

## HINGING

*The most critical step of the framing process*

An interview with Margaret Holben Ellis

September, 2009

JB: In your introduction to *THE CARE OF PRINTS AND DRAWINGS* you say "the careful matting, hinging, and framing of prints and drawings according to conservation standards is one of the most effective ways to provide a longer life for these works of art."

*Why is hinging so critical?*

MHE: The means by which a print or drawing is secured to its mat or backboard is the most critical step of the entire framing process, not only at the time of the hinging operation, but also over time, as the hinges age. To this end, informed choices need to be made along every step of the hinging process – from the selection of the carrier and adhesive, to the hinge's configuration and placement on the work of art by a skilled technician or conservator.

Five factors determine the success or failure of a hinge:

1. The carrier (the paper, plastic or fabric that constitutes the hinge and "carries" the adhesive) must be the correct caliper (thickness), color, opacity and strength for the sheet it is to secure. It must also have, and retain over time, a neutral pH. It should be chemically stable and not lose its strength, flexibility or change color.
2. The adhesive must be selected with consideration given to the weight, absorbency and dimensional stability of the artwork to which it is applied. It, too, must have a neutral pH and be chemically stable. As it ages it cannot darken, lose adhesion or become more difficult to dissolve. This latter characteristic - reversibility - is of utmost importance and will be discussed below.
3. Many different sizes and configurations of hinges have been devised in order to properly support works of art on a variety of papers. While lengthwise, horizontally folded hinges of Japanese tissue applied to the verso (reverse) of the artwork are the most common, hanging/pendant hinges and slotted hinges have been found to offer better support for

particularly heavy artworks or those that expand and contract with changes in ambient temperature and humidity.

4. Hinges must be located where they can offer optimal security while not interfering with the visual enjoyment of the artwork. Typically, hinges are placed in the upper corners of the verso of the work, however, other arrangements may be in order if the work has irregular dimensions, is oversized or destined to travel.
5. Finally to be considered, is the ability of the person applying the hinges and manipulating the work of art. Each type of hinge requires a level of knowledge, skill and experience for its proper design, preparation and application.

Properly applied hinges allow the work of art to be seen to its best advantage, while providing adequate support during display, storage and transport. Hinges can fail due to any one of the above factors. When this happens, the artwork can fall away completely or is left dangling from one still-affixed corner. Conversely, when the hinge is too strong, the weaker artwork can shear away from it, leaving a corner behind.

*JB: You write that "Hinges should be made from Japanese tissue" and "The adhesive used in hinging should be purified rice starch or wheat starch paste." Why these materials?*

MHE: I prefer Japanese tissue (*washi*) as the carrier because it is available in many weights, fiber types and opacities so can be selected to best suit the characteristics of the artwork to be hinged. For example, sheer lightweight tissues can be used for hinges behind translucent papers. Japanese tissue is also extremely strong and long-fibered so adheres well to even slick, smooth-surfaced papers. Most importantly, Japanese tissues made in the traditional manner using pure fibers and non-chemical processing are still easily available. Although woodpulp and chemical refining has been introduced to this segment of the papermaking industry, high quality *washi* is still distributed widely in the United States through conservation and library/archives supply houses.

Starch paste, cooked up from purified wheat or rice starch, remains the most versatile paste available. It can be modified, made thicker or thinner, or used with other adhesives, to meet the needs of the artwork. Most importantly, it has stood the test of time and does not discolor, become acidic, lose adhesion, or become more difficult to reverse as it ages. These aging properties are not

just anecdotal – they have been scientifically proven through rigorously controlled aging experiments.

While conservators have also used synthetic resins that are solvent- or heat-activated, cellulose ethers, acrylic emulsions and other adhesives with great success, starch paste remains the most versatile and dependable, especially as it ages.

*JB: In the past twenty years or so a number of pressure-sensitive or self-adhesive (S.A.) "archival" tapes for hinging works of art on paper have been introduced. They are popular with framers since they require no preparation, little experience or skill to handle, and can be applied in only seconds, vastly reducing the most time-consuming step in the framing process. Are they as safe to use as the traditional Japanese tissue and starch paste hinges?*

MHE: That depends on what is meant by “safe.” While these tapes do have better aging characteristics than the old-fashioned “scotch” tape or masking tape, their acrylic-based adhesives are not easily removed, especially after they have aged a few years. Also, in looking at the factors listed above that can affect the success or failure of a hinge, the paper of these tapes, typically a bright white short-fibered bond wove paper, is not as variable, although recently a thinner paper carrier as well as a matte plastic carrier have been introduced for use on lighter weight papers. Plus the configurations one can make with these tapes is limited: flat, folded or rolled up like a sausage. Both aesthetically and mechanically these tapes may not be as attractive or effective when used for hinging.

*JB: It is claimed that pressure-sensitive hinges can be easily removed with heat. Is there a risk in using heat to soften the adhesive and peel off the tape? They also are removable with hot water or mineral spirits--is this a risky process?*

MHE: The question of the ease of reversibility of these tapes is a highly controversial issue among conservators. One popular tape is described as being water-soluble in one advertisement, soluble in mineral spirits in another, while a third distributor makes no mention of the reversibility of this same tape.

Shortly after application, these sorts of tapes can usually be rolled away using a crepe square, providing the artwork’s surface is sturdy and non-fibrous. In general, these tapes are reversible with water if caught within the first year or so of their application. It is important to note that water does not dissolve the adhesive – it “gels” or partially solubilizes it, so that it can be gently rolled

away. If the paper to which it has been applied is not heavily sized, has a fibrous surface or is a deteriorated woodpulp, skinning or thinning of the paper can easily result, since the gelled acrylic adhesive remains extremely sticky. Over time, however, hot water or “stronger” (more polar) organic solvents are required to soften the adhesive. The application of hot water and solvents can easily result in staining and the formation of “tide lines,” especially when dealing with older, yellowed or more absorbent papers.

Heat can be applied to soften the adhesive, but unless the exact melting point of the adhesive is achieved, the heat will often drive the adhesive into the artwork, leaving behind a tenacious sticky residue that is even more difficult to eliminate.

*JB: Of course, the use of pressure-sensitive tapes in hinging artworks isn't new. “Scotch” tape was often used in the past. It deteriorates badly over time, whereas the new pressure-sensitive “archival” tapes are quite stable. So aren't they an improvement?*

MHE: Again, both the carriers (neutral or alkaline paper or a matte plastic) and the adhesive (acrylic) of these tapes have improved when compared with the original “scotch” tape, which had a cellulose nitrate carrier and a natural rubber-based adhesive.

The carriers of these tapes are generally good-quality papers, sometimes buffered with calcium carbonate. One manufacturer misleadingly describes their tape as neutral, when the pH of its paper carrier is 9.1; this is quite alkaline (pH 7 is neutral). High alkalinity can damage certain types of photographs and some dye-based inks. Most of the tapes are described as “acid-free,” a vague term open to interpretation. As mentioned above, a translucent carrier has been introduced for use on thinner papers. Ironically, the risks involved in its removal are increased when used on the very type of paper it was designed for!

Like the carriers, acrylic-based adhesives do indeed age significantly better. They generally do not darken, retain their tack, and neutrality. They do, however, contain plasticizers that can cause dye-based inks to bleed. For this reason, one manufacturer specifies that their tape is “best-suited for areas without print or decoration.”

*JB: Most of the tapes we are speaking of carry the word “archival” in their description. Perhaps this isn't quite the right word?*

MHE: I suspect that for advertising purposes, the word “archival” is meant to denote the tapes’ end use in archives and libraries. For example, one tape is recommended for “repairing joints, hinging, and mending damaged edges of documents and book pages.” “Works of art” are not mentioned. Alarming, however, other similar products are called “preservation” tapes or are specifically recommended for securing papyrus!

If the term “archival” means easily reversible, then the term is highly inaccurate. Most archivists and librarians I know consider the items under their care as irreplaceable and are just as committed to reversible repairs as fine art conservators.

It should be acknowledged that these tapes work very well when reversibility is not an issue, for example, for repairing books in a circulating library collection, or non-unique documents destined to be copied or saved in another format. There is a huge scrapbooking movement in America today, for which these tapes might be suitable, however, it’s important to keep in mind that some ephemera from the past is treasured today. It should be said that these tapes perform well when reversibility will not be considered in the future, which is never the case when hinging unique works of art on paper.

*JB: In THE CARE OF PRINTS AND DRAWINGS, in the chapter you devote to Matting, Hinging and Framing, you point out that "Conservators consider the primary function of framing to be protective." And today you state that hinging "is the most critical step in the entire framing process, not only at the time of the hinging operation, but also over time, as the hinges age." To sum up this issue--should framers who work to "conservation standards" use pressure sensitive tape to hinge art?*

MHE: On several occasions, I have encountered multiple sets of pressure-sensitive "archival" tape hinges left over from past reframing campaigns. I'm then faced with the difficult decision of whether to leave them alone or to remove them, which involves some degree of risk. When time and money constraints enter the picture, the temptation is to leave the tapes in place, allowing them to become more and more difficult to remove in the future. As a collector, I would want to be reassured that these tapes are not lurking out of sight in my framed works.

---

Margaret Holben Ellis is the Eugene Thaw Professor of Paper Conservation, Institute of Fine Arts, New York University and Director of the Thaw Conservation Center at the Morgan Library & Museum. She is the author of numerous essays in conservation including:

"Materials, Tools, and 'Technics'," No Limits, Just Edges Jackson Pollock Paintings on Paper, Deutsche Guggenheim, Berlin, 2005.

"Watercolors Today - Dr. Ph. Martin's Synchromatic Transparent Watercolors, Magic Markers and Day-Glo Colors," Gekleurd of Verkleurd, VAR, Koninklijke Bibliotheek, den Hague, Netherlands, 2003.

"Daylight Fluorescent Colors as Artistic Media," The Broad Spectrum, Archetype Books, London, 2002.

"The History, Use, and Characteristics of Wax-Based Drawing Media," The Paper Conservator, Vol. 22, 1998, pp.48-55.

"The Shifting Function of Artists' Fixatives," Journal of the American Institute for Conservation, Vol. 35, No. 3, Fall/Winter 1996, 239-254.

"Drawings in Fibre-Tipped Pen - New Conservation Challenges," Modern Works - Modern Problems? Leigh: The Institute of Paper Conservation, 1994, pp. 114-121.