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AiA Art News-service

TRIANGLE BUSINESS JOURNAL

How a Duke University technology solved a decades-old irritation for art conservators

Sep 8, 2015, 9:16am EDT Updated Sep 8, 2015, 10:28am EDT



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A software program developed at [Duke University](#) could change the way art conservators look at paintings – literally. And that could lead to new discoveries in pieces already hanging in art galleries across the globe, including the [North Carolina Museum of Art](#) (NCMA) in Raleigh.

[Noelle Ocon](#), conservator of paintings at NCMA, describes the problem.



Duke University's Rujie Yin explaining her technique at the North Carolina Museum of Art.

She uses X-ray radiography to get clues as to the condition and manufacturing process of a painting. It's a technique that has revealed surprises in the past – such as a head that's been painted out.

But, in old wooden panels, there's a big view obstruction. Dubbed "cradling," it's a wood lattice conservators use to attach to the back of an old painting to prevent warping on the wood. It's an art preservation technique used in the '40s, and one that causes a big technical quandary to conservators today.

"We would never do this today," Ocon says.

But, as the wood was often filed down to make way for the lattice, there's no way to remove the cradling without risking serious damage to priceless pieces.

That's where Duke University came in. Rujie Yin, a research assistant in Duke University's mathematics department, was looking at a 14th century altarpiece by Franciscuccio Ghissi when the obstructing bars appeared on the X-ray.

"So we decided to remove the cradle digitally," she says.

For Yin, it was just a solution to a small speed bump in a bigger project. Her goal was to use software to match panels from the same collection – panels that had weathered the centuries differently in separate museums. The end result was supposed to be an art exhibit. But it soon became apparent that she'd stumbled on a fix for an issue that had been a decades-long irritant to the art restoration community.

"I just had no idea," she says. "But it became clear that it was a big problem."

The solution: a software plug-in that works in Photoshop. It was the result of a months-long collaboration between conservators and mathematicians, and is already attracting attention from the likes of Spain and Belgium. The project, funded by the Samuel H. Kress Foundation, has been dubbed the Platypus program and is just the latest technology collaboration out of NCMA and Duke, which has also partnered in laser imaging technology. The goal is to make the technology available, free of charge, to institutions and museums across the globe so that conservators can better

understand the wooden paintings on the walls of galleries everywhere. After all, centuries-old pieces such as the wood panels at NCMA may have seen multiple restoration attempts over the years, Ocon says.