



Winterthur/University of Delaware Program in Art Conservation

Conservation Treatment Report

Owner: Winterthur Museum, Garden & Library

Accession #: 2016.0019.003

Object: Figure group (Neighboring Pews)

Artist/Maker: John Rogers (1829-1904)

Object Date: 1884

Materials: plaster, ferrous alloy armature zinc and lithopone paint¹,

Dimensions: 40 L x 30 W x 48 H centimeters (15.75 L x 11.8 W x 18.9 H inches)

Distinguishing Marks:

Carved into base of sculpture, beneath front pew: JOGN ROGERS / NEW YORK / 1883

Carved into base of sculpture, front facing edge: NEIGHBORING PEWS

Carved into back of sculpture, second pew: PATENTED JAN. 29 / 1884

Reason for Examination: 1st year documentation project, 2nd year objects majors group treatment project

Initial Documentation and Report: Abigail Rodriguez (2020)

Consulted:

Lauren Fair, Objects Conservator and Affiliated Assistant Professor, Winterthur/University of Delaware Program in Art Conservation; Johanna Bernstein, Material Scientist, Rutgers University; Stephanie Delamaire, Associate Curator of Fine Arts, Winterthur Museum

Report Date: December 3, 2021

*This project was initiated by Abigail Rodriguez as a first-year documentation project in Spring 2020. It carried into Fall 2020 as a group project for second-year objects majors: Rodriguez, Allison Kelley and Nylah Byrd, who began treatment with documentation, solubility testing and surface cleaning. This treatment was continued in Fall 2021 by second-year objects majors Meghan Abercrombie (MA), Olav Bjornerud (OB), Elle Friedberg (EF), Alyssa Rina (AR), and Katie Shulman (KS), who focused on consolidation and additional surface cleaning.



Front face of sculpture, before treatment

¹ The paint was characterized by Jennifer Mass, a scientist in the Science Research and Analysis Laboratory at Winterthur, in January 2016 using Scanning Electron Microscopy and Fourier Transform Infrared Spectroscopy (see email correspondence in object file).

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Treatment Steps

During Treatment Documentation (OB/EF/AR/KS- 1.5 hours)

1. Completed examination and documentation, post-cleaning/pre-consolidation.

Consolidation (MA- 3.75 hours, OB- 12.25 hours, EF- 6.75 hours, AR- 6 hours, KS- 10.5 hours)

2. Areas of flaking paint were consolidated with 15% Paraloid B-72² in acetone delivered to the surface using a fine brush.³
 - Areas of excess adhesive were cleaned by carefully swabbing with acetone.
3. After the acetone fully evaporated, heat was applied using either a tacking iron⁴ with a color temperature indicator strip,⁵ or a Leister® Labor S hot air tool⁶ to selectively reactivate the adhesive and relax paint flakes.
 - The tacking iron was applied to the surface through a barrier of silicone release Mylar⁷ at low heat.
 - The Leister® hot air tool was placed near the desired area and allowed to deliver directed hot air for several seconds to soften and relax flakes back into plane. Flakes were further manipulated using a silicone colour shaper tool.

Surface Cleaning (MA- 2 hours, AR- 1 hours, KS- 4 hours)

4. Following consolidation, surface cleaning was carried out locally in areas where cleaning could not be undertaken initially due to instability in the paint layers.
 - Occasionally, consolidation and cleaning were undertaken in tandem.
5. Consolidated areas were cleaned by swabbing with a 1% solution of citric acid prepared in pH 8.5 adjusted water.⁸ The cleaning solution was cleared with pH 8.5 adjusted water.

After Treatment Documentation

6. Completed after treatment photography (MA/OB/EF/AR/KS – 1.5 hours)
7. Completed after treatment documentation with photographs and written descriptions (KS – 2 hours)

Total Treatment Hours: 51.25 hours

² Clear colorless thermoplastic acrylic resin composed of an ethyl methacrylate (70%) and methyl acrylate (30%) copolymer. Previously manufactured by Rohm & Haas, now produced by The Dow Chemical Co. and available from conservation suppliers.

³ Though Rodriguez, Kelley and Byrd conducted testing and recommended using Paraloid B-72 in Shellsol A 100 at a low concentration (10-15% w/v) for consolidation, testing by Lauren Fair and second-year objects majors found that Paraloid B-72 in acetone was successful. This solution was preferable as it has good cohesive properties, did not darken the paint and used a less toxic solvent.

⁴ **Error! Hyperlink reference not valid.** Hot tacking tool (hot model) is a small, lightweight form of heated spatula. The hot model operates at 20 watts and reaches a maximum temperature of 500°F; used with the dial temperature control will allow control of the temperature from 150°F to 500°F. Available from Talas.

⁵ Reversible Liquid Crystal Temperature Labels are indicator strips with melting temperature-specific increments that can be used to determine precise temperatures of items that come into contact. The indicator colors for RLC-80-100/220 are: Green (at Temp), Dull Green (Slightly Below or Above Temp) and show a range from 100°F to 220°F. Available from Omega.

⁶ Model 7A1 handheld precision heat gun intended for welding plastic. The Labor S has a regulator for both the heat and air, allowing the user to control both settings.

⁷ Clear, inert polyester (biaxially oriented polyethylene terephthalate) film used as a barrier film in treatments and as an encapsulating material in storage; may also be treated with a silicone release coating to make it non-stick. Available from conservation suppliers.

⁸ pH adjusted water was prepared with glacial acetic acid and 10% ammonium hydroxide according to a protocol provided by Chris Stavroudis. The solution was buffered with a pH 8.5 solution of bicine 13 and sodium hydroxide.

Recommended Future Treatment Steps

As outlined in the initial treatment proposal by Abigail Rodriguez

Additional Surface Cleaning (estimated 3 hours)

1. Continue cleaning consolidated areas⁹, as needed, using a 1% solution of citric acid prepared in pH 8.5 adjusted water.¹⁰ Clear the cleaning solution with pH 8.5 adjusted water.

Corrosion Reduction (estimated 2-4 hours)

2. The corrosion on the exposed ferrous alloy armature should be first reduced mechanically using wooden tools, making sure not to expose the base metal
 - If necessary, the corrosion can be further treated using Cortec VpCI-426 (phosphoric acid with corrosion inhibitors)
3. A barrier layer of either an acrylic or wax coating should be applied after treatment

Stain Reduction (estimated 2-4 hours)

4. Cleaning tests should be performed using the modular cleaning program in order to identify an appropriate solution and chelator for the stains
 - The extent of the stain reduction should be discussed with the curator as the areas will be in-painted for aesthetic re-integration

Structural Stabilization (estimated 6-8 hours)

5. This step is dependent of the outcome of the x-radiography data as well as consultation with the curator thereafter
 - The treatment of the shoulder could be either invasive or very minor ranging from complete removal of the arm to the filling of the small losses in situ and re-enforcement of the join with additional plaster

Loss Compensation (estimated 4-6 hours)

6. There are several ways in which to proceed with the larger areas of loss compensation
 - The losses could be hand built in place from reference images of other copies of the sculpture (this would be the most time-consuming option)
 - The losses could be cast from a mold made from another copy of the sculpture (this option is dependent on access to another copy)
 - The losses could be cast from a mold made using a 3D printed copy of the loss obtained by scanning another copy of the sculpture (this option is also dependent on access to another copy, but is far less invasive; this option is also dependent on the access to 3D scanning technology)
7. The materials for loss compensation could be explored with mock-ups, but using a modern gypsum plaster may be the best bet for the strength and versatility needed to fill the losses
 - If possible, using removable fills in the areas of exposed armature would allow for later access to the metal for both research and re-treatment purposes

Aesthetic Re-integration (estimated 8-10 hours)

8. After the losses have been filled, the extent of the in-painting will have to be discussed with the curator in order to produce a consistent surface overall
 - The materials available for inpainting a matte surface include Golden Fluid Acrylics with a matte medium, applied by brush or HVLP
 - Mock-ups of the fill material can be used to test possible in-painting materials and methods of application

⁹ Areas that may require further cleaning include: man's PL shoulder and upper back, man's PL hand and book, seated woman's hands, the base, and within interstices.

¹⁰ pH adjusted water was prepared with glacial acetic acid and 10% ammonium hydroxide according to a protocol provided by Chris Stavroudis. The solution was buffered with a pH 8.5 solution of bicine 13 and sodium hydroxide.

After Treatment Documentation (estimated 3 hours)

9. Complete after treatment evaluation and document with photographs

Submitted by: Meghan Abercrombie, Olav Bjornerud, Elle Friedberg,
Alyssa Rina, Katie Shulman

Report Date: 12/09/2020

Appendix: During Treatment Photography - Before Consolidation



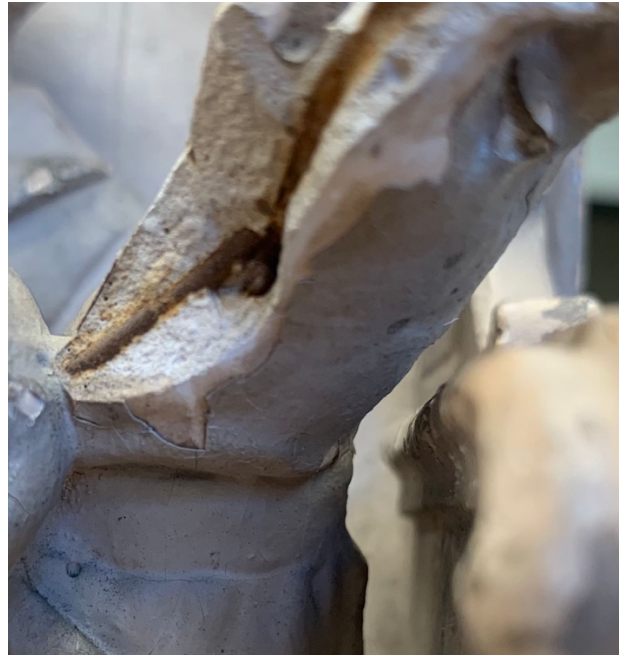
Appendix: During Treatment Photography - After Consolidation and Surface Cleaning



Appendix: During Treatment Photography - Details



Detail of hand before consolidation



Detail of hand after consolidation



Detail of woman's face before consolidation



Detail of woman's face after consolidation



Detail of woman's cheek before consolidation



Detail of woman's cheek after consolidation



Detail of woman's skirt before consolidation and cleaning



Detail of woman's skirt after consolidation and cleaning