The patrician family Tucher was of great influence in late mediaeval and early modern Nürnberg. Throughout the centuries the Tucher family has continuously owned a great archive of documents and precious cultural legacies. During World War II the most precious documents were stored in a safe in their city palace in Nürnberg. This building was destroyed during the bombardment of the city on the second of January 1945. It is reported that the safe became red-hot from the heat so that the fire brigade sprinkled water over it to cool it down and take the contents out. When the hot steam penetrated into the safe it provoked the enveloped parchment documents to shrink so that they agglomerated to a clump a quarter of the original size and formed a very hard mass which could not be opened without serious losses of material (Fig 1).

These recovered document lumps were stored on permanent loan from the family foundation untouched in the city archive of Nürnberg. Nobody wanted to do the delicate conservation. In a project with students we succeeded to develop an appropriate method to restore the flexibility of the parchment and open the folded and conglutinated mass. One of the most spectacular of the recovered documents is the doctoral diploma of Sixtus Tucher executed in Bologna. Even if it has shrunk to one quarter of its original size, the now flattened document still demonstrates the splendour of university documents from 15th-century Bologna (Fig 2).

The paper will present different techniques of humidification and flattening of gelatinated hard parchments. Various methods of flattening will be shown. The results can convince many doubts of archivists who have resigned because of the seemingly unsolvable problems of stiff parchment lumps.

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Fig 1: Doctoral diploma for Sixtus Tucher 1485, before conservation (© Robert Fuchs)

Fig 2: Doctoral diploma for Sixtus Tucher, after conservation (© Robert Fuchs)
The Berne Antiphonaries, which date from about 1485-1490, were made for the chapter of the collegiate church of St Vincent by two renowned scribes and illuminators, one of whom is even known by name. Today, two of the six volumes are kept in Vevey, the remaining four in Estavayer-le-Lac.

During the recent conservation of the two Vevey volumes, close investigation by binocular loupe made it possible to identify the details of the work processes in the Berne scriptorium, based on minimal local overlaps between the layers of the ruling, text, decoration and music notes (Figs 1 and 2). This reconstruction sheds new light on the complexity of the work that went on inside the scriptorium, about which little has been known to date.

A conservator who applies his knowledge and his tools in codicological research is in an uniquely privileged position for uncovering new knowledge about an object. Such opportunities should not be missed. What are the motives for conservators to engage in this kind of research process?

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The ‘Mokvi Gospel’ (ca.1300) is stored at the National Centre of Manuscripts in Tbilisi, Georgia. The parchment manuscript is adorned with canon tables, headpieces, initial letters and 157 illuminations. Because of its high value it is incorporated in the ‘Memory of the World Programme’ by UNESCO.

All miniatures are painted on polished gilding. This results in heavy flaking of the paint layers as well as of the gilding. The adhesion power between paint layer and polished gold is poor and is unique in the tradition of illuminations. A continuous loss of original material can be observed throughout the years (Figs 1 and 2).

In October 2011 an international group of experts investigated the condition of the manuscript and developed a rescue programme. 73.2% of the illuminations urgently needed consolidation. In 2013 all miniatures were consolidated with sturgeon glue and polyvinyl alcohol (PVOH). The latter synthetic adhesive was applied for detached paint layers when the sturgeon glue did not develop a sufficient adhesive power. PVOH is a known adhesive in objects conservation and rather seldom used for pigment consolidation in manuscripts. The application was done with either brushes or aerosols. Within another part of the project the common medieval pigments were detected by SEM. ELISA analysis was performed for the identification of the binding media. Small samples could be taken because of the overall flaking.

The analysis identified a natural gum as historic binding media. This is one reason for the extreme flaking, another is the gold-leaf layer, which impedes adhesion. The analysis of binding media in medieval manuscripts is challenging and needs highly specific scientific resources.

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In recent years the work of the Institut für Bestandserhaltung und Restaurierung (IBR) of the Bavarian State Library in Munich is largely determined by exhibitions and loan requests and in particular by digitization projects. Of the 97,000 manuscripts in the library collection, illuminated objects are often requested. Unfortunately, unstable areas in the paint layers that require stabilization were detected consistently during the mandatory condition report (Figs 1 and 2).

The lecture will focus on the consolidation of paint layers with isinglass in different cases. The handling of treasure bindings during consolidation is considered as well as the work on oversized objects. In the latter case it deals with the conservation of a magnificent manuscript (1557-1559), which was prepared for the private use of Albrecht V., Duke of Bavaria, the founder of the Bavarian State Library. The music of the Flemish composer Cipriano de Rore was illuminated on 82 pages by the painter at court Hans Mielich, who was considered an excellent portraitist and master in miniature painting as well as in large format panel painting. Together with the Flemish humanist Samuel Quiccheberg he created an amazing iconography for this manuscript.

Due to its size (H. 62, W. 45 cm) and weight, as well as its fragility this highlight of Renaissance miniature painting is difficult to handle and needs well-adapted equipment during consolidation.

In this case the consolidation and subsequent digitization represent the first steps in a research project on a European level on this and two other manuscripts, the penitential psalms of Orlando di Lasso, illuminated by Mielich according to the same formal principles.
Tackets, overbands, and buckles
Survey and stabilization of tacketed account books of the Medici family

The Harvard Business School’s Baker Library houses 145 account books and day books recording the business activities of several generations of the Medici Family dating from 1406 to 1597. Combining survey and treatment, this project sought to record unique binding features and to stabilize vulnerable elements of the binding.

The survey documented structural features, such as information about overbands, lacing patterns, spine and endband tackets, and fastenings (Fig. 1). Illustrating trends of 15th-16th century Italian tacketed bindings, the survey also shed light on unexpected binding variations. With the help of the survey, unique features that could have been easily over-looked were noted (Fig. 2), which stressed the importance of a thoughtful approach and minimally invasive repairs.

Ultimately, conservation treatment aimed to stabilize vulnerable elements, while preserving historical binding evidence. Most bindings had broken alum tawed spine tackets and overband lacings, which if handled could be further damaged or lost. Repairing broken tackets and lacings preserved the lacing design and restored the structure. Additionally, many parchment covers were severely damaged by rodents, resulting in large losses that left the textblock vulnerable to soiling and wear. One challenge was filling losses to the cover without disturbing evidence of manufacture. Finally, many volumes had paper labels with heavily inscribed iron gall ink applied unevenly across the spine and overbands. Ink fragility and spine movement caused many labels to fracture.

This paper will share survey results, explain the conservation project methodology, and describe several repair techniques for tacketed bindings.

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Fig 1: Early 16th century Italian account book with fore-edge flap, buckle and leather strap extending from center overband. Left cover, spine. Medici 544 v.1 (© K. Beaty)

Fig 2: Covers are inscribed with ownership marks and indexing letters. Center overband and iron buckle. Medici 544 v.1 detail (© K. Beaty)
Identification of inks is a key priority for addressing questions of dating, attribution, and studio practices of drawing techniques. Also, it is essential to predict risks like ink fading, colour changes or ink corrosion. Until now, ink analysis is limited to determine the inorganic part of inks with microchemical tests, or X-ray fluorescence spectroscopy (XRF). This only allows a rough estimation of the nature of the ink: presence of iron indicates an iron-gall ink, presence of chrome a chrome-logwood ink. The organic part of inks remains undetermined. In addition, coloured inks made of natural or synthetic dyes can not be identified, because an appropriate micro-sampling technique is lacking, as is an analytical technique, sensitive and reproducible enough to analyse micro-size samples.

Therefore, a new technique has been developed which significantly improves the sampling of original inks. By gently rubbing a pointed, fine grained, inert, magnesium-oxide rod onto an ink surface, a minute ink sample is obtained. The sampling area is visible only under magnification if at all. The test is immediate, cheap and easy to carry out in situ (Fig 1).

Taken ink samples can be examined first with XRF and Raman spectrometry, before destructive analysis is performed. Subsequently, the sample is dissolved with a two-step extraction method and analysed with ultra-performance liquid chromatography (UPLC) attached to a photodiode array detector. The sample is compared to our reference library of late 19th century synthetic components, and natural organic colourants. In addition, self made reference inks, and 50 historic inks from ink bottles dating between 1850 and 1950 from different countries (Fig 2) have been analysed.

The analyses have shown that historic inks from bottles often contain synthetic dyes. Studies on original manuscripts prove that the new sampling method is very easy to use. The taken sample is large enough to be analysed and gives reliable results. It is even possible to identify traces of faded inks, and to determine the colourants used in the paper-making process (Fig 1).

The developed techniques were used to study drawings and letters of Vincent van Gogh. Since the sampling technique is easy to apply, conservators can take samples of inks, but also of other media like water colour, wax crayon, pastel, ball points etc. and send them to specialized laboratories for identification. This will usher in a new era of investigating the origin and history of master drawings, medieval illuminations, art on paper, and documents.

Fig 1: Sampling of a document from 1869. Red ink contains cochenille, the blue paper is dyed with indigo (© Birgit Reissland)

Fig 2: Some historic ink bottles of the Cultural Heritage Agency of The Netherlands (© Birgit Reissland)
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An integrated non-invasive spectroscopy study

Modern inks and papers from the manuscript collection of The National Library of Norway

The National Library of Norway (NB) takes care of an extensive collection of manuscripts by major authors in the Norwegian language. Iron-gall inks, which constituted the standard writing and drawing ink in Europe prior to 1850, have been extensively studied both in terms of their chemical composition, chemical instability and degradation. From 1850 onwards, the production and use of inks dramatically changed with the introduction of new ink formulas, a variety of additives and aniline colours. A similar change affected the production of paper, which was mass produced using new chemical methods.

All these changes are reflected in the papers and inks kept in the Manuscript Collection of the NB (Fig 1). The variety is enormous and in many cases can be followed in the oeuvre of a specific author. Present are metal-containing inks, which at times might damage the paper they are written on, blue ball-point oil-based inks on very thin paper, etc. Letters, memoirs or major works can be written on strong, hand-made and expensive paper or on machine made, short fibred paper, which was made cheap and would not preserve its colour, flexibility and resistance to damage.

This research is aimed at providing an insight into the material composition of different modern inks and papers from the collections of NB. Manuscripts were selected spanning from 1850 to 1950, with multiple samples at 10 year intervals.

Preliminary analysis on samples is being performed at the NB using a commercial multispectral scanning device in order to assess and document fluorescence and reflectance properties of the inks and papers (Fig 2). Elemental and molecular characterization of samples using X-ray fluorescence and Raman spectroscopy will be performed at the Physics Dept. of Politecnico di Milano within the LaserLab Europe project. In parallel, time-resolved optical fluorescence measurements will provide valuable information on the presence of additives, previous conservation treatments or oxidation phenomena. The research will provide a first step for selecting useful parameters for the differentiation and identification of inks and papers from the industrial era, which will be valuable for documents dating and preservation of the collections of the National Library of Norway.

The present research has received funding from LASERLAB-EUROPE (grant agreement no. 284464, EC’s Seventh Framework Program).

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Fig 1: Letters from the Manuscript Collection of the National Library of Norway (© Chiara Palandri)

Fig 2: Fluorescence lifetime map of a paper surface, suggesting that novel short-life fluorophores have developed followed by paper yellowing, Sample: Eiker, 1809-11, NB Norway (© Daniela Comelli)
The potential information to be obtained from the large corpus of codices and documents written on parchment is immense. Aside from the obvious textual information, there is a wealth of biomolecular information trapped in the fibres of the parchment itself (Fig 1). By analysing the collagen molecules that form the basic structure of skin we can determine what animal was used to make the parchment and even assess its quality by specifically measuring the deamidation of certain residues in the molecule.

In collaboration with conservation staff at the Borthwick Institute for Archives at the University of York, we have developed a non-invasive method for sampling parchment (Fig 2). Using conventional conservation erasers we are now able to ‘dry sample’ parchment in libraries and archives using a non-invasive procedure that requires no specialist training. From the eraser waste collected we are able to extract minute amounts of collagen that are sufficient to be analysed by mass spectrometry. We are not only able to determine the species of animal used but also the level of deamidation present in collagen molecules. This allows us to estimate the level of damage present in the parchment, likely due to the liming process, which could prove useful when deciding what conservation treatments to implement.

A wealth of untapped information remains locked in libraries and archives and we believe that with our non-invasive sampling method we are a step closer to unlocking all that information. Benefitting the humanities, the scientific community and conservators all in one stroke, never has such a wealth of information been obtainable from such a small amount of waste.

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**Illuminating the hidden secrets of parchment**

Application of non-invasive biomolecular techniques

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This paper presents the problems concerning the conservation of historic herbaria of Michal Fedorowski, dating from the 1890’s. The herbaria are compiled in albums and comprise dessicated plant specimens mounted onto the paper support. The presence of dessicated plant material within paper pages poses a set of specific problems when it comes to the conservation, storage and handling of the items due to the different properties of dried plant specimens and the paper itself.

The objects were subjected to treatment because they were to be used by ethnobotanists and researchers. Therefore they were supposed to be brought back into the public after several years of oblivion.

The items were analysed by a X-Ray Fluorescence (XRF) scanner to investigate if they had been contaminated with pesticides used as a means of preventive treatment. The XRF scanner enables not only an identification of elements but also provides information about the distribution, which can be helpful when assessing health and safety risks for the conservation treatment (Figs 1 and 2). Microfading tests were also carried out to estimate the vulnerability of the herbaria to light exposure and to compare the lightfastness of the paper and dessicated plants. Microfading enabled an individual assessment of the risk of colour fading.

The XRF scanning and microfading tests set up a methodology of safe and precise identification of possible hazards and sensitivity to light exposure. The following conservation treatment concerned dry cleaning, securing loose plant material, infilling and mending tears in the paper support, resewing and making individually designed boxes to safely store the albums.

The project was carried out thanks to the Polish Ministry of Culture and National Heritage, as a part of the Creativity Promotion Fund Scholarship.

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Fig 1: Scan from Macro-XRF M6 JetStream (Bruker) (© Piotr Targowski)

Fig 2: The X-Ray Fluorescence scanning proved the absence of mercuric chloride and arsenic in the herbarium. Identification of elements from MacroXRF M6 JetStream (© Piotr Targowski)
The need to describe bindings is common to many who work with early books, for catalogue entries, descriptions of books in academic research, booksellers’ catalogues and, above all, for conservators who need to record the bindings on books that are about to be repaired, where a detailed record of books in their original, albeit damaged, state will be the only record of what may be lost in the process of repair.

For such descriptions to be of more than local interest, the process of description needs to be formalized and ordered to allow consistent records to be made that can be compared directly one with another at an appropriate level of detail. A common language is a first requirement, which the Ligatus Research Centre has addressed with its thesaurus of terms, the Language of Binding, all the terms in which are used in the forthcoming guidebook: ‘Coming to Terms: guidelines of the description of historical bookbindings’, to be published by the end of 2015 and which this paper will introduce and describe.

Compiled with input from an advisory panel chosen from the international team working on the Language of Binding project, it attempts to explain the processes, both practical and theoretical, by which accurate and consistent descriptions can be made, based on a methodology developed over many years, but especially on the surveys carried out in the monastery of Saint Catherine on Mount Sinai, but here expanded to include the types of binding made across Europe up to the early nineteenth century. An example is shown in Figs 1 and 2.

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Decorated papers constitute material evidence that can provide valuable information for the history of the book, its provenance, and chronology, which are important to record. However, anyone willing to describe a paper will need to rely on written descriptions or attempt to describe it themselves, which often requires time and a certain level of expertise (Fig 1).

This observation has led the Ligatus Research Centre, in collaboration with specialists in the field, to develop a new digital tool for identifying and recording decorated papers. The project aims to compile a database of described and photographed papers in order to provide a reference collection and a tool to assist any user (expert or non-specialist) in the identification and recording of decorated papers. Each paper will be attributed a reference number in the database and users can simply refer in their record to the number of the paper having the closest appearance to that of the observed paper (Fig 2).

To allow categorisation and keyword searching, the images are accompanied by terms. The terminology, which forms part of a larger thesaurus of bookbinding terms, is founded on the existing literature and organised according to the SKOS standard, so the project’s output can easily be shared.

Once set up, this resource will be open to submissions from its user-group of both pictures and bibliographical information, thus expanding the range and specificity of the examples held in the database. Our intention is to collect as many pictures and bibliographical references as possible and therefore create a comprehensive and versatile tool with potential material for research in paper history.

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A. Martin*

The Ligatus Decorated Paper Project
A new digital tool to identify and record decorated papers

Fig 1: ‘Marbled paper, Tree-root pattern’: imprecise description. ‘Marbled’ is usually used to describe Figs 1 and 2, although two different techniques were used for their manufacture (© A. Martin)

Fig 2: ‘Marbled paper’, unnamed pattern: identified in the database by its technique of manufacture (‘trough-marbling’) and its URI to which users can refer directly without lengthy descriptions (© A. Martin)
The widespread use of wooden boards is an acknowledged feature in medieval bookbinding (Fig 1). Less investigated is its permanence throughout the printing press era when pulpboard is thought to have become a substitute for wood. Recently, the use of very thin wooden boards, known as scaleboards, has been identified as an American Colonial bookbinding custom.

According to a general definition, sometimes the only way to identify scaleboards with certainty is to be able to see through the cover if damaged (Fig 2), because their thickness is comparable with cardboard (1-3mm). On the other hand, the manufacturing technique, implying fast and economical measures, should be taken into account. But it is quite hard to distinguish whether a board has been planed or split or both, even when bare or plainly visible.

Currently more than 200 wooden board bindings from the 15th to the end of the 18th century have been detected at Biblioteca Marciana in Venice. A substantial number of these books are strongly bonded with the city, being Venetian imprints or very typical manuscripts such as Mariegole, Commissioni Dogali, and music books. Greek books printed in Venice are significantly represented too.

Boards of every thickness have been included in the study, with a particular overview on thinner scaleboards, showing the constant presence of wooden boards and the progressive thickness decrease from the medieval to modern times. A reliable relationship between the choice of wooden board and bookbinding structure including changes in sewing, board connection, covering, and finishing has been worked out to identify how and why this material has been used continuously over time.
Digitization versus conservation
Outcomes of the Clairvaux abbey digital library project at Montpellier University

Montpellier University Library’s heritage collections consist of about 800 manuscripts, 85,000 early printed books and 7,000 prints and drawings. The Library’s conservation team (3 conservators) recently started working closely with the internal digitization team (3 technicians) on various large-scale projects.

In 2013-2014, our conservation and digitization departments were involved in the Clairvaux Abbey virtual library project initiated by the Médiathèque du Grand Troyes. The aim of this very challenging project was to make available online images of all the remaining Clairvaux manuscripts (UNESCO ‘Memory of the World’). Most of the manuscripts – more than 1,000 – are held by the Troyes Public Library and 70 out of the remaining 98 manuscripts spread throughout Europe are held in Montpellier.

The risk of damage that the digitization process can cause to fragile medieval items, the short timeframe allowed, and the high quantity of precious documents which must be handled required rigorous conservation planning and a new custom-made assessment system. To prioritise and optimise our treatments and meet deadlines, a treatment classification was defined in accordance with:
- the type of bindings
- their physical state
- the presence of illuminations
- the book’s opening

This new approach was rather satisfying, both in terms of lowering the risk of damage from digitization and making rational decisions, including the use of minimal treatment procedures (Figs 1 and 2). As a pilot, the Clairvaux Abbey digitization project was an opportunity to improve how we deal with future projects of an equivalent scale and complexity in the library.

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Fig 1: Fold in the parchment and pigment loss preventing digitization (© BIU Montpellier)

Fig 2: Pigment consolidation to lower the risk of damage during the digitization process (© BIU Montpellier)
The damage and treatment of a specific group of medieval wax seals, known as ‘Blätterteig-Siegel’ (‘puffpaste’ seals, white seals), was the subject of my Master’s thesis. The sealing wax splits off in small layers parallel to the surface. If the flaking damage is very advanced, the seal could disintegrate completely with the slightest pressure put on it. The current theories on the origin of the damage were not satisfactory. An extensive literature study was the basis for further scientific research (Scanning Electron Microscopy, Infra Red Spectroscopy and Gas Chromatography by Doerner Institute Munich). The poor mechanical properties are caused by a change of composition. The quantity of alkanes with a low melting point and wax esters significantly decreased in the wax. These low molecular weight components function as plasticizer.

Based on the results, different tests with consolidating compounds were carried out. The main problem was to find an application method and a consolidant which completely would penetrate the fragile texture. If not, a hard shell would form on the outer face, which would produce a predetermined breaking point to the brittle, flaky interior.

Because wax has no sufficient capillary effect to obtain this result, consolidation by means of underpressure has been successfully tested.

Results from different test series have shown that Aquazol 200, a high-performance water-soluble polymer (Polymer Chemistry Innovations), is a suitable consolidant. The small molecules penetrate well into and between the wax lamella. It can be dissolved in water or alcohol and has comparable thermoplastic properties to wax. Therefore, it renders consolidation possible, as well as cleaning and fusing of wax to protect spoiled edges.

The newly developed consolidation technique has been successfully tested on some white seals of the Landeshauptarchiv Koblenz (LHAK) (Figs 1 and 2). The long-term stability was tested on test samples with artificial ageing (4 weeks, 30ºC, RH changing from 30 to 85%, intervals of 1.5h). No optical changes occurred, mechanical tests were not carried out.

Further investigation into the development of suitable treatment equipment for seals is planned.

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Current book conservation tends to favor the conservation of the original cover and treatments that avoid dismantling the book structure. In case of incomplete or missing covers, however, it is often necessary to insert new elements on the original ones or a rebinding intervention.

Every age has found different solutions, even opposites to one another: nowadays, while conceiving a new cover, original binding residues are taken into consideration, or elements that are coeval with the print date. Private collectors also ask for historical fine bindings, or design bindings structurally different from the original.

‘Tomorrow’s Past’, an international group of bookbinders and book conservators, propose contemporary design binding made to be in harmony with the ancient, according to a manifesto and specific ethic principles. This is expressed through an approach innovative for the book field, answering the question ‘What should a new cover on an ancient book be like?’.

In this presentation Tomorrow’s Past’s method will be explained, underlining its accordance with current conservation theory, its applicability as a practice in book conservation, the difficulties that can occur and the comparisons with other current approaches (Figs 1 and 2). The aim is to propose Tomorrow’s Past’s work as a valid alternative that can combine preservation and enhancement of book heritage, which can be applied in conservation treatments that involves rebinding or filling losses in the original book cover.

Fig 1: The cover of Sacred Dramas, Hannah More (c. 1818), before treatment (© Kathy Abbott)

Fig 2: The binding of Sacred Dramas, Hannah More (c. 1818), made in 2013 following Tomorrow’s Past manifesto (© Kathy Abbott)
This paper focuses on the issues associated with ethical challenges in the conservation treatment of industrial heritage archival materials and importance of ethics in the decisions a conservator makes when choosing a suitable treatment.

The focus is on the preservation and conservation treatment of the 19th century ship plans constructed by William Simons & Co in Greenock, Inverclyde, Scotland (Fig 1). This collection consists of 680 plans of 156 vessels built from 1820 until 1926.

The collection provides over 85% of the total of pre-1870 ship plans held by the University of Glasgow Archives Service. The national importance of these plans draws from the significance of blockade running to the Clydeside, economy throughout the American Civil War (1861-1865).

Shipbuilders based on the Clyde built a great many of the ships that ran the blockade. This project is to ensure the ongoing preservation of these plans, allowing researchers to access information on the full extent of the Clyde’s ship-building industry in the nineteenth century.

As the industrial heritage ship plans were working documents, and as such were made with so-called ‘ready-use’ elements. Due to their past storage and handling, a process of minimum intervention is necessary in the conservation program to respect the ship plan’s authenticity and protect their historic substance (Fig 2).

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Since 2001 we have been working with the Conservation Department of the Institute for Ancient Manuscripts, Matenadaran (Yerevan/Armenia) on the maintenance and repair of metal fittings on the covers of medieval Armenian manuscripts. Objects which are equipped with three- or four-sided, hinge-jointed silver plates are a specific group that required attention. In case of inflexible rounded spine-plates, the appropriate opening of those books is extremely affected. This is caused due to partially damaged metal spine-plates or the adjoining silver-plates on the cover.

The basic evil, caused by silversmiths’ ignorance of mechanical laws concerning the hinges between covers and spine, is progressive (Figs 1 and 2). Either with or without conservation efforts, we are confronted with a double-bind dilemma. The opening of such a book is severely restricted. Each trial will deteriorate either the aggrieved metal fittings, the coherence and solidity of the manuscript, or both. Assuming that the object should stay approachable for scientists, archival employees or others, it is nearly inescapable not to raise further damage.

Nevertheless, often the purchaser wants a successful reduction of visible damages. The question is, what can be done respecting contemporary conservation rules and ethics?

We will show examples of historical attempts trying to avoid these problems and some of our own efforts and approaches and explain what we learned by this.

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Fig 1: Curved spine-plate made of decorated metal, centre of upper edge partially broken. Ms. 5580 (© M. Jaschke)

Fig 2: Metal spine-plate with hinges, entirely detached from front-cover. Left edge damaged, signs of former repair measures. Ms. 7699 (© M. Jaschke)
'Not only does a prescribed conservation treatment methodology not impose uniformity, it actually supports different results, appropriate to the many variables that treatments must address... the same object in different settings should receive different treatments based on the differing use and meaning...' (Barbara Applebaum, Conservation Treatment Methodology).

This paper will discuss the different approaches taken by conservators in two separate UK institutions, the Natural History Museum and the Royal Collection, in the treatment of John James Audubon’s ‘The Birds of America’. The aim is to highlight some of the factors that influence decision-making in conservation, including how the use of an item within its particular holding institution contributes to the direction of conservation treatment.

The 435 hand-coloured engraved and aquatint plates of ‘The Birds of America’ were printed between 1827 and 1838 on double elephant-folio wove paper and usually oversewn into four volumes with tight-back bindings.

The Natural History Museum acquired a set on 22 June 1885. The volumes were rebound in the 1970s. In 2010 the Library chose to disbind and keep the individual plates in sets of ten, inside purpose-made folders within a bespoke Planorama® chest of drawers (Fig 1).

The Royal Collection’s copy in Windsor Castle is one of the few remaining in the hands of original subscribers. The circa 1843 bindings sustained considerable handling damage and degradation of materials over time (Fig 2). They were conserved and rebound in a new flexible style with facsimilie covers in 2011/2012.
Although various types of binding structures (i.e. Romanesque, Carolingian, Byzantine bindings etc.) have been extensively described, the simple yet stable binding structures of archive bindings have been ignored by researchers in the past. Even in the cases where an archive binding is recorded in a catalogue, descriptions are focused on the context of the gathered documents, paying no attention to the binding structure and its condition. Furthermore, the once common practice of dismantling the existing binding structure for certain purposes like rebinding or digitization vanished the only evidence of archive practices in a certain era.

This paper discusses issues concerning the study and preservation of archive bindings that belong to the collections of the General State Archives of Greece, dating from the seventeenth to nineteenth centuries. The main characteristics of these plain bindings are the usually flexible covers made of paper, leather or parchment and the exposed sewing structure without any decorative elements, such as endbands or elaborated decorations (Figs 1 and 2).

Documentation of the various materials and techniques used in the bookbinding processes (e.g. type of binding, materials and technique used for sewing, covering, ties etc.) and the detailed description of their present condition have proved to be indispensable for the decision of potential conservation treatments and preservation practices. Finally, the evaluation of practical and ethical issues raised indicate the conservation treatment should be limited to minimal interventions in order to preserve the individual features of these bindings for researchers of the history of bookbinding.

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Archive bindings
A neglected style of binding

Fig 1: Archive notary binding from Naxos, end of 18th century
(© Angeliki Stassinou)

Fig 2: Exposed sewing, Ministry of Interior, 19th century
(© Angeliki Stassinou)
Photo albums can be found in most archives, libraries and museum collections in Poland. Still they did not get any complex study concerning the techniques, materials and conservation problems. While working on my dissertation, I conducted studies on the history of photo albums and got to know the variety of their constructions. I prepared a new classification system, dividing photo albums into a few categories based on the context, of which three will be discussed here.

The first category consists of scrapbooks, albums of tags or albums of trifles, which include unique photos taken by different authors together with watercolours, prints and drawings, for example albums by Marcin Olszyński. The second category contains author- and edited photo albums with black and white (B&W) and/or hand coloured photographs, such as albums by Felice Beato, Karol Beyer or William Fox Talbot. The third category are conventional family photo albums comprising format photographs like ‘cartes de visite’ or in cabinet format, in B&W and/or hand coloured, with photographs usually taken by different authors.

Mass production of classical family- and edited photo albums had a great influence on the way they were prepared, and on characteristic decay patterns. Examples shown are based on my doctor’s thesis and a contemporary research project (National Science Centre, Poland; 2014/13/D/HS2/02755). I will discuss common conservation problems in context of the albums’ indivisibility and integrity (Figs 1 and 2).

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Many cultural institutions in the Netherlands possess large quantities of technical drawings. However, frequently information about the size, techniques, value, usage and the condition of these collections is not precise, known or available. In an attempt to shed light on these ambiguities and to explore how Dutch cultural institutions are coping with implementing adequate conservation strategies, a team comprised of Dutch book and paper conservation students and junior paper conservators conducted concise research on the quantitative and qualitative aspects of technical drawings in several Dutch collections (Figs 1 and 2).

Through interviews with both conservators and curators and by paying visits to various institutions such as archives, libraries and museums the data were gathered.

The general lack of knowledge about and awareness of these collections gave rise to the idea that technical drawings are neglected parts of collections. Surprisingly, this view turned out to be far too negative. It can not be denied that the knowledge on how to handle or preserve these objects is sometimes absent or the extensive nature of most collections poses (financial or logistic) problems, however in some cases technical drawings were considered to be treasured parts of many collections and institutions proved to be quite resourceful in an effort to document and preserve them appropriately.

By discussing the ‘status quo’ of technical drawings in the Netherlands, this research aims at creating more awareness for this formidable but often somewhat unrecognized part of our cultural heritage, hoping to move it forward into an area of more knowledge and care.

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The Stedelijk Museum Amsterdam has one of the main poster collections in the Netherlands, with circa 20,000 items, stored with a vertical hanging system (Fig 1). This method was used from the 1950s because of a lack of space. As a result of mechanical damage to the system, from 1960-1980 the museum reinforced the edges of all the posters with pressure-sensitive tapes as a preventive measure (Fig 2). Of a total of 20,000 posters, 52% have tape around the edges, which created massive paper damage with, in retrospect, disastrous effects. From the 1980s onwards encapsulating the posters in Melinex sleeves was introduced to prevent further physical damage, but that solution turned out to be time-consuming and costly.

In 2014 the paper conservation department assessed the materials, workflow, and manpower needed for the hanging system. The goal was to investigate if this method complies with the requirements of today's preservation standards, also taking into account the museum's current financial constraints.

The examination consisted of: sampling the condition of the posters, mapping the developments in the hanging system, interviewing past employees, researching the museum's archive over the last fifty years, and reconstructing various chemical methods (white spirit, petroleum ether) that were used as a tape-removal treatment during the mass-conservation of the 1990s. This comprehensive effort resulted in understanding the development of the hanging system together with its advantages and disadvantages, its history, and the consequences of both the tape and its removal.

This overview is a starting point in order to evaluate if the hanging system should be continued for storing a growing poster collection. The lecture will focus on the history of the hanging storage and its implications for the future.

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To hang or not to hang?
The conservation history of the poster collection of the Stedelijk Museum Amsterdam

Fig 1: Vertical hanging system (© Tessa Rietveld)

Fig 2: Verso of poster reinforced with pressure-sensitive tape before 1980 (© Tessa Rietveld)
Three archival collections, once of the same origin, have been divided and stored in two different countries, Finland and Sweden, since the early 19th century. They have been chosen for a case study from the point of view of preservation, conservation and digitization. Once very similar, the collections are today quite different in their physical form, both when looking at the descriptions of the collections as well as in strategies of preservation. At the same time, digital reproductions could be seen as a way of uniting the collections again, bringing them back together but in another format.

Until 1809 Finland and Sweden were one country. After Sweden lost the Finnish War against Russia, Finland was an autonomous Grand Duchy of the Russian Empire. From the 16th century, King Gustav Vasa of Sweden formalised the Swedish archival tradition. State officials created archival records related to taxation, population registers and land owning. From this time and onwards, large amounts of records, both maps and written documents, were created. Until the years around 1810 most of them were kept in Stockholm, but from 1812 and onwards most of the archival records related to Finland where transported to Finland.

In this study we have chosen three different collections, comparing preservation, conservation and digitization projects done. The main subject of the presentation is how the choices made by the two institutions are visible in earlier decisions of preservation, and todays strategies concerning conservation and digitization.

The collections chosen are among the most used and of the most historical importance. The eldest series of documents, the ‘fogderäkenskaper / voudintilit’ are documents created by early bailiffs between 1530’s to 1630’s. Due to the reformation, the covers of the bindings were often reused folios from earlier catholic manuscripts. The ‘länsräkenskaper / läääintilit’ are the later series of taxation documents between 1630’s-1809. The so called ‘geologisk jordeböcker / maakirjakartat’ are cadastral maps, which were drawn in the 17th century.

All these collections bear a lot of visible traces from earlier history. The first significant differences after the collections were separated were caused already during the transport from Stockholm to Finland. The conditions during the wet winter in 1812 caused mould growth, which has later been treated with several conservation treatments.

The storage and use of these collections today differs also depending on the two institutions ways of dealing with large collections of cultural heritage, making them accessible to the public (Figs 1 and 2). Digitization will unite the collections again after more than 200 years of separation.

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Fig 1: Swedish collections: The earlier taxation documents Foggeräkenskaper, kept their original parchment binding (© Swedish National Archives)

Fig 2: Finnish collections: ‘Blue series’ taxation books Foggeräkenskaper. Once parchment bindings, they were unbound around 1840 and again in the 20th century for conservation purposes (© Finnish National Archives)
While Merovingian sealed documents of the French National Archives (Paris) were prepared for an exhibition, ‘fibres’ of unknown origin were discovered inside the wax seals (Figs 1 and 2). Their presence could not be a happenstance, because the fibres were numerous and arranged in an orderly way in the wax.

This discovery was first done at the National Archives, but later also in quite different patrimonial institutions which take care of comparable artifacts. This pointed to a sigillary practice evoked in the past which had never been the object of thorough examination. A vast research project was undertaken to study parchments of the early middle ages and their sealing processes. The project has a multidisciplinary approach and includes several professions (archivists, conservators, curators, chemists), working in different institutions, all with complementary knowledge and facilities. The interpretation of the results and their valuation were shared with the public.

The first results gave the opportunity to formulate a number of hypotheses which improve our knowledge of the validation’s practices of the royal diplomas from the Early Middle Ages. To date, the studies verified the existence of a specific practice in royal diplomas of the Early Middle Ages: the voluntary inclusion of human hair (the ‘fibres’) in their seals.

The corpses of seals, often based on plaster moldings made during nineteenth century seem to have engendered errors of understanding and analysis. Besides being incomplete, the information provided sometimes rests on bad reconstructions of the original seals. We shall show that restorations made in the past might originate wrong conclusions and a bad understanding of Merovingian seals.

Merovingian documents and their seals still seem to have secrets to deliver to us. An accurate examination can provide information on technological as well as on diplomatic practices.

Fig 1: Seal of Childebert III (© Archives Nationales Paris)

Fig 2: Detail of Chilpéric II seal, with hairs included in the wax (© Archives Nationales Paris)