
NOVEL ASPECTS IN LEATHER COVERS CONSERVATION MANUSCRIPTS FROM PUTNA MONASTERY

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Abstract

The paper presents some new aspects on the conservation of manuscripts from the time of Stephan the Great, preserved at Putna Monastery Museum. Most of the manuscripts have wooden covers wrapped in leather, in poor conservation state. Dehydration, discoloration, different nature stains, advanced deterioration due to their use, are among the most frequent degradations. Conservation consisted of cleaning, hydration, emolliating, consolidation, chromatic integration, etc.

Keywords: conservation, manuscripts, leather

1. Introduction

Means of culture, progress and civilization, for many times considered as 'Jewels of the altar', the old books have been affected both by regular use and improper keeping [1].

The Museum of the Putna Monastery holds a valuable collection of old books, which includes manuscripts and printed books, most of them with leather covers. The value of these books is given both by the use of high quality materials and the mastership of the handcrafts but also by the existence of cultural developed guilds.

The manuscripts in the collection of Putna Monastery are tied between wooden boards covered in dark brown leather. The leather covers are ornamented with geometrical or floral motifs through pressing (very often are used the motif of the snowdrop), the use of different motifs for the front cover and the back one being a common characteristic [2].

Several manuscripts from the XVth century are intended for conservation, as they are to be part of the future exhibition within the Monastery's Museum. They are as follows: *Sbornic (Chiriac)* - 1481 (Inventory No. 77/41), *Minei pe oct. (Cassian)* - 1467 (Inv. No.1), *Minei pe nov. (Popa Ignat)* - 1504 (Inv. No.

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43/39), *Triod* - 1492 (Inv. No. 42), *Evangheliar* – XVth century (Inv. No. 54/35), *Minei pe ian.* – XVth-XVIth century (Inv. No. 3), *Ceaslov* - 1493 (Inv. No. 53), *Psaltirea anonimă* - XVth century (Inv. No. 78/51), *Leastvița* – 1472 (Inv. No. 72/36, 289), *Sbornic Iacov* - 1474, (Inv. No. 31/44).

2. Experimental

Leather and parchment are organic materials, highly hygroscopic, sensible to various degradation types, especially when exposed to temperature and humidity variations.

According to the stereomicroscopic investigations made with an Olympus type microscope, the material used for the books covers has been in most of the cases the oxen hide.

The books present different types of degradation:

- *biological degradation* (Figure 1b): the books have musty areas which demand biological investigations made by specialists although the active conservation of these books will be made by means of prevention and not by biological care. The biological infestation (especially fungi) suffered in time as well as the improper care on the items left deep traces on the surface of leather.
- *physical and chemical degradation* (Figure 2): are manifested as dehydrations, sores, bleaching, loose of elasticity, cracks, brittleness of the support, wax stains, dust and dirt deposits, functional usage, etc.

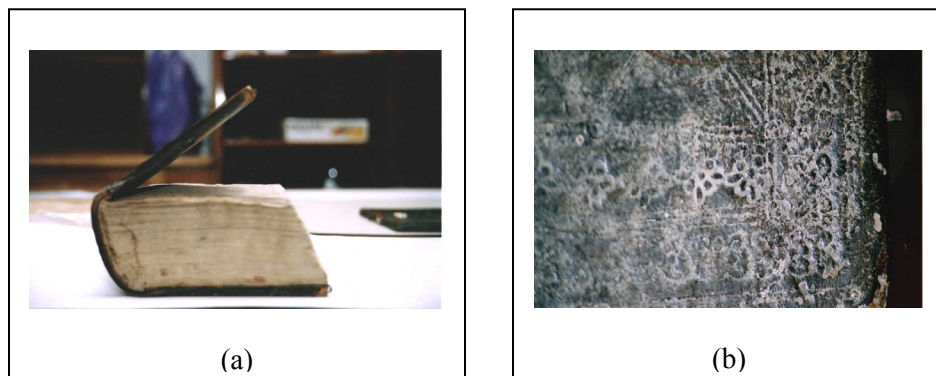


Figure 1. (a) Ensemble before conservation; (b) details of biological degradation.

Chemical investigations were performed in order to find out data concerning the type and quality of the tanning and also about the conservation state. The values of humidity, fatty, mineral and dermal matter were established in standard conditions.

3. Results and discussion

The physical degradations might be caused by the initial quality of the leather and the techniques used for binding. Most of the damages are handling and storing faults, the most affected areas being the corners and the joints of the books.

The chemical degradation may be caused by the presence of sulphuric acid with origins in the polluted environment or from the leather itself as this acid was used during the technological refining process. This acid affects the vegetal tannins, especially those from the group of the condensed ones, decomposing the collagen – tannin complex and leading to what is known as ‘the red-rot’. Although in poor concentration, the sulphuric acid combined with oxygen affects the leather tissue, making it become friable, especially in the joint areas and on the upper parts of the covers, which finally leads to its tearing [3].



Figure 2. Details of the: (a) physical degradation; (b) chemical degradation.

The physical and mechanical degradations can be locally restored within the limits of an active conservation operation. They demand certain cleaning treatments through vacuuming and brushing, removal of wax stains and adherent dirt, etc.

The advanced degradations of leather are the result of tied-water losing through gradual evaporation caused by temperature and humidity, which led to an accented dehydration and degreasing of leather. This means that the leather needs to be re-hydrated and re-greased in order to restore its normal elasticity and flexibility.

The functional usage proves to be something normal if we take into account the age of the books (XVth/XVIth century) and the fact that they were frequently used in the churches and were improperly kept.

An important problem is to be mentioned in the case of all leather covers. Due to dehydration, the leather shrank especially in the binding area, a fact that makes impossible the closing of the books. In this case, a gradual re-hydration and the use of emollients will lead to dimensional recovery.

4. Case study

A particular problem was met in the case of the book '*Ceaslovul scris de monahul Paladie*' in 1493 (inv.53/1893). Its covers presented advanced degradation caused by heavy functional usage due to the fact that apart from its religious use during the ceremonies, the book was used for didactical purpose in the monastery's school (Figure 3).



Figure 3. (a) Front cover: general view; (b) Degradation of the cover (detail).

It can be easily observed the advanced state of chemical and biological degradation. The surface of the leather presents gnawed marks, bleaching, wax stains, traces of dirt and fungi. These degradations affected the surface and ornaments of the leather cover. The state of dehydration led to friability of leather manifested through deep cracks.

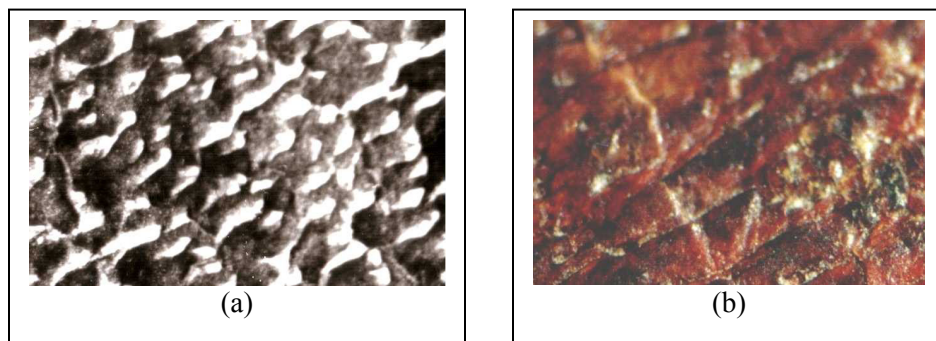


Figure 4. Examination of the: (a) leather horned cattle (witness) (x25); (b) leather Ceaslov (x25).

The preliminary macro- and microscopically investigation shows that the examined leather has the characteristics of the modified ox skin, due to the various degradations; the used method was the comparison of the stereo microscopically images with those of an whiteness sample (Figure 4).

Taking into account the colour, the presentation and the characteristics of the leather, with respect to the tanning technology of the XVth century, we can say that the leather has been vegetable tanned. This was the method used until the introduction of chrome tanning method in the year of 1835 [4].

The active substance used for tanning is to be identified after laborious investigations and the results will be presented in a subsequent paper.

The stereo microscopically investigation enabled us also to point out some new aspects which, added to the book restorer's personal observations (which have founded the same soil traces), allowed us to conclude that the book might have been buried or kept into completely improper conditions. This would explain the advanced degradation and the presence of soil deposits on the surface of leather, and also its resemblance to the already studied archaeological leather [5]. Furthermore, it is a well-known fact that during our agitated history, our artefact were often hidden or buried.

The history of this '*Ceaslov*' seems to be different from those of the rest of manuscripts, which present a better state of conservation and no soil traces or structural modifications similar to the archaeological leathers [6]. In this case it is easy to notice the advanced state of degradation pointed out by histological and structural modifications (Figure 5), a fact that imposes urgent restoration of the book.

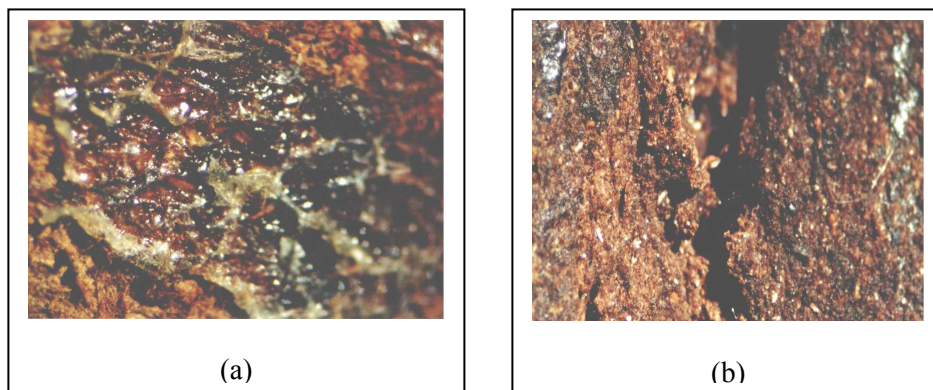


Figure 5. Detail: (a) physical and biological degradation of the front cover;
(b) chemical degradation of the book's binding.

The results of the chemical analyses are presented in Table 1.

Table 1. The chemical composition of the leather from *Ceaslov 1493*

No.	Leather component	Determined value (%)
1.	Humidity	14.67
2.	Fatty matter	29.11
3.	Mineral matter	2.29
4.	Dermal matter	53.93

According to these data one may remark that:

- The leather sample has a relatively good content of dermal matter, fact that proves a relatively good conservation state.
- The low level of mineral matter in the analysed specimen indicates that the leather has not been mineral tanned, a normal fact for the about spoken period of time.

5. Conclusions

The passive conservation will ensure the microclimate witch implies a constant humidity of 50-60% at a constant temperature of maximal 18°C. The essential conditions for a long run conservation of leather objects are the absence of the solar light, UV and IR radiations and the use of diffuse cold light. It is also recommended to keep the leather objects in boxes or safety envelopes made of chemically neutral materials and which shall contain hygroscopic materials in order to reduce the effects of microclimate variations [7].

Another important factor to ensure the conservation of parchment and leather objects is avoiding the humid warmth through continuous ventilation and avoiding the iron shelves that can promote the apparition of the condensed moisture.

Testimonies of such great artistic value of our medieval art and civilization, preserved piously during centuries, parts of *the Putna treasure*, needs the entire attention of all those who can cure it from that merciless linens called indifference to allow the future generations to enjoy it with both their mind and soul.

If ill people ask for care and get help, most of Romanian masterpieces silently suffer from degradation. It is our duty to keep for and pass to our descendants these treasures of the past undeniable historical proofs.

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