Preservation and Conservation of Karolingian and Ottonian Charters* at the Episcopal Archives of the Diocese of Choir, Switzerland

***Parchment documents with pendant seals are referred to in this article as charters.*

Storage of the Charters

The collection of the Episcopal Archives of the Diocese of Choir (Switzerland) comprises over 4200 charters, the 32 oldest among them dating between 758 and 1070. These charters have not been subject to any measures of preservation or conservation for the last 200 to 300 years. However, infestation of the wooden shelves by woodworm causing damage to the charters called for immediate action (figure 1 – 5). A survey investigating preservation and conservation needs was conducted. As a result, the Archives were renovated and conservation work was initiated.

figure 1
The Archives before renovation. The wooden shelving system with drawers for the charters dates from 1750

figure 2
Up to 4 charters with seals were stored in envelopes (format A5 !)
The envelopes and the charters themselves show damage by woodworm (white arrows)

figure 3
A look into the shelf with anj open drawer, the arrows indicating the damage caused by woodworm

figure 4
The storage of the charters before renovation of the archives (wooden boxes)

figure 5
The storage of the charters before renovation of the archives (cupboards)

The Archives are located in a medieval tower where relative humidity repeatedly (rh) reached between 65 and 68% whereas tolerable values lie between 40 and 60%. However, short term fluctuations of relative humidity in the Archives within this high range were minimal, which is due to the tower's 3,5m thick walls (thermal inertia) in the first place. It showed that the high values of relative humidity in the Archives were influenced by the humidity of the cellar vaults. In the cellar values up to 95% were measured (figure 6).

figure 6
The Episcopal Archives of the Diocese of Choir are located in a medieval tower with walls up to 3,5m thick. Its foundations most probably are of Roman origin.

upper arrow: archives
lower arrow: cellar vaults where relative humidity reached up to 95%.

By installing a system of ventilation in the cellar, the values of relative humidity could be stabilised at a lower level. The wooden shelves and drawers where the charters were stored in envelopes (format A5), were replaced by mobile shelving systems. Today, all charters are stored horizontally and folded in special boxes. The seals are secured by protective containers made of cardboard segments in the form of half circles. For the 32 oldest charters (10 Carolingian and 22 Ottonian) horizontal storage (1 charter per box) has been decided upon. This guarantees easy access for visitors

and researchers and avoids repeated folding and unfolding. The latter would cause further damage to the fragile seals as well as to the parchment already partially brittle as a result of spilled lamp oil.

figure 7
New shelving system which allows for horizontal storing of the boxes

Conservation treatments

The extent of any intervention should be carefully weighed. Be it medieval manuscripts or Carolingian charters, conservation measures should be based on the principle of minimal intervention.
The Episcopal Archives of the Diocese of Choir decided – even before starting conservation treatments – to preserve all fragments of earlier interventions. Consequently, fragments are either mounted in a separate brochure or left in place on the charters. Whatever measure taken, it is discussed and decided upon with the archivist responsible for the collection.
In the following, preservation and conservation treatments of two Carolingian and two Ottonian charters with pendant seals are described. All of them had already undergone treatment in earlier centuries.

Karolingian Charter no. 1 of Emperor Charles the Great dated 774

The whole surface of the Carolingian charter no .1, the oldest charter of the collection, had been lined verso with parchment to consolidate one major lacuna affecting the text area. Furthermore, losses were present along the edge top left. From today's point of view, this measure was not justified since the original parchment was thick and stable and no loose text fragments needed to be secured (figure 8).

figure 8
The charter with the old lining removed. The losses were caused by mice which damaged the parchment in the folded state

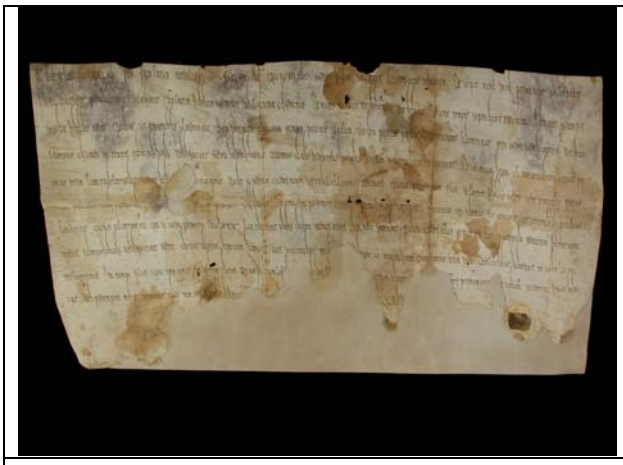

figure 9
recto after conservation treatment:
the losses filled with parchment, the new parchment was slightly coloured with natural pigments and soot so as to match the losses aesthetically

figure 10
verso after conservation treatment:
Traces of the brush from gluing the earlier lining are visible on the charter

In order to remove the lining, the charter was placed under Gore-Tex and left in a humidity chamber (Lascaux Colors&Restauro, CH-Zurich) for 6 hours at 95 %rh. After, the parchment lining could be removed. The remaining adhesive was cleaned with a mixture of ethanol/water 1:1. Finally, the charter was relaxed on the suction table and missing areas filled with new parchment which we coloured with natural pigments and soot. From a preservation point of view, the big lacuna at the lower edge needn't be filled since the charters itself is very stable even in places where the damage reaches into the text area. Thus, there is no risk that text is being lost. The measure was a purely aesthetic compromise and was intended to bring back the more or less rectangular form in the first place. However, if the measure does not seem acceptable to future generations of conservators and historians, it can be easily removed (figure 9, 10).

Karolingian charter no. 8 of Emperor Charles III dated 887

The seal which had broken into a number of major and minor pieces was held together by a piece of wood chip, a purely mechanical measure as it is used in the production of certain qualities of soft cheese. However, interventions dating back 300 to 500 years have long become part of the history of the charters and may provide us with valuable information on their handling in the course of history. In principal, before removing such a historical intervention, it should always be discussed if it could be preserved (figure 11).

figure 11
The charters after relaxing on the suction table and before removing an earlier attachment of the seal

As far as charter no. 8 is concerned, it was not imperative to remove the mechanical stabilisation of the seal. The protective nature of the container was still intact. However, it became evident that on manipulation, the seal gave off small particles of wax which led to the decision to remove the wood chip container and to secure the seal with wax instead (figure 12, 13).

figure 12
An earlier intervention: the broken seal secured by woodchip and thread passed across the parchment

figure 13
verso of the seal with the thread passed across the charter

Ottonian Charter no. 18 of Emperor Otto I dated 960

The major missing areas on charter no. 18 are the result of spilled lamp oil. The oil has caused the parchment to become hard and brittle provoking missing areas at the upper and lower edges. Around 500 years ago, these areas had been lined with waste parchment dating to the late 15th or early 16th centuries. The seal which had broken into four major fragments had been secured with thread (figure 14.

figure 14
The charters before conservation treatment:
the brownish stains are the result of spilled lamp oil

Upper and lower edges had been lined some 500 years ago with waste parchment dating to the late 15th or early 16th centuries

Conservation procedures on the charters:
The lining with waste parchment had to be removed because the charters had stiffened in such a way that it was difficult to unfold it. After 6 hours in a Lascaux humidity chamber under Gore-Tex at 90 %rh, the linings could be removed. The old adhesive was removed with a mixture of ethanol/water 1:1 and finally the charter was relaxed on the suction table figure 15, 16).

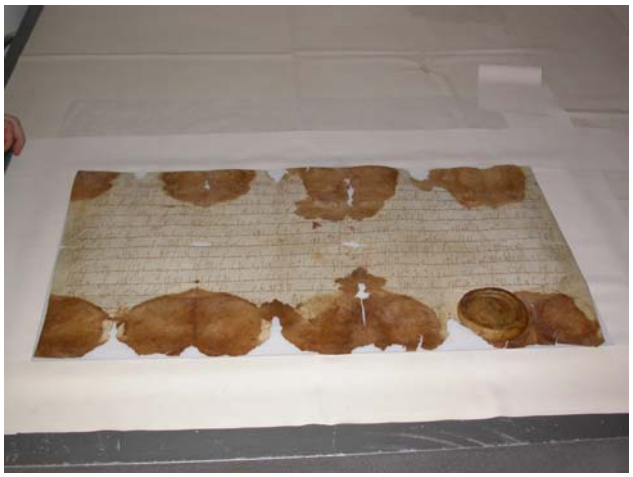

figure 15
after removing linings of earlier interventions, the charter is being relaxed on the suction table.

figure 16
To dry, the relaxed charter is covered with a Gore-Tex membrane. This avoids dust particles to accumulate in the parchment.

Since the parchment had become brittle by spilled lamp oil (figure 17, 18) near the missing areas and to prevent further losses, all losses were filled with parchment. However, it was decided not to glue back the two strips of waste parchment because this would have led to planar distortion of the relaxed charters. However, in order to preserve the character of the late medieval repair, we remounted the two strips of parchment on the verso of the charters by hinges of Japanese paper. Thanks to this procedure, the character of the earlier intervention could be preserved. Unfortunately, part of the text contained on the verso of the charters (annotations) is covered. This problem can be solved by copying the annotations and storing them in the box together with the charters. If future generations decide that the charters should be shown without the strips of waste parchment, they can remove them in no time by cutting through the hinges figure 19-22).

figure 17
Close-up of the tears in the foldings, losses at the lower edge, discolouring and embrittlement caused by spilled lamp oil.

figure 18
The parchment fillings coloured with dry natural pigments

A repair with waste parchment dating from an earlier intervention is visible at the lower edge.

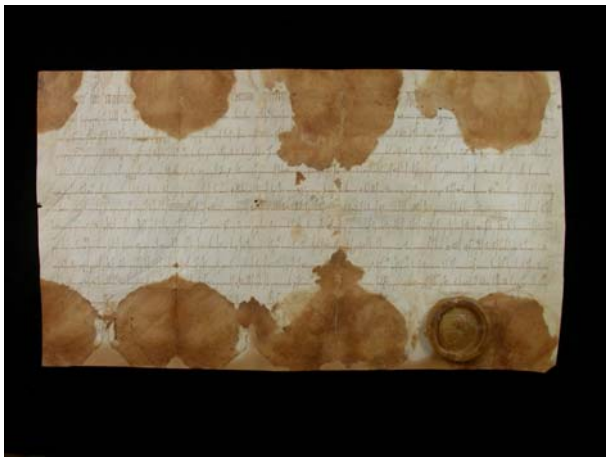

figure 19
recto of the charter after conservation treatment

figure 20
verso of the charter after conservation treatment and before remounting of the two strips of waste parchment dating from an earlier repair along the upper and lower edges

figure 21
verso of the charter after conservation treatment and after remounting of the two strips of waste parchment dating from an earlier repair along the upper and lower edges

figure 22
the upper strip of waste parchment mounted with a hinge of Japanese paper, which makes it possible to read the notes underneath written by a past archivist

figure 23
verso of the seal before conservation treatment

figure 24
verso of the seal after conservation treatment. Note the thin strips of whitish parchment used to repair tears

Conservation treatment on the seal:

The seal which had broken into four major pieces had fallen out of the incisions in the form of a cross (which make the seal adhere to the charters). The seal had been repaired on the occasion of an earlier intervention by means of thread to secure it. On the intervention in 2006 we removed the thread and filled the losses with new wax. Obviously, we could have done without adding new wax since the functioning of the earlier repair was still sufficient. However, the loose parts of the seal would have gone on rubbing against each other upon manipulation so that further small pieces of wax would have fallen off. We can thus say that by filling the losses with new wax, the seal is better protected in the long run than by preserving the earlier repair (figures 25 – 35).

figure 25
The seal was secured with sewing thread during an earlier intervention

figure 26
after removal of the threads, the seal disintegrates into four major fragments

figure 27
after separating the fragments the importance of the damage becomes evident

figure 28
left: verso of the seal with the piece of wax in pyramid form that matches with the incised mark in the parchment to the right

figure 29
verso of the seal: the fragments being joined

figure 30
verso of the seal: some wax is melted in the fractures with a slightly heated soldering tool in order to make the fragments stick together

figure 31
small rolls of a mixture of bleached bee's wax and Dammar resin coloured with natural pigments are melted with a soldering tool to fill in the loss

figure 32
the losses are filled to reach the height of the preserved seal

figure 33
Verso of the seal:
The bigger fractures are consolidated with bleached bee's wax and Dammar resin coloured with natural pigments

figure 34
Recto of the seal after conservation treatment

figure 35
Verso of the seal before fastening to the rest of the seal, the two parts being consolidated with liquid wax

Ottonian Charter no. 17 of King Otto I dated 958

This folded charter had most probably undergone conservation treatment around one hundred years ago. The reason for the intervention were several losses caused by rodents. Furthermore, three missing areas on the verso at the incised marks of the foldings had been lined with a piece of parchment that was much bigger than the losses themselves. These linings had stiffened the parchment.

figure 36
Charter no. 17 dating 16th January 958 of King Otto I before conservation treatment. The grey stain top left is a missing area which has been lined during an earlier intervention

figure 37
Verso: two parchment linings, the loose seal was fastened with a piece of waste parchment and thread to the charters

The verso of the seal presented a piece of waste parchment which had been sewed to the charters by thread because the seal had somewhat loosened. On the occasion of the intervention in 2006 all parchment linings were removed. Of the 7 missing areas only the biggest was filled with parchment and subsequently coloured with natural pigments. The reason for this procedure was that a fragment of a letter was hanging from this missing area. Without filling the loss this letter would have fallen off. However, we avoided filling the 6 remaining losses since edges damaged by rodents do not make parchment unstable.
Thanks to the removal of the parchment linings, the charter may be unfolded much more easily. The seal was consolidated with a mixture of bee's wax and Dammar resin. In this case it did not make sense to preserve the earlier repair since its remaining elements exercised tension on the charter which made its handling more difficult.

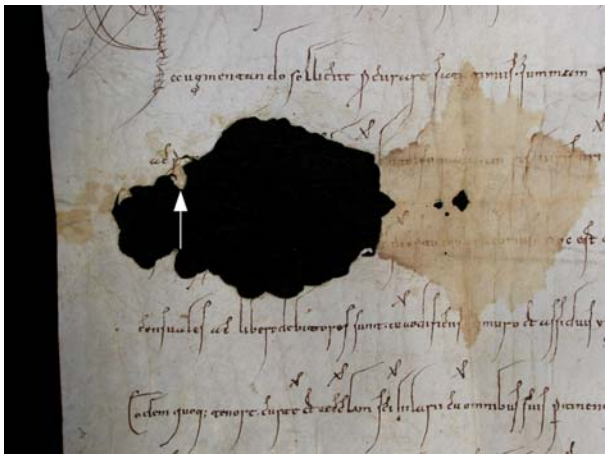

figure 38
before conservation treatment:
close-up of a loss (black) caused by rodents. The arrow points out a loose text fragment prone to loss.

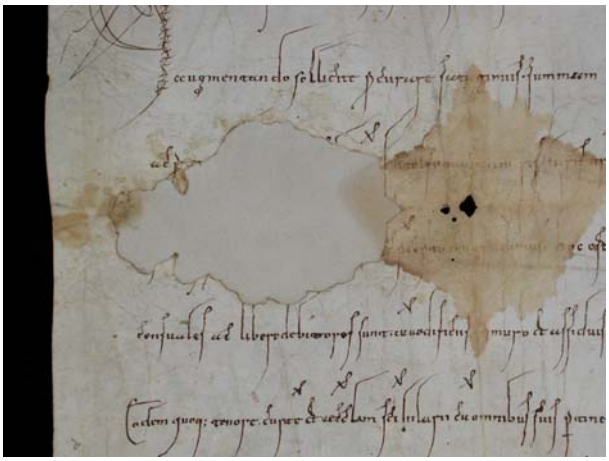

figure 39
after conservation treatment:
close-up of the consolidated loss. If it were not for the loose text fragment, such losses are not filled. Edges of damage caused by rodents usually remain stable.

Nonetheless, we have to keep in mind that it is thanks to the above mentioned earlier conservation treatments that much of the original substance of charters and seals was preserved for hundreds of years. These earlier interventions have thus reached their goals of preservation even if in our times interventions can be performed in a more aesthetic and perfect manner.

Again and again we come across earlier interventions. In this respect it must be said that not all of them are bad quality. Moreover, we need to bear in mind that it is almost impossible to treat earlier interventions on seals without any loss of substance. Thus, in cases where loss of substance is inevitable, it is advisable to renounce any intervention and to accept earlier interventions even if they may be aesthetically unsatisfactory.
The seal was filled with wax at the occasion of an earlier conservation treatment. Such historical interventions need to be preserved even if unsatisfactory from an aesthetic point of view.

figure 40
Example of a damaged seal on an Ottonian charter. The preserved fragment of the seal is still well fastened to the charters, thus, treatment is not necessary.

figure 41
Example of an earlier treatment with wax on a seal of an Ottonian charter. We didn't make any changes on this historic intervention even though it does not satisfy today's standards of conservation. The shining surface may stem from an earlier treatment with a liquid.

figure 42
Ottonian charter with an earlier repair (lining of the loss with parchment left of the seal). The reason for the loss was an earlier damage by mould. There is no urgent need to intervene with the earlier repair because the lining holds the fragments in place.

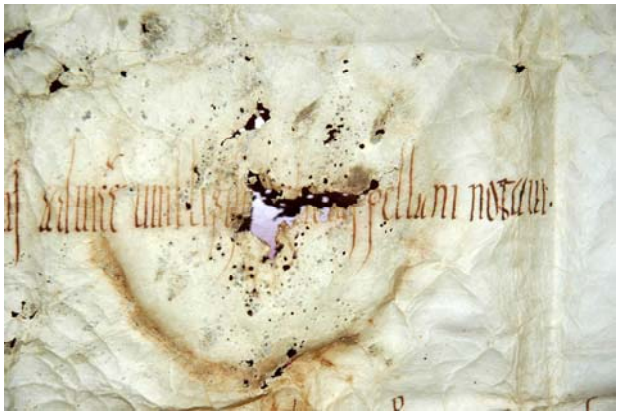

figure 43
Example of a damage that needs to be treated because the parchment has become very thin and fragile, thus putting at risk some of the text. The cause of this damage is unknown.

figure 44
Example of an earlier quite effective conservation measure. A cardboard ring (higher than the seal) was put tightly around the seal for protection. All four seals of the collection stored in this manner do not show any damage.

Materials and Techniques used for Conservation Treatments on Charters and Seals

Conservation Treatments on the Charters:

In order to remove parchment linings of earlier interventions, the charters were put into a humidity chamber (Lascaux-Colors&Restauro) and treated for 6 hours under Gore-Tex at 95%rh and 20°C. After, the adhesive had dissolved enough so that the lining could be removed and the old adhesive could be removed with a cotton ball and ethanol/water 1:1. The still humid charters were then relaxed on the suction table and dried under Gore-Tex (protection against dirt particles in the air) for half an hour. For treatment on the suction table we placed the charters on a sheet of polycarbonate (of 10mm thickness) with a hole whose diameter was somewhat bigger than that of the seal. This procedure made it possible to place the charters with their projecting seals on the verso (seals of Carolingian and Ottonian charters are always fastened to the charters) onto the suction table and to relax the parchment up to very few millimetres close to the seal.

Filling losses in the parchment was done with calf or sheep parchment which in general is one side buffed as the charters themselves. The new parchment was slightly coloured with natural pigments and soot so as to match the losses aesthetically. Filling parchment was glued on the verso (overlapping 2-3mm) with unbleached Saliansky sturgeon glue(Kremer D-Aichstetten) and dried under weights. The edges of missing areas were not sharpened on the original, because their sharpening would have caused irreversible loss whereas a slight difference in thickness was acceptable.

Conservation treatments on Seals:

Earlier conservation treatments of seals with thread were removed by cutting through the threads.
Wherever necessary, the impressions of seals were cleaned with a dry brush.
Fragments of seals were joined by a tacking iron with a pointed needle and losses filled with a mixture of 80% bleached bees wax and 20% Dammar gum resin and coloured with natural pigments.
In cases of major pieces missing and where the remaining fragment of the seal was still well fastened to the charters, no filling of losses was performed.

Documentation:
Every charter has its own documentation in which the conservation treatments for the charters and the seal are described separately and which also contains codicological details. All techniques and materials used are described in detail and with references.
The restoration of Carolingian and Ottonian charters made it clear that the relaxing of charters should be handled even more restrictively, especially when it comes to restoring further series of charters dating from the high or late middle ages. The foldings may – as proved by a French researcher – indicate the origins of a charter and should not be eliminated. It is also possible to relax a charter only to such an extent that the foldings are still visible. For the next series of some 40 Ottonian charters, we decided to preserve the foldings, but at the same time to store the charters in a relaxed condition. However, there are always cases in which the damage is so extensive (mould) that relaxing cannot be avoided. In these cases the foldings may be drawn 1:1 on a sheet of paper of the size of the charters and the drawing stored together with the charters.
A lively exchange of experience and thoughts among conservators and specialised historians can add to optimise conservation procedures. This dialogue is very important especially for self-employed conservators because unlike their colleagues at public institutions they do not have the same kind of resources, but must build up their own networks in the field.