



ERC Newsletter

1/2017

April 2017

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PAST WORK

Research Projects

We have been granted further projects and another award:

The Origin of the Glagolitic-Old Church Slavonic Manuscripts - An Interdisciplinary Investigation Accompanied by Editions (Sinai III)(2017-2020)

FWF Project Lead University Vienna

Sinai III is a multi-, inter- and transdisciplinary pilot-project in which philologists, computer vision scientists, chemists and physicists, microbiologists and conservators will work together to illuminate the history of some of the oldest Slavic manuscripts and palimpsests, prepare editions of hitherto unpublished texts and thereby improve the methods and techniques for the analysis, conservation and preservation of written cultural heritage. Several complex results are to be expected:

1. Insights in the material and cultural history of the early Slavs.
2. Editions of highly important texts of the 10th-11th c.
3. Further developments of computer vision-, spectroscopic and DNA-methods of cultural heritage investigation.
4. Insights in the make-up of Glagolitic manuscripts and the preparation of Glagolitic palimpsests.

Partners are Academy of Fine Arts, Vienna, Technical University, Vienna, University of Life Sciences, Vienna.

AFFANDI III

Traditional Architecture and contemporary Art – The Estate of Kartika Affandi(2017)

Asea Uninet with Technical University Vienna

Kartika Affandi is one of the most important contemporary artists in Indonesia. Keeping up the legacy of her father Affandi she inherited not only his talent but also an interest in architecture. Whereas Affandi designed the Museum in Yogyakarta as a place to host his art and this of his family in a very particular and unique architecture, Kartika created a space for her work of art hosted in a lavish garden inside of typical traditional buildings of central Java that she collected over the last years. The collection of buildings and art is a unique place where Kartika not only created a place for art but also a place where art is created in inviting interested women to workshops to create art on their own and also displays sculptures and paintings of artists all over Indonesia. The traditional buildings translocated to the garden are pieces of art on their own and an important part of the architectural heritage of Indonesia. In the way they are displayed and used the premises are a kind of open air museum providing an insight into different styles of the so called joglo type of buildings. In terms of building history they are of exceptional interest as they represent a building typology that is declining in the way as it is represented in Kartika's place. Combined with the art it is hosting today it provides a particular interesting place to research the history of the buildings and the how they can be a suitable place for hosting artwork on canvas and paper. For the architectural part of the research a comprehensive recording of the building with an in-depth building archaeological research would be needed to unveil the origin of the buildings and how much they have been altered when re-erected at the place they are right now. For the works of art exhibited there, a survey of exhibition conditions is of substantial importance. Not only the physical conditions, but also the reception of the works of art is of great interest. To exhibit these particular works of art a particular reception of them was developed earlier and also the exhibition in the concrete environment fosters a distinct sort of reception. To understand the reception fully is one of the prerequisites of any conservation work, as presentation in a certain context is one of the fundamental tasks of conservation. Therefore the exhibition conditions in the joglo collection of Kartika should be studied in comprehensive way. As a side work so far found notes about the architecture and the works of art by Kartika and her family members are on paper

and should be part of the conservation project, as they show severe damage such as ink corrosion, a fatal decay of a particular ink (iron gall ink), a work that will be accomplished by the cooperation partner at the Donau University Krems. The joglo collection of Kartika reflects a raising awareness about tradition and its manifestations and also the possibility to move traditional buildings and put them into a new context, which is a trend that is raising within Indonesia. You can find traditional houses of central Java (limasan) in Bali used as bungalows in touristic enterprises for providing the “traditional experience of Indonesia”. In this way the interdisciplinary research in Kartika’s estate can provide a new approach to research the interrelation between art and architecture but also between the tangible and intangible cultural heritage.

AFFANDI II

Affandi’s Art and Architecture as Part of the Tangible and Intangible Heritage of Indonesia(2017)

Asea Uninet with Technical University Vienna

To preserve Affandi’s oeuvre, his oil paintings, his graphic art, his statues, his architectural artistic work and his ideas, a comprehensive approach must be chosen. The reason for such comprehensive approach is the manifold of material used by the artist, the tropical climate conditions, which make material decay fast and the social and political circumstances in the past and today. This approach includes the tangible and intangible aspects of the works of art and the environment in which they were presented and are used and kept. The recent project will include

1. The memory cult concerning Affandi in his family and outside
2. The history of the restoration of Affandi’s art
3. The history of the museum Affandi

Ad 1 The memory of Affandi goes far beyond a private commemoration of a grandfather, and great grandfather. It is a vital omnipresence of his ideas and actions in the family and in the museum Affandi and beyond. This is even more remarkable as other Indonesian artists of the same time faced different faith. Widayat, as Affandi, had built a museum for his works of art, but his children sold the paintings after his death and the museum was closed. Dullah had finished his museum and before he could open it he fell sick and past away, no one continued the idea of his museum. Rusli had even managed to select a superb place for his museum, but again his children did not continue his ideas and by selling his paintings took contradicting actions to their father’s ideas. Affandi had his museum built during his life time, to be precise the first gallery. After his death his daughter did not only maintain what was there, but continued the development both of the buildings and the management and even took care of the preservation of the works of art of Affandi in a professional way. The intangible quality of this enlarged artistic atmosphere and awareness of responsibility to maintain an inherited treasure of special sort contributes to the preservation of the works of art themselves. How this multi layer aspects actually are shaped and how they work is one of the questions which will be answered in the project. Another topic is how these intangible moments influence the conservation work today. However during recent project work also various sorts of old conservation material was found on the works of art themselves. Soon the need to bring together more information about this practical interventions to maintain the works of art by Affandi became clear. There are patches, tapes and reinforcements, which partly might have been applied by Affandi himself or authorized by him and there is other material, which most probably was applied later. To shed a light on how Affandi himself struggled to keep his works of art in good condition in this hot humid climate and who else tried to help him maintain the works of art will further contribute to understand the phenomenon “preservation of the work of Affandi”. Furthermore it will be a good basis for any conservator’s decision making today, because to understand the individual history of a painting etc. as well as the immediate and larger environment is a precondition for any practical conservation. Finally the museum and its buildings is in the terms of art one of the works by Affandi, while at the same time, as an item it is a sort of protection layer around the other works of art by Affandi. Thirdly it is a sign to the world by its physical appearance. To describe and understand this triple nature of the museum is the third topic, however strongly interwoven to the other two aspects of the application. The project aims to compile those aspects in a comprehensive publication to provide an insight into the interrelation between the different facets of the tangible with intangible heritage of Affandi and its legacy as an important part of Indonesia’s cultural heritage. Again the cooperation between the UGM, the Donau Universität Krems and the TU Wien are important to connect the views from outside to those from inside Indonesia and to cover all aspects of this new approach. The aim is to use already compiled material from the preceding project and enlarge it with interviews and additional data focussing on the objective of the new project to publish the history of Affandi from a new perspective that can be a part of the celebration year 2020.

The running projects: NanoKult due to be finalized and Affandi I finalized.

NanoKult

In NanoKult we are now testing the effect of the new method on microorganisms in papers. The results will be published in our next Newsletter.

Paintings by Affandi

The project was finalized within the year 2016. Results will be presented at the Indonesian Embassy in Vienna on 20th June 2017.

The University course Interdisciplinary Methods in Graphic Art, Book and Document Conservation MA

<http://www.donau-uni.ac.at/en/studium/interdisciplinary-methods-graphic-art/index.php>

The new University course is open for registration. Internationally recognized and renowned experts have been attracted as lecturers.

The lectures normally take place in Krems, Austria. In some cases we will visit archives and libraries in the area, one excursion to Germany also being part of the programme. The course is designed in a way allowing students to keep their jobs while studying.

The costs are 14,000.00 Euros in total for all 5 semesters.

Travel and accommodation is not included.

To reduce travel costs, two units are arranged "back-to-back" in several cases; two units are provided as an online lecture and two units are inverted classroom lectures, which means those who want to come to Krems are warmly welcome, the others will get livestreamed lessons at the comfort of their homes. As the dates are provided well in advance, students can achieve saving by buying tickets well ahead. Alumni will assist in finding space to live at modest price. The alumni can be found via Facebook.

Furthermore, we are planning to design a scholarships system, but this is going to take some time yet.

All lectures are delivered in English.

Here is the detailed information:

Unit 1

Philosophy and theories of written/graphic heritage conservation

16th-20th Oct. 2017 (Giorgio Bonsanti)

The conservation theory by Cesare Brandi and the subsequent suggestions by Umberto Baldini build the core and backbone of this unit as well as European understanding of conservation of written heritage as such.

However, it is important to see the development of the theory by Brandi in a historical context and understand previous and recent development against the background of general developments and changes in society because any conservation theory is rooted in the general philosophy of the society. The Unit not only strives to discuss this fact, but also brings to the table means and methods to assist further thinking. Finally, new ideas concerning new aspects of conservation theory should be developed and evaluated in Unit 1.

Unit 2

Ethics of written/graphic heritage conservation

23rd-27th Oct. 2017 (Christine Grond, NN)

The Unit shows how the conservation theory is practically implemented in our everyday life today. Maintaining and passing on the authenticity of source material for research in public archives that keep collections of personal items, some of which being living artists' archives deposited by writers, composers, architects, filmmakers, etc., is the first central topic of this Unit. Documents from *The Archives of Contemporary Arts - A Collection of Literary Estates* at DUK are taken as a pertinent example. The lecture will be held partly at the archive.

Unit 3 online

International recommendations in the field of written/graphic heritage preservation

11th-15th Dec. 2017 (Peter Strasser)

The striving for pinning down the idea of conservation resulted in a series of recommendations, which themselves reflect the understanding of what is conservation at a given time in history. Students will be offered various legal texts and codes (Athens, Venice, Nara, etc.) relevant to the conservation of cultural heritage, along with comments thereon. There will be a discussion online forum and the lecturer will be available to answer and comment on the text brought forward in the forum. The aim is to offer the students an opportunity to discuss various interpretations of international recommendations and reach benefits for the own work from that kind of discussion. This Unit partly prepares the discussion in Unit 7, which is half a year later. The time in between is available for better understanding of the legal material.

Unit 4

Environment aspects (monasteries, private collections, state libraries)

15th-19th January 2018 (Patricia Engel, NN)

As seen in Unit 3, the environment plays an important role in defining what conservation is, however, apart from the cultural environment, there is also physical and geographical environment. The term "Environment" is used as a headline for this Unit. An excursion to the "Klimahaus Bremerhaven, Germany" <http://www.klimahaus-bremerhaven.de/en/discover/the-journey/overview.html> to Bremerhaven will give the students an immediate, "bodily" impression of various climatic environments. Impressions about sociocultural environments will be gained by comparing European understanding of the conservation of heritage with the Chinese and Japanese approach. The Unit ends with information and hands-on materials of how to measure

the climate in various given environment setups and what parameters can influence climate changes in particular.

Second semester

Unit 5 online

First-response measures in cases of catastrophes affecting written/graphic heritage

22nd-26th January 2018 (ZKGS DUK)

While the first semester dealt with philosophical issues, the key theme of the second semester is the first response action. In Unit 5 relevant information on first-response measures in cases of catastrophes affecting written/graphic heritage is provided online. There will be a forum for discussion and the lecturer will be available to answer and comment on the questions and comments brought forward by participants via an online forum. The aim is to discuss fire prevention in archives, libraries and other collections, making first response plans and mitigating disasters, if any.

Unit 6

Water response measures in cases of catastrophes affecting written/graphic heritage

16th-20th April 2018 (Katja Sterflinger, Anna Kaiser, Gunthard Gutmann, Patricia Engel)

While archivists, librarians and conservators have to leave the fighting to others in the case of fire, the care for wet heritage items remains their responsibility. This is the reason why the fire Unit is an online unit but the water Unit is a hands-on unit.

It will cover the planning and handling of wet books, both in theory and practice, and in particular focus on mould. This is particularly important in case the flooding resulted from heavy rains or broken tubes. A general introduction to fungal biodeterioration of paper material will be given followed by the most important facts on fungal ecology related to humidity in archives, libraries and storage rooms. Treatments and measures in order to detect, to prevent and to handle fungal contaminations on materials will be presented

National first response units – changing examples: The unit will describe how the Austrian army acts in case of a disaster – in particular how this is done with respect to written heritage.

An important element in any disaster mitigation action is to lead the people involved. This unit will also take care of this topic.

While in the case of unit 5 first response to fire was dealt with theoretically, this unit includes a practical session on planning first response plans. The participants will go to a castle, an archive, a library, etc. and conduct a survey in order to be able to make a first response plan for the specific collection.

Unit 7

Written/graphic heritage and the law

18th-22nd Juni 2018 (Jakob Widner, Peter Strasser, NN, Nikolas Sarris)

Legal regulations play an important role both in heritage preservation and in implementing new research results in the conservation work flow.

Jakob Widner will lecture on the applicable law at the intersection of contracts, scientific research and the export of cultural property & heritage.

Peter Strasser will lecture on heritage law and what must be especially considered in safeguarding of written heritage.

Patent law relevant for the developing of new conservation methods, its restrictions and possibilities is dealt with by NN.

Nikolas Sarris will lecture about real cases in conservation of written heritage as a free lance conservator, both in Greece, which is his home country, and abroad, including his work for UNESCO and Conservators Without Frontiers. After the presentations the students will be given an opportunity to discuss various aspects of freelance conservation work conducted world wide.

Unit 8

Types of damage and preservation solutions of written/graphic heritage

2nd-6th July 2018 (Patricia Engel, Robert Sablatnig, Manfred Schreiner, Katja Sterflinger)

The first part of the Unit will deal with organoleptic methods for understanding the state of a work of art. This is a method of paramount importance in terms of the conservator's ability to quickly estimate the condition of collections (Patricia Engel).

The Unit will then demonstrate (theoretically and in a hands-on fashion) how to:

- o image (partly) unreadable manuscripts using multi-spectral imaging techniques
- o analyze multi-spectral images in order to enhance text readability
- o analyze the layout of manuscript pages
- o recognize lines, words, and characters of manuscript pages
- o perform Handwritten Text Recognition (HTR) and CribRecognition for manuscripts in order to understand state-of-the-art methods of Computer Vision applied to Digital Humanities (Robert Sablatnig).

The next part of the Unit will cover the instrumental material analysis and the results it can provide to better understand an artwork ~~of~~ at hand. It also will explain what questions ~~can not~~ be answered with these methods and what combination may lead to meaningful results. Mainly non-destructive analytical techniques will be discussed and their applicability to art objects in a non-invasive way is presented. These methods are based on energy dispersive x-ray fluorescence analysis as well as infrared and Raman spectroscopy. (Manfred Schreiner)

Methods for analysis of biogenic (fungi, bacteria) contamination will be presented: this includes both the sampling on the materials (theory and practice) and the microbiological and molecular analysis of the samples (theoretical part). State of the art molecular methods for sample analysis will be presented (DNA extraction, PCR and DNA sequencing) and the pros and cons of classical molecular methods versus newest molecular analysis will be discussed.

Finally, the biological analysis (DNA) will follow (Katja Sterflinger), and finally all this information is brought together by showing how they can be used for building a conservation concept. (Patricia Engel) This last part will be demonstrated on real cases. However, understanding the work of written heritage from the linguist's and historian's perspective must also be considered. How this is done will be demonstrated in the next Unit.

Unit 9 inverted classroom

Latest research in the field of book conservation

1st-5th Oct 2018 (Heinz Miklas, Claudia Römer, Jedert Vodopivec)

Two ongoing research projects are selected, their origin is described and it is shown what could be reached so far. In 2018 one case will be the ongoing project *The Origin of the Glagolitic-Old Church Slavonic Manuscripts - An Interdisciplinary Investigation Accompanied by Editions* (Heinz Miklas). The second case in 2018 will be on Ottoman manuscripts. (Claudia Römer) Additionally to the point of view of linguists, the book as entity will also be dealt with. (Jedert Vodopivec)

Unit 10 inverted classroom

Latest research in the field of paper conservation

3rd-7th December 2018 (Volker Ribitsch, NN, Karin Scheper)

While Unit 9 focused on projects in the field of written heritage, Unit 10 focuses on latest research in written heritage conservation. In 2018 this Unit introduces two ongoing or just finished research projects. Specifically, in 2018 the Unit will deal with mass deacidification and ink corrosion and the comprehensive research on Islamic manuscripts, their material, technique and the terminology associated with these methods and techniques.

Unit 11

Research strategies for safeguarding written/graphic heritage

14th-18th January 2019 (NN)

After having seen some ongoing projects, the next Unit, which is Unit number 11, deals with the strategy behind these research activities, which is a strategy for the well-being of our written and graphic heritage. Apart from the research introduced in the framework of the university course all research done in the field is now brought "on the table."

On the other hand, topical questions in research in written heritage protection are brought together. On the basis of this information new research ideas are formulated and the funding landscape is analyzed for possible calls for projects for the first time. In Unit 14 these first attempts will then be brought down to specific bids. For the time being, only an impression of the landscape of calls for projects should be provided in order to enable a conclusion on the usability of the calls. In case there is some substantial shortcoming in a call, it is shown how the community of archivists, librarians, conservators, etc., can influence the policy of money distribution and the focus of governments on supporting research in the field.

Unit 12

Related fields

4th-8th February 2019 (NN)

Before coming to writing project applications, two more related Units on material are offered. Unit 12 deals with fields related to conservation. These may be material or immaterial. For 2019 the focus of the Unit is the topic terminology.

Unit 13

Related material groups

11th-15th February 2019 (Lucretia Miu, NN)

Various methods of manufacturing leather and parchment will be presented and discussed. During the practical sessions participants will receive samples of leather and parchment in order to identify the animal skin and conduct damage assessment according to latest research results.

4th semester

Unit 14

11th-15th March 2019 (Thomas Aigner, Patricia Engel)

Fundraising for written/graphic heritage

The fourth semester deals specifically with the question of how to further develop the field of heritage conservation as an international interdisciplinary endeavour and the design of new methods in common comprehensive way to the further development of the field itself.

Unit 14 continues the work of Unit 11 and builds on the work done in the self-study mode for Unit 11. By that time, the calls which have been analyzed and useful calls detected for the already identified research needs. It involves establishing the project management methods, preparing the Gantt charts, establishing of the consortium and writing of applications. The unit is a practical case study which can serve as a role model for an initial stage of writing any bid for funding. Furthermore the Unit brings forward means and methods for dissemination of project results, which is an important element in any project planning.

Unit 15

Economics of safeguarding written/graphic heritage

13th-17th May 2019 (David Ungar-Klein, NN)

Research results should not only be disseminated, but also used on the market. Management/Marketing is communication. The unit will focus on the importance and diversity of communication in all aspects of conservation of written cultural heritage and art on paper.

Representatives of industry supporting the conservation of written heritage in one or the other way will be invited as discussion partners. It seems meaningful to communicate face to face and learn to understand each other's point of view.

Unit 16

Interdisciplinary exchange – future project

20th-24th May 2019 (NN)

Unit 16 takes up what was started in Unit 15. Now the communication is continued with representatives of the society at large (politicians, heads of collections, authors) and the general public.

The representatives will be chosen shortly before the unit starts. Public discussion will be done in various setup and with different groups.

Unit 17

Research in the field

1st-5th July 2019 (NN)

The unit will finalize the effort to advance the field of Graphic Art and Book and Document conservation. Topics resulting from and arising during the 16 previous Units will be dealt with in effective way.

Unit 18

Reading Group

8th-12th Juli 2019 (NN)

In July 2019 doctorate students in fields related to Graphic Arts, Document and Book Conservation from all over Europe are invited to present and discuss their work with each other and a board of internationally recognized experts in the fields of the works presented that will be selected for such discussion. The students of the ULG will be the audience of the presentations and will be actively involved in the discussions. The discussion will not only deal with the ongoing research in the field of conservation of graphic and written heritage, but will also serve as good preparation for the MA thesis of the students. The university course will be finalized with an excursion, the location of which will be selected according to its relevance to the course shortly before it takes place.

Conservators without Frontiers

We sent the first mission to Iraq. Please find more information at <http://www.restauratorenohnegrenzen.eu/Projekte/>

science2business Award

The science2business Award was granted to the NanoKult Project.

Summary of ERC Newsletter in Russian language

And we have the pleasure to inform you that from now on, the most important parts of the newsletter are translated into Russian. This will be done by Ekatarina Pasnak. We would like to thank her warmly for this support.

We also take this chance to warmly thank Oleg Philippov for his constant help in proofreading our texts in English.

New Representatives of ERC

We also could attract new representatives:

- Armenia (Gayane Eliazyan, Susan Barseghyan)
- Austria (Patricia Engel)
- Belgium (Femke Segers)
- Bulgaria (Roumiana Decheva)
- Croatia (Radic Bizjak)
- Denmark (Kathleen Mühlen Axelsson)
- Estonia (Pascual Ruiz Segura)
- France (Cédric Lelièvre)
- Germany (Julia Bispinck-Rosbacher)
- Greece (Penny Banou)
- Ireland (Zoë Reid)
- Italy (Chiara Senfett)
- Lithuania (Tatjana Timcenko)
- Norway (Nina Hesselberg-Wang)
- Poland (Agata Lipinska)
- Portugal (Ines Correia)
- Romania (Cristina Casote)
- Russia (Maria Dmitrieva)
- Ukraine (Tatjana Krupa)
- Slovakia (Katatina Vizarova)
- Spain (Marisa Ferrando)
- Sweden (Kathleen Mühlen-Axelsson)
- Turkey (Nil Baydar)
- United Kingdom (Victoria Purewal)

All the work is done voluntarily.

In case there are requests please do feel free to contact us directly or via our representatives.

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ARTICLE

Claudia Benvestito* and Paola Bottega**

Three in One Preservation Box for Scrolls

Abstract

The conservation of scrolls is one of the most challenging problems for a book conservator. While flattening is recommended as the best practice, it poses a problem because it changes dramatically the scroll's nature. An innovative modular box for the preservation of hand scrolls overcomes the risks that arises during the three fundamental situations:

- Storage:* the box is made of archival quality cardboard and provides sufficient room for the scroll, without any variation of its nature or physical aspect.
- Handling:* the box provides a safe, clean, housing enclosure. Fitting the scroll on cores in the box reduces the handling of the scroll and avoids the use of temporary and risky methods which would otherwise be necessary to prevent the scroll rolling off the table.
- Display:* the scroll does not have to be removed from its box either for transportation or for exhibition. The box includes an element that keeps the scroll at the ideal slope for exhibition.

1 Introduction

The conservation of rolled-up paper and parchment is one of the most challenging problems for a book conservator. Generally speaking, flattening is suggested as the best practice for the conservation of rolled-

* Biblioteca Nazionale Marciana, Venice, Italy

** Paola Bottega is responsible for the section titled General Dimensioning

up oversized documents¹ but it must be said that flattening a scroll dramatically changes its very nature. On the other hand, it is very hard to find articles about the conservation of small hand scrolls.

Currently the method to keep the scrolls is to wrap them with neutral or buffered paper, Tyvek, or polyester film and put them inside boxes or tubes stored horizontally. The biggest problem occurs when opening the scroll to examine the contents. It is in fact necessary to have a free and clean surface to work on, and small weights to hold the scroll. Working cautiously and using weights to prevent the scroll from curling improperly, one needs to unroll one end and re-roll the other and then to shift the position of the object on the examination surface so that more can be unrolled.

Nevertheless either for big or small scrolls, the improper handling of an object that tends to roll and move may jeopardize its preservation. This must be taken into consideration when choosing a scrolls preservation method.

An immediate need for a new conservation solution for three little scrolls owned by the Biblioteca Marciana in Venice (Fig. 1) forced us to look again at this question. The previous boxes were not consistent with conservation standards. The scrolls were more than a hundred years old

¹ National Park Service (2003), J:15; Ogden (1999); AIC (2013)

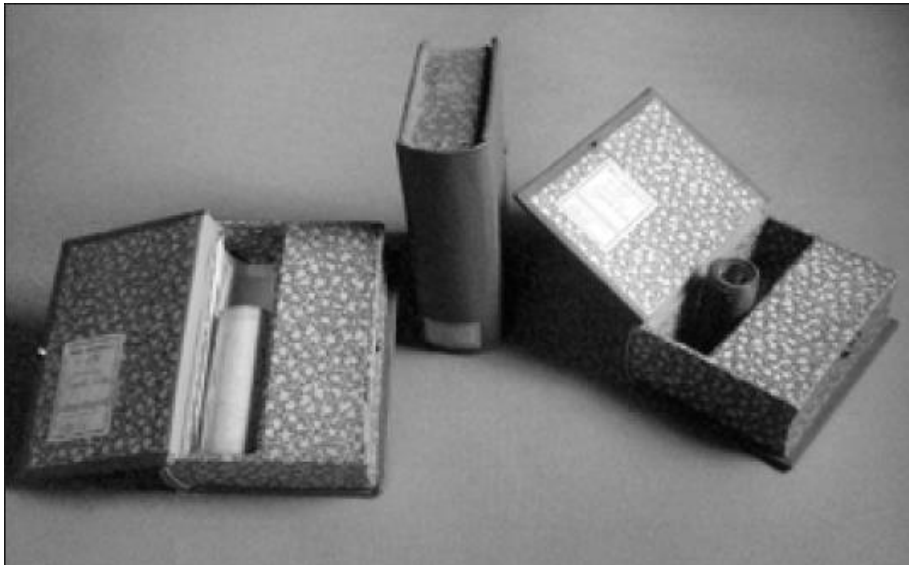


Fig. 1 Previous book like boxes

and they were shaped to resemble a book; they were made from wood-pulp board, with a hollow to fit in the scroll. One of the problems with this solution was to remove the scroll from the box. It was proved possible, with an innovative multifunctional box, to get rid of the three fundamental risk situations (storage, handling and display) which are of concern for the preservation of hand scrolls. The aim of this paper is to describe how to build this box and calculate its dimensions.

2 Background

The inadequacy of the three oriental scrolls storage boxes of the Biblioteca Marciana in Venice, became evident during the preparatory work for the event which celebrated the presentation of the Cod. Or. 276 (= 12059) to the public.²

As part of Emilio Teza's donation (1831-1912), which includes almost 30,000 books and pamphlets, most of which focused on oriental languages and traditions,³ Cod. Or. 276 came to the Library with two other hand scrolls: Cod. Or. 277 (= 12060) and Cod. Or. 278 (= 12061). All three scrolls with the text running parallel to the short side.

Cod. Or. 276⁴ is an Ethiopian 17th century magical scroll with miniatures and text, measuring 9.5 * 161 cm, and it is made up of two parchment pieces connected by a narrow strip of parchment. The second magical Ethiopian parchment scroll, Cod. Or. 277⁵, is so tiny that can be hidden in a hand and it is also very light: its dimensions are 6*49 cm and it weighs 10.4 g.

The third scroll, Cod. Or. 278⁶, is an Armenian paper scroll with the grain and the text running parallel to the short side. It is made of two strips adhered to each other with paste, with a 1 cm overlapping edge. Its dimensions and weight are 9 * 124 cm and 16.2 g, respectively.

The new conservation box can be considered a development of the box created by Joanne Sonnichsen for an Ethiopian nineteenth century scroll.⁷ In her design, the upper side of the box could be flipped back to

² Biblioteca Nazionale Marciana (16th May 2012)

³ Biblioteca Nazionale Marciana (13th Jan. 2012) add: <http://marciana.venezia.sbn.it/eventi/la-scrittura-che-protegge-il-rotolo-etiope-della-biblioteca-nazionale-marciana>

⁴ Codices Orientales Bibliothecae D. Marci Venetiarum. XII Codices Aethiopicum, Cod. CCLXXVII, c. 38r, Biblioteca Marciana Venezia, (manuscript catalogue). <http://marciana.venezia.sbn.it/la-biblioteca/la-storia-e-il-patrimonio/il-patrimonio/patrimonio-librario/fondo-teza>

⁵ Codices Orientales Bibliothecae D. Marci Venetiarum. XII Codices Aethiopicum, Cod. CCLXXVIII, c. 38r, Biblioteca Marciana Venezia, (manuscript catalogue).

⁶ Uluhogian (2010), pp. 396-397

⁷ Evrard (1999), p. 44

allow the scroll to lie on a slope. The technique consisting in creating an enclosure that can be used either to house or to display an object has been successfully used elsewhere.⁸

However, the way the scroll was held in place in Sonnichsen's box, with two strips of non better identifiable tape, did not really address our requirements. Furthermore, this system did not allow for the frequent variation of the portion on display.

Instead, the new box proposed in this paper provides two holders for unrolling and re-rolling the scroll. There is also a 45° slope for the scroll base. These two improvements allow the box to be a very safe and stable conservation solution.

3 Description

The box is covered with binding cloth and consists of three basic cardboard parts, hinged widthwise: the case, the lid tray and a wedgeshaped element. Each internal part of the box is eventually lined with durable smooth paper.⁹ (Fig. 2)

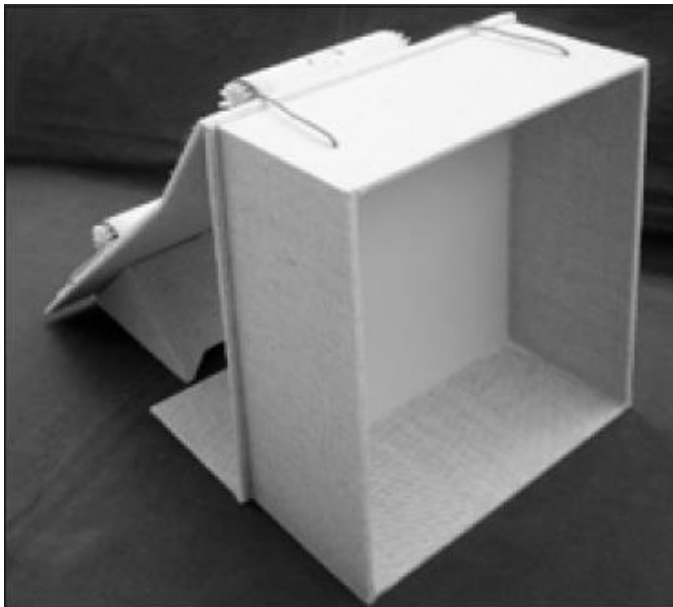


Fig. 2 Opened

The case consists of four boards in order: lower board, connecting shoulder, upper board, closing shoulder. Each part of the case can make a complete rotation on its connection side.

⁸ Benvestito/Pugliese (2000), p. 8-9; Benvestito/Pugliese, Conservation project 2001, Corografia della patria del Friuli Biblioteca Marciana Venezia, Cod. It. VII, 1513 (= 10041). The box designed for the oversized rolled-up map lays totally flat when is opened, being suitable at the same time for storage and display. <http://docplayer.it/9448283-L-intervento-su-una-raccolta-di-carte-geografiche-della-biblioteca-nazionale-marciana-alcune-soluzioni-per-la-sistemazione.html>

⁹ For step-by-step description on boxes construction see Brown (1982), pp. 95-137.

A quite thick raised board is fixed on the lower board of the outer case, so that the lid tray, placed face down, locks by fitting this step.¹⁰ (Fig. 3)

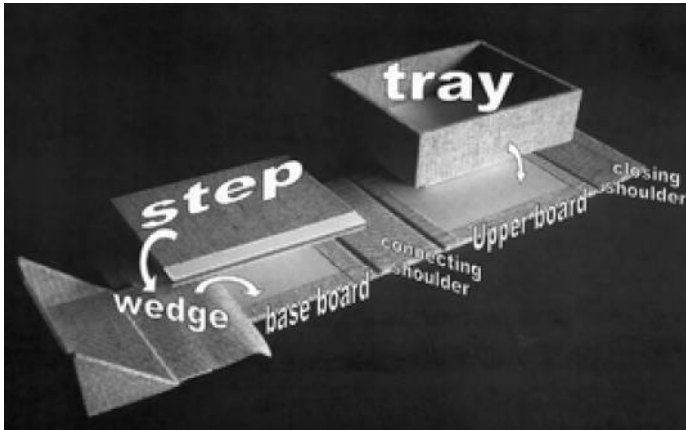


Fig. 3 Basic cardboard parts

The wedge is a solid with a right-angled isosceles triangle base. It is covered with cloth too and it is linked to the case by the wedge clothing, embedded between the fitting wide step and the lower base board. To prevent any risk of abrasion of the scroll, when the box is closed, the wedge is recessed on the side next to the scroll. Finally, the wedge can revolve around the lower edge of the box to support, in open stage, the base with the scroll, setting this way the required slope. (Fig. 4)

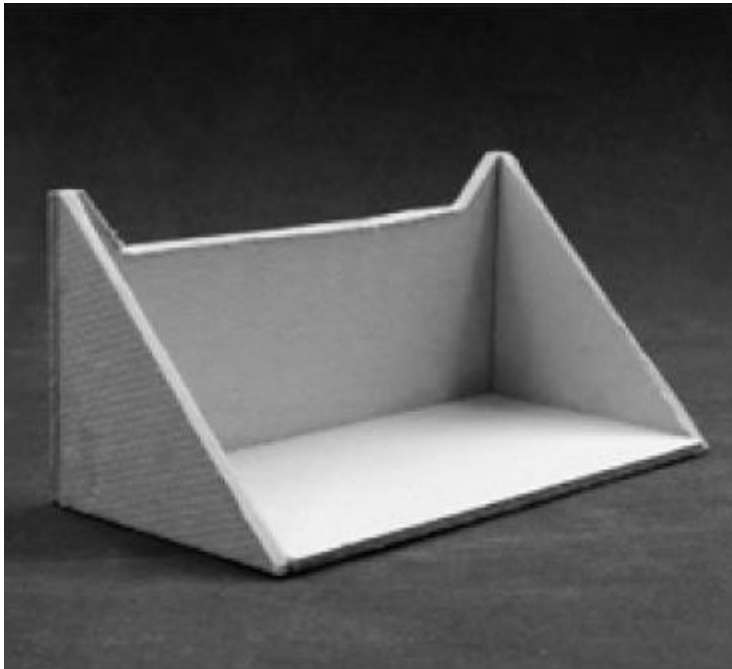


Fig. 4 Wedge

Scroll holders are made of two durable paper concertinas in Hedi Keyle's blizzard book style,¹¹ threaded in waxed stiff cotton strings. The reason of this shape is to provide a flexible joining point for the end of the scroll that hangs to whichever pick of the concertina. The scroll can thus roll naturally on it and it will be clinged almost to the end. (Fig. 5)

¹⁰ The step is made in 5 mm foam board to reduce total box weight leaving though significant thickness.

¹¹ Alstrom (2013).

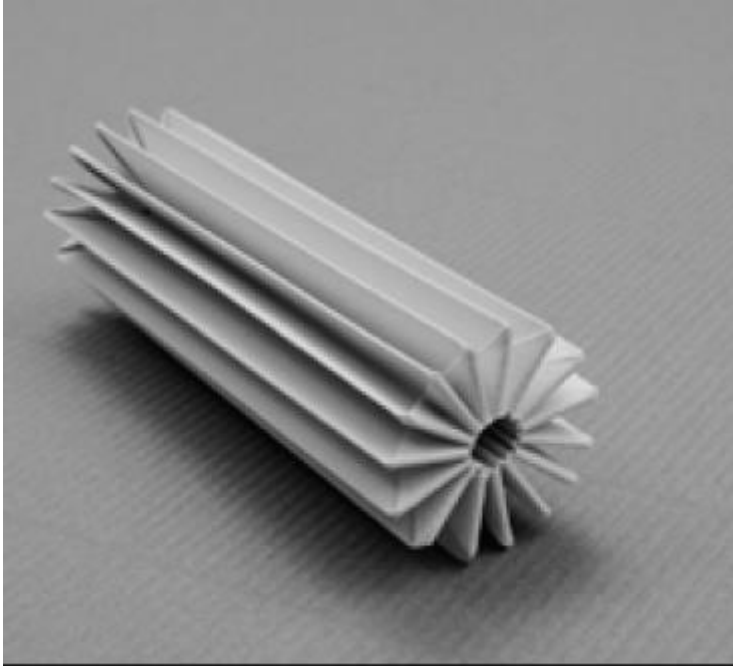


Fig. 5 Concertina in *blizzard book* style

4 Movement

The box opens by lifting up and revolving the lid tray 270° clockwise on its hinge.

The wedge revolves anticlockwise around its hinge until the hypotenuse leans on the horizontal top and the cathetus against the outer side of the base board. The preordained wedge angle holds up the base of the box, keeping it on similar slope, equal to 45° to horizontal. (Fig. 6)

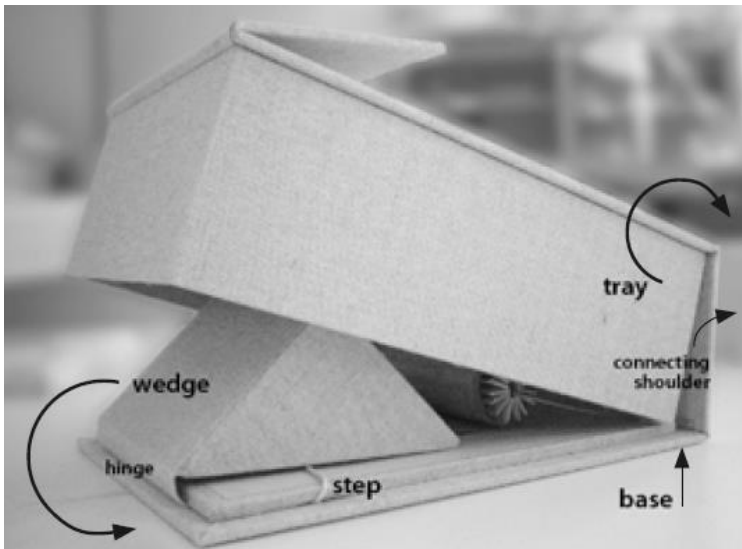


Fig. 6 Movement

The two concertinas are hung by threads in the lower part of the base and in the wall of the lid tray next to the connecting shoulder. Opening the box, the upper concertina rises up to the connecting shoulder and widens the scroll portion on display. By closing the box, the scroll exerts an elastic pull on concertinas,

so that the upper one slides down to the base and the lower one fits into the wedge. In this way the scroll inside the box may reach its best natural relaxation.

5 General dimensioning

From a dimensional point of view, the terms involved in box construction are: (Fig. 7)

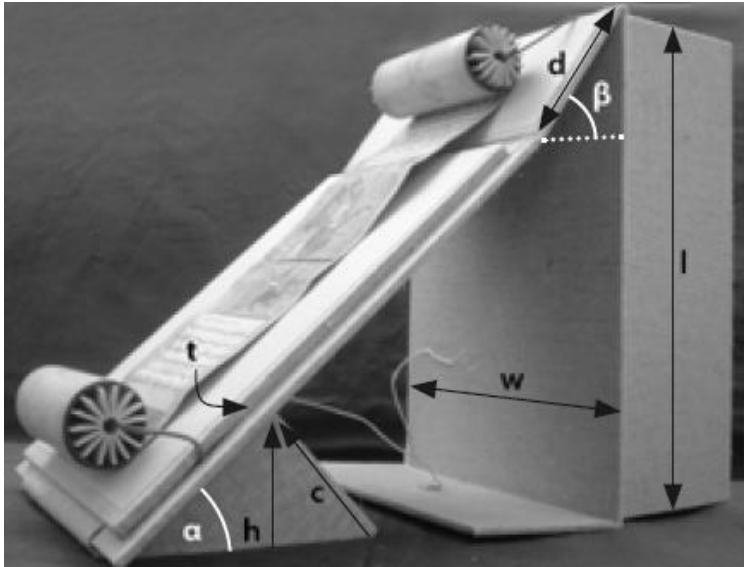


Fig. 7 Dimensions

Box length = l	Connecting shoulder slope to horizontal = β
Box depth = d	Wedge height = h
Box width = w	Wedge side = c
Base slope to horizontal = α	Raised board thickness = t

Box dimensions can therefore be modified to let the box meet any specific scroll or storage requirement. In fact all the modular system arises from scroll characteristics and needs.

Specifically, box depth and wedge height are closely linked to the scroll diameter, as the wedge minimal height has to be sufficient to perfectly encompass the scroll.

Synthetically, the wedge has to encompass the scroll and must be encompassed by the tray. So we need to compute the height of the wedge h by the radius of the scroll r , posed the angle of isosceles triangle base equal to 45° :

$$h = r \cdot (1 + \tan 67.5) \cdot \sin 45 \text{ (wedge height)}$$

For security reasons, it sounds effective to increase this measure h by 20%, for a very safe fitting of the scroll. So the depth of box should be:

$$d = h + 0.2 \cdot h \text{ (box depth)}$$

The wedge cathetus c is easily drawn from the wedge height in the formula:

$$c = h \cdot \sqrt{2} \text{ (wedge side)}$$

The thickness of the raised board can be chosen as desired, providing it would not be too high to prevent the box from closing.

Once involved in measure calculation, it has become patent the existence of a relationship between the length of the box, the depth of the box, the slope of the base and the slope of the connecting shoulder.

The relationship between the length, the depth and the slopes is formally stated trigonometrically by the formula:

$$l \cdot \sin \alpha + d \cdot \sin \beta = 1$$

This equation contains four terms. Thus, it is possible to calculate the value of the other three variables, provided that the two missing ones are known or imposed. Although this equation contains four terms, we practically fixed α , providing a 45° slope on which the lower board leans, and d . After having decided the length of the box l , you can finally check the value of p with the following formula:

$$\beta = \arcsin \cdot \left[\frac{l \cdot (1 - \sin \alpha)}{d} \right]$$

$$l = p \cdot \sin \beta / (1 - \sin \alpha)$$

Finally, it can be assumed that these formulas must be managed just to meet the different needs of the scroll that should be preserved. For example, a very rigid scroll, that can not be stretched excessively, may require a lower length of the base while an inclination lower than 45° may be required for heavy scrolls, which could slide downward otherwise. If you decide to use a different inclination for the wedge, it has to be considered though that the formula which was provided for the wedge height is not valid in this case.

6 Simplified dimensioning

The approach just described is general but a simplified one is being proposed in this section. We used the last to build the boxes for the Biblioteca Marciana scrolls. Working on these scrolls it was possible to set the best ratio between depth and length at 1 to 3. This proportion can be taken as the ideal ratio for a standard box.

The way we followed to obtain the measurements was:

- Add 2.5-3 cm per side to the thickness of the scroll, to obtain the width of the box.
- Compute the height of the wedge and the depth of the box with the previous formulas.
- Triple the depth to obtain the length of the box.
- Calculate the side of the wedge with the proper formula.
- Finally, if you want, you can calculate p with the formula in the 'general dimensioning' section.

7 Warnings

Make the wedge and the lid tray first and cover them. Then remember:

- add one board thickness to closing shoulder size, to allow a perfect fitting with the lower base board.
- when covering the case be sure that each piece may revolve completely.
- place the concertinas by fixing their hanging threads.
- place the lid tray by the side of the closing shoulder, after placing the rivets on it. The rivets with the thread need to be placed on the lower base board.
- cut the step to fit exactly inside the tray, but consider that two thicknesses of cloth must be then added at wedge connection.
- place the wedge under the step. Connect the wedge by the cloth used to cover it externally and internally. Leave enough cloth to revolve the wedge around the base edge.
- Don't forget that the step must be centred on the base case board.

8 Conclusion

The modular box described is very effective for the preservation of scrolls. It is also an ideal phase box, because the scroll doesn't need any preventive treatment or mounting.

It is safe for scroll storage, because it is made of durable cardboard. Without any variation of its nature and physical aspect, the box gives the necessary room to fit the scroll.

It is very suitable for scroll handling, because it gives a safe, clean and conservative surface for examination. Leaving hands free, it reduces manipulation and avoids temporary and risky methods to prevent the scroll from rolling off the table.

It is safe for scroll display, because it provides the established slope and it allows to easily change the scroll portion on display for better preservation. In addition, it doesn't need to change the scroll place either during carriage or exhibition.

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