Extended Abstract—The Schlürfer: A Vacuum Technique for the Cleaning of Paintings

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INTRODUCTION

In the early 1990s, the Schlürfer (from the German schlürfen, to slurp) was developed for dirt removal from sensitive modern art paintings by the German conservator Winfried Heiber (Nicolaus, 1998), later professor at the Academy of Fine Arts in Dresden. It was initially used for unvarnished paintings, where the traditional mechanical methods of water-based cleaning (such as rolling, wiping, and swabbing with wet soft sponges, tissues, or cotton swabs) led to pigment loss, color changes, and microdeformations. In contrast, a water treatment with the Schlürfer was able to reduce the mechanical impact to the extent that no paint damage or negative effects could be observed.

EQUIPMENT DESCRIPTION

The Schlürfer equipment (see Figure 1) can be described as follows: a vacuum pump equipped with a regulator and gauge is connected to a gas-washing bottle (optionally fitted with a filter disc to reduce the size of air bubbles) via a flexible hose. Another flexible hose, the “working” one, is connected to the other side of the gas-washing bottle and has a soft moistened suction PVA sponge (a highly absorptive, microporous sponge essentially composed of polyvinyl alcohol) at its end. Because of the suction of the vacuum pump, the solubilized dirt is vacuumed through the soft wet sponge during the cleaning process. Dirt and solvent are collected in the water-filled gas-washing bottle. A cotton filter pad (optionally containing sodium chloride) in front of the outlet is generally recommended to protect the pump. The elements of the Schlürfer, e.g., gas-washing bottle volume, sponge size, hose diameter, and length, etc., have to be modified according to specific characteristics of the painting and the substances to be removed. Standard sizes are around 3 cm diameter sponge (4 cm in height), a 0.5 cm diameter hose, and a 500 mL gas-washing bottle.

Instead of a mechanical interaction with cotton swabs, tissues, etc., water is applied to the paint surface with a fine soft flat brush. Immediately after water contact, the solubilized dirt is vacuumed, keeping friction and abrasion to a minimum. The technique offers the option of a short intensive water application. Because the suction power of the Schlürfer is much higher than that of sponges, cotton fibers, microfiber tissues, etc., the water can be removed rapidly from the surface.
Apart from its original use for dirt removal, the Schlürfer also can be used for varnish removal. In the following case study, an aged polyvinyl acetate (PVAc) coating on a matte porous glue-based frail paint layer was removed with the help of this apparatus. In 1914, Ernst Pasqual Jordan and Richard Schlösser painted an ensemble of 12 landscapes and town views for the town hall in Buxtehude, Germany. These naïve romantic paintings, typical for the time, are picturesque decorations of an ideal world in bright colors (Figure 2). Possibly during the 1930s, a glossy, thick layer of an aqueous polyvinyl acetate emulsion was brushed on. This turned yellow and gray with time. As a result, the typical visual impression of light, pastel-like paintings on fibrous tightly woven canvases was completely lost.

The aim of the treatment was to regain the original color intensity and matte appearance without endangering the thin and fissured paint layer. For the removal of the aged PVAc varnish, acetone was the strongest and most effective solvent among the various organic solvents tested. However, neither a cotton swab nor solvent gel nor solid poultices led to satisfactory results in comparison with this solvent. The removal of the soluble and/or swollen synthetic resin out of the porous paint layers from the highly absorbent canvas was successfully achieved with the Schlürfer and acetone, but with following modifications (Figure 3).

An intermediate layer of fine Japanese paper (Manila 10 g/m²) was used. After the application of the acetone with a brush on the paper, the wet Schlürfer sponge was pressed onto the surface, and the solubilized polymer was vacuumed through the paper. The removal effect was improved because the PVAc varnish material adhered to the paper. An advantage of using the Schlürfer was that the penetration of the highly viscous solution deeper into the cracks and pores of the paint layers and the textile support could be prevented. Important in this procedure was the close contact of the paper to the paint surface by using a special comb for pressing down the paper. Immediately after the swelling and suction procedure, a transparent plastic film (cling wrap) was applied on to the paper surface with light brush strokes. In this way the tacky PVAc material adhered to the film and could be peeled off as in the strappo technique, resulting in an increased amount of PVAc material removed. Finally, the Japanese paper was removed with acetone.

The complete treatment had to be repeated three times. The result was an even, homogenous, and extensive reduction of the PVAc varnish (Figure 4). No disturbing white blanching effects
FIGURE 3. Removal of the PVAc varnish in four steps: (top left) Vacuuming the soluble PVAc and acetone through Japanese paper with the Schlürfer. (top right) Pressing down the Japanese paper with a special comb. (bottom left) Strappo technique: applying and peeling off cling wrap with the swollen PVAc material. (bottom right) Removing the PVAc-impregnated Japanese paper with acetone.

FIGURE 4. Detail of the surface appearance (left) before and (right) after PVAc removal.
of the residual PVAc material in the deep pores of the paint surface and in groove-like depressions of the rib weave were observed, as was the case for the other solvent treatments tested. Further information about this intervention is given elsewhere (Hausmann, 2005).

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REFERENCES