

# Stuck on You: Separating Oil-based Printing Ink from Acrylic Glazing

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Frances Opferman was a graduate intern at the Virginia Museum of Fine Arts during the summer of 2023, under the supervision of Samantha Sheesley.

*Untitled* (1983), by David Engel, is an etching and linocut on medium weight wove paper (see Figure 1). The abstract colorful shapes are the linocut, which are quite thick and textured, not unlike paint impasto. At some point in its life, the print was float-mounted in the center of a matboard and displayed behind acrylic glazing. However, there were no spacers or a window mat; the acrylic was in direct contact with the print and over time, the two became adhered together.

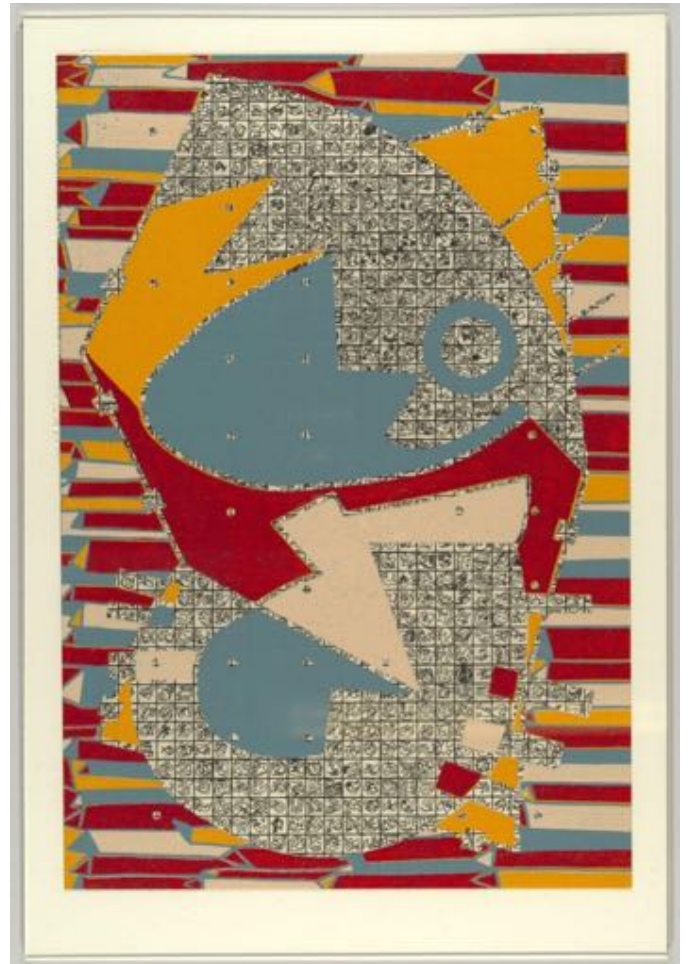


Figure 1: *Untitled*, 1983, David Engel, etching and multi-layer linocut on wove paper, 22x15 in. Virginia Museum of Fine Arts, 83.132.6. Normal light, before treatment.

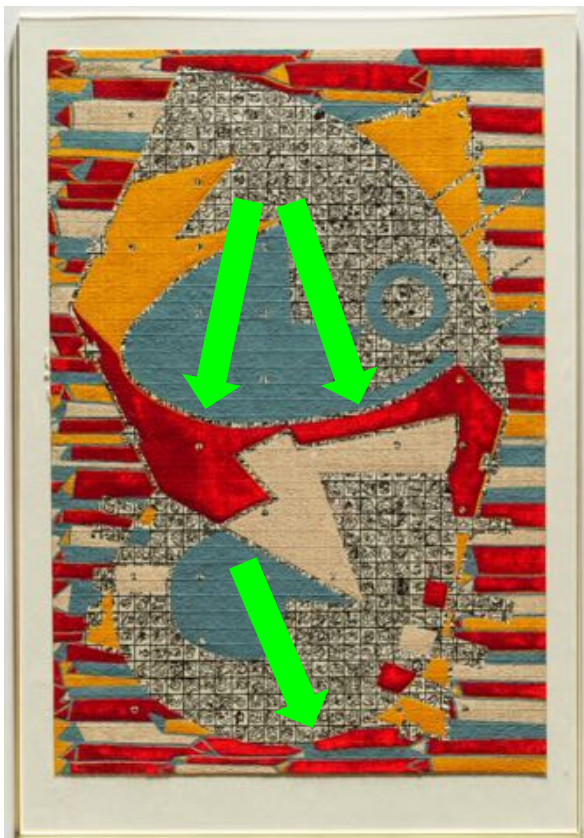


Figure 2: *Untitled*, raking light, before treatment. The green arrows point to some of the bright red areas of ink, which are stuck to the acrylic.

The bulk of the stuck areas were in the topmost ink layer, the red. This was especially evident in raking light, where the stuck places almost glowed a bright red (see Figure 2).

It was clear that regardless of how the print was removed from the acrylic, there would be some amount of disfigurement of the media, either from being stuck for so long or from whatever method used to detach them, or both. Despite this, the goal was to minimize the amount of ink loss as much as possible, while knowing that once the print was freed, any damage caused during the removal process would now be accessible to repair.

None of the current literature on objects stuck to glazing center on this specific set of circumstances, of *oil-based* media adhered to *acrylic*. To attempt to figure out the best way to separate my print from its acrylic, a practical treatment experiment was conducted that involved the creation of mockups and testing different removal techniques (see Figure 3).

**Stuck on You: An Experiment in Separating Oil-based Printing Ink from Acrylic Glazing**  
 Frances Opferman (Graduate Intern) and Samantha Sheesley (Senior Conservator and Head of Paper Conservation)  
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### Introduction

In its past, Untitled (1983) by David Egger was mounted for display without matting or spacers; the acrylic glazing was in direct contact with the colored ink layers, which became adhered to the acrylic. The stuck areas were particularly visible when Untitled was viewed under raking light (Figure 1). Most literature regarding adhesion to glazing focuses on photographs stuck to glass, and there is little to be found highlighting other circumstances. Thus, a practical treatment experiment was undertaken to determine how to effectively remove the acrylic glazing with minimal ink loss to the artwork.




Figure 1: Untitled (1983) by David Egger, showing ink and acrylic glazing on a white sheet. © 1983 by Virginia Museum of Fine Arts. All rights reserved. Photo by [Name].

### Experimental

A mechanical method was deemed safest because it eliminated the need for solvents. Solvents posed risks due to the inaccessibility of the media for spot testing and the possibility of microcrack formation in the acrylic.

Mockups were separated by gently twisting a microspatula inserted between the acrylic and ink layer, after exposure to different conditions. The most successful method was repeated several times and further refined by testing various tools.

<b>Humidification</b> Gore-Tex (30 mins)	<b>Cold</b> Ice (on acrylic) Freezing (commercial freezer, -4°F/-15.6°C)
<b>Heat</b> Mug warmer (on verso) Hair dryer (on acrylic)	<b>Freezing + microfilament</b> Freezing + blade

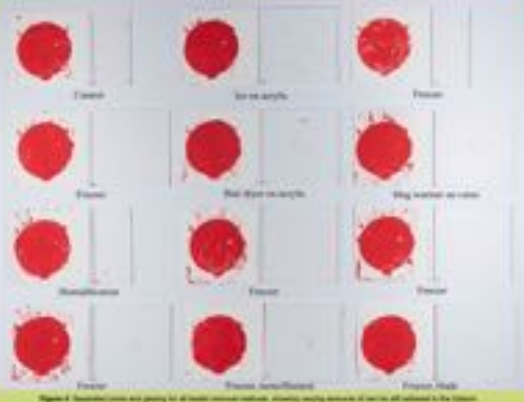


Figure 4: Mockup results showing ink on acrylic, heat, and freezing treatments.

### Results

- Fully freezing the mockups prior to removal attempts visibly minimized the amount of ink left on the acrylic after separation compared to other tested methods (Figure 4).
- Humidifying the mockups had no effect on the ink-acrylic adhesion and resulted in the ink and top layer of paper delaminating from the rest of the sheet.
  - This method was expected to be unsuccessful from the outset, as the oil-based printing ink was not anticipated to respond to humidification.
- Removal methods involving heat caused visible damage to the printing ink where it had been adhered to the acrylic (Figure 5).
  - Conversely, stuck areas separated after freezing retained the glossy smooth appearance caused by contact with the acrylic.




Figure 5: Mockup results showing ink on acrylic, heat, and freezing treatments.

### Mockup Creation

Mockups were made with characteristics as analogous to Untitled as possible to ensure the results of the removal tests would be transferable to Egger's eventual separation. The most important aspect to replicate was the uncoated acrylic glazing adhered to the high points of thickly-applied oil-based printing ink.

- Red oil-based block printing ink was spread with a palette knife on a cut linoleum block to achieve a thick and textured ink layer (Figure 2).
- Prints were made on medium-weight wove machine-made paper and left to partially dry overnight.
- Optium acrylic glazing was gently pressed onto the ink, which was left to dry under light weight for two weeks.
- Once dry, the adhered ink shone under raking light (Figure 3), indicating the mockups were comparable to Untitled.




Figure 2: Spreading ink on a linoleum block with a palette knife.




Figure 3: Mockup showing ink on acrylic glazing.

### Conclusion

- Freezing the mockups was the most effective separation method for this scenario.
- A blade offers useful tactile control for separating large well-adhered areas that will not be readily popped apart.
- Minimal ink was left attached to the glazing upon separation – remaining colored residue was more akin to a stain than a discrete loss.
- Applying heat to oil-based printing ink may have deleterious effects on the physical structure and appearance of the ink – more testing and research is required.
- The freezer + blade method was used to successfully release Untitled from its acrylic, followed by very minor loss filling and inpainting after separation.

Figure 3: Poster detailing mock-up creation and experimentation. The poster is also available for download on the AIC website: Events → AIC Annual Meeting → Past Meetings → 53<sup>rd</sup> Annual Meeting in Minneapolis (2025) → Posters.

TLDR: the best removal method tested was to fully freeze the stuck print mockups and use a microspatula with a gentle twisting motion to essentially pop the ink from the glazing. Repeated tests continued to have successful results.

A chest freezer was borrowed from the VMFA objects conservation lab, and the print was frozen at around 4°F (approx. -15°C) for 24 hours. Once it was fully frozen, the print was quickly removed from the chest freezer and the ink popped off the acrylic with the microspatula-twisting method.

While working, silicone release Mylar was inserted between the acrylic and the print in the newly separated areas to ensure they wouldn't get stuck again. After only a minute or two of separation, the paper and ink began to feel more thawed, and the popping became less successful. When this occurred, the print was put back in the freezer for at least an hour to refreeze, and then the process repeated. Separation was done almost entirely by feel, especially at first, since acrylic needed to be face-down during removal (see Figure 4).

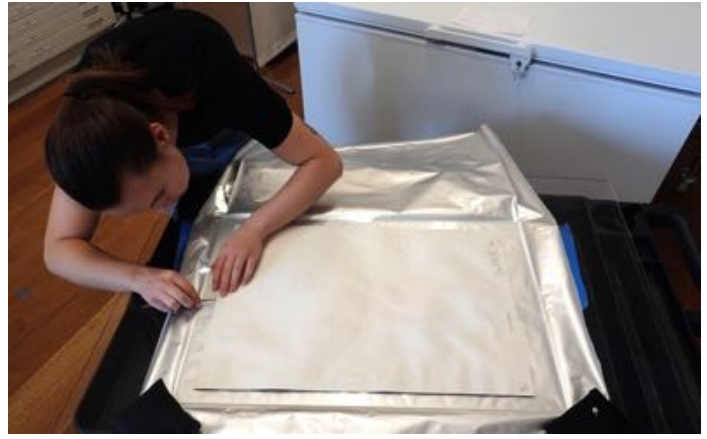


Figure 4: Popping the frozen ink from the acrylic with a microspatula.

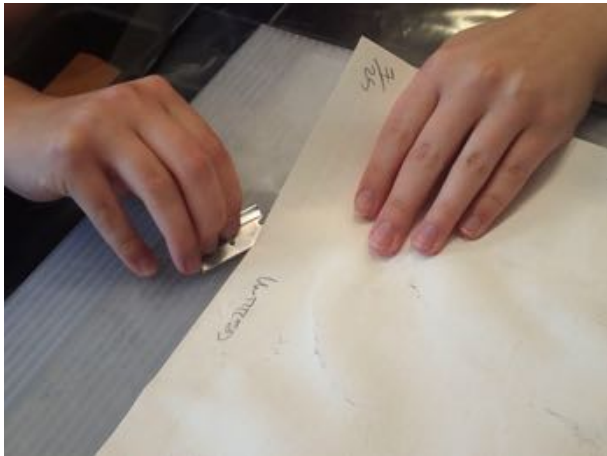


Figure 5: Using a blade to separate the print from the acrylic.

It was eventually found that though the small stuck areas popped off easily with a microspatula, the larger areas were more tenacious. They were more strongly adhered to the acrylic than the paper, and there was concern that trying to pop those areas up would fully delaminate the ink from the paper.

After some further experimentation with frozen mockups, it was found that very carefully sliding a blade between the acrylic and frozen printing ink would finish separating the print (see Figure 5). There was a very useful tactile difference when the blade was oriented more toward the acrylic versus the printing ink. This technique ensured that the blade was effectively splitting the two apart or scratching up the acrylic, which was not being retained, but *not* slicing into the printing ink.

After about three days of separation campaigns, the print was finally freed from its glazing. Once the print had fully thawed, its condition could be fully evaluated. It was in good condition, aside from a few small ink losses that had happened during the removal process, which were very straightforward to reattach or fill and inpaint. The minor amount of red still on the glazing after separation was more like a stain, and not substantial ink loss (see Figure 6). After treatment, there was virtually no indication that the print had ever been stuck to something (see Figure 7).



Figure 6: The acrylic after removal, raking light. Red stains are visible, as are scratches left by the blade, indicated by the green arrows.

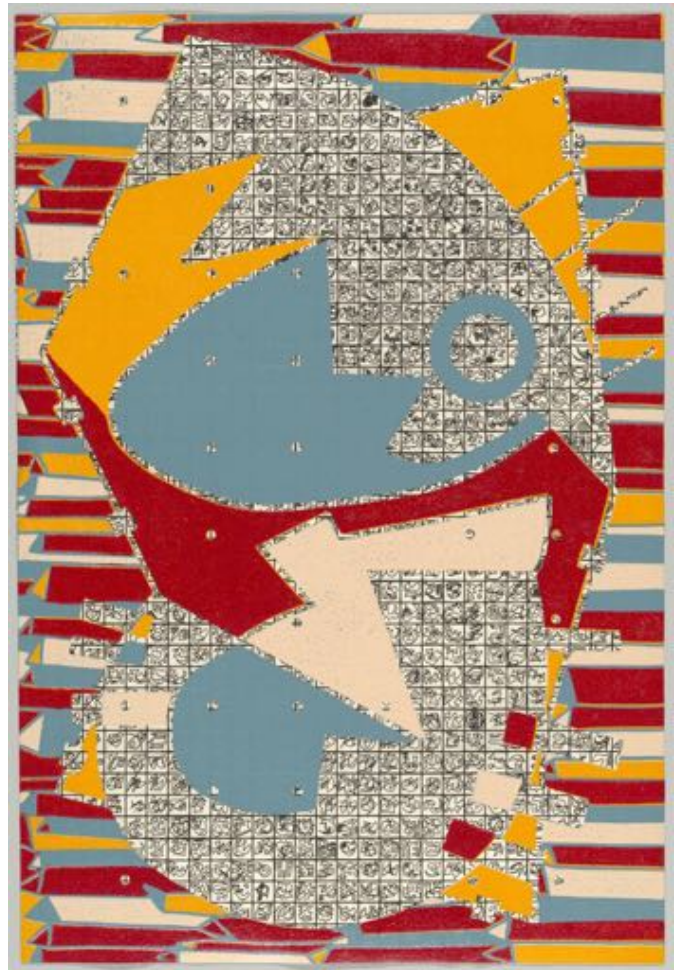


Figure 7: *Untitled*, normal light, after treatment.

To summarize, try playing with colder temperatures when dealing with adhesion issues, especially if they involve acrylic glazing and if the media can tolerate freezing. There are obviously other ways to introduce cold to an object; freezing the whole thing just worked best in this situation.

If you're tasked with freeing an inaccessible object, don't be afraid of doing something unconventional, even if there's slight risk to the object involved. That will just be one step in the treatment, and we all know that things often look worse before they look better. Don't forget that you have the skillset for any cosmetic repairs that might be needed.