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The application of non-destructive imaging techniques for the study and revelation of sketches under the whitewash layers of the interior walls of the House-Museum of Giannoulis Halepas, in Tinos Island, Greece

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Abstract. Giannoulis Halepas (1851-1938) is considered one of the most famous yet tragic sculptors in Greece. During his tumultuous life, he produced several masterpieces that are currently exhibited in galleries, museums, and public places in Greece. After his death, his house on Tinos Island was declared a historical monument and turned into a museum. The walls of his house, layer by layer, cavity by cavity, bear traces of his unending inspiration, as he used to sketch on them. The current paper presents the systematic investigation and research of the interior walls of the upper floor of the House-Museum of Giannoulis Halepas in Pyrgos, Tinos Island, in order to locate, digitally reveal and highlight sketches the artist made on the walls, as well as investigate the possibility of mechanically revealing them, by exploiting both non-destructive imaging techniques, such as infrared reflectography and USB microscopy, and micro-destructive ones, such as sections.

Keywords: House-Museum Giannoulis Halepas, Imaging techniques, Wall paintings, Graffiti, Sketches, Infrared reflectography, InGaAs camera, Sections, USB microscope.

1 Introduction

Giannoulis Halepas or Chalepas (1851-1938) is considered one of the most famous yet tragic sculptors in Greece. Following his father's steps, he joined him in his marble sculpture business in Pyrgos, Tinos Island. His talent was so evident that in 1873, after finishing the School of Arts, the Panhellenic Foundation of Evangelistria Tinos gave him a scholarship for postgraduate studies at the Academy of Arts in Munich. There, he excelled and was awarded several times in exhibitions. When he returned to Greece, he received commissions, the most famous of which being the sculpture of the deceased Sofia Afentaki, also known as Sleeping Female Figure, situated at the 1st cemetery of Athens. From 1877 onwards, Halepas experienced multiple nervous breakdowns during which he destroyed most of his works. This disease and his consequent behavior finally led to his institutionalization in 1891 by his own parents. Following his father's death in 1901, he was allowed to return to Tinos Island and live with his mother. After his mother died in 1916, Halepas slowly started to do sculptures again, but the years of inaction, in combination with his heavy mental state, were evident in the variety of sculptures he produced. Whereas in his early life and career, his work was characterized by academic qualities, his later years' creations bear the stigma of the heavy burdens he experienced.

Halepas was well known for the numerous sketches he produced as a result of his endless inspiration [1]. He would sketch on any surface he could find, such as loose paper, books, bills, wood, and even on the interior walls of the house he lived in [2,3]. However, the walls were whitewashed over and over again. Elderly people in Pyrgos, still remember having seen the sketches of Giannoulis Halepas in his

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house. As the years passed, Halepas relocated to Athens, where he spent his final years at the house of one of his nieces. After his death, his house in Tinos was bought by the Panormos Municipality in 1950, was declared a historic monument [4] in 1968, and in 1977, it was turned into a museum dedicated to Halepas. The house is a well-built, two-story building with a kitchen and utility room downstairs and the main spaces upstairs. It constitutes an almost typical example of a Tinian house. Upstairs is the hall, which is the everyday room for the family, and two smaller chambers are used as bedrooms.

By most scholars, the artist's work is divided into three periods, defined by critical turning points in his life: (a) the youth period, from 1870 to the onset of his illness in 1878, which follows the patterns of his academic apprenticeship, (b) the period from 1918, when he started working again after his mother's death, until 1930, when he lived and worked in Tinos and (c) the last years of his life, from 1930 until his death in 1938, which he lived and created in Athens. There are no known sketches of the artist's first period. From the second and third periods, apart from the sculptures, a large number of sketches have been preserved.

Sketches known to belong to the second period were made mainly in nine account books of his father's marble sculpting business. As they are sketches made exclusively for himself, they are often overlapping, restless, and fragmentary (Fig.4 right). It is not easy to distinguish stylistically the sketches of the second and third periods, although the ones from the third period are more specific, the line is more stable, the composition is clearer, and the themes are more understandable [5].

Halepas' sketches help approach problems associated with his sculptures. By sketching his subject from many angles, one can see his preparation of a project, its completion, and even solutions that he rejected. We learn about works that are not saved or about works that he ultimately did not realize in three dimensions. His sketches present his preferences or reveal his amazing visual memory.

As historic graffiti are the object of research for a long time [6], the purpose of the present study was the systematic investigation and research of the interior walls of the upper floor of the House-Museum of Giannoulis Halepas, in Pyrgos, Tinos Island, in order to locate, digitally reveal and highlight sketches the artist made on the walls, as well as investigate the possibility of mechanically revealing them. This paper includes the preliminary results of this effort.

2 Methods and Instrumentation

Non-destructive imaging techniques, optical microscopy, and physicochemical methods were applied on the interior wall surfaces according to existing protocols [7] and using instrumentation from ARTICON Lab (Advanced Research Technologies for Investigation and Conservation), the Wall painting conservation Lab and the Stone Conservation Lab from the Department for Conservation of Antiquities and Works of Art, University of West Attica (UNIWA). The non-destructive techniques that were applied were visible photography (VIS), thermal imaging (TI), and SWIR thermography/infrared reflectography (IRRef). Macroscopic and microscopic observation was also carried out, and in areas where the plaster facilitated the procedure, incisions were made so that outer layers would be removed to enable the possible detection of sketches on inner layers.

Visible Photography. Apart from reference photos, the surfaces were also captured with raking light to highlight the relief, the texture, the multiple color coatings, the cracks, and the detachments of the mortar. In cases of special interest, details were photographed with a macro lens. A Nikon D800 FX-format camera with a 36.3 megapixel CMOS sensor (59.4 x 84.1 cm/ at 200 dpi) was used, in combination with lenses micro NIKKOR 60 mm f/2.8D and NIKON AF-S NIKKOR NANO CRYSTAL ED 24-70mm.

SWIR Thermography/ IR Reflectography (SWIR/IRRef). These methods in the region of 900-1700nm were applied to exploit the penetrating ability of infrared radiation, and to study the existence of sketches at the greatest possible depth. InGaAs AVT Goldeye P-008 SWIR Cool thermographic camera with Peltier cooling system was used in combination with KOWA 16mm/f1.4 and 50mm/f1.4 CCTV lenses as well as NIKON micro NIKKOR 60mm f/2.8D. Consecutive images of an approximately 20x20 cm^2 area were acquired from the floor up to a height of two meters on all the walls of the hall. In room 1 and room 2, the images corresponded to a 40x40 cm^2 area. This led to the acquisition of more than 1500 exploitable images that covered more than 36 m^2 of wall surface.

Examination with a visible microscope USB Dino-lite. In situ microscopic examination using a digital polarizing measuring microscope (USB Dino-lite AM7013 MZT with a resolution of 2592x1944 was used for the study and documentation of the micromorphology of the surface of the walls, their stratigraphy, and the understanding of their pathology.

The images obtained were organized by wall and by method and were processed with image processing software PS Adobe Creative Cloud, Photoshop CC, 2015.0.0 Release, Version for Macintosh for the best extraction of the information.

Macroscopic examination was carried out in order to determine the areas where there were indications of the existence of sketches and to obtain information about the construction technology and the state of preservation of the walls and plasters. The figure presents the floor plan of the upper floor of the House – museum "Giannoulis Halepas," bearing all the walls that were examined with the aforementioned techniques (pink).

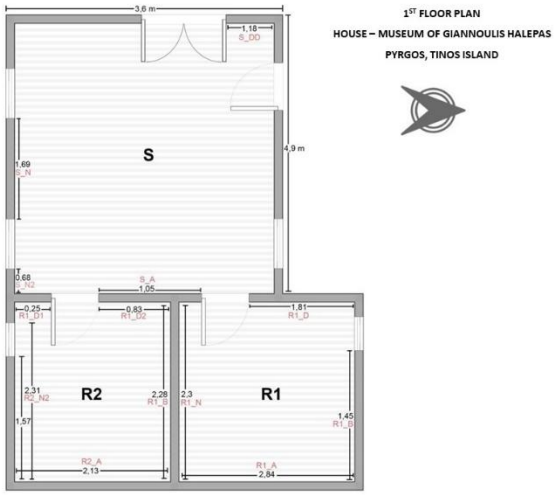

Fig. 1. The plan of the upper floor of the House – museum "Giannoulis Halepas".

3 Results and Discussion

3.1 Hall (S)

The microscopic examination established the presence of at least 11 layers of coatings (fig.2 left), from the first one, a rough, solid white layer and then a succession of light green and white layers of small thickness and finally two yellowish layers, of newer synthetic constitution. The thickness of the coatings varies even in different areas of the same layer. Characteristic traces of a paint roll can be seen in the two uppermost layers, and lime aggregates in several of the older white layers. Sketches are scattered in layers 2,3,4,6,7, and 9, without excluding their presence in other layers as well.

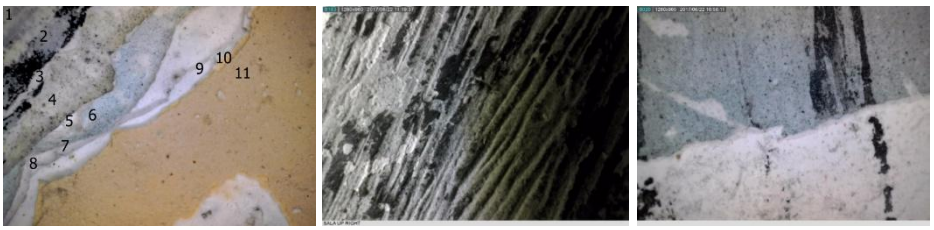

Fig.2. Left: Succession of layers on the west wall. Middle: Discontinuities due to the existence of different sketches on different layers. Right: Discontinuities due to the rough morphology of the surface.

The consistency of the layers varies by strata and area, such as in areas affected by humidity, where also disintegration and poor cohesion appear. There is also limited cracking of the upper coating layer in areas of loss, possibly due to the effect of moisture or another external factor, such as solvent from cleaning material. The sketch lines generally have a writing width of 2-4 mm and appear to have been made of a soft black material (probably pencil or hard charcoal) [5]. Their imprint shows characteristic discontinuities in the deposition of material due, on the one hand, to the morphology of the substrate and, on the other, to the nature of the material (fig.2 middle and right). This fact makes them particularly vulnerable to mechanical damage.

Examination of the walls by SWIR/IRRef showed that the west wall, to the left of the main entrance when entering the building, bears the largest and most complete sketch, which depicts the face of a figure (fig.3). The revealed sketch bears the characteristics of Halepas' sketches, with discontinuous lines that form the eyes, the nose and possibly the outline of the face, while around it there are irregular lines that may be parts of another composition of the artist, similar to his usual way of sketching [1,5,8]. Sketches visible to the naked eye are shown in intense black, while the ones revealed under the whitewash are recorded in a grayer tone, which is found to be a continuation of the visible ones, forming a face and possibly pleats of a cloth.

Fig. 3. Left: Visible image of part of the west wall. Middle: Infrared reflectogram of the same part, which reveals the sketch of a figure's head. Right: One of Halepas' sketches, which belongs to the National Gallery-Museum of Alexandros Soutsos and shows the similarities in the artist's style [5].

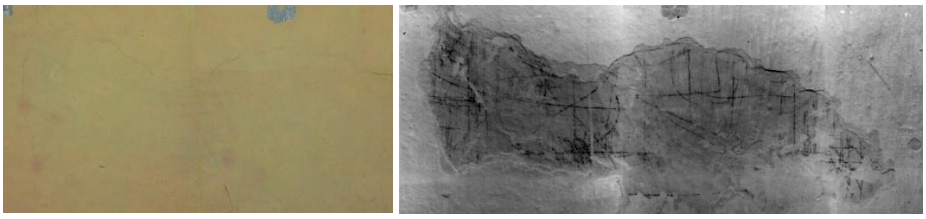

Fig.4. Left: Visible image of part of the east wall. Right: Infrared Reflectogram of the same part of the east wall, which reveals several geometric designs.

The other walls display both individual small sketches and larger ones. Although the sketches are fragmentary, as on the rest of the walls of the hall, it is nevertheless possible to distinguish a rich writing, as if they were parts of a larger composition. On the east wall (fig.4), several geometric designs were revealed, which depict a circle divided vertically, horizontally, and diagonally with a note on the side that rests on the plane line.

3.2 Room 1 (R1)

Room 1 presents visible sketches limited in areas where test sections were made and in areas of damage where observation and examination was made macroscopically and with the help of a digital microscope as well as with the help of raking light. Six (6) test sections were studied, but only one showed the presence of sketches. The east wall bears extensive repairs, leading to the hypothesis that if there were sketches on this wall, they would be of a limited extent.

Microscopic examination showed the presence of 6-14 layers of whitewash. The loss at the bottom of the south wall makes its deep stratigraphy visible. Thus, the wooden partition, layer of clay mortar, white plaster, and stratigraphy of plaster can be distinguished from the first rough, solid white layer and then white layers of thin lime. In the same area, filling with newer mortar was also observed.

Fragmentary lines were observed on the south and east walls, limited and in poor condition, due to the detachment of the lime coatings that act as a substrate and eventually cover them. Typical examples of sketches developed on two different whitewash layers were also observed, which proves the presence of losses in the past as well. Traces of black color of limited extent were observed on the east and north walls, which are,, however, also distinguishable with the naked eye. These lines are covered by a thin

layer of plaster of such a small thickness that it allows transparency and, by extension, the reading of the lines.

3.3 Room 2 (R2)

Room R2 is next to room R1, where ten (10) test sections were studied, five of which established the presence of sketches between layers (fig.5). All surfaces are plastered with the same good quality mortar about 3-4 mm thick that was found in the other two rooms (Hall and room R1). No sketches were found in this layer.

Up to 10 plaster layers were observed in room 2: white lime plasters, a bluish one, and finally, the newer yellow plaster that presently covers the walls of the Hall and room 2. The thickness of the coatings varies even in adjacent areas of the same layer. Sketches were observed on the south, east, and north walls, some of which extended over more than one layer, which proves that when they were created, the wall was already damaged and was not a single-layer substrate.

Fig.5. Presence of sketches found during the test sections.

Adhesion between layers of coatings varies depending on the area and materials and is judged from good to weak in areas with humidity problems. The more recent yellow layer is in a good state of preservation.

SWIR/IRRef was unable to reveal underlying sketches on the wall surfaces, except for a few traces on the south wall, although there was evidence of their presence from the exploratory sections (see above). This fact is due, on the one hand, to the great depth of the layers and, on the other hand, to the fact that, as can be seen from the exploratory sections, the possible sketches are found in inner layers.

4 Conclusion

On the walls of Halepas' house, superimposed layers of whitewash and, in some cases, with the addition of pigments, have been found, and the maximum number of counted layers was 14. The thickness of the whitewash layers varies even in different areas of the same layer. There are discontinuities and differences in the texture of the coatings, which document their – in many cases – fragility and poor cohesion. This fact makes them particularly vulnerable to mechanical damage and stress.

Sketches were revealed, which are found to span in more than two layers. As a result, layers of whitewash covering a sketch are difficult to remove. Therefore, it is not possible to define one layer against another, but the whole of the walls seems to constitute a kind of palimpsest, which could only theoretically be partially revealed, since mechanical cleaning is not recommended due to all the aforementioned characteristics of the plasters. In a total of twenty-two test sections, traces of sketches were found in seven of them (a percentage of 31.8% on the number of sections and not on the unit area). The largest number of sketches was revealed in the Hall. In these cases, the sketches were the richest in lines and design details so that they could be further digitally editable and exploitable. In the remaining areas of the walls, although several sketches were found, they were fragmentary, incomplete, and limited in extent in relation to the entire surface of each wall. Sketches are seen as single or superimposed lines, sometimes interrupted due to loss of overlays, sometimes the same sketch spans more than one layer, sometimes the sketch is composed of individual design lines coming from different layers so that they do not show logical continuity resulting in limiting the possibilities of revealing a composition as a whole. It is further pointed out that the non-detection of sketches with the followed methodology does not imply the non-existence of sketches, as is typically demonstrated in Room 2, where despite the indications of the

exploratory sections for the existence of sketches in several underlying layers, it was not possible to locate them with infrared radiation, mainly due to increased thickness of coatings.

In conclusion, the research to identify and reveal possible sketches in underlying plastering of the interior walls in the Giannoulis Halepas House-Museum highlighted a complex and multiparametric issue with important aspects that need special attention due to the historical and possible artistic value of the sketches and the importance of the building. The axes of further approach to this issue can be (briefly):

– dealing with humidity problems, monitoring the condition of masonry and plastering, and investigating how to deal with detachments so that there are no material losses.

– taking protective measures to preserve and monitor the state of preservation of the sketches. Actions in these two directions are considered primary.

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References

1. Papastamos, D.: Sketches of Giannoulis Halepas. National Gallery-Museum of Alexandros Soutsos, 1981. (Δ. Παπαστάμος, Σχέδια Γιαννούλη Χαλεπά, Εθνική Πινακοθήκη – Μουσείο Αλεξάνδρου Σούτσου, 1981)

2. Giannoulis Halepas 1834-1938. Municipality of Tinos Publications, 1988. (Γιαννούλης Χαλεπάς 1834-1938. Εκδόσεις Δήμου Τήνου 1988)

3. Doukas, S.: Giannoulis Halepas. 2nd edition, Kedros, 1978. (Σ. Δούκας, Γιαννούλης Χαλεπάς. 2η έκδοση, Κέδρος, 1978).

4. YA 28546/7-12-1968, Official Gazette 726/B/24-12-1968 Concerning the declaration of G. Halepa's house in Pyrgos Tinos as a historical monument

5. Giannoulis Halepas. Exhibition Catalogue. National Gallery, Athens 2007 (Γιαννούλης Χαλεπάς. Κατάλογος έκθεσης. Εθνική Πινακοθήκη, Αθήνα 2007

6. Keegan, P.: Graffiti in Antiquity. Routledge. New York 2014.

7. Alexopoulou, A., Kaminari, A.. Moutsatsou, A.: "Multispectral and Hyperspectral Studieson Greek Monuments, Archaeological Objects and Paintings on different Substrates. Achievements and Limitations", Transdisciplinary Multispectral Modeling and Cooperation for the Preservation of Cultural Heritage, First International Conference, TMM_CH 2018, Athens, Greece, October 10-13 2018, Revised Selected Papers, Part II, Springer, Communications in Computer and Information Science 961, pp.443-461.

8. Goulaki-Voutira, A.: Unknown sketches of Halepas in Pyrgos, Tinos Island. Cultural Center of Panormos Tinos, Tinos, 2008. Αλεξάνδρα Γουλάκη-Βουτυρά, Α.: Άγνωστα σχέδια του Χαλεπά στον Πύργο της Τήνου. Πνευματικό Κέντρο Κοινότητας Πανόρμου Τήνου, Τήνος 2008