The Conservation of the Middle Eastern manuscript collection in the Leiden University Library: Results of a conservation assessment survey

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Abstract
The collection of Middle Eastern manuscripts at the University Library of Leiden is too large to simply carry out conservation treatments as the manuscripts need them. Therefore, a database and assessment survey were set up in order to obtain the objective data about the physical condition of the manuscripts. Additional criteria as value, frequency of use and authenticity of the binding are used to further prioritize the conservation plans. The aim of the treatments carried out are to preserve the manuscripts visual and tactile character as much of the current structure and material as possible, at the same time allowing the items to be used as is necessary in an academic environment.

In this paper the design of the database is explained and some of the main results of the assessment survey are given. The paper also discusses an interesting result of such a survey: the gained knowledge about several characteristics of the collection, and their influence on the conservation approach.

Introduction
The first Dutch university was founded in the city of Leiden in 1575. From the beginning the study of the Orient was of the utmost importance, particularly because protestant theologians needed to be able to study the Bible in its original languages, as a direct consequence of the Reformation. Political and commercial interests also prompted the rebellious Dutch provinces to establish relations with their enemies' enemies, among which was the Ottoman Empire, then at the zenith of its power. The cornerstone of the Leiden Middle East Collections was laid by Levinus Warner (1619-1665), ambassador of the Dutch Republic to the Sublime Porte in Istanbul. His legacy of c. 1,000 manuscripts in Arabic, Ottoman Turkish and Persian is still referred to as Lugatun Wuriyisii. Together with the manuscripts of Scala & Gellrich, this legacy was the basis of the later development and flourishing of Oriental studies in the Netherlands. The current Middle Eastern & Islamic collection comprises c. 5,000 manuscripts as well as a large number of printed works in the languages of the Middle East. Materials in Arabic, Persian and (Ottoman) Turkish predominate, with sizeable holdings in other languages such as Berber, Kurdish, Urdu and the Turkic languages of Central Asia.

Starting the conservation project
It was not until autumn 2000 that the conservation department in the library was set up. Apart from a few rebindings in the late 19th and early 20th century, real conservation treatments on the collection were virtually non-existent. In the meantime it was apparently found to rebind approximately twenty books and on a limited number of occasions an especially damaged manuscript had been sent to a private conservator to be treated. These circumstances left the collection in a particular situation. The older collection, c. 400 manuscripts, had been in the library for a very long time – some of them for over 300 years. This part of the collection contains many of the most valuable manuscripts, and is well catalogued. The manuscripts' conditions have been fairly stable and are well known. The other c. 600 more recently acquired manuscripts were not as old, or had been in circulation for a long time. They were derived from many different sources. They have only recently been catalogued or are in the process of being catalogued. These manuscripts have been intensively used but mostly prior to their accession in the Library; their physical condition was neither explored nor registered but could generally be described as poor. They have not, however, been meddled with by Western binders. The curator, who had been working with the collection for nearly thirty years, was well aware of the conservation needs of the Middle Eastern Manuscript collection. He did acknowledge, however, that it was far easier to advise on the prioritizing of the conservation of the older collection, given the known value, frequency of use and the physical condition of most objects. Nevertheless it was beyond doubt that many problems existed in the younger part of the collection which could well be far more urgent. In many cases it was already clear that treatment of some kind was essential even to enable access of these manuscripts.

It was therefore decided to develop a damage inventory and database to survey the condition of the c. 600 manuscripts. The aim was to generate data about the general condition of this part of the collection in order to make overall conservation decisions and to produce information on the conservation needs of the individual manuscripts. The survey was designed to be a very pragmatic tool to serve as a basis for the conservation work on these manuscripts in the first years following the survey, therefore great detail was not required.

Designing the database
Initially a day or two was spent going through the collection, looking at the characteristics of the books and the way they were kept. Based on the notes of this initial examination a database was designed in Access. The decision was taken to create a database that would be easy and quick to fill in, with tick boxes, to prevent overlooking certain features and one text field for describing the specific aspects of the condition of the book or material characteristics. The layout of the records would allow easy access to important specifications (Figure 1).

Several storage options were available:
- change storage,
- add box or four-flap,
- add conservation cover,
- or, discarded old wrappings as it does not need protective covering after treatment.

Special remarks that were found important to be looked up quickly were:
- not to be consulted,
- urgent,
- possibly active contamination of mould or insect,
- disturbing paper repairs (pasted over text)
- and, special binding.

As mentioned above, the primary aim was to undertake the preservation of as many manuscripts as possible in a few years. Taking problems of risk, of loss, and consolidating partly loose material, the main aim of the survey was to indicate the problems with the object and identify appropriate treatment so they were not designed to provide precise descriptions on bindings, construction or foiling, nor did it identify whether bindings were contemporary.

Results of the assessment
Only six manuscripts were absolutely inaccessible. Two of them had excessive water and mould damage and pages were stuck together. Four of them had severe paper damage caused by either iron gall ink corrosion or copper corrosion; use would inevitably lead to loss of information. It is worth noting here that far more manuscripts suffered from copper corrosion that endangered the text, but in most instances the risks were limited to parts of the manuscript and it was thought at the time that careful access could still be allowed; hence they were not marked as inaccessible.

277 Bindings were in need of conservation treatment, of which at least 22 would be major restoration treatments, involving both paper conservators of the text block and conservation of the construction and binding. The other 255 were categorized as smaller conservation treatments, concerning either repair of some text leaves or easier construction repairs or relatively simple preservation of the binding, or as first aid treatments in order to consolidate the condition of the manuscripts. The last group would...

Figure 1 Page of the database form view.

After this initial phase the inventory started. The manuscripts were surveyed on a case by case basis, notes were made on paper and only afterwards imported into the database. In all, 1,048 manuscripts were assessed. However, only those with a damage that would lead to a necessary action - treatment or new storage conditions – were entered into the database. Manuscripts with old worm holes for example, but not bad enough to cause further damage and otherwise sound, would not make an entry into the database. In all the data of 725 books was imported into the database. The condition of the other manuscripts, c. 65%, was either good enough to require no treatment in the first years following the assessment, or so bad that proper archival boxes had already been provided (in the case of 125 manuscripts).

Every item was imported using its inventory number, and the means of storage was mentioned: box / portfolio or none whatsoever. The different types of damage were identified: loose leaves, loose quires, paper damage, deteriorated yarn, tape, biological damage or mould, chemical damage of the paper or leather, or other mechanical deterioration of the leather, textile or paper covering material.

A number of treatment proposals were suggested:
- leather treatment,
- a first aid treatment (as opposed to a full conservation treatment),
- a small conservation treatment,
- or, paper conservation without any need to treat the construction or binding.

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still require further treatment once time and means allow. Of the 272 damaged manuscripts only 44 were bound in textile, the others were bound in leather; that is full leather or leather hacs and strips of leather round the edges of the boards combined with (decorated) paper.

Fifty-six books needed paper repair only. Of these fourteen were damaged by tape, others were in different stages of deterioration by copper corrosion or other media, suffered deterioration from mould or merely intensive use. For twelve manuscripts a conservation binding was suggested, because they were lacking a binding. A further 59 bindings would need a box or a four-flap. Some of the manuscripts in this category do need protection but not necessarily the support a box offers. They are bindings with beautifully tooled or painted covers, or manuscripts with some loose leaves inserted or with protruding pages. Most of these manuscripts are so damaged that the box will provide the protection which is needed until the necessary restoration treatments can be carried out. For this category the treatment is not yet specified. There were another 109 bindings in leather that did not need immediate treatment but will benefit greatly from a leather treatment in the near future. Consolidation of the leather will prevent further damage.

On the whole the collection would benefit from better storage. The climate in the vaulted stacks is stable and up to the current standards, but the objects themselves are often wrapped in the wrong materials. Many of them, 123, are stored in old portfolios. They offer insufficient protection to the bindings on the head and tail sides and loose material can therefore get lost. Moreover the lacing of these portfolios are very inconvenient and can easily cause further damage because other items can incidentally be put on top of these lacings and be torn/ripped out of the shelves when the portfolio is accessed. The portfolios are also made from the wrong materials. Another 37 items are wrapped or packed in various materials, brown paper or old envelopes. Often these objects are or contain fragments. It is recommended that all these objects be housed in boxes of conservation quality.

The Leiden conservation approach

One of the positive side effects of a survey like the one mentioned above is the enhanced awareness regarding certain features of the collection. On the whole the collection appears to consist of several groups of bindings. This knowledge allows for a more sophisticated approach to the preservation of these specific groups of bindings.

Two examples of these specifics are:

1. Manuscripts that have never been sewn, the quires have been wrapped in a binding that from the outside appears to be a bound volume, or, small strips of leather have been pasted onto the spine (Figure 2). These strips only hold onto the outer leaves of the quires and their function is possibly to prevent the quires from moving inside the wrapper-binding.

Figure 2 Manuscripts that have never been sewn, with leather strips pasted onto the spine to keep the quires together, with their bindings.

2. Bindings that have been repaired, sometimes over and over again, in a very unorthodox way, apparently not by a binder. Most of these repairs consist of layers of pasted strips of leather or cloth, sometimes paper. Several of these repairs are carried out with yarn (Figures 3 & 4).

Choosing what to preserve

Soon after the report with the survey results was written the conservation of several manuscripts began. As the capacity of the conservation workshops is limited, choices were made in relation to the collections. Access to the collections is a major task for the library, therefore those manuscripts threatened by use due to loose material or severe damage were first in line for treatment. Manuscripts with loose pages were given priority over text blocks with tape repairs for example. Extra criteria were also used to decide which items would be treated. These included how unique the text was or whether it was available from another source; whether it was especially valuable due to its provenance or annotations or some other context.

The manuscript Or.18.182 is one such unique manuscript. It is a combination of several religious texts assembled by someone for personal religious life. It contains Qur’an fragments but also other spiritual texts illustrated with amulets and talismans. The pages and binding were badly damaged by mould and use but the sewing was still intact. The binding had been repaired at least two times, with paper strips and yarn, but also with tape. Nevertheless the binding had loose parts (Figure 5). Treatment was considered urgent due to the damage and discolouration caused by the mould growth and the condition of the binding. The unique contents of the manuscript ensured it met the additional selection criteria.

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Untraditional conservation methods

The full leather cover of this manuscript has been restored with new leather as well as coloured Japanese paper as the spine lacked a lot of material. Japanese paper has proven to be very compatible with these Middle Eastern bindings. The technique of using Japanese paper for binding conservation was first developed by Don Fehrentz (Fehrentz 1999). The technique has been adapted, by combining it with several new box attachment techniques, and is now widely used on Western bindings next to the traditional binding repair techniques (Aubry 2002 & 2003, Frederick & Ehr 2003). The advantages are that the method is quick and relatively cheap, but it also prevents the book from being exposed to certain risks that arise with traditional conservation methods such as full leather re-backings. With the new techniques there is no need to remove as much of the original material, and less original leather needs to be lifted in order to apply the repair. Japanese paper is thin and will allow for the original leather to remain in place.

Dry cleaning of the paper with a smoke spoon removed much of the dark discolouration. Where the paper had become extremely thin and weak it was strengthened with thin Japanese paper and wheat starch, and the first and last quire were loosely assembled in order to repair them properly. During the process the end leaves appeared to belong to these outer quires, they had been pasted over the original end leaves at some time. They were loosened and revealed the original endleaves, which were interestingly made of dwelling. The use of that material positioned the making of this binding in the Indonesian archipelago. For this instance the decision was taken to remove some but not all of the old repairs. The paper repairs on the outer hinges of the binding were completely torn, but they covered some of the original gold decoration. The best solution was to remove the remnants of these paper strips, and make a proper new board attachment with a spine lining inserted into the boards. The old repairs carried out in yarn were kept in place, as the new covering material could be manoeuvred under these threads and their subsistence is quite characteristic of the simple and cheap but smart repair solutions undertaken by the former owners.
The Middle Eastern manuscripts are often covered with very thin leather, especially bindings in half leather with leather strips on the board edges, and the inner hinges. It would be hard to repair such areas with new leather, the leather would need to be pared very thinly to be aesthetically pleasing or functional, at the same time losing much of its strength. Using Japanese paper gives impressive results. It is fairly easy to dye the paper in many different shades of red, brown and black and once applied the structure of the paper blends in with the leather. In the workshop in Leiden a mixture of Encore® and Methyl Cellose is used to apply the Japanese paper. It results in a strong and aesthetic repair.

The construction of many Middle Eastern bindings is very poor. The yarn is often thin and weak, the sewing itself a first class job. Sometimes the spine is lined with tissue that provides some stability to the text block and when the endbands are sewn through this type of spine lining the sewing structure tends to last longer. When there is no spine lining at all, the cover material is then adhered directly to the spine.

The board attachment is often as feeble as the sewing structure. Most boards are simply attached with an inner hinge, sometimes connected to the outer leaves of the text block, sometimes to the spine, before the cover material is applied. Evidence would suggest that boards seem to have been covered separately with leather, after which the leather parts extending at the spine edge are pasted onto the back where the overlap is hardly noticeable. It is therefore not surprising that many manuscripts suffer construction damage. The question is how to conserve them. The manuscripts are to be preserved as authentic as possible. On the other hand it is not sensible to preserve the original flow.

It is our aim to keep as close to the original structure as possible, and to preserve the visual and tactile character of the book. But, since the collection is there to be used, it is sometimes necessary to amend the construction. Most frequently changes are made in the spine lining and board attachment. If there is no spine lining one may be added, Japanese paper pasted on with wheat starch is most commonly used. This thin layer supports the movement of the book without interfering with its manner of functioning. A second lining may be applied using thin cotton or Tyvek®, a synthetic non-woven material, to restore the board attachment. Instead of lifting the endleaves or cover material the boards are often incised along the hinge-edge (Figure 6). The extending sides of the spine lining can be pasted into these incisions, the original inner hinges need not be disturbed and the cover material can be repaired and finished with coloured Japanese paper. When text blocks or boards are particularly large or heavy the new spine lining can be fixed by re-sewing the outer quires through the lining material.

Where an original spine lining does exist but is broken on the hinge, it may prove difficult for board reattachment. The endbands are mostly sewn through the lining to prevent tearing of the paper quires and to improve the attachment of the lining to the text block. If the lining no longer gives support to the attachment of the boards, because the textile or leather is torn at the hinges, the suggested conservation treatment would be to replace the lining with new, sound material. Merely adding a second layer of lining would stiffen the spine considerably and is therefore not preferable. Removing the damaged lining completely would involve loosening of the endbands. That is not necessary if the spine lining is cut just beneath the yarn of the endbands. The outer ends of the original spine lining stay in place, and the part in the middle is replaced with new material with extending sides to be used for board reattachment.

The alterations to the construction as mentioned above are not chosen lightly; other options are considered and discussed. The fact that the books will be used and studied does sometimes demand that a stronger protection against future mechanical damage be used, than the authentic construction and materials can offer. It is strongly believed though that these changes do not interfere with the authentic character and functioning of the binding. What is explicitly not changed is the fundamental nature of the construction. The flat and pasted onto leather back will be preserved, and will not be transformed into a hallow back, which functions quite differently.

Another adjustment is sometimes made on the envelope flap. Degradation of the materials and extensive use has often caused tearing of the hinges of the envelope flap. Materials like thin cotton, Tyvek® and Japanese paper can be used for reattaching the flap or mending the tears in the hinges equally as successfully as for board reattachment.

The fore-edge of the book is sometimes too wide for the flap. It is not always clear if this was always the case; the leather may have shrunk, the binding may have been made with boards originally belonging to a thinner binding, and the envelope flap may indeed have been too small to cover the fore edge completely; the flap would then have to be inserted somewhere in the middle of the text book. When the hinges are completely torn it is possible to extend the flap in order to make it cover the fore edge properly. Or, when the envelope flap spine consists of a many layered and stiff core, it can be thinned down to gain space instead of being extended. The flap then turns into a flexible flap and the left over material is kept with the documentation report.

In some cases the envelope flap has gone missing. Because the manuscripts are no longer used and transposed outside the library in detrimental circumstances the fore edge flap has somewhat lost its primal function. It is therefore not necessary to replace the flap with a new one. A substitute would ethically be debateable, for how can one decide what the flap should be made of or look like? The assessment made it very clear that the tools and materials for the flap can diverge from the rest of the binding, although often they are in harmony with the design of the boards. There is also an economical factor: a new flap would add absolutely nothing to the improvement of the use of a manuscript and therefore time can be better spent on conserving other damaged manuscripts. Because of these arguments the decision is made not to replace lost flaps. It is also decided to leave the evidence of the former presence of the envelope flap undisturbed. There are of course clues in the text block itself when the paper is diseasured where the flap was resting, and sometimes these leaves show abrasive damage where the edges of the flap have been, but a bare front edge of the back board provides more direct evidence of the former existence of an envelope flap. When the conservation of the binding includes finishing the cover material with Japanese paper this bare edge is therefore not covered or closed. The exposure of the bare board edge may appear awkward at first glance, but it provides primary documentation about the former appearance of the book (Figure 7). Furthermore the evidence in the text book itself may not always be so very clear at all.

Figure 6 An incision of a board edge.

Figure 7 A preserved binding with a bare front edge on the back board.

Figure 8 Severe copper green corrosion in the margins.

Text block repairs

When extensive use has caused weak paper edges and corners, the pages can be restitched with starch to strengthen them. The Arabic paper reacts extremely well to this treatment, since the paper used to be sized with starch like paste to begin with. Several varieties of Japanese paper are used to strengthen and repair tears, from 5 up to 23 grams/m². The thin Japanese paper is only used to strengthen weak areas when necessary, to prevent increasing thickness of the text block.

Not surprisingly many text blocks have been reperforated before. Repairs to the folds of the quires are common, as well as paper strips posted onto cracks in copper corroded margin lines or over areas badly damaged by biological attack. When these old repairs are sound and cause no further damage they are kept alone, unless they are pasted over text areas. Often the original adhesive has dried out and the paper strips loosen when the paper is manipulated. A further reason to replace old repairs is when the thickness of the repair paper or the sharpness of its edges causes damage to the original paper. This is frequently the case with the paper strips used for repairing the quire folds.

Copper green corrosion in frame lines forms a threat to many text pages. Since there is no way of stopping this process as yet but it is known that the corrosion process is accelerated in moist conditions, the damage can not be repaired with Japanese paper and starch or gelatine. The risk of losing pages has to be minimized by adding thin paper strips as bridges over the copper lines. In one case a manuscript with margins of coloured or decorated paper had to be treated, because all the green margins were dried with a pigment containing copper that caused crumbling of the paper. These extremely deteriorated margins were replaced with newly dyed paper in order to preserve the text (Figures 8 & 9).
sewing, which makes it more difficult to keep to the original construction. In the first case a spine lining is added, in the second original material needs to be cut in order to preserve the endblocks while strengthening the spine.

* Boards are often only attached with the covering material, in circumstances where they lack a connection with the text block on the inner side of the boards. Such a construction can be improved by adding inner hinges made of Japanese paper, in order to prevent the boards from being pulled loose when roughly opened. A second option is to sew the spine lining, when accessible, through the outer quires.

* Quite a few manuscripts have not been bound at all. The quires are loose, the binding is merely used as a wrapper. The conservation strategy of making sure no loose quires do exist can not be held on to. These items are protected with a box, and when required, users are permitted to access these items only within clear view of the Special Collections reading room staff.

* Many boards appear to have been connected to the binding separately: two pieces of leather overlap and connect on the spine. Often the leather is torn on the hinges. The leather back, in this case the two strips of leather, are re-attached when possible but if a complete rebacking is required it needs to be decided if the original board attachment should be reconstructed.

* When the envelope flap is missing the front edge of the back board is left uncovered in order to show the evidence of the once existing flap.

**General remarks**

* Japanese paper is most suitable for the conservation of Middle Eastern Manuscripts, for paper repairs as well as for conservation of the bindings.

* Some manuscripts are protected by a sort of paste. These need to be protected themselves.

* Many bindings are too small for the manuscripts, leaves protrude from the edges. Boxes or four-flaps are needed.

**Work in progress**

A database is an essential tool to start making a conservation plan for a collection such as the Leiden Oriental collection. The importance of the work that has to be done before the data can be processed cannot be stressed enough. To decide which characteristics have to go into the database and to define what information has to be generated from the database forces one not only to consider many aspects of the collection and its use, but also the physical possibilities of the institution as well as financial aspects. In our case it was known that the capacity to carry out conservation treatments would be limited, without the prospect of a change in this situation for several years.

Consequently it is essential to begin to prioritize. The database provides the objective data indicating the conservation requirements of the manuscripts. Naturally, the decisions made are strongly dependent on the importance of the manuscripts themselves. It was and is therefore absolutely necessary to confer with the curator regularly.

Quite a few manuscripts have thus become available to the public. In many cases it was decided to first protect the manuscripts with a proper box or four-flap, to gain some time for carrying out the treatment. A lot of work remains to be done. However, the time and energy invested in the database is well spent. The generated knowledge enables both the curator and the conservator to motivate their choices. It is both encouraging and comforting to know that the remaining conservation work is controlled and based on essential information and well motivated decisions.

**References**


**Author Biography**

Katrin Schepers was trained as a book and paper conservator at the Dutch Heritage Institute in Amsterdam from 1991-1995. She worked in the Amsterdam Municipal Archive and in a private workshop for book and paper conservation in Amsterdam. In 2001 she set up the conservation workshop in the Leiden University Library. Apart from the daily conservation work she initiated and supported several conservation projects. She also teaches book conservation at the Dutch National Archives.