

BOOK REVIEW

Biology for conservation and restoration of cultural properties

Florea Oprea

Maiko, Bucharest (2006), 535 pp, ISBN (10): 973-7620-07-0,
ISBN (13): 978-973-7620-07-1

Recently it was published in Bucharest, Romania, an important book entitled **Biologie pentru conservarea și restaurarea patrimoniului cultural** (*Biology for conservation and restoration of cultural properties*).

This book was conceived, as a systematic content of ideas, during a long career carried on by our colleague, professor F. Oprea, in the National Archives of Romania where he worked more than three decades as a specialist and then as a chief of the Conservation-Restoration Laboratory. From this position the author was acquainted with the guild of Romanian conservators and restorers from which he learned a lot of things and to which he manifested a whole disposition for colleague-like cooperation.

Coming into the field of conservation and restoration of the cultural treasure in 1972, during a time when this field was *in statu nascendi* in Romania and, at the international level, it was in a full progress, the author have had the opportunity to attend a lot of professional meetings, to present personal researches and to publish several articles and studies in Romanian and foreign reviews.

In the field of documentation on the foreign reference material he has had the advantage (partly hindered by the times of the recent history) to be for 24 years (1976–2000) member, corresponding member and consultant of the former Committee on Conservation and Restoration of the International Council on Archives (ICA/CCR) which became meantime the Preservation Committee of that international council. In this position the author attended the professional and scientific meetings, he was acquainted with many foreign professionals in conservation and restoration, he has had visits, mutual exchanges of experience, and he has had the benefit to obtain a large access to the specific literature.

This book, the necessity of which is so evident, obtained a final form by the way of the didactic dialogue that the author has, from 1999, with the students of the Conservation and Restoration section, which now became the Sacred Art specialization, of the Faculty of Orthodox Theology 'Patriarch Justinian' of the University Bucharest.

It is well known by all of us that Biology is the science of the life (gr. *bios* = life; *logos* = science). Therefore, some persons less acquainted with the general sciences implications could be puzzled and tempted to try to understand the reasons of the necessity of Biology in the field of Conservation and Restoration of the cultural treasury. That is, such a person could ask, shortly, *cui prodes?* Such a perplexity has indeed historical arguments since during a couple of millenniums the cultural patrimony goods and the art value objects were kept, with more or less chances without the help of the Biology.

The intervention of the Biology, as the intervention of the general science and technology, in the keeping field of cultural goods has begun after the suggestion made by the Cardinal Franz Ehrle between the years 1898 – 1899 during the International Conference of the Librarians (O. Posse, Restaurator – International Journal for the Preservation of Library and Archival Material, **Supplement 1** (1969) 1). After that time has begun the process of redefinition and substantiation of the operative side of the traditional keeping. The positive results obtained by the half of the past century determined Gaëtan Picon to assert that *les savantes qui luttent pour préserver de la mort les témoignages de l'art sont entre tous les plus proches et les plus dignes de l'artiste, qui lui-même a lutté pour préserver de la mort une image de la vie* (G. Picon, *Préface*, in R. Deschiens et C. Coste, *La lutte contre les insectes ravageurs des oeuvres d'art en bois sculpté*, Travaux et Publications IV, ICCROM - International Centre for the Study of the Preservation and Restoration of Cultural Property, Mason et Cie, Rome/Paris, 1961, 39).

The role and the contribution of the Biology in the keeping of the cultural patrimony are materialized by cognitive, operative and technical arguments and necessities on several directions.

First of all, a large number of cultural patrimony objects have a material origin of prevalent vegetal or animal nature. It is enough to mention the art objects wholly, prevalent or partly made of wood, cellulose, plant or animal textile fibres, leather or parchment, ivory and bone, pearls and mother-of-pearl, fossil materials, etc. A simple examination of an oil painting will lead us to identify in the structure of the art piece the support canvas made from plant fibres, glues and sizes of plant or animal origin (yolk, linseed oil, etc.) and a lot of other materials, say nothing about the frame made of wood. About all these materials knew a lot of things the artist which chose and combined them in an artistic expression but, in the field of durability, keeping and protection know, in a great measure, more many things the specialist in Biology. And if he does not know yet some things, the same specialist will identify the front of research and after a short time the answer will come out to develop the science of conservation.

Secondly, Biology produced enough proofs on the fact that among the factors degrading the cultural patrimony objects, the biotical factors have a prevalent destructive action. As will be seen in the content of the book, there is just an ecologic concept of 'destroyers' defining a large and diverse category of living organisms that have the perpetual role to maintain, at the planetary scale,

the processes of transformation and recycling the materials of biotic origin into simple elements from which they originally were born. In this respect, the microorganisms (bacteria and fungi) are playing the most important and specific role. The microorganisms are ubiquitous in fermentation, decay and rotting processes. Still in the XIXth century the great scientist L. Pasteur was overwhelmed by the fact that *sans les microbes, la vie deviendrait impossible, parce que l'oeuvre de la mort serait incomplete.*

The fact that a cultural patrimony object, made from materials of plant or animal origin, represents, from the intentional and spiritual point of view, an work which does not need to be touched by the wing of the death impose, in the keeping practice, the necessity of some essential knowledge of Biology. In such an approach, the conclusion of the specialist in conservation is clear: *Among the disciplines forming what we can now rightfully call 'Science for conservation' is Biology, due to the significant role played by biological factors in the deterioration of works of art* (M. Laurenzi Tabasso, *Foreword*, in G. Caneva, M.P. Nugari and O. Salvadori, *Biology in the conservation of works of art*, ICCROM, Roma, 1991). Such a conclusion confirms a previous and justified finding related to the fact that the specific analysis on the cultural patrimony objects needs the existence of a laboratory of investigation which include sections of microchemistry, Physics and Biology (H. Daifuku, *Exemple de l'aide apporté par l'UNESCO aux musées des pays tropicaux*, in *La preservation des biens culturels, notamment en milieu tropical*, Musées et monuments XI, UNESCO, Paris, 1969, 99).

For the third, there is a synergic action of the biotic and non-biotic factors involved in the deterioration of the cultural property objects, both in the open spaces and in the protected ones. Such a reality has inspired special ecological approaches on which the author draw attention still in 1976, and which tends to develop a distinct chapter of Ecology, namely inside Ecology or Kryptoecology (F. Oprea, *Aspecte ecologice ale biodeteriorării documentelor*, in *Știința și tehnica în arhive*, F. Oprea (ed.), București, Arhivele Statului, 1976, 54).

There are, in addition, many other directions of work in the field of recovery and restoration of cultural patrimonial goods that can't be successfully carried out without biological knowledge. The restorer, indeed, does not take the liberty to act in an unknown base of work because, beside the efficiency, the principles of restoration oblige on the compatibility of the new materials with the ones existing in the initial structure (F. Oprea, *IANUS. Revue archivistique/Archival Review*, 2 (1994) 44). As a result, one could state with justified reason that the Science of conservation has included the Biology among its supporting disciplines, together with the Physics, Chemistry, the Science of materials, the History of old crafts and many other contact-sciences.

On the other hand there is not any secret regarding the fact that there are conservators that have not enough experience in Biology and there are biologists that have not a sufficient experience in conservation. Both the professionals – acknowledged or in a formation stage as students – will need this book of *Biology for conservation and restoration of cultural treasure.*

The present book is added to the list of the few systematic writings of this kind and the themes are developed in an original view (F. Gallo, *Biological factors in the deterioration of paper*, ICCROM, Roma, 1985; F. Gallo, *Il biodeterioramento di libri e documenti*, Editione italiana aggiornata ed ampliata, Centro di Studi per la Conservazione della Carta, Roma, 1992; G. Caneva, M.P. Nugari and O. Salvadori, *Biology in the conservation of works of art*, ICCROM, Rome, 1991).

Thus, after a general introduction, the text is divided in five parts from which the third part, *Biology of the conservation environment* is the most important and occupies nearly half of the entire book (appendix). The text is richly and originally illustrated with 27 tables, 3 plates, 20 figures, 10 photos and the scientific information are correlated with several hundreds of Romanian and foreign literature references.

All of us we are aware of the fact that a book does not ever exhaust a subject. Much more, it is true that any start has, normally, some failures but I think the colleague-like suggestions to improve this book will be thankfully agreed by the author.

Professor Tatiana Eugenia Şesan

*Corresponding member of the
Romanian Academy of Agriculture and Sylviculture Sciences*

SHORT CONTENT OF THE BOOK

Introduction

Part I: GENERAL BIOLOGY (some elementary notions)

1. Biosphere
2. Fundamental processes of the living matter
3. Notions of ecology
4. Natural circulation of the biogen substances

Part II: Structural BIOLOGY

1. Chemical composition of the living matter
2. Cellular structure of the living matter

Part III: THE BIOLOGY OF THE CONSERVATION ENVIRONMENT

1. Ecological valences of the conservation environment
2. The groups of creatures that lives in the environment for conservation of cultural patrimony objects
 - Bacteria
 - Fungi
 - Green algae (Chlorophyta)
 - Diatoms
 - Lichens
 - Mosses (Bryophyta)
 - Higher plants (Cormophyta)
 - Insects
 - Mycophagous and entomophagous cohabitants
 - Maritime biodeteriorative animals
 - Biodeteriorative vertebrates

Part IV: ANALYTICAL BIOLOGY

1. Structural analyses
2. Analyses of aetiology and resistance to the biodeterioration
3. Analyses of biochronology
4. Appraisal of the non-biotic environment

Part V: TECHNOLOGICAL BIOLOGY

1. Prevention of the biodeterioration by ecological methods
2. Bio-technologies for conservation and restoration
3. Staff protection against mycoses

Appendix: Substances used in DDD treatments