

Preserving the Sheen of Winterthur's Silver



Softly reflecting candlelight in the museum rooms and shining from exhibit cases in the Galleries, Winterthur's storied silver collection is always a memorable experience for visitors. With approximately 2,900 pieces on view and 9,000 objects, primarily spoons, composing a reference collection of American silversmiths' marks, it is also an important resource for scholars and collectors. Highlights of the collection include the only known set of six matching Paul Revere tankards, the first coins minted in Boston, the largest extant collection of British fused plate lighting devices, and the Campbell's collection of British, European and American soup tureens. This collection deserves and gets the best collection care possible.



Winterthur has been in the forefront of preventive conservation for silver since the 1980's when it began an innovative coating program. Museum rooms feature the silver collection in domestic settings without cases, leaving these objects highly vulnerable to tarnish. Repeated polishing to maintain the collection in display condition is inherently damaging because each polishing removes a small amount of silver. Over time it softens the crisp appearance of cast and applied ornament, blurs engraved design and reduces the silver layer on fuse and electro-plated objects revealing the metal below. Lacquering coats the surface of silver, protecting it from the corrosive gases in the environment, such as sulfur dioxide, that cause it to tarnish.



1972.0306.001 before treatment



1957.1420 before treatment

After much testing at the onset of the lacquering program in the 1980's, Agateen Lacquer #27, a cellulose nitrate polymer, was chosen. It provides the best results visually – it is often difficult to tell if a piece is lacquered without close examination – and is compatible with the polished silver surface resulting in a durable bond. It provides the best balance of minimal visual intrusion, stability and tarnish protection. No other coating tested has been able to produce comparable results. Like all cellulose nitrate, however, it has a limited life expectancy; in the Winterthur environment it is somewhere between 20 and 30 years. After this time period, a haze of tarnish often appears below the coating and areas of wear develop thick, localized tarnish.

The Conservation Department identified renewing the coating on Winterthur's most vulnerable silver objects as its highest priority and received a two-year grant in 2010 from the Institute for Library and Museum Services to help fund the project. Three Conservation Assistants, William Donnelly, Maggie Bearden and Kaitlin Andrews work under the supervision of Objects Conservator Bruno Pouliot and Objects Curator Ann Wagner. Treatments are carefully scheduled to reduce disruptions caused by removing objects from exhibit.



Conservation Assistant William Donnelly with Senior Objects Conservator Bruno Pouliot



Silver Project Conservation Assistants Kaitlin Andrews and Maggie Bearden with Associate Objects Curator Ann Wagner



Conservation Photographer Jim Schneck

After art handlers deliver selected objects to the metals conservation lab, staff begins the documentation process, carefully photographing each object and recording its condition in the collection database. To protect the silver surface from corrosion caused by fingerprints, gloves are a constant necessity.



Steam removes the old coating in most cases, but solvents must be used to dissolve the coating when sensitive materials such as wooden handles are present.



Once the silver surface is free of its coating, tarnish removal begins. Each piece is polished with an aqueous slurry of precipitated calcium carbonate, a soft abrasive with micron size particles. It minimizes the amount of silver lost to polishing and prevents scratching, but a single teapot may take several hours to polish, depending upon the amount of tarnish that is present. Once the surface is completely clean, it is rinsed, dried with compressed air, degreased with a solvent, and given a final buffing with a Selvyt cloth. The surface must be absolutely clean or the coating will not adhere properly.

Two coats of Agateen are brush or spray applied. This is the most difficult part of the procedure, requiring skill and practice to achieve an even, continuous coating. Any flaws or gaps identified when the dried coating is inspected mean the object may need to be re-cleaned and coated. Typically the objects are then left in a cabinet for 2-3 weeks to allow the coating to fully dry, and to ensure that there are no flaws in the coating.



Once final documentation and photography are complete, the object can be returned to exhibit.

Art Handler Kathan Lynch works with Ann Wagner



Dr. Jennifer Mass positions silver for analysis

In an effort to better understand how silver tarnishes as the lacquer coating ages, tiny samples of aged coating and areas of specific tarnish on some objects are being analyzed in Winterthur's Scientific Research and Analysis Laboratory (SRAL). With X-ray fluorescence spectroscopy and Raman spectroscopy, Scientist Dr. Jennifer Mass examines silver pieces to better understand the tarnish layers and how they developed in relation to the aged coating. The results will help

ensure that there is no chemical interaction between an aged coating and the silver, and may help indicate whether or not the coating should be replaced at more frequent intervals.