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An Aqueous Alternative for the Removal of Varnish from 19th-Century Wall Maps

INTRODUCTION

This article describes a method for varnish removal that was demonstrated at the Varnished Wall Map Symposium held at the New York Public Library in September 2022.

To be perfectly clear, it is important that it is understood that the information presented in this essay regarding conservation treatment procedures and all observations and conclusions drawn from them are not based on objective scientific research and analysis. Rather, these are empirical observations from more than 40 years of experience with repeated successful results from about 1980 in my first studio in Torrington, Connecticut, until the closing of the Heugh-Edmondson Conservation Services studio in Kansas City, Missouri, in 2019. Furthermore, this essay can only be written in the first person because it is a personal account of how the removal of varnish from 19th-century maps was achieved without the use of solvents such as ethanol, isopropyl alcohol, or other polar solvents of that nature that would be effective on natural resin varnishes.

THE BACKSTORY

I was first introduced to the treatment of 19th-century wall maps during an apprenticeship at what was then the New England Document Conservation Center (NEDCC) in Andover, Massachusetts, in the mid-1970s. The process was straightforward, to use that term loosely, and started with some degree of dry surface cleaning to remove the worst of the soiling, followed by immersion in water baths to initiate cleaning of the paper component and set the stage for removing the cloth/linen backing. (As those who treat these items know, they are frequently badly shattered in one or more areas, and washing and the subsequent removal of the linen backing creates a logistical problem in keeping track of the fragments. Exactly how that aspect of map treatment is handled has as many approaches as there are conservators solving that problem.) A new cloth backing was prepared by prewashing and pasting a high-quality artist's canvas to a tabletop with wheat starch paste, and a layer of Japanese paper was applied overall. The old linen backing was removed, and the map was faced with polyester film, usually in its sections, and reassembled on the new backing. All/any loose fragments were repositioned as best as possible, and after a final smoothing brush-down, the map was left to dry, usually (but not always) by the next day. This procedure was started in the morning and completed by the end of the day. After the map was thoroughly dried, the varnish was manually removed with cotton swabs and ethanol. This is the point where my discontent with the process remained for many years because the manual removal of the varnish allowed enough to penetrate the paper and leave it as brown as the discolored varnish layer had been.

My first studio was on the second floor of a late 19th-century commercial building in downtown Torrington, Connecticut. It was at the back of the building and consisted of two good-sized rooms totaling more than 1100 square feet, with very high ceilings and a large skylight in the center of the deep front room that augmented the two 8-foot fluorescent fixtures fitted with UV filtering sleeves where I had my two sinks and an office area where I would meet clients when they came into the studio. At the back of the office/sink/wet area was a large opening into the second room that was nearly square and had two huge double-hung sash windows. The sinks were top-grade stainless steel and were manufactured by a local metal shop. It as requested that the largest sink be 6 ft. × 4 ft. × 6 in. and its companion to be half the length. (Due to the vagaries of metal fabrication, all measurements ended up being shy by fractions of inches.)

I opened the Torrington studio in the spring of 1978. By the early 1980s, I had already received several requests to undertake the treatment of varnished wall maps and had done so following the general NEDCC protocol described previously, with one exception. I chose to use unbleached cotton muslin as my new lining fabric instead of an artist's canvas for

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a few main reasons. First, muslin has a much tighter weave and is closer in appearance to the usually lightweight and finely woven linen found on these maps. The second reason was simply that the cost of good artists' canvas is comparatively high. A third reason was that the artists' canvas frequently imparted a weave texture into the newly remounted map, which required an interlining of Japanese paper, and which meant more work and more expense. I did not have any solvent fume extraction capability, so I would leave the studio for a couple of hours after manually removing the varnish with ethanol and cotton balls. The issue of driving dissolved varnish into the map continued, and there was a pattern of discoloration all over the light-colored muslin backing that matched any losses and/or breaks and cracks in the paper, which was very disfiguring to the verso. This left even the most successful treatments unsatisfactory.

A FORTUITOUS MISJUDGMENT

My private practice was six or seven years old and finally consistently paying for itself (and sometimes even for me), when a map of unusually promising appearance was brought to me for treatment. Even through the discolored varnish layer, it was obvious that the applied colors were still there, and the physical damages that were enough to require a new backing were not catastrophic in and of themselves. I was eager to see this piece at completion but was struggling to finish a project to clear the table surfaces that would be required to reline the map. Both sinks were available because the wet work on the other project had been completed, and it was only a matter of finessing the mending and aesthetics. I did the usual preparation work to prepare the map for washing, which included separating it at the horizontal seam so that it could be stacked in two halves in the large sink and washing the muslin that I kept rolled and in a plastic bag in my studio refrigerator. A modification to the NEDCC protocol that I had adopted was to make the water of the first few baths as hot as could be had from the tap and to add a few tablespoons of baking soda to the very first bath. This did seem to facilitate the washing and separation of the maps into the usual four sections and made completing a treatment in a day make more sense to me.

The preceding operative words in this scenario are "it was only a matter of finessing the mending and aesthetics" for the project I was trying to complete. As we all know, finessing mends and aesthetics easily becomes a rabbit hole that can be quite difficult to get out of. Redoing a fill or loosening a mend to get a better alignment of edges starts with just a few minutes to initiate but ends with hours to complete. In this situation, what I had anticipated to be a few hours of work became a marathon that dragged on for about a day and a half. In the meantime, the wall map was waiting in the only place where there was room for it: lying stacked in the large sink, immersed in water. To avoid the development of mold, it was necessary to change the water baths every hour or so during the day and leave the map in a fresh change of water before going home in the late evening—and thinking to myself all this time that maybe we would not tell anyone about this. Two days later than intended, I was finally able to move forward with the map treatment.

Throughout this prolonged immersion, I kept checking the condition of the paper. I was relieved that it was showing no sign of increased deterioration since the first wash, nor was there any evidence of microbial contamination; this last may be due to the very hot water and raised alkalinity of the initial bath. What did surprise me was that when I touched the surface of the map, the varnish layer, now very much blanched, disintegrated and floated off into the water. I used a soft-bristle brush and tested a couple of random areas and had the same result. With rising hopes, I turned back the screen carrying the top sections of the map to assess what was happening in the underlying sections. There was some similar degradation of the varnish, but not to the same degree. After taking an hour or so to evaluate the situation, I realized that even though the amount of immersion time in the baths was the same, the map sections on top of the stack had been exposed to the ambient light in the studio from the skylight and the fluorescent lights, whereas the underlying sections had not. I separated the two top sections at the seam and cut the linen backing, then transferred them to a fresh bath in the adjacent smaller sink to hold until the bottom half of the map had been exposed to light for one more day. That one more day proved sufficient to complete the breakdown of the varnish, and removing the varnish from all sections using a soft-bristle brush was completed. All four sections were gently rinsed with running water to get rid of the loosened varnish and placed in a final rinse bath prior to mounting on a new muslin lining. Even while still wet, it was obvious that the paper was quite bright and fresh looking, and all applied colors remained intact.

For the record, my lining technique is not significantly different from that of most of my colleagues except for the use of unbleached muslin and the absence of the inserted layer of paper between the map and the textile, which some might consider significant differences.

Before use, I always washed the muslin at home in warm water without a detergent and stored it damp in a plastic bag until it was time to paste it. I had a large (6 × 6 ft.) piece of eighth-inch Plexiglas that I built a frame for to make it easier to handle and to keep it flat as the map(s) dried. I always sanded the surface of the acrylic sheet with a medium grit wet or dry paper to provide tooth to allow the pasted muslin to stick during the drying phase. I applied a liberal amount of freshly cooked wheat starch paste using a Liebco 10-knot pure bristle brush (and if you do not have one of these, good luck getting one) until the muslin was uniformly coated and smooth with no air bubbles. Most of the maps I worked on were printed in four sections and mounted with half-inch overlapping seams

starting with the bottom right quadrant. I found that the easiest way for me to handle them was to transfer each section from its washing carrier face down onto 5-mil polyester film and transfer the map section to the desired location on the pasted muslin. The clear polyester film allowed me to properly align the succeeding sections until the lining was completed. A final brush-down was done through a Hollytex interleaf to remove air bubbles and set the contact with the muslin. The drying time ranged from 12 to 24 hours, depending on the environmental conditions. There are always finishing and/or finessing issues that must be dealt with, but the most rewarding result of this procedure was almost always a fresh and creamy paper tone that allowed the printed and colored details of the maps to have a strong and clear contrast.

CONCLUSIONS/OBSERVATIONS

It is important to remember that the procedure discussed previously is most valuable for the independent paper conservator working in a small studio with little or no means of effective and efficient solvent fume removal.

Although it cannot be denied that this aqueous treatment to remove a natural resin varnish from paper, a wall map, or otherwise is unorthodox, neither can it be denied that it works. Over the years, I have had to adjust my thinking and attitudes about certain tenets that are held regarding the conservation treatments of works on paper. Obviously, whatever is on the paper support also must be able to tolerate any aqueous procedure(s), so the only caveat that can be stated on this subject is that the degree of solubility of any applied colors usually cannot be determined until well into the treatment because the varnish acts as a fixative until it is gone, no matter the methodology for its removal. Therefore, document the locations and colors of any fields one does not want to see permanently removed and have this discussion with the owner/curator beforehand.

Until that forced prolonged immersion event, I had pursued aqueous treatments as needed, wanting to get the most improvement with the least risk. After completing the preceding and subsequent map treatments, I came to conclude that there are two general types of paper-based artifacts: those that can tolerate aqueous treatments and those that cannot. These are usually quickly distinguished (and once a piece of paper is saturated with water, it cannot get any wetter). The whys and wherefores of this are too complex and numerous for this document, but it does remind me of a theory a philosophy professor told me: that ultimately there will only be two kinds of squirrels, those that will successfully cross a road and those that will not even try.

In the early years of my career, one of the "understood" tenets of paper conservation was the incompatibility of paper and textiles, which I had no reason to doubt. At NEDCC, it was one of the main reasons for applying a layer of Japanese paper to the new canvas backing (along with preventing embossing the map with the weave texture of the canvas). As I treated more and more wall maps, I could not help but think that the broken condition of the maps did not have anything to do with being lined with a textile; rather, it was the result of how they were handled over the years. When such a lining takes place, the textile is saturated with water and starch paste and is as contracted as it can be, and the paper is saturated with water and therefore is as expanded as it can be. And that is how they dry. In my opinion. Which is based on well over 40 years of doing and observing—but most important of all, thinking about what I have been doing and observing.

A POSTSCRIPT

In early February 2024, Denise Stockman (NYPL-LSC) sent an e-mail to the participants of the Varnished Wall Maps Symposium describing the treatment of a varnished wall map using a house-made heat-set tissue (Sekishu paper coated with a 1:3 mixture of Lascaux 498HV and water) to face some areas of potential fragmentation and stabilize them during treatment. With Denise's permission, I mention this here because I believe that the procedure has great potential. Rather than paraphrase, I quote: "I applied a facing of heat-set tissue only in places that had small pieces that would detach when the fabric backing came off; then I washed it, lined, and removed the heat-set tissue. It just peeled off while the map was still wet." After pressing in a blotter stack, "I noticed that the varnish had been unevenly (but cleanly and without disturbing the media) removed in the places where the heat-set tissue had been" (Stockman, pers. comm.).

Perhaps instead of "unevenly," "selectively" might be more descriptive; nevertheless, the point I make is that it appears that the wet treatment phase broke the bond between the map paper and the varnish layer, and the thermal-activated adhesive retained its bond with the varnish, and it was lifted away. Nice! This procedure needs to be thoroughly and extensively explored, as it has the potential to drastically reduce the dependence on solvent removal of varnishes from maps and reduce the aqueous approach down to hours.

Trust me, the irony of this is not lost on me.

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