

历史建筑保护及其技术

Architectural Conservation and Technology

主编 戴仕炳 陆地 张鹏

Edited by Dai Shibing, Lu Di, Zhang Peng



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前言

遗产保护科学始于馆藏文物的修复与保护研究。19 世纪末、20 世纪初，博物馆的艺术修复师在修复壁画彩绘、油画等艺术品时所遇到的技术难题，通过与化学家、物理学家等的合作找到了答案。20 世纪上半叶，越来越多的自然科学手段被加入到遗产保护当中，科学在保护中的应用得到了广泛的认可。在这期间，许多强调科学的保护实验室在世界各地的博物馆和保护中心内创办，如意大利中央修复学院（Istituto Centrale del Restauro）、德尔纳研究所（Doerner-Institut）、福格艺术博物馆（Fogg Museum）、罗浮宫（Louvre）和伦敦国立美术馆（London National Gallery）等。修复技术随着精密科学发展得到切实的完善，并逐渐形成保护科学（Conservation Science）。今天在欧美大学里的历史保护（Historic Conservation）专业课程中，仍然有一部分是针对馆藏文物或建筑附属文物，如彩绘壁画等的保护课程。

但是暴露在自然风化环境下的文化遗产，如摩崖石刻和仍然在使用的建筑遗产，其保护所涉及的问题要复杂得多，把馆藏文物保护修复技术生搬硬套到建筑遗产中，自然行不通。19 世纪末到 20 世纪上半叶初步形成保护性修复（Conservative Repair）理论体系及相兼容（Compatible）保护修复技术。1929 年，英国古建筑保护协会（S.P.A.B.）的秘书长（A. R. Powys）出版了《古建筑修复》（*Repair of Ancient Building*）一书，在书中，Powys 忠实记录了满足保护性修复理论的修复方法，既包括所谓的低技术，如石灰水（Lime Washing），也包括当时被认为的所谓高技术。作为保护理论与技术相结合的典范，该书分别在 1981 年、1995 年两次再版，成为现代建筑修复师掌握保护修复技术的启蒙读物。今天，保护性修复已经是全球共识。

欧美在文化遗产保护特别是建筑遗产方面的理论体系在 20 世纪下半叶逐渐引入国内，但是保护技术方面却落后理论，更缺乏系统。但是，经过 20 余年的引进消化再创造，已经逐渐形成了建筑遗产保护技术体系雏形，贯穿到建筑遗产保护利用的各个阶段，包括信息采集与实录技术、信息管理技术、结构检测鉴定与加固技术、保存与修复技术（传统保护技术和现代保护技术）、监测与维护技术等等，在法律法规的层面也开始制定有关技术标准与导则。进入 21 世纪后，

基于监测的预防性保护及传统保护技术的现代化变成重要的趋势。

鉴于我国在保护技术方面的研究尚处在起步阶段，理论与实践之间存在严重脱节，上海同济大学于 2008 年创立了“历史建筑保护实验中心”，是中国建筑类院校中目前唯一一个侧重历史建筑保护技术研究开发的专业技术实验室。作为高密度人居环境生态与节能（同济大学）教育部重点实验室的一部分，同济大学历史建筑保护实验中心目前包括砖石、木材、实录等 3 个专业实验室。

《历史建筑保护及其技术》收录了 2010 年以来上海同济大学历史建筑保护实验中心与相关合作单位完成的成果，部分已经公开发表，涵盖了历史建筑保护的理论、关键技术、案例分析、教学培训等。目的一方面是忠实地记录同济大学保护团队在这一领域的研究现状，另一方面为同行提供参考或批判的素材。本文集中的主要技术成果源自实践，希望通过总结为从事历史建筑保护工作实践的管理工作者提供适应性的落地生根的技术支撑，并最后能够上升到指导我国建筑遗产保护的理论层面。

本文集的成果的完成主要得到国家“十一五”科技支撑计划重点课题“重点历史建筑可持续利用与综合改造技术研究”（编号：2006BAJ03A07）、“十二五”科技支撑计划重点课题“井冈山区域红色资源保护与利用关键技术与示范”（编号：2012BAC11B01）、国家自然科学基金项目“我国砖石建筑遗产的古锈（patina）保护研究”（项目批准号：51378351）、浙江省自然科学基金项目“温州永嘉古建筑的微观保护与修复技术研究”（编号：Y1110804）及山西省文物局、天津市、杭州市、海口市、上海市等政府科研基金的资助，在此表示感谢。同时感谢各位作者及团队成员的贡献，感谢同济出版社江岱对本文集出版给予的支持及积极建议。温州职业技术学院陈彦老师在策划与编辑本文集中付出大量宝贵时间，香港大学格桑（Gesa Schwantes）校对了英文摘要，为此我们表示衷心感谢。

戴仕炳，陆地，张鹏

2014 年 12 月，上海

The Architecture Conservation Laboratory of Tongji University, short Tongji ACL, was established in 2008 at the College of Architecture and Urban Planning (CAUP). The Tongji ACL is a pilot laboratory specialized in conservation theory, the diagnosis of building materials and their deterioration processes as well as the investigation of traditional building techniques. In addition it is a leading laboratory with a focus on research and development of conservation technology for architecture and monuments in China. As part of the “Key Laboratory of Ecology and Energy-saving Study of Dense Habitat, Ministry of Education”, the Tongji ACL currently consists of three laboratories specialized in the conservation of masonry, the conservation of timber constructions and in monitoring and documentation. The “Architectural Conservation and Technology” is a compilation of recent publications (including conference proceedings) of the Tongji ACL and its collaborative partners. It comprises publications on conservation theory, case studies (in Mainland China, Hongkong and Macau) and innovative technology in the conservation of architecture and monuments. The presented research works were completed under the financial support of “Research on the Technology of Conservation and Adaptive Reuse of Historic Buildings” (No. 2006BAJ03A07), “The Key Technology Research and Demonstration of Red Resources on the Jinggangshan Region” (No. 2012BAC11B01) from Key Projects in the National Science & Technology Pillar Programs, “On the Conservation of the Patina of China Masonry Architectural Heritage” from National Science Funds (No. 51378351), “On the Conservation and Restoration Technology of Historic Building in Wenzhou Yongjia Region” from Zhejiang Science Funds (No. Y1110804) and research funds from Shanxi, Tianjin, Hangzhou, Haikou and Shanghai Municipal Governments. The editors express their deep appreciation to other members of the research teams and to the coauthors of the various contributions.

Edited by Dai Shibing, Lu Di, Zhang Peng

December 2014, Shanghai

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风格性修复理论的真实与虚幻

陆地

The Reality and Illusion of Stylistic Restoration

Lu Di

摘要

针对风格性修复的一些认识误区，分析了其产生的社会背景及理论要点、风格性修复与早期旨在形式纯化的修复实践之间的差异，以及风格性修复的理论缺陷。

Abstract

Aiming at some misunderstandings of stylistic restoration, this paper analyses the social background and theoretical key points of stylistic restoration, the theoretic shortcomings of stylistic restoration, the difference between stylistic restoration and the restoration, which is aimed at purification of the form in early stage.

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中国建筑面层原位保护的研究与实践

——聚焦抹灰保护的灌浆材料

格桑

Research and Practice of in-situ Conservation of Architectural Surfaces in China

—With a Focus on Injection Grouting for Plaster Reattachment

Gesa Schwantes

摘要

为了在适当考量遗产价值的前提下保护建筑面层，其原位保护被视为至关重要的实践。建筑面层的文化意蕴与其所在地密切相关，且有助于其完整性和真实性。一旦灰塑、壁画从建筑表面上被揭取下来，其自身价值和该建筑的重要性均将受到影响。不仅如此，抹灰或许还包含了历史性材料、工艺、事件的珍贵信息，或揭示了建筑的前世今生。本文旨在结合原位保护原则来强调其重要性，讨论了针对中国特色情况下，建筑面层原位保护所面临的挑战，不仅着眼于保护实践的现状，且将材料多样性及当地气候纳入考量。最终，本文讨论了分层灰塑的回贴所面临的主要挑战。为了确保修复的持续性、提高修复材料的兼容性，基于当地传统材料、且经新技术改性的注浆材料被视为研究重点。

Abstract

The in situ conservation of architectural surfaces is seen as crucial practice in order to conserve them in due consideration of all their heritage values. Their cultural significance is closely related to the site and contributes to its integrity and authenticity. Especially in the case of decorated plaster and wall paintings detaching them from their context diminishes their own value as well as the significance of the place from which they were removed. But additionally plain plasters may also contain valuable information on historical materials and techniques, carry

information about historical events, or indicate a former use of the site. This article aims to bring together the principles of in situ conservation to emphasize its importance. It discusses the challenges of in situ conservation of architectural surfaces specific to the situation in China, both in terms of current conservation practice, and in terms of variety of materials and climate across the country. Finally it discusses challenges in a primary problem of intervention: the reattachment of delaminated plaster from its support structure. Injection grouts on the basis of traditional local materials but with improved performance through new technologies are seen as important area of research in order to develop compatible conservation materials for sustainable interventions.

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