PERSPECTIVES ON THE RESTORATION OF THE BALINESTI CHURCH

Oliviu Boldura

General historical data

Placed in the North of Moldavia, close to the border with Ucraine, the Church from Balinesti is part of Gramesti locality; it is situated at approximately 15 km away from Siret town in Suceava county (**Fig.1**).
The church was built by the chancellor Ioan Tãutu, one of the few Moldavian noblemen who were allowed by the prince Stephen the Great to build churches (**Fig.2**).
The disputes arisen at the date of the church building are determined by the various contradictory elements identified. We shall take into consideration only the date mentioned on the rotive in the church porch and that is „*With the Lord's wish, with the help of the Son and with the committing of the Holy Spirit, pan Ioan Tautu... finished it in the year 7007 [1499] December the 6th*".
All the information provided by the documentary resources, epigraphic or stylistic don't offer reliable data regarding the building or the painting of the church but only hypotheses which, we hope can be proved with new elements, discovered probably, in the present stage of the monument restoration.
In the architectural context from Stephen the Great age, the church from Balinesti is peculiar from the architecture shape point of view, the hall type divided in chancel, nave and narthex, and from the internal and external painting. The peculiarity consists in the polygonal transformation of the western wall of the narthex, the chancel disconnected pentagonal outside and circular inside, as well as the sculptured decoration of gothic origin.

Fig.1. St. Nicholas church, Balinesti

Fig.2. St. Nicholas church, Balinesti. Nave. Votive painting, after restoration

An important moment in the research of this church is constituted by the discovery accomplished in 1964 by Sorin Ulea related to the inscription that mentions the name of the painter. The researcher discovered this inscription on the votive painting at the base of the throne on which Jesus Christ sits, which tells us: "*Gavril the hieromonk wrote/painted*" (**Fig.3**). This painted text has a major importance as it offers us the name of the first known painter who signed on a wall ensemble from Moldavia.

THE PAINTING OF BĂLINESTI CHURCH

ishing of the church. The figurative painting form inside was done by Gavril the Hieromonk and is distinguished as one of the most valuable wall painting from Stephen the Great age. The external painting was done between 1535 – 1538 during Petru Rares' reign, Stephen the Great's son.

The internal painting

Out of the direct study of the surface and of the stratigraphic research we distinguish two superposed layers of painting:

- ***the first decoration*** had a temporary character, from the termination of the construction until the painting of the

Fig. 3. The inscription of the painter

We must notice the fact that the church from Bălineºti is part of the group of monuments with internal and external painting from the 16th century and we remember Arbore, Voronet, Probota, Moldovita and Suceava churches.

Regarded in general the wall decoration from Balinesti has a unitary character from the technological point of view, as we notice similar characteristics both inside and outside. Their accomplishment met more stages of painting starting with a first decoration that imitate the brick or stone layers immediately applied after the finchurch. After the loss of the figurative wall painting on the lower areas and on the vaults, we can identify the first painted decoration mainly with geometrical elements, made up of horizontal rows of brick layers (**Fig.4**). This type of decorative painting is met on the whole surface inside the church as well as on the vault of the porch.

- ***the second wall decoration, is a painting accomplished „a fresco"*** applied over the first decoration. This painting layer covers great part of the church, but there are also some empty spaces, especially on the vaults because of the infiltration moisture.

Fig. 4. The two painted layers of the church

The external painting covered the entire church and was applied directly on the wall, covering the first decoration with ceramic plates of the higher areas (**Fig. 5, 6**). There are still maintained fragments of it on the altar layer, on the steeple and partially on the Western side where the colour layer is eroded by the mechanical action of the winds.

Fig. 5. Exterior wall of the chancel. Superposition of the murals over the enameled disks

PRELIMINARY RESEARCH

Fig. 6. Chancel apse. Outside

The restoration intervention started in 2002, along with the archaeological research of the church and the drafting of the preservation plan – restoration of the internal and external painting from Bălineºti. Up to present this intervention was done at the request of Professor Riyki Miake as representative of the Japanese Keio University from Tokyo that supported the financing of the research and the restoration of the wall painting until 2005.

Through lab **physical – chemical analyses** they aimed at knowing original materials (pigments, mortar), their chemical composition and dosage of the mortar as well as the identification of the cases of abnormal alteration of the colour layer, especially of the pigments and their delimitation by the notion of "shade". The pigments identified on the wall painting are those used in that age: azurite blue (used for backgrounds and applied on a black layer of wood coal), ground green (**Fig. 7, 8**), red ochre, yellow ochre, white chalk and red cinnabar. The chromatic alterations are mainly determined by the

Fig. 7. Pigments identification by lab analysis

long presence of different types of moisture (capillarity or infiltration) that develops as shadowed extended surfaces. A particular case of alteration is determined by the reaction of burette that takes place under the conditions of an organic binding, in a basic environment and in the presence of copper ions. After this reaction a

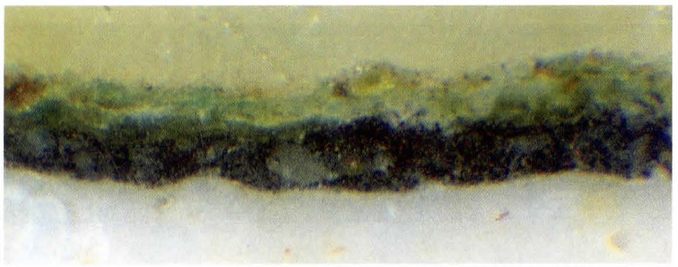

Fig. 8. Pigments identification by lab analysis

Fig. 9. Pigments alteration due to "the burette reaction"

violet alteration takes place in the contact areas of white calcium carbonate that contains protean binding near the azurite pigment based on copper or gold decorations in copper alloying (**Fig. 9**).

An important part of the restoration process is the recognition of the salt types contained by the painting layer. Out of the accomplished analyses we especially notice the presence of the sulphate ion (especially gypsum) and of the nitrate with the origins in the church attic, that is the organic accumulations of the birds (guano).

Out of the technological analysis and of the internal mortar quality it was established that the painting is done on a specific plaster (intonaco) made out of lime mortar with tow of 7 – 10 mm thick and outside can have 30 – 35 mm.

Microbiological analyses

Out of the research of different types of accumulations on the wall painting surface various phenomena of biodegradation were noticed bare eyed and evidenced, inside by the heavy pungent smell and confirmed by the lab exam. The most affected areas are those where moisture of capillarity and infiltration acts. The microbiological forms developed easily in the presence of water, lack of light and optimal ventilation. Thus, inside were identified various types of bacteria such as Aspergilus, Penicillium, Alteraria, Actinomycete and other and outside developed colonies of lichens from various species such as: Lecanora, Xanphoria, Parmelia, Physcia and Rhizocarpon. As a consequence, the whole church was contaminated by an intense microbiologic

Fig. 10. Elimination of the biological attack. Tests

Fig. 11. Identification of the biological attack

Fig. 12. Tests for the elimination of the biological attack

attack, illustrated in the present work (**Fig. 10, 11, 12**).

Moisture measurments undertaken inside the church indicates a high level of humidity reaching values superior to 8,6 in altar, nave and pronaos, up to a height of 2,00 m, diminishing in height (**Fig. 13**). As a consequence of capillarity moisture, on the lower part can be noticed a loss of the support layer cohesion due to the mechanical action of the salt crystallisation process. In the higher part, on the domes, vaults and archways, big areas affected by moisture of infiltration and a loss of the support layer adherence can be noticed.

Fig. 13. Chancel. Inside. Degradadtion and loss of the painting du to capilarity moisture

PRESERVATION STATE AND SAMPLES FOR DEFINING THE INTERVENTION METHODOLOGY ON WALL PAINTINGS

Along with the biological processes identified on the painting accumulated important deposits of dust and smoke from the burning of paraffin candles, that were included in salt crystallisation process, becoming very adherent and hardly soluble.

Traces of wax, the burning of the paintings caused by the candles, the incisions and careless mending with improper materials, argil, plaster, cement and introduction of electricity are the problems encountered in the church.

Under the action of these factors of degradation natural or provoked by human beings carelessly or intentionally, the colour layer encounters multiple degradations from erosions, loss of adherence between layers (scales, swellings, cover slopes) or the cohesion among the particles next to great background surfaces.

In the case of external additional to these degradations we can talk of erosion or even an Aeolian abrasion through the friction of wall surface with minute particles led by the wind that blows from Siret.

METHODOLOGICAL ASPECTS

The complexity of problems in which the painting was when starting the works determined us to deepen the research

Fig. 14. Cleaning test

even on the higher surfaces at which we have direct access after setting the wooden platform.

After the control and absorption tests done on the sample areas, we passed to the execution of different cleaning tests of adherent, and non-adherent deposits (of various nature – smoke, dust, wax, tars, etc), and the fixation of the degraded colour layer (**Fig. 14**). The tests continued on the areas with salt efflorescence as well as on the biological agents. In order to have control over the operations measurements of relative humidity and environmental temperature were done during the tests. These parameters registered in September 2003 varied inside between 19° C and 24° C, and the air relative humidity between 57,7% and 88,6%. The preservation state on each sample, the methodological details and the observations are accompanied by a photo illustration gathered under the form of records, which are part of this work.

The internal painting hardly legible because of the accumulations that covered it (dust, smoke, salts, biological formations, wax, etc) was cleaned in more stages. We approached separately the areas sensitive to various cleaning substances, like the backgrounds on which we found traces of azurite and gilded surfaces. These surfaces, very generous in the altar, were

Fig. 15. Comparative zones during the cleaning

Fig. 16. Comparative zones during the cleaning

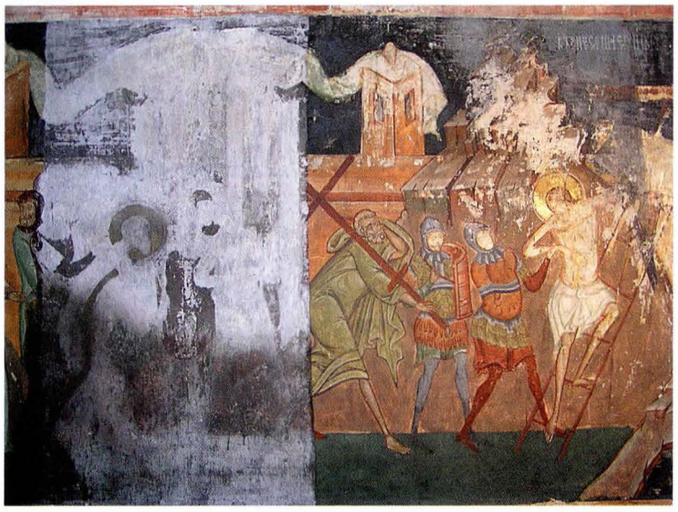

Fig. 17.Comparative zones during the cleaning

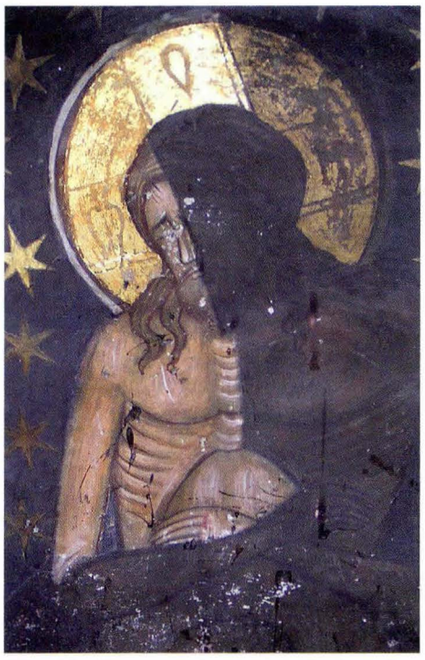

Fig. 18. Comparative zones during the cleaning

Fig. 19. Chancel. Inside. Before the intervention

Fig. 20. Chancel. Inside. The same after the intervention

cleaned with an alcohol substance. For the figurative or decorative elements we used wet ways of cleaning, with ammonium carbonate solutions (from 5% to 10%), or dry ways locally applied. The selective and differentiate approach permitted a unitary cleaning, reported to the preservation stage of every pigment. The esthetical recuperation is remarkable (**Fig.15, 16, 17, 18, 19, 20**).

The thick crusts of salts were cleaned in more stages, combining as in the case of adherent deposits the chemical means (ammonium carbonate and distilled water) with mechanical ones. After the application of compresses we passed at careful removal with the lancet, followed by the removal of veils, using window fibre and erasers of various dourness. For the removal of the very soluble salts like the nitrates we used compresses of distilled water.

An additional problem met at this church was raised by the consolidation of the colour layer. We chose to use mineral substances compatible with wall painting. The restoration of cohesion with barium hydroxide was concluded on the UNESCO site from Probota in the presence of Italian specialists. The method was used on a large scale even on the other sites of the company, that is Sucevita, Voronet, „St John the New" in Suceava, Arbore, Moldovita. In the case of Bălineºti church, this method was used for surfaces with nitrate concentration lower than 15 mg/l and

Fig. 21. Detachment of the painting layer

for the other surfaces the pigment cohesion was recovered by using ammonium oxalate.

Along with the resolution of this fundamental problem regarding the preservation of the colour layer, the painting from Bălineºti is marked by great detachments between the two preparation layers and the wall structure (**Fig. 21, 22**). In fact, the painting of the vaults and the dome

Fig. 22.Detachment of the painting layer

of the altar was completely removed remaining suspended through self-support. For the remaking of the adhesion on such extended areas we decided the insurance with support props and local consolidation with anchorage points organised in a sustain network (**Fig. 23, 24**). The network of anchoring points began in the lower areas at a greater distance in the beginning (1

Fig. 23. Consolidation of the painting layer

m) and more and more numerous as the consolidation advanced. The injection under pressure with PLM-AL

Fig. 24. Consolidation of the painting layer

for vaults and PLM-A for vertical surfaces was made at an interval of 48 hours, period necessary for the strengthening of the consolidation introduced in the previous areas.

On the surfaces marked by the microbiological formations we applied biocide treatments with Sintosept QR 15 (an ammonium quaternary salt) in a few stages on the whole surface. This treatment was applied after the cleaning and consolidation of the colour layer operations. Outside, after the biocide, the lichens were removed individually in order to regain the traces of the technological elements that were maintained on the original support layer marked by erosions.

Fig. 25. Chromatic integration

The aesthetic presentation problems, as the final stage of restoration, showed us great incomplete surfaces as a result of the colour layer degradation. The white areas of various forms and sizes were differently approached, according to their problems. Thus, the colour erosions were chromatically integrated in the *velatura* technique by using neutral wash-tints of paint-wash (**Fig. 25, 26**).

Fig. 26. During the restoration process

The gaps of the colour layer of little sizes were integrated in the *ritocco* technique with grey wash-tints, so that the white areas could be transformed in neutral "background" from the chromatic point of view, putting in value the remains of the original painting, that is the preparatory design, colour fragments, etc.

The integrable gaps of the support layer, previously puttied, are integrated in the "tratteggio" technique obtained through the decomposition and juxtaposition of some colourful vertical lines especially in primary shades.

Outside, the difficulty of intervention consisted in removing the tough mortar of cement that bordered the paintings, as this material was deeply introduced between the layer of intonaco and wall surface provoking unevenness and displacements from the original position. At these we add the resolution of the big incomplete surfaces from the preservation and aesthetic presentation point of view. Thus, after taking many samples of mortar with different compositions and structures, we used mortar according to the dominant chromatic of the next area working with different types of white. These surfaces were puttied under the level of the original layer and their surface was processed with texture different from the original, trying to put it into value (**Fig. 27, 28, 29, 30, 31**).

The variety and complexity of problems raised by the preservation and the emphasizing of wall painting from Bălinesti, means application and accumulation of experience in definite and difficult situations encountered at this monument. The objective and unitary approach of restoration means the recognition of the original and unaltered character of the transmitted image over centuries (**Fig. 32**).

Regarded generally, the preservation – restoration intervention from Balinesti is about to put again in the circuit of the values the architectural monument built by the chancellor Tautu and the wonderful painting of Gavril the Hieromonk.

Fig. 27. Chancel apse. Before restoration

Fig. 28. Chancel apse. The same area , after restoration

Fig. 29. Chancel apse. Outside. Zone of the Virgin, before restoration

Fig. 30. Chancel apse. The same zone, after restoration

Fig. 31. St Nicholas church, seen from eastern part, after the restoration of the chancel

Fig. 32. The chancel vault, after restoration

Author: *Oliviu Boldura*

CERECS ART srl, Bucharest