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# Conservation and Restoration of the Manuscript Book from Schiefing am Wörthersee

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**Abstract:** The manuscript from Schiefing am Wörthersee originates from the early 19th century and contains the transformation of the German translation of *Mistical City of God*, a narrative written by Spanish nun María de Jesús de Agreda (1602–1665) about the lives of Jesus and Mary. It is written in the local dialect typical of the Schiefing am Wörthersee parish, and that is why it constitutes an important part of the written cultural heritage, especially for Slovenians in Austrian Carinthia. Because the manuscript book was damaged, it was not available to users in the Klagenfurt Diocesan Archives, where it is stored. At the custodian's proposal, the Restoration and Conservation Centre of the Archives of the Republic of Slovenia performed all the necessary conservation and restoration work in order to make the manuscript book usable again and preserve it for our descendants. The text block, which is 302 mm high, 196 mm wide and about 50 mm thick, has 128 leaves folded in ten quires, and the contents are written in iron-gall ink. The text block was merely inserted into the leather cover, without any visible traces of the structural elements that usually bind the text block with the cover. Based on the size of the cover, which differed from the size of the text block, the cover must have originally belonged to another book. Based on a precise inspection of the condition of the manuscript, we carried out the following conservation-restoration treatments: unbinding of the text block, dry cleaning of surfaces, measurement of the paper's pH, fibre identification, ink identification, text block leaf restoration, text block sewing, binding reconstruction and rearrangement of the existing cover to fit the given text block. To protect it permanently, we also made a custom-made protective box for the manuscript book. The conservation-restoration treatments performed are the result of the knowledge and experience of decades of team work of conservers-restorers of the Restoration and Conservation Centre of the Archives of the Republic of Slovenia and professional developments in this field.

**Keywords:** Manuscripts, Book, Schiefing am Wörthersee, Klagenfurt, Conservation, Restoration, Paper, Leather

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## 1. Introduction

The manuscript from Schiefing am Wörthersee originates from the early 19th century. It contains the adaptation of the German translation of *Mistical City of God*, a narrative written by Spanish nun Mary of Jesus of Ágreda (1602–1665). The text describes the lives of Jesus and Mary, but the story is told from Mary's point of view. It is written in the local dialect typical of the Schiefing am Wörthersee parish, and that is why it constitutes an important part of the written cultural heritage, especially for Slovenians in Austrian Carinthia.

The manuscript book was not available to users in the Klagenfurt Diocesan Archives due to damage, so the custodians decided to preserve and restore it. For these

works, we chose the Restoration and Conservation Centre of the Archives of the Republic of Slovenia, where we performed all the necessary conservation-restoration treatments in order to make the manuscript book usable again and preserve it for our descendants.

## 2. Professional Inspection and Assessment of the Manuscript Book Condition

Prior to treatment, the manuscript book was photographically documented and basic written documentation was prepared [1, 2, 16], which was updated

during the procedure. The manuscript text block was merely inserted into the cover, without any visible traces of the structural elements that usually bind the text block to the cover. The cover had a pasteboard support and a tannin goat skin covering but was the wrong size, so we assumed it once belonged to another hardcover book. The text block measures 302 mm in height and 196 mm in width, and due to the poor condition of the binding, we measured only an approximate thickness of 50 mm. The text block was made from high-quality handmade paper without any visible watermarks. All 128 sheets contain writing in ink.

A thorough examination of the manuscript book led to an assessment that the damage was the result of frequent and long-term use and inadequate storage. It suffered mechanical damage, such as tears at the edges of the leaves and in the folds of the sheets and missing parts on the leaves of the text block and on the cover; there were also various stains and dust, as well as soot on the first leaves (Figure 1). Due to exposure to external influences from the environment, especially the first quire suffered severe damage, and the last twenty leaves were cut from the last quire.



*Figure 1. Condition of the manuscript before conservation treatment.*

### 2.1. Text Block

The text block consists of 64 sheets bound in ten quires. The second and sixth quires consist of seven sheets, the tenth of twenty sheets, while others consist of six sheets. The text block consists of two sizes; the leaves of the last quire are 5 mm shorter in width and 6 mm longer in height than those of the other nine quires. The text block was sewn to two linen tapes with a thick string (Figure 2). The sewing was done vertically through the leaves and not through the centrefolds [3, 16].



*Figure 2. Condition of the open manuscript before conservation treatment.*

When the text block was unbound into individual sheets, we found that the binding was not original. The centrefolds of the sheets bore the traces of stabs from earlier sewing, which showed that the text block had been sewn with four single bands and an initial and final stitch. Material traces of the bands were not found. However, we found that the rebinding of the manuscript book, which was probably severely damaged at the time, preserved it and prevented irreparable damage.

### 2.2. Cover

The size of the cover did not correspond to that of the text block because it was taken from another book. It was too small in height and width and too large in the spine. The given cover consists of pasteboard support covered by brown alum-tawed goat leather [4]. Traces of five single bands were visible on the spine. A part of the covering was torn off in the bottom spine part. The skin was stiff, shrivelled and worn in spine folds and corners. The front and back pastedowns were preserved (Figure 3).



*Figure 3. Inner side of the cover before conservation treatment.*

## 3. Description of Individual Conservation-Restoration Treatments

Based on the inspection of the condition of the manuscript [5, 16], we determined the appropriate conservation-restoration treatments: unbinding of the text block, dry cleaning of surfaces, measurement of the paper's pH, fibre identification, ink identification, leaf restoration, text block sewing, cover restoration and binding reconstruction.

### 3.1. Unbinding of the Text Block

The manuscript text block had damaged leaves in the centrefold, and one leaf with missing pagination was torn out and inserted in the text block. The dilemma arose as to the correct position of the leaf. Although conservers-restorers do not examine the content, this is often helpful in determining the order of the pages. The dilemma was solved with the help on an expert<sup>1</sup> who studies this type of texts. By following the

<sup>1</sup> Andrejka Žejn is an assistant with a PhD at the Institute of Slovenian Literature and Literary Studies at the Research Centre of the Slovenian Academy of

text, she arranged the pages in the correct order and inserted the torn leaf into the text block, and we marked it with the appropriate pagination.

### 3.2. Dry Cleaning of Surfaces

The first step after the unbinding of the text block was the dry cleaning of leaves [6]. Two types of restoration erasers<sup>2</sup> and various soft brushes were used for cleaning (Figure 4). The leather covering of the cover was cleaned with a conservation-restoration coating<sup>3</sup> for leather.



**Figure 4.** The difference between an uncleaned sheet (left) and a dry-cleaned sheet (right).

### 3.3. Measuring PH Value

The aim of measuring the pH value of the paper surface was to determine its acidity [7]. The pH values of the paper surface were measured with a straight flat electrode SEN TIX SUR and a pH-metre INOLAB pH 720.<sup>4</sup> The measurements were carried out on several leaves and on several spots of the same leaf (Figure 5). The values were between 5.88 and 6.27, which indicates that the acidity of the paper is not so high as to affect its degradation. Before that, we assessed by visual inspection that the paper was well preserved.



**Figure 5.** Measuring the pH value of the paper surface.

### 3.4. Identification of Fibres

A microscopic examination of the fibre composition of the paper on samples taken from the detached pieces of damaged leaves was performed on a Zeiss Axioskop 40 optical microscope under 100-fold magnification [8]. This was followed by Graph C colouring. A comparative analysis of the type of fibre showed that only flax fibres had been used as a raw material for paper production. Because detached pieces from the damaged areas were used for analysis, damage to the fibres can also be seen in the examined samples.<sup>5</sup> Given the time of the book's creation, the visual inspection and our experience, such a result was expected.

### 3.5. Identification of Ink

We presumed iron-gall ink was used, the predominant ink from the late Middle Ages until the early 20th century. Because of its solubility, the ink is able to penetrate the paper surface, making it difficult to erase. However, it is a corrosive ink that sometimes causes severe ink corrosion damage to the paper support.<sup>6</sup>

We performed a test with two indicators that react with the present iron and copper ions, turning pink and blue, respectively, when they come in contact with the ink [9]. The test was performed in three different spots: 5 x 10 mm indicator sheets moistened with distilled water were placed on the selected part of the text or on the selected letter, so that part of the indicator covered the ink and part was placed on a spot without text (so that we could observe the difference). If iron is present in the ink, the indicator changes colour. In our case, the results on all three test spots confirmed the presence of iron-gall ink, but we assessed during the conservation-restoration examination that the ink had not yet degraded the paper. Further storage in appropriate conditions is necessary, such as, for example, in a place with the right relative humidity (Figure 6).



**Figure 6.** Identification of ink using indicators.

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<sup>2</sup> Eraser Milan 2012 oval and rubber sponge (Dry Cleaning soot sponge, Arbsorber®).

<sup>3</sup> Lederbalsam leather balm, natural, Maroquin.

<sup>4</sup> The investigation was carried out at the Restoration and Conservation Centre of the Archives of the Republic of Slovenia.

<sup>5</sup> The investigation was carried out at the Restoration and Conservation Centre of the Archives of the Republic of Slovenia.

<sup>6</sup> Iron and copper ions accelerate the decomposition of paper, especially in high humidity.

### 3.6. Conservation and Restoration of Text Block Leaves

Conservation-restoration treatments on the text block leaves were performed by manually filling in the missing parts and gluing the tears with a selected Japanese paper that was most similar in appearance, colour and thickness to the text block paper [6].

The corners of leaves that were worn and “rounded” from frequent use were, at the request of and in agreement with the custodian, supplemented and trimmed to the right angle, to the same shape as they were in their original condition.

We added “new” (blank) leaves of Japanese paper to the places where the leaves were cut out, thus restoring the text block to its original thickness.

A mixture of starch glue<sup>7</sup> and methylcellulose was used in the restoration of the text block. We intentionally used a very thick glue (minimum water content) to reduce the possibility of impurities migrating into the paper and consequently the formation of water stains at the spots of gluing. The restored leaves were dried and flattened between wooden planks, lightly weighted. The correctly arranged sheets were then joined into quires (Figure 7).



Figure 7. Filling in the missing part of the sheet.

### 3.7. Sewing of the Text Block

Upon unbinding, we made a template for each quire on which we marked the location of stitches of the original binding. The template helped us in the reconstruction of the sewing of the text block [10].



Figure 8. Rebound text block (detail).

Before sewing, we weighted the assembled quires between planks for a short time. To ensure the more durable attachment of the cover to the text block, we sewed a cotton lawn fabric on the first and last quire in the width of 5 mm. The assembled and appropriately arranged quires were sewn on a sewing frame into a text block following the traces of the original sewing with four single hemp bonds. A bookbinding linen thread of natural color was used for sewing (Figure 8).

### 3.8. Restoration of the Cover

The cover, which was not part of the original binding, was smaller in width and height than the text block. Nevertheless, we decided to use the cover with leather covering in full. The support therefore had to be supplemented with cellulose fibres to reach the size corresponding to that of the text block [11, 16]. The pasteboard support was first carefully separated from the leather covering. We took apart the pasteboard and placed thinner cardboard in the centre,<sup>8</sup> alternately adding Japanese paper on both sides<sup>9</sup> until we approached the thickness of the original support. We used a mixture of methylcellulose and starch for gluing. Since this adhesive is not strong enough to glue together many layers of Japanese paper, we added dispersion paper glue in a very small amount.<sup>10</sup> The added part was larger, so we cut it to a size fitting the text block when it was completely dry [17].

The leather part of the cover in the spine was wider than the text block. This excessive quantity of the leather covering, together with the leather on the flaps, enabled us to successfully install the same leather covering on the increased support.

### 3.9. Reconstruction of the Binding

Four hemp bands were fanned and glued to the inside of the increased support by starch adhesive (Figure 9). The spine of the text block was reinforced with cotton tapes and covered with new, dyed goat skin. On the newly added leather on the spine, we glued the original leather cover (Figure 10), which was then also placed on the support. Two endpapers were glued on for additional attachment of the text block and the cover [12, 16].



Figure 9. Four hemp bands were fanned and glued to the inside of the increased/restored support.

<sup>8</sup> Archival quality cardboard Hahnemühle, 1 mm thickness.

<sup>9</sup> Japanese papers Paper Nao 642 181 and Japico RK 02.

<sup>10</sup> Dispersion adhesive Mekol 1413/ G, Mitol®.

<sup>7</sup> Wheat starch glue Domofix, Helios®.



*Figure 10. Gluing the original cover to the support.*

#### 4. Protection of the Material After the Conservation Treatment

For the conserved and restored book, we also made a custom-made protective box [13] from archival quality pasteboard intended for the permanent storage of valuable archival material. It consists of three parts: the lower part – boxes with cutouts for the easier handling of the book, the lid and the cover that connects them. The box is lined with quality natural cotton linen (Figure 11 and Figure 12).



*Figure 11. Manuscript after conservation treatment.*

#### 5. Recommendations for Permanent Storage

The recommended temperature and relative humidity in the room for preserving archives, especially those made of different materials, are a maximum temperature of 18°C and 40–50% relative humidity. It is important that these values do not fluctuate during the day and throughout the year; if this happens anyway, it is important that the fluctuations occur as slow as possible. The manuscript book must be stored in the dark [14, 15].

#### 6. Conclusion

From the point of view of the permanent preservation of Slovenian cultural heritage, an important work was done with the conservation-restoration treatment, because despite

different sizes of leaves and cover, which originally did not belong to the book, we bound the book into a homogeneous whole by conservation and restoration and arranged it for permanent conservation. We took care of it materially. However, our wish is that there will always be someone who able to read this content, as it is written in a Slovenian dialect that is not known to everyone.



*Figure 12. Manuscript in a custom-made protective box.*

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