

The art of postponing the inevitable

Iskra Tsvetanska¹, Ivanka Yankova¹, Boryana Hadzhieva¹, Veska Lasheva²

University of library studies and information technologies Sofia, Bulgaria¹

University of Chemical Technology and Metallurgy, Sofia, Bulgaria²

i.cvetanska@unibit.bg, i.yankova@unibit.bg, b.hadzhieva@unibit.bg, veska_lasheva@abv.bg

Abstract: This paper briefly reviews the deterioration of written heritage from a chemical point of view and then discusses conservation and restoration. Restoration is seen as an art surgery, and conservation as an art by which we postpone the inevitable aging and preservation of the written heritage. The ecological approaches in this area are considered.

KEYWORDS: CONSERVATION, RESTORATION, WRITTEN HERITAGE, ECOLOGICAL APPROACHES;

1. Introduction

Preservation of the written cultural heritage requires the development of strategies for preventive protection, which must be increasingly innovative, effective, long-lasting, as well as economically sustainable. Although existing legislation provides for planned maintenance aimed at preventing deterioration and reducing operating costs, there are currently no decision support tools to support the periodic planning of interventions to be implemented. The aim is to define the techniques and innovative strategies of the conservation process, emphasizing the intelligent capacity of this process.

Today, countries with intensive cultural development can afford to set aside funds for conservation and restoration. For them, this is a national policy, as is digitalization. But in Bulgaria at this stage, along with digitalization at the national level we must consider extending the life of the originals, because the original is irreplaceable. When we talk about a document, in addition to the basic semantic information it carries, the original carries a lot of additional information. For example, the nature of paper, parchment, printing, bindings, inks, dyes. And that's not all. The original is a living organism, each individual has its own biography and individual characteristics. Who held it in their hands, what signs - notes, autographs, drawings, etc. has left the human presence. The seals, the signatures, the ex-libris, it's all socio-cultural memory, and it carries knowledge that awaits "decoding." The digital copy will mark the characters with photographic accuracy, but will not adequately transfer memory because it is not, and cannot be, a complete replacement for the original.

2. Factors on which the destruction of written heritage and ecological treatment depends

The reasons for the destruction of library and archival funds as monuments of civilization and the spiritual memory of human genius, in the most general form on the one hand are defined as changes that occur as a result of natural processes of natural aging of organic matter, which we don't can stop, but we can keep the "kiss of time", and on the other hand as changes that take place under the influence of the environment - the chemical destructive processes that develop under the action of temperature, humidity, light, atmospheric gases and mechanical stress. Biocorrosions occurs when the microclimatic and hygienic conditions of storage are violated, as well as when contaminated and disinfected documents are imported. For these reasons, each institution must reassess the existing storage conditions and, on the basis of a realistic assessment, develop a "Program for the Preservation and Preservation of Written Heritage".

Chemicals are toxic and should not be used directly on the elements of the collections. By assessing their negative effects on human health and the environment, the notion of applying non-toxic methods is becoming more and more widespread. Institutions

must therefore begin to change their attitude towards the use of these products.

In an effort to treat collections of invading bio-agents, document conservation experts are developing effective treatments. Chemical treatments have long been widely used in the preservation of cultural collections. After research and scientific evidence from various international organizations such that these methods are highly toxic and harmful to humans, the environment and collections, experts began to apply alternative environmental methods of treatment without toxic chemicals - freezing methods and modified atmosphere anoxia. In recent years, methods of atmospheres modified by anoxia have aroused great interest. The published results of researchers and conservation specialists from their research allow the dissemination and improvement of the method. The treatment is considered safe, environmentally friendly, non-toxic and is completely inert to artifacts of organic origin, such as paper, leather, wood, fabric, or in combination with inorganic materials. Its methodology uses specific materials and equipment to ensure efficiency parameters. There is no risk to human health and the environment, as no chemicals are used that can cause harmful side effects, as well as oxidation of documents, corrosion and physicochemical changes.

Modified anoxia atmosphere techniques consist mainly of removing oxygen in an enclosed space in which the materials are isolated during treatment. This can be done with three variants of the system:

- by applying carbon dioxide or inert gas;
- with oxygen absorbers;
- both processes simultaneously.

The result is the elimination of living organisms (decomposition of agents) in some of its evolutionary stages (egg, larva, pupa and adults).



Fig. 1. Static anoxia system applied to Levski's notebook

In the restoration practice, which can be considered as "art surgery", before proceeding to any restoration procedures, especially of these documents of proven scientific and international

significance, a comprehensive study of the materials from which the document is made, the degree of development of the destruction processes is taken into account, i.e. Scientific-conservation expertise is applied, which is a key point in choosing an appropriate restoration technology, because there is no single analytical method that gives comprehensive information about the nature, nature and physicochemical properties of the individual document. Restoration and conservation should be considered as unique activities in which, with the help of the most modern science-based and technologically applicable achievements, it is possible to achieve the least interference in the structure of the documents.

The principle of the individual approach to each object for restoration is very important, by preliminary analysis of its condition, preceding the processes of restorative restoration intervention, in accordance with the different material carrier (parchment, paper, fabric), as well as inks, dyes and combinations between them. The application of these methods and techniques allows the recovered material to be stored in an optimal mode, i.e. for its conservation.

As a standardized method worldwide, the classical method of restoration still prevails. In this method, all restoration activities are carried out by manual means. For this purpose, papers of different thickness and color, fabrics and polymer compounds are used. With this method there is no serious intervention on the structure of the document and inks, due to which there is a complete reversibility during restoration. The only drawback of the classical restoration - a very slow and low-productivity process.

Sheet casting as a mechanized method of restoration, in which the main raw material is fibrous cellulose material, i.e. broken pulp. This method makes it possible to optimize the processes of restoration of documents on paper. It is used to repair severely damaged documents and books, especially those destroyed by mold and insects.

When the documents are in a fragile condition, despite the consolidated treatment, a lamination restoration process may be recommended.

3. Conclusions

The application of modern technologies in the preservation of library and archival materials is an important task. Today, the driving force of the restoration are scientific institutes and laboratories led by scientists and specialists - chemists, physicists, entomologists, mycologists, historians, paleographers, who pave the way for a new science - the science of reviving these relics, without which history would become a legend. Technological development is not only a desire, but also a commitment to invest time and money. Research and development in the field of preservation of the written cultural heritage requires patience, and the paths for successful decisions are marked with failures that require determination and preservation of commitment and responsibility. Regardless of the era, any progress requires years of work and accumulation of knowledge and skills to achieve perfect results.

A public, global archive of information on biological pest damage and successful treatments would be a key step in a new, common policy for the preservation of written cultural heritage.

In the new dynamically changing environment, through the improvement of management technologies and the introduction of new advanced environmental methods and standards, cultural institutions must be able to ensure access to and protection of the written heritage of Bulgaria, constantly identifying the factors on

which they depend diametrically. opposing but compatible missions - access and protection.

4. Acknowledgement

The report was developed as part of a project " Creating an Eco – chemical Model and Laboratory for Teaching Preservation of Written Cultural Heritage ", Contract No KP-06-N40/ 1 /, 10.12.2019 with head of the project Dr. Eng. Iskra Tsvetanska financed by National Science Fund of Bulgaria.

5. References

1. B. F. Zerek. Methods of Disinfection: Ch. 5. // *The Preservation and Protection of Collections*, 185-204. (2014)
2. B. F. Zerek. Methods of Microbiological Control of the Air: Ch. // *The Preservation and Protection of Library Collections*, 97-142. (2014).
3. D. Tapete. Chemistry for Restoration. Painting and Restoration Materials. // *Journal of Cultural Heritage*, In Press, Corrected Proof, Available online. (2017)
4. T. D. Schowalter. *Management of Insect Populations*: Ch. 17. // *Insect Ecology*. 4- ed., 565-595. (2016)