

Abstracts

Miklós Zoltán

Tradition keeping or constraint job?

The annually organised conservation conference in the Haáz Rezső Museum in Székelyudvarhely generally offers a possibility for opening exhibitions. The intention of the organisers of the conference is bifold: to help the participants in enlarging their knowledge concerning the conservation and restoration of objects of art and to give them insight into the traditional material heritage of Udvarhelyszék through these exhibitions. To underline the latter aspect, a popular scientific lecture is occasionally also given on the topic of the exhibition. An ethnographic exhibition titled “*Heritage*” made part of the professional conference in 2006. The short lecture read at the conference aimed at the presentation of the relationships experienced at the preparation of the exhibition, which provided new data that can complement the material remains.

The traditionalism that can be observed in the modern rural Székely villages rather mirrors the lack of material potentials than a life strategy consciously chosen by the inhabitants. The use of sheds with daubed walls and small-scale cultivation with draught animals is not a conscious nature-friendly lifestyle; it illustrates what the agriculture of the region affords. Handicrafts can be discussed in the same context, since the material and work demand of handicraft products is rarely recovered. The temporary exhibition shows representative handicrafts that are still actively practised in certain settlements of the region. We also involved craftspeople who have a reputation in the circle of their profession and are capable of preparing representative objects.

The craftspeople of the presented three crafts – shingle making, straw plaiting, and basket weaving – work with different raw materials, their products meet different demands and the working processes and the end products are also different, just like their clients. However, identical/similar stimulating factors can be found in the basis of practising these professions in all the three cases. A smaller or a larger productive unit – be it an individual, a family or a small enterprise – is always regulated by an efficient respond to the demands. This is the only way it can work since the products primarily serve the producer’s feeding and material well-being. The (exterior) observer living in a world of technology and modernisation generally sees a momentum of the preservation of traditions in the activity of a craftsman who makes use live workforce. It should be stressed, however, that this social layer rarely if ever acts under the aegis of traditions, they actually subordinate the professional activity to the demands of the market. The (skilful) versatility characteristic of the members of

old peasant communities and the handicrafts practised in modern rural villages have come from the constraint of exigency.

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What is X-ray diffraction good for?

The study describes the method, which is suitable for the demonstration and identification of crystalline materials, from the aspects of museologists. The diffraction of the X-ray reflected from the sample or passing through it is measured, and the crystalline components of the sample are deduced from it. The places and the intensities of the peaks in the curve of the measurements (diffractogram) individually characterize the various crystalline matters. X-ray consists of photons, which do not cause lasting deformation in most of the materials. The analysis does not alter the sample. The geometry of the sample area of modern instruments is larger – a few hundred mms –, which enables the analysis of objects of arts without taking samples. X-ray diffraction instruments are fixed, and the object to be examined must be carried into the laboratory.

The first step of a successful analysis is asking the right question. The most appropriate type of analysis can be chosen only when we know the question. X-ray diffraction gives only indirect information on the chemical composition. It is not suitable for the analysis of the organic components and the binding matters of pigments, and that of glasses and amorphous samples of glassy texture.

The quantity of the sample necessary for the analysis depends on the material type, the purpose of the analysis, etc. Generally, a few mg are sufficient, and no more than a few hundred mg are enough for even the most sophisticated analysis. The flat sample is prepared from the material to be analysed after grinding and pulverizing. A flat surface of a few square cm is the ideal size. When it is important to preserve the original condition of the sample, the analysis can be made without pulverizing. These measurements yield less information but still enough to answer a number of questions.

Here are a few examples how X-ray diffraction analysis can support conservation work and the better recognition of the material.

The chronological and spatial distribution of the use of certain pigments is generally known, thus the identification of the pigments provides objective data for dating. The priming of paintings is characteristic of the period and the painter, and the white pigment of the priming (chalk, barite, lead white, zinc white, titan white etc.) can easily be identified. The analysis of the accompanying minerals of lapis lazuli has successfully been applied for the determination of provenance. The identification of the decomposition products of the pigments on discoloured paintings can help the reconstruction of the original colours. E.g. yellow auripigment (As_2S_3) turns into colourless arsenic trioxide (As_2O_3) in effect of light. The analysis of plaster can yield important data on the materials and methods of production and help the choice of the conserving method. The crystallinity of the lime (calcite) of the plaster can tell if it came from the binding of quicklime, lime dust or marble dust. When lime is present in the form of an aragonite modification, it means that ground bivalve shells were used. Beside calcium carbonate, magnesium carbonate (magnesite) also develops from lime produced with the burning of limestone of a high Mg content. This can help the identification of the limestone quarries and calls our attention to the fact that plaster is more sensible to the deteriorating effects of acidic sulphate moisture. The distribution and the crystalline content of the gypsum content tell if it was intentionally mixed in the plaster or it developed from the lime in effect of acidic rainwater (or ground water). Killed plaster mixed into the plaster and locally bound plaster can be differentiated by crystallinity. The X-ray diffraction analysis of ceramics offers information on the raw materials, the firing temperature and technology. The crystalline components of glazes and pigments can also be identified. The analysis of metals and alloys tells about their composition and the method of their production, while that of the corrosion products reveals the causes and circumstances of corrosion and the composition of the original alloy. The analysis of gilded surfaces helps in the determination of the gilding technology. The sizes of the crystallites of gold and the distribution of their direction can be determined with diffraction analysis, and they inform about the production technology (gold foil, fire gilding, galvanization or vapour metalizing). Tin plague and deformations caused by oxidative corrosion can be differentiated on tin objects. The method can also be used for the identification of the materials of other art objects, minerals, jets and precious stones and rocks. The more exact petrologic analysis of rocks can contribute to the identification of provenances, possible mines and the drawing of possible trading routes.

The interpretation of the data is the most crucial part of the analysis. The crystalline components of the samples can be identified by comparing the data with a reference database. When the sample contains a material that cannot be found in the database, further analyses can help in the identification of the crystalline component. Special

reference measurements can be made of the characteristic material types (e.g. pigments, ceramics, etc.) to help the interpretation of the measurement data. It would be useful to make more analyses to support the conservation work. Regrettably, the majority of the results of analyses are not published in a form that can easily be reached by conservators. The publication and the systematic archiving of the existing data would be very important.

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Conservator on the façade

**Reconstruction of the façades of monuments
from a conservator's aspects**

The paper tries to determine what conservation means in the case of the reconstruction of façades. The author cites examples to illustrate that historical façades can be preserved in their original materials. He also wishes to show that reconstruction from a conservation aspect not only uncovers the real monument: it can also be economic. He adds that conservation and preservation does not always mean the exhibition of the original surfaces. The so-called sacrificed layers can be applied first of all at the conservation of façades. This means either that the oldest surface is not uncovered since the later layers protect it, or we coat the original surface with materials that can protect the original one while they themselves decay (e.g. with limy mortar, gypsum plaster or whitewashing). It is an irresponsible act to uncover the original surfaces of renaissance or gothic façades since we cannot protect them, not even with the latest technologies, against the deteriorating effects of the weather.

The author argues that façades are integrated parts of the buildings and they were not accidentally prepared in the form that we can see. The material, the colour and the facture of the coatings generally have meanings and if we change them, we change the meaning of the building as well. So the investigation and the study of the history of façades are indispensable in the case of monuments and the designs of the reconstruction must be based on their results. This must determine the methods of treatment as well: will the façade be conserved or renovated?

Several paragraphs question the actually accepted theories and interventions, first of all the use of industrial materials in the process of conservation that were developed for other purposes than conservation. These materials and procedures are appropriate in the right cases but their inappropriate application can deteriorate the monuments.

Finally, the author describes his major façade reconstructions in five chapters. He tries to give such a detailed description that the reader can get really serviceable information. He does not avoid mentioning the failures since the same mistakes can be evaded if these instances are known.

The most important statements of the study are the followings:

Traditional repair technologies, especially the application of lime, can be advised even to date since they are advantageous and economic.

Hydrophobing can cause more damage than profit if it is used without careful consideration. Nothing can justify hydrophobing in the case of a real conservation.

The application of synthetic resins either for reinforcing or as paints is nearly certainly deteriorating. They should not be used.

As far as it is possible, inorganic materials should be used in all the phases of the working process. Cement, however, should be avoided: nothing can justify its use on historic façades. The only possible exception can be when no original material has been preserved in the façade.

The demand of reversibility is even less sensible in the case of façades than in other fields of conservation. Instead, we should consider the possibility of a later conservation. This should be the main regard at the planning of the interventions.

The valuable works of art discovered during the investigation should not be uncovered. If they are already uncovered, they should be taken off or covered with a lime-and-sand mortar. We are not yet capable of preserving them.

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Identification of a Venetian painting with conservation methods

Tiziano Vecellio: Mary introduces her son to Saint Paul

A listed work of art formerly attributed to an unknown Venetian painter was sent to auction as a painting probably painted by Tiziano Vecellio. The art historian who studied the painting dated it from the beginning of the 1540's according to stylistic traits that were characteristic of Titian's middle phase. He found a reference in the chapter on Titian's biography in Ridolfi's book „Le Maraviglie dell'Arte” to a painting depicting Madonna with Saint Paul, which Ridolfi had seen in the collection of Francesco d'Este earl of Modena. The inventory taken of the collection at the beginning of the 1700's mentioned a painting from Titian: “Virgin Mary introducing her son

to Saint Paul whose right hand rests on a broadsword”, and gave the measurements. The description matches the painting preserved in Budapest, and the measurements are also identical. Beside the written sources, the investigations carried out by the conservator contributed to the verification of the identity and the authorship of Titian.

The painting was distorted by the yellowed varnish and alien repainting, which could be localised in ultraviolet and infrared photos. At the uncovering, the support could be observed in the worn areas. It was a thin-threaded canvas of identical warp and filling threads, which is mentioned in 16th century sources as *renza*. Titian used canvas of thin threads especially for the smaller paintings. The very thin gesso priming, which contained a lot of glue, barely covered the threads of the canvas. A richly segmented architecture characteristic of Titian appeared under the brown background in the infrared photos. The master did not make sketches for the complete composition although he marked the outlines of certain coloured areas, which he later changed a few times during painting. It could be observed in the X-ray shots that the dresses of the figures were significantly changed. Titian painted this composition in several versions at different times, one of which is preserved in the Hermitage. The postures of Madonna and the child are nearly identical in the two paintings, however, the painting technique of the painting in Saint Petersburg is more mature and it is dated from the 1560's. The painting in Budapest is regarded to be earlier. In the Budapest painting, Saint Paul can be seen right of Mary, while Magdalene stands at the same place in the painting in the Hermitage. The latter one has another version, which is preserved in a private collection in York. It is dated from the period between the two above paintings. In the Budapest painting, Mary's kerchief covered the child's body in the sketch, while he is naked in the final painting. The neck of Mary's dress was painted by lead white in a V shape, while it became rounded in the final painting. The X-ray photo revealed that an evangelist was first sketched on the canvas with rolled up sleeves holding a book and writing a book (?) with the right hand. In the finished painting Saint Paul is depicted in a Roman military uniform wearing leather armour, a “Titian-red” legionary cloak holding a sword in the right hand. Mary and the child were painted in a single event, while the painter took more time to finish Saint Paul's figure and he applied several layers. There are no coherent outlines sketched in the painting, nor a network or a grid. No monochromatic underpainting can be observed, while we can find many examples of lead white contours marking the borders of colour spots and shapes, constant drawing during painting and folds marked by coal. It is not the multitude of pigments that determine the strong colours of the painting but their excellent quality, the method of their application and the high standard painter's skill. The bold modification of the first version during painting and the excellent outcome

attest to a genial pictorial expertness. It did not cause problems to the painter to turn the evangelist personifying the donator into Saul and then Saul into Saint Paul, and he was not disturbed by the inconsequence of the drawings he made during the modifications. We know from the accounts of Giorgio Vasari his contemporary that Michelangelo praised Titian's colorito, emphasised how true his paintings were to nature but he found his graphic capacity lacking. The many pentimentos, the sketchy graphic marks, the permanent modification of the composition during painting that can be observed in the painting were among the characteristics of the technique of 16th century Venetian painters. The masters of Veneto owed a smaller significance to the sketches made before painting than their contemporaries in Florence or Rome. This did not mean that they could not draw: it is linked with a different function of drawing. The painter did not sketch the individual figures, only marked the outlines. They were formed during painting, and they were modified and perfected as the painting advanced. The pictorial solutions uncovered in the Budapest painting, the numerous authentic modifications by the painter, the characteristic lead white sketches, the graphic broadness and the shiny colours are characteristic traits of Titian's paintings. The investigations of the art historian and the results of the analyses made by the conservator support that the Budapest painting is identical with Titian's painting described in the catalogue of the princely collection of Modena in the 17th–18th centuries, the same painting that was seen in the Kaunitz palace in Vienna in the 30's of the 19th century, and the one that was presented at the auction of the Hungarian Royal Post Savings Bank in 1932. The owner generously let the painting to be exhibited in the permanent exhibition of the Museum of Fine Arts.

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Éva Benedek– Zsuzsa Mara

Introduction to the exhibition of conserved sacral objects in the Csíki Székely Museum

In 2006, an exhibition was opened in the Csíki Székely Museum with the title "Rescued sacral treasures". From the more than fifty objects of art conserved for the exhibition, the authors describe the conservation of each an item from the various object types. One of them was a codex fragment from the 15th century, which was the glued end-leaf of an incunabulum discovered in the wall of the Csíksomlyó monastery. There were large areas missing from the parchment deteriorated by moulds, and the letters fell out at

a few places. The paint had run and caused spots. A number of active mould species were identified on the object in the conservation laboratory of the National Library in Bucharest, and then it was disinfected with formaldehyde. In the Csíki Museum, the shrunken parchment was first moistened with an ultrasound humidifier to flatten it, but this method did not bring results. Next we sprayed the parchment with distilled water mixed with ethyl alcohol. The smaller missing elements were replaced with parchment pulp coloured with tea extract, using a hand moulding technique. The larger missing areas were replaced with parchment of a similar colour and quality. Parchment glue was used for gluing. After pressing, the surface was treated with 2% solution of Klucel-M in ethyl alcohol. The dark spot was not blanched because of the poor condition of the parchment.

From among the printed matters, the conservation of an 18th century manuscript with musical notes will be described. The object consists of two unifacial leaves mounted on canvas, which were glued together so that both faces can be read. The support of the notes is hand-moulded paper. The text and the notes were written in iron-gallic ink, and tempera was used for the large initials and the floral motive with tendrils, which frames the text. The paper became crumbly in the upper part of one of the leaves, and the paint was faded and it ran. The text was incomplete. The other leaf was also spotty, torn and incomplete. The object was not dismantled before treatment. After dry cleaning with a rubber, the colours were fixed with the 3% solution of Regnal S1 in ethyl alcohol where moisture deteriorated the material. The missing areas were completed with repair paper of a colour and a thickness similar to the original one. 3% watery solution of Glutofix was used for gluing. The flower-and-tendrill ornament was retouched with tempera. The object was exhibited in a wooden box having glass panes on both sides.

The Bible edited by Abrahám Szenczi Kertész in 1660–1661, which is in the possession of the Calvinist Church of Hodgya (Hargita county) was one of the exhibited books. The book had a paper board with an ox hide binding of vegetal tanning, which was goffered with late Renaissance patterns. The corners of the binding were torn and incomplete, and the goffering had become slightly vague. The text was printed in black paint on the mould-made leaves. The headband was missing, the title page decorated with xylograph got detached from the body of the book, and the first sections tore off. A pH value of approximately 6.5 was measured on the leaves of the body of the book. Active *Aspergillus* mould was demonstrated in the sample taken from the back flyleaf of the bible in the laboratory of the Sapientia Transylvanian Hungarian University of Science. The infected paper cover was removed. No traces of active moulds could be observed on the leaves of the body of the book, nevertheless, we applied 1% solution of Preventol CMK in ethyl alcohol on the leaves with a brush. All the leaves were dusted and cleaned with rubber sponge. The condition of the detached title page and sections necessitated wet

cleaning, which was carried out with the watery solution of fatty alcohol sulphate and a little methyl-cellulose. The paper was strong enough to afford the blanching of the large brown spots with acid chlorine bleach, which was followed by neutralising with acetic acid and repeated rinsing. The damaged corners of the body of the book were completed with Japanese paper, and the smaller tears were consolidated with Japanese paper. The detached sections were sewn back to the body of the book. The infected mouldy board was replaced by pH-neutral cardboard. It was covered with brown calfskin, and then the original leather, which had been cleaned and softened with liquor, was mounted over it with the help of wheat starch. Waxy leather paste was used as a conserving matter.

From among the polychromatic statues, only the biretta was preserved from among the attributes of the statue of Saint John of Nepomuk preserved in the Csiki Székely Museum, and only the prebendal robe referred to the prototype. The left foot and arm and each a fragment of the cap and the pedestal were missing. The paint layer had worn off from the projecting areas. The lower part of the statue was deteriorated by insects. The superficial impurities were removed with a soft brush, while chemical and mechanic methods were alternately used on the stronger greasy impurities. According to cleaning tests, the mixture of ethyl alcohol (70%), turpentine (29%), linseed oil (1%) and a few drops of ammonium hydroxide proved to be the most efficient. The proportion of the components was modified with 25% of dioxane or 25% of dibutyl phthalate depending on the sensitivity of the colours, and then the surfaces were wiped with dibutyl phthalate. The missing elements were replaced according to iconographic researches and the existing forms. The measure of completion raised ethical problems, so the left arm, the position of which was not evident, was not completed. The completions were prepared from maple and glue was used for gluing. The mixture of 3.5–7% rabbit glue solution and mountain chalk was used for the filling in of the insect holes and the gaps of the paint layer and also for the priming of the completions. The aesthetic reconstruction was made with invisible retouch using watercolour and they were covered with a protective varnish layer.

The exhibited “winged crucifix” differs from the traditional crucifixes in the depiction of Jesus. This crucifix type, which Franciscans regard to be their symbol, became known as the pictorial representation of Saint Francis of Assisi’s vision. The object was very dirty, the paint layers crocked at a number of places and they became cracked and brittle. The wood was incomplete on the rays and the wings, and traces of repairs, repainting and completions could be observed on the entire surface. To consolidate the detached paint layers, they were first injected with 1:1 mixture of ethyl alcohol and water, then hot 7% solution of rabbit glue and cigarette paper were applied. The latter one was removed after drying. The original gilding was relatively well preserved under the repainting. The solvent mixture Superkromofag and the mixture of

n-dekanol (90%) and methylene chloride (10%) were used for uncovering the gilding. In result, the original brown colour of the cross was also uncovered. The mixture of technical alcohol and white spirit was applied for the cleaning of the oil paint of the body colours. The gluing was carried out with 20–25% bone glue. The missing paint layers were completed with chalk mixed in glue and the same was used for priming. Three-four layers of red bolus were applied under the gilding. As the colours of the original and the freshly applied gold foils were different, the latter one was patinated. The aesthetic reconstruction of the painted surfaces was carried out with invisible retouching using oil paint, and then the entire surface was coated with a matt protective varnish layer.

The small panel painting “Adoration of the Three Kings” was painted on pine wood reinforced with canvas. It had once broken into two but it was glued together again. The two parts warped to different degrees so they were taken apart. The adhesive was dissolved from the backside with gradual moistening. The wooden panel was damaged by insects. The infection did not seem to be active, nevertheless, the entire wooden surface was disinfected with Biotin S as preservation. The two parts were fit together with the consideration of the arch of the warping of the support. They parts were first fixed at two points with a two-component adhesive, then the missing areas were completed with wood dust mixed with bone glue. The backside of the support was consolidated with 15% solution of Paraloid B72 in a mixture of organic solvents. The Japanese paper, which protected the painting during the conservation of the support, was removed from the picture side, then the missing paint layers were completed with sealant along the refitting and the edges. The ground was applied in several layers, then it was polished back to the plane of the picture and the superficial impurities were cleaned with egg emulsion. The aesthetic reconstruction was prepared with invisible retouch using watercolour, while patinated gold foil was applied on the gilded surfaces. Finally, the panel picture was coated with a matt varnish layer.

In the exhibition, the visitors can catch a glimpse of the tricks of conservation on the posters placed beside the objects.

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Hédy M-Kiss
Banner collection of the Guild History Museum
of Kézdivásárhely in 2005

Guilds of tanners, boot-makers, cobblers, furriers and potters worked in Kézdivásárhely from the second half of the 16th century. Handicrafts started to decline in the 18th century when the members of the guilds were recruited and the operation of the guilds was reformed. Nevertheless, a new flourishing of guilds could be witnessed in the first half of the 19th century. This was the period when butchers, harness-makers, tailors, joiners, hatters, braziers and hammers-locksmiths were organised in guilds. In 1872, guilds were dissolved in Hungary. They were, however, reorganised because of the absence of industrial plants. They were allowed to work until 1948 when the capital equipments were nationalised in Romania. Eleven guilds and 3 unions existed at that time in Kézdivásárhely. The banners of 7 guilds and 5 banners of the guild of fire-fighters have survived, which are preserved in the Guild History Museum.

1. *Banner of the fire brigade, inv. no: B/XX/1.* The one-sided banner is composed of two leaves of red satin with golden fringes. A tassel of metal threads is at the upper corner. The symbols of the trade of the fire brigade, a helmet and two crossed fire-hooks enclosed by an olive branch are embroidered in the centre. The inscription „Árkosi önkéntes tűzoltó egyesület” [Voluntary fire-fighters’ union of Árkos] runs underneath in an embroidered frame. The red painted pole is decorated with golden depressions and a wooden sphere. Flag studs can be seen on the pole in three rows. The finial is white tin. *Condition:* Mould spots can be seen on the textile, it is dehydrated and torn, the fringes are oxidized and they loosened at several places. A tassel is missing.

2. *Banner of the fire brigade, inv. no: B/XX/2.* The one-sided mass-produced banner is composed of two leaves of red satin with yellow textile fringes. There are tassels at both corners. A round emblem of the fire brigade can be seen within a red twisted cord frame on side “A” with the inscription „PENTRU PAZA CONTRA INCENDIILOR” [to the fire-guards] in Romanian embroidered with yellow rayon thread under it. A coiled hose, a five-branched star and two crossed nozzles are depicted in the base field. An ear of wheat is depicted on the right side of the medallion, while a pattern of angular cogs can be seen on the left side. The inscription „F.P.C.I.” is placed at the bottom. The inscription „FORMATIA VOLUNTARA DE PAZA/CONTRA INCENDIILOR/A ORASULUI/TG. SECUIESC /1873” [Voluntary fire guards of the town of Kézdivásárhely 1873] is embroidered with yellow rayon thread on side “B”. The leaf was fixed to the black painted pine pole with 3 flat-headed tacks and with 2 shields under the finial. The metal plaques with names belong to banner no. 5. *Condition:* it is a well preserved 25–30 years old banner coloured to a purplish claret shade. It is dusty.

3. *Banner of the fire brigade, inv. no: B/XX/3.* It is

nearly identical to the above one only the emblem of the fire brigade and the inscriptions are simpler on side “A”. The inscription „FORMATIA VOLUNTARA DE PAZA/CONTRA INCENDIILOR/FRUNTASA PE JUDET” [Eminent voluntary fire guard of the county] is embroidered with yellow rayon on side “B”. The leaf was fixed to the pole stained to a red colour with nails. The finial is almond-shaped with a metal frame coated with copper. *Condition:* It is a well preserved 25–30 years old banner coloured to a purplish claret shade. It is dusty.

4. *Banner of the fire brigade, inv. no: B/XX/4.* The damaged leaf was renewed in a museum in Bucharest in the 1980’s. The medallions, the ornamental ribbon and the fringes were preserved from the original banner. On side “A”, the equipment of fire fighters, the helmet, the fire-hook, the axe, the ladder and the safety rope were embroidered with silver-coated, gilded, yellow, brown, white and black threads in the lined white silk medallion framed by the old ornamental ribbon. It bears the inscription “Önkéntes tűzoltó egyesület” [Voluntary fire-fighters’ union] on the top and the name “Sepsi Szent György” at the bottom. The portrait of Louis II King of Hungary and Bohemia can be seen in a round medallion frame enclosed by oak leaves. A crown with stone inlays is represented above it. The Latin words „KRISTUS SPES MEA” [Christ is my hope] run on top of the frame, and the date “1509” can be read under it. The end of the gore of a canon, the end of a gun-barrel with a bayonet, the tip of a sword, a drum, a bugle and a banner are placed around the frame. According to the traces of the stitches, the original red, white and green banner must have been larger and oblong-shaped. The actual base of the banner was made with sewing together the original white base and a red and a green textil. As opposed to the picture on side “A”, the colours of the embroideries and the base are more vivid since the banner was probably exhibited with this side against the wall because of the undesirable picture. The silk ribbon has two branches, and it is framed with a gold cord. The backside is new red rayon. Its inscription runs: „A.S.Sz.Györgyi önkéntes tűzoltók. 1891.” [Voluntary fire fighters of S.Sz.György, 1891] and „Háry Gyuláné Kain Mária”. The bow is simple. The brown pole is composed of two parts which were fit together at the turned spherical ornament. It is ornamented with longitudinal grooves coloured with gold and flag studs in four rows. The brass finial is lance-shaped. *Condition:* the medallions are dusty with spots of mould, they are torn, discoloured showing the run red colour of the original base material. The ribbon is crumpled, the fringes are missing. The rod of the banner and the tip of the finial are missing.

5. *Banner of the fire brigade, inv. no: B/XX/5.* The two-sided new red and blue banner is composed of two leaves of rayon. The original measurements can be judged from the nails on the pole that fixed the banner and the length of the gilded trimming cord that was preserved from the original banner. The medallion on side “A” probably belonged to the original banner. It shows the

equipment of fire fighters embroidered with gilded threads enclosed by oak branches. The medallion was covered with a cardboard sheet tacked to the base material. The medallion enclosed by an oak branch on side "B" also came from the original banner. Only the white lining has been preserved, which became greenish from the run paint. The blue stains also indicate the colour of the original banner. Embroidery of gold threads can be seen in the centre: „KÉZDIVÁSÁRHELYI/önkéntes/TÚZOLTÓ EGYESÜLET/1876” [Voluntary/firefighters’ union/of Kézdivásárhely/1876]. The pole was made from pine stained to a dark shade. It ends in a copper sleeve. It is decorated with a turned wooden sphere, gilded grooves and three rows of banner studs. The finial of the banner is a small fire-fighter helmet decorated with two lion head reliefs and an engraved radiating sun motive. *Condition:* the textile is dusty and corrugated, incomplete and stained. The bow and the rod of the banner are missing.

6. *Banner of the joiners’ guild, inv. no.: A/I/32.* The original banner was a pinkish purple single silk leaf. In the 1980’s, it was reinforced with doubling it on rayon in a museum in Bucharest. The patterns were sewn with thick coloured threads probably after the old embroidery. In the centre, the joiners’ tools are depicted in a flowery wreath: compasses, bevel-square, plane. A letter “9” is embroidered under the plane with a red thread, and the inscription „1858 Ns.Asztalos Céh.” [1858 Joiners’ guild etc.] can be seen underneath. There are two tassels on the corners made from machine-made fringes. *Condition:* the remains of the original banner were very poorly preserved, they are kept folded up in a box. A copy of the banner made of purple satin can be seen in the exhibition.

7. *Banner of the furriers’ guild, inv. no.: A/I/131.* It is a single-sided banner with a forked tail. The dark blue satin banner leaf was sewn together from three pieces of different patterns. In the central field, a white lamb surrounded by an olive branch with a flowery wreath is depicted in the medallion framed with a trimming ribbon. The inscription „1649/A „nms’ Szöcs Czéhe” [1649/Furriers’ guild etc.] is embroidered above it with a yellow thread. Three white flowers with stems and leaves are embroidered in the two free corners. The ribbon is wavy white rep trimmed with a cord made of metal threads. A gilded fringe closes it at the ends. The bow is simple. Embroidered inscriptions can be seen on the stems: side “A1–2”: „Dr. Vargha Béláné szül. Welnreiter Vilma.” [Dr. Béláné Vargha born Vilma Welnreiter] and „Lobogonk az egyetértés és szeretet jelvénye!” [Our banner is a symbol of concord and love!], on side “B1–2”: the names of the president, the vice president and the members. The pole is varnished to a brownish colour and flag studs can be found on the upper part in four rows. The first shield with the inscription „Dr. Vargha Béláné/zászlóanyja” [Dr. Béláné Varga/banner mother] is the largest one surrounded with a laurel branch. A copper sleeve is placed on the lower end of the pole. The finial is lance-shaped made of brass. It bears the date “1912”. *Condition:* The original banner was

attached to a blue cotton cloth in a museum in Bucharest in the 1980’s and the depictions were re-sewn with thick coloured threads. Probably a leaf of the original banner was used for the exhibited copy, which can be seen with the original ribbon and pole.

8. *Banner of the tanners’ craft-union, inv. no.: A/I/33.* It is a single-leaf claret silk banner of an arched closing. There is a claret thread fringe on the edges and coloured thread tassels on the free corners. In the central field, two rampant lions hold a crowned shield with the depiction of the characteristic tools of tanners (tanning vat, beam-knife and two branches of oak with leaves). The date of the foundation of the guild is embroidered above them: “1572”, while under them, the inscriptions bears relevance to the year of the foundation of the craft union „A n.s. „Timár ipartársulat” [Tanners’ craft union etc.], and “1887”. The ribbon is patterned claret silk with fringes at the ends. The bow is simple. On one end of the ribbon the inscription „Jancsó Dénes elnöksége alatt” [during the presidency of Dénes Jancsó] is embroidered with gold cords. The pine pole is brown with a copper sleeve at the lower end. There are no names on the 29 flag studs arranged in a single row. The leaf is fixed with 27 metal rings. *Condition:* the textile is faded, dirty, stained, torn with smaller repaired rips on the lower part. The ribbon was lengthened, it is faded and the ends of the letters are discoloured.

9. *Banner of the boot-makers’ craft-union, inv. no.: A/I/36.* It is a two-sided banner of an arched closing made of two leaves. It is framed with silver diamond-patterned and yellow ornamental bands, the textile fringe is claret. Each a tassel can be found at the free corners. Side “A” is blue peony-patterned double satin. “Bürger” boots are embroidered with yellow tread in the medallion of the central field. The date “1879” above it is the year of the foundation of the craft-union. Both are enclosed by a leaved olive branch. Side “B” is red double satin. It inscription runs: “A vásárhelyi Ns Csizmadia/Ipartársulat által/ujitva/1908-ban és 1939-ben” [Renewed by the boot-makers’ craft-union of Kvasárhely in 1908 and 1939 etc.]. One end of the ribbon is red the other one is blue double satin. Their inscriptions run: „Nagy József és Tuzson Mihály” [József Nagy and Mihály Tuzson], and „elnöksége alatt” [during the presidency of]. The fringes at the ends of the ribbon are made of gilded metal threads. The maple pole is decorated with 32 flag studs of rosette heads arranged in a single row. According to the holes left by studs, yet another row must have existed. The coat-of-arms of Hungary can be seen on one side of the lance-shaped brass finial. 14 metal rings were used for the suspension of the banner leaves. *Condition:* Slightly discoloured, faded, dusty, the ornamental band and the fringes are rusty.

10. *Banner of the cobblers’ craft-union, inv. no.: A/I/37.* A single-leaf oblong-shaped banner made of blue satin trimmed with a yellow industrial cord. The fringes are dark blue ready-made products. The lining is light-coloured flax cloth. Two rampant lions hold a shield

enclosed in a circle in the central field. The dates “1857” and “1929” the year of the foundation of the craft-union and the consecration of the banner can be read in the circle. A royal crown is embroidered with golden yellow thread under the circle, while coloured flowering branches are under it. The ribbon is golden yellow satin, the bow is simple with an additional ribbon. There are four rows of flag studs on the pole. The first shield of every row is decorated with a crown. The name “Szarka István” is engraved on the first shield of the third row. The actual banner base is 165 cm x 130 cm large, but it must have been larger according to the rings on the pole. *Condition:* The excellent condition suggests that it was renewed.

11. *Banner of the butchers' craft-union, inv. no: A/I/34.* It is a single-leaf oblong-shaped banner made of silk damask of four-leaf clover pattern. Claret textile fringes can be seen on the arched closing of the free end, and the tassels on the free corners are made from golden threads. A brown silk shield can be seen in the central field trimmed with a yellow cord. The emblems of the butchers' craft: a facing bull's head, a knife and a whetstone are embroidered in a smaller white shield within the larger one. A multi-coloured flowery crown enclosed by a leafed branch from above can be seen on the top of the shield. An oak branch with oak-apples borders the small shield at the bottom and on the left and an olive branch with olives on the right. The embroidered inscriptions „ALAKULT/1809” [Founded/1809] and „A kézdivásárhelyi/MÉSZÁROS/IPARTÁRSULAT.” [Butchers' craft-union of Kézdivásárhely] can be found under and above the medallion. Each a leaved and flowery branch was embroidered along the two longer sides of the banner. The ribbon is green satin silk, the bow is simple. The text „Molnár Józsiásné Sz.Gál Elvira 1894.” [Józsiásné Molnár b. Elvira Gál 1894] can be read on one end of the ribbon and „Az egyesülés erő a haladáshoz” [Union is power for advancement] was embroidered with silver and gold threads on the other end. Four stars and a flower can be seen on the additional ribbon. The fringe of the ribbons is made of gilded metal threads. Flag studs can be seen on the pine pole in three rows. An engraved inscription can be found on the first crowned shield of the first row: „Molnár Józsiásné/G.E./zászlóanya” [Józsiásné Molnár/G. E./banner mother]. There are 13 nails with rings on the pole to hold the rod of the banner. The rod is made from brass. A butcher's cleaver and a knife are depicted on the brass finial. *Condition:* The banner seems to have had another side and perhaps a lining as well. At repairing, both layers were stitched to the dark red textile. The white silk of the medallion is frayed, the original colour of the trimmings can be seen under it. The ribbon is faded and stained.

12. *Banner of the joiners' craft-union, inv. no: A/I/35.* The oblong-shaped double-leaf two-sided banner was made from red damask. Three edges are trimmed with a yellow ribbon and fringes of metal threads. Joiners' tools can be seen in the medallion of side “A” surrounded

by an oak branch with oak-apples. The inscriptions „KÉZDIVÁSÁRHELYI” [OF KÉZDIVÁSÁRHELY] and „ASZTALOS IPARTÁRSULAT” [JOINERS' CRAFT-UNION] are embroidered with gilded metal threads under and above it. The numbers “19” on the left and “04” on the right mark the year of the consecration of the banner. Branches and flowers run in the corners on both sides. On side “B”, the Hungarian royal crown is represented between olive branches with olives with the contours prepared from gilded metal threads. The inscription „Összetartás, akarat” [Solidarity, will] can be found above it and the inscription „Sikert biztosat arat” [Success will certainly be achieved] can be read under it. The crown was an undesirable symbol during communism so a red cloth was stitched over it. The material and the embroidery threads of the covered area have preserved their original colours. The ribbon is red-and-green striped rep and it is lined under the inscription. The bow is simple. Embroidery with silver-coated metal threads can be read on the ribbon ends: „Nagy Ferencné/született/Csiszár Sára 1904.” [Ferencné Nagy/born/Sára Csiszár 1904] and „Zászlóanya” [Banner mother]. Tendrils were sewn around the letters with silver threads. The fringes at the ends of the ribbons were made from gilded metal threads. The two parts of the pine pole are fixed together with a brass sleeve and a tusk. The crowned shield-shaped flag studs are arranged in five rows. The rod and the finial were made from brass. *Condition:* The textile is faded, dusty and weakened, although it is relatively well preserved in the area of the crown. The fringes are fragmentary, the silver embroidery is oxidised. The embroidery threads loosened at a few places.

The banner collection was assessed according to the aspects of conservation and preservation. It was also an excellent opportunity to estimate the suitability of the store-rooms and the exhibition area, and to call the attention of the staff to the condition of the banners. The expected result of the assessment will be, according to the conservation propositions, the conservation of the objects, the continuous measuring of the microclimatic factors, and, as far as it is possible, the introduction and maintenance of the most effective methods of preservation.

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New materials and new methods in the restoration of silicate-based objects of art

The author has successfully applied materials and methods different from the ones generally used in the restoration

of silicate-based objects, and they were tested within the training of the conservation of objects of applied art in the Conservation Department of the Hungarian University of Fine Arts.

The gluing and completion of outdoor ceramic works of art needs the application of materials that resist time and weather. The materials that can be used for the completion of such objects are Ardurit S16 and S/16 W fast glue developed for the gluing of stone, tile and concrete. It contains special concretes and elasticizing synthetic materials (vinyl-acetate and ethylene co-polymer). Mixed with water, it binds with hydration. Mixed with Ardion 90 synthetic resin improver, we get an easily mouldable and water repelling material. It was first used at the conservation of a functioning Zsolnay well. On the inner parts that needed consolidation but were not constantly exposed to water, Ardurit S16 treated with Ardion was used, while another Ardex product, X7G flexible adhesive mortar was applied to ensure water resistance in areas that were constantly under water. The well was glued with Bisonit polyurethane adhesive and filler, which resists water and numerous chemicals between -30 and +100 °C. The completions were painted with UV and water resistant Neolux 2k acryl enamel, component "A" of which is a reactive acryl, while component "B" is aliphatic poly-isocyanate. Hydrophobing was made with two layers of Dryfill siloxane resin. It is difficult to prepare fine-patterned and smooth shiny surfaces from Ardurit. In the case of such surfaces, first the surface of the completion is prepared in a thickness of a couple of millimetres from a more suitable material, e.g. Standofix polyester resin. Then the completions are fit to their places with Standofix and then they are filled in at the back with Ardurit S16. This method was applied at the conservation of a broken and incomplete element of a Zsolnay fireplace. The shrinking of Standofix is negligible at a thickness of 0.5 cm. It is strongly thixotropic so it can be thinned until it becomes transparent even at the edges, and it can perfectly be fit to ceramic surface. Ardurit becomes very hard after binding, so its surface should be formed before complete binding. Standofix can easily be shaped even after binding. When the object of art to be conserved is not statically heavily loaded, the completion can be prepared in a way that a thin synthetic foil is placed on the fracture surface and Ardurit is applied on the foil. The completion can easily be lifted after binding, and it can simply be refit with appropriate glue. The restoration of Zsolnay's "Duck fountain" preserved in the Janus Pannonius Museum in Pécs was conserved with this method within the frames of a diploma work.

At the conservation of an 18th century porcelain four-armed candlestick, also within the frames of a diploma work, the missing arm was replaced with Limoge porcelain (kaolin) plastic mass instead of the widely used synthetic resin. Its shrinking at drying and firing is 17%. Thus copies were made of the completions using Oxam S1 silicone resin, which were bloated in an organic solvent

(toluene) to reach a size larger by 17%. A plaster negative had to be promptly taken of the rubber lifted from the solvent, since the rubber quickly started shrinking as the toluol evaporated. The biscuit firing of the kaolin moulded in the plaster negative took place at 800 °C after slow desiccation, while its transparent glaze firing was made at 1250 °C. The leaves and the petals were completed from the formerly prepared elements with polishing them to the fracture surface. They were glued with epoxy resin. The arms were fixed with Akemi Marmorkitt 1000 polyester adhesive without jointing. Schminke acryl retouching paint was used for the painting of the completions so that the completion could be differentiated from the original.

It can happen in the case of glass object lifted in situ at excavations that the glass appears to be completely corroded after the earth had been removed. In such situations the task is to preserve the layers, which cannot be taken into the hand, and which can be injured even from the touch of a soft brush. The corroded fragments cannot be glued together and completed since their thickness is no more than a few microns, and there are no sharp fracture lines that could be fit together. The only treating can be careful moist cleaning since the removal of the corrosion would mean the perishing of the object. The fragments can be preserved on a synthetic support, which is made to mirror the original shape of the object according to the fragments. It is prepared in subsequent steps from clay, silicone and plaster moulds matching the interior size of the object. The fragments saturated with Paraloid B72 are placed on a support cup made of water clear Araldit 2020 epoxy resin with an adhesive of watery base, e.g. methyl-cellulose. Two Roman glass tumblers were recently conserved with this method: one by the author, the other within the frames of a diploma work.

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