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CONSERVATION AND RESTORATION OF THE FRAME ON THE HISTORICISM MIRROR

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ABSTRACT

The aim of the researches presented in the paper is conservation and restoration of the frame mirror, artistic style of Historicism. History and development have affected the frame of the mirror. All damages were documented before starting the conservation and restoration process. Partial consolidation with 8% solution Paraloid B 72 Dimethyl ketone was made on the wooden part of the frame. Wooden parts were carved. Wood identification was essential for reconstruction of the missing parts. Three sections of wood - cross, radial and tangential - were made for microscopic hardwood and softwood identification. The wood samples from the frame are assumed to be Walnut (*Juglans regia* L.) and Spruce (*Picea Abies* L.)

Key words: historicism, consolidation, carving wooden parts, wood identification, conservation-restoration works

1. INTRODUCTION

The course of events that marked the trends in furniture production in the period of Historicism also left a trace in the production of mirrors. The artistic style in the 1930s of the 19th century, known as Historicism, reflected the emergence of a new worldview, new state ideas, and a new world order. The awareness was being raised that the identity of people could not be based only on the ethnographic origin, but also on a cultural and historical self-consciousness. An interest in the past and in preservation of cultural heritage and of major restoration projects occurred (Brdar and Mustapić, 2000).

The diversity of stylistic trends and neo-styles, collectively called Historicism, was not reflected only in the interpretation of the past styles. Various styles in art occurred simultaneously, there were no strict time limits, which resulted in a pronounced diversity of arts and crafts and in specific use of non-traditional materials in furniture production.

Neo-renaissance had its beginnings in France, and then it spread to the rest of Europe. The establishment of German Empire in 1871 is considered to be the beginning of the neo-Renaissance in Germany. Neo-Renaissance tendencies became an imperative in crafts, especially in the production of furniture, and the new Neo-Renaissance style comprised the recognizable regional style from German speaking countries, called the Altdeutsch (Halbertsma, 1999).

In the field of furniture production, the Neo-Renaissance developed recognizable features. The furniture was made of dark, heavy, and hard wood, mostly walnut, and carvings were used as decorations.

The frame and the decorative parts of the wall mirror from the period of Historicism, i.e. the German Neo-Renaissance, was made of spruce (*Picea abies* L.) wood, while the entire flat surface was veneered with walnut (*Juglans regia* L.), which was determined after the identification of wood types. Macroscopic and microscopic identification, necessary for reconstruction of the damaged and missing parts, was achieved by comparing the transverse, radial, and tangential sections of small wood samples with the existing wood identification keys. (Torelli, 1991); (Dallwitz *et al.*, 2002).

The frame is rectangular with straight edges, 96 cm high and 64.5 cm wide. The workmanship and recognizable details show that it is a typical Alt Deutsch period artefact. The frame is dominated by the carving placed at the head which consists of a combination of floral motifs of flowers, leaves and stylized volutes. Small carved low-rise pyramid shaped details, diamonds, are placed in the corners along with decorative profiled mouldings. There are two holes at the head, designed for wooden dowels of acroteria, ornaments that adorned the head of the artefact.

All damages on the wooden frame were documented before the restoration process started. Wood as a material is susceptible to harmful effects of abiotic and biotic damaging agents, so wooden artefacts are often attacked by the Xylophagous insects or fungi (Despot, 1996). Humidity and temperature control, especially when artefacts are exhibited for a long time, are the most important factors in conservation and protection (Vokić, 2007). Damages occur as a consequence of improper use, preservation and storage of artefacts (Ivezić, 2008). Apart from those caused by the Xylophagous insects, there are also mechanical damages, therefore disinfection and consolidation of the wooden frame are necessary (Láslo,1985). The diversity of harmful effects required a proper selection of the appropriate disinfection and consolidation process, so as to prevent further deterioration of artefact, prior to the final restoration work (Benko, 1989); (Bešvir, 1998); (Unger, 2001).

2. MATERIAL AND METHODS

The frame of wall mirror from the period of Historicism is rectangular with decorative carvings at the head, decorative edge mouldings and wooden diamonds. Visual inspection was made along with photo documentation of the current condition (Fig. 1.).



Figure 1. The frame of wall mirror

Small samples of wood from the frame were taken for the purpose of their identification. The microscopic preparations of transverse, radial and tangential sections were made for the two types of wood from which the frame was made. Samples were analyzed with optical microscope, and based on their anatomical features and a comparison with the tree identification keys, the wood species of walnut (*Juglans regia* L.) and spruce (*Picea abies* L.) were determined, which is important to know so as to create the missing elements (Torelli, 1991); (Dallwitz *et al.*, 2002).

The emergence openings and wormholes were compared, and the most appropriate method of disinfection was determined based on identification of wood types and possible pests (Despot and Hasan, 2008). With regard to the encountered condition of the artefact in question, there was a need of

implementation of partial consolidation in order to restore its use value, use it again and exhibit (Horie,1987).

In the process of conservation and restoration, the parts of the mirror frame were dismantled for the purpose of extensive cleaning, and later on for better fastening of the frame joints. After the cleaning process, the reconstruction of missing parts was made in accordance with the existing data and photo documentation found in the specialized literature (Brdar and Mustapić , 2000). Adhesive bonding was gradually applied on the parts of veneer surface, the missing veneer was replaced with the new one and later on the colour was unified. Sealing small cracks on the original veneer and holes made by insects was done before grinding and preparation of surface for the final restoration work. After the unification of colour, the polish was applied in layers as protection from the wooden frame surface. When it all dried, the narrative part and the photo documentation of conservation and restoration work were recorded.

3. RESULTS AND ANALYSIS

With regard to the encountered condition of the wall mirror from the period of Historicism, the beginning of conservation and restoration work comprised removal of surface impurities and remains of the old layers of paint. The wall mirror was wiped with slightly moistened cotton cloth. The carvings at the head and the carved details were cleaned with a brush and special metal spatulas because of the layers of dust and other impurities. Afterwards, the entire object was cleaned with denatured ethyl alcohol (96%) with cotton pads and wiped with a clean, dry, cotton cloth. Some parts were removed for more effective disinfection and consolidation. Small wood samples were taken and microscopic preparations were analyzed both with optic microscope and based on the anatomical properties of wood; the obtained results were compared with the tree identification keys (Torelli, 1991); (Dallwitz et al., 2002). By comparing the samples of transverse, radial and tangential sections, it was evident that the frame was made of the above mentioned walnut (*Juglans regia* L.) and spruce (*Picea abies* L.) wood (Fig.2,3,4,5,6,7).



Figure 2.
Cross section of Spruce
(*Picea abies* L.) 100×



Figure 3.
Radial section of Spruce
(*Picea abies* L.) 100×



Figure 4.
Tangential section of Spruce
(*Picea abies* L.) 100×

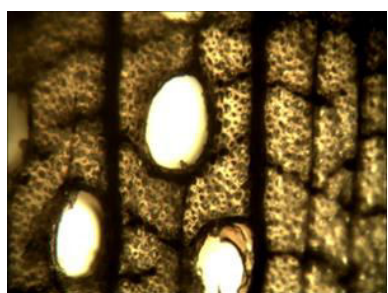


Figure 5.
Cross section of Walnut
(*Juglans regia* L.)100×



Figure 6.
Radial section of Walnut
(*Juglans regia* L.) 100×

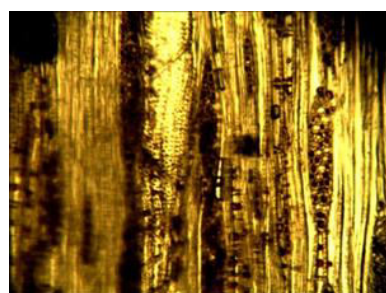


Figure 7.
Tangential section of Walnut
(*Juglans regia* L.)100×

The disinfestation was made because of the visible traces of infestation by the Xylophagous insects. The affected areas on the carved wooden parts of the wall mirror, the emergence openings from which a tiny wormhole drizzled, and numerous small corridors led to the assumption that the pests belonged to the family of *Anobidae*, *Anobium punctatum* Geer.- furniture beetle (Despot and Hasan, 2008) (Fig.8, 9).



Figure 8.



Figure 9.

Disinfestation of the wood frame

Disinfestation was done by injecting a solution Drvosan which contains the contact insecticide Permethrin (Ivezić, 2008). After injecting the insecticide, the treated parts were wrapped in a plastic foil, thus creating favourable conditions for increased activity of chemical components in the insecticide solution. The protective foil accelerated the 2-week disinfestation process (Petrović, 1987).

By respecting the conservation and restoration principles of minimalism and reversibility, there was the need for partial consolidation in realization of the following basic functions of consolidation: joining the fragments, strengthening and stability of artefact, ensured functionality for further use (Unger, 2001).

Partial consolidation of the wooden wall mirror holder was done with the 8% solution of Paraloid B72 (acrylic resin) in dimethyl ketone. The wooden base was treated locally by injecting the specific amount of acrylic solution depending on the degree of degradation in areas where the stability and functionality of entire artefact were questionable due to the wormholes (Horie, 1987), (Fig.10,11).



Figure 10.
Consolidant



Figure 11.
Partial consolidation

Damages made to the wooden holder in the form of dents and minor defects of wood material under the veneer level were filled with wood repair epoxy putty Wood Epox to align the surface and prepare it for reconstruction of the damaged or missing veneer.

Adhesive bonding was applied on the parts of veneer that tended to come off from the wooden holder. The missing veneer was replaced by a new walnut veneer. To achieve better elasticity, the bulging veneer was moistened with the minimal quantity of water, and after softening it, warm bone glue was applied under it with a thin brush and wooden sticks. The air was squeezed out with gentle pressure, the bonded veneer was levelled and left to dry under clamping pressure. Thin boards that made up the flat background of the wall mirror lost their original shape and slightly curved. They were cleaned, levelled with warm water, and put under mechanical pressure.

The missing details were reconstructed according to the existing samples and an insight in data and photo documentation found in the specialized literature (Halbertsma, 1999).

New decorative edge profiles, wooden holders of edge profiles and wooden plastic were hand-made and machine-made, and modelled according to the existing ones. Out of four small carved low-rise pyramid shaped details, diamonds, which were typical decoration of the Renaissance, only one was preserved. They were evidently positioned at the corners of the wall mirror and were hand-made from spruce (*Picea abies* L.) wood. The holes in the holder from both sides of the central carving indicated that the acroteria were missing. They were made by comparing this mirror with another one from the same period. Acroteria were turned on the lathe.

After assembling all the parts of the wall mirror and after restoration of a veneer layer, small cracks on the original veneer and holes made by insects were filled up. Surfaces were filled with chalk powder and natural pigment putty *Terra D'Ombra Naturale* No. 797, *Terra di Cassel* and with bone glue as a binder. Several different shades of putty were made so as to even it up with the natural texture and colour of wood to achieve a more natural final appearance and to minimize any further retouching interventions. Uneven areas caused by puttying were sanded with 180 and 400 grit sandpaper and at the end with 1200 grit sandpaper to get extremely smooth surface required for later coating of polish. All reconstructions were visibly lighter than the original parts, the new parts were retouched to even out the colour. In the process of colour unification the water-based colorants were used and nuanced with potassium dichromate dissolved in water to balance the nuance of colorant with pigment oxidation and to achieve the effect of "old wood". After retouching was done, the new parts were sanded with 800 and 1200 grit sandpaper to achieve the smoothness required for polishing.

The polish was prepared by dissolving the ruby shellac flakes in ethyl alcohol in the ratio of 1:2, and by diluting the dissolved shellac in ethyl alcohol in the ratio of 1:8. The flat surface of the wall mirror was polished by applying by hand the powder of pumice stone, the prepared solution of shellac and minimal amount of Vaseline oil which is light and colourless, thus improving the quality of shellac polish.

Carvings were coated with the same solution of ruby shellac applied in two layers by brush which protected them from further influence of microclimate changes. After the protective layer has dried, the dismantled parts of the wall mirror were re-assembled. It was followed by the narrative and photo documentation of conservation and restoration works on the wall mirror from the period of Historicism (Fig.12).



Figure 12.
The frame of wall mirror

4. CONCLUSIONS

Being familiar with the features of the respective stylistic periods in the history of furniture, the wall mirror from the late 19th century belongs to the period of Historicism. Visual inspection and comparison with artefacts in the specialized literature showed that there were damages made by the Xylofagous pests, surface damages, missing veneer, missing carvings – diamonds, acroteria, and decorative edge mouldings. A solution containing the contact insecticide Permethrin was applied as the most acceptable method of wood protection for the most common tertiary insects of the family *Anobiidae-Anobium punctatum* Geer.

Microscopic preparations of transversal, radial and tangential section of two types of wood from the wall mirror, as well as the comparison with the tree identification keys enabled the making of new parts of carvings and of wooden holder made from walnut (*Juglans regia* L.) and spruce (*Picea abies* L.) wood.

The partial consolidation of the wall mirror was carried out to preserve its functionality. Since the object was poorly preserved with visible degradation of layers of material and unsustainable stability of construction caused by mechanical and biological activity, then the consolidation has been applied by injecting the 8% solution of Paralod B 72 in dimethyl ketone.

Conservation and restoration works on the wall mirror frame from the period of Historicism sought to present an interdisciplinary activity and a holistic approach to the artistic artefacts, which is a complex work aimed at conservation and protection of the rich cultural heritage.

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