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THE STUDY OF BOXWOOD PRAYER BEADS AND MINIATURE ALTARS FROM THE THOMSON COLLECTION AT THE ART GALLERY OF ONTARIO AND THE METROPOLITAN MUSEUM OF ART

LISA ELLIS AND PETE DANDRIDGE

The Thomson Collection of European Art at the Art Gallery of Ontario (AGO) and the Metropolitan Museum of Art (MMA) jointly hold an impressive number of early 16th century miniature boxwood carvings known as prayer beads and miniature altars. These intricate objects have fascinated collectors and now museum visitors with their diminutive scale, intricacy, and somewhat mysterious methods of construction.

A technical research project exploring these objects is under way at the AGO and MMA: findings will be shared in an exhibition at the AGO, the MMA, and the Rijksmuseum. The study of carving techniques and strategies of joining tiny, interlocking pieces will help group the objects into clusters of makers and/or workshops, and perhaps even determine a chronology of manufacture.

Conservators and curators at the AGO and MMA have profited from different institutional collection strategies and staff expertise for the benefit of the project. The AGO's investigation relies on high-resolution x-ray tomography, called *micro-computed tomography* (micro-CT), a noninvasive tool that reveals the carvings' internal structures and features. Imaging software allows three-dimensional virtual models to be created from the high-resolution x-ray scans, which can then be examined and manipulated in a so-called virtual deconstruction. With the information provided by the micro-CT scans of their objects, the MMA took the additional step of deconstructing their boxwood objects to the extent possible. With greater access to their interiors, specifics of tooling and fabrication could be documented microscopically, intrusive restorations reduced, broken elements readhered, and accumulated dirt and insect casings reduced.

The AGO has also embarked on an ambitious program to photograph the entire opus of prayer beads and miniature altars found internationally (about 130 objects) using high-resolution, focus stacking software. This will allow the comparison of objects and examination of detail impossible to date with the constraints of traditional photography, which was only able to produce hazy images of these tiny works.

To more thoroughly understand original manufacture and subsequent repairs and restorations, minute samples of the AGO works' adhesives, coatings, and polychromy are being analyzed at the Canadian Conservation Institute with Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy–energy dispersive spectrometry (SEM-EDS), and pyrolysis–gas chromatography–mass spectrometry (Py-GC-MS), as well as a Bruker Senterra dispersive Raman microscope. Similar analytical work is being undertaken at the MMA.

The employment of new technologies such as micro-CT scanning and focus stacking software, along with the analytical work carried out at CCI and MMA, is providing previously inconceivable access to the prayer beads and miniature altars. The resulting data, including high-quality images and previously hidden construction details, will allow conservators to posit credible theories about makers and chronologies of manufacture. The collaboration between institutions is yielding greater results than would otherwise be possible: there is access to a greater number of works for research purposes, as well as the benefit of a collegial environment in which to share findings and deliberate their meaning.

These artifacts and findings about them will be presented in an exhibition entitled *Small Wonders: Gothic Boxwood Miniatures* opening in Toronto on November 5, 2016. Featuring more than 60 rare boxwood carvings from institutions and private collections across Europe and North America, following

its debut at the AGO, the exhibition will open at the Met Cloisters at the MMA on February 21, 2017, before traveling to the Rijksmuseum on June 15, 2017.

The study's results will be published in two publications available late in November 2016: a guide to boxwood miniature carving and an exhibition catalog entitled *Small Wonders: Late-Gothic Boxwood Micro-carvings from the Low Countries*.

FURTHER READING

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LISA ELLIS has been the Conservator of Sculpture and Decorative Arts at the AGO since 2007, where she is responsible for the AGO's permanent collection of sculpture and decorative arts, as well as the objects in the renowned Thomson Collection of European Art, and the sculpture in the Henry Moore Collection, the largest public collection of the artist's works in the world. She is presently the technical lead on an upcoming exhibition about boxwood carvings from the Thomson Collection at the AGO. She has master's degrees in Art Conservation from Queen's University, Kingston, Canada (1998) and in Art History from the University of Toronto (2000). She has published conservation articles in *Studies in Conservation*, *JAIC*, *Material Research Society Symposium Proceedings*, and *ICOM Proceedings*. E-mail: lisa_ellis@ago.net

PETE DANDRIDGE, Conservator and Administrator, came to the MMA in 1979 after receiving his MA in Conservation and Certificate of Advanced Study from the Cooperstown Graduate Program in the Conservation of Historic and Artistic Works of Art. Since 1984, he has had primary responsibility for the conservation of the ivories, enamels, and metalwork in the collection of the Department of Medieval Art and The Cloisters. His published work and lectures have focused principally on elucidating the technical history of these same materials and the capacities of the artists manipulating them.