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FLEXIBLE FILLS: A TECHNIQUE FOR IMITATING ASIAN LACQUER

ELLEN PROMISE, JESSICA CHLOROS, AND HOLLY SALMON

Compensating for loss on an Asian lacquer object is a challenging task. To achieve an unobtrusive fill, the gloss, color, decoration, and surface condition must be matched while accounting for surface sensitivity and considering reversibility. To create lacquer fills, conservators have used a wide variety of materials and techniques, ranging from Japanese paper to bulked adhesive to Urushi itself. Each method has advantages and disadvantages and must be targeted to the needs of the object and the treatment goals. This article outlines another approach, which the authors have employed successfully, utilizing fills cast from bulked acrylic emulsion paint.

Fluid acrylic emulsion paints are mixed to the appropriate color with added acrylic matte gel, creating a paste-like consistency. This mixture is spread on a sheet of silicone-release Mylar to a thickness approximating the depth of the loss being targeted. When the cast fill is dry, it is peeled off the Mylar, revealing a glossy surface. The fill can be refined, with some success, by sanding on the underside. A tracing of the loss is then made and placed over the cast acrylic film to cut out the fill with a sharp scalpel. The fill can then be adhered in place with a reversible adhesive.

This method can be used to match the color and gloss of a lacquer surface as well as the surface condition in cases where the lacquer has not taken on a craquelure pattern. Matching decorative elements requires additional experimentation. Some success has been achieved by reverse-painting the desired presentation surface on the Mylar for the first layer. Overall, this fill method was found to be effective and efficient and to present little risk to the lacquer object. With some customization, it could be employed for loss compensation on a variety of lacquer objects.

KEYWORDS: Lacquer, Loss compensation, Acrylic, Removable fill

1. INTRODUCTION

Conservators have explored many materials and preparation methods for imitating the aesthetic characteristics of Asian lacquer and creating a convincing fill. Some options have inherent disadvantages, such as the relatively poor aging and reversibility of epoxy, as well as the unsuitable surface gloss of resins like Paraloid B-72 (Webb 1998). Other options have been utilized successfully. Impressive results have been achieved using dyed acrylic emulsions, such as Acrysol WS-24, and building up the medium in layers (Webb 2000). This layered process can be time-consuming, however, and using materials that must be sanded down in situ always introduces the risk of damaging the surrounding Urushi. This is especially true when the loss is adjacent to a network of stabilized cracks and flakes. As an alternative, attempts have been made to cast sheets of resin, like polyester, to allow fills to be cut and finished independent from the object. In practice, pure polyester has proven too brittle for this purpose, and bulking the polyester with softening agents interferes with its tone and opacity (Webb 1998). More promising *ex situ* fills have been achieved using painted and glazed paper (Chao 2014), but a sizable gap in available options remains within this category of lacquer fills.

2. FILL PRODUCTION METHODOLOGY AND CASE STUDY

With this history of fill techniques in mind, I approached the treatment of a late 1800s' Japanese red lacquer box at the Isabella Stewart Gardner Museum (fig. 1). Before treatment there were several long cracks and networks of smaller cracks with lifting lacquer flakes adjacent to two losses on the box lid. Avoiding unnecessary manipulation of these areas was desirable. After some discussion with my co-authors, the idea of casting a fill was proposed, and a bulked acrylic paint was suggested as a medium. This would incorporate some of the desirable properties of acrylic emulsions into a cast, removable fill.



Fig. 1. Japanese red lacquer box, 1870, wood and lacquer, $15.2 \times 49.5 \times 31.8$ cm, Isabella Stewart Gardner Museum, M11w2 (Courtesy of the Isabella Stewart Gardner Museum)

In considering bulking agents, Golden Regular Gel (Matte) was selected. Initial tests showed that it produced a frosting-like consistency when mixed with acrylic paints, would take on the finish of the casting surface, and retained flexibility when dry. Sheets were cast on silicone-release Mylar. I created low barriers using bamboo skewers and wooden tongue depressors to allow a more uniform spreading of the paint mixture and to help control film thickness (fig. 2).



Fig. 2. Presentation surface of cast bulked acrylic film (Courtesy of Ellen Promise)

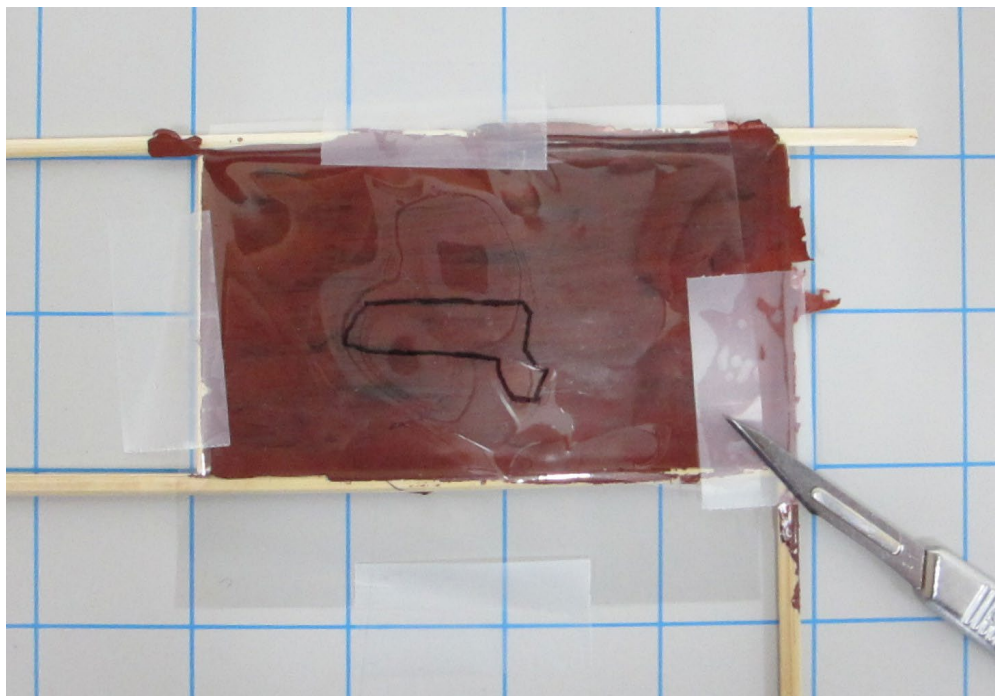


Fig. 3. Tracing of loss ready for cutout (Courtesy of Ellen Promise)

When dry, the cast film could be lifted easily from the silicone-release Mylar. I created a tracing of the loss using a fine-tipped marker on a thin sheet of Mylar. Securing the tracing to the cast film, I was able to cut out the fill shape using a sharp scalpel (fig. 3). The fill could then be modified on the underside by shaving with a scalpel or lightly sanding the surface where it was too thick or by adding drops of acrylic paint where it was too thin. When the fill is prepared, it can be secured in place on the object using a reversible adhesive, such as cold fish glue or Paraloid B-72.

The matte gloss of silicone-release Mylar taken on by the cast fill proved to be an ideal match for the semi-gloss surface of aged, somewhat degraded Asian lacquer. To match the lacquer surrounding the losses, however, surface irregularities and fine sprinkled gold *nashiji* designs also required imitation. This required some experimentation. I found that it was possible, although difficult, to approach the initial casting step like reverse-painting on glass, using a thin wash of a darker acrylic before spreading the bulked mixture to emulate streaks in the lacquer, for example. This is a promising method, as it does not add any dimension or change the gloss of the presentation surface, but it may not be practical when reproducing parts of complex design details.

3. REPLICATION OF SURFACE DECORATION AND CASE STUDY

As a fellow at Historic New England, I worked on a second Asian lacquer object, a Chinese export sewing table dating to the 1840s (Crossman 1991) (fig. 4). Before treatment, the table was in poor condition, with many lifting flakes of lacquer and large losses. The condition issues made this object another good candidate for the flexible fill technique.

Having settled on painting the lost gold designs on the red lacquer box with metallic acrylic paints and mica pigment powders, I was eager to explore alternatives in my treatment of the sewing table.



Fig 4. Chinese export sewing table, 1840, wood, lacquer, metal, and silk, $28\frac{3}{8} \times 24\frac{3}{4} \times 17\frac{5}{8}$ in., Historic New England, 1964.10 (Courtesy of Historic New England)

For the red box, acrylics were chosen as the best option in light of time constraints, but it proved difficult to replicate designs without adding visible dimension to the surface. I also found that the metallic particles in mica powders and the acrylic paints were much larger and less evenly dispersed in comparison with the original gold designs, making the color and gloss match less convincing from some angles. I did have success using a fine-tipped black marker to introduce veining on a leaf element on one of the fills and wanted to pursue the idea of using markers further (fig. 5).

I decided to compare 11 different metallic media options on the basis of eight characteristics: adhesion to acrylic, opacity, ease of use, granularity of metallic particles, line fineness, line crispness, and color and gloss match for my application. The results, ranked on a basic scale building from poor to fair



Fig 5. Detail of fill in area of leaf design on red lacquer box, M11w2 (Courtesy of the Isabella Stewart Gardner Museum)

to good to very good, are recorded in table 1. The tested media included five commercial markers, four paint mixtures applied by brush, and two attempts at dusting metallic particles over an adhesive or sizing agent. Not recorded is an attempt I made to use a Rapidograph, a fillable, fine-nibbed pen—various metallic media all proved to be too viscous for use in the pen.

Several of the commercial markers were highly satisfactory tools, but the color and gloss match excluded them from consideration for my purposes. Tools with a poor or fair color match, six in total, were ruled out first. Two water-based options were also ruled out because, as expected, their adhesion to

Table 1. Metallic Media Comparison

	Adhesion	Opacity	Ease of Use	Granularity	Line Fineness	Line Crispness	Color Match
Faber-Castell ink pen	Very good	Very good	Very good	Very good	Poor	Very good	Poor
Pentouch marker	Very good	Very good	Very good	Very good	Good	Very good	Fair
DecoColor Opaque paint marker	Good	Fair	Good	Good	Poor	Fair	Very good
Gelly Roll Metallic	Fair	Fair	Very good	Fair	Fair	Fair	Poor
Pentel metallic brush	Very good	Very good	Very good	Very good	Fair	Fair	Poor
Kremer metallic watercolors	Poor	Poor	Fair	Poor	Very good	Fair	Very good
Acrylic mixed with mica	Very good	Good	Fair	Fair	Fair	Fair	Fair
Laropal A 81 mixed with mica	Very good	Good	Good	Fair	Fair	Fair	Fair
Aquazol 500 mixed with mica	Poor	Poor	Poor	Poor	Poor	Poor	Very good
Rolco dusted with shell gold	Very good	Poor	Poor	Poor	Poor	Poor	Very good
Laropal A 81 mixed with shell gold	Very good	Good	Good	Good	Very good	Very good	Very good



Fig. 6. Detail of fills on the crossbar of sewing table, 1964.10 (Courtesy of Historic New England)

acrylic was poor. The remaining dusting method was eliminated because it produced a poor gloss match and most of the other working properties were also poor. This left two acceptable options: a xylene-based paint marker and the mixture of Laropal adhesive with shell gold. I chose the paint marker for its nearly ideal color and gloss match, thin texture, and ability to be used in marker form, for larger fill areas, or released into a palette well and diluted with xylene for brush application when fine lines were necessary (fig. 6). All work with this medium was carried out under a fume extractor.

4. CONCLUSION

The diversity of forms, condition issues, and corresponding treatment needs when considering Asian lacquer objects suggests that one uniform approach to loss compensation is unlikely to be effective in all cases. Cast acrylic fills can boast a quick and simple preparation process, a strong gloss match with slightly degraded lacquer surfaces, and easy reversibility. On the other hand, the seam between the fill and the original material will always be visible, even if a nearly perfect cutout is achieved. The seam can be minimized to some extent by filling with the bulked acrylic paint in liquid form, but this negates some of the desirable properties of this technique as an *ex situ* fill. It can also be difficult to control the film thickness when casting to obtain a flush surface with the original lacquer. For these reasons, the technique is probably best suited to filling areas of loss on aged lacquer surfaces with other visible cracks and irregularities that allow the fill to blend.

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- 2000. *Lacquer: Technology and conservation: A comprehensive guide to the conservation of Asian and European lacquer*. Oxford: Butterworth-Heinemann.

SOURCES OF MATERIALS

Aquazol 500

Polymer Chemistry Innovations Inc.
4231 S. Fremont Ave.
Tucson, AZ 85714
520-746-8446
<http://www.polychemistry.com/>

DecoColor Paint Marker

Uchida of America Corp.
3535 Del Amo Blvd.
Torrance, CA 90503
800-541-5877
<http://www.uchida.com>

Golden Fluid Acrylics, Golden Regular Gel (Matte)
Golden Artist Colors Inc.

188 Bell Rd.
New Berlin, NY 13411-9527 USA
800-959-6543
<http://www.goldenpaints.com/>

High Tack Fish Glue
Lee Valley Tools Ltd.
PO Box 1780
Ogdensburg, NY 13669
800-871-8158
<http://www.leevalley.com/us/>

Kremer Metallic Watercolors
Kremer Pigments Inc.
247 W. 29th St.
New York, NY 10001
800-995-5501
<http://kremerpigments.com/>

Laropal A 81, Paraloid B-72
Conservation Resources International LLC
5532 Port Royal Rd.
Springfield, VA 22151
800-634-6932
<http://www.conservationresources.com/>

Metallic PIT Artist Pen GOLD
Faber-Castell USA Inc.
9450 Allen Dr., Suite B
Cleveland, OH 44125
216-643-4660
<http://www.fabercastell.com/>

Mica Powders and Mylar
Conservation Support Systems
PO Box 91746
Santa Barbara, CA 93190
800-482-6299
<http://www.conservationsupportsystems.com/main>

Pentel Metallic Brush Pen
Pentel of America Ltd.
2715 Columbia St.
Torrance, CA 90503
760-200-0547
<http://www.pentel.com/>

Pentouch Paint Marker and Gelly Roll Metallic

Sakura of America
30780 San Clemente St.
Hayward, CA 94544
<http://sakuraofamerica.com/>

Rolco Quick Dry Gilding Size

Rolco Labs
655 Washington Ave.
Carlstadt, NJ 07072
866-271-5367
<http://www.rolcolabs.com/>

Sepp Gold Leaf

Sepp Leaf Products Inc.
381 Park Ave. South
New York, NY 10016
800-971-SEPP
<http://www.seppleaf.com/>

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HOLLY SALMON has been a Conservator at the Isabella Stewart Gardner Museum for more than 10 years and currently heads the Objects Conservation Lab. Holly received her MS in art conservation from the Winterthur/University of Delaware Program in Art Conservation in 2001. Her graduate internships included work at the Philadelphia Museum of Art; Harvard's Peabody Museum of Archaeology and Ethnology; and the National Conservation Centre in Liverpool, England, where she studied laser cleaning. After graduating, Holly received a Mellon Foundation Fellowship at Historic New England and an advanced-level fellowship from the Straus Center for Conservation at Harvard. She also received a Luce Scholars Program Fellowship to spend a year studying at the Kyoto Lacquer Restoration Institute.

