Session Track: Heritage Conservation Technology and Philosophy
Session Code: CS10a

Paper: Fading Lustre: Investigation and Remediation of the Golden Roof and Lantern atop the NY Life Headquarters in New York City

Presented by
Michael Kramer
President, The Gilders' Studio, Inc.
Olney, MD USA

Speaker(s) Biography
Michael Kramer is the founder and president of The Gilders Studio, Inc., an award winning firm with prestigious projects across the United States and overseas. Formed in 1985, the studio works on monumental sculpture, state capitols, government and commercial buildings as well as churches and private residences. Several of the Studio s more notable commissions include the Great Cupola of the Church of the Holy Sepulcher in Jerusalem, The Golden Boy in Manitoba, Lincoln Tomb Historic Site, the Library of Congress, the Georgia State Capitol, Faneuil Hall and the Old State House in Boston as well as gilding conservation in the Washington Monument and paint conservation in the Lincoln Memorial.

Listed in Who s Who in American Art, Michael is President of the Society of Gilders as well as a member of AIC and the APT. Since 1987 he has taught gilding and decorative painting at the Smithsonian, for the Society of Gilders and other venues. He has also written several articles on gilding and related fields, which have been published in Traditional Building Magazine and other periodicals. His chapter titled Exterior Architectural Gilding was included in, Gilded Metals from Archetype Press.

Abstract
Designed by Cass Gilbert and opened in 1928, the NY Life Insurance Company headquarters is an icon in New York City. With an imposing crenellated masonry pyramidal roof crowned by a magnificent lantern covered in gold leaf, the building epitomized Gothic Revival.

Unfortunately, water leaks in the roof were a constant problem, and in 1966 it was re-designed. The 65 tall lantern remained the same and was re-gilded with 23 KT gold leaf. The 22,000 square foot roof had the ornamentation removed and was clad with gold enameled roof tiles. The result was breathtaking.

By 1995, the gold finish on the tiles deteriorated and required replacement which was completed in 1996. By 2000 the gold enamel glaze on the new tiles began to fail.

Replacement of the new tiles was not an option as the manufacturer no longer offered them. The Owner, Architect and Gilder worked together to develop a program to remediate the failing glaze while maintaining the integrity of the roof tiles and also retaining the strong visual effect of this golden pinnacle on the city skyline. The team undertook an extensive testing program to determine the most efficacious solution. After considering several options the Owner decided to have the roof and lantern completely gilded with 23.75 KT gold leaf.

While there are voluminous specifications for preparation and painting of myriad substrates, there is no reliable information for preparation and application of gold leaf to any surface, much less a failing glazed terra cotta tile. A totally new system had to be developed for removal of the failing glaze, then preparation and gilding of the tiles, all in situ.

Five different priming and gilding systems were developed and subjected to accelerated weathering to ASTM Standards in 2003. One system out-performed the others by far. But as an added wrinkle, by the time the work was approved in late 2006, new VOC regulations regarding paint were adopted on the East Coast of the US and the primer for the approved system was no longer available. With the project already underway, three new

systems were rushed into testing. Fortunately, one of the three VOC compliant systems performed as well as the original candidate.

Removal of the glaze was also problematic. New York City has strict regulations regarding blasting and release of contaminants into the air or washed into the sewers. Sponge media met the needs of the project. Lightweight and recyclable, blasting with sponge produced an excellent surface for priming, with none of the containment issues with other media. The primer used was a VOC compliant catalyzed epoxy followed by a phenolic resin as the adhesive for the gold leaf (also meeting VOC standards). An extra heavy weight 23.75 KT gold leaf was produced specifically for the project in Florence, Italy to be installed atop the modern coating system.

Once the scaffold was erected, new challenges arose regarding the bronze lantern. In 1966, as a response to water infiltration, the entire lantern was coated with a thick layer of bituminous tar to as a sealer with lead coatings atop, then gilding. Unfortunately, sealing the bronze caused deterioration of the metal, along with other problems, not the least of which was safe removal of the tar/lead combination so the bronze could be stabilized, repaired and made watertight prior to priming and gilding.

This project illustrates the successful collaboration between owner, architect and gilder willing to try novel approaches to meet the needs of the project while using modern methods and materials which are environmentally benign yet adapted to gilding, one of the oldest crafts on the planet.7

Session Track: Heritage Conservation Technology and Philosophy
Session Code: CS10b

Paper: Conservation of South Facade of Upper Castle in the Town of Cesky Krumlov

Presented by
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National Institute for the Care of Historical Monuments
Prague, Czech Republic

Speaker(s) Biography
Dagmar Michoinova, P.E. is a Chemical Engineer. In 1990 she earned a degree in silicate chemistry from ICT The Institute of Chemical Technology in Prague. Since 2000 she has been working towards a PHD with the Faculty of Civil Engineering in the Chemistry Department at Brno University of Technology. The subject of Dagmar s doctoral thesis is traditional techniques for making lime mortars for heritage conservation.

Abstract
The paper will describe a conservation approach to architectural heritage, when major alteration of the appearance of the monument is not permitted and the protection of unique traces of the historical development of buildings and records of historical building techniques and materials is highly required. The approach will be demonstrate on the case of safeguarding of Gothic, Renaissance and Baroque renders on the south facade of the Upper Castle in the town of Cesky Krumlov which has been UNESCO heritage listed city since 1992.
Conservation of the southern facade of Horní hrad of the Cesky Krumlov State Castle establishes the completely new trend in the Czech monuments care. With meticulously respect to the historic building s original fabric as an irreplaceable bearer of monuments authenticity, infinite telling ability, feeling of age and poetry, conservation approach, by means of recall and re-use the historical artisan building practices as well as traditional materials, endeavors to save extraordinarily valuable monument. The conservation approach transfers conservation ethic and methodology, so fare used in the field of works of art only, into the care of the whole historic building.
Cesky Krumlov Castle is the second largest castle complex in the Czech Republic after Prague Castle complex. The Castle is located in South Bohemia in the town of Cesky Krumlov. The Upper Castle, which is part of the complex, is situated on a high rock above meanders of the Vltava River and the old city of Cesky Krumlov. The Castle passed through special building evolution gradual building up however without grave changing of older parts of the facades.
The philosophy of facade conservation has resulted from the following principles:

1. Facades of the Upper Castle are unique thanks to architectural, historical and documentary values.
2. Aim of the treatment is not to change time-honoured feature of the façade.
3. At the same time the aim of the treatment is to stabilize the state of historical elements and renders and effectively prolong their durability.
4. The careful architectural, historical and scientific documentation and the research of facade and present materials is important part of the conservation treatment.
5. Actual quality of the historical lime renders allows using new fully compatible lime-based materials.
6. As the properties of historical renders are achieved not only by the composition but also by the manner of preparation, processing and application, new renders will be prepared and applied by traditional masonry craft, by experienced masons and renderers able to work with traditional lime materials in a traditional manner.
7. Special decorative parts of the facade and the final esthetical retouch of the facade will be done by render and stone restorers.
8. Interdisciplinary team of architects/conservators, National Heritage experts, building-company and conservators will cooperate in the facade maintenance.

The conservation approach of facades with historical renders will be presented from the interdisciplinary points of view.7

Session Track: Heritage Conservation Technology and Philosophy
Session Code: CS10c

Paper: Making the Grade with Historic Timber

Presented by
Ron Anthony
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Speaker(s) Biography
Ron Anthony received an M.S. degree in Wood Science and Technology from Colorado State University. He earned his B.S. degree in Forest Management with a second major in Wood Science and Technology, also from Colorado State University. In 1999, after 15 years of research and consulting in the field of wood science, Mr. Anthony established Anthony & Associates, Inc., focusing on evaluating the performance of wood in historic structures and conducting forensic investigations. He has lectured at Columbia University, the University of Colorado and Colorado State University on investigating wood in historic buildings and given presentations at the Association for Preservation Technology and Colorado Preservation, Inc. conferences. Mr. Anthony is the 2002 recipient of the James Marston Fitch Foundation Grant for his approach to evaluating wood in historic structures.

Abstract
Making the Grade with Historic Timber

Grading lumber is about saving historic buildings. Every day, structural engineers make decisions about lumber and structural timber (wood members) in historic structures. They do so, generally based on good intentions, but without the necessary tools to properly assess the suitability of historic fabric to provide safe, reliable, long-term performance. Due to uncertainties about the allowable design values that can be assigned to the wood members, decisions to replace or reinforce them are made, even though the wood members are working , i.e. they have and will continue to safely carry the holds imposed upon them. Too often, these decisions result in the replacement of historic fabric that could, in fact, remain in service without compromising structural integrity.

Lumber and structural timbers used in new construction are intended to comply with the relevant building code for that jurisdiction. For wood construction, structural engineers rely on design values referenced in the building code to determine an acceptable species, size and grade for a particular load condition. The design values given in the building code for solid wood products are established by the American Forest & Paper Association and published as the National Design Specification for Wood Construction. The published design values are based on test data that demonstrate the engineering performance of the material. Products are graded and stamped in accordance with procedures promulgated by one of several forest products industry associations, such as the Western Wood Products Association or the Southern Pine Inspection Bureau.

For historic buildings the engineer often relies on current standards to determine adequacy of the wood members to remain in service. Since many historic buildings were built before building codes or design values for wood products were established (and thus without a grade stamp), it presents a quandary when determining what design values are appropriate. Frequently an assumed species and grade are assigned, only to show that the wood members are structurally deficient. Yet the building has withstood the test of time without failure. The result is often an overly conservative estimate of the design values and unnecessary replacement, repair and retrofit decisions with the associated unnecessary project costs and destruction of historic fabric.

The question of how to properly assign design values to older wood members that do not have a grade stamp (and, therefore, are not within the traditional guidelines of the building codes) is a significant issue in historic structures. Recognizing the need to fill this knowledge gap, the National Center for Preservation Technology and

Training provided funding to APTI for the development and implementation of a simple grading protocol to be used in historic structures.

This presentation describes the grading protocol and presents the means to change the decision-making process by giving preservation engineers and architects the tools to better understand the grading of wood members in relation to building code requirements.7

Session Track: Heritage Conservation Technology and Philosophy
Session Code: CS10d

Paper: Low-Impact Conversion and Seasoning of Wood for Conservation

Presented by
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Jerry MacNeil Architects Limited
Halifax, NS Canada

Speaker(s) Biography
Gregory J. MacNeil, BA, BEDS, M. Arch.
Vice-President, Jerry MacNeil Architects Limited

EDUCATION
Acadia University, Wolfville, Nova Scotia
Bachelor of Arts, International Relations, 1987
Technical University of Nova Scotia
Bachelor of Environmental Design Studies, 1992
Technical University of Nova Scotia
Master of Architecture (First-Professional), 1994
Catholic Theological Union, Chicago
3 year Certificate Course in Liturgical Design, 1997

He joined Jerry MacNeil Architects as a graduate architect in 1994, and by invitation joined the architectural department of the Diocese of Augsburg in Germany in 1997 and participated in the restoration of their Baroque churches. He has extensive training in architectural beveled glass, is the recipient of an IFRAA international design award from the AIA, and presented his work Use and Application of Digital Technology in the Design and Fabrication of Gothic Revival Replacement Windows using CAD/CAM Equipment at the APT Conference in Toronto, 2002. His use of CAD/CAM technology is a unique and active part of his restoration work.

He completed the ICCROM 12th International Course on Wood Conservation Technology in Oslo, Norway, 2006. His West LaHave (circa 1916) farmhouse was featured at the AIA Seattle Symposium on Sustainability, 2005; was the subject of his paper titled Stabilization of Neighbourhoods as an Accidental Effect of Over-cladding , and presented at the APT Annual Conference in Atlanta, Georgia, 2006. The project was the published in the Old House Journal.

CERTIFICATE TRAINING
Norwegian University of Science and Technology
ICCROM 12th International Course on Wood Conservation Technology, 2006.

Harvard University Graduate School of Design
Certificate Course in Language of Design: Graphics, Products, and Interiors, 1992

Association for Preservation Technology International
Certificate Courses in Stained Glass Conservation and Protection;
Modern Historic Concrete;
Exterior Wood Conservation & Protection:
Seismic Retrofit for Historic Buildings;
Professional Development Program in Engineering for Older Buildings, including Heritage Buildings: Materials & Pathologies.

Abstract

The preservation of natural and built resources comprised of wood fibre starts in the forest and establishes a bond between cultural heritage preservation and the conservation and sustainable use of forest resources. With the development of contemporary cities beyond suburbia to exurbia increased environmental, economic and cultural stress is being placed on the rural regions, which in the recent past were the sources of our building materials.

With today s technology better use can be made of the wood on or close to historic sites by looking at urban trees as a resource to be converted into something more valuable than fuelwood, material for mulching, or green material that enters the urban waste disposal system. If we treat urban trees as a source of lumber for preservation purposes, we can reduce green waste at its source.
Cutting trees into saw logs derives value from the waste stream.

Uniform timber grading, and Forest Stewardship Council certificates, is often part of the purchasing requirements for industrial manufacturers. Graded products allow for process controlled or prescription based applications. Historic sites and preservation projects often incorporate timber of non-standard dimensions that can be graded on site in contrast to large quantities of material that need to yield a homogeneous quality for mass production. Preservation projects often utilize skilled tradespersons working directly with architects, material scientists, engineers, etc. who can access cut timber for its fitness.

Many historic sites are adjacent to tracts of urban land containing trees to be removed for development, maintenance, conflicts with infrastructure, insect infestation, disease, or hazard control etc. Land development can result in the creation of tree farms where cleared land tends to be replanted with trees of the same species and same youthful age. Once mature they become a crop of the same trees of the same age, potentially resulting in a clear-cut neighborhood. We need to rethink our planting and harvesting patterns. A change of viewpoint is required for seeing urban trees as part of an urban forest in order to identify the trees as a resource before they are felled.

Selectively harvesting urban trees represents an opportunity for the owners and managers of historic sites to partner with developers, municipalities, provincial governments, tradespersons, adjacent property owners, environmentalists, community leaders and community colleges to secure a supply of wood for preservation purposes, and to have a direct say in the urban forest practice which may directly affect their specific site.

Portable mills operated by small crews can convert logs into timber on urban sites with reduced petroleum input. There is no need to transport the log off site. Solar dryers are now in commercial use. The traditional methods of air drying and kiln drying are technologically advancing with new commercially available fabrics, refined climate data to predict drying rates, solar panels, high capacity direct current fans and controls.

Topics addressed will include but not be limited to sustainable timber harvesting with historically-appropriate logging tools and technologies, boom and knuckleboom cranes, the low impact extraction of felled timber, thick and thin kerf portable mills, principles of air and kiln drying, solar kiln construction for off grid operation in cold climates, moisture monitoring, drying defects such as distortion, shrinkage, stress, checking and splitting, and indoor and outdoor dry wood storage.

The writer has two decades of experience operating portable mills to process logs in both urban and rural environments, air-drying the end products, and is directly involved with selective cutting in the Historic LaHave River Valley utilizing low impact skidding, and for the past two years has operated a solar kiln off-grid to prepare preservation materials for rural buildings.7