THE SAVING OF THE WOODEN CHURCH OF URȘI IN A NEW POSTURE: THE INTER-DISCIPLINARY RESEARCH, PLANNING AND CONSERVATION

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Abstract: Part of the salvation plan of the 60 wooden churches, initiated by the Order of Architects in Romania, the wooden church of Urși, Popești Village, Vâlcea County, is in a new posture: going from the urgent intervention, meant to protect immediately and remove the danger of an imminent collapse to an inter-disciplinary-based research, planning and the operations of consolidation and conservation-restoration of the church architecture together with its artistic components (mural painting, iconostasis and icons, and furniture). The anamnesis, the iconographic and stylistic analysis, the technological analysis about the nature of materials employed in the *al fresco* and *al secco* paintings, the initiation of microclimate monitoring, the identification of degradation factors, with a deep analysis of the biodeterioration are the branches of the inter-disciplinary research undertaken at Urși. The execution of the general conservation-restoration project of the church made possible a long-term allocation of the operations through which the church will be rendered to the community. The article closes with a plea for the authorities to get involved in saving a type of monuments representative for the history of Romanian art facing disappearance.

Rezumat: Aflată în planul de salvare a celor 60 de biserici de lemn inițiat de Ordinul Arhitecților din România, biserica de lemn din satul Urși, comuna Popești, județul Vâlcea, se află într-o nouă ipostază: trecerea de la intervenția urgentă, destinată protejării imediate și a înlăturării pericolului unei iminente prăbușiri la cercetarea cu caracter interdisciplinar, proiectarea, operațiunile de consolidare și conservare-restaurare a arhitecturii bisericii împreună cu componentele sale artistice (pictura murală, iconostasul și icoanele, mobilierul). Anamneza, analiza iconografică și stilistică, analiza tehnologică privind natura materialelor folosite în picturile realizate *al fresco* și *al secco*, inițierea monitorizării microclimatului, identificarea factorilor de degradare, cu o analiză aprofundată a biodeteriorării sunt ramificațiile cercetării interdisciplinare întreprinse la Urși. Realizarea proiectului general de conservare-restaurare a bisericii a făcut posibilă o eșalonare pe termen lung a operațiunilor prin care biserica de lemn va fi redată comunității. Articolul se încheie cu o pledoarie pentru implicarea autorităților în salvarea unei categorii de monumente representative pentru istoria artei românești aflate în curs de dispariție.

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Caiete ARA 4, 2013, p. 249-270.

Included in the list of the 60 wooden churches[1] which the Order of Architects of Romania proposed to be saved, as a matter of emergency, the Church *Buna Vestire* (the Annunciation) in Urși illustrates the fate of peasant monuments in an exemplary way. With an apparently recent history, the village foundations are an echo, as Iorga once said, of the dawn of the Romanian civilization.[2] New and old at the same time, the wooden churches are the first to disappear. Except the well-known group of monuments of Maramureș, the constellation of wooden churches going down from the North of the country to the Southern Wallachia do not manage to get the status of the masonry monuments, sharing a fate close to the old and almost vanished peasant architecture.

Built from organic materials, subject to biodeterioration first and foremost, part of the conditions of a severe microclimate, the wooden ecclesiastic buildings need a complex and difficult treatment based on inter-disciplinarity and a stable post-operatory monitoring. All those requirements prove to be inversely proportional with the attention that the custody provides to that category of monuments under an accelerated process of destruction.[3]

In this context, the intervention on the wooden church in Urși aims at attracting the attention both on forgotten or ignored values and on the way in which, in a focused action, wooden churches may be rendered back to the communities.

Erected towards the late 18th century,[4] the wooden church dedicated to the Annunciation and Archangel Michael (Fig. 1) has engraved over the portal the date 7303 (1794-1795). Another testimony about the existence of the church towards the end of the 18th century is the

1 "60 wooden churches. A project to save the built heritage" under the coordination of Architect Șerban Sturdza.

2 Iorga 1929, chapter "Eglises de bois: chansons premières", pp. 5-6. An idea adopted and supported by Ioan Godea (Godea 1996, pp. 30-32).

3 Petranu 1931, pp. 3-6.

4 N. Stoicescu presents the wooden church of the Annunciation as being built in 1757 by Ion Danciul and Father Constantin. At the same time, he points out to the information received from C. Bălan regarding the existence of the church of the Annunciation and Archangel Michael founded by Nicolae Milcoveanu (Stoicescu 1970, p. 687). The 1757 dating and the mentioned ktitors also appear in A. Pănoiu (Pănoiu 1977, p. 112). A document from 1509, under Mircea, son of Mihnea I, mentions the existence of a wooden church on Cucești estate, a church belonging to Teodosie the Monk in 1730, who, in 1742, offers it to Amota Monastery.

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Fig. 1. The Annunciation wooden church of Urși in 2010.

wooden cross on top of which there is a metal cross with the inscription 7305. *Ioan deaconu zugrav otu Tomșani; 1797 iunie 16* ("7305. Ioan deacon painter of Tomșani: 1797 June 16).[5]

From the turn of the 19th century we have an inscription mentioning year 1802 on one of the pairs of royal doors found in the church,[6] marking thus one of



Fig. 2. The dedicatory inscription painted in 1843, at the same time with the completion of the iconographic programme.

the stages of endowing the church with painting about which we have no further documents so far.

The first and concise notation carved over the portal was overlapped, in mid-19th century, by the dedicatory inscription painted in fresco, comprising the abbreviated history of this foundation's passage through time (Fig. 2):

Această sfântă și dumnezăiască beserică, unde să prăznuiește hramu Buna Vestire și Arhanghelul Mihail, din temeliia ei au fost făcută de cti(t)ori vechi, ale cărora nume sânt scrise la pomelnic; și ajungând în dărăpănare s-au sculat întru ajutori d(umnealui), d(omnul) praporgic Nicolae Milcoveanu, de au pus-o pă temelie și au coperit-o… curtea și cumpărând… au înoit-o cu zugrăveală. ("This holy and divine church, where the celebration of the Annunciation and the Archangel Michael take place, was made from its foundation by old ktitors, whose names are written in the memorial; and, being left to decay, the honourable praporshchik Nicolae Milcoveanu came out to help, and endeavoured to lay it on foundation and cover… the yard and buying… and renewed it with painting").[7]

Two other inscriptions, on the memorials painted at the proskomidia, come to strengthen the information included in the dedicatory inscription of the church. Along Nae Milcoveanu's name, the names of living Nicolae, Ștefan and Ioan, as well as the departed Constandin, appear. Together with the ktitor, painters Gheorghe,



Fig. 3. Proskomidia, the representation of Jesus the Vine, together with the commemorative inscription of the church and the double signature of Gheorghe the painter, on the pedestal of Jesus and together with his helpers, Nicholas and John.

Nicolae and Ioan are mentioned (Fig. 3). *Gheorghe zugrav din Urși* ("Gheorghe painter from Urși") wants to highlight his status of a leader of the team of painters, signing at Jesus' feet in a sophisticated writing, accompanied by the mention of the date of the painting "1848 May 27".[8]

This moment also brings a new iconostasis with new icons, among which the representation of Holy Archangels

[5] Cross preserved today in the masonry church of the village and which we could examine grace to Fr. Valeriu Șerban, parish priest. Inscription mentioned by C. Bălan (Bălan 2005), p. 953.

[6] Bălan 2005, p. 952.

[7] *Ibidem*, p. 951.

[8] *Ibidem*, pp. 952-953.

Excerpt from ARA Reports 4, 2013.

Michael and Gabriel, carrying an inscription, much deteriorated now, which mentions the ktitor once again.

The donation act of praporshchik Nicolae Milcoveanu, half a century after the erection of the church by the peasant-founders, was to reshape the interior and exterior surfaces of the church through an iconographic programme. The endowment with mural paintings introduced the church of Urși in a category deserving a special place in the history of Romanian art. That is the group of wooden churches painted *al fresco*, in a technique which, by its own nature is addressed to masonry, and adapted in our case to the wooden walls of the church.



Fig. 4. View toward the porch of the church.

Mural painting: iconography and style

The new iconographic programme was adapted to the space of the wooden church, a specific space for peasant churches, made in our case by the porch supported by thin posts, gracefully sculpted (Fig. 4), the rectangular, small-sized pronaos which is entered through a simple and beautiful portal, the ampler naos and the polygonal altar, provided with a small recess of the proskomidia. A barrel vault made of planks supported by wooden arches covers the naos and pronaos alike. The two rooms are divided by a wall with no tympanum, pierced by a doorway and side openings to North and South, all crowned by ogee arches. The polygonal altar is covered, in its turn, by a vault of planks supported by wooden ribs. The church is part of the group of ecclesiastic buildings with a nave shape and a polygonal altar apse.[9] The whole construction is made of oak beams assembled into horizontal courses[10] and oak planks for the barrel vault. The construction of the church belongs to an ample tradition of rural wooden



Fig. 5. The Register of Saint Hierarchs in the polygonal apse of the altar.



Fig. 6. Two of the planks with mural painting from the collapsed section the altar vault, after the conservation works of 2010. Painting fragments contain a part of the medallions with the images of the Mother of God with Jesus Child and of Holy Archangels Michael and Gabriel.

architecture, founded and conveyed by experienced peasant-craftsmen.[11]

Although it is due to the team composed of the three painters mentioned in the proskomidia – Gheorghe, Nicolae and Ioan – the interior and exterior mural painting is stylistically defined by the hand of the craftsman from Urși, Gheorghe, whose presence we can retrace in the much better preserved foundation of Ionești, a hybrid construction of wood and masonry. With an alert and sure hand, Gheorghe the painter built an iconographic programme adapted to the limited space of the small wooden church, marked though by

[9] Pănoiu 1977, pp. 111-112.

[10] Locally named "crowns"; Dragomir 2012, p. 88.

[11] Pănoiu 1977, pp. 32-35 and Stoica, Petrescu 1997, p. 82.

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Fig. 7 a, b. Naos. North, the base of the vault with the scenes illustrating evangelical pericopes of the Passion Week.



Fig. 8. Detail from the scene of the *Entombement*, in the north-east, at the base of the naos vault.

an already elaborate tradition in Vâlcea area, of masonry churches with exterior painting.

The polygonal altar apse is dominated by the image of the church fathers, led by the two Great Hierarchs, Saint John Chrysostomos and Saint Basil the Great, all wearing bishop's clothing, cut and decorated following the post-Brancovan tradition of the 18th-19th centuries. The Byzantine polystavrion sakkos is replaced by a sakkos decorated with rich floral embroidery (Fig. 5). In the nothern half St. John Chrysostomos (Zlatoust) is followed by St. Cyril of Alexandria, and Saint Athanasius. To the South, Saint Basil the Great is followed by Saint Gregory the Theologian (Bogoslov), Saint Nicholas, Saint Sypridon the Wonderworker and Saint Gregory the Decapolite whose most-worshipped relics[12] are not far away, at Bistrița Monastery.

Over the contingent of Holy Hierarchs, between medallion portraits of Holy Prophets, two medallions with angels flank the image of the Mother of God holding Baby Jesus. The whole succession of medallions unfolds against the lime-white background decorated with bunches of flowers. The axial portrait of Mother of God accompanied by Archangels (Fig. 6) and Prophets, takes the place of the ample representation of the Embodiment and of the Christic genealogy usually covering the vault of the altar's apse.

In the narrow space fulfilling the role of proskomidia, created between the iconostasis and the plank placed vertically between floor and wall plate, the representation of Jesus the Vine is depicted, sitting on the throne and

[12] The painter continues the tradition of Brancovan iconographic ensembles where Saint Gregory the Decapolite is listed among the great hierarchs as a protector of Wallachia. *Repertoriul* 2008, vol II, p. 127.

Excerpt from ARA Reports 4, 2013.





Fig. 9 a, b. The register of Saints depicted standing, under arches, on the northern wall of the naos.

pressing the grape in the chalice. A phylactery unfolded over the small window of the proskomidia reads: *Cela ce mănâncă trupul mieu și bea sângele mieu are viața vecilor* (Rom., regional and archaic: The one eating my body and drinking my blood enjoys eternal life).

The Western tympanum is occupied by the depiction, rich in details, of Abraham's Sacrifice. Although interrupted by ample lacunae in its southern half, the image can still be appreciated overall with the whole narrative representation, from the journey to the place of the sacrifice, to the central episode of the offering and to picturesque details such as the one in the northern angle of the tympanum, representing the two servants in 19th century farm servants costumes, preparing the fire. The scene takes place in a hilly landscape, shaped with the full savour of details, suggesting rather the surroundings of the village than the conventional representations of Byzantine origin.

At the bottom of the tympanum, a frieze of medallions against a white background as well, decorated with floral bunches, is reserved for the pictures of the great Holy Archdeacons: Stephen, Roman and Philip. To the southern end of the frieze, where a medallion dedicated to St. Lawrence might have been, there is a wide lacuna.

In the naos, over the wall plate, on the surface at the spring of the barrel vault, the fresco painting is consecrated to the illustration of evangelical readings from Jesus' Passion Week and to a selective succession of pericopes to follow Resurrection. To the north, the scenes are: *Jesus Before Pilate* (*Când au dus pă Hs la Pilat* – When they took IH to Pilate), the *Way of the Cross* (*Când au dus pă Hs să-L răsticnească* – When they took IH to crucify), the *Descent from the Cross* (*Când au pogorât pă Hs după Cruce* – When they took IH down the Cross) and the *Entombement* (*Când au îngropat pă HS* – When they buried IH) (Figs. 7 a, b). To the south, starting from east to west, follow the *Sunday of Thomas*, the *Sunday of Myrrh-Bearing Women*, the *Sunday of the Paralytic* and the *Sunday of the Samaritan Woman*.

Preserved to a higher degree as to the images in the southern section of the vault, the scenes of the Passion of Jesus are also the most expressive through the robust and simple composition construction based on the linkage of faces in foreground (Fig. 8).

The fresco covering to North and South the logs making the vertical walls of the naos is devoted to martyr saints represented standing, against a white background, under archways bordered by stripes outlined in red oxide, underlined in black, and decorated in the spaces between them with bunches of red flowers. All military saints wear the cross as the sign of martyrdom for Jesus, are dressed in knee length tunics with amply embroidered edges and precious belts, wear mantles and parade spears garnished with intensely-coloured red tassels (cinnabar).

On the northern wall, going from east to west, the saints Sergius and Bacchus, the Holy Great-Martyr Demetrius, Holy Martyr Julitta and Saint Quiricus, Saints Nestor and Jacob the Persian are represented (Figs. 9 a, b). To the south, Holy Martyrs George, Saint Theodore Tyron, Aretha and Tryphon.

On the western wall, over the entrance and the openings to the pronaos, there's again a frieze unfolding, with medallions consecrated to veterotestamentary portraits. Images of the Righteous ones, among which Noach and Melkizedek, are painted on the same white background covered with a rich floral decoration (Fig. 10).

With an abbreviated iconography dedicated to the Mother of God, the pronaos makes an imposing impression first of all through the monumental representation, exceeding the scale of all other scenes, of the Protecting Veil of the Mother of God ("*Tent of Salvation*") in the western tympanum (Fig. 11). Based on the axial image of Mary, crowned, with the wings unfolded widely along the curve of the tympanum, protecting the kneeling believers with her ample dress,

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Fig. 10. Image of the western wall of the naos, dedicated to portraits of Holy Prophets of the Old Testament.



Fig. 11. *Tent of Salvation* (*The Protecting Veil of the Mother of God*) takes the whole western tympanum of the pronaos.

the scene follows an iconographic model to be retraced in numerous foundations in Vâlcea.[13]

Other two representations related to the Marian iconography cover the areas of north and south from the springing of the pronaos vault. To the south, although fragmentarily preserved, the image can be still identified as an illustration of the third kondakion from the Akathist of the Annunciation, "*The power from the Most High overshadowed then...*". To the north, the reading of the image is interrupted by the lacuna in the central section of the scene, comprising the icon of the Mother of God. The iconographic composition inspired by one of the hymns of the Great Oratory of Mother



Fig. 12. *Mută să fie gura păgânilor care nu se închină cinstitei icoanei tale* (Dumb should be the mouth of pagans not worshipping your honoured icon), scene taking place at the base of the pronaos vault, to the north.



Fig. 13. Pious Saints Stylianos, Demetrius the New (Basarabov) and an unidentified saint, represented on the southern wall of the pronaos.

of God[14] bears the inscription *Mută să fie gura păgânilor care nu să închină cinstitei icoanei tale* ("Dumb should be the mouth of pagans not worshipping your honourable icon") (Fig.12). The axis of the scene is taken by the icon

[13] An iconographic model could be played by representations from Hurezi, Govora or Polovragi. *Repertoriul,* pp. 109-110.

[14] Compared to the inscription of the scene, the full text of the hymn is: *Mute să fie buzele păgânilor, celor ce nu se închină cinstitei Icoanei tale, ceii zugrăvite de prea sfințitul Apostol și Evanghelist Luca, ceia ce să chiamă Povățuitoare* [Dumb should be the lips of the pagans, those not worshipping your honourable Icon, the one painted by the Most Holy Apostle and Evangelist Luke, the one named the Adviser]; Psalm Book printed by Metropolitan Veniamin Costachi in Iași, 1835, p. 372. The hymn is placed after the 9th song and the Axion dedicated to the Virgin. We thank Ecaterina Cincheza Buculei, due to whom we learned about the iconographic source of the image.

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Fig. 14. Donor's portrait of praporshchik Nicolae Milcoveanu.

of Mother of God leant against a column linked by a *velum* with a second column placed in the Western half of the image, behind a group of kneeling believers. In the Eastern half, Archangel Michael, with his raised sword, expels the group of pagans. The scene is imposing through its dynamism, the expressiveness of faces and the force of the compositional solution: an apparent symmetry where, along one and the other side of the axis on which the Mother of God is raised with Jesus child, two different worlds exist and confront each other.

The Eastern wall, similarly to the west side of the naos, is measured by the same rhythm of medallions with Holy Prophets: Habakkuk, Daniel, David, Solomon and Jonah.

On the north and south side walls and in the northern half of the western wall, the images of standing Pious Saints unfold. To the north, Pious Saints Theodosius, Sava and an unidentified saint given the presence of a large-sized lacuna. To the south, the images of Saint Stylianos, Demetrius the New (Basarabov) and again an unidentified saint due to the disappearance of a part of the painting (Fig. 13). To the west, right of the door, Pious Saint David is followed by two other



Fig. 15. Fresco fragments from the representation of Mother of God on the throne with Child Jesus on the eastern wall of the porch.

saints whose inscription is partly damaged (one could be Alexios the Man of God).

A strong and unconventional presence is the picture of the ktitor, praporshchik Nicolae Milcoveanu. Painted in the southern half of the western wall, the praporshchik is dressed in his ceremonial costume, wearing in the right hand a flowered handkerchief, and a flower in the left. The ktitor looks to us as in a genuine secular portrait from the early stage of Romanian modern painting (Fig. 14).

Over the entrance to the church, there is an ark preserving the image of the church as it looked like after the exterior mural decoration was accomplished.

The Eastern wall of the porch unfolds its iconographic programme around the portal, austerely decorated with a simplified relief of two snakes meeting each other over the ogee opening. In an ornamental frame over the portal there is the partly damaged text of the dedicatory inscription.

The tympanum of the porch is occupied by the abbreviated composition of the Last Judgement, dominated by the central image of Jesus as Judge supported by the fire circles of the Thrones and having on one and the other side the two intercessors, Mother of God and Saint John the Baptist.

Preserved as fragments, given the extended lacunae which cross them, the two compositions placed on one side and the other of the portal have a similar character, both being axial constructions. The first, placed on the southern side of the portal, has the image of Jesus on the throne in the middle, with Archangels Uriel and Raphael to the right and the left. The second representation, on the northern side of the entrance to the church, has in its axis the image of Mother of God on the throne with Child Jesus, accompanied by Archangels Michael and Gabriel (Fig. 15).

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Fig. 16. Image of the church exterior from the north-east, with the succession of portraits dedicated to Holy Prophets of the Old Testament.



Fig. 18. Saint Prophet Elijah. Detail of exterior painting, eastern side of the polygonal apse of the altar.



Fig. 17. The image of the church ark painted over the door, on the western wall of the pronaos.



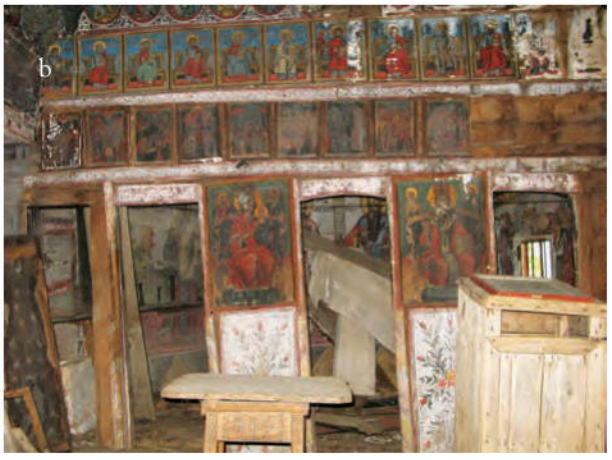


Fig. 19. a. Church iconostasis after the disassembly of the register of sovereign icons and of the festal icons; b. The register of sovereign icons and of festal icons before disassembly and restoration.

The exterior of the church is fully devoted to the portraits from the Old Testament. Similarly to the interior, medallions with alternating backgrounds of charcoal-black, yellow ochre, red ochre green earth, set against the white background of the *intonaco* layer decorated with bunches of flowers, link to each other in a dynamic of chromatic contrasts which, once the painting completed, would transfigure the log construction of the church (Fig. 16). We need to imagine the median rope moulding and the lower register, down to the bottom of the church, fully covered by the decorative "epiderm" of the fresco. From what is preserved, but also from the image of the ark of the church in the pronaos (Fig. 17), we can reconstruct

the suggestion of a white drapery ornate with black tassels which would surround the lower register of façades.

On the southern façade, up to the axis of the polygonal apse, there's a range of medallions with portraits of Prophets Ezekiel, Sophonias, Zacharias, Elisha, Osee and Isaiah. To the north, the medallions bound the portraits of Prophets Aggeus, Malachias, Jeremiah, Moses, David and Solomon.

Undoubtedly, the whole pictural "script" of the iconographic ensemble was defined by the hand of painter Gheorghe from Urși whose presence we recognize stylistically inside the church of Ionești. The painter must have also had the experience of wall painting, along with that of the icon maker. The overall image that the ktitor, through the hand of his painter, would have wished to convey must have been that of a masonry church[15] as those which could be seen not far away in many villages of Vâlcea. That aspiration to the durability of the masonry church, replacing the fragile and perishable wood construction, we may see for instance at Ionești, where the wooden construction is gradually covered in masonry to get, eventually, through the porch supported by columns and arches, the full physiognomy of a small masonry church.

Gheorghe the painter and his team accomplish at Urși, within the limits of a restricted iconographic programme, a pictural work where one can find the late synthesis which the art of the village churches accomplishes between the tradition of the post-Brancovan painting, the plastic language of the peasant art and the iconography conveyed by the art of printing. Rooted in tradition and open to renewals, the painters from Urși produce a living art, separated by the sterile conventionalism, strayed into mannerism and an infective technical skill.

The painting of the wooden church in Urși continues the image construction tradition in Byzantine and post-Byzantine mural painting, based on tones modelling starting from a dark underlayer to the light tones and accents.[16] To make this modelling possible, the base tones are saturated, and the most eloquent example of the method is the way visages are accomplished. At Urși, they used the ochre-greenish or brown *proplasma* as foundation, followed by the superposition of the light ochre tonalities of *plasma*.[17]

Gheorghe the painter relies in the perfecting of the image on the generous contribution of the final drawing with brown and charcoal black. The outlines are robust and firm, often laid on flat tones, substituting thus the absence of a modelling of tones from dark to light. Through the vigorous drawing the faces get a special physiognomy, large eyes, highly contoured, well-built nose, and marked features (Fig. 18). Visages are, actually, foreground presences, the backgrounds being often reduced to minimal, essentialised staging.

Besides the dynamic chromatics, based on contrasts, the painter generously uses the white background of the fresco support (intonaco).

The whole morphology of the image, beyond the crude aspect owed to peasant art, presents many elements coming from the transitory language of the 19th century, from the lettering of inscriptions to the ornamental repertoire and the inclination to return the vestments their roundness of folds and materiality.

Meaningful observations may also be extracted from the analysis of the eclectic ornamental repertoire, starting from the traditional palmette - and floral - friezes and ending with clumsy marble imitations.

On the interior, once again: iconostasis, icons and furniture

Returning to the interior, a special attention needs to be paid to the iconostasis, the icons in the pronaos and the furniture. The attention owed to the latter would need to be so much greater as it may easily be subject to damage, ignoring its belonging to a unit, both stylistic and liturgical. It is designed from the very beginning in accordance with the style of architecture and interior design and accomplishing, most of all, a series of functions necessary in the church life.

The iconostasis of the church in Urși is built in a system mostly used for wooden churches,[18] representing a wall made of posts, a robust transversal beam on which a tympanum made of planks rises up to the cylindrical vault. In the spaces between the posts, the icons and royal doors are fixed, the icon-curtains panels, and on the tympanum, seen ascending, the register of festal icons, the registers of Apostles and Prophets, the *molenie* icons and the cross with the image of Crucifixion (Fig. 19 a, b).

From the first register, of the sovereign icons, the image of Jesus the Great High Priest is preserved, accompanied by two intercessors, Mother of God and Saint John the Baptist, painted in the secondary foreground, the icon of the face of Mother of God crowned, on the throne, with Child Jesus, having in second foreground the Holy Archangels Michael and Gabriel, the representation of Holy Hierarch Nicholas, also on a throne, and a double icon, comprising in the same image

[15] Pănoiu 1977, pp. 143-144. See the whole chapter "Relațiile arhitecturii lemnului cu arhitectura de zidărie" [The relationships of wooden architecture with masonry architecture], pp. 143-162.

[16] *Erminia*, chapter "Cum se desenează și se lucrează la perete" [How to draw and work on the wall], pp. 55-56.

[17] *Ibidem*, p. 57.

[18] A general presentation of the construction of iconostases in wooden churches at Pănoiu 1975, p.18.

Excerpt from ARA Reports 4, 2013.

the scene of the Annunciation – the dedication of the church – and the visage of Holy Archangel Michael.

An ornamental repertoire set against a white background, reminding of the rich decoration of Brancovan origin, comprising colonettes and friezes applied on the raw structure of the wood, decorate the spaces between icons and separate the register of festal icons from that of sovereign icons and the upper registers of the iconostasis. To this add the icon-curtain panels, which, in correspondence to the decorative backgrounds of fresco medallions painted inside and outside, are decorated with bunches of flowers in the taste of the 19th century. The royal doors are entirely covered by the icon of the *Annunciation* represented in an ample architectural frame, emphasising the verticality of the two characters and the ascending sense of the whole scene.

The register of *Royal Feasts* is unfortunately incomplete by the disappearance of three of the icons placed to the southern end. The succession of festal icons, as fond on the iconostasis, is the following: the Ascension of Jesus, the Baptism of the Lord, the Nativity of Jesus, the Presentation of Jesus at the Temple, the Entry into Jerusalem, the Entry of the Mother of God into the Temple, the Dormition of the Mother of God.

Having a slightly larger dimension than the register of royal feasts, the register of Apostles marks the bottom of the tympanum on which the upper half of the iconostasis unfolds. On the axis of this register there's the icon of Jesus Pantocrator, sitting on the throne, in the Deesis scene, flanked by the Mother of God and St. John. The central image is sided by the icons of the twelve apostles. The three icons from the south, the last of which was removed from the iconostasis, have almost entirely lost their pictural layer being at this point hardly recognizable.

Three registers of medallions follow, surrounded by a floral decoration on white background, dedicated to the Prophets in the Old Testament and reminding of the chains of medallions inside and outside the church.

Unlike the register of *Royal Feasts*, the area of the tympanum is made of assembled wooden panels on which several icons are painted. In the middle of this assemblage, a space is reserved for the *molenii*, the two customary side icons with the image of Mother of God and Saint John the Apostle placed on each side of the Cross representing Jesus crucified. The last two rectangular spaces left at the bottom of the Cross were completed by the representation of two Seraphim, of which one no longer existed at the moment of the *in situ* examination.

There is an easily identifiable difference between detachable icons, such as the sovereign icons and the festal icons, and the decorative elements together with the panels from the upper register of the iconostasis, fixed with wooden dowels to the structure of the iconostasis. The latter have a drab look, more compatible with the aspect of the fresco and reminding of *al secco* mural paintings, generally effected with a weaker binder than that used in icon painting and without an effective protection layer. This observation leads us to the hypothesis of a first stage of the iconography of the interior (between 1797 and 1843), lacking the fresco painting owed to praporshchik Nicolae Milcoveanu, restrained to the icons of the iconostasis and to the two icons of the pronaos, preserved to this day, with the images of the Mother of God and of Pious Parascheva.

In the sovereign and festal icons we can recognize beyond doubt the hand of Gheorghe the painter, while for the other icons an attribution will only be possible after a stylistic analysis, to be occasioned by theconservation-restoration works.

A few remarks need to be made about the furniture of the church, mostly destroyed or damaged. We can imagine the complete furniture which would have had support functions in the ecclesiastic life of the small wooden foundation in Urși.[19] Pews, at least one lectern, candlesticks, a chandelier, one candle stand, and other small accessories such as coat hangers which would have decorated, along with the icons and liturgical objects, the interior space of the church of the Annunciation. Today the case is disastrous and what is preserved should be vigilantly conserved in order to have the guiding elements for a future restoration. We have at least a few fragments of the peasant pews, in their simple, unadorned construction, several candlesticks in an advanced stage of degradation, a peasant table decorated with incisions which may have served as candle stand.

Taken as a whole, the wooden church in Urși stands today as an argument meant for a double target: on the one hand, the reconsideration of a series of monuments representing the continuation of late medieval Christian art in a language of great vitality, both traditional and renewed, and, on the other hand, the gradual transfer of that series of monuments, extremely vulnerable by the nature of materials it is composed of, from an emergency salvation campaign to a cross-disciplinary programme of long term conservation.

Trying to put this strategy into practice starting from the case of the wooden church in Urși, after the first stage, of the urgent intervention of preventive protection and of focusing the local attention, and, to a feasible extent, that of public authorities and opinion on the small wooden church of the Annunciation, abandoned and brought to a pre-collapse state, we initiated a programme of inter-disciplinary research capable of providing the general information required by a restoration project.

[19] General information about "furniture foundations in the country" in Pănoiu 1975, p. 16.

Excerpt from ARA Reports 4, 2013.

Taking place simultaneously with the inter-disciplinary research and the preparation of the general project for the conservation-restoration of the church, the continuation of the intervention of preventive conservation proved necessary. The degradation of some temporary securing works effected on the exterior painting in 2010, as well as the evolution of biodeteriogens in the interior space of the church called for a resuming of preventive treatment.

At this stage, the architecture research and the elaboration of the project for the consolidation, straightening and laying the church on a new foundation, remaking the irreversibly damaged elements and the restoration of architecture with its artistic components, generated a few directions of inter-disciplinary research:
-the analysis of the execution technique and the constitutive materials of interior and exterior mural paintings;
-the technological analysis of *al secco* paintings, especially the icons which make up the iconostasis;
-the determination over a period of at least two years of microclimatic conditions;
-the analysis of the biodeteriogens as main factors of degradation, both for the wooden material included in the construction, as well as for the mural painting, icons and furniture.

A special chapter in the technique of the late medieval painting of Byzantine tradition: fresco painting on wooden support. Technological analysis.

The tendency, already mentioned so far, for the wooden churches to assume something from the expression of masonry churches resulted in hybridizations which raise nowadays special problems of conservation. One of those transpositions from the domain of masonry foundations to that of ecclesiastic buildings of wood is the fresco mural painting.[20] A technique organically connected to the mineral structure of masonry walls, and incompatible with a support made of an organic material, the wood, sensitive to humidity and with a different behaviour compared to porous materials such as brick or stone, quintessentially designed for painting on fresh lime base. In spite of that, the decision of the painters of wooden churches to use the *al fresco* painting relied, on the one hand, on an older experience of the builders to introduce wooden materials in the structure of brick and stone masonry bound with lime mortar, and, on the other hand, on the skills and experience of the Byzantine tradition painters.

The first condition which the log and plank walls of the church were to accomplish that of being prepared



Fig. 20. Adze or hatchet strikes cut into the oak logs to provide a hooking surface for the support-plaster of the *al fresco* painting.

to ensure the adherence of the lime support of the fresco. The team of painters at Urși knew that the only effective solution, on the long term, was of transforming the inner and outer surfaces of the wooden logs and planks in a *hooking* structure, similar to hammering of masonry, resulting from a systematic blowing by adze or hatchet, as if splintering wooden surfaces (Fig. 20). It is a processing similar to preparing laths for lime mortar plastering. The wooden logs thus "hammered" represent at Urși, both inside and outside, the *hooking surfac*e for the support layer – *intonaco* – of the fresco painting, a



Fig. 21. Spaces between logs were sealed with the same type of mortar used for the support of the *al fresco* painting.

layer of variable thickness, from a few millimetres to 8-10 mm. The joints between logs, sometimes over four centimetres, were filled with the same which made the support of the fresco. (Fig. 21).

A second condition which the new mural painting had to accomplish was to become self-supporting through the rigidity if its base layer, which would allow it to resist anchored only to the reliefs caused by the

[20] Pănoiu 1977, p. 159. The fresco technique is remarked, along with the most frequent secco ("tempera"), applied directly on wood or onto the fabric applied on wood.

Excerpt from ARA Reports 4, 2013.

"hammering" of the log surfaces by the adze. The tradition of the Byzantine and post-Byzantine mural painting comes to support the painters from Urși, providing the opportunity to reinforce the lime support of the fresco with a sufficient amount of fibres which would stiffen the layer of *intonaco*, while also conferring a certain flexibility.[21]

The support of the interior and exterior mural paintings in the case of the wooden church at Urși is to the largest extent made of a single layer with a double role of *arriccio-intonaco* made of aerial lime reinforced with hemp. In a few areas a first *arriccio* layer could be detected, which is however not defining for the ensemble of the painting. The relatively thin and single-layer support may be explained also by the fact that, for the fresco worker the obligation to work on a wooden wall asks for an adaptation and knowledge of the materials behaviour just as in the case of stone or brick walls. In the case of wood, experienced painters knew that they had to deal with a material which, during the soaking phase, does not allow the curing of the support of the fresco while once the conditions for the drying process are created (the disappearance of the source of humidification of wood, favourable microclimate conditions), this would take place a lot faster than in the case of brickwork, with a high contraction of materials composing the stratigraphy of mural paintings (the wooden wall, the *arriccio-intonaco* layer, the pictural layer).

The lime-hemp support once applied the surface of the *intonaco* layer, compacted and polished at the proper time, represented in the case of the iconographic ensemble at Urși the white background of the mural painting, generously used in the chromatic composition of the iconographic ensemble.

The palette of Gheorghe the painter and his team proved to be mostly that recommended by the *Erminia*,[22] including pigments compatible with the alkalinity of the lime-based support. Non-invasive analyses[23] undertaken on the planks with mural painting transported for conservation operations in the conservation-restoration workshops of the National University of Arts in Bucharest identified the following pigments: yellow iron oxide (yellow ochre), red iron oxide, cinnabar red, minium, green earth, chrome green, arsenic yellow (orpiment), charcoal black, black iron oxide. Among these pigments, at least one is considered by tradition incompatible with the painting on fresh lime: orpiment.[24] It can be joined by a possible pigment meant to *al secco* additions, the minium. Among all these traditional pigments, the chrome green[25] appears as one of the new colours starting to enter the trade in the Romanian Provinces and Transylvania in the first half of the 19th century.[26]

Applied by *giornate* noticeable under raking light, the mural painting of the wooden church in Urși preserves, as we have seen, the Byzantine system of image construction filtered through the experience of post-Brancovan art. The alert drawing of the saints' figures or of scenes is followed by the applying of base fields and tones for vestments and architectures. Next comes the selective and progressive finishing of details by superposition and modelling of tones, starting from the dark base tone to light ones. The accents of highlights and the final drawing in brown and black complete the image. Many times though the structure of clothing or of other details is only made through a vigorous and unhesitating drawing, with a precise and continuous trace. The modelling of faces also follows the procedure of medieval mural painting, starting from a greenish or brown *proplasma* overlapped by the light tone of *plasma*, the accent of highlights and the strongly asserted outlines of the drawing applied in swift touches, in our case briefly modelled.

Technological analysis of al secco icons and painting on wooden panels.

We need to remind that the iconostasis of the wooden church at Urși is made of two distinct parts. The royal doors and sovereign icons, together with the festal icons belong to the moment of the rebuilding and adornment with fresco painting by the care of praporshchik Nicolae Milcoveanu. Most likely, this part of the iconostasis is owed to Gheorghe the painter. The icon-curtain panels, the decorative elements on the frames of royal and deacons' doors, the ornamental friezes framing the series of festal icons, the painting of panels on which the Deesis and Apostles registers are, the panels with the Prophets medallions come, apparently, from a first phase of the church decoration, made with a weak tempera, without varnish, on a thin preparation. One has to see to which stage in the completion of the iconostasis can be assigned the painting of the cross and the *molenie* icons.

Made of lime wood, radially cut, the support of festal icons and of sovereign ones is made of a single piece. Of larger size, the sovereign icons are strengthened on the back with parallel transoms embedded in the upper and lower sections of the panel. The frames of the icons, flat, without decorative elements, result from the thickness

[21] *Erminia*, pp. 54-55.
[22] Painters'Manual written by Dionysius of Fourna; *Ibidem*, p. 58.
[23] XRF analyses taken with the X field portable analyser by physicist Gh. Niculescu.
[24] Thompson 1956, pp.176-177 and Dragomir 2011, pp. 158-159.
[25] Dragomir 2011, pp. 173-174.
[26] About the circulation of the new pigments in Wallachia, see Mohanu 2011, pp. 96-98.

Excerpt from ARA Reports 4, 2013.

of the icon panel, by the thinning the surface meant for the image.

The ground, resulting from the "plastering" of icons as stated in the *Erminia*, is made of a mix of gypsum and animal glue applied unevenly, in thickness varying between 1-2 mm, directly on the wood panel.

Analyses undertaken simultaneously with those devoted to mural painting highlighted for the sovereign and the *molenie* icons a specific palette for the *al secco* painting and at the same time very close to the range of colours used by Gheorghe the painter for the *al fresco* painting. The following pigments were identified: lead white, lead minium, cinnabar red, yellow iron oxide (yellow ochre), black iron oxide, yellow based on arsenic (orpiment), green earth, copper green.[27] Gold leaf resulting from an alloy of gold, silver and brass adds to these. A layer of varnish, currently damaged, represents the protection of the pictural layer.

The analyses on the iconostasis are under way, aiming to find the differences between registers and especially between the detachable icons and those with a dull look, fixed on the eastern tympanum of the naos or between the icons attributed to Gheorghe the painter and the ornamental surfaces of the iconostasis.

A synthetic look over degradation factors and the status of conservation.

The analysis of the degradation factors is made of a complex of related phenomena in which the understanding of degradations and their causes, for one or the other component of the historical monument takes us to determine the state of conservation of the architectural ensemble. Thus, the degradations of mural paintings in the case of Urși represent a mirror of the degradations of the wooden material used for building the church, of the biodeterioration phenomena, of the changes brought by the microclimate variations to wood, of the serious structural displacements which have recently culminated with the collapse of the altar's vault. Under the interdisciplinary activity we refer to, an overall analysis of the conservation state of the architecture of the church was taken by architects Ștefan Bâlici and Virgil Apostol, and is minutely reflected in their surveys (Fig. 22).

In what concerns us, we think it is necessary to retrace the route of the degradation factors which concern both mural paintings, the painting on wood and the wooden structure of the monument.

The first step was the anamnesis, difficult to accomplish in the case of a monument with few and modest bibliographical references. Archive images are in their turn insufficient and without the opportunity of reconstructing an evolution of degradations over the more than one and a half centuries from the second foundation due to Nicolae Milcoveanu to this day. However, we could get an unexpected source of information, discovering in the exhibition of prints made between 1925-1939 by Anton Kaindl, illustrations dedicated to Romanian monuments, an aquatint with the image of the wooden

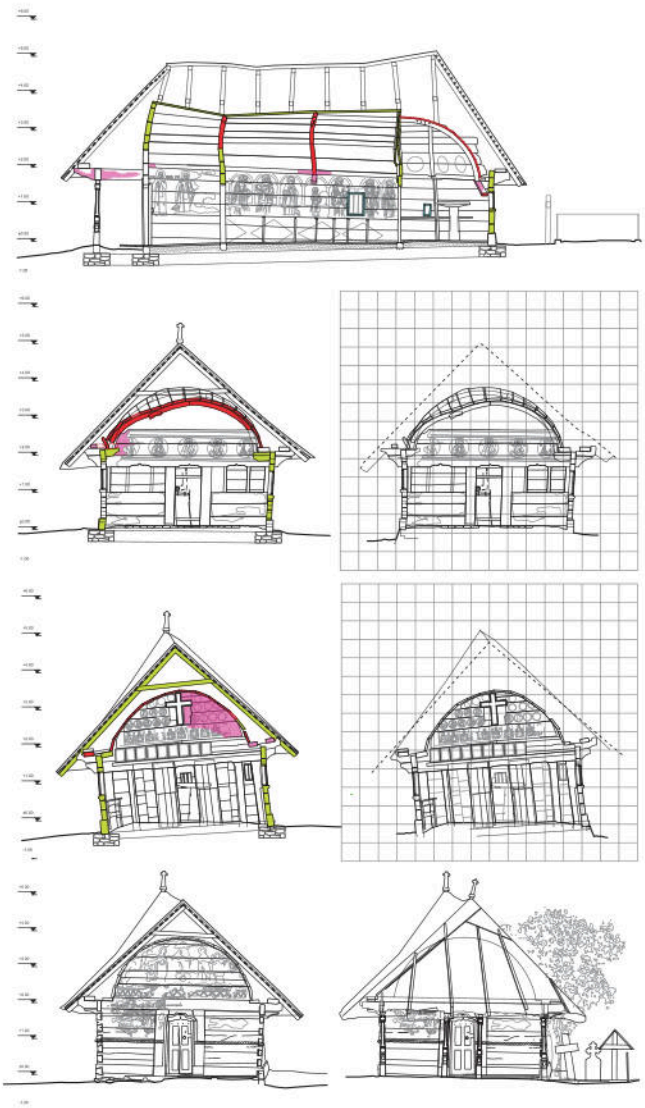


Fig. 22. Survey of the conservation state of the wooden church in Urși (provided by Virgil Apostol and Ștefan Bâlici).

[27] Pigments identified in Urși are found in the palette of icon painters in Wallachia in the 18th-19th centuries. Dragomir 2011, pp. 140-174, chapter "Caracteristici ale pigmenților utilizați în pictura icoanelor pe lemn" [Features of pigments used in wooden icons].

Excerpt from ARA Reports 4, 2013.



Fig. 23. The image of the Annunciation wooden church of Urși, as viewed by printmaker Anton Kaindl. The work was realised, together with other images representing Romanian monuments, between 1925 and 1939.

church in Urși[28] (Fig. 23). Engraving with minuteness and respect for the truth of information worthy of his predecessors, such as Raffet or Bouquet, Kaindl drew the image of the wooden church from the south-western angle. Comparing the state of the church captured by the Swiss engraver with the current state of conservation of the church, we find that the major degradations seen in 2010 were already present in 1927. Besides the ample lacunae of the mural paintings, the engraver remarked the leaning of the construction taking place at the apse of the altar in the northeast. We can also evaluate the state of the roof structure, the degradation of the shingle covering, the gaps in the roof and the general state of abandon the exterior image of the church conveyed as early as the first half of the 20th century.

The identification of degradation factors, as well as the destructive processes and the morphology of degradations were conducted through the correlation of *in situ* observations with lab research and tests performed on detached elements, transported for conservation operations in the workshops of the Conservation-Restoration study programme at the National University of Arts in Bucharest.

The factors of degradation which act simultaneously upon the wooden material of the architecture of the church, on the mural paintings and on the icons of church in Urși are of physical, chemical and biological nature. Also, in the preventive activity, we need to take into consideration the source of these factors: natural factors and the anthropic factor. All those factors, seen in their independent and combined action, are responsible for a wide range of degradations which affected the state of conservation of the monument as a whole. An example of the combined action of the degradation factors is the microclimate factors. The relative humidity, associated to the other sources of humidity such as the one coming from infiltrations, provide the optimal conditions for the emergence and development of biodeterioration processes. At the same time, the variations in microclimate, with moments of excess which lead to the soaking with humidity of the construction material, followed by extremely powerful contractions generated by the drying of wood, represent the fundamental cause for producing multiple degradations which concern both the wood and the mural paintings covering it.

Natural factors, briefly presented further on, are depending in the effectiveness of their action on the anthropic factor, which favours their access and further expansion.

Infiltration humidity represents the effect of degradation, through the lack of a permanent monitoring and a systematic maintenance of the protection system: the roof structure, the system to collect and channel pluvial waters, gullies and drains, the setup of the perimetral terrain. In our case, the roof of the church suffered degradations which the anamnesis pointed out as being part of a long period of lack of maintenance or even abandon of the church. The infiltrations of rainwater resulted in successive deformations of wooden logs and planks, and of icon panels as well. Along with deterioration of wood, the infiltration humidity produced serious degradations to the ground and the pictural layer of icons, as well as to the mural paintings. The waters coming inside the church through the deterioration of the roof represented at the same time one of the sources of humidity with a vital role in the emergence and development of biodeteriogenes, generating serious deterioration forms, hard to be treated, on the wooden material which makes both the structure of the church and the support of the mural paintings and icons (Fig. 24).

Capillary humidity works in conditions of a lack of a system of horizontal damp barrier and a system to capture rain water (drains or perimetral gullies). In our case, it is about a perimetral, unarranged and unprotected area. The existence of tombs in close vicinity to the church may also represent a cause of raising dampness in the foundation ground and, especially, of its destabilization. A research and a potential consolidation of the foundation ground will be needed at the moment of straightening the church and its laying on a new foundation. Operations which, of course, will need to take place under archaeological supervision.

[28] The print was part of the exhibition "Monumentele noastre în creația graficianului elvețian Anton Kaindl" [Our monuments in the work of Swiss printmaker Anton Kaindl], Cotroceni National Museum, November 9, 2007 – January 11, 2008. The print was reproduced in the exhibition catalogue, p. 60, pos. 43, under the title "Biserica de lemn Cucești, c. Oteșani, j. Vâlcea" [Cucești Wooden Church, comm. Oteșani, county Vâlcea].

Excerpt from ARA Reports 4, 2013.



Fig. 24. The south-eastern area of the naos vault with complex degradations of the wood, fresco painting and *al secco* painting of iconostasis.

Microclimate conditions represent, in their turn, supporting factors of degradation processes in which the dominant position is taken, especially in the case of wooden churches, by biodeterioration.

Microclimate variations expressed by the values of relative humidity and temperature are, in the case of wooden churches, a lot more reactive to changes taking place during one year at the exterior of the construction. The difference in this respect between wooden churches and masonry ones is notable, thermal inertia playing an essential role in the case of the latter.

To set a precise diagnosis needed to monitor the wooden church in Urși on the long term, we considered it necessary to initiate a microclimate study, extended at the level of a comparative study with the recordings from a neighbouring monument, the church in Ionești, where the presence of Gheorghe the painter was also identified. The study is under way and only next year an interpretation of data and the conclusions needed for a policy to monitor and protect the church in Urși will be formulated. It will be the moment when the conclusions of the microclimate research will serve the stage of long-term conservation and restoration, once the imperative of emergency is superseded. It is also the opportunity to offer a possible model to monitor and protect the wooden churches.

In close connection with the microclimate conditions we have to take into consideration the variable humidity reflecting the hygroscopic properties of materials. The differences of absorption of constituting materials at the church in Urși, where organic components – wood – gets over mineral materials – mural painting – are to be considered both for what concerns the conservation-restoration solutions, as well as the preventive treatment. We will have to take into account the possible degradations, such as dimensional changes, cracks, deformations which may appear in conditions of hygroscopicity of materials. Also, we need to analyse, for a solution to consolidate the mural paintings, the tension taking place between the support of mineral nature of the fresco and the wooden walls of the church.

Simultaneously with the presence of humidity and temperature as degradation factors, we will need to pay special attention to light, whose presence alters, through the effect of radiations invisible to human eye, the organic materials used in the composition of wooden churches. Thus, ultra-violet radiations have, as we know, damaging photo-chemical properties. In their turn, infrared radiations have thermic effects which may be considered catalysers of certain chemical reactions with destructive impact on organic materials contained in the al secco painting. Not least important, the presence of light, combined with the favourable microclimate conditions, is responsible for the emergence and spread of biodeteriogenes.

Seismic movements are also part of the category of natural factors with disastrous effects even in the case of relatively light and highly flexible constructions. Besides structural dislocations, the movements of logs and planks which bear fresco painting caused cracks and lacunae along the joints (Fig. 25).



Fig. 25. Raking light highlights both the dislocations of the vault planks and the detachments and the lacunae of the fresco painting.

The anthropic factor needs to be assessed not only through the decisive effects it causes through inappropriate interventions, but also through the way in which, by inappropriate maintenance of the historic monument, up to abandon, it "diffuses" to all types of degradations. The image of the church in Urși surprised by Kaindl is an indirect witness of what the lack of concern for the state of conservation of the monument perpetuated for almost a century meant.

Destructive factors briefly presented above generated at the wooden church in Urși a mix of degradations with specific morphology, which makes the object of the conservation intervention.

Excerpt from ARA Reports 4, 2013.

Structural degradations concerning the architecture of the church are, as we mentioned, noted on the surveys drawn by Ștefan Bâlici and Virgil Apostol. The degradations of architecture are combined with the degradations specific to the construction material, the wood. At the same time, the morphology of degradations is determined by the organic-mineral association specific to the mural surface of the church at Urși.

The fresco mural painting associated to the construction of oak logs and planks generated, in the presence of humidity under its various forms and of the microclimate factors causing the strong contractions of the wooden material, a series of degradations with a specific morphology. At the level of the support layer (*arriccio-intonaco*), we could identify:

-contraction cracks of the support of the fresco painting;
-cracks along the joining lines of logs and planks of the vault;
-ample detachments, detectable but acoustically, of the mural painting support layer anchored only to the "hammering" produced on the surface of the oak logs;
-detachments with the deformation of the mural surface (blistering) (Fig. 26);
-displacements of the mural surface along the joining lines logs and vault planks, with the loss of the image continuity in certain areas;
-variable sized lacunae, associated to detachments of the support taking place in the areas of movement and displacement of logs and planks, in the areas of rainwater infiltration and in the lower register of walls subject to capillary humidity;
-lacunae resulted from the displacement or collapse of structural elements, as in the case of the collapse of the altar's vault;
-lacunae associated to detachments of the support, taking place in areas of infiltration, with displacements and bioteriorations of wood (Fig. 27);
-lacunae caused by accidental impacts, negligence or possibly vandalism.

In what concerns the pictural layer, the degradations observed *in situ*, in direct and raking light, may be attributed both to an evolution in time under the action of degradation factors, as well as to initial technical faults, hard to identify, such as the work on a support insufficiently fresh, partly carbonated or by the use of incompatible pigments with the work in *al fresco* technique. The state of conservation of the pictural layer is expressed by the following degradations:

-exfoliations with various morphologies along the contraction cracks and of those resulted from the movements and the dislocations of the wooden material (Fig. 28, 29);
-powdering of the pictural layer on certain tones, where the carbonation was insufficient or there were *al secco* interventions;

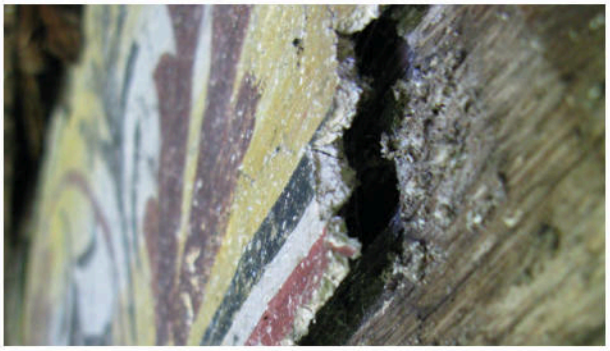


Fig. 26. In the lacunae of the painting support, ample detachments of *intonaco* layer may be noticed.

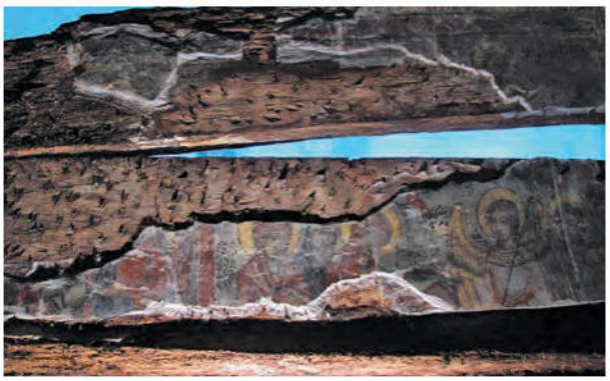


Fig. 27. Degradation of wood exposed for a long time to infiltration humidity, and displacements of vault planks resulted in wide losses of the fresco painting.



Fig. 28. Movement of wood with fresco painting caused detachments, fractures and distortions of the lime support reinforced with hemp.

Excerpt from ARA Reports 4, 2013.



Fig. 29. Possible technical faults, but mostly infiltrations of rain water and microclimate conditions generated the emergence of exfoliations with various morphologies of the pictorial layer.

-exfoliations and powdering in areas with advanced biodeterioration processes;
-erosions, lacunae due to negligence;
-alteration of the pictural layer in areas subject to bioderioration processes;
-surface deposits, small scale saline veils.

Although under the incidence of the same degradation factors which acted on the *al fresco* mural paintings, the *al secco* painting, including the iconostasis and the other icons placed in the pronaos, presents degradations with a specific morphology. There are, in this case as well, degradations resulting from initial technological faults such as an inappropriate working of the wood support, or the use of an insufficient amount of binder capable of providing cohesion to the pictural layer. Also, the absence of the protective varnish layer makes the secco painting more vulnerable to degradation factors.

In general, the support of some icons – festal icons for example – which were not under severe conditions of humidity is in a good state of conservation. Not the same thing can be stated about the southern half of the iconostasis, subject to infiltrations of rainwater for a long time.

One can talk, at least for some icons, also about an active attack of the xylophagous insects. An overall correct diagnosis will be possible to reach in the next stage when, once the iconostasis is taken off, it will be moved to the conservation-restoration laboratory.

Observations noted so far show that both the ground, as well as the colour layer present displacements of various morphologies, coming from a combination of a *secco* technique based on a week binder, with microclimate variations and with the progressive degradation of the roof, in the absence of monitoring and maintenance operations.

Biodeterioration at the wooden church of Urși.

In the current stage of conservation of the church in Urși which pushed it to a state of pre-collapse, the installation of an ample and complex process of biodeterioration represents one of the key issues concerning the long term salvation and conservation strategy of the monument. That is why the identification and analysis of biodeteriogenes played at this stage a decisive role.

The analysis of the conservation state in what concerns the biodeteriorartion was carried out through the following methods: the analysis of surfaces in direct and raking light by direct observation and with a magnifying glass, the contact test, the photographic recording, the analysis of fructification bodies under the optic microscope and the analysis of samples taken by cultivating in specific sustrate (for fungi).

The biodeterioration process was identified on the visible wood, inside and outside, in all the spaces of the church (pronaos, naos, altar), and on all types of sublayer available at the moment of examination (remains of flooring, wooden structure in walls and vault, mural painting). Thus, outside, on the wood, flight holes of



Fig. 30. Flight holes of xylophagous insects and sporulated mycelium of *Trichoderma viride* (photo V. Albu).



Fig. 31. Basidiomycetes mycelium and flight holes (photo V. Albu).

Excerpt from ARA Reports 4, 2013.

xylophagous insects were found, sporulated mycelia from *Trichoderma viride* (Fig. 30) and mycelium without fructification bodies from basidiomycetes (Fig. 31). The rate of colonisation of the wood on the exterior is closely correlated with the temperature and the hydric regime each year. The air currents have a positive role for reducing the growth of microbiodeteriogens since they support the evaporation of water from the wooden structure, but also a negative role through the spread of spores.

The same biodeteriogenes were highlighted on the interior wood: on the supporting element in the altar *Trichoderma viride* (Fig. 32), respectively the beam in

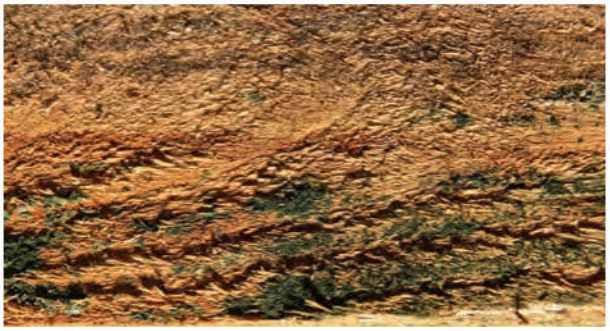


Fig. 32. Sporulated mycelium of *Trichoderma viride* (photo V. Albu).



Fig. 33. Extended mycelium of basidiomycetes and flight holes.

the naos, a mycelium of basidiomycetes and tunnels of xylophagous insects (Fig. 33). The air currents have a major role in spreading the spores; in what concerns their role in water evaporation, this is present, but because of the closed space and the hygroscopicity of the wood, the water vapours are reabsorbed.

In the pronaos, areas where the wood was coloured purple here remarked, given the development of the mycelium of *Fusarium sp.*, but also black-coloured colonies belonging to the species of *Aureobasidium pullulans* (Figs. 34 a, b). The aesthetic aspect of the wood is affected, as well as the structural one (fungi synthesize cellulase and lignolitic enzymes).



Fig. 34. a. Wood colonized by *Fusarium sp.*; b. Wood colonized with *Aureobasidium pullulans* (photo I. Gomoiu).

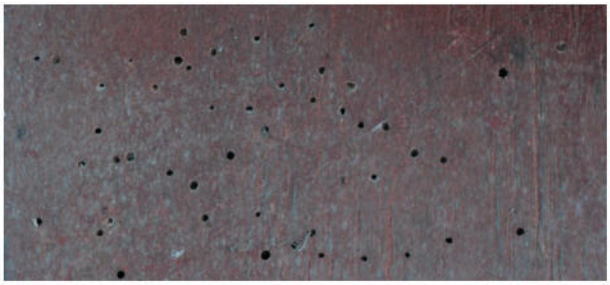


Fig. 35. Flight holes on the wood of the iconostasis.



Fig. 36. Flight holes on the wood in the naos.

On the wood of the iconostasis (Fig. 35) and the naos (Fig. 36) the flight holes of the xylofagous insects are visible. Only the larvae are active, during the biological cycle of the insects, both in terms of

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Fig. 37 a, b. Fructification bodies and mycelium of *Antrodia sinuosa* (photo V. Albu).





Fig. 38 a, b. Fructification bodies have pores at the surface (1x-photo I. Gomoiu); The pores are irregular (8x-photo I. Gomoiu).

movement and nutrition, and thus they affect the structural integrity of the wood.

In the naos, both mycelium and fructification bodies belonging to the *Antrodia sinuosa* species were observed (Figs. 37 a, b). The pores (Figs. 38 a, b) and the channels existing in the structure of the fructification bodies were identified with the optic microscope.

The biodeterioration in the case of the wooden church in Urși may be succinctly defined through the following aspects:

1. The main identified biodeteriogenes are: basidiomycetes (*Antrodia sinuosa*), xylophagous insects and filamentous fungi (*Fusarium sp, Aureobasidium pullulans*).

2. *Antrodia sinuosa* was discovered on extended areas, representing both architectural surfaces of wood, furniture and icon panels, as well as the surface of the mural painting.

3. Fructification bodies (including spores), as well as mycelium propagules contributed to spreading the biodeteriogenes in favourable conditions created by a closed space, the humidity under its various forms and the variations of temperature.

4. At the moment of our intervention, the component materials of the monument, mostly the wood and the mural painting were in a highly advanced stage of biodeterioration.

The structure of a conservation-restoration strategy for the wooden church of Urși.

At the current stage of the salvation operations of the wooden church from Urși, a conversion was possible of a minimal emergency intervention into a larger research, assessment and planning activity, of interdisciplinary character. This leads us to a series of conservation-restoration operations and long term monitoring of the church. We are, therefore, able to provide the outline of a methodological itinerary whose end will be represented by an ecclesiastic monument rendered back to the community. The proposed strategy is presented from the point of view of the restorers of art elements.

1st Stage, 2010: Prophylactic operations to protect and take out of immediate danger the vulnerable elements of the church: the mural painting and icons.

The operations engaged simultaneously the *in situ* action of restorers and of labs able to provide to the intervention with the scientific support. The following actions were undertaken on a voluntary basis:

-temporary anchoring of areas with detaching mural painting, through the application of Japanese paper stripes with Paraloid B72 (20% acetone);

-laboratory tests to determine the nature of materials and the execution technique of the mural paintings and of the secco paintings (iconostasis, icons);

-collection of samples and laboratory tests to identify biodeteriogenes;

-observations, measurements and photographs to support the surveys and the general project for the consolidation and restoration of the architecture of the church;
-disassembling of a part of the icons of the iconostasis, and transporting them in the tribune of the masonry church of the village;
-transporting and storing in the cemetery bell tower of a part of the boards with mural painting collapsed inside the altar apse;
-disassembling the degraded roof of the church;
-completing a temporary construction to protect the church;
-prophylactic-based consolidation, packaging and transport of festal icons, royal doors and sovereign icons in the laboratories of the Conservation-Restoration section of the National University of Arts in Bucharest;
-prophylactic consolidation, packaging and transport in the restoration laboratories of the National University of Arts of two planks with mural painting.

2nd Stage, 2011-2012: Preparatory works to straighten and lay the church on a new foundation.

-completion of general conservation-restoration project and securing of all necessary permits;
-completion, between September 2010 - June 2011, of conservation-restoration operations for all festal icons, sovereign icons and royal doors; completion of experimental conservation intervention on the two planks with mural painting from the altar of the church; exhibition with the restored objects and their return to the community;
-return *in situ*: apply biocide treatment with Biotin R and Biotin T, on mural paintings and on temporary construction raised near the cemetery to deposit the planks with mural paintings;
-continue consolidation of mural paintings in order to apply the protective facing during the disassembling of the barrel vault;
-extend temporary securing measures inside and outside the church;
-effect consolidation of exfoliating or powdering colour layers;
-apply localized consolidations with lime mortar along the detached margins of mural paintings in lacunose surfaces;
-apply with CMC the facing for the mural painting on the vault planks;
-effect prophylactic consolidation of icons in the upper registers of the iconostasis;
-take photographic evidence, drawings and conservation records;
-disassemble the vault and store the planks with fresco and secco painting in the temporary construction close to the cemetery;
-disassemble the upper registers of the iconostasis and store the icons in the tribune of the village masonry church;
-continue to monitor microclimate conditions.

3rd Stage, 2012-2013:

-pack and transport the icons and the decorative components of the iconostasis for the conservation-restoration treatment in the restoration workshops of the National University of Arts;
-prepare a part of the planks with *fresco* and *secco* painting for the transfer in the restoration workshops: partial cleaning with mechanical means of the rear side of the painted planks, preventive biocide treatment with Biotin R;
-complete conservation-restoration works, between October 2012 and June 2013, for a part of the planks with *fresco* and *secco* painting and for some of the icons and decorative elements of the iconostasis;
-carry preparatory operations to temporary secure the architecture of the church together with its artistic components, in view of its straightening and laying on a new foundation;
-straighten and lay the church on a new foundation, operations to be carried out under archaeological supervision;
-effect conservation works on the architecture of the church: biocide treatment, consolidation-impregnation of wood, filling and replacing of certain logs out of the architectural structure of the church; consolidation of original elements of the arches and replacing missing parts;
-continue the monitoring of microclimate conditions;
-return to Urși, after completion of conservation-restoration works on the planks with mural painting and icons of the iconostasis.

4th Stage, 2014-2016:

-continue to treat the planks with *fresco* and *secco* painting, the icons and decorative elements of iconostasis through a methodology similar to that already applied in the conservation-restoration works of 2011-2013, completed in the workshops of the Conservation-Restoration Section of the National University of Arts in Bucharest;
-continue *in situ* conservation-restoration works of the architectural structure;
-return to Urși, after completing the conservation-restoration works of the last component elements of the vaults and iconostasis;
-reassemble the planks with *fresco* and *secco* painting in the vault of the church;
-reconstruct the roof structure of the church;
-reassemble the icons belonging to the iconostasis;
-continue and complete conservation-restoration works of the architecture of the church; conservation-restoration and reconstruction of furniture items;
-continue *in situ* the conservation-restoration of *fresco* and *secco* paintings;
-continue monitoring of microclimate conditions; the attempt to involve the community in monitoring the monument and in conservation of the protection area of the church.

It is good to remind that this whole process, completed so far to a large extent due to voluntary involvement, unfolds outside any major concerns of the national state or ecclesiastical authorities, in regard to a particular category of endangered monuments, facing extinction. And along with them, comes the disappearance of specific professions, heritage trades we may call, without making a mistake: joiner, carpenter, blacksmith, the whole chain of jobs which would sustain the continuity of the cultural heritage of the Romanian village.

Undoubtedly, volunteer work may play its part in saving a monument from destruction through a minimal intervention, through a series of actions which would at least draw public attention upon a collapsing wooden church. Nevertheless, to take it out of danger is something else, it implies a prompt presence of expertise, an interdisciplinarity able to take action immediately and to impose, at the same time, a long term life regime. Such

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a programme is unconceivable in lack of consistent and, moreover, coherent funding. It is time for the authorities to adopt a new policy in their plan to protect historical monuments: going from the preferential investment resulting from various types of reasons, divided geographically, to a non-discriminatory protection of the monuments taking into consideration their vulnerability.

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