Conservation Update

Publication of the ERC

April 2021
Editorial board:
Dmitrieva, Maria
Kostadinovska, Maja (layout)
Reid, Zoë

Webpage:
Wenger, Emanuel

Facebook account:
Ruiz Segura, Pascual

Picture on the cover and watermark of pages throughout the publication:
“The Prayer Book of Bonne of Luxembourg, Duchess of Normandy” (1300-1349); source Metropolitan Museum of Art (free for commercial purposes and re-publication under creative commons license).

Copyright:
European Research Centre for Book and Paper Conservation-Restoration
ISSN: 2663-0125

DOI: 10.48341/74h7-1p78
Contents

Foreword .................................................................................................................................................. 3

1. RECENT ACTIVITIES OF ERC ........................................................................................................... 5

News ..................................................................................................................................................... 5

The European Research Centre for Book and Paper Conservation-Restoration has established two awards ................................................................................................................................. 5

Conservation in Covid times: a commercial perspective ................................................................. 7

2. ARTICLES .......................................................................................................................................... 10

A system in which the old covers shall be documented and preserved: A contribution to the history of book restoration in Austria - Eleonore Klee ................................................................. 10

Conservation and Codicological Research of the Column-scroll “Cathedral Code of 1649” ............ 36

3. UPCOMING EVENTS ......................................................................................................................... 51

Our events ............................................................................................................................................. 51

Other’s events ..................................................................................................................................... 51

Workshop “Actual problems of preservation in the scientific library” ............................................. 51

International Annual Conference “Photography collections at the museum” ................................. 52

Transform 2021, 2021 AIC/SPNHC Joint Virtual Annual Meeting ................................................... 52

Old Books and New Technologies: Medieval Books and the Digital Humanities in the Low Countries ................................................................. 52

The Fragment in the Digital Age ........................................................................................................ 52

Paper Stories: Paper and Book History in Post-Medieval Europe .................................................. 53

Hacer tangible lo intangible/Conferencia ICA-SBA 2021 ................................................................. 53

Ciencia y Arte VIII. Ciencias y tecnologías aplicadas a la conservación del patrimonio ................ 53

IMC 2021 Medieval Congress / Special thematic strand: Climate .................................................. 53

2021 Conference Mod Cons: ................................................................................................................ 53

Modern Conservation. Modern Constraints. Modern Conveniences ............................................ 53

4. CALL FOR PAPERS FOR THE NOVEMBER ISSUE 2021 ........................................................... 54

IMPRESSUM ......................................................................................................................................... 55
Foreword

Dear friends and colleagues, readers and authors!

2020 was difficult enough for all of us. It was not easy to work remotely or with limited office hours during the stressful pandemic times. Many events were canceled or postponed. Many projects had been moved on-line.

In spite of many difficulties, two issues of our journal were published on time. We are very glad that the journal is flourishing and strengthening its position!

The current issue has many encouraging news for our readers and authors. Now our journal has a direct web link: https://conservationupdate.com/, while still being accessible through the European Research Centre for Book and Paper Conservation – Restoration website https://www.restauratorenohnegrenzen.eu/erc/.

The new guidelines for authors can be found on a special page of Conservation Update https://conservationupdate.com/CUguidelines/.

We are also happy to announce that starting with this issue; all articles will be assigned a DOI index. The DOI - Digital Object Identifier - is the standard for identifying a piece of intellectual property (such as an article, chapter, and issue) on a digital network. The DOI index was also assigned to all previous issues of the Conservation update https://conservationupdate.com/CUarchive/.

"Conservation Update" is a bi-annual peer-reviewed online journal. It has the International Standard Serial Number: ISSN 2663-0125. "Conservation Update" is a non-commercial project. Our journal does not charge for publication. The full text of all journals’ content is available for free. The journal allows the authors to hold the copyright without restrictions.
The editorial board of the ERC and editors of web journal "Conservation Update" are constantly improving the project and pursuing a policy of its progressive development, including indexing and placing the publication's materials in leading international databases. Now the ranking status of our journal Conservation Update is under the process.

The Conservation Update Journal call for papers for the next issue (2021, No 2). Submissions must be sent by the deadline of September 10, 2021.

We wish all readers and authors good health and great success.

Sincerely,

Editorial Team
1. RECENT ACTIVITIES OF ERC

News

The European Research Centre for Book and Paper Conservation-Restoration has established two awards

‘Book and Graphic Art Conservation Achievement Award’ BCAA
‘Book and Graphic Art Conservation Literature Award’ BCLA

The ‘Book and Graphic Art Conservation Achievement Award’ to natural or legal persons, represents the highest expression of recognition for those who have made significant contributions and continued commitment to excellence in endeavours of science, research, and leadership in the practice and theory of preservation, conservation, restoration and auxiliary fields.

For the ‘Conservation Achievement Award’, a third party must suggest a person to be awarded – no self-registration. Nominations should reach the ERC by e-mail: drpatriciaengel@gmail.com.

Suggestions to the board will be discussed once a year and the award given then within 3 months.

The “ Book and Graphic Art Conservation Literature Award’ is given for an original published paper. The ‘Conservation literature Award’ provides an opportunity for researchers and practitioners to be recognised for their commitment, innovation and resourcefulness towards the publication of their research or practice.

There will be two broad criteria used to judge the Award entries:

1. Quality of Research (originality, accuracy, sources used)
2. Writing quality (clarity, organization, command of terms and use of literature)
For the ‘Conservation Award’ self-application is encouraged. Applications should reach ERC by e-mail: drpatriciaengel@gmail.com. Application forms can be downloaded soon.

The ERC board members and CU team will read the submitted papers out of which the five best will be chosen. From these the best paper will be chosen in the following ERC board/joint CU team meeting.

The first ‘Conservation Achievement Award’ will be presented to Emanuel Wenger for his decades of building up and maintaining the Bernstein Portal for identification of watermarks.

There will be a public lecture by Emanuel Wenger on 27th April 2021

Award presentation Wenger E. Watermarks Database and Search Engine
01:00 PM Amsterdam, Berlin, Rom, Stockholm, Wien

Link
https://donau-uni.zoom.us/j/61010795272?pwd=MDVqazBkOGZBMVBZNIArTlNEdGFFUT09

Meeting-ID: 610 1079 5272
Passcode: 028832

Patricia Engel
Head of European Research Centre for Book and Paper Conservation-Restoration
Conservation in Covid times: a commercial perspective

Caroline Checkley-Scott | Commercial Director | Conservation By Design

As someone who started my professional life in conservation during the 90’s, working in a large conservation department in a government run library, we were never short of materials for conservation projects. Years of stockpiling specialist handmade and Japanese papers, alongside threads and twines, leather of every colour and parchments, meant that everything I ever needed was immediately to hand.

Nowadays, at least in our experience at Conservation by Design (CXD), many materials are bought as and when they are needed. This allows departments to make the most of their budgets and complete a variety of projects as and when required. Space is often at a premium and so smaller quantities are often preferred.

Pre Covid this was the state of play. We would look at our order book, anticipate customers’ requirements and keep supplies well stocked to meet demand. For example, in recent times, the timetable and raw material availability for manufacturing Japanese paper has been affected by climate change. Added to that younger people are not prepared to endure the years of arduous training to become a master papermaker. We at CXD have to invest more resources to guarantee a good supply.

So what else has changed? Now, the Covid pandemic has brought many new challenges for companies like CXD. Our suppliers are often trying to manage their own cash flows, are losing their expertise through staff cuts, or reducing their output to make use of government support schemes. This is aside from the stops and starts as a direct result of Covid related illnesses and isolation periods. Brexit also adds its own challenges with extra paperwork and timescales and delayed delivery times. However, we hope these are just teething problems and in fact we are seeing the situation improving daily.

Communication is key to ensuring that CXD continues to meet the complex demands of the sector in such challenging times. Please keep us posted of upcoming projects and
requirements. Let us know if you need something special, chances are someone else is thinking the same so we can join together.

Commercial companies like CXD are an important part of the cultural sector coming out of this crisis. Let’s us all share what we have learnt, and continue to learn, and let Covid be a stepping stone to a new way of working where commercial, public and private bodies work better together towards a common goal-preserving the world’s heritage for now and for future generations. If Covid has taught us anything, it’s that our collective memory matters.

Since 1992, museums, galleries, libraries and archives worldwide have turned to CXD for our comprehensive range of high quality conservation storage & display products which include; furniture, showcases, acid-free boxes, museum boards and specialist papers.
Delivery to Europe presents no problem to us; we are an international company and use CXD France to keep European deliveries running smoothly. Our huge range of products are available to you to buy online. Our easy to use website shows many live stock levels and lead times. For specially commissioned items, our friendly team will either communicate by phone or email to keep you abreast with the progress of your order. Check out our details here https://www.cxdinternational.com/ and http://www.atlantis-france.com/en/
2. ARTICLES

Harald EHRL† and Patricia ENGEL‡

1 Custodian of the Abbey Collections
2 University for Continuing Education, Krems, Austria

A system in which the old covers shall be documented and preserved: A contribution to the history of book restoration in Austria - Eleonore Klee

Abstract

The paper deals with a new finding of a large number of old, disposed book covers found in the monastery of St. Florian in Austria and gives an example of how such finding may be documented best. It is used as an occasion to look at the history of book conservation in Austria, in particular the work of Prof. Eleonore Klee. To give a more comprehensive picture, some notes found in Kremsmünster Abbey concerning Mrs. Klee and her conservation work are described as well. Based on this research, the paper suggests conservation concepts for both the old covers identified at the monastery and the estate of Prof. E. Klee.

Keywords: History of book conservation, documentation, book covers, Eleonore Klee, St. Florian, Kremsmünster

DOI: 10.48341/08s1-k967
1. Introduction

In the course of preparing a comprehensive survey and research on the history of book conservation in Austria and a possible contextualization of findings with the state of the art of the time, we found important and rich information in St. Florian Abbey in Upper Austria. Previous publications\(^1\) reported on what had been evident in 2016, however over the years, additionally to the restored books, a rich collection of documents was brought to light, illustrating not only Eleonore Klee’s personal career but also the history of book restoration in Austria.

These documents include:

1. a written documentation of the restoration work carried out by Prof. Klee for St. Florian Abbey from 6th Sept. 1944 to 19th Aug. 1991, arranged chronologically and divided according to work packages she carried out and the numbers of the manuscripts, incunabula and printed books
2. a card catalogue with photographs illustrating the written reports and also divided into these “deliveries” and numbers. The photos date from 1949 onwards (27th delivery)
3. the manuscripts restored by her
4. a collection of text fragments extracted from the manuscripts
5. a list of manuscript numbers of other monasteries, in particular Kremsmünster, Reichersberg, Admont and other institutions, which refer to restoration work executed by Mrs. Klee
6. a list of the costs of her working hours and material used
7. 165 covers removed from St. Florian manuscripts,\(^2\) which were replaced by new covers and can be clearly related to the respective manuscripts even today, as well as further elements of book covers, bindings, fittings, end-bands, etc., removed from printed works and archive manuscripts.
8. some boxes designated as “bequests” (documents, correspondence, fittings, fragments of covers, capitals)
9. other artefacts restored by her, e.g., a collection of engravings, which is in the Graphics Cabinet.
10. a collection of her drafts for articles to be published, some of them in several versions (1948, 1968, 1981), showing the development of the restoration profession including the special terminology as well as her own state of knowledge\(^3\)
11. a list of her publications

---

\(^1\) Engel, (2018), pp. 227-244


\(^3\) One example of that evolution is that E. Klee uses the term “Zelluloid” in the first version of one of her texts in 1948 which is a particular transparent foil made of nitrocellulose, but was used as a colloquial expression for any transparent foil back then while she later crossed out this word and wrote “Folie” which means any transparent film in the later version of the text. Another example is the use of “Pergamynpapier”, a colloquial term for paper with short fibres and beige tone, medium pressed to achieve smooth surface, which was substituted with “Japanese paper”, which is paper with distinct range of fibres, usually no fillers and no sizing and very commonly used in the 1980s for backing and infills in lacunae. In the second case it is not only a correction in the wording but also the change of words that expresses a change in conservation technique and material used.
12. a collection of secondary literature on Eleonore Klee and her work
13. a collection of slides which she made for her lectures, according to Dr. Buchmayer, the librarian of the Abbey.
14. equipment and some of her tools
15. letters by her and to her.

This rich material collection
- allows for a comprehensive survey and deep understanding of a particular aspect of the field of book conservation in Austria
- creates new demand for conservation action today. (In what sense will be described below)

Before we start with a closer survey of the collection of material, a short biographical note shall provide some background to understand her work strategy and make the reader acquainted with the framework in which she could act in terms of historical events, administrative structure and possible choices.

2. Eleonore Klee - Life and Historical Context


Born in 1901 in Leipzig, Germany, she received education in art after primary school and was especially enthusiastic about bookbinding, studying art and literature for some semesters. Then she worked for a large bookbinding shop and finally became a self-employed professional herself, offering “works of art and craftsmanship and restorations”, as she writes in her book “Mein Lebenslauf”. In her early days as a self-taught restorer, she particularly focused on restoring incunabula.

In 1935, after her father’s death, she took over running his printing shop. In 1938 Mrs. Klee passed the examination for the master craftsman’s diploma. Reichsgericht, the Imperial Supreme Court, an organisation for which she had already worked when she offered handicraft work, remained her main client. In 1942 her company was shut down by the state government. The machines were taken away; other metal tools and implements were used as scrap metal. “I continued to work until the big bombing raid on 3/4 Dec. 1943” writes Mrs. Klee. With tools and materials quickly brought together she worked from then on directly at the Reichsgericht, as her own workshop was destroyed by bombing.

Her flat survived, however, and there was a lady living there with her as subtenant who was ordered to St Florian with the “Bruckner Choir”. During a guided tour in the monastery, this lady asked the then provisional director, Prof. Dr. Joh. Hollnsteiner, whether he needed a restorer.

“The Historical Research Institute under the direction of the Federal Office for the Protection of Monuments (Dr. v. Juraschek) had been allocated rooms in the monastery for the manuscript collections of Oberdonau which had been collected in the monastery. These holdings needed to be looked after and restored” (“Das Historische Forschungsinstitut unter der Leitung des Bundesdenkmalamtes (Dr. v. Juraschek) hatte für die im Stift zusammengezogenen Handschriftenbestände von Oberdonau Räume im Stift zugewiesen bekommen. Diese Bestände galt es für mich zu betreuen und zu
restaurieren.”), Prof. Klee writes. She brought tools and material she needed for her work from Leipzig to St. Florian and began to work at St. Florian on 15th August 1944 on the basis of a contract with the Federal Office for the Protection of Monuments. Although the institute was closed in autumn 1944, Klee was able to continue working, with the work being “handled” („abgewickelt“) by the Archives of the country (Landesarchiv) in Linz.

At the end of the World War II the manuscripts were returned to their owners, but Mrs. Klee remained in St. Florian and restored for St. Florian Abbey, but also for other abbeys and museums, namely the abbeys of Kremsmünster, Reichersberg, Admont, the State Museum and Archive in Linz and Salzburg University Library.

Eleonore Klee was an autodidact in conservation. Additionally, she took part in discussions with colleagues from Vienna and other countries, for example in teams of experts organizing first response in Florence when the Arno River flooded the Old Town in 1966. This situation, however tragic in terms of the loss, greatly accelerated the development of restoration and especially book restoration.4

Mrs. Klee got retired in 1971, but continued her restoration work for Admont until 1979 and for St. Florian Monastery until 1991. An unfinished work on manuscript number 197 is preserved in the manuscript collection. For her life’s work, which amounted to restoring of more than 3056 books, for most of the manuscripts, she was awarded the professorial title.

Even though Alois Riegl had developed his value system and applied systematic approach towards legal protection of cultural heritage (“Wesen und Entstehung des modernen Denkmalkultes”) as early as 1903 and even though the “K.K. Zentralkommission für die Erforschung und Erhaltung der Kunst- und historischen Denkmale” (Austrian commission for the research and preservation of cultural heritage) included the care for archival material in the list of categories of materials to be preserved under legal protection since 1873, we must underline that Eleonore Klee, having received training in bookbinding, not only had no theoretical background in conservation but was unaware of these developments in legal thought that applied to Austria. Moreover, she started her work at St. Florian before the War had ended, when an entirely different value system was still prevalent.

Cesare Brandi’s teoria del restauro was published only 20 years later, in 1963. It was written in some sophisticated Italian language and its application to book conservation also took some time. It is all the more astonishing, therefore, how advanced E. Klee was in her understanding of the nature of conservation work. She even recorded her conservation steps, anticipating the practice that later had become a de facto standard in the conservation profession.

In Vienna both scholars working at Bundesdenkmalamt (the Federal Office for the Protection of Monuments) and professors at the Academy of Fine Arts, where conservators were educated, did important work towards a new understanding of conservation as a profession in its own right. It included discussion of latest publications, elaborating

---

4 Personal communication of Prof. Otto Wächter with an author.
Conservation Update – Publication of the ERC, 1/2021 (April)

on the ideas of Athens and Venice Charters (Austria being represented by Gertrud Tripp), foundation of a number of associations for the research in conservation and dissemination of its research, such as IIC Austrian Section initiated by Manfred Koller.

Prof. Klee’s close co-operation with Prof. Otto Wächter and Italian conservators starting from 1966 (Florence flood) coincided with a very important period in the development of book conservation. In England, Christopher Clarkson pioneered new approach to book conservation suggesting to only repairing what really needed repair. We can see from the correspondence between Mrs. Klee and Mr. Clarkson that they tried to understand newly detected stitching structure used in old bindings that Mrs. Klee had also found in some manuscripts in Kremsmünster. Prof. Klee was clearly very keen on seeking new knowledge and exchanging views with other conservators.

We found in her personal collection numerous letters to and from her colleagues and articles published in book binders’ periodicals dealing with conservation issues showing that she had been a pioneering figure right from the beginning of her professional life as a conservator (1940s – 1960s).

In the 1970s E. Klee worked according to the state of the art, which can be verified by her publications as well as by the author personally, who worked as a professional conservator in Vienna during this period herself. The topics of Prof. Klee’s articles, her guidance on how to equip a conservation workshop and make conservation work, the change of terms in consecutive editions of her texts, the enlargement of her written documentation are clear signs showing that she took up ideas coming most probably from Vienna and was influenced by Prof. Wächter.

However – and for reasons not clear to us – in her late conservation work her “bookbinder’s neatness” and tendency to make books look pretty seem to suddenly overrule all her previous balanced and “conservation first” approaches. We still don’t have enough clues to understand where this change of mind came from. Only after each and every manuscript preserved by her is documented with conservation history perspective in mind can some answer be given.

To understand the change in the approach to conservation better, a careful documentation of the information available is mandatory. A method on how this can be done was developed and shall be described below.

3. Recent progress in conservation of Klee’s professional inheritance

Numerous letters, manuscripts and notes left by Prof. Klee are on wood pulp paper and already quite brittle; so is the so-called “secondary” literature, newspaper articles and texts cut from magazines.

The collection of covers, clasps etc. taken off the manuscripts and other books was

---

5 For example “Allgemeiner Anzeiger für Buchbindereien (AAFB)”, Max Hettler Verlag, Stuttgart, from 1969 on Schütterschen Verlagsanstalt und Druckerei, Hannover in which she also published herself. However, to understand the influence of these articles on E. Klee as a conservator can only be fully understood by reading the papers.

6 These instructions must still be evaluated in conjunction with the manuscript restoration jobs performed by E. Klee.
discovered in all sorts of boxes in random order.7

Eleonore Klee’s documentation of her conservation work cannot be used systematically, because it was organized according to her workflow, which is no “logical” system per se.

Her workshop tools were found to be stored in different places in the monastery.

To get an overview, the material was brought together and described in German language.

❖ Proper storage for all elements of this diverse collection was developed and implemented step by step
❖ A concept of how to make the catalogue and correspondence accessible and usable was developed
❖ A concept on how to make the old covers usable was developed
❖ Further research on relevant information stored in other monasteries was started (Kremsmünster collection), however due to Covid 19 pandemic situation this activity had to be stopped in November 2020.8

In this contribution we focus on the description of the system in which the old covers shall be documented and preserved, and we give a short insight into the findings in Kremsmünster.

3.1 The old book covers taken down from manuscripts

This work was not only a concept on how to make the covers and with them old book binding tradition and local habits accessible but also a concept of the documentation of a valuable puzzle stone of Austrian conservation history.

Therefore, a description of the covers of the manuscripts had to include possible information on the covers.

After a survey of each individual cover, the manuscripts and the related numbers were identified. Then all covers were photographed with the number, a measure and a colour card on the pictures. One picture showed the cover inside and one outside. If it seemed important, details were also depicted. The pictures were stored with file names holding the manuscript’s number and showing the inside and, correspondingly, the outside appearance of the cover under the file name. This serves not only as a first conservation measure, but also helps document the state of the covers in 2020.

The next step is the description of the cover. This shall be done in the Ligatus database9.

The covers shall not be cleaned because recent research shows that the surface dust can also be an important source of information. They are put in envelopes in neutral paper without calcium fillers and, finally, into boxes. The boxes shall carry the manuscript number outside to avoid opening and handling them when some particular item is looked for.

7 T. Mittermayr has already put some effort into sorting the covers (personal communication with Dr. Buchmayr), however the adhesive tapes he applied shall be taken off the old leather and parchment as soon as possible.
8 Father Willibroad was librarian in Kremsmünster having a lively contact and communication with Prof. Klee of which we have a written record. More about it in chapter 4.
9 Ligatus.org.uk
The descriptions shall be used to build a catalogue. The catalogue will indicate every manuscript's number, the description of its cover, a reference to the page number of the documentation texts by E. Klee (for which the pages were numbered) as well as the photos E. Klee made before and after treatment. A reference to the manuscript catalogue will be mandatory too.

Three examples – a full leather binding with wooden boards for a paper manuscript, the same sort of cover for a parchment manuscript and a full parchment binding with card board boards for a paper manuscript – were used to illustrate what a catalogue of these covers could look like. In two cases the sewing is kept. The covers are presented to make scholars acquainted with the rich collection they could possibly use in St. Florian.

3.2 Individual example one – a paper manuscript bound in tawed skin/leather

XI 628

❖ Catalogue text of the manuscript


10 Czerny, Albin, Die Handschriften der Stiftsbibliothek St. Florian, Linz 1871, Seite 214

Alternatively, a photo of the catalogue text could be used in this position.

❖ Description of the cover which was taken off the manuscript, incl. photo

The board from the manuscript XI 628, with the leather still on it, is preserved.

The dimensions are: 308 mm height, 233 mm width; portrait format. The boards are 7.5 mm thick in the thickest part. They become slightly thinner towards the fore edge and measure 7 mm there. From 8 mm towards the spine they are rounded (bevelled). All other board edges are in rectangular shape to the board surface. The wood is beech and the direction is in parallel to the back spine. Traces of tools used to cleave the wood out of the trunk can be seen in particular on the rear board (not front board).

The boards are covered with red-dyed alum tawed sheep skin which is approximately 1 mm thick. All turn-ins are irregular in shape, cutted with a knife and without the leather thinning at the margins. On the turn-in towards the front edge on the board which was at the back of the book we find scratches, which continue onto the wood. The turn-ins dimensions are between 27 mm and 47 mm.

The mirrors were most probably reused parchment. This can be assumed judging from the imprints of ink text on the upper edge turn-ins of the board which was at the back of the book as well as the shapes of frass holes and insect frass (powdery dust leftovers) which would look different in case paper was pasted there.
In the case of both boards the turn-ins of the front edge were made before the leather was turned in from head and tail. Overlapping is not wide, and thus shows an angle of close to 45 degrees.

The codex had 10 bosses, 2 clasps, a chain and a tag for a text.

Three bosses are still on. They are made of copper-containing metal, 16mm in diameter and 9 mm in height. Their centre point is positioned 21 – 28 mm from the upper and lower board edge and ca. 23 mm from the front edge of the board. The two centre bosses are in the crossing point of notional diagonals on the cover.

The chain was fixed on the back board upper edge, 110 mm from the front edge and 30 mm from the upper edge.

The two clasps close from back to front. The 27 mm-wide thick red-dyed leather straps rested in a place where the wood was taken away on the back board as to accommodate the leather. They are nailed down with four copper-containing metal nails or perhaps they are only metal sticks, because the head ends are less than 1 mm in diameter.

The rests on the front cover were positioned accordingly. The clasp closer to the tail was lost earlier: this can be concluded from the colour of the leather, which is the same as the rest of the leather cover, while the colour under the upper clasp and under the bosses is fresh red. That the leather is fresher on the back cover than on the front is a result of the storage as a chained book. This, again, accounts for the tag with the title on the front cover, from where it was taken off in the course of restoration. This tag was not exactly in the centre between the bosses, which made it an optical centre when the codex was looked on together with its spine.

The distance from the head edge of the board was 12 mm; its height was 30 mm and its width 106 mm.

Bookblock and mirrors must have been 6 mm smaller than the boards, at least the discoloured leather turn-ins suggest this.

The stations are located at 63 mm, 125 mm, 183 mm and 243 mm from the top of the book (centre of station taken as reference point). There are 65 mm from the centre of the lowest double station to the tail edge of the board. The two end-band stations enter the boards at 5 mm at a shallow angle. The station material was alum tawed leather of which the end-bands’ cores were made of twisted leather of the same sort.

All other stations enter the boards in the area where the wood is bevelled and are fixed with two wooden pegs, at 10 mm each, and are again fixed with a single wooden mail, at 30 mm each.

Backing of the spine of the bookblock was made of parchment, which was fixed between boards and leather, i.e. on the outside of the boards, and cut free to accommodate the stations.

The double stations were trimmed down with s-twisted cords, which can be concluded from the imprints on the leather.
All written and photographic testimony/evidence/documents(?) relevant

Translation by the authors (Fig. 1):

April 1980

XI 628 Old, red leather volume with bosses (4 are missing, 2 do not fit/suit well, 4 scratched through). Stations torn off, elements of back clasps missing, boards eaten by worms and broken. Old chain book.

Volume completely dismantled and deconstructed because stations were very hard. Dirt brushed out of all leaves, strips fixed to quires, sheets repaired. New hand-made paper flyleaves sewn on leather strips, new headbands, pressed, uneven quires were evened out, spine lining, new wooden boards, new leather cover. Some old instructions from the cover inside re-applied. 10 brass bosses and 2 clasp elements made properly. Book shoe. Working time 24 1/2 (most probably hours) Material 136,- (most probably Schillings)\textsuperscript{11}.

\textsuperscript{11}In contrast to her early work, this documentation was too lapidary and the work executed according to the state of the art. It was not a pioneering work anymore, compared to what we saw at the beginning of Prof. Klee’s professional life.
Conservation Update – Publication of the ERC, 1/2021 (April)

On the left picture the leather of the back spine is still there, we might still find it in the Monastery (Figs. 2 and 3).

E. Klee wrote on the verso: 1980, 10. Lieferung (10th load (this refers to her numbering of workloads)), then the numbers of the two manuscripts she depicted on this photo and on the bottom in so called Gabelsberg script, a short hand writing: “vor Rest” and “nach Rest” (obviously meaning “before conservation” and “after conservation”) (Fig. 4).

Fig. 2-4: Photos of the photos which was the “photographic documentation of Prof. Klee’s conservation work.

During a photo documentation session some 100 photos were made in September 2020.

The following view of these photos shows the style and intention behind these photos (Fig. 5-8).

Fig. 5: XI 628 old covers outside.

Fig. 6: XI 628 Cover front, old cover taken off left and Prof. Klee’s conservation, i.e. today’s state.
Although Mrs. Klee’s main focus was on the binding structure and covers, which is in complete accordance to her education as a book binder, she sometimes also repaired the paper of the book block. However, she never mentions work like treatment of ink or copper corrosion or other genuine conservators’ work. This is also the reason why the book block, the paper and parchment etc. are not described and commented in the context of this contribution. Paragraphs like this may also be a part of database entry.

Whether or not such backings had been of the same shape and accuracy in the first binding cannot be judged any more.

The last photo (Fig. 9) does not only show the text fragments which Mrs. Klee strived to connect directly with the codex, which is a good idea from the scientific perspective and not such a good idea from aesthetic perspective, but also shows her book binders’ precision. The raking light shows the edges of the backing of the spine and some additional material in the places where the bosses are.
3.3 *Individual example two — a paper manuscript bound in parchment*

XI 692

❖ **Catalogue text of the manuscript**


❖ **Description of the cover which was taken off the manuscript, incl. photo**

This full parchment bound book with boards made of cardboard (Figs. 10 and 11) is 314 mm high, 210 mm wide and the back is 62 mm wide; portrait format. The parchment is from sheep or goat skin and not coloured, but has a primer. The board is made of layers, not couched, and is about 2 mm thick. On the front edge a lip (an overarching part of the board and parchment which is bent 90 degrees towards the book block’s front edge).

We have the typical green ribbons to tighten the book. They were 11 mm from the front edge of the board and 8 mm from the head and the tail edge of the board (measured to the centre of the ribbon). The slit that takes in the ribbons is 10 mm long.

On the back we find an inscription written with iron gall ink. On the front cover, a crossed out “91” and a “27” next to it, both quite faint, can be seen.

All turn-ins are cut straight. First the ones from head and tail were made, then the ones from the front edges. On the four corners the parchment only slightly overlaps at about 45 degrees. The width of the turn-ins ranges between 24 mm and 15 mm. Two layers of paper were used as a mirror, one of them imprinted. The distance from the edge of the mirror to the edge of the cover is 2 to 5 mm. The fold is 2.5 mm wide.

The cover was not only chosen for this article, because it serves as a good example for a parchment binding as well as a binding with cardboard and not wood, but also to illustrate how to describe a sewing. In this case the sewing is attached to the cover.

Although cut open, the 4 double stations made of hemp cords which were frayed at each end can be seen clearly. Measured from the upper edge they are positioned at 63 mm, 126 mm, 192 mm and 256 mm. The lowest station is 60 mm from the tail edge. The thread was not stitched between the two cords but around both of them at once, i.e., if the bookbinder worked from head to tail: he first went down, then around the station material and then back into the hole of the particular station. Both the material of the station and the thread are s-twisted and both are of the natural colour, i.e., not dyed. The headband, however, seems to have been of two colours, but the colours largely faded. The headbands are

\(^{12}\) XI. 692. Paper manuscript of the 17th cent. 3 Volumes in 2° with 250, 409 and 356 fols., previous owner Joh. Carl Seyringer. All sorts of farewells and prejudice. They refer to Upper Austrian court cases. First volume missing. It seems that the collection was brought together in 1670 and, according to an inscription in the 4th vol. fol 1, was owned by Georg Const. Gschandtner.
stitched around parchment strips. This strip is 31 mm wide for the head end-band and 28 mm is the strip of the end-band at tail. The parchment strips were glued (not pasted) down to the book block. There were three more parchment strips as backing of the bookblock of which the uppermost was 21 mm wide, the one in the centre 17 mm and the one closest to the tail, 25 mm. All these parchment strips are reused book pages with old text on them. On them we do not only find imprints of the quires but also of the fizzstations. The lower of the fizzstations was 12 mm from the tail end and the upper fizzstation, 18 mm from the head end. The imprints of the backings under the mirror show that they were fixed at irregular distances; with 30 mm they measure the widest distance at the end-bends.

On the front mirror there was an exlibris or some other piece of paper pasted. To detach it, it had been made wet, which caused a characteristic margin stain. A small piece which was not detached completely indicates the sort of paper used there.

Mrs. Klee turned this full parchment binding into a half leather binding (Figs. 12-15). At the moment, we do not fully understand her reason for doing that.

❖ All written and photographic testimony/evidence/documents(?) relevant

![Fig. 10: XI 692 - Outside of the cover taken off the manuscript by E. Klee.](image1)

![Fig. 11: XI 692 - Inside of the cover taken off the manuscript by E. Klee.](image2)
**Fig. 12-13:** XI 692 - Documentation photos made by E. Klee: before conservation (left) and after conservation (right).

**Fig. 14:** XI 692 - Front cover of the codex in its current state (right) and the old front cover kept in the collection of covers (left).

**Fig. 15:** XI 692 – Back of the codex in its current state (right) and the old back kept in the collection of covers (left).
In this case E. Klee interpreted the full parchment binding by a half leather binding. The original sewing is also preserved (Fig. 16):

**Fig. 16:** XI 692 - Station and sewing cut out of the manuscript and preserved in the collection of covers.

Klee writes as a documentation text:

**Aug. 1988**
**XI 692**

Completely worm-eaten parchment-bound volume with boards from cardboard. Bookblock slid out towards front. [small sketch not visible in the photocopy]

Cover was removed and book dismantled completely. All double folios cleaned from sand etc. Quires strongly pressed. Fold strips adhered and tears repaired, quires again brought to good shape with the bone folder. New front leaves with handmade paper. Sewn-on cords; new leather back and leather corners. As paper cover a sprinkled marble paper. Bookshoe, Material 93.-Sch. [Schilling] work time 12 “Std” [for hours]

E. Klee obviously repeats the old sewing technique, but it might have later appeared to her “book-binder’s mind” that this did not match with the back made of parchment, which was indeed a strange and technically imperfect combination. Nevertheless, she had not taken up this book with half leather binding, and her choice of white leather had not been explained by her.

### 3.4 Individual example three – a parchment manuscript bound in tawed skin (leather)

**XI 720**

- **Catalogue text of the manuscript**

We need not retype the catalogue entry, as a photo can quite serve the purpose (Fig. 17).

**Fig. 17:** Catalogue entry for XI 720.

- **Description of the cover which was taken off the manuscript, incl. photo**

While the previous two manuscripts were paper manuscripts, the bookblock of XI 720 is made of parchment (Fig. 18).

---

13 Some of the book shoes are made of low-quality cardboard. It must be checked if they must be exchanged for better quality book shoes today.
The surviving cover has wooden boards and an alum tawed undyed blind-tooled sheep leather cover with a clasp at its front edge and a chain. The cover was 233 mm high, 140 mm wide and 32 mm thick; which is a rather small portrait format.

The two beech wood boards run parallel to the back spine and are slightly rounded at all edges, towards the back spine strongly. The back board is intact; the front board is slightly weakened by insect frass.

The leather is decorated with three parallel bind-tooled lines. They run around the margin of the codex and in diagonals to form an “Andrew’s cross”. Back and front are decorated equally. The tools were single rolls or fixed tools to print lines. The distance between the single lines varies and lies between 4 mm and 7 mm.

The leather turn-ins are trimmed with a knife, which can be seen from the shape of the edge, however, they are not straight with the exception of the fore edge turn-in of the back cover. At the corners, a sort of tongue is cut, which was shaped tightly on the boards while the leather was wet. The width of the turn-ins varies and measures 10 mm to 301 mm.

The hole for the chain is 10 mm from the head edge of the board and is positioned a bit towards the back spine of the codex, which, spine included, makes it appear at the centre. Traces of rust on the leather make us estimate a cross-shaped fixing plate. A counter plate inside the board left a round imprint. It seems as if this plate was positioned between leather turn-in and mirror.

The mirrors left imprints both on the leather and on the wood. It clearly shows that the mirrors were of parchment sheets that carried some text. It is certain that backing material for the spine was also taken off. These fragments were not found in the fragments collection of the monastery. Nevertheless, they should be found in any case, as the fragments are another important element of information. In the case at hand the strips have different dimension and are of extraordinarily fine parchment. The widest is the second strip from tail, it is 42 mm wide, and the narrowest is the strip on top, which is as narrow as 14 mm on the front cover. The parchment reaches differently far onto the cover and were applied on the inside of the wooden boards; 45 mm is the measure if reaching onto the board.

The leather was pasted firmly to the back of the quires, which is the reason why the parchment strips are fixed firmly to the leather and show the imprints of the quire-pattern towards inside.

The sewing, which must have been intact, was cut open. There had been 3 stations and 3 headband-stations. The internal station material is slit alum tawed leather with slits exactly the length needed for sewing. The leather strips are 10 mm wide. The sewing thread is light in colour, very soft and z-twisted and is stitched in such a way that is goes between the two parts of the leather strip. The stations enter the wood from outside at ca. 13 mm and are fixed with round wooden pegs of ca. 8 mm diameter at 25 mm. The two end band stations are stitched over two intertwined alum tawed strips of leather each and anchored in the fizzle stations. These threads are also uncoloured and also z-twisted; however, it appears a bit more robust.
than the sewing thread. The thread is stitched down at every other winding. The inlays of the headband-stations do not imprint; therefore, it is not possible to see if, and if so where, they might be fixed.

The leather is cut straight. Due to pulling the leather over the boards a v-shaped opening appeared at the folds, i.e., between back and board.

In the centre of the back board there is a boss, which holds the leather strip of the clasp. The leather is 4 mm thick and rests in a particular recess in the wood, the leather of the cover is thin in this area and covers it and on top there are rivet and boss.

The latter is round, with a diameter of ca. 10 mm and made of copper-containing metal. How high it was is difficult to say, because it is pushed inwards today. The metal appears to be quite thin. On the front board the hole of the counter plate still exists, it is 50 mm from the board’s fore edge.

In the upper area of the front cover there are traces of adhesive which had held a label. It had been 14 mm from the upper edge and minimum 77 mm wide and minimum 18 mm high.

On the back spine there is a label (34 mm high) made of paper and a text written in iron gall ink immediately under the end bend station. Immediately above the lower end bend station there are traces of an inscription directly on the leather.

❖ All written and photographic testimony/evidence/documents(?) relevant

![Fig. 18: XI 720 - How it appears today (right) and the old cover taken off and given to the collection of covers left.](image)
The manuscript in question is the rightmost of the three depicted codices – it is difficult to see (Fig. 19).

4. More Findings about Prof. Klee’s conservation work

Documenting Prof. Klee’s work is just one mosaic stone in a vast task of writing the history of conservation. This article focuses on book conservation; however, the findings and first-hand memory still alive in the monastery are of additional value.

There is much work still to be done, such as close observation and description of each and every manuscript she restored, preferably following the pattern we suggest here as best practice. Furthermore, her letters should be read, sorted, properly stored and edited. The same holds true for the photo collection she left: these photos captured the state of a particular item and may serve as a valuable source for understanding its speed of decay. In general, all items Eleonore Klee left for us should be brought together in such a way that researchers can use them.

In the following part we only focus on a few elements:

❖ Publications

Among her publications, the one dealing with “Kremsmünsterer Knotenheftung” is of particular interest from today’s perspective. Of course, it already attracted interest of the community of book conservators in the 1970s, which is reflected – among other details – in the correspondence about it with Chris Clarkson in England in June/July 1979, which can be found in her letters.\footnote{E. Klee also had exchanged letters with Dr. Müller, Jena and Prof. Otto Wächter and his team in Vienna National Library.}
Correspondence

The letters illustrate the point of view of Mrs. Klee, the evolution of her ideas and the overall “fashion” prevalent in conservation in the particular periods. One example is her communication with P. Willibroad OSB, who was a librarian at Kremsmünster. Their correspondence related to a particular issue: whether or not a folio should be taken out of Codex Millenarius Major for the purpose of an exhibition. Mrs. Klee firmly advises against this – a position which is valid still today.

Covers

The fact that the old, even in some cases medieval book covers still exist at the monastery cannot be overestimated. From the survey done so far, we found that all the covers kept there were taken off after 1980. So, it might be that the new perspective in conservation developed in Italy in the 1950s might have reached St. Florian via Vienna by then. Another option would be that E. Klee had kept the covers as a source of material. End leaves taken out of old books had been made into paper pulp for leaf casting in Vienna as a regular practice until the 1980s and Tarquin Mittermayr mentions in his diploma thesis written at University of Surrey Roehampton in 2000 that Mrs. Klee was extremely careful in the use of resources, which might confirm the latter hypothesis that she re-used the material of the old covers.

However, she clearly did not re-use what did not appear “beautiful” enough to her. Original bosses and clasps were left back on the covers she had taken off the manuscript, which is confirmed by her written documentation texts, where she tells us that the bosses are “scrubbed through” (durchgescheuert) (Fig.20).15

Clasps and other elements

Apart from the book covers, another valuable collection is that of clasps, cut off end-bands, boards, etc.

E. Klee clearly used some of these elements as patterns for her new book elements (Fig. 21).

Shape and size, but even the patterns of some clasps were copied onto paper, which may have served as model to cut the shape of the clasp out of a metal plate. It still needs more time and attention to sort all these elements and connect them with particular conservation actions.

Other fragments were limp covers of archival material (Fig. 22).

Or cut off endbands (Fig. 23).

These two examples are only given to demonstrate the outstanding value of this collection.

Manuscripts

Finally, it is worthwhile to closely describe the conservation work done on any manuscript by Prof. Klee, even if there is no cover left.

15 One other reason why E. Klee’s texts need editing is that she sometimes uses unusual terms, such as “morsch” to describe the state of leather (normally used for wood affected by microorganisms) or “kapitalt”, which obviously means that she made new endbands.
Fig. 20: E. Klee’s documentation where she says that the bosses were “scrubbed through”.

Fig. 21: A taken off clasp together with a close copy of it in cardboard.

Fig. 22: Limp binding taken off the bookblock.

Fig. 23: Cut off endband.
Among the notes by E. Klee in St. Florian monastery we found evidence of particular numbers of manuscripts Mrs. Klee restored for other collections. Our first step was to visit Kremsmünster Abbey and see the collection there.

Soon it became clear that Prof. Klee restored many more manuscripts for Kremsmünster than the list she had left in St. Florian indicates.

It had already been clear from notes on the end leaves of codices in Kremsmünster that Prof. Klee had restored some of these manuscripts. Texts in green ink written by P. Willibroad were – as we found out now – copies of E. Klee’s written documentation provided to Kremsmünster. This practice of P. Willibroad was later taken up by other librarians. In some cases, her texts had been cut out and pasted into the manuscripts on the backboards’ inside.¹⁶

Details on that work shall be published at some later moment, but one aspect should be mentioned here already: The fact that we could not find any covers taken off before the 1980s might be due to the fact that E. Klee reused the covers at least in parts and re-applied them onto manuscripts. An example illustrating that would be CC 8 of Kremsmünster (Fig. 24), from the 14th century, which was restored by Mrs. Klee in 1963.

From the codex itself, which is shown in the picture, we can see that the old leather is applied on both front and back cover. In Kremsmünster Abbey we find

- Prof. Klee’s written documentation
- Delivery notes
- Invoices, and
- A few letters

All these items must be sorted, connected with the individual codex and edited.

Of particular interest is the diary by P. Willibroad OSB, which starts on 25th June 1945.

From this text, we learn that the delivering manuscripts from St. Florian, where the Nazis had accumulated a vast amount of treasures from all over the country, back to Kremsmünster started at 6 in the morning of 10th July 1945. We learn that one way took them 2 hours and that they had two transports...

¹⁶ This part of the survey had been done in the frame work of DITAH project.
on this day (diary page 4). P. Willibroad (Fig. 25) left us a detailed description not only about the transport, the manuscripts and all the circumstances, but also about his thoughts on where to put the manuscripts in Kremsmünster Abbey. The diary gives us a vital picture of the time.

Further details about Eleonore Klee’s work in Kremsmünster shall be reserved for next publication.

Only one thing should be mentioned: the fact that the leather of CC 8 was taken off the cover (Fig. 26) that E. Klee found when she received the codex for conservation was confirmed when we found the boards of CC 8 in Kremsmünster without leather.

St. Florian Abbey holds a rich and precious collection of covers and fragments taken off manuscripts, such as single clasps, end-bands, etc. Furthermore, both St. Florian Abbey and Kremsmünster Abbey possess numerous written documents by and about the conservator Eleonore Klee.

All the evidence of E. Klee’s conservation activity, both at St. Florian and at Kremsmünster are of considerable value. They present a clear view of the state of book conservation from the 1940s onward. They also provide a detailed picture of older bookbinding tradition, as the old covers are “open books” to the experts of today, and the fact that we still have them is by no means usual.

It is not clear whether these fragments were collected intentionally by Mrs. Klee or were forgotten to be disposed of, whether they were used as templates to make new clasps and covers or a source of material used by her as book conservator. There is no reliable information to clarify this point, and surely not all book covers are available or have been found to date. We can provisionally conclude that E. Klee kept the covers intentionally based on the fact that she gave the old covers back to Kremsmünster Abbey after she had restored their codices.

Eleonore Klee is one of many conservators who worked in book conservation in Austria, but she is also one of the conservators who had a strong impact on the profession because of

- Her long professional service
Her focus on conservation as her own life’s work
- Her publications

From the material studied so far, we could get a comprehensive insight into Prof. Klee’s work as a conservator as well as into the history of book conservation in Austria.

Eleonore Klee was clearly a pioneering spirit at the beginning of her career as a conservator. However, we must also stress that her conservation action focused on sewing and binding. Severe threats such as ink and copper corrosion were not dealt with, although from the 1980s on this kind of corrosion was the research topic most hotly discussed by Viennese conservators. (Prof. Wolfgang Wächter from Leipzig was even invited to Vienna to speak about his paper splitting method that was used, among other methods, to preserve ink-corroded manuscripts).

As a child of her time and given that book conservation was still a young discipline, Prof. Klee wrote guidance books on how to preserve a codex and how to set up a book conservation workshop.¹⁷

E. Klee took steps to further advance her own education. She collected articles on book conservation and exchanged opinions with other experts in the field. She had excellent craftsmen’s skills and competence, which can be seen in every cover she made.

While E. Klee actively wrote her own papers and published even at the Vienna Academy of Sciences (her finding of “Knotenheftung” in Kremsmünster in 1944 and her advice to not take apart the manuscript “Major” given in a communication with P. Willibroad, which was ahead her time). Later, while in Kremsmünster, she enriched the texts of her documentation, but, on the other hand, “fell back” into the state of the art and still later, towards the end of her time, she even seems to have fallen back behind that. This point, however, must still be documented in detail.

Prof. Klee was a book binder par excellence and approached the task of conservation with a bookbinder’s neatness that did not completely agree with the advanced conservation philosophy of her day. Her scientific œuvre, too, is more often concerned with technical questions rather than conservation theory, which is well illustrated by her notes.

5. Conclusion

This contribution greatly gained from the fact that Harald Ehrl knew E. Klee personally and Patricia Engel was involved in conservation in Vienna from 1979 on and knows many details about the evolution of the profession from her own experience with people E. Klee had personal communication with.¹⁸ It also suggests a way forward for this particular collection that can be followed by anyone interested in the topic and a best practice that can be applied to similar collections. Specific measure of each element of the book and a proper description help reveal certain

¹⁷ We found also some photos showing her own workshop at St. Florian Abbey.
¹⁸ This is also the reason why the authors started documenting and surveying the Viennese conservation methods using, O. Wächter’s book (Wächter (1982) and started her own work on the history of book conservation from 2014 on. The latest Strukturmittelprojekt DITAH – “Digitale Transformation der österreichischen Geisteswissenschaften” Donau-Universität Krems, DBU, Zentrum für Kulturgütergeschutz, European Research Centre for Book and Paper Conservation-Restoration she is involved in gives another good opportunity for going further on into this topic.
workshops’ or bookbinders’ traditions. An ideal arrangement would be that the results of such surveys are fed directly into Ligatus\textsuperscript{19} database, which would allow for comparisons of data with a large number of other data concerning bound books.

The next step will be to create a catalogue of the covers and fragments held at St. Florian Abbey. This catalogue will result from a comprehensive description of the collection. It will indicate:

1. The number of the manuscript
2. The catalogue entry of the manuscripts or a link to it
3. The description of the cover and other elements taken off the manuscript and photos of the elements
4. All written and photographic documents of the past which are related to the manuscript and its conservation
5. Evidence of fragments possibly taken out of the manuscript in the course of the conservation activity
6. A description of the conservation measures taken by E. Klee
7. Further relevant information

Due to Covid 19 pandemic we had to discontinue the work, leaving it unfinished. After a close survey of the material at Kremsmünster, other abbeys such as Admont, will also be addressed for permission to see their manuscripts.

It has already been mentioned that all manuscripts at St. Florian will be documented in the way suggested in this contribution. Furthermore, the covers must be stored appropriately: they should be kept in individual boxes, or boxes of uniform size with the space between book cover and box edges stuffed with paper. The monastery has already found a space where the climate conditions are appropriate and users can access the covers if needed. The boxes will be labelled outside, so that the individual cover can be found easily.

All elements of book binding will be surveyed and, whenever possible, the relevant codices or books or archival bundles found.

Editing all the written material is another time-consuming task ahead. In the meantime, all these documents also need proper storage, because most of them are written on wood pulp paper and are already brittle today.

Next steps will be to present an equally thorough view of the work of other Austrian book conservators, as elements and “building blocks” of a realistic and comprehensive picture of the history of book conservation in Austria.

\textsuperscript{19} Ligatus database is a tool for documenting bookbinding features in a standardized way.
Aknowledgement

We thank father Petrus, OSB librarian at Kremsmünster Abbey for his help in finding texts about the conservation of the manuscripts and the permission to survey the manuscripts themselves, and Oleg Philippov for his help with the English language.

References


Father Willibroad OSB, diary without number, Kremsmünster Abbey

Ligatus, URL: ligatus.org.uk [19th March 2021]

Authors CVs and contacts:

Harald R. Ehrl
1960-03-13 born in Perg, Upper Austria
1978 entry into the monastery of St. Florian
1979 - 1989 Philosophical, theological studies and organ studies in Salzburg
1990 ordination to the priesthood
Various pastoral positions
1997 - 2005 Novice master
2005 - 2016 Priest of the Abbey
Since 2018 Custodian of the Abbey Collections

Patricia Engel is a senior researcher at the University for Continuing Education, Krems, Austria. She graduated from the conservation class of the University of Fine Arts Vienna in 1984 and holds a doctorate and a habilitation degree in conservation of the University of Fine Arts Warsaw. P. Engel finished her habilitation in 2014. She worked at the National Library in Vienna, the State Library Prussian Heritage in Berlin and later as free lance conservator in Germany and Austria (amongst others cooperation with ICCROM and the Austrian federal department of cultural heritage) and taught in the Centro del bel libro in Switzerland. From 2000 on she installed the new chair of Book and Paper Conservation at the University of Applied Sciences and Arts in Hildesheim/Holzminden/Göttingen, Germany and was head of it until 2008. P. Engel headed international research projects in conservation of cultural heritage, organised international conferences, founded the European Research Centre for Book and Paper Conservation-Restoration, taught in numerous European universities and in Indonesia, Sri Lanka and Armenia and is author of numerous international publications in the field. She works for international organisations such as ICOM – CC and IPH (International Paper Historians). In 2017 she was granted to Austrian awards for her scientific work (Life Science and Liese Prokop).
Marina Volchkova¹ and Maria Dmitrieva²

¹ Russian State Archive of Ancient Documents (Moscow, Russia)
² State Research Institute for Restoration (Moscow, Russia)

Conservation and Codicological Research of the Column-scroll “Cathedral Code of 1649”

Abstract

A unique manuscript - a handwritten column-scroll over 300m in length - was treated at the Preservation Laboratory of the Russian Academy of Science Archive. Thorough conservation treatment of "Cathedral Code of 1649" has allowed the scientists to carry out the codicological research. While unrolling the manuscript many important details about the scripting process, editing, combining the sheets in the scroll were discovered. A challenging decision, about rearranging the sheet sequence based on the scientific research, is described in this paper. Now the whole information about research and conservation treatment, and a digital copy of the Cathedral Code as well, are available for public access via the internet.

Keywords: Column-scroll manuscript, conservation, Cathedral Code of 1649

DOI: 10.48341/ys6b-kp69
1. Introduction

The “Cathedral Code of 1649”" is the original fundamental Russian legislation of the pre-Petrine era\(^1\). In form, it is also a unique manuscript - a handwritten column-scroll over 300 meters in length.

The decision to conserve the scroll was adopted at the end of 2007 by the former chief curator of the Russian State Archive of Ancient Documents Idea Balakaeva and was carried out within the framework of the National Heritage program. The conservation treatment of the Cathedral Code made it possible to perform a complicated codicological study of this monumental manuscript.

2. Preliminary research

The conservation treatment was carried out by highly qualified conservator Marina Volchkova at the Preservation Laboratory of the Russian Academy of Science Archive. Like any scientific conservation treatment, it began with research on the preservation state of the written monument. The Cathedral Code of 1649 was kept tightly wound on a wooden shaft and housed in a gilded silver case (Fig. 1).

Fig. 1: This gold-plated ark was made in 1756 by the decree of Catherine the Great to preserve the Cathedral Code.

\(^1\) Russian State Archive of Ancient Documents, file 6.
In August 2008, the scroll without its case was brought to the Preservation Laboratory for the conservation procedure and rewound onto a wide hardboard cylinder (Fig. 2). The initial oak cylinder shaft was 19 cm long and 2 cm in diameter. The ends of the stick had different shapes: 0.5 cm and 1 cm long parts of a square cross-section and the upper cylindric end of smaller diameter and 1.5 cm long (Fig. 3).

The first few meters of the scroll showed that the manuscript was glued together from separate sheets of paper resembling the well-known Russian ‘column-manuscripts’. However, it was not possible to make a conclusion on the general preservation state of the manuscript precisely, because of its scroll format and length, over 300 meters². Therefore, a description of the damage was made throughout as the conservation progressed from beginning to end. Traces of numerous previous mends were noticeable even along the edges and on the opening pages. Tears had been mended using methods and materials that did not meet modern standards of scientific conservation treatment of documentary monuments. Those interventions included capacitor paper³, gauze-type fabric, non-woven synthetic material, a paper containing wood pulp, PVA glue, and adhesive scotch tape. Most of the mending strips were glued without removing the old ones, with one on top of the other, sometimes up to three layers were found (Fig. 4 and 5).

Fig. 2: The scroll was unwound for digitizing and then wound back.

Fig. 3: A stick-shaft for winding the entire scroll.

The first few meters of the scroll showed that the manuscript was glued together from separate sheets of paper...

² Volchkova et al. (2013), pp.44-46.

Capacitor paper (GOST 1908-88) is the thinnest semitransparent fastness paper made of sulfate cellulose after total removing of all impurities, in particular, metal. Capacitor paper impregnated with a liquid dielectric (Trichlorobiphenyl) is used as a dielectric interlayer between aluminum foil plates in electrical capacitors. In the last century, this paper was frequently used for paper mends due to its features (4-15 mm in thin, density 0,8-1,35 g/cm³, pH 6-7, moisture content 6-9%).
In addition to visual examination, the paper base of the manuscript was studied using laboratory equipment: microscope Leica MZ12.5, with a digital camera DFC490 connected to a computer. Microscopic examination of the adhesives and mending materials used to repair the manuscript was also carried out. The hydrogen index (pH) of used repair materials and scroll paper was measured. pH measurements are needed to determine the degree of paper acidity, which in turn affects the long-term storage of a paper-based document. The pH measurements of the scroll were carried out using a HANNA HI 9025 pH-meter with HI 1413 contact electrode. Although the pH values 5.6-5.2 obtained indicate acidification of the paper, they are not critical for old rag paper. UV-light and fluorescence microscopy investigation of the ink was undertaken. It was discovered that the scroll was written with iron-gall ink and that it had not corroded the paper. Also, the necessary studies of the ink for sensitivity to moisture were carried out and the ink was found to be water-resistant. Studies on the water solubility of the adhesives used during the creation of the scroll, and its numerous mends, were also performed. It was found that the glue used by the creators of the scroll in the middle of the 17th century was of animal origin (gluten). The adhesives for the mending process mostly had a vegetable nature (starch), with the exceptions of some PVA and scotch tape adhesive.

Laboratory studies of biodeteriorations were carried out, as well. Visual examination revealed no obvious active centers of microbial infection. The archive storage conditions of the previous decades did not allow microorganisms to actively develop. However, to exclude hidden infection or the presence of viable fungal spores, it was decided to carry out sampling followed by laboratory analysis. When sampling from various types of damaged areas, non-destructive methods were used: micro-scraping of surface contaminants, sterile Tupfer-swatting\(^4\), and the bact-print method\(^5\).

\(^4\) Each sterile swab, placed in sterile tube, has one cotton tip on the end of a sturdy plastic stick. Sterile swabs are used to implant microorganisms onto a growth medium agar petri dishes.
A total of 48 samples were taken from the verso and recto, from dust areas, from folds of paper, and from the previous mends. The collected samples were examined under a microscope; some samples were transferred to a nutrient medium in Petri dishes. The results of laboratory analysis confirmed that there were no fungal infections of the scroll paper. Samples examined by luminescence microscopy showed no living cells. Analysis of Petri dishes confirmed the absence of mold contamination.

3. Conservation Treatment Plan

The scroll form of the Cathedral Code and the technical complexity of removing previous mends led to the proposal of the following plan of conservation treatment: 1) To separate the scroll sheets (about 1 m in length) using water compress applied to the places of the initial gluing or mended cracks during the gradually unrolling the manuscript (Fig. 6).

2) To humidify the sheets to reverse previous mends6.

3) To repair the cracks and consolidate the breaks with wheat flour glue and Japanese long-fiber equal-strength paper and to dry these pages in a press.

4) To attach (or to join) together all these fragments in one single scroll after the conservation treatment (Fig. 7).

4. Codicological Research

The decision to divide the scroll into sheets provided a unique opportunity for a complete codicologist study of this manuscript, including detailed examination of scroll making technique.

The process of how people created the scroll in the 17th century is apparent in the Cathedral Code itself. On the first introductory pages, it is stated that,

---

5 Bact-print containers are used in microbiology for taking an imprint of microorganisms from different surfaces, on a growth medium agar and the subsequent study of their germination in a thermostat. Single-use bact-prints are made of biologically inert material.

6 We put two dry blotters on the sheet or certain area, added the moistened blotter, and covered the whole area with plastic or polyethylene, and left this sandwich for 30 min.
according to the sovereign's decree, lists of different “rules”, “spells”, and “orders”, and “judicial codes” were going to be enacted, but also that new laws had to be “written” and “expounded”. All data collected in the course of conservation treatment and codicological visual research were included in a detailed report on what was written anew and how, how it was “read”, and how it was “changed”.

During a visual examination of the document, inconsistencies in the numbering of the sheets on the recto and verso of the scroll were identified by the conservator. This confusion made it impossible to describe the manuscript correctly. The numbers running along the front side of the Cathedral Code scroll only went up to number 205, not to the end. The sheet number failure was found five times: on sheets 4-5, on sheets 11-12, on sheets 17, on sheet 21, and on sheet 140. The page numbers on the verso of the scroll, although they went from the beginning to the end, also did not correspond to the actual number of sheets in the manuscript. The first failure occurred on sheet 211 (written twice), next on sheet 304 (written twice), and some mistakes were noticed on sheets 887-888.

Therefore, in order to maintain a precisely documented conservation and codicological description of the manuscript, the researchers decided to recount and renumber the entire scroll in the right order and in accordance with the sheet amount. The scroll is made up of exactly 960 sheets. The new correct numbering served as the basis for compiling the scroll description. The renumbering of the handwritten scroll was approved because the previous numbering had never been

---

7 Link to the digital copy of Cathedral Code
referred to in scientific literature. The old numbering was recorded only once in a digital copy of the Cathedral Code scroll, made at the Russian State Academy of Architecture and Civil Engineering before its conservation treatment. This decision was made by the restoration council of the Preservation Laboratory of the Russian Academy of Science on 17 December 2009.

During conservation treatment, the codicological nuances and details had been noted in the workbook or recorded using digital photography. This allowed all accumulated data to be collected into a unified electronic table-description of all 960 pages of the scroll.

Essential technical features of the scribes' work were noted: strictly following order of *vergé* arrangement, *pontuseaux*, watermarks, and text. It was determined how the "paper cutting" for the scroll took place, and how the text writing upon free sheet space took place. A whole sheet of handmade paper (~34x42 cm in size) was cut through the middle of the short side so that each part of the watermark always ended up on each piece. And these central parts of the sheet always turned out to be the left margins of the scroll sheets. The text had always been arranged along the pontuseaux lines and never covered the watermarks (Fig. 8).

These rules were strictly observed on all 960 sheets of the scroll without a single exception. This demonstrated the high professional skills of the people who created the Codex. Paper with four watermarks was used in the manuscript: "Jester", "Strasbourg lily", "Passover lamb", and "Lorraine cross under the crown". This method of conservation treatment through separating the scroll sheets made it possible to perform a digitization of all watermarks, which are presented in this document. The photographs of the watermarks are indicated by the number of the sheet and linked to a specific part of the general Cathedral Code description on the interactive table.

A signature of the manuscript creators was found while unrolling the scroll. Narrow strips of paper between the sheets glued in the 17th century had been inserted (Fig. 9).
These insertions suggest the process of editorial corrections that had been made directly into the document before its completion. Namely, a narrow strip of paper that was left from the sheet with the changed text.

All scroll sheets were also measured in length and width. Differences in the size of individual sheets became additional material evidence of text editing during the scroll’s creation. This data indicated the difference between a small editorial insert like ‘notes and a ’standard’ initial sheet of pre-prepared text.

This research data led to further work on the complete codicological description of a unique documentary monument. Historians and researchers primarily investigated issues related to the text of the Cathedral Code. They used the rare opportunity to examine every particular sheet, and edit the Internet version of the text, dividing it into parts accordingly to the sheet numbering\(^8\). It was found that the last academic edition of the Cathedral Code in 1987 does not correlate with the sheet numbering in the original manuscript\(^9\).

In addition, a study to identify the number of scribes of the manuscript was performed.

---

\(^8\) Mankov et al. (1987), p. 448.
\(^9\) Cathedral Code, text (webpage).

---

**Fig. 9**: An example of a narrow paper strip inserted between the sheets during the Cathedral Code editing.
writing of the column-scroll. All the different styles of each scribe were digitized and inserted in the MS Excel data table. In this table, a series of different handwriting styles were recorded in certain colours and linked to a number on the manuscript sheet. Using this interactive table everyone can find the sequences of handwriting styles, a series of watermarks-filigrees, the sheet sizes in length and width, and link to the sheet number. This table will soon be available for public use. All these opportunities make the process of manuscript creation clear and accessible to the investigation.

5. The Last Stage Challenges

The last stage of conservation treatment was the joining of all sheets back into a single column-scroll, before winding the scroll on the original shaft. At the end of this procedure, the scroll was placed into the ark-case from the Catherine II epoch\(^\text{10}\). Therefore, it was crucial to apply the right method to join the sheets. Prior studies showed that the glue used by the creators of the manuscript was of water-soluble protein origin, specifically of the bone type. All these adhered joints were strong and stable. No weakened adhesions were observed.

However, the scroll had more than 120 breaks that formed near the joint areas (Fig. 10).

![Fig. 10: The breaks formed near the joint areas after the archival restorations in the mid 20th century.](image-url)
They could have appeared due to the weakening of paper fiber strength along the joints, probably as a result of past heating of the paper to stabilize glue.

They could have appeared due to the weakening of paper fiber strength along the joints, probably as a result of past heating of the paper to stabilize glue. In the recent conservation treatment, a wheat starch paste was applied by the conservator to glue the sheets together and a press method with felts was used to avoid deformations (Fig. 11).

For the next step, it was necessary to wind the scroll onto the original wooden shaft. As was mentioned above, the shaft design assumes the presence of two side stop discs that direct the manuscript scroll for compact winding. Such shafts have been used in Torah scrolls. Therefore, to optimize the winding process, a temporary stop disc at one end of the shaft was used (Fig. 12).

While winding the scroll it became clear that all mended mechanical damages (breaks and tears) to the sheet edges had been caused by its tight winding in the past. The edge of the scroll had been touched and torn by the stop discs. The first rewinds, which took place even during the creation of the document, also left their own traces: the sheets were not rewritten due to breaks but were carefully “repaired” by

**Fig. 11:** Several glued sheets were stacked together, sandwiched by cardboard and felt layers and kept under pressure until dry.

**Fig. 12:** A cardboard disc at one end of the shaft was used to optimize the winding process.
carefully gluing them with rag paper and wheat glue. One of these has preserved the signature of the scribe (Fig. 13).

The multiple mends to the breaks and tears indicate the number of re-winds made in past. It also became clear that the previous conservators used a "triple" seam made of thin semi-transparent paper for through breaks (Fig. 14).

Such a joint allowed for the scroll to be wound very tightly but it partly covered the text. These rigid joints caused tension near seams leading to deformations and breaks. Scientific conservation guidelines do not approve such a treatment of written monuments. Therefore, in our case, the gluing and mends were made only on verso using thin Japanese long-fiber paper of equal strength (Kozo). Such a seam does not assume a power load during rewinding. So, in its final form, the scroll became a little bit puffier. It barely fit the case, with little waves at the ending sheets (Fig. 15).

Fig. 13: An example of an alteration made during the scroll creation: the patch bears the signature of the scribe.

Fig. 14: Method used for break mending during previous restorations.
Due to the complex and thorough conservation treatment of the manuscript, and after codicological research, as well as the creation of a detailed electronic table-description, and making this information publicly available through digitization the necessity for removing the scroll from the housing and the need to handle has greatly been reduced. This means that the long-term preservation of this unique document is guaranteed not only by qualified conservation treatment but by the careful efforts of researchers and curators.

In 2015 for the first time, a documentary monument of Rosarchive - the column-scroll "Cathedral Code" of 1649 - was recommended for inclusion in the UNESCO Memory of the World Register for the protection of the World Documentary Heritage\textsuperscript{11}.

\textbf{Fig. 15:} After conservation the Cathedral Code was placed back into the gold-plated ark.

\textsuperscript{11} Link to UNESCO website
Acknowledgements

The authors express deep gratitude to the Russian Foundation for Humanitarian Research for grant support of the codicological research on the Cathedral Code of 1649. We also very grateful to the historians whose very close collaboration allowed us to carry out this complicated project: Dr. Boris Nikolaevich Morozov, a senior researcher at the Institute of Slavic Studies of the Russian Academy of Sciences, and Yuri Moiseevich Eskin, a historian-archivist and deputy director of the Russian State Archive of Ancient Documents.

References

Russian State Archive of Ancient Documents (Moscow, Russia). Fond 135, Section V, rubricator 1, file 6.


Authors CVs and contacts:

Marina Volchkova
Marina Volchkova is an art critic and the MA conservator of graphic artworks at the Russian State Archive of Ancient Documents (Moscow, Russia). She participated in scientific research and conservation of unique Russian, Byzantine, and Western Europe medieval parchment manuscripts at the Russian State Research Institute for Restoration, Grabars' Russian Scientific and Artistic Restoration Centre, The State Tretyakovs’ Gallery Archive of Russian Academy of Sciences. Volchkova M.A. has 35 years of experience in the restoration of all types of graphic techniques, including mixed techniques of contemporary artists, Chinese traditional wood prints, ancient photographs. Her papers have been accepted at international conferences on practice and research in restoration. She is an author of more than 20 scientific articles on restoration and archiving topics. Contact information: marinavolchkova@yandex.ru.

Maria Dmitrieva
Maria Dmitrieva, PhD in Material Sciences with emphasis in protection of works of art from microbial infection. She worked at the State Research Institute for Conservation as a Research Assistant, Senior Researcher, and than Head of the Microbiology Sector. Now she is a scientific consultant at this Institute. Since 1992, she worked at museums, archives, and cultural institutions in Russia and abroad (Egypt, Lithuania, Armenia, Azerbaijan, China). With extensive experience in the field of paper conservation, she worked as a conservation specialist for twelve years at The State Museum-Estate «Arkhangelskoe» (gravures, drawings, maps XVIII – XIX centuries). Since 2009 till 2019 she worked as a Senior Researcher and Supervisor at the Russian State Archive of Scientific Documentation. Contact information: biorest.maria@gmail.com
### 3. UPCOMING EVENTS

#### Our events

*Throughout the whole year ERC for Book and Paper Conservation-Restoration organises conferences and courses.*

*At these events conservators, information professionals (archivists and librarians) and students from member countries get the chance to discuss matters relevant to the field of book and paper conservation. These opportunities complement their professional fields or areas of study with new qualities, provide the opportunity to upgrade their knowledge or take their first steps in their career, and increase their international experience, by establishing contacts with colleagues from across Europe.*

*More information about previous events and courses can be found on our websites:*


#### Other’s events

<table>
<thead>
<tr>
<th>Time / Place</th>
<th>Event</th>
<th>Organizer</th>
<th>Links</th>
</tr>
</thead>
<tbody>
<tr>
<td>15&lt;sup&gt;th&lt;/sup&gt; April</td>
<td>Workshop “Actual problems of preservation in the scientific library”</td>
<td>Library of the Russian Academy of Science</td>
<td>Information <a href="http://www.restauratorenohnegrenzen.eu/erc/OurEvents/">click here</a></td>
</tr>
</tbody>
</table>
April 20th – 22nd
St. Petersburg, Russia
International Annual Conference “Photography collections at the museum”
Museum and Exhibition Centre “ROSPHOTO”
Information – click here

May 3rd May – 24th June
Virtual Meeting (on-line), United States
Transform 2021, 2021 AIC/SPNHC Joint Virtual Annual Meeting
AIC/SPNHC - American Institute for Conservation / Society for Preservation of Natural History Collections
Information – click here

May 6th – 7th May
Brussels, Belgium
Old Books and New Technologies: Medieval Books and the Digital Humanities in the Low Countries
KBR, The Royal Library of Belgium (partners: Campus Condorcet of Paris, the National Library of Luxembourg, the KB national library of the Netherlands, the universities of Ghent, Leuven, Liège, Mons and Namur, and the Vlaamse Erfgoedbibliotheken)
Information – click here

May 6th – 8th May
Hildesheim, Germany
The Fragment in the Digital Age
HAWK Hochschule für angewandte Wissenschaft und Kunst Hildesheim/ Holzminden/ Göttingen in cooperation with the German National Scientific Committee for Conservation-Restoration of ICOMOS and the Verband der Restauratoren e. V.
Information – click here
<table>
<thead>
<tr>
<th>Month</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>Paper Stories: Paper and Book History in Post-Medieval Europe</td>
<td>The Árni Magnússon Institute for Icelandic Studies</td>
</tr>
<tr>
<td></td>
<td>Virtual/online</td>
<td></td>
</tr>
<tr>
<td>6th May</td>
<td></td>
<td></td>
</tr>
<tr>
<td>– 7th Jan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>Hacer tangible lo intangible/Conferencia ICA-SBA 2021</td>
<td>ICA, International Council of Archives/SBA, Section on Business Archives</td>
</tr>
<tr>
<td>2nd – 4th June</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basilea, Switzerland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>Ciencia y Arte VIII. Ciencias y tecnologías aplicadas a la conservación del patrimonio</td>
<td>Ministerio de Cultura y Deporte, Dirección General de Bellas Artes, Subdirección General del IPCE y Fundación La Caixa</td>
</tr>
<tr>
<td>2nd – 4th June</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madrid, Spain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>IMC 2021 Medieval Congress / Special thematic strand: Climate</td>
<td>University of Leeds</td>
</tr>
<tr>
<td>5th – 9th July</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual/online</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>2021 Conference Mod Cons: Modern Conservation. Modern Constraints, Modern Conveniences</td>
<td>ICON Book &amp; Paper group</td>
</tr>
<tr>
<td>4th October – 7th January</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual/online</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. CALL FOR PAPERS FOR THE NOVEMBER ISSUE 2021

Contributions are welcome on current research articles relevant to book and paper conservation – restoration.

**Articles should be sent to the editors:**

Zoë Reid zoereid2399@gmail.com  
Maria Dmitrieva biorest.maria@gmail.com

Articles should be submitted in English and will be peer-reviewed.  

**Full guidelines for authors can be found here:**

http://www.restauratorenohnegrenzen.eu/erc/Publications/documents/guidelines_for_authors.pdf

We also welcome genuine contributions on aspects of the history of conservation of manuscripts, books, graphic art.

We believe we can learn from the past:

- What conservation practices were good methods and are not employed any more, but should be engaged/involved again;
- What methods have been shown to be not a good practice, but are still applied and should be stopped for good reasons.
- How can we deal with impact of old conservation methods without knowing the old conservation material in detail?

**Deadline for articles to be included in the November issue is 10 September 2021.**
IMPRESSUM

European Research Centre for Book and Paper Conservation-Restoration
Address: Rosenhuegelweg 24, 3550 Langenlois, Austria
Tel.: +43(0) 650 58 71 877
E-Mail: patricia.engel@donau-uni.ac.at
Web page: www.donau-uni.ac.at/paper-conservation
ISSN: 2225-7853