

WCG October Meeting
National Academy of Sciences
October 3, 2013
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A Building Reborn: The Restoration of the National Academy of Sciences

The four speakers for this meeting addressed various aspects of the recently completed restoration of the [National Academy of Sciences](#), where the meeting was held. Their individual presentations are summarized below. One point that they all shared, and that came up again in the Q & A, was the importance of coordination between crews, since conservation of historic art and architecture was not the only aspect of the building's refurbishment. With so many groups of conservators and construction workers sharing the space it was difficult to meet deadlines, and some work had to be repeated. Flexibility was a necessity in reaching the successful reopening of the historic building.

Woodwork Conservation at the National Academy of Sciences

Speaker: Maria Bonet, Assistant Conservator at [F.C. Vogt Co.](#)

The woodwork for the walls and ceilings at National Academy of Sciences is primarily frame and panel construction of walnut, some with beautiful elements of wood inlay and paint and gilded decoration (see far right image). The accumulated damage over the years included tape damage, abrasion, wood shrinkage, cleaving and bloomed areas of finish and uneven surface sheen and color. The conservation project was fairly straightforward and repetitive due to the large scale. 4200 labor hours went into the project.

Throughout the project, collaboration was important. Work site standards for a typical construction site were atypical to the expectations of conservators. Flexibility and communication were crucial, especially in scheduling, to help a worksite that included various trades people, project managers, architects, movers, artisans, and conservators/restorers run smoothly and meet building code and OSHA requirements.

One exciting discovery came about while the East Lobby ceilings were temporarily removed for the installation of an up-to-date sprinkler system. This process uncovered original skylights. Reproduction skylights were made to current building standards to restore the historical design and appearance. Also, a builders' stamp for Carpenters and Joiners Union of America was discovered.

Samples of the original 1920s finish were analyzed and most of the surface was determined to be nitrocellulose. Later applied layers of shellac, soot, and grime had built up on the surface over the years. The South Lobby had a different surface, and the tin or aluminum gilding was coated with a toned natural resin varnish to give the appearance of gold leaf. The MCP ([Modular Cleaning Program](#)) was employed to determine an appropriate cleaning system - which was an aqueous solution with a raised pH and a surfactant. This system was tested safely on all of the woodwork surfaces.



Maria Bonet at the podium. (Photo courtesy of Greta Glaser.)



The South entrance interior showing the ceiling woodwork after restoration.

The treatment followed a series of steps: 1) cover murals to protect them, 2) vacuum all surfaces, 3) make the necessary repairs to the inlay and joinery, 4) clean all surfaces with the system described above, 5) gently pad shellac onto the surface to even the sheen and color of the original coating, and 6) touch ups. The treatment used minimal intervention to achieve a rich, restored surface appearance.

Conservation of the Exterior Bronze at the National Academy of Sciences

Lindy Gulick, Conservator at [Conservation Solutions, Inc.](#)

This project included 23 window assemblies with four different types of windows on four elevations from different building campaigns: South Elevation (1920s), East Wing (1962), West Wing (1965), North Elevation (1972). The cast bronze Night Doors, a sundial, and bronze entry doors were also part of the project.

Lee Lawrie (1877-1963) was the sculptor behind the original windows on the South Elevation. He collaborated with Bertram Goodhue (1869-1924), who was the architect for the building. Lawrie is also responsible for bronze work at the LA Public Library, Nebraska State Capitol Building, and *Atlas* at the Rockefeller Center. All of the window elevations have a floral bas-relief decoration, and the original windows also have bas-relief, figurative spandrels (see image above right). At the start of the project, each elevation had its own surface treatment, as did the doors and sundial; the doors had been painted brown.



Lindy Gulick at the podium. (Photo courtesy of Greta Glaser.)



The original South elevation windows after treatment.

Condition issues included soiling, corrosion, caulk drips, and uneven patina degradation. The treatment steps included: 1) overall scrubbing and detail cleaning, 2) repatination, and 3) application of protective top coat. Patination is intentional corrosion, or a change in the compounds on the surface of a metal to produce a certain color through a series of chemical reactions. The chemicals chosen, as well as the heat (or lack of it), and the concentration of the chemicals affect the final color.

The original patina of the 1920s windows was determined through analysis, and this appearance was recreated for the majority of the bronze work. A blue-green color was created with multiple rounds of spray stippling cold chemicals. This new corrosion was removed from the figures in the bas-relief design. Ammonium sulfide was then used to give the raw bronze figures a rich brown color. The bronze was then coated with high performance, outdoor grade lacquer, followed by 6-8 toning coats. The Night Doors received a hot patina of dilute liver of sulfur to give a brown base, followed by cupric nitrate to add green. The cupric patina was removed from the decorative elements and received ammonium sulfide to create a rich brown and highlight the relief sculpture. The sundial was treated so that the background was dark and the features were highly polished.

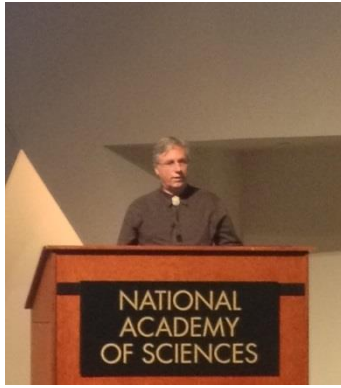
Hildreth Meiere's Decoration in the Great Hall of the National Academy of Sciences

Michael Kramer, President of [the Gilder's Studio](#)

Hildreth Meiere (1892-1961) was mainly known for her Mosaics, and she often collaborated with Goodhue in architecture. The cast tiles for the Great Hall were made in a factory for a specific acoustic

response. Meiere was only allowed to cover less than 50% of the tile surface with decoration to retain the intended acoustic response.

The decoration was done with plaster, tempera paint, and ribbon gilding, all applied in 1926 (see far right image). Meiere also stained the tiles with watercolor, since this did not change their acoustic response. The ornamentation was first laid out as a pattern of dots made with talc (pouncing). The plaster was traced on top of the pounced pattern by hand, using a squeeze bag. Wooden shims would have been used to guide straight lines. After drying, some of the plaster was coated with red, green, or blue paint, or left white; and some of the plaster received a layer of 23 ¾ KT gold ribbon leaf with slow oil size.



Michael Kramer at the podium. (Photo courtesy of Greta Glaser.)



The decorative ceiling in the Great Hall after treatment.

The condition of the ceiling showed water damage, efflorescence, previous interventions, plaster loss, and over 80 years-worth of grime. The goal of the treatment was to stabilize and repair the damages and unify the appearance. The least obtrusive methods possible were chosen, and all of the work done was carefully documented so that it can be tracked in the future.

Ten wet and dry methods were tested prior to cleaning the surface, and the sensitivity of the paint restricted options to dry cleaning. The ceiling was vacuumed overall, and then Absorene and Wishab sponges were used. Inpainting was done on both the plaster decoration and the tiles where necessary to even out the appearance. The gilding could be cleaned using water and Vulpex, because a layer of shellac on the gold protected the original material. There was over a mile of gilding to clean.

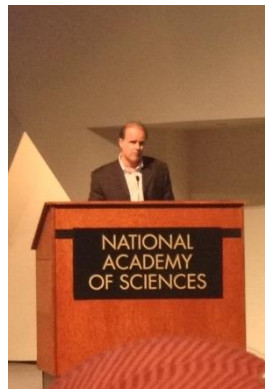
Broken plaster was stabilized using Rhoplex; areas that were too badly damaged were removed. Reproductions of the lost design areas were hand-applied using the original method: a squeeze bag of plaster and wooden guides. Ribbon gold leaf was applied using slow oil size. To integrate the bright new gilding with the aged gilding, used swabs from the cleaning process were re-used to add some historic soil and dampen the sheen.

Conservation of A. Herter Wall Paintings

David Olin, Chief of Conservation at [Olin Conservation, Inc.](http://www.olinconservation.com)

The paintings of focus were *Prometheus* (see far right image) and *Founders of the Academy* (Lincoln and his cabinet) by Albert Herter (1851-1950).

Founders had been painted on canvas and adhered to a plaster wall (marouflage). It had lost a lot of its visual detail due to soiling, multiple layers of varnish, discolored overpaint, solvent abrasion, stress cracking, and an overall uneven surface. The painting was faced with tissue to keep the surface stable, and then it was removed from the



David Olin at the podium. (Photo courtesy of Greta Glaser.)



Albert Herter's Prometheus in the Great Hall after treatment.

walls. The 1920s paste adhesive was removed from the back, revealing a manufacturer's stamp. Microcrystalline wax was applied to the back of the canvas. Previous surface treatments were removed from the front, and then the painting was inpainted and freshly varnished.

Prometheus had been painted onto a stretched canvas that was attached to the wall. The painting already had a wax lining which was in good condition. Removal of the painting from the wall was the trickiest part, considering the size of the painting and the height of the installation. There were some stress cracks from uneven tension, and a tear had been repaired previously. The treatment included the use of mild hydrocarbons to remove varnish and interlayered grime, with careful avoidance of the gilding in the painting.

Other decorative wall paintings throughout the building were also treated. In the Members' Room, where *Founders* is located, there are several marouflaged figurative paintings representing Centers of Learning, as well as decorative painted elements around the walls of the room. These showed damage from water, poor restoration practices, and age. The surfaces were cleaned, overpaint was removed, and inpainting was done to restore the integrity of the imagery.