Abstracts

Éva Galambos – András Heitler – István Bóna

Results of research on the materials and painting technique of the medieval wall paintings in the St. George church of Ják, and their conservation in 2021–2022

Éva Galambos
About the painting technique of the wall paintings

The comparative evaluation of the restorers' examinations has revealed the original technique of painting the murals, the actual state of plasters and coloured layers, and the used materials. The St. George wall painting in the apse and the other murals in the tower's ground floor became comparable, and it is possible to reconstruct in theory the original colour scheme as a result of the research.

In terms of composition and manner of application, the plasters carrying the St. George wall painting in the apse and the wall paintings of the tower's ground floor are very similar containing a high rate of lime and some vegetal fibres. They were probably prepared close to each other in time but they slightly differ in the filling material. The paintings were made with secco technique, on the dry plaster.

The figural scenes on the south-western tower were created with a relatively thick, pale red and orange underdrawing, and in many places this is all that has remained of the paints. In contrast, the St. George painting mostly has a black preparatory drawing. There is a significant detail in the St. George mural in the form of small fragments of a painted head under the horse figure, which could be interpreted as a donor figure. This detail also has red underdrawing, which in turn could be associated with the wall paintings in the tower. This assumption is supported by the presence of ultramarine particles in this patch of the head. This is a fascinating finding as the natural ultramarine (lapis lazuli) is the blue background colour used for the tower wall paintings, whereas this pigment does not occur elsewhere on the St. George painting, only in this head of the donor figure. Indeed, the blue colour used in the St. George mural was painted with vivianite, a different material. These observations may suggest that the wall paintings of the tower and the painting of the small donor head are similar, possibly from a later period according to the relative chronology.

The identification of vivianite in this painting is unique because it is the first example of the use of this rare iron-phosphate blue pigment in Hungary. Here, unfortunately, it has been altered, and suffered colour transformation over the centuries, and it is now visible in only patchy, faded yellowish brown hues on the background of the painting.

The other colours and painted layers of the painting on the tower's ground floor are similar in the structure to the St. George painting. In both places, the structures of the colour are created by a deliberately chosen underpainting layer, like a preparatory layer under the finishing colours. There are often greyish or darker-toned underpaintings of burnt vegetable charcoal (veneda), which are mainly used for the backgrounds. Moreover, there are many examples of the same pigment usage such as ochres or copper greens. A similarity in their painting techniques can be observed as the greens are applied in different tones with darker or lighter underpaintings, depending on whether a darker or lighter shade was intended.

The original green pigment is copper chloride, which is an interesting choice. This may be due to the fact that the images date from the 13th century when green earth was most common.

Unfortunately, copper pigments easily transform in response to the water soluble salts in the walls; particularly on the tower's ground floor was the recrystallization of copper chlorides observable.

The finishing upper black contour lines can be found on the wall paintings at both places, with identically thick lines, but on the St. George scene, the lines are far more dynamic and vigorous. The application of the last colour layers is often visible over the black lines, which a typical feature in both wall paintings.

The flesh tone of the figures of the tower is difficult to compare with the more durable, stronger yellowish flesh tone of the St. George painting, because no intact surface has remained in the tower, which is why we see the red underdrawing mentioned above. There may also have been a yellowish flesh tone used in the tower, but no good samples of these have been obtained.

Thus, the materials and the technique used on the two paintings are similar, clearly belonging to the same circle. They could have been made close to each other in time, but there are some differences, which in turn could refer to two different masters or workshops.

The colours of the palette are lime, vegetable charcoal black, iron-rich red and yellow ochre, copper containing green (presumably also originally copper-chloride), blue natural ultramarine (lapis lazuli) in the tower and vivianite (iron phosphate) in the case of the St. George painting. In addition, there is some kind of organic red pigment (found on the discoloured mantle of St. George) which has lost the colour or got degraded.

András Heitler

Restoration of the mediaeval Saint George fresco in the former Benedictine church in Ják

The wall painting depicting Saint George slaying the dragon is in the main apse of the former Benedictine Abbey Church in Ják. The painting is dated to the mid-13th century. Painted on a single continuous plaster patch applied to the stone surface of the apse wall, the composition was found in 1889 during reconstruction work under the leadership of István Möller. The restoration of the mural was carried out by Mauro Pellicioli, the decisive figure of 20th century Italian restoration, in 1937 with the help of his student Luigi Pigazzini

The conservation in 2021-2022 was justified by the extraordinary contamination of the painted surface. During the restorers' research prior to the intervention, the composition of the plaster and paint layers were examined in detail, the used pigments were determined, and the steps of the creation of the wall painting done predominantly in secco technique could be reconstructed. The appearance of the painted surface drastically differs from what it might have looked originally: the partial demise of the layers (erosion of green copper chloride layers), transformation of a part of the remaining pigments (e.g. browning of vivianite pigment) irreversibly changed the formerly vivid colours, and the damaged and missing plaster sections are also extensive.

The aim of the restoration was to clean, explore and demonstrate the lacerated, fragmented surface, using as little loss compensation as possible. The plaster layer is on the whole stable, holds firmly, and at the few spots where it began to come off some lime based grout (PLM-A) could be injected in to stabilize the plaster. The state neither of the plaster nor of the paint layers required impregnation. On the St. George mural the use of chelating agent were not permitted because copper-containing pigments are sensitive to them, but the non-ionic tensid Marlipal 1618/25 of low concentration was used with good results. The aim was to explore as much of the original painted layers as possible, so we removed the water soluble retouching applied in 1937. At that time, several motifs of the wall painting were glazed lightly and moderately, to make the highly fragmented composition more intelligible. The examination of the cleaned surface and the UV luminescent photos taken during the work clarified several earlier unintelligible details such as the head of a smaller figure in the lower section of the picture field.

The surface is dotted with mechanical damage, marks of chisel and hammer strokes; the preservation of the fragmentariness did not allow for the extensive filling of the holes, only the most disturbing plaster defects were filled. The basic principle of restoration was to restrict retouching to the new fillings as much as possible, in line with the method used in the restoration of the rest of the church interior surfaces. On top of the new fillings first a layer of casein (Kreidezeit Kasein Marmormehlfarbe) underpainting coloured with pigments to a hue adjusting to the original plaster was applied, and then came the watercolour retouching.

István Bóna

Restoration of the wall paintings under the southern tower and the organ loft

The surfaces restored include ground floor section of the southern tower and the entire surface under the choir loft. Most of the surfaces under the tower contain Romanesque frescoes, while under the loft only a smaller badly ruinous fragment survived. Later, presumably in the 17th century, the entire church interior was whitewashed and richly embellished with red and yellow ashlar imitation and red stencil patterns. The whitewash and paint was directly applied to the Romanesque paint layer, traces of it still visible at places. The present restoration aimed to preserve, conserve and demonstrate all the surviving layers and unpainted stone surfaces.

The Romanesque wall paintings were found and uncovered from under the 17th century painted decoration in 1904. In that year, copies in tempera were painted and good quality photographs were taken. In 1937, Mauro Pellicioli and Luigi Pigazzini restored the murals. The result was taken photographs of, too. Their subsequent fate is not known.

The article does not follow the restoration consistently in temporal or technical term; much rather it concentrates on the use of methods that are not yet, or are hardly, applied in the Hungarian restoring practice.

The great majority of surfaces were dry cleaned. After the customary Akapad and Cleanmaster cleaning sponges, we tried out some make-up sponges on more sensitive areas. They are not only softer than the routine cleaning sponges but often more effective, too. For the wet cleaning of painted surfaces, we only used polyvinyl 'Saugschwamm' sponges and when it seemed necessary applied the cleaning agent Marlipal 1618/25. During cleaning, it was often difficult to decide what was original and what a later touch was. Therefore, we tended to retain some of the later interventions, lest the original surfaces should be damaged. The unpainted stone surfaces were cleaned with a steam cleaner.

The paintings were physically feeble, very sensitive to the most careful interventions, too. We decided therefore to fix them. We chose materials containing nano-particles of lime. These are dispersions of almost nano-size calcium hydroxide particles suspended in alcohol. First, we used the tenfold-diluted dispersion of CaLoSiL E50, and then CaLoSiL Grey developed specifically for wall painting conservation. The result was good beyond expectation.

It was typical of the plaster behaviour that the thin plaster did not stick to the masonry, yet there was no hollow behind it. This meant that none of the familiar injecting material could be applied. We tried CaLoXiL injection grout extra fine, which contains very pure, good quality and fine-particled lime, and it proved excellent for the purpose. Retouching was done in Schmincke watercolour, according to the rules and methods of selezione chromatica. We aimed first of all to smooth out the monochrome backgrounds to reduce disturbing vibrations. As a result, the appeal and perceptibility of the paintings were improved without adding to the forms of the representations.

Translated by: Judit Pokoly

Zsuzsanna Várhegyi – Melinda Szabó

Conservation and reconstruction of a 13th century leather shoe from Szolnok Castle

The conservation and restoration of the archaeological leather pieces found at Szolnok Castle, Earthwork Fort Site in the autumn of 2018 were carried out at the National Centre of Conservation and Conservation Training, Hungarian National Museum (HNM) in 2019.

The pieces were apparently parts of one shoe, and conservation revealed that the pieces could be assembled into one whole footwear.

Based on the formal and technical features of the conserved footwear, it is a rounded toe ankle-shoe, belonging to the group of western type footwear with side laces. It is characterised by an asymmetrical sole that follows the shape of the foot. The upper part of the Szolnok shoe is made up of three pieces, the front is the vamp, which is made of one piece of leather, and the back is the quarters, the right and left sides of which are cut separately. The two parts are joined at the midline of the throat and that of the quarters. The upper edge of the quarters is decorated with incisions at evenly spaced intervals. Among the shoe parts, the heel-stiffener and the V-shaped leather piece used to reinforce the lacing helped interpret and develop the shape of the footwear.

The worn, damaged skin layers were cleaned and soil contaminants adhering to the skins were removed with a 2% aqueous solution of Marlipal®5 non-ionic surfactant. The cleaning process was followed by the conservation of the leather pieces to restore their moisture content and thus their elasticity. For this purpose, the finds were soaked in a 20% aqueous glycerol solution for 9 days. The wet treatments were followed by drying of the soaked skins, during which excess water was removed by the method of freeze-drying without vacuum. After cleaning and conservation, it was possible to carry out various material tests and observations, which provided valuable information concerning the materials used for the shoes and the original crafting technique of this piece of attire dated to the 13th century. The identification of the leather grain showed that the vamp is made of sheepskin and the quarters of goatskin. It was not possible to identify the animal species on the sole due to the high degree of surface abrasion. The types of stitching used to assemble the shoe parts became observable. The remains of the thread used for sewing show that it is a light-coloured Z-twist.

To ensure the stability and original shape of the shoe, a foot-shaped support body made of polystyrene foam was designed to match the inner surface of the shoe. Finally, the completed, moulded shoe pieces were applied to this support (pinned with stainless steel insect needles). The support was previously covered in a leather-coloured textile, while preserving the shoe shape and the deformities resulting from its use. The resulting shape also allowed us to infer the possible foot deformity of the wearer.

Based on the tests and observations on the leather pieces, and on the patterns of the shoe parts, it was possible to create a reconstruction to the original design.

The statically reinforced and completed footwear was fixed onto a specially designed supporting and holding core, on which it can be stored in accordance with the environmental parameters recommended for the treatment materials and the material type. As a result of the glycerol treatment, the treated leather can absorb more moisture. Therefore, it is recommended to store it in a space with 40-45% relative humidity, since there is a risk of mould growth at higher humidity levels. The appearance and spread of mould fungi can be prevented by thyme essential oil evaporation at 20 °C. These governing parameters should be maintained during storage, transport and exhibition to help ensure the preservation of the restored artefact.

Translated by: Hajnalka Szabó

Sára Sánta – Zsuzsanna Tóth

Volumes of the German Humanist and Diplomat Christoph von Scheurl's Library in the National Széchényi Library

Christoph von Scheurl, a Nuremberg diplomat at the turn of the 15th and 16th centuries, amassed a considerable book collection in his lifetime, but its items got scattered after his death and can now be found in various libraries the world over. Two of his volumes, marked Inc. 631 and Inc. 687, which kindled Sára Sánta's interest, are kept in the National Széchényi Library's Collection of Early Printed Books. They were acquired from the Jankovich Collection.

Having studied the items, we concluded that the inscriptions, ex-libris, bookbindings, and their modifications could be linked to the known life story of Scheurl. Into the panel of the front cover of each book a bookplate with coats of arms is glued: a young woman standing in the middle holds the arms of the Scheurl family in her right and that of the Tuchers' in her left hand. Research has attributed the unsigned prints to Lucas Cranach the Elder. In the panel of the back cover of each another unsigned coloured woodcut ex-libris of Scheurl's was pasted, which is also attributed by specialists to the workshop of Lucas Cranach the Elder. The handwritten notes on the title-pages of the books reveal that the binding of the volumes was commissioned by Scheurl himself: that of the colligatum marked Inc. 631 in 1501 the latest, that of the book marked Inc. 687 in 1499. The technique of binding ranges the volumes among the Italian renaissance bindings.

The fate of these books of Scheurl is unknown until the 19th century – as no inscriptions had been added –, then they got into the Jankovich Collection. In the knowledge of Scheurl's life and the inscriptions, the authors of the paper aim to explain the changes in the bindings, demonstrating the differences in binding techniques south and north of the Alps. In the studied period south of the Alps the bookbindings were fastened to the backboard usually at four points, while in the north they were fastened to the front cover, typically at two points. In the late 15th century in Italy renaissance bindings were made with edges of the book boards extended and bevelled, which gave the bindings a delicate appearance. The ornaments of the bindings were centralized with typical renaissance motifs. Gilding also appeared on more luxurious bindings. North of the Alps, the squares of the thick wooden boards were thin; the board edges were straight or curved, lending the books a heavy look. The bindings were adorned with blind tooling, gothic stamps, allover designs.

Translated by: Judit Pokoly

Márta Egervári – Boglárka Lengyel – Orsolya Zay

16th century hairnet from Sztána

A rare Renaissance hairnet was found in Sztána, in the reformed church under renovation. As benefactors of the ecclesiastical place, the Gyerőffy family, who played an important role in the history of early modern Transylvania and reached the rank of nobility, could use the church of the hidden village as a burial place, in the period of inadequate public security, between 1530 and 1550.

Archaeologists excavated *in situ* the find found in the last hours of the excavation, most of whose metal thread parts were preserved. It was safely stored in a room of the reformed community centre next to the church, until restoration work began. It could be guessed that it was a piece of rare and outstanding value, so we considered it especially important that it be accurately documented from the excavation through the restoration to the publication.

The coif is made up of two main elements, the mesh part holding the bun and the oval on the top of the head. The latter is a sewn lace sewn with gold-plated thread and decorated with silver. Instead of the usual initial contour thread, a 14-strand braid with gold and silver threads frames it. The finished oval shape is joined at the forehead by a narrow, wavy-edged gold thread lace, the upper half of which is bobbin lace and the lower half is made with a braided technique. This braid continues across the temple to the cheek, and used to frame the entire coif. The mesh part of the headdress that surrounds the bun connects to the oval at the back. The square grid structure, consisting of seven columns and four rows, is made of macramé cords, knotted with special picot of gilded silver thread. The inside of the macramé squares was filled with an airy silk mesh. On this net, in the centre of the squares, embellishments with perpetual braid pattern, adorned with gold and silver thread were also embroidered.

The morphology of the metal threads and the embellishment was examined with an electro-microscope, and the material composition with spectroscopic elemental analysis (EDX, SEM). According to our assumption, they were made of precious metals, gold and silver could be identified.

Underneath the 'bonnet' with metal threads, there could have been another, fine thread, embroidered netting, but only the imprint of this could be examined. We were able to reconstruct its structure, i.e. what pieces it was made of and a small detail of its pattern could also be identified. Based on the other very small remains, we conclude that there was a face covering and a death shroud in the grave, the materials of which could have been some kind of linen or velvet, as well as embroidered filet lace or reticella, similar to the rhombus pattern of the lower hairnet, only consisting of tighter meshes.

For finds with such complex materials, such as pieces of clothing, where organic and inorganic materials are present at the same time, the joint work of the textile- and metal restorer and the clothing historian is important.

The closest analogies of the Renaissance coif in Sztana are the 16th century mesh coif found in the crypt of the parish church of St. Martin in Szombathely, and the fragment of the mesh coif from the 1931-33 excavations in Csenger.

Translated by: Juhász Anna

Gerdi Maierbacher-Legl – Ralf Buchholz – Christine Fiedler – Susanne Karius

Restoration of the choir stalls of Tóbiás Transylvanian stalls from the workshop of Johannes Reychmut of Segesvár

Completed and annotated by Petronella Kovács

In the apse of the fortified church of the village of Tóbiás (Tobsdorf/Dupuş) a three-seater and a six-seater set of stalls stood across from one another for nearly 500 years. After the exodus of the Transylvanian Saxons, the state of repair of the church deteriorated rapidly, so the stalls were dissembled in 2002 and transported to the fortified church of Kereszténysziget (Großau/Cristian) used as storage for endangered cultural goods. That was where students of furniture and wooden object conservation and restoration from Hildesheim's Hochschule für Angewandte Wissenschaft (HAWK) chanced upon them in 2006. A contract with the Romanian Lutheran Church corroborated by the Romanian authority of historic monuments allowed the pieces to be transported to Germany in 2010 and in an 8-year project their restoration could be completed under the aegis of university instruction in Hildesheim.

The stalls are decorated with flat carving and block intarsia of geometric and perspectival patterns, on the crowning part of the triple stalls the date 1537 can be read. Similar church furniture can be found in the churches of Berethalom (Biertan/Birthälm), Segesvár (Sighişoara/Schäßburg), Szászbogács (Bogeschdorf/Băgaciu), Ecel (Hetzeldorf/Aţel), Riomfalva (Reichesdorf/Richiş) and Garat (Stein/Dacia) with dates between 1495 and 1534. The stalls in the fortified church of Szászbogács is signed and dated in the Latin inscription by the Segesvár master furniture-maker Johannes Reychmut. The students assessed the furniture in the church of Tóbiás and the mentioned settlements, and the similarities they had found confirmed the hypothesis that they belong to a group of art works associated with master Johannes Reychmut of Segesvár.

Microscopic examinations revealed that the inlaid motifs were created by using oak (Quercum spp.), yew (Taxus baccata L.) and maple (Acer spp.). At a few places walnut (Juglans regia) and ordinary spindle-tree (Euonymus europaeus L.) also occur. The support structures were made of lime and deal.

The wood of the stalls of Tóbiás were heavily infested with insects, the sections close to the floor perished, the grid of bottom beams was missing. The infection was still active, so the first intervention was to disinfect the wooden materials in a poly tunnel with nitrogen gas.

The aim of the restoration was to reinstate the stalls into function, through the conservation of the surviving parts including the extremely porous bottom sections. To consolidate the wood, the parts were immersed in 5% then 17% dilution of Degalan P 28 acrylic resin mixed into an 80:20 ratio mixture of limited-boiling petrol and xylene. The result was checked by CT images which showed that the lower badly damaged edges of the beams were not yet firm enough. The secondary strengthening of these parts was done with Araldit 2020 epoxy resin.

From the weight carrying supports of the stalls up to 40 cm long pieces were missing at places. The complements accurately adjusted to the fracture surfaces were made of lime wood, using 3D laser scanner and CNC milling machine. The tenons between the old and the new elements are threaded steel bars set in ash wood rods.

The fixing of loose or fallen out intarsia parts was done with animal glue, the painting on the flat carving was fastened with 2% solution of Methocel A4C™.

One of the back panels of the six-seat stalls and a third of one of the triple stalls got lost. Archive photos showed the pattern of the inlay decorating the panels. The reconstruction of the missing parts were made digitally, with UV flatbed printer directly onto lime wood panels.

Some parts of the stalls had a coat of transparent brown varnish, while the microscopic examination of samples taken off revealed several earlier surface treatments. The coating layers were removed with a gel of 1:1 mixture of ethanol and acetone with methylcellulose.

For aesthetic and conserving reasons, the damages of diverse extent on the stalls were sealed and retouched. Larger gaps were filled with rougher putty made of corkwood powder and animal glue, the small defects received finer putty of lycopodium spores and gluten glue. For retouching Maimeri Restauro restoration colours were used. The colour of the solid wooden complements was acquired from water-soluble dyes.

Veneered and inlaid surfaces were first treated with a thin glue solution, then with oil resin, as the historical recipes required.

The supporting grid was constructed of oak on the basis of similar historical structures, with easy-to-undo joints. The cross beams flank and hold in the air the side walls and the seat divider elements, hence they do not directly rest on the floor. The frame of the platform allows enough space between the back and the wall for ventillation. The choir stalls were assembled in their new venue, the St. Margaret Lutheran church of Medgyes (Mediasch/Mediaș) in 2018.

Translated by: Judit Pokoly

Andrea Perger – Emese Pásztor

Database of the Ottoman-Turkish rugs of Transylvania

The database mentioned in the title comprises data collected as a result of detailed technical analyses of the Ottoman-Turkish carpets in the collection of the Hungarian

Museum of Applied Arts. We have assumed that if the results of meticulous analyses of 15-18th century Ottoman rugs from Transylvania are stored in a database, and if sufficient amount of data is available, we may be able to determine places of origin and periods of making, by screening the data.

The creation and improvement of the database may engender important art historical insights, and the collection and screening of data 'inferred' from carpets of diverse types may also raise important questions about restoration, and may as well provide grounds to answer them, whereas in isolated surveys, material examinations or restoring processes this is not, or just rarely possible.

Our research is still in the phase of assessment, but we hope to further refine our current knowledge of production techniques by defining subgroups, type groups or temporal characteristics (e.g. whether the making techniques of so-called 'Transylvanian rugs' changed from the turn of the 16th century to the early 18th, or in the case of the so-called Lotto carpets). The primary condition for all this is the examination of as many Ottoman Turkish rugs as possible. Since in Transylvania the number of Ottoman Turkish carpets originating from authentic sources is unique in the world, it would be expedient to include in this research the carpets kept in ecclesiastical and museum collections in Transylvania.

Translated by: Judit Pokoly

Zsolt Hidasi

The restoration of a mid-19th century Érard double-action harp

The harp was donated to the Nádasdy Castle Collection, which was completely renovated as part of the National Castle Programme, and although its historical connection to the Nádasdy family is unknown, after restoration the harp was placed in the library room designed by Alajos Hauszmann.

The condition of the harp before restoration was characterized by the fact that the whole instrument was weakened due to loose glues and cracks. The bass part of the resonator was deformed, the lacquer layer was ageing and the gold fillets were damaged. Both the resonator and the string holder had suffered considerable damage due to drying and stress. The varnish and gilding on the neck and shoulder were also damaged and in need of restoration. A large part of the composition ornaments of the column had been destroyed and needed to be replaced. The original gilding had been restored twice, the last time only with imitation gold (metal leaf). The gilding of the pedalbox was damaged in several places; the sculptures used to decorate it had been distorted beyond recognition due to the damage. The instrument's stringing was incomplete, with most of the remaining strings being from later (not period) supplements. Some of the ebony pins (so-called lower bridge pins) used to fix the strings were also missing.

The restoration was not intended to make the harp playable, following international guidelines for the restoration of historical instruments. The basic aim was aesthetic restoration, but this could not have been achieved without dismantling the instrument.

Only after dismantling did it become clear that the instrument had been created by assembling parts from two separate Erard harps, presumably as a result of a repair following serious damage. The restoration, while respecting the basic restoration criteria, could not have been carried out without thorough research into the history of the instrument and knowledge of the harp making. The research almost brought to life the stories of the Erard and Morley harp-making dynasties in England. The former owners of the two harps used in the previous repair can be associated with no less public figures than the Transylvanian-born composer Carl Filtsch, who died young (the harp probably belonged to a close relative of Carl Filtsch) or Sir Thomas Metcalf's daughter Emily (Metcalf was the 4th Baron of the East India Company). During the restoration, the restorer worked closely with harp experts (partly from the UK), which revealed many other interesting facts about the history of the instrument and its technique. In the publication, the author highlights details of interest from a decorative and instrumental point of view, such as the execution of the compo additions or the efforts made to reduce the deformation of the soundbox and to regenerate the varnish layers. Some steps of the restoration could only be carried out at the cost of compromises. For example, to restore the gilding of the column, the top metal layer had to be removed, which meant sacrificing the oil gilding of the second period. For aesthetic and static reasons, the instrument had to be re-strung, using strings made with the same technology as used at the time of the harp's manufacture (the removed strings are kept).

Translated by: the author

Éva Mester

Glass paintings in oblivion for 170 years Construction history of the St Anne chapel and the Wenckheim crypt in Szabadkígyós – the state of the glass paintings

The chapel and the crypt belonging to the former Wenckheim castle of Szabadkígyós were commissioned to be built at the entrance of the estate by the owner Count Antal József Wenckheim, the Elder. In view of its unique artistic values the ensemble was listed as historic monuments by a ministerial order in 1953, soon after the nationalization.

The single-aisle chapel of St. Anne erected on an artificial mound in classicist style received as ornaments two large glass paintings and the altar painting in oil of St Anne with the infant Mary above the tabernacle of the high altar. They must be contemporaneous with the building of the chapel. The themes and composition of the glass windows with semi-circular heads were probably devised using schemes of pattern books prevalent in the 19th century. The central figures of the paintings, the triumphantly risen Christ and Mary are standing with their attributes atop radiant clouds, in a mandorla each lined with beads and golden rays. Their halos are also meaningful: according to the Book of Revelations Mary will appear as the celestial lady of the Apocalypse 'clothed with the Sun' and with a crown of twelve stars. The spelling mistakes as well as analogies support the presumption that the windows were made by German masters.

The figures display typical features of the 18th century, when small-size glass paintings adopted the technique of porcelain painting: the minute elaboration of faces, hands and feet, the ornate damask patterns of drapery, similarly to panel paintings meant for close observation. These features cannot be noticed with the unaided eye as the paintings are high up, but they become discernible in high-resolution photos. Orientation is largely hindered by the extremely neglected state of the glass paintings. It is not simply owing to natural ageing, but in addition to the biological, physical and chemical damage, also to deliberate stone throws and weapon shots, which caused many defects and broken parts. A contributory factor is the constant movement of the building erected on alluvial soil. The cracks of the masonry close to the windows shifted the metal framings. The huge window panes shifted out of their original places into instability may collapse any time, falling out of their frames. The temporarily applied adhesive tapes used to fasten defects and broken pieces can only postpose a bit the collapse. It is perfectly obvious, that the two glass paintings cannot be saved for posterity unless their all-round restoration is done within a short time. This is also urged by the fact that as far as we know, these two windows are the earliest 19th century works in the entire area of that-time Hungary.

Translated by: Judit Pokoly

Brigitta Mária Kürtösi

Invisible risks of earlier interventions. The re-restoration of Miksa Róth's mosaics on the facade of the Lutheran Church in the Fasor, Budapest

The Budapest-Fasor Lutheran church was built on plans by Samu Petz in 1905. The ornament of the portal is Miksa Róth's glass mosaic composition against a golden background. The irreversible changes noticed on the original materials of the artwork during research called for extensive and complicated restoring procedures to preserve the aesthetic appearance of the mosaic surface in its entirety. Retreatability was perhaps the most essential professional aspect in this case.

The in-depth crack caused by the movement of the building appeared on the external surface, along with major deformations, and detachings. It was urgent to fix the surface to prevent further decay, but the facing layers did not hold because the whole surface of the mosaic was treated with a probably hydrophobic agent, which was 'oily' to the touch and impossible to remove.

Scientific examinations revealed that the earlier coat of poly(organosiloxane) compounds applied with the intention to repel water were present not only on the surface but on each side of the tesserae and in the mortar filling the joints. The materials used during the intervention in 2006 were not compatible with the original materials, while leakage and the crystallized water-soluble salts continued to cause damage.

It was justified to separate the mosaic work from the supporting wall. Its removal and re-installation on a new support and the need to present it in its original place urged for the elaboration of a technological protocol adjusted to the given state of repair.

The silicon compounds got chemically and irreversibly bound to the surface of the glass mosaics and they were practically impossible to be removed. Not only keeping the mosaic in its original place but also the possibility of detaching it became questionable.

In every case, it is very useful, even indispensable to copy the entire composition tessera by tessera. A 1:1 scale drawing is not only a graphic documentation of the mode of inserting the pieces, the size and position of each tessera, but it is indispensable for further restoration work as well.

After the assessment, we decided to apply a two-component silicone paste adjusted to the presence of siloxanes and a layer of cotton gauze to the entire surface. Finally, it showed adequately strong adherence and at the same time good flexibility for the process of the mechanical detachment.

The detachment took place by strappo method in 21 portions. The size and shape of the units were determined by the extent of attachment to the mortar, and we also took care not to cut through faces or hands of the figures.

The damage caused by the structural crack mostly affected a little girl's figure reconstructed during earlier interventions. The reconstruction did not fit its environment either in materials or in aesthetic quality, and original neighbouring sections were deteriorating too. It was necessary to reconstruct this detail by indirect technique on the basis of an archive photo and the 1:1 scale graphical documentation.

A thin but strong and flexible layer of fiberglass net cut to form and embedded in MS polymer (modified silane polymer) proved most suitable for mounting the mosaic to the new support, because it had to be compatible with the polysiloxanes now taken for granted. The use of traditional matrices had to be discarded. The choice of the light-structure support was influenced by the expectation of firmness of hold and an adequate thickness not exceeding that of the original order of layers, so that the original surface of the mosaic would come to its original level. The supporting panel is a 1.6 cm thick lightweight polycarbonate panel. A separating layer was inserted between the panel and the mosaic, which will make it possible and easier to safely detach the mosaic from the supporting panel if necessary during future interventions. The detached mosaic was fixed to the brick wall with screws, leaving a narrow ventilation gap.

Translated by: Judit Pokoly

Petronella Kovács – Mária Fodor

Restoration of nativity puppet theatres from around Lake Balaton

It is a peculiarity of the nativity plays around Lake Balaton, similarly to the Upper Tisza region and the Danube bend, and sporadically elsewhere in historical Hungary – Transcarpathia and the Székely country – that the nativity play performers who go from door to door to perform also take a small theatre with them and complement their performance with scenes in which the puppets move about and dance.

A nativity often shaped like a church is usually a very simple structure. Regional differences include a framework of laths covered with paper, of cardboard elements, of planks, painted or decorated with paper. They are usually in very bad condition when they get into a museum, for they are used for decades – true, only at Christmastide – but during the year they are stored under unfavourable circumstances. Getting them out before the feast, the theatre sets are spruced up meaning repairs, complements, repainting or new ornaments, which is why their restoration poses several ethical questions.

For three of the four nativity puppet theatres from around the Balaton now kept in the Museum of Marcali – one from Kéthely (made in 1905), one from Balatonberény (1959) and one from Mesztegnyő (late 19th c.) – the usual conserving/restoring procedures of painted wooden objects could be applied: examination of the wood and paint layers, dry cleaning and cleaning with some solution, complementing and retouching. The arising ethical questions mainly concerned the extent of complementation and the retention or removal of certain paint layers. In all three cases the solubility parameters of the paint layers, the identity of the bonding agents and the temporal proximity of the layers called for the retention of the uppermost layer, while the examination of the microscopic cross-sections of the samples taken from the paint layers revealed the structure of the layers. This, in turn, allowed us to reconstruct digitally the previous colouring of the objects and to make replicas accordingly.

The fourth artefact (dated around 1880), which got into the museum from Vörs, was also made of boards but covered with paper inside and outside. Owing to the great extent of insect infestation, the treatment of the weakened wood was not possible without endangering the rest of the components. It was therefore necessary to remove the paper coverings and decorations and the devotional images from inside, which could only be restored after removal. When the wooden structure and the covering papers, sacred images, ornaments had been restored, it had to be decided what to keep of the external and internal, wholly or partly overlapping decorative and repair paper covers and other decorations. Due to the annual mending-embellishing efforts – particularly in the interior – the accurate chronology and connections of the constituents could not be determined, despite the mapping and numbering during dismantling. Replacing them into their special positions with some glue or other fixing agent would have jeopardized their physical condition. After consultations with ethnographer museologists, it has been concluded that a blue marbled paper reconstructed from the remains found on the boards as the bottom layer and copies of the devotional pictures and prints were put back in place according to the map drawn up during removal. The tympanum and the two interior sidewalls of the stable received red paper cover as the found remains indicated. The towers were not covered, the secondary wooden crosses were replaced by new ones. The over 130 restored devotional pictures are preserved in the museum as a separate unit for research.

The so-far unknown inscriptions, newspaper-adverts, picture postcards with postmarks found during the work on the four nativity puppet theatres as well as investigations required by the restoration confirmed the presumed dates of creation and the quondam users' information, and also provided new information on the history of the objects.

The study wishes to direct attention to the material relics of a traditional custom specimens of which already found their way into museum collections in the late 19th–early 20th century. Probably further specimens can still be found in rural communities and, as the Museum of Marcali exemplifies, they can be collected. One way of acquisitioning is to give replicas or new nativities in return, so that the tradition could be continued.

Translated by: Judit Pokoly

Katalin Orosz – Zsuzsanna Várhegyi

Biocodicology
Methods of examining the materials of parchment documents and the information they provide

In recent decades an ever greater stress has been laid on the principle of minimal intervention in conservation-restoration as well, and great progress has been made in using methods of non- or micro-destructive material testing. They provide more and more information about the materials, condition and history of our works of art, including traces of earlier users and the effects of repairs, restorers' interventions.

Under the aegis of the 'Beasts to Craft' project led by Dr Matthew Collins and financed by the European Union, scientists, humanities scholars and conservators have jointly worked out a protocol of material examination for parchment manuscripts. This complex procedure is biocodicology, which focuses on the examination of the materials of parchment documents, the characters of their making technique and the microbiome on their surface – the gene stock of microorganisms on the objects. In the course of research, information is gained about the production; history, owners, and users of a heritage object with the help of instrumental analysis and via the observation of the object illuminated by incident and transmitted light

The most significant stride forward has been a new triboelectric sampling method elaborated within the project. It needs a PVC rubber. The tiny sample thus acquired is sufficient to be subjected to peptide mass fingerprinting (eZooMS), and all the proteins acquired from the surface of the parchment can be identified. Part of the examination is the MALDI TOF procedure which is a fast and cheap method to identify the animal species and to inform researchers of the quality of the parchment via the determination of the so-called glutamine index. Proteomics has advantage over genomics, for it does not only identify the animal species and the relationship of two individuals, but it is organ-specific on which the identification of binder and glue materials depend. Thanks to the fast and cheap procedure, several thousand – so-far unstudied – parchment documents have been analysed. The findings have clearly revealed that at the time of making the manuscripts the raw materials were the skin of sheep, goat and calf, while other animal skin, e.g. of deer, was rarely used, and foetus, dog or squirrel skin was never prepared.

Defining the state of a heritage object is important for conservation, restoration and exhibition alike. A method to assess the condition of a parchment document has been measuring the shrinkage temperature, but it raises several problems. The researchers participating in the project have proposed an instrumental examination called DSC (Differential Scanning Calorimetry) to test the thermal stability of the collagen fibres. They have also pointed out that the thermal stability of parchment is also influenced by the circumstances (e.g. the season) of its preparation, the extent of liming, while the species of the animal is not an influential factor. The diverse instrumental tests can provide lots of useful information, but experienced restorers with adequate knowledge of the technique of making parchment can document the signs of the making technique, the anatomical features of the animal, its illnesses as well as stains from use, together with the mode of creating the manuscript or document and its materials, when they illuminate and transilluminate the parchment with light of different wave lengths. For instance, it can be ascertained about the marks of stitches whether they indicate small cuts made for skinning and sewn up before stretching, or some later tear of the dry skin was mended. Certain features also inform a well-trained and skilled conservator to differentiate the flesh and hair sides of the parchment despite the smooth finish. The size, thickness and anatomical characteristics reveal the species of the animal, the signs of damage allude to the quality of finishing process.

In sum, it can be concluded that manuscripts on parchment are a kind of time capsules in which the text is only part of the information. We hope that if we can preserve the signals carried by the surface microbiome in the course of storing, researching and conserving the art objects, we may enlarge our knowledge with a lot of interesting data in the near future.

Translated by: Judit Pkoly