

# CONTACT CLEANING OF TEXTILES

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**ABSTRACT** - This paper describes the development and use of contact cleaning at the Textile Conservation Workshop. The techniques of water application and removal and materials used are detailed. Also covered are the types of textiles treated in this manner. Descriptions of modifications illustrate the versatility of the method. Some explanation of the mechanisms at work is provided, along with some cautionary notes.

## 1. INTRODUCTION

Contact cleaning was developed at the Textile Conservation Workshop (TCW) over a period of several years beginning in 1992. We wanted to treat some textiles with water, but needed more control of both wetting and drying than is possible with traditional immersion and drying methods. Although the suction table/disk is an alternative, the extent of soiling, dimensions, or other physical features frequently reduce the viability of these methods.

At the TCW, we have treated a wide range of soiled textiles using contact cleaning methods. It has proved successful on water-stained crewel-work, bleeding dyes, ink spots, and general discoloration and stains.

We define success in contact cleaning according to the same criteria as successful in wet cleaning. Soil is removed; fibers are re-hydrated; hand, smell and appearance of the object is improved.

## 2. EVOLUTION OF THE TECHNIQUE

Our method evolved from a belief that the blotting techniques used for simple testing and spot cleaning could be expanded. We noticed that during the testing prior to wet cleaning,

individual stains were removed more completely than during full scale wet cleaning. This was despite the fact that we test with the same solution percentages, and at roughly the same temperature as when we wet clean. This suggested that techniques of water application and drying were as important as detergent and temperature. We wondered whether repeated wetting during testing caused swelling and rehydration of fibers, and the solvated soils were then drawn out by the capillary action of the blotting process.

Added to this was Kathy Francis's paper on drying techniques. She suggested that control could be maximized through wicking and blotting. We started to think that textiles previously considered ineligible for treatment with traditional aqueous methods might be treated with careful control of water application and removal (Francis 1992).

We began to experiment by swabbing soiled areas with water and using cotton flannel as an underlayer. Acid-free blotters were used to extract soils from the top of the textile. As we found ourselves treating larger and larger areas, applying water with a swab became impractical and we began careful use of a plant mister or sprayer. Similarly, blotters gave way to using flannel both above and below the stained area.

## 3. METHOD

### 3.1 EQUIPMENT

Contact cleaning requires simple, easily accessible equipment. We use undyed cotton flannel sheeting, acid-free blotters, swabs, plant misters, a fan, a hair dryer, mylar, and softened

and filtered luke-warm water. We do not use detergents during contact cleaning.

### 3.2 PROCEDURE

Contact cleaning is selected as a treatment for objects when immersion (and therefore rinsing of detergent) is not viable. Before contact cleaning, all artifacts are examined, tested for dye stability with warm water and vacuumed front and back. Generally, a piece of dry flannel sheeting is placed on the table, the object is laid on top of the dry flannel, and sprayed with warm water. More dry flannel is placed on top of the object and gently pressed against the surface of the textile, ensuring close contact between wet artifact and dry flannel (hence the name contact cleaning). The flannel sandwich is left for a variable period of time and is checked at regular intervals. For example, rapid soil release resulting in dirtied flannels would cause more frequent exchanging of cloths.

When the top flannel has discolored with wicked soil, the dirty flannels (both top and bottom) are removed. The object is re-wetted and new flannels are pressed into place. The process continues, with the flannels changed as necessary until no more soil is released. The textile is then allowed to air dry with the final flannels in place.

### 3.3 SPECIAL CONSIDERATIONS

The question of water quantity should be discussed. Our method is subjective and based on experience. We wet a textile until the water has penetrated the fibers. The textile is frequently wet through, but water is not allowed to pool on the surface of the object or on the table beneath.

We do not weight the textile once it has been dampened and the flannel sandwich

created. Although weighting might ensure closer contact between flannel and textile, the drying process would be inhibited by weights and the extraction of soils would be limited.

### 3.4 MODIFICATIONS

In some instances, pre-treating an area with water and blotters before wetting the entire piece increases its success. A torah curtain marred by an ink spot was pre-treated in this manner. During contact cleaning the ink spot released so much ink that extra flannels were layered on top to increase capillary action and draw the ink away. Blotters or flannels are placed above and below the stain to absorb wicking soil.

If materials are sensitive to water, areas may be isolated from moisture with mylar barriers cut to the appropriate size and shape. These are fitted over the area to be protected before water application. We prefer to moisten the whole piece, to avoid damage that might be caused by differential wetting. This could include fiber breakage or tide line staining. Extra control may be obtained by accelerating drying with either a small fan or a cool hair dryer.

## 4. THEORETICAL EXPLANATION

It should be emphasized that we have not made empirical tests of the method to discover the precise mechanism at work. However, given the lack of detergent, the forces must include absorption and capillary action as dictated by fabric structure, fiber content, morphology and condition. Capillarity and absorption may be modified by thermal action (the temperature of the water at application) and agitation (the pressing of the flannels against the piece.)

We believe that wetting the textile on top of a dry flannel enhances the penetration of the water into the soiled fibers. Additionally, wetting causes the solvation and movement of water-soluble soils. The close contact between additional dry cloths and damp textile allows capillary action to move the solubilized soils and degradation products out of the object and into the flannel. Repeated wettings of the object allow for re-hydration of the fibers.

To clarify: we assume that capillarity is the dominant force at work. Liquids are drawn through the pores of the fiber surfaces, along the fibers and through the interstices of both the yarns and the weave structure of the soiled textile. Thus, the solubilized soils are transported out of the artifacts and into the flannels. The mechanical action of blotting increases the capillarity and the flannel provides a collection point which exhibits visual evidence of soil removed.

## 5. CAUTIONARY NOTES

Many textiles come to the TCW which cannot receive even this aqueous treatment. For example, a red on white Hawaiian breadfruit quilt soiled in a furnace puffback, had unstable red dyes. The contrast was so stark that the slightest separation of flannel from the quilt might have resulted in dye bleeding into the white ground rather than the flannel layers.

Contact cleaning may not be suitable for extremely delicate textiles. Embrittled fibers might be further damaged. Even humidification might be too stressful for such textiles.

## 6. CONCLUSION

Contact cleaning is an effective and useful technique. Although not all types of soils (especially oily, non-water soluble soils) can be

removed during contact cleaning, the benefits of an aqueous treatment clearly outweigh the alternative of merely vacuuming particulate soils. The use of water results in the removal of water soluble soils such as inorganic salts, sugars and other crystalline compounds, as well as the re-hydration of the fibers, release of odors and improvement of the hand and appearance of the textile. Contact cleaning offers the option of introducing water to a range of textiles with complex problems.

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## REFERENCES

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