dominant characteristics of this group are the increased amount of small angular quartz grains unevenly distributed in the matrix and occasionally the presence of dark reddish-brown subangular to subrounded argillaceous inclusions (Fig. 5c). The regular presence of the nonplastic components indicate a common provenance for all the samples of this group and links its origin with the muscovite gneiss and mica schists lithologies of Kaesariani schists and the Upper marble unit.

## REFERENCES

Katsikatsos, G. (1977): La structure tectonique d'Attique et de l'île d'Eubée. In: Kallergis, G. (Ed.), Proceedings VI Colloquium on the Geology of the Aegean Region, 1. IGME, Athens, pp. 211-228.  
Pandelidou-Gofa, M. (2005): The Protohelladic Cemetery of Tsepi at Marathon, The archaeological society of Athens, p. 376.

## FABRIC GROUP 5: METAMORPHICS WITH LESS QUARTZ

Samples: 8

Fabric: coarse

Matrix: yellowish-, to reddish-brown, optically active to moderately active (low-firing temperatures <750°C)

Monocrystalline nonplastic components: angular-subangular quartz, alkali feldspar, muscovite, biotite and epidote

Polycrystalline components: angular-lensoid fragments of quartzite, mica schist, epidote schist, phyllite, subangular micritic and sparitic limestone and rarely serpentinite

Voids: elongate voids parallel to the vessel walls

Shapes: bowls, lid, crucible

Comments: The dominant characteristic of this group is the rare presence of angular quartz grains in the matrix (Fig 5d). The regular presence of the metamorphic nonplastic components indicates a common provenance for all the samples of this group and links its origin with the mica and epidote schists of Kaesariani schists.

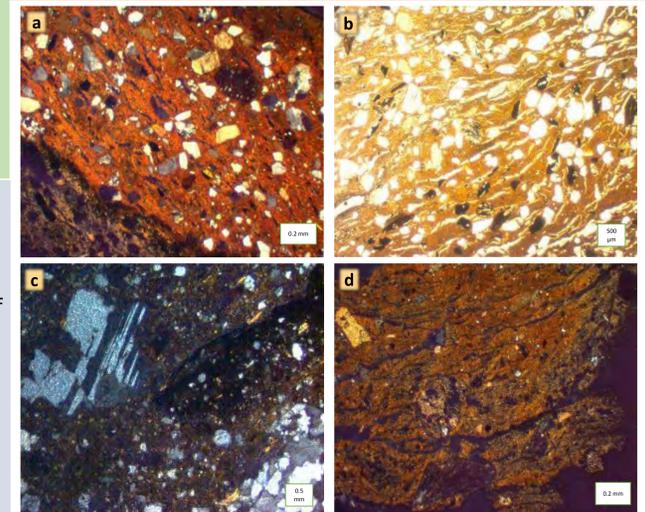


Fig. 5. Photomicrographs of the studied samples: (a) Fabric group 3 with fine texture and elongate voids (TSP 13/5, XPL), (b) Fabric group 3 with elongate voids (TSP 13/104, PPL), (c) Fabric group 4 with angular plagioclase and black clay concentrations (TSP 13/3, XPL), (d) Fabric group 5 with rare quartz (TSP 13/62, XPL).

## SAMPLE TSP 13/80: mould

This sample shows inhomogeneity in texture and consists of a mixture of three different clay fabrics (Fig. 6): part of the matrix is similar to fabric group 3, another part is highly micaceous like fabric group 2 and the third part is quartz-rich like fabric group 4. The coexistence of the three fabrics relates possibly to the successive coatings of the mould after each use. It also indicates that three of the five fabrics are possible recipes of the same pottery workshop with a local source of raw materials.

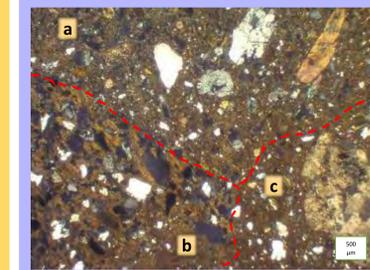


Fig. 6. Photomicrograph of sample TSP 13/80, which comprises mixture of three different fabrics: (a) Fabric group 2, (b) fabric group 3, (c) fabric group 4.

## CONCLUSIONS

- All ceramics seem to share a common local provenance and the nonplastic components of the raw material come from the gneiss and schists of the LTU (Kaesariani schists and Upper marble unit).
- There seems to be no differentiation of the fabrics with regard to the function of the vessels. The shape repertoire is limited and all fabric groups contain more or less the same shapes. Fabric group 1 seems to contain mostly undecorated vessels whereas in the other groups surface treatment varies from a light wash to heavy burnishing.
- However, it is evident that there are different recipes. Fabric groups 1 and 1A characterized by the addition of angular calcite fragments are clearly different from the others. The vessels are distinguished both by their size and by the thickness of their walls. Is the only group without washed surfaces, resulting in a coarse exterior surface.
- Fabric group 2, characterized by the predominance of muscovite mica differs from fabric group 3, which displays a fine texture with elongate voids, indicative of tempering with organic matter. It is rather a different technique. The local provenance of the pottery is confirmed with sample TSP 13/80 (mould), which comprises three different clay mixes.

## ACKNOWLEDGEMENTS

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