

24. Backing Removal (Draft May 1985)

Separation of primary support from auxiliary support which is structurally, chemically or aesthetically deleterious to the object.

24.1. Purpose: To stabilize and preserve the principal object, to remove sources of strain or stress.

24.2. Factors to consider before backing removal.

24.2.1. Sensitivity of media to: pressure, moisture, solvent, steam, pH changes. Object may have time-related sensitivity to chosen treatment. Adjust accordingly and use a combination of techniques to maximize safety and effectiveness.

24.2.2. Strength of original paper support versus that of auxiliary support.

24.2.3. Actual benefits/ necessity to re-back.

A. Consider extent of adhesive that can be removed after backing removal. Residual adhesive could cause excessive curl and require re-backing of item.

B. Fragile support may require re-backing.

24.2.4. Artist's intent.

24.2.5. Provenance/integrity of auxiliary support. Backing may have artist's signature or comments.

24.2.6. Value of object versus time for backing removal.

A. Discuss with curator or owner.

B. Bear in mind current AIC Code of Ethics and Standards.

24.2.7. Quality and composition of adhesive and backing material.

24.3. Materials and equipment.

24.3.1. Water, solvent bath

A. Trays for floating or soaking object. Should be large enough to allow for adequate handling of object and use of additional tools (e.g. spatula) while object is in bath. May need larger trays for tray-within-tray process. (See 24.4.4. Enzymes below.)
Stainless steel, enamel or homemade trays of polyester film or polyethylene are necessary for solvent work.

B. Support materials such as polyester web, nylon screen or polyester film to permit safe handling of wet object or support on which to float object or surface on which to

lay object face down for in-treatment procedures.

- C. Water source . Should be conveniently located to permit repeated filling and emptying of tray. (See 18. Washing .)
- D. Blotters to drain water from object.
- E. Miscellaneous: sprayer, wetting agent or alcohol to assist in wetting object prior to bathing; ammonium hydroxide, calcium hydroxide or magnesium bicarbonate solutions to adjust pH of water bath; solvents appropriate to removal of rubber cement, dry mount or non-aqueous adhesive.

24.3.2. Steam.

- A. Steamer unit of "Wrinkles Away" or "Steamstress" type available at local hardware or department store. Some conservators recommend use of sodium bicarbonate instead of salt in "Steamstress".
- B. Small easel to permit vertical or near vertical support for object. Allows for more efficient use of steam for certain machines.
- C. Support materials: Blotters, polyester web, etc. to protect face of object and absorb excess steam around its perimeter.
- D. Miscellaneous tools such as spatulas and scalpels to remove loosened backing material and adhesive.

24.3.3. Enzymes.

- A. Appropriate enzyme. (See 21. Enzyme treatments).
- B. Thermometer.
- C. Support materials such as polyester web, glass or plexiglas depending on method of treatment.
- D. Miscellaneous: water, trays, blotters, etc. (See 24.3.1. Water bath).

24.3.4. Humidification.

- A. Humidity chamber. Can be easily made with plexiglas, polyester film or polyethylene and wood, large trays, etc. Wet blotters or an ultrasonic humidifier are alternative methods to achieving humidification. (See 27. Humidification).
- B. Support materials such as polyester web to protect face of object against any possible condensation, nylon support screen on which to rest object above

source of moisture.

- C. Water and tray to serve as source of moisture.
 - D. Humidity indicating papers or a machine to measure humidity level.
- 24.3.5. Poultice material such as a cellulose ether or starch powder and water to make a paste to locally "wet" an area in a more controlled manner.
- 24.3.6. Materials for dry removal (splitting, sanding, heating, freezing).
- A. Hand tools: scalpels, spatulas (metal, bamboo, Teflon) for removal of backing board material. Some conservators believe that contact of the paper with steel tools is potentially harmful due to possible deposit of iron particles.
 - B. Portable board, glass or plexiglas on which to attach item if working face down. Tape for attachment. Plexiglas or glass would permit checking of depth of backing during removal.
 - C. Lamp, table or floor, especially useful for raking light illumination if object is face up. Permits viewing "depth" of spatula while working. Light box for viewing "depth" of backing during removal if object is secured face down to clear support.
 - D. Weights and blotters or tape to hold object in place while working. Prevents slippage from applied pressure of scalpel or spatula.
 - E. Heat source such as hot air gun, hair dryer or fabricated heated spatula to soften adhesive such as rubber cement or dry mount tissue.
 - F. Cold source such as dry ice, freon to neutralize or reduce tack of heat-sensitive adhesives.
 - G. Miscellaneous: rubber cement pickup, erasers, sandpaper, electric sander, cotton and water or solvent to remove residual adhesive. Polyester web, glassine, silicone paper to protect front of object while working face down or to insert between back of object and backing while treatment is in progress after partial removal of backing material.

24.4. Treatment variations.

Wet techniques

24.4.1. Soaking: used if strength of paper support and insensitivity of media to prolonged contact with water has been determined to be safe.

- A. Determine safety of media with water and advisable handling procedures for wet paper. (See 3. Media Problems, 10. Spot Tests, and 18. Washing.) Preliminary treatment may provide possibility of immersion. (See 23. Consolidation/fixing/facing/sizing).
- B. Reduce bulk of backing if it seems necessary or appreciably beneficial. May be determined by thickness, density, absorbency of backing material and actual area of adhesion (ie. object may only be partially affixed at perimeter); assumed strength of adhesive bonding; or expandability, fragility or sensitivity of object.
 1. Spot test or spray object and backing to determine above-mentioned properties.
 2. Remove excess material using appropriate dry techniques. (See 24.4.7-11. Dry techniques).
 3. Partial attachment of item to backing may lead to uneven expansion of original when placed in water bath. Recommend manual removal prior to bathing and maximum reduction of extraneous material to extent safely possible.
- C. Prepare water bath. Adjust temperature, pH as desired.
 1. Pre-spraying with alcohol or alcohol/water mixture, addition of a wetting agent to water or use of tepid water may increase responsiveness of item to treatment. Test media and paper for safety with alcohol; alcohol may "move" sizing or degradation products, leading to ringing or spotting.
 2. Adjust pH to 8-8.5 with addition of ammonium hydroxide or neutralizing agent. Protein glue will swell more easily. (See 20. Neutralization)
 3. Employ appropriate enzyme if desired. (See 21. Enzyme Treatments).
- D. Immerse object face up on chosen support material. Gentle movement of water over the object or manipula-

tion of object or tool may facilitate removal as the adhesive bond is softened.

1. Bathing time will be determined by properties of individual item. Discoloration of water is a good indication of the need for continued bathing. Change or adjust bath as required.
 2. If adhesive is tough or absorbency of material is low the object might be removed periodically to gradually peel away extraneous material before re-immersing and continuing.
- E. Remove residual adhesive as possible. This may be accomplished with object in or out of bath, face down on support, as dictated by object's properties and choice of support material.
1. Manipulate with finger tips, moist cotton, stainless steel spatula, blotters, etc.
 2. Re-immersing and repeat as necessary.
- F. Dry or flatten as desired. (See 28. Drying and Flattening).

24.4.2. Floating: used if original paper support is extremely thin or fragile or media is somewhat sensitive to prolonged contact with water.

- A. Follow steps A., B. and C. as in 24.4.1. Soaking.
- B. Supporting and floating item.
 1. Choose support such as polyester web, polyester film and/or nylon screening stretched onto a frame as determined by item. Polyester film may float away from object during treatment but can be gently realigned for removal of object from bath.
 2. Spray item lightly if possible and place on support. This will insure more uniform expansion of both original and backing and should guard against any ringing or depositing of stain onto original as capillary action moves water up from the reverse once floating begins.
 3. Adjust water level in tray.
 - a. Low level is easier to control.
 - b. If using screen adjust water level so that a thin film of water just covers the top surface of the screen.

4. Holding support diagonally at corners, carefully lay item down onto water surface. Allow to remain still. If using a framed screen support, can gently rock tray or lift screen at intervals to increase water flow if desired.
5. Remove periodically from bath to remove extraneous material and repeat procedure as necessary. Follow directions as in D., E. and F. of 24.4.1. Soaking reading "float" for "immerse".

24.4.3. Steaming: used if media is relatively sensitive to water and/or proteinaceous glue has been used to attach the backing material. Paste, unlike glue, will not respond so well with the additional heat supplied by steaming.

- A. Test sensitivity of media to moisture and friction.
- B. Remove bulk of backing material with scalpel or spatula.
- C. Secure object face down onto blotter support by taping or pinning (not through item!) or weighting as desired. May use small easel for angled vertical working to maximize vertical rising of steam.
- D. Steaming object.
 1. While steaming, tease off backing material with spatula or scalpel. Area of working and time for removal will be determined by item.
 - a. May prepare local area for steaming by moistening with methyl cellulose or water or preliminary run with steamer over larger area to allow some steam to penetrate before principal "attack" in a smaller area.
 - b. Residual bits of adhesive or backing may be removed afterward with moist cotton, methylcellulose application and/or scalpel as determined by object.
 - c. Since exposed original will absorb steam, direct steam accordingly to avoid possible tide lines or damage to sensitive media. May cover partially with blotter to help guard against this.
 - d. Object will be temporarily deformed after steaming but can be flattened and dried as appropriate.

24.4.4. Enzymes: used especially when original paper support is too fragile to tolerate much manual manipulation or adhesive responds very slowly or inadequately to water alone.

- A. (See 21. Enzyme Treatments for preliminary information, procedures and appropriateness to object.)
 - B. May be used in combination with above procedures. Enzyme solution may be sprayed on front and/or back of item as preparatory step to soaking or floating.
 - C. Proceed, following appropriate chosen treatment.
- 24.4.5. Humidification: used if original support is very fragile, media is very sensitive to actual contact with water or removal of thick or dense backing material would be facilitated by slow moisture absorbency as preliminary step to another technique.
- A. May employ a moisture chamber to assist softening and swelling of hygroscopic adhesive such as protein glue. May make viscous methylcellulose poultice to slowly humidify and soften backing material for removal.
 - 1. Place object in chamber as in normal relaxation technique. (See 27. Humidification.)
 - 2. Allow to remain overnight or for similar time period.
 - B. Remove item from chamber and proceed as in one of the above procedures.
- 24.4.6. Solvent bath: used if backing has been secured with a dry mount tissue, rubber cement or similar non-aqueous adhesive.
- A. Test sensitivity of media to chosen solvent. If unsafe proceed with one of the dry techniques.
 - B. Reduce bulk of backing as possible as in 24.4.9. Splitting, 24.4.10. Heating or 24.4.11. Freezing.
 - C. Prepare solvent bath. Be assured that tray material is safe with solvent. If not a temporary tray can be constructed out of polyester film (Mylar) or polyethylene sheeting and rigid side supports.
 - D. Immerse object face up on chosen support material. Gentle movement of solvent or tray may facilitate removal. Bathing time will be determined by properties of individual item. Discoloration of solvent or presence of adhesive residue on object or tray bottom will indicate effectiveness of treatment. Change or adjust bath as required.
 - E. Allow to air dry to truly see results of treatment. Solvent will temporarily cause paper to look translucent. Repeat if necessary.

- F. Should an adhesive be impossible to dissolve (e.g. some synthetic emulsions) it may be possible to swell it and then manually remove it with a rubber cement pickup, plastic eraser or scalpel. Some adhesive may remain.

Dry techniques

- 24.4.7. Scraping: used if media cannot tolerate any contact with moisture or solvent necessary to effect removal.
 - A. Place item face down on support material such as polyester web, silicone paper, blotter or glass as seems appropriate to item. Tape around edges to portable board or table if desirable and/or possible.
 - B. Weight to prevent slippage while pressure is exerted by scalpel or spatula movements.
 - C. Commence removal of layer(s) by pushing or pulling cutting tool as preferred or determined by composition of backing material.
 - 1. Take extra caution with backings composed of miscellaneous particulate matter that can "catch" the tool's progress.
 - 2. Change scalpel blades or sharpen spatula as necessary to maximize working time and safety of object.
 - 3. Adjust tools as proceeding. A large spatula is often good for the beginning stages and a sharper scalpel or smaller spatula better as the back of the original artwork is approached.
 - 4. Work as evenly as possible. Best to work down over-all layers evenly to prevent undue pulling or pressure on original as the interface of the backing and artwork is approached. Occasional checking on a light box may be useful.
 - D. Residual bits of backing material and/or adhesive may be removed with scalpel, sandpaper or moist cotton as determined by object.
- 24.4.8. Sanding: used if backing is very thin and media cannot tolerate any contact with moisture or solvent. Probably used most frequently as a last step to another dry technique.
 - A. Follow A. and B. as in 24.4.7. Scraping.
 - B. Commence removal with coarsest sandpaper as possible (e.g. 80 or 100) and work towards a finer grade as the back of the original artwork is approached. Some con-

servators employ an electric sander for this purpose.

- C. While working remove residual "dust" with brush or controlled vacuum. Wear protective dust mask while working.

24.4.9. Splitting: used if media is sensitive to moisture or solvent necessary to soften adhesive and/or if backing must be preserved. Probably used most frequently as a preliminary step to another dry technique or a solvent bath to reduce the residual adhesive.

- A. Use only if original paper is strong or thick, backing material is easily fractured in even layers or is much weaker than the original and/or adhesion between original and backing is very weak.
- B. With item face up secure item very well to prevent slippage. Best done with taping to table if margin is available; otherwise, weight well, protecting face of item. Use raking light illumination to assist in seeing the "depth" of the spatula or folder employed.
- C. Choose appropriate tool and method of working: A Teflon spatula may permit smooth action but is probably thicker than a metal one; a metal spatula may provide the necessary "cut" through the material. Push or pull the tool in small, interrupted arc-like patterns as seems to be most effective, keeping the tool as flat and parallel to the paper as possible. Once one is underway and proceeding safely, the strokes can be elongated to cover a larger area. The procedure may appear to be easier in one direction than another due to the grain of the material being split.
- D. Proceed as in 24.4.7. Scraping or 24.4.8. Sanding and approach the artwork from the back if splitting method seems unsafe.
- E. If the separation does not occur exactly at the adhesive interface remove residual backing material and adhesive as in 24.4.7. Scraping or 24.4.8. Sanding.

24.4.10. Heating, hot spatula: used most frequently if backing has been attached with a dry mount tissue.

- A. Determine appropriateness of procedure (i.e. heat sensitivity of adhesive).
- B. Secure item face up to working surface with tape or weight as possible.
- C. Begin at one corner and direct heat between item and backing.

1. While holding hot air gun or heated spatula with one hand loosen adhesive bond with spatula held in other hand or by carefully pulling up on item.
 2. As removal proceeds insert silicone paper between object and backing to prevent re-adhering.
- D. When completed remove residual adhesive with additional heat, eraser, rubber cement pickup or solvent as appropriate. If dry mount tissue still adheres to reverse of object reduce manually with scalpel or sandpaper and follow with adhesive removal as possible, dry or with solvent. It may be impossible to remove the tissue without abrading the back of the artwork if the paper is very fibrous.

24.4.11. Freezing: also used most frequently if backing has been secured with a dry mount tissue.

- A. May use as "other-side-of-the-coin" technique to 24.4.10. Heating, hot spatula.
- B. Follow procedures as in 24.4.10. Heating, hot spatula, substituting canned freon for heat source.
- C. Using dry ice.
 1. Protect face of item with polyester film to avoid possible condensation on paper.
 2. Protecting hands as necessary, lay dry ice on surface and leave for short period of time.
 3. Remove and check for release of adhesive. Repeat if necessary; otherwise, insert silicone paper into loosened area and proceed.
 4. Remove residual adhesive as in D. of 24.4.10. Heating, hot spatula.

24.5. Bibliography.

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24.6. Special considerations.

24.6.1 A large number of Arthur Dove watercolors have been mounted with rubber cement. His ink signature has been noted to be partially soluble in ethanol.

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