Supports for Textile Display: Overview and Strategies for Flat Objects

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Most textiles and many other three-dimensional objects made from organic materials require support for safe storage and display, both to slow down the damage gravity exacts and to allow for optimal viewing of the object. Mounts and supports are an important part of the object's preservation; if well-designed, they can serve for both storage and display, thereby reducing unnecessary handling of an object and the associated risks. Display supports also aid in the viewer's interpretation of the object, preserving the intended form or shape in as inconspicuous a manner as possible. As part of an exhibition, the manner of display can complement the interpretation of the object. A good mount design provides the necessary support while presenting the object to its full advantage, and allows for a safe, minimally invasive, and re-treatable method of attachment.

Considerations for mount design

Mount design begins with examination and assessment of the object's stability. The degradation and oxidation of organic materials is accelerated by use, light exposure, and poor environmental conditions. Areas of the object that have been handled heavily in the past, or carried a significant amount of weight, are often weakened and required support to prevent further damage [Fig.1]. Components may not be as flexible and supple as they once were, so manipulation may be limited and modifications to the support may be require. Soiling or staining may also embrittle components that were intended to be flexible. Storage without adequate support or padding between folds often results in creases that can weaken and even break. Stabilization of tears, weak areas, and losses may be necessary in order for the object to be displayed in the desired orientation, particularly if the flaws compromise the appropriate distribution of weight necessary for safe display.

Material choice is integral to mount design. Materials are selected to provide the desired physical properties, such as rigidity and firm support where necessary, along with a balance of cushioning and gentle support in more vulnerable areas. The original form that supported the object must essentially be re-created, taking into account the changes that the object has undergone with age and use. The surfaces of the mount materials that directly contact the object also contribute to the success of a mount. A preferred surface texture will protect fragile object surfaces from abrasion and aid in safe removal of the object; a surface can also be selected for a slightly toothed texture to help secure the object on the mount. Often a combination of these contrary properties is desired, and materials are used in an unusual assemblage that makes best use of their properties in a selective manner to contribute to the support and safe handling of the object.

A mount can compensate for cosmetic issues that are not desirable to the curator. In some cases a well-designed mount can serve in place of a treatment that actively manipulates or modifies an object. A mount cover with an appropriate color and texture can visually minimize small losses that do not require stabilization. Design elements within a loss can be recreated on the mount cover, as a form of passive fill or "inpainting," without affecting the artifact. A mount

maker can also utilize color theory to show the object to its best advantage; certain colors can de-emphasize the yellow discoloration and darkening that often occurs with aged organic materials. Carefully placed padding can gently coax an object back to its original form (taking care not to create any damaging stresses).

Figure 1: Thomas Willis, *Hiram Emery*; silk, painting, and embroidery. The silk back panel shattered in transit due to lack of support.

Materials for mounts and supports

Mounts generally consist of a firm, internal support or armature, padding material to soften the form and achieve the desired shape, and a cover that comes into direct contact with the object and may be partially visible. The placement of these layers is dictated by the object's needs. Metals, wood products, and some stable plastics can serve as the firm internal support of the mount. Stable polyethylene foams of high quality can provide both support and cushioning within a mount. Synthetic polyester fiber products and fabrics serve as the outermost cushioning and cover, and their chemical stability is critical due to their close proximity to the object.

Mount materials are selected, tested, and treated if necessary to be non-reactive with the object and to perform for an extended period of time. Poor mount materials can accelerate the degradation of the organic components of the object, affect dyes or other applied surface treatments, and corrode metal components. If the mount fails because it has aged poorly, it can put the object at risk for damage. Custom-designed mounts represent a significant investment in time and effort, and as such should use materials and construction techniques that are stable and durable over a period of time. Using mount materials that can perform as intended and remain stable through both anticipated handling and environmental fluctuations, even water damage and other emergency situations, best allows for the preservation of the artifact.

Figure 2: Katy Schimert, *A Woman's Brain*; aluminum mesh, wool, steel pins, and electrical sockets. The textile sculpture is supported for flat display by a custom panel of laminated aluminum and polyethylene.

Certain stainless steel and brass alloys are suitable for mount applications, and can provide lightweight strength when used as an armature or internal component of the support. Panels made of aluminum honeycomb or aluminum laminated onto a polyethylene core are also useful as a rigid and lightweight base for a support. The latter can be custom cut to follow the contours of the object [Fig. 2]. Metals that may corrode are treated with age-tested resin coatings to prevent any corrosion that may occur through normal exposure to the elements or in the event of an environmental control failure. Dissimilar metals should not be placed in contact with one another because it could lead to galvanic corrosion, where the less noble metal corrodes preferentially in contact with the more noble metal. Barrier layers provide protection and cushioning where needed.

Wood products are readily available, easy to work, and strong; as such, they can seem like an obvious choice to give form and structure to a mount. However, wood products have various levels of acidity, and manufactured wood products have adhesives which may contain formaldehydes and acids. Issues such as the wood's acidity, the sensitivity of the object, and the amount of airflow around the mount are considered when including a wood product in a mount design. Impermeable barrier layers such as laminated aluminum foil sheeting are incorporated if there is little tolerance for any acid migration, such as with cotton

and other plant materials, and in enclosed cases. Many applied coatings do not sufficiently block acid migration from the wood and cannot provide enough protection against the acidic products of the wood to be suitable for use in direct contact with an object or in an enclosed space.

Padding materials used within a mount can provide cushioning and gentle support in a wide range of densities. Polyethylene foam in plank form is available in a range of densities up to 9 lb/ft^3; the most commonly encountered is approximately 2.2 lb/ft^3. This is a closed-cell foam that will not absorb and hold moisture and can retain its shape under considerable, extended stress. While the polyethylene polymer is chemically inert and stable, the blowing agents used in its manufacture may off-gas and become brittle or react with materials in direct contact. Therefore it is important to purchase materials from established manufacturers whose products are regularly tested for such issues. Polyethylene foam is also available in sheet form.

Other padding materials often used in mounts are polyester batting and polyester fiberfill. Batting is available in a wide range of thicknesses. Many battings sold for quilting retain their form because they are resin-bonded; the resins used in this process can off-gas and be damaging to historic artifacts. Only heat-bonded battings, where the extruded polyester fibers are locked to one another in the desired lofty format, are recommended for use in mounts. Similarly, polyester fiberfills can be treated with coatings such as polysiloxanes to increase their slickness for a softer padded feel; these coatings may interact with sensitive artifacts and should be used with appropriate barrier materials.

Fabrics often cover the surface of the artifact mount. This direct contact introduces a great deal of opportunity for physical and chemical interaction with the object. A stable fiber with good aging properties, spun and made into a dimensionally stable fabric will best serve this purpose. Dyes are tested to ensure that they will not crock, or rub off, on the artifact. Other surface treatments that may be applied, such as fire retardants and stain-preventive coatings, have proven to be unstable in close contact with artifacts. In addition to woven and knitted materials, nonwoven fabrics such as DuPont Tyvek (a spun-bond material made of polyolefin, a stable polymer) can serve as covers for mounts. Texture and color (or ease of dyeing or painting) are key properties considered when choosing a fabric for a mount. After testing, fabrics are scoured to remove sizings and oils from manufacture. If necessary, the fabrics can then be dyed or painted with stable, tested materials and techniques to achieve the desired colors or patterns.

Figure 3: Hanging hooks, not original to this tapestry, unevenly distribute weight and may cause tears and distortions along the top edge.

Strategies for display

"Flat" textiles such as quilts, samplers, and embroidered panels are often intended to be viewed from a single side. While there is emphasis on the two-dimensionality of the works, their structure includes a depth which must be considered for proper support. Padded fabric-covered panels made of archivally sound materials conform to any irregularities of the surface. Fabric for the panel is selected to provide a friction nap-bond, which contributes to the support that the panel provides. An appropriate color choice can mask losses and de-emphasize any

discoloration of the object.

Methods of attachment that secure the object to the support are critical to a system's success. When displayed vertically, the weight of the object transfers stress to the point of attachment. Spreading that stress over a broad and stable area is a primary goal in preparing these objects for display. Fabric-covered supports allow for minimally interventive stitching to provide such attachment. Stitching is chosen only when a textile is strong enough to withstand conservation stitching and can support its weight from these carefully chosen points of attachment. Threads are chosen for several qualities including visual appearance, chemical stability, and balance of strength and breaking point to prevent damage. Thread must not react with the object or degrade quickly. The ideal thread will provide adequate and gentle support without damaging the object, in a diameter that safely passes through existing stitch holes and/or interstices of the weave. If the thread matches the object in color and gloss, and is of a fine-enough diameter to be visually inconspicuous, larger stitches may be used, which will better distribute the weight of the object and reduce the potential for damage. Stitch placement is critical, since each stitch affects how stresses are transferred through the object; a misplaced stitch can result in distortion or tearing, in particular on an aged textile.

As the dimensions of a "flat" textile increase, the weight increases and the planar irregularities/unevenness compound over a greater distance. Improper hanging can cause tears and distortions[Fig. 3]. If the object is stable enough, a hanging system of wide cotton twill tape and hook-and-loop tape can be attached to the top edge. For a large textile to hang safely and squarely, the hanging system should be perpendicular to the direction of vertical stress in the center of the artifact (usually the warp yarns of the fabric). This isolates and prevents any unevenness and undue stresses from being transferred through the object. A safe method of hanging will distribute the weight of the object over a broad and stable area to prevent damage from hanging. When executed correctly, these hanging systems are also removable with minimal change to the object.

Costumes and three-dimensional objects pose similar concerns, compounded by their more complex structure and range of use. These will be addressed in a second installment.

Allison McCloskey, Assistant Conservator of Objects and Textiles, has been at WACC since 2007, treating artwork and working with clients to help preserve their collections. She studied Art History and Museum Studies at Rutgers University (1998), followed by the MA programs in Art History and Museum Studies at Syracuse University (2001). She specialized in textiles with a concentration in preventive conservation at the Winterthur/University of Delaware Program in Art Conservation (2006) and completed internships at the National Museum of the American Indian and with the New York State Bureau of Historic Sites at Peebles Island Resource Center (PIRC). She is a Professional Associate of the American Institute for Conservation.