Abstracts

Eszter Tóth – Bence Soós – Emőke Baranyai – Annamária Fazekas – Rebeka Kovács – Julianna Máté
The conservation of bronze wheels of a cauldron-wagon from the Iron Age in the Applied Arts Object Conservation Program at the Hungarian University of Fine Arts

The paper is presenting the restoration of four wheels of a cauldron-wagon dated to the Iron Age (8-7th centuries BC) from the collection of the Hungarian National Museum (HNM). The work was carried out in the 2018-19 school year with students in their second year in the Applied Arts Object Conservation Program organized jointly by the Hungarian National Museum and the Hungarian University of Fine Arts (HUFA). The course was held by Eszter Tóth and Melinda Nagy, metal-goldsmith conservators of the Hungarian National Museum, the conservation tasks were achieved by Emőke Baranyai, Annamária Fazekas, Rebeka Kovács and Julianna Máté. From an archaeological point of view Gábor János Tarbay (archaeologist, HNM) helped the students' work, the historical background in this paper was written by Bence Soós (archaeologist, HNM).

The wheels were got into the HNM in 1901 as a bequest of the painter, István Delhaes. During the 13-12th centuries BC the first cauldron-wagons of the early Iron Age had turned out in North and Middle Europe, but from the 8th century they concentrated in the Southern Alps and Italy. Taking into account the number of spokes, the width of the tyre and the shape of the hub the formation of the wheels shows strong similarity to the wheels of the cult/cauldron-wagon of Strettweg, a most emblematic piece from the late Iron Age. Their function may be closely related to the sacred and libation ceremonies connected with the aristocracy.

The upper part of the cauldron-wagon from the collection of Delhaes was lost, only the four casted wheels (ø: 14 cm) with 8-8 spokes were remained. Two of them were complete; the other two were in pieces with more or less defaults. The identity of the shapes considering the position of the spokes, the distance between them, and the hole through the hub refers to the same mold. The identification of the materials of each wheel was carried out with a portable X-ray fluorescence spectrometer (p-XRF). The analysis showed a clear difference in the elemental composition of the first and the second two wheels all made by tin-copper alloy.

The thick waxy coatings on the objects had indicated a former conservation treatment. The third and the fourth pieces had broken and incomplete, the fragments had been fixed by adhesive, solder, and brass rings around the joinings. About two-thirds of the fourth wheels had been refilled by casted brass elements and a huge amount of soft solder. After cleaning the surfaces with white spirit, the two wheels were disassembled; the rest of the adhesive and solder were removed mechanically with scalpel from both the original parts and brass refills. Even though the brass elements were not fit exactly to the appropriate diameter, they were reused for assembling. Compared with the complete ones the right layout was designed, the wheel was temporary compiled by using hot glue and wires. The elements were joined with coloured Duracrol, a methacrylate dental resin, this material was also applied as infills for the third and the fourth wheels. The brass parts were patinated before given protective coating made with a 5% solution of Paraloid B72. For retouching pigments fixed with a thin solution of Paraloid were used.

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Erika Tímea Nemes
The painting technique of murals of the Unitarian church in Chilieni (Sepsikilyén, Kilön)

The murals of the church had been discovered in 1882 and were explored and copied by József Huszka in 1885. Over the years major or minor repair works had been carried

out in the church, but the systematic and detailed exploration of the murals had never been conducted until 2004.

Fresco technique was used for the outer and inner paintings of the church, together with secco bonding in some places.

Inside the church, murals are located in three registers under each other: The Last Judgement on the southern wall, the first scene of the Passion beneath it, as well as the supposed imagery of Mary with Child. All of them were painted at the same time and in the same workshop just like the Legend of St. Ladislaus king of Hungary, which begins on the upper register of the western side and continues through the northern wall, and the scenes of Passion underneath.

The painting process of these murals were the following: after applying the plaster, the surface was smoothened with a palette knife in a horizontal and slightly curved line as the movement of the arm allowed it. The string with which the painting grid was marked, was probably not impregnated with paint, as no traces of paint are visible. Since the puncture point could be found in case of each nimbus, most likely a drawing compass was used for scratching the contours of the nimbuses. The Last Judgment scene in the middle of the mandorla contains the enthroned figure of Christ; the cross was probably drawn with a ruler. According to the orientation of the tracks, it was engraved from the top to the bottom and from left to right. The double contour of the mandorla and the semi-arches in the area of Jesus's abdomen and below his feet were also engraved into the wet plaster.

First, each composition was sketched with a brush and ochre colour, then colouring on the background the grey sky and the ochre ground, and finally the architectural elements and the decorative frame followed. The third step was painting the figures; the order began with the nimbus and face, and then the head and limbs were painted. Ultimately, the clothing and the smaller decorative details were prepared.

The main characteristics of the faces are the light base with shadows and circular facial flushing. Instead of highlights, the light-hued primary colour of the face was let to prevail. The lines of the mouth, eyes and face are marked with assertive dark contours. There are no signs for various painters; the majority of the figures are similar, painted without any personal characteristics and with the same painting technique. One small difference might be the flushing of the faces, which is at times circular, at others follows the lines of the cheekbones.

A few rudimentary attempts can be observed to create the sense of space, but one cannot speak about perspective representation, most of the scenes have a simple plain background. The architectural elements are mostly flat and decorative, only a slight attempt is discernible at the representation of Kingdom of Heaven.

The microscopic examinations reveal the colouring of each figural representation were depicted at the same time on the southern, western and northern walls, as well as the lambrequin below them.

There are scenes both on the southern and northern wall with questionable origins. On the southern wall between the starting scene of the Passion and the Last Supper, there is a representation of Mary with Child. From a stylistic point of view, this mural is incomparable with the others due to the heavily worn paint. It is problematic to determine the date of implementing; data and descriptions found in the literature attribute it to a later period, and therefore probably destroyed the earlier scene of the Triumphal Entry. Photographs taken in grazing light refuted this assertion. The plaster boundaries of the Passion cycle overlap the painted surfaces of the Mary representation indicating that it was created earlier than the murals on its sides. According to the microscopic investigation, the plasters of both scenes contain volcanic sand, the samples' cross-sections show strong similarity, and therefore their close correlation could be assumed.

One of the most important characteristics of the wall paintings is the technique how the plaster had been smoothened. There are no visible peculiar traces referring to a smoothing tool on the scene of Mary and Child. Since the plaster of the scenes of the Passion is much more grooved by a palette knife, the same date for preparing the two murals seems improbable. On the southern wall, the lack of murals with heavily worn paint, also exclude simultaneity.

Based on the painting style the figures of the two healing saints on the northern side, and the standing saint with nimbus under the Kingdom of Heaven scene on the southern wall could be separable from the other figures on the inner walls of the church. Since their plasters are not grooved by smoothing tools and ended under the plasters of the upper registers, they might had been made earlier than those.

For the three saints the double contour of the nimbuses were created into the wet plaster by using a drawing compass. The contours of the heads and the edges of the nimbuses were engraved later. The composition and monochrome colouration link them to the other murals of the interior, but their painting technique differs. The dark shadows applied in a broom-like manner on the light pink surface of the faces vary from the other figures. The highlights had been painted in the same linear manner.

Due to the worn and fragmented paint it, is hard to compare the murals on the outer surface of the southern wall with the inner ones. The compounds of the outer plaster correspond with the plasters of the inner murals. The monochrome colour could also be noticeable here; the commonly used colours are ochre, red, white and their mixtures. The style of the grooved nimbus covered by the tower is similar to that of the two healing saints and the saint with basket facing them.

The results of the survey confirm the hypothesis written in literature, i.e. the murals show the characteristics of

the last decades of the 14th century, both regarding style and painting technique.

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István Bóna
What will happen after the detachment of murals?

Removing of murals from the wall is probably the most controversial intervention of conservation. The taking artefacts off the place where they were created deteriorates the monuments and the murals as well. The most responsible consideration and preparation is needed when removing a wall painting, while its future should be assured as well before detachment.

The reality is that detachment is often asked for from conservators because the work of art is no longer desired (for some reason). The client does not even have in mind to care about the removed wall painting and in absolutely no case wants to spend funds on it later. Many of the detached murals do not reach the standard that a museum requires to be on display or it is not suitable for decorating any public institution. After being taken off the wall these works of art are abandoned during the intervention, they lie in the depths of warehouses, and finally they fade into obscurity. Likewise, it happens that the mural has to be detached because it hinders some other works on the monument. In such cases, it is common demand for the painting to return to its original location after the procedure. There are times when the wall painting is honestly intended to be preserved by detaching it and transferring it to some new medium. The murals are removed from the wall where severe damaging processes take place, trusting that these processes will be decelerated (or even halted). It is believed that on a reliable medium the painting can endure a prolonged time in a museum without damages, however in most cases the detached murals need conservation and are often complicated to treat.

The current literature does not consider the interaction of the new medium and the murals on them to be a considerable problem. According to the literature, unvarying, manageable and preferably not too expensive solutions are supposedly appropriate. This paper not only attempts to inform that media can be sources of further damage, but at the same time some solutions are suggested that, according to our knowledge, are the least perilous. The use of water-based fixatives and adhesives, as well as materials with good thermal conductivity such as metals, are recommended to avoid. Some specific solutions are presented in the study; as substrates: plastic and glass foams, polycarbonate and epoxy-glass-based composite sheets, although there are other good solutions that are omitted due to extent reasons. Among the adhesives, the one-component neutral silicone rubber and various polyurethane products have already proven satisfactory in practice.

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Non-destructive investigation of pigments of 17-19th century painted furniture from the region of Segesvár (Sighişoara) and Kőhalom (Rupea), Transylvania with a portable X-ray fluorescence spectrometer. Contribution to orpiment-indigo green and its components

From the middle of the 17th century, the Transylvanian painter-carpenters not only constructed furniture fulfilling church orders, but the wealthy urban and rural population were among their customers. Perhaps the most beautiful and elaborate pieces of Transylvanian painted carpentry-furniture made for secular purposes that have survived in this region were created in the cities and vicinity of Segesvár (Sighişoara) and Kőhalom (Rupea).

Pigments of five painted carpentry objects from the mentioned area were examined using a portable X-ray fluorescent (pXRF) elemental analyzer. Four of the five objects have a special motif of a castle/church typical for this area. One of the examined furniture, a front part of a chest is decorated with large flowers (ca. 1680-1720), while all the others were painted with castle /church motif: a small wall cabinet (1769), a large wall cabinet (180(3?)), a wall hanger for decorative jugs and plates (1820s) and a bench-chest (1836). The time-span of the production dates of these furniture covers approximately 150 years between ca. 1680 and 1836.

The paper discusses the basics, advantages, disadvantages, limitations, problems and pitfalls in the evaluation of measured data of non-destructive pXRF elemental analysis summarized for conservators, and the results were interpreted in comparison with the stratigraphic structure of the painting at the location of measurement.

Large amounts of calcium has been found at each measurement point, therefore the different colours and pigments were not used pure, but always mixed with white pigments such as gypsum or chalk/lime. In most cases, these white pigments cannot be distinguished from each other by pXRF because the detection of sulfur is generally unreliable.

The pigments identified in the different colours were as follows:

Red colour of the chest is proved to be a mixture slightly different from the others. The red pigment mixture used on the front panel of the chest: red lead, orpiment, red ochre (iron oxide red) and probably gypsum (based on gypsum detected in the white paint of the same object).

The other furniture showed bright red paints that were different in colour-tone and composition from the previous one. The bright reds contained cinnabar, red lead and gypsum or chalk/lime. The brightness is probably due to the pigment cinnabar. The wall hanger for jugs and plates also contained some red ochre in the mixture.

Flesh colour on the large wall cabinet: cinnabar, red lead and large amounts of gypsum or chalk/lime.

Dark reddish-brown colour was determined to be dark red ochre (iron oxide red) mixed with gypsum or chalk/lime. This colour was found only on the chest's front, on the large wall cabinet and on the bench-chest.

Yellow colour of the large wall cabinet and hanger proved to be orpiment and gypsum or chalk/lime; on the bench-chest: orpiment, gypsum or chalk/lime and little red ochre.

Yellowish brown colour on the chest's front: orpiment, yellow or red ochre and gypsum or chalk/lime.

White colour is usually gypsum or chalk/lime. On the earliest dated furniture, the white pigment mixture was gypsum and quartz (sand, diatomaceous earth). The same result was concluded after examining the small wall cabinet, but additionally, lead white was also included in the mixture. The large wall cabinet had gypsum or chalk/lime and titanium white (probably natural).

Greenish-blue or blue-greenish colour is a mixture of yellow and blue pigments. The analysis confirmed the presence of a mixture colour, the so-called orpiment-indigo green, which consists orpiment, organic blue (indigo?) and white pigment as fixative/filler for indigo, probably gypsum or chalk/lime and lead white, a traditional white pigment as an excellent opacity-increaser.

Blue (pure) colour was only present on the hanger for jugs and plates in a form of indigo blue. The organic blue (indigo) is fixed on white pigment(s) such as gypsum or chalk/lime as fixative/filler and opacity-increaser.

Brown colour was measured on the small wall cabinet and proved to be burnt umber, and on the large wall cabinet brown is probably organic.

Black colour: carbon black was found on the chest's front, on the large wall cabinet and on the hanger. Magnetite black was applied on the hanger for the stalks of flowers and leaves.

Each of the investigated furniture was painted with an amazing and rare blend colour, indigo green, which is little known and less used today. This colour was often applied as background colour of painted furniture from the 17-18th century in Transylvania in different shades and tones ranging from green to blue. We have previously dealt with indigo green paints, which are mixtures, prepared of orpiment and indigo fixed on white pigments. The study presents a brief summary with references on orpiment-indigo green and its components, including historical use in medieval and modern painting technical sources and in documents related to the techniques and recipes (written by Cennini (1390), found in the Bologna Manuscript (mid-15th century), in manuscripts from Csíkszenttamás (Tomeşti), Transylvania by Antal Ferentz (1828), etc. Properties, preparation of the colour, aging, fading of orpiment-indigo green and its components have been established, and as well as it's early use (8th-14th century) in codex paintings, which was investigated and evidenced by combined (pXRF and Raman) analysis of indigo green and indigo blue paints.

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Conservation of a wall cabinet from the 18th century

The baroque wall cabinet was discovered in a house in Kisapold (Apoldu de Jos, Sibiu County, Romania) purchased by an antiquities collector. The object, originally used to store certain food as well as personal items, was inserted into the wall of the house. The painted front panel decorated with curved appliqué elements and turned half-columns was visible, but the back box structure was hidden. The monochrome layer of paint seemed to be overpainting because there were evidences of an earlier floral-themed painting revealed in raking light. This was confirmed by X-ray examinations and by microscopic cross-section results.

There were no observable traces of infection caused by insects or fungus on the wood of the wall cabinet, but it had damages caused by shrinkage of the wood and usage. Cracks appeared in the planks and some elements moved apart from each other, the pedestal of one of the half-columns was incomplete, the inner parts and the shelves were covered by greasy impurities. Both the original paint layer and the overpainting cracked in the same direction as the wood grain.

According to solving tests, the overpainting was removed using a mixture of dimethylformamide (DMF) and nitro thinner poultices. After cleaning, the original decoration was revealed: on the door a heart-shaped flower in a vase, blue, red and yellow tulips and on the columns colourful marbling. As an unexpected result of the intervention, the year – 1782 – and the name of the former owner, Christian Strum emerged, painted on the upper board of the facade.

The original paint layer was in relatively good condition, only partial detachment was observable. The flaking paint layer was adhered using a 5% fish glue solution

and Japanese paper, ironed by a heated spatula through Melinex foil as an intermediate sheet. The supplements of the wooden defects were created from the identical wood as the material of the object, taking into account the direction of the wood grain. Replacements for the missing wooden parts as well as the loosened elements were fixed with a 20% fish glue solution. A mixture of fish glue and chalk was used to fill the gaps on the painted surface. The aesthetic retouching was performed with aquarelle, and next the wall cabinet was given a coating of 10% dammar resin.

It was discovered with the help of the local Saxon community that the Sturm family was a wealthy, respected family. Christian Sturm married in 1781, and the following year he ordered this piece of furniture from a carpentry workshop. Considering the shape and painting of the object, which probably has German influence, it is asserted that the cabinet is an unusual piece, differs from other painted wall cabinets made in Transylvania during this period. The object has not been removed from the wall since 1782; it was in its original place for nearly two hundred and forty years until 2019 when it was restored. The privately owned object will return to its original location after the house has been restored.

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Materials used for elephant tusk infills

The word ivory is commonly used for elephant tusk; the term often appears falsely in literature as well. On one hand ivory is not the bone, but the tusk of the elephant, and on the other this phrase is usually used for determine animal or plant materials similar in appearance, therefore 'ivory' can be deceptive.

The tusk of an elephant is a modified canine eye-tooth. Examining its cross-section reveals the growth rings and crossing lines. The white and solid parts alternate with the darker and softer ones resulting in its characteristic pattern.

The ethical rules for infill carvings made of elephant tusk correspond to the rules used for artefacts made of other materials. The elephant is a protected animal (Washington Convention CITES), therefore for completion of artefacts, only elephant tusk certified to date before 1975 is allowed to be used.

Natural (extracted from plants or animals) or artificial (plastics or of natural origin) materials are exclusively used to infill artefacts made of elephant tusk. Materials of natural origin can be tusks, teeth, horns, antlers and bones of other animals, or artificial materials made of the above-mentioned ones or tusk in powder form.

The tusk of the mammoth is the most suitable to substitute elephant tusk. Not only it corresponds in appearance and structure but in chemical, physical and optical properties as well and most importantly, it is legal to trade.

After the elephant, the walrus has the largest tusk of any living animal. Its two upper eyeteeth had modified into tusks, of which secondary dentine layer has a specific marbled pattern.

The hippopotamus has several teeth, which have transformed into tusks; their lower canines are particularly advanced. As the pulp cavity's cross-section has a shape of a roof, it clearly differs from the elephant tusks.

Both the upper and lower canine teeth of the warthog had developed into strongly curved tusks, of which's cross-section is angular, the concentric rings have irregular forms.

Fangs and teeth of several other animals are suitable to complement elephant tusks. Their size largely determines their application.

On the hollow beak of animals, belonging to the rhinoceros bird group a horn-like formation develops with an inner bone beam network.

Antler is a modified bone, whose exterior is compact, while the interior has a trabecular structure. Horn is peculiar for the Bovidae family; it has no branches, but can be twisted. The real horn is a solid projection developed from coalesced bristles, for example the tusk of a rhinoceros, while the hollow horn is a pod covering the fronthead.

Bone is a passive part of the musculoskeletal (locomotive) system of vertebrates. By form and structure it is possible to differentiate them to tubular, flat, hollow (pneumatic), sesamoid and irregular bones. The so-called feeding holes appear dark after working with it, and thus bones can be easily differentiated from tusks.

One organic replacement is the nut of ivory (tagua) palms. The term ivory nut refers to the very hard white endosperm of its seeds, which resembles elephant ivory.

The artificial materials that can be used to infill 'ivory' carvings range from natural to synthetic. The natural group can be divided into two subgroups: compounds extracted from plants or from animals.

Powdered bone mixed with casein forms a bone-like substance such as Galalith, a semi-synthetic plastic material manufactured by the interaction of casein and formaldehyde.

Putty prepared from natural resins and caoutchouc are organic materials of vegetable origin.

Around 1846 Christian Friedrich Schönbein, a German-Swiss chemist, discovered the cellulose nitrate when he spilled a mixture of nitric acid (HNO_3) and sulphuric acid (H_2SO_4) into a cotton apron. Nitrocellulose was the starting-point for the semi-synthetic substances produced in the second half of the 19th century with varied components and using different production methods. In 1862, Alexander Parkes produced Parkesin (created from nitrocellulose and camphor, with added dyes and other agents), generally considered as 'synthetic ivory'. In 1870, an American, John Wesley Hyatt patented a semi-synthetic material called Celluloid manufactured with the inclusion of cellulose nitrate and camphor using high temperature under pressure. Celluloid is also suitable to imitate ivory, marble, mother-of-pearl and tortoise shell. Ivoride, another celluloid compound is also used as a substitute for ivory.

Today, there are endless lines of artificially produced fully synthetic materials. One of the earliest is the fully synthetic caoutchouc. The white version of Bakelite produced between 1920 and 1930 was a popular replacement for ivory-like materials. For the same purpose a German product, Kallopast (a mixture of methacrylate bead polymer and monomer methacrylate containing a catalyst) was applied in Hungary in the 1970's. The texture of substitutes listed above is optically different from that of ivory objects.

Nowadays manufacturers are consciously intending to create materials deceptively similar to ivory in terms of both machinability, colour and texture, to protect wildlife. Elforyn as such is a mixture of minerals and resins containing UV dyestuff for distinction. There are ongoing experiments with bio-inspired synthetic materials consisting of hydroxyapatite powder ($Ca_5(PO_4)_3OH$) and gelatine to supplement piano keys.

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The use of gels in paper and leather conservation

Cleaning with solvents, removing contamination, adhesives or coatings by aqueous or organic solvents are hazardous, but often used treatments by conservators. In recent decades, considering the guidelines of the so-called 'green chemistry', it has become increasingly desirable to use environmentally and health-wise less hazardous solvents, and to reduce the amount of chemicals. This has diverted attention to the use of gels in the restoration process.

The study presents the written sources, the author's experience using agar, and gellan rigid hydrogels, which is commercially available and can be prepared easily. The paper describes their structure, operating mechanism, method of production and possibilities of their application in paper and leather conservation. The properties of degraded paper and leather effected by moisture and the dangers of wet treatments are rewied. Some of the model experiments conducted by the authors are presented and the results are shared. A 4-5% w/v solution of gellan and agar gels placed in a microwave or on a hot plate can be prepared for use by heating it to approx. 90 °C and pouring it into a flat glass bowl. The 3-5 mm thick gel sheet can be used on a flat surface to dissolve contamination or to introduce treatment agents (e.g. complexing agents, enzymes) into the material of the artefact.

Hydrogels with a concentration of 2% w/v are suitable for enzymatic treatment. During any such treatment, it is advisable to cover the gel with a Plexiglas or glass cloche to prevent the solvent from evaporating. Because paper and leather are porous materials, they are able to bind a lot of moisture, therefore their wet treatment carries more risk. The use of hydrogels on paper is determined by the absorbency and water sensitivity of the paper. A paper object may be sensitive to moisture due to the writing materials on it (water-soluble inks; swellable, soluble binders of paints; loosely bound pigments such as pastel, charcoal, graphite) or the weakened condition of the substrate (acidic, moldy, ink-corroded paper). Although gels are often recommended in the literature for the treatment of water-sensitive papers, this is often too risky for the above-mentioned cases. The gel does not seem to be suitable for treating paper containing water-soluble inks or paints. It can also be risky during local treatment because it is difficult to prevent lateral water transport and thus the formation of another water stain, especially in poorly sized papers with good absorbency. For pastel, charcoal, and graphite drawings, it can only be applied from the back (verso) by placing the graphics on the gel sheet. It is then advisable to pre-humidify the paper to stretch it so that it is in even contact with the gel. In this case the artefact lays on the gel sheet, therefore it can be damaged when removed, if the wet strength of the paper is not high enough (e.g., acidic, moldy sheets). In such cases, we can use Japanese paper for the handling, which is located between the graphics and the gel during the whole cleaning process, but a longer treatment time must be expected.

For leather, the use of hydrogels poses several risks and is not recommended for use on alum tawed, untanned, red rotted, loose, damaged, cracked, and gilded, painted leather. For the treatment of a well-preserved tanned leather with closed grain surface or parchment bookbindings a 4-5% w/v solution of gellan gel may be suitable for a few minute-long treatment, however, due to its strong wetting ability, even then, the agar gel is not recommended. On metal-combined leather artefacts, the thermoreversible agar gel mixed with a complexing agent is suitable for removing corrosion products from copper parts. In this case, the material can still be applied to the metal in a lukewarm, densely fluid state (before gelation), where it solidifies quickly and can then be easily removed after treatment.

Hydrogels remove diffusion and degradation products from porous materials by diffusion and osmosis. These are very slow processes, so effective treatment can often take hours or even a day. The process can be speeded up a bit by changing the gel from time to time, but we have to reckon with the fact that the artefact is in an aqueous environment for a long time.

Chemical gels with a similar mechanism of action may be more suitable for treating moisture-sensitive papers and leather because they transfer less moisture, but these are not possible to produce in conservation labs.

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Judit Varga
Conservation of a globe table made by a bookbinder

In the early 19th century, economic changes had an impact on housing culture and consequently on furniture design, which caused the appearance of more and more types of furniture in home interiors. The specific shaped furniture of the Biedermeier style, the globe tables which were primarily used for storage embroidery tools of ladies have emerged in this era. Barely a few globe tables were made in Europe, their production required expertise and precision at a very high level. The few preserved pieces are from Vienna, England, and only three globe tables are known in Hungarian collections. One of them belongs to the Museum of Applied Arts in Budapest, the second is owned by the Blaskovich Museum in Tápiószele and the third one – presented in this article – is in the Janus Pannonius Museum in Pécs.

The table has a unique and particular globe made from paper, not from the commonly used wood. Based on a paper tag in it, it was made by a bookbinder in Arad. Bookbindig techniques were applied for the manufacturing of the storage drawers hiden on different levels. The storage units were covered with velvet and different decor papers and lined with silk. During the process of conservation and material analyses, it turned out that there is a marble painted layer under the hand-painted map of the globe.

The goal of the conservation treatment was the physical strengthening of the artifact. An important aspect of the conservation was to preserve the earlier interventions, except in cases where they no longer performed their tasks and even carried the risk of damage. The work process was simplified by taking apart the leg from the globe, as this provided better acces to the elements, making the handling processes more secure.

Removing the surface contaminants from the elements was carried out by using vacuum cleaner, Wishab-, latex sponge and rubber. The lacquered map on the upper hemisphere was cleaned with distilled water.

The secondary repairs of the damaged lower torn hemisphere were removable by wetting it with water. Its shell-like structure was locally humidified with Sympatex membrane to cease the deformation. The softened parts were fixed to the appropriate form with the help of an inner core made of polystyrene. The shell-like structure was strengthened and completed with Japanese paper, cellulose pulp, and chalk grounding mixed with Ethulose (ethyl-hydroxyethyl-cellulose). During model experimentations it turned out, that animal glue as adhesive gives too much moisture to the paper layers, which softens and deforms them. Therefore, instead of animal glue, Ethulose was used. Repairs including the missing blondel decoration were made using original techniques and materials. Retouching was done using aquarelle paints.

The acidic degradation products of the damaged paper tag indicating the information of the bookbinder was cleaned by washing it with water and alkaline water. It was repaired with the technique of leaf casting on a suction table. The torn textile elements were strengthened with fabrics of the same coloration. Solophenyl direct dye was used for the dyeing of velveteen and Lanaset acidic dye for the silk. The wooden legs were cleaned with an emulsion containing white spirit. Peeling layers on the legs were affixed with isinglass. Aesthetic reintegration was performed by underpainting of shellac mixed with dyes of different colours, than with aquarelle. Retouching of the metal like surfaces was done with aquarelle mixed with metal powder.

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Fruzsina Rauca-Bencze
Paintings of Vincenc Melka
in the heritage of the Art Museum of Cluj-Napoca.
Case study: The conservation of a large oil painting on canvas

In December 2019 a temporary exhibition about the Czech painter, Vincenc Melka's works was opened in the Art Museum of Cluj-Napoca, where a notable part of Melka's oeuvre has been stored: nine oil paintings, three sketchbooks and an aquarelle. The display provided a chance to present these works together for the first time ever, since some of them have never left the museum's warehouse due to their damages, some of them caused by improper storage. On the occasion of the exhibition five portraits and a hunting scene were conserved in the conservation workshop of the museum founded in 2017.

Vincenc Melka (1834-1911) began his art studies at the Academy of Fine Arts in Prague and continued his education in Vienna and Dresden. He moved to Cluj-Napoca after 1870, where he lived and worked until his death in 1911. The contrasting change of his painting style is connected to the settling in Transylvania, when he switched from early historical compositions to themes depicting nature, with an emphasis on ethnographic and hunting scenes. Due to his outstanding drawing skills the University of Cluj-Napoca from 1879 to 1910 employed him as an art teacher. Melka took part on painting trips, participated in aristocratic hunts in the Retezat and Gurghiu Mountains in the company of Rudolf, Crown Prince of Austria, depicting the Crown Prince, hunting scenes and the beautiful landscapes of Transylvania. He often received orders from members of the Transylvanian nobility and various public institutions.

The large oil painting on canvas presents a full-length portrait about a young man dressed in uniform in an interior that opens onto a balcony in the background. The large-scale painting (208x114 cm) was stored in the museum for decades in an intentioned state without a stretching frame. The painting was subjected to continuous moving, the canvas became very sensitive and over the years the adhesion of the ground and paint layers to the support have reduced, which led to peeling and gaps on the entire painted surface. In the past the canvas had been resized three times, it had been rolled up several times, which led to the weakening and fragmentation of the stretching sides and the edges of the painting, and as a result, numerous gaps and twenty-seven horizontal tears appeared in the canvas. The painted surface was coated with a heavily yellowed, uneven layer of varnish covered with a thick layer of dirt, sticky stains and insect contamination.

The dust was removed from the surfaces, then the cleaning was followed by forming a temporary surface protection of the paint layer using Japanese tissue paper and fish glue. The straightening of the canvas with soaked, swollen and glued tracing paper strips continued this. As a result, the canvas was straightened and tensioned evenly in all directions with equal force. The gaps in the canvas were filled in with similar fabric patches, the tears were structurally reinforced with fibers using a bridging technique. New painting edges were applied to the canvas using BEVA 371 synthetic resin. After eliminating the temporary surface protection the yellowed varnish layer was removed, the gaps were filled in. The canvas was stretched on a new frame with crossbars and wedges. Retouching was made with aquarelle underpainting and a base varnish layer on it. Aesthetic reintegration was performed by thin layers of mimetic retouching with Maimeri Restauro retouch paint, then by Talens 114 acrylic spray the painting was given a protective varnish layer.

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Szidónia Pál

Conservation of a wrought iron hanging lamp from the Baroque revival era

The wrought iron lamp made in the end of the 19th – beginning of the 20th century, became the property of the Museum of Applied Arts, Budapest after the Second World War. There are no available information about its history; the place and the date of manufacturing are unknown. In Iron and Metal Sample Sheets in 1884, a drawing of a hanging lamp designed by Albert Schikedanz is included. That lamp is similar to the piece owned by the Museum of Applied Arts, but due to the stylized depiction it cannot be said to be identical to the object is the paper about.

The large (height: 155 cm, width: 62 cm, weight: 45 kg) lamp was made by using traditional blacksmithing techniques like chasing, punching, welding, riveting, and compiled with soldering and bolting. The decoration elements are various: curls, acanthus leaves, lambrequin imitations, punched pieces, petals and laurel tendrils. The screw holes indicated missing and unknown elements. The original curved lateral glass panes of the four sides and the lighting structure was absent. The lamp had been repaired several times when in use; it had replacement glass panes fixed by glass putty. The entire surface was covered with dirt and corrosion; many decorative elements were deformed, damaged or broken.

After dismantling, all one hundred and twenty-nine pieces were cleaned using glass-bead blasting, the screws were treated with rust remover liquids. In order to preserve the lamp's historicity, deformed parts were straightened out only in cases where this was necessary for stability or warranted aesthetically. Replacements of the Withworth threaded screws were made with a computer-controlled lathe in exactly the same dimensions as the originals. A strong iron-alloy rod was put in so that the lamp could again be hung. Based on the results of artificial corrosion tests, the iron parts were individually treated with tannic acid, they were then coated with ethyl-methacrylate-based resin and microcrystalline wax. Of the fragment of the earlier replacement transparent glass panes held in place by putty, the bottom ones were adhered and relaid, while the broken side ones were removed. Lack of data on the original side panes meant that no new panes were crafted, although a one-face mould suitably curved was made.

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Conservation of a floor vase by Géza Gorka

During the 1910-20's in Hungary, factory products crafted mostly by the manufactures of Herend and Zsolnay dominated the market, and ceramic artists mostly displayed their artworks exclusively on exhibitions. After the First World War, ceramics became an essential part of home culture. At that time, Hungarian art ceramics achieved international successes, which can be mainly attributed to István Gádor, Margit Kovács and Géza Gorka.

In 1927, Géza Gorka built his own workshop in the garden of the family villa in Nógrádverőce. From 1936 on, when he left using ready-made glazes as well as cracked glazes; new techniques, special self-mixed glazes and reduced firings started to characterise his works. The style, the scenic effect and the plastic character of glazes he used became his trademarks. His artworks were included in the domestic (O. M. I. T. and the National Association of Hungarian Applied Artists) and foreign exhibitions (Monza 1930, Tokyo 1932, Österreichischer Kulturbund 1935, Geneva, Baltic States 1936, the World Exhibition in Milan (1933), Brussels (1934), Paris (1937), New York (1939). His works were awarded several times at the Milan Triennial.

Géza Gorka got acquianted to István Szabó at the Expo in 1936-37 in Cleveland (officially called the Great Lakes Exposition), an interior designer, who later came to be the owner of the vase. According to family reminiscence, the object became the property of the Szabó family in 1939.

The vase, which is an outstanding example of the pottery glazed in an individual painterly way, was created at the beginning of the artist's independent era around 1935-42. Green and teal coloured glaze formed the aquatic plant and animal life motifs appearing on the vase. Blue, turquoise, brown and white are the supplemental colors used. Due to the specific use of glaze, the surface seem slightly plastic and glaze cracks appear on the surface. Damage during the Second World War had resulted in a large gap and several major cracks in the surface. Its then owner had pieced the fragments together, but they slipped apart over time. The large gap had been repaired with gypsum, into which wires and a spacer piece of wood were placed for stiffening, which were made visible by X-rays.

The further investigations (XRF, SEM-EDX, RDX) were mainly aimed at determining the materials of the body and the glazes.

Disassembly of the vase and mechanic plaster removal were done with water-soaked poultices. Cracks were injected with Araldit 2020 epoxy adhesive; temporarily compilation of fragments was necessary for preparing and modelling the infills. Replacements for the missing sculpted surface parts were made from Acrystal-type polymerised plaster and with the help of plastilene repairs that were fashioned and silicone negatives that were taken from them.

The reconstruction of fish and plant ornaments of the incomplete parts were designed according to the photos taken of the object, and after the motifs were patterned into the plasticine supplement based on the features of the object. A negative form of this was created of silicone, so a precisely fitting addition could be applied from the inner surface along the fragments. The final sticking was performed using colourless epoxy resin (Akepox 5020).

Retouching was done with acrylic paints using airbrush and hand-painting techniques. The repairs were given a coating of matte and glossy acrylic varnish.

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