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# ASPECTS CONCERNING THE CONSERVATION OF THE ‘VIRGIN HODEGETRIA’ ICON FROM FRUMOASA MONASTERY, IASI

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## **Abstract**

The paper presents the results of preliminary research on the icon ‘Virgin Hodegetria’ from Frumoasa Monastery - Iasi, its state of preservation as well as the consolidation and cleaning tests that are part of the flux of interventions done for it’s conservation.

*Keywords:* painting, icon, radiography, XRF, conservation

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## **1. Introduction**

The studied icon (Figure 1) is a rare representation of Virgin Hodegetria with the Akathist Hymn, from Frumoasa Monastery – Iasi. The icon represents Theotokos holding the Child Jesus on her left side while pointing to Him with her right hand, as a symbolic representation of the religious text: “I am the way and the truth and the life” (John 14.6). The Virgin is wearing a dark red maphorion trimmed with orange and golden lines on which there are three stars on the head and the shoulders – the marks of the Virgin. The Child is blessing with His left hand, on the right hand holding a rolled scroll. He is wearing orange himation with gold striations and green chiton. The drawing is ripped. The halos are marked by a double incision in the gold background. There is an inscription in red, the abbreviation of Mother of God, ‘MP’ ‘ΘU’, on the gold background in the upper part of the icon, in symmetry with the Virgin’s halo, and another inscription, ‘\_ОДІГІТРИИ’ (Hodegetria – ‘She who shows the Way’), on the left side at the shoulder level. There are two angels pointing to the Mother of God on the upper part. The central icon is framed by sixteen scenes from the Akathist Hymn placed on two lateral sides and on the upper one, with decorative elements on the lower side. Usually, the akathist contains 24 scenes (12 *oikos* and 12 *kontakion*) that refer to the dogma of the incarnation of the Son of God [1]. The text is written in the Church’s Slavonic language.

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(a)



(b)

**Figure 1.** The icon 'Virgin Hodegetria': (a) with and (b) without the silver revetment.



**Figure 2.** The inscription and the image of Ecaterina Mavrocordat on the silver revetment.



(a)



(b)

**Figure 3.** The reverse of the icon with three planks of wood (a); the painting covered with piles of abrasive material used to clean the silver revetment (b).

The silver revetment (riza) is richly adorned and carefully worked in detail (Figure 1a). In the middle, the silver revetment is covering the clothes of the characters, the halos and the background of the icon being decorated with vegetal motifs. The Virgin is wearing a richly adorned imperial mitre. The sixteen scenes from the Akathist Hymn, framing the central icon, were remarkably done.

There is an inscription on the upper part of the icon showing the name of the benefactor who donated the silver revetment, i.e. Ecaterina Mavrocordat and there is also her image: "*Out of devoutness for the Mother of our God, Ecaterina covered this icon in silver with her own money; she was the daughter of Constantin Roset, and the lady of a ruler, a very good man, Mavrocordat, i.e. Constantin; being a woman and because of her help [...] it is kept such as it is. Ecaterina, the lady of Constantin Mavrocordat*" [2] (Figure 2).

## **2. Methods for examination and analysis**

Non-destructive techniques were used for the study of the icon: XRF, radiography and macro photography. Materials of the painting layers were identified by a portable XRF spectrometer Innov X Alpha Series source excitement: X-Ray tube, the anode Ag W, 10-40 kV, 10-50  $\mu$ A, up to 5 filters. Detector: Si PIN diode, <230 eV FWHM at 5.95 keV Mn  $K\alpha$  line.

The mechanic resistance of the wood (control sample and consolidated wood) was evaluated by means of the SIBTEC SCIENTIFIC DMP 709607 resistograph [3].

## **3. Results and discussions**

### **3.1. Technological aspects**

The wooden support (1320 x 990 x 33 mm) was made of three planks of hardwood (Figure 3a) with two dovetail crossbars. The central area of the icon, towards the painted side is prepared, underlying two frames: one that is 16 cm wide on with sixteen scenes from the Akathist Hymn and a 2 cm wide frame as a border. Strips of canvas were fixed on the edges of the icon, on the joints of the panel.

The icon was painted in tempera water colours - inorganic pigments (Table 1) linked by yolk of egg - applied on a 0.9–1.5 mm thick ground made of gypsum and animal glue. There are traces of ground present on the rims of the icon and on the back. The central scene is protected by a thin, transparent layer of glaze, while the lateral scenes are covered in a thick layer of reddish varnish. The background, the halos and the frame were covered by a gold leaf applied on a red bole and animal glue.

The painting is covered in silver and gilded silver revetments, and there are also elements of coloured glass embedded on the Virgin's mitre. The sixteen pieces of metal were fitted into the icon by means of silver-made nails.

**Table 1.** The materials of paint layers identified by XRF analysis.

Sample area (original painting and repaintings)	Results
the Virgin's hand (original painting)	white lead + ochre
the Virgin's neck (original painting)	white lead + ochre
the Child's face (repainting)	white lead + ochre
the Virgin's face (repainting)	white lead + ochre
protoplasm of the Virgin's face (repainting)	chrome green
the green clothing of the Child (chiton)	copper green
the red clothing of the Virgin (maphorion)	red iron oxyde
the red clothing of the Child (himation)	cinnabar
ground	gypsum

### 3.2. Damage to the icon

#### 3.2.1. Damage to the paint layer

Massive piles of abrasive material collected during the cleaning of the silver revetment were formed under the painting, especially in the lower part (Figure 3b). These layers of material caused difficulty in making any intervention for the preservation of the icon, as they are mixed with some fragments of the painting that fell off the support.

The painting has aging cracks, detachments (Figure 4), lacks (superficial holes within the glaze layer, the colour layer and the metal leaf and deep holes within the ground layers), loss of canvas, fissures, changes in the smoothness caused by the aging of the materials, the defective techniques used by the author, the unstable microclimate conditions and the air pollutants [4]. The types of painting detachment are: exfoliation of the colour on the ground, detachment of the different layers of ground due to its low cohesion, detachment of the ground and the canvas from the wooden support. There is an even layer of dirt (dust, smoke, grease) half sticking to the surface of the painting.

#### 3.2.2. Damage to the wooden support

The dehydration of the wood caused by its insufficient drying up for the making of the icon support as well as the dry environment in which the icon was kept for shorter or longer periods, determined its contraction and the appearance of 0.5–1.5 mm spaces between planks (Figure 5a). On the lower part, the three planks were fitted rigidly by means of a crossbar with nails and, as a result, fissures and a fracture formed in the thickness of the icon, including the painting layer. On the upper part the support is unstable because the dovetail crossbar was lost and the planks are unstuck, distanced and without any supporting system.

The wood has traces of an old attack of the insects from the *Ptilinus pectinicornis* species (O. Coleoptera, *Anobiidae*), the surface being punctured by 1-1.5 mm diameter flight holes (Figure 5b) [5].



**Figure 4.** Detachments, loss of ground, canvas and colour layers.

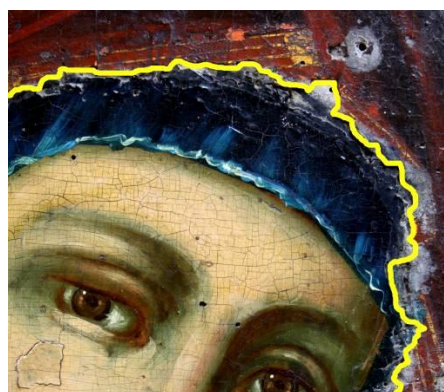


(a)

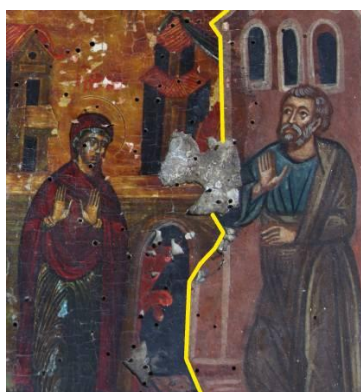


(b)

**Figure 5.** Spaces between planks of wood: (a) fissures, (b) holes and tunnels produced by the insects.



(a)



(b)

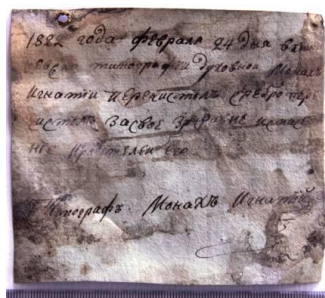
**Figure 6.** The yellow line separating the original painting (above the line) from the repainting (under the line) done after scraping the painting off the original portraits (a); the overpainting in tempera from the right side contrasts with the original painting on the left side (b).



**Figure 7.** Radiography shows that the portraits were painted in oil colours directly on the wood, after removing the original paint layer.

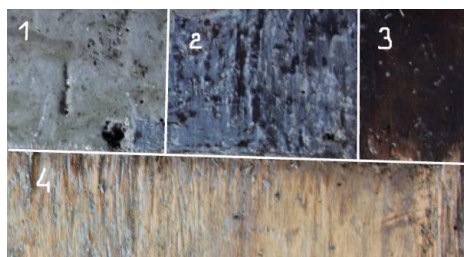


(a)



(b)

**Figure 8.** The edges of the icon were covered with a textile patch (a); the note of Ignatii the monk from 1822 (b).



(a)



(b)

**Figure 9.** Tests to clean the reverse side of the icon: (a) 1 – first layer of paint, 2 – the second layer of paint, 3 – the burnt wood under the paint, 4 – the cleaned wood; (b) paint and beeswax removed from the wood.

The tunnels dug by the larvae are visible within the thickness of the wood (the edges, the areas where the planks fitted) and distributed all over the volume of the wood and pile of wood dust under the dovetail crossbar. As a result of the insect attack the wood has a low mechanic resistance, with fissures and changes in the smoothness of the surfaces and loss of wood.

### **3.3. Subsequent interventions on the icon**

The macroscopic observations (Figure 6a) and the radiography (Figure 7) show the fact that the portraits of the Theotokos and of the Child were totally removed, being repainted in oil colours probable at the beginning of the nineteenth century. The idea is supported by the results of the chemical investigations that singled out the presence of the white lead in these areas, the network of aging cracks as well as the interventions - for cleaning the riza - from 1822 (Figure 8b). Only the lower part of the necks of the Virgin and Christ were kept from the original painting.

On the right side of the icon, from the 11<sup>th</sup> to the 16<sup>th</sup> scene of the Akathist Hymn, we can see the overpaintings in tempera, with a penurious palette of colours, in an artless style (Figure 6b). On the same side, along the height of the frame, a fragment from the icon is missing, a wooden stick being subsequently attached, so as to make up for the initial dimensions and to fit the silver revetments. The wooden stick, as well as the edges of the icon were protected by means of textile fragments (Figure 8a) stuck into the wood by nails or tacks.

The back of the icon and the edges were covered by a paint based on blue oil colour (Figures 3a, 9a) to camouflage the burnt wood underneath and the beeswax used for filling the spaces between the planks and some holes in the wood.

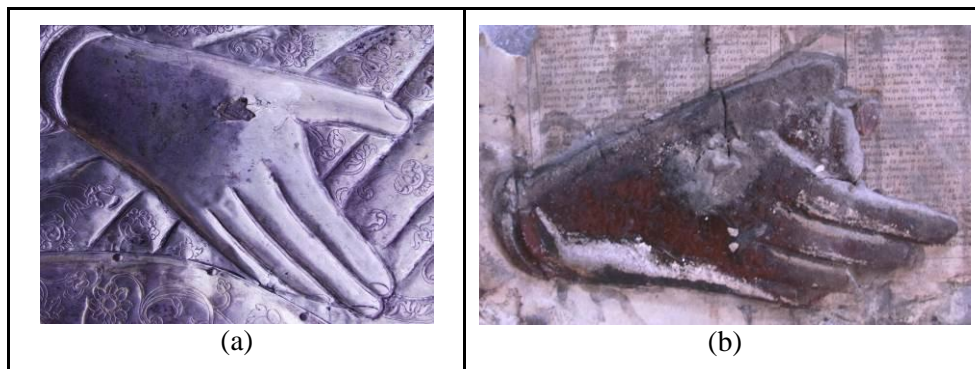
Under the silver revetment, in the area of the Virgin's right hand (Figure 10a), a piece made of beeswax poured into the riza was found (Figure 10b). The purpose of this intervention could be the fitting up of valuable materials from the religious point of view or to cover the 4 cm<sup>2</sup> hole in that area.

Underneath the silver revetment a note in Russian was discovered, which stated that the riza was cleaned by the monk Ignatii in 1822: "*the year 1822 on February 24<sup>th</sup>. Ignatii, the monk monographer cleaned the silver for its [...] health and salvation. Ignatii, the Monk Monographer*" (Figure 8b).

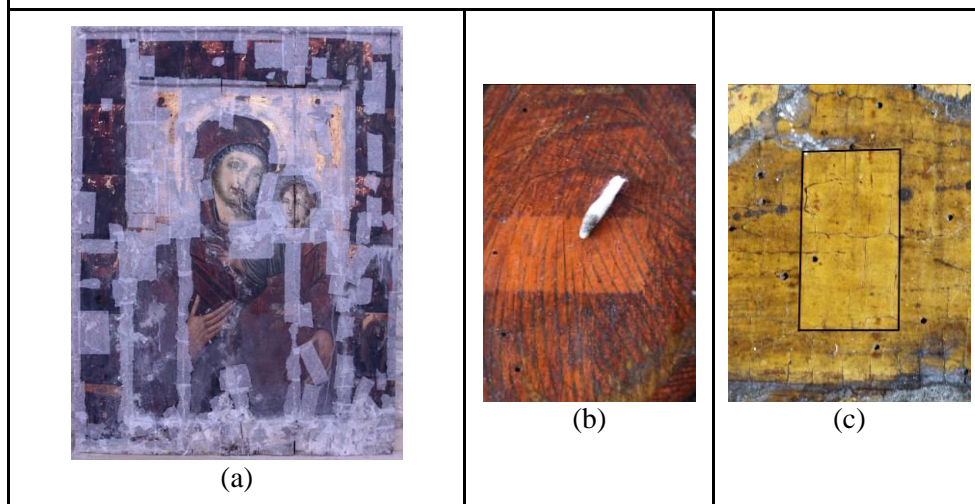
## **4. Conservation treatment**

### **4.1. The consolidation of the paint layer**

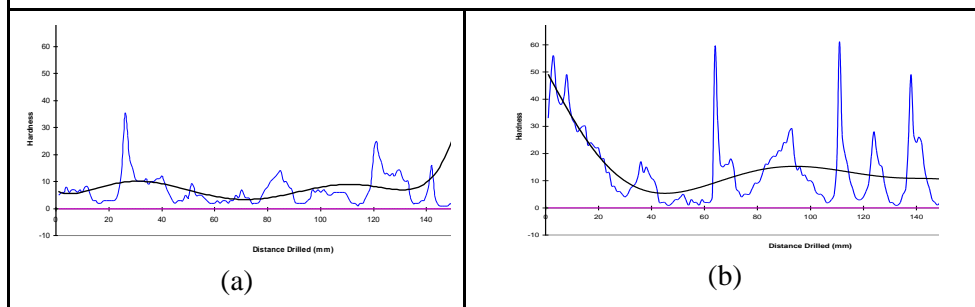
The prophylactic consolidation in situ of the paint layer was necessary for transporting the icon to the laboratory (Figure 11a). The paint layer was fixed with sturgeon glue 3% and Japanese paper.



**Figure 10.** On the right hand of the Virgin, under the silver revetment (a), is a mixture containing beeswax was poured (b).



**Figure 11.** Prophylactic consolidation in situ of the paint layer (a); tests for removing the dirt layer (b, c).



**Figure 12.** The mechanic resistance of: (a) the unimpregnated wood and (b) the impregnated wood with Paraloid B72 15% [ $o_x$  – distance drilled (mm),  $o_y$  - hardness].



Consolidation tests were done, by using sturgeon glue solutions in various concentrations (Table 2). Lower concentrations are preferred for interventions, as we know the negative aspects of consolidating the painting by using animal glue (hygroscopicity, reduced plasticity, a relatively slight biodegradability).

**Table 2:** Concentration of the glue used for painting consolidation

<b>The types of painting detachment</b>	<b>Glue concentration</b>
exfoliation of the thin layer of colour on the ground	3 - 4%
detachment of the different layers of ground, its low cohesion	5-7%
detachment of the ground from the wood	6 - 8%
detachment of the canvas from the wooden support	10 - 15%

#### ***4.2. The consolidation of the damaged wood***

Consolidation tests were done by using Paraloid B72 in butyl acetate, in concentrations of 5%, 10%, 15%, 20% and 25%. Graphics of the mechanic resistance of the wood that was impregnated with solutions of consolidating substance were done, the comparative study of these graphics with control sample (Figure 12a) indicated a significant and constant rise in the wood resistance at 15% concentration (Figure 12b). For the lower values of 5% and 10% the rise is insignificant and higher values can be noticed only as compared to the ones of the unimpregnated wood. The wood that was impregnated with resin of 20% and 25% concentration have higher values at the surface where the resin layer is formed, and deep, the values are similar to the ones of the resistance of the unimpregnated wood. In conclusion, at high concentrations the high viscosity of the solution will not allow the migration of the resin particles but only of the solvent so that the wood is not really consolidated although it seems to be impregnated with the substance.

#### ***4.3. The cleaning up of the support***

The paint layers on the back were cleaned by 85-95% dichloromethane and 3-9% methanol solutions (Figure 9a). The unpainted wood is covered by dirt that easily gives in to solutions of alcohol in water and to mechanical action. The wax that was introduced between the wooden panels does not strongly adhere to the support thus being easily removed mechanically, the wood being subsequently degreased by using xylene (Figure 9b).

#### ***4.4. The cleaning up the painting***

The tests for removing the dirt layer that partially adheres to the painting (dust, smoke, grease) indicated a solution of 3-5% ammonia in distilled water to be effective (Figure 11b, c). The tests for leaching the glaze on the lateral scenes indicated that the solutions of n-amylene alcohol, toluene and ethylene alcohol in various concentrations were effective.

## 5. Conclusions

This work describes the technological study and some intervention performed on the icon 'Virgin Hodegetria' from Frumoasa Monastery in Iasi. The subsequent interventions from 19<sup>th</sup> and 20<sup>th</sup> century, revealed by radiography, XRF, macroscopic analyses, have changed the original painting. Unfortunately, the original painting representing the portraits of Theotokos and of the Child are definitively lost. Consolidation and cleaning interventions for the painting and the wooden support conservation pose no particular problem, but require attention and skill. The next stage is to delimit the over-paintings areas from 11<sup>th</sup>-16<sup>th</sup> scene of the Akathist Hymn which implies more investigations.

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