

Hungarian University of Fine Arts Doctoral School

Thesis

of the

DLA dissertation entitled

**“New methods in the conservation of wall-
paintings recovered from archaeological
excavations”**

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The dissertation presents the professional knowledge gathered through 25 years of professional experience and continuous research in the field of the conservation of wall-paintings recovered from archaeological sites. The paper would like to point out that the works of art recovered from archaeological excavations constitute a significant part of our cultural heritage and that their preservation, their professional handling and the training of professionals in the related fields are extremely important tasks. The conservation of excavated wall-paintings is still not part of the training of conservators, just as it was not part of it when I was a student. Therefore, it was not easy to accumulate the necessary knowledge, which I did chiefly in an autodidactic manner. Based on my considerable experience gained both in Hungary and abroad, I believe that this field must be incorporated into the conservator training curriculum. All the more so as the quality of the finds from excavations and the quality of the accumulated expertise in Hungary are acknowledged abroad, and it would be a shame to let them go waste.

Experience from recent years showed me that there was hardly any research in this field of conservation. When I study the literature or consult colleagues it feels like going back to the past: skilful craftsmen pass their knowledge on to each other. The thorough, deep and highly professional scientific work that is already a routine in other fields of conservation and the serious publications appear to be missing here.

The dissertation may show that I have made an attempt to change that. I contacted the best Hungarian experts and research institutes when I planned the conservation methods and when I examined the materials to use and the finds to be conserved. My team and I always used the most modern methods for the examinations. The knowledge thus gathered made it possible to formulate theses the majority of which are completely new even to the international literature. Please find the theses below.

1. The “in situ” conservation of wall paintings surviving on the walls is still impossible today. The excavated fragments must be transferred to a museum or covered with earth again as soon as possible. Today, the decision on the future destiny of the finds is the responsibility of the archaeologist, primarily. The conservator has the duty to draw the archaeologist’s attention to the fact that if they insist on the preservation of the finds in their original place, even in spite of the enormous costs that will incur, the fragments will face certain destruction.
2. The use of water is harmful at any stage during the conservation-restoration process, even if the consequences do not arise at once. Methods involving the use of no or very little water must be developed. My research has successfully proven that it is possible to avoid the use of water. The direction in which the research should be continued is also taking shape.
3. The presence of good conductors of heat or materials with high specific heat capacity in the new supports leads to thermal condensation and thus to salt damage. The use of metals and other materials with high specific heat capacity must be reduced by all means. Ideally, their use should be avoided completely.
4. The pore system of a painted plaster applied to a closed system support is only open towards the painted surface, and so moisture can carry the damaging salts one way only, to the surface. Therefore, symmetric, hydrophilic and porous systems must be developed that are open at the back. Successful examples exist, in the case of the Mithraeum and in that of certain models, for example.

5. The non-traditional approach in the treatment of salts must be pursued and new methods need to be developed. The extraction of salts from the wall is not a realistic aim. Their quantity may be reduced but never sufficiently. The efforts should focus on avoiding the concentration of salts on the surface. Other solutions may include passivation, directing the moisture towards the back of the support and the dispersal of the salts within the system.
6. In order to achieve the aim described above, it is necessary to develop active systems in the long term. In an active system, with the help of built-in sensors and a control unit, the fresco would respond actively to changes in the environment and bring itself to a condition which allows it best to avoid suffering any damage. That would be a true 21st century solution. Though it may sound slightly Utopian, I am planning to build the first such system in the near future.
7. Being light is not as important for a structure as the literature emphasises it. The frescoes should be able to be disassembled into pieces that two persons can safely handle. A simple and safe construction needs to be planned. Storage and transportation are best carried out in individually designed cases. Light structures incline conservators to build a structure from extremely large panels, and that leads to difficulties when moving the structure, as the pieces may be too large to go through windows and doors, it may be difficult to handle, move, disassemble and assemble them, and their transportation may require special vehicles.
8. The structure of the cementing plaster should be similar to the structure of the original plaster. The structure of the fresco and the new support together should be similar to that of the real wall.
9. The internationally used reconstruction method that makes use of a glass table is incorrect, because it leads to the creation of a perfectly even surface that never existed in reality. The method involves assembling the fragments face down on a glass table. The process is monitored with the help of mirrors and light sources built in the table. Frescoes assembled this way will display unnecessary deformations. The original surface of the frescoes had never been perfectly even, and if we level them out by force, geometric distortions and adjustment problems will appear beyond their losing their original distinctive features. The original structure of the surface needs to be preserved. And that can only be assured if the fragments are assembled face up.
10. The conservation process should consist of the fewest possible phases. Facing and rotation should be avoided as they involve potential danger.

11. It should be possible to cut up and change the support subsequently to its completion. Accurate assembly should be ensured with the use of an adjustable structure. The sizing of the parts ought to make it possible for no more than two persons to assemble the structure carrying the fragments. The development of the simplest technology for assembling and dismantling the support structure can solve the problem of moving the wall-painting. This was the approach we used during the conservation of the Mithraeum in Óbuda, Hungary. The idea worked perfectly. Had we not created the structure according to the above described principles, we could not have transported the frescoes to Lyon to exhibit them there. And this approach is completely in line with the modern requirement that the plaster on the back of the fragments must not be wasted. Previously, one of the justifications given for wasting was that the fresco needs to be made lighter, so that it may be moved and transported easily. Though at certain places wasting is still done automatically, internationally, the requirement to preserve the plaster in its full thickness is becoming the established norm.
12. The aesthetic reconstruction of the original work of art must not go beyond the making of the fresco agreeable to look at. It is not acceptable to paint a “complementary reconstruction” of the missing parts of the figurative fresco. The larger reconstructions, which help interpret the work of art, should be made in a digital form, using photographs taken of the work of art, in the form of models or even in the form of full-size copies¹.
13. The conservator must bear the lion’s share of the research necessary for the reconstruction of the figurative paintings, as the art historian or the archaeologist do not understand what type of analogies the reconstruction demands. They have the notion that for the reconstruction of a specific iconographic type they have to look for an analogy among the similar iconographic types, but that is incorrect. The truth is that the compositions were compiled of figure types and “postures”. Therefore, the analogy for a figure may be found in the depiction of a completely different theme. (For example, the key of the depiction of Ilia in the Mars and Ilia fresco in Tata was found in a fresco representing Ariadne in Naxos, where Ariadne was depicted almost identically to Ilia in Tata.) Furthermore, this phenomenon is entirely genre-

¹ The Museum of Fribourg exhibits a full-size reconstruction of the painted garden facade of a Roman building excavated in Vallon, Switzerland. The original fragments are displayed beside the reconstruction in a sand bed. **Fuchs**, (1996): pp. 30-38

independent. The analogy for the completion of a fresco may well be found on the frame of a mirror or on a tombstone.

14. I considered it important to use Hungarian inventions in the development process. I experimented with 3P resins for a long time, but they have not proven useful for us, yet, so the dissertation does not mention them at all. The ground glass foam of Geofil Kft. on the other hand, produced excellent results. The material has proven its merits in practice as well as in research and models, and I see further exciting possibilities for its use. In certain fields it shows better qualities than many expensive materials available only from abroad and at the same time it is remarkably cheaper than those. It is time to introduce this material to the general conservation practice.

I consider some of the theses described above as proven, while I intend to continue research into some others because I do believe that I am on the right track.

Selected Bibliography

Alvarez, L. C. (1987): Stucco: A Report on the Methodology Developed in Mexico. In: **Hodges, H. W. M. (szerk.)** *In Situ Archaeological Conservation*. INAH, GCI, California USA, 90-97.

Arendt, Claus (1991): The Role of the Architectural Fabric in the Preservation of Wall Paintings. In: **Cather, S. (szerk.)** *The Conservation of Wall Paintings*, The Getty Conservation Institute, LA. 29-41.

Ashkenazi, Eli (2007): *Restoring the Masada Frescoes*,
http://paleojudaica.blogspot.com/2007_03_11_archive.html

Banner János, László Gyula, Méri István and Radnóti Aladár, (1954): *Régészeti Kézikönyv I. Gyakorlati Régészet*, Egyetemi Tankönyv. Tankönyvkiadó, Budapest.

Bíró Endre, (2001): *II. századi falfestmény Brigetióból*, Alfadat Press Kft, Tatabánya.

Borhy László, (2001): *Pannoniai falfestmény*, Enciklopédia Kiadó.

Brandi, C. (2005): Restoration of Ancient Paintings. In: **Basile, G. (1977. szerk.):** *Theory of Restoration*. Nardini Editore, Firenze, 96-100.

Brunet, J. Vouvé, J. Vidal, P. Malaurent, P. and Lacazedieu, G. (1995): Theories and Practice of the Conservation of our Heritage of Rock Art. In: **Thorn, A. és Brunet, J. (1995. szerk.):** *Preservation of Rock Art*. Melbourne, 1-11.

Brus, J. and Kotlík, P. (1996b): Consolidation of Stone by Mixtures of Akoxysilane and Acrylic Polymer. In: *Studies in Conservation 41*. 109-119.

Caldararo, N. (1998): *Structural support for mural panels*. Conservation DistList, 07-06-1998. Message Id: cdl-12-9-009

Camuffo, D. (1998): *Microclimate for Cultural Heritage*. Elsevier Science B. V. Amsterdam.

Chvatal, T. (1979): Erfahrungen mit den Natriumsulphat Testen bei verschiedenen Steinsorten und Konservierungsmitteln. In: *Restauratorenblätter*. 3 sz. 206-217.

Dorsch, K-D. (1993): Les photographies des peintures catacombes de la collection Parker In: *Functional and Spatial Analysis of Wall Painting*, Stichting BABESCH, Leiden, 212-222.

Ettl, H. and Schuch, H. (1996): Putzsicherung mit Ledan TB1, In: *Putzsicherung, Arbeitshefte des Bayerisches Landesamtes für Denkmalpflege, Band 79*. 37-42.

Frohberg, B. (2004): Wandbildabnahmen in der Dorfkirche Wolkenberg, deren Neuaufbringung und Restaurierung, In: *Beiträge zur Erhaltung von Kunst- und Kulturgut, Verband der Restauratoren, Heft 2*. 148-157.

Fuchs, M. (1996): Wand und Deckenmalerei aus Vallon, In: *Römische Fresken aus dem Kanton Freiburg*, Mseum für Kunst und Geschichte, Freiburg. 30-38.

Grissom, C. A. and Weiss, N. R. (1981. szerk.): Alkoxysilanes in the conservation of art and architecture: 1861-1981. In: *Art and Archeology Technical Abstracts, Supplement Vol. 18, Number 1*. 150-203.

Horn, F. (2003b): *Digitale Bildbearbeitung als ein Werkzeug der präventiven Konservierung*, Siegl, München 2003.

Hughes, J. and Válek, J. (2003. szerk.): *Mortars in Historic Buildings*, Published by Historic Scotland, Edinburgh.

Keller, K. and Schreiter, Ch. (1997): Ein Fundkomplex römischer Wandmalerei aus Xanten: konservierung und präsentation in einem reversiblen Träger, In: *Roman Wall*

Painting: Materials, Techniques, Analysis and Conservation, Institute of Mineralogy and Petrography, Fribourg, 1997. 374-355.

Kottulinsky, L. (1982): Bericht über die Restaurierung eines römischen Deckenfreskos in Enns/Österreich. In: *Maltechnik 2. Restauero*, 88./April. 91-97.

Kriston, László, (2001): A szőnyben feltárt római falképtöredékek röntgendiffrakciós vizsgálatának fontosabb eredményei, In: **Borhy László (2000. szerk.):** *A római kori falfestmények Pannoniában*, Klapka György Múzeum, Komárom.

Laenen, M. (1995. szerk.): *Methods of Evaluating Products for the Conservation of Porous Building Materials in Monuments*, preprints, Rome, ICCROM.

Lehmann, M. (2004): Langfristige Schädigung von Wandmalerei durch die Wirkung eingebrachter Kunststoffe, In: *Zeitschrift für Kunsttechnologie und Konservierung*, Wernersche Verlagsgesellschaft, 18. Jahrgang 2004. Heft 1. 71-90.

Ling, Roger. (1991): *Roman Painting*. Cambridge University Press.

Mazzei, B. (2005): La conservazione delle pitture delle catacombe romane. In: **Exner, M. és Jakobs, D. (2005. szerk.):** *Klimastabilisierung und bauphysikalische Konzepte*, ICOMOS Hefte des Deutschen Nationalkomitees, XLII. Berlin. 65-78.

Mharrsch, L. (2007): Masada fresco restoration project completed, in Roman Archaeology, http://www.uoregon.edu/~marrasch/2007_03_01_romanarch_archive.html

Moorman, E. (1991): Destruction and Restoration of Campanian Mural Paintings in the Eighteenth and Nineteenth Centuries In: *The Conservation of Wall Paintings*. The J. Paul Getty Tust, LA. 87-101.

Mora, L. and P. Philippot, P. (1984): *Conservation of Wall Paintings*, Butterworth, London.

Morgós András and Hervainé, Nagy Judit, (1993): Nagy sótartalmú, mállott, festett kerámiák restaurálása In: *Műtárgyvédelem*, Vol. 22. 49-60.

Moschini, D. (2001): Restauro virtuale, In: *Kermes, XIV. Gennaio-Marzo*, Nardini Editore, 45-54.

Petzet, M. (1996. szerk.): *Salzschäden an Wandmalereien, Arbeitsheft des Bayerischen Landesamtes für Denkmalpflege*, Band 78, München.

Preusser, F. (1991): Scientific and Technical Examination of the Tomb of Queen Nefertari at Thebes In: *The Conservation of Wall Paintings*. The J. Paul Getty Trust. 1-12.

Price, C. (2000. szerk.): *An Expert Chemical Model for Determining the Environmental Conditions Needed to Prevent Salt Damage in Porous Materials*. Archetype Publications Ltd. London.

Steffny, E. (1979): Entfernung von Kalksinter auf römischen Deckenmalereien mit einem Feinsandstrahlgerät. In: *Arbeitsblätter*. Heft. 2.

Wihr, R. (1971): Der Einsatz von Trevira-Gittergeweben, Ultraschall und expandierten Bienenwabenelementen bei der Konservierung römischer Wandmalereien. In: *Arbeitsblätter, Heft 2*. 37-42.

Wozniak, R. (1998): *Structural support for mural panels*.

Date: 07-02-1998. Conservation DistList Instance 12:7, message Id: cdl-12-7-020