Art Conservation *and new technology*

Securely cushioned in an archival box in a lab in the research building at Winterthur, the dun-colored, horseshoe-shaped object hardly calls to mind a life of adventure on the high seas. Yet the object, a spectacle plate once part of the rudder assembly of an 18th-century war ship, has taken part in many nautical exploits. Even resting today on dry land, the object's existence is far from mundane. Indeed, its recent laser cleaning by second-year Winterthur/University of Delaware Program in Art Conservation (WUDPAC) Fellow Bartosz Dajnowski is believed to be the first ever use in this country of laser technology to remove concretion from an underwater archaeological bronze.

The spectacle plate, also called a gudgeon, belonged to the H.M.S. DeBraak. A single-masted cutter that originally sailed under the Dutch flag, the DeBraak was captured by the British, who added a mast and new cannons before returning it service as a Royal Navy sloop of war in 1796. Two years later, while escorting a convoy of British and American merchant ships, the DeBraak capsized in a sudden gust of wind and sank in the Delaware Bay. Raised in the 1980s, the DeBraak is uniquely important because it is the only known Royal Navy sloop of war from this time period ever recovered.

Lasers are not widely used in art conservation in this country. Nor are they always the appropriate choice for conservation treatments. In this case, however, not only was the concretion-covered spectacle plate a good candidate for laser cleaning, but Bartosz had already gained experience with the technology while working at his family's private conservation firm, CSOS, Inc., before coming to WUDPAC. The firm loaned two El.En Italian-made lasers for the project.

By using a handheld laser and controlling for the various parameters of the laser beam, Bartosz was able to precisely remove the many layers of calcium-based deposits and corrosion that had built up and discolored the object over the almost 200 years it lay at the bottom of the Delaware Bay. He also was able to see the results immediately and adjust, when necessary, to ensure that he touched nothing below the concretions. Although he returned the plate to its patina level, he left a small window showing the multi-hued concretion layers that were removed.

Bartosz will next treat the spectacle plate with a copper corrosive inhibitor, followed by a pigmented wax coating, to protect it from further corrosion. It will then be returned to its owner, the state of Delaware.

ARTC Spotlight—January 2012

The University of Delaware Art Conservation Department educates and trains professional conservators who are well versed in the treatment, analysis, documentation, and preventive conservation of individual artifacts and entire collections. Our students are powerful public spokespersons for cultural heritage and its preservation. For more news about our students and other department activities, visit us at http://www.artcons.udel.edu

Top: Second-year WUDPAC Fellow Bartosz Dajnowski using laser ablation to remove concretion layers from a spectacle plate from the H.M.S. Debraak. Inset: The laser removes very thin layers, one at a time. The bright spot is plasma from a single laser impulse. The dark residue trail behind the beam is gently brushed away to reveal the next layer. Above: Detail from the spectacle plate covered in concretion and corrosion before treatment.