<u>An Attractive Solution: Using magnets to mount Barkcloth and Tapa for display</u>

Introduction

The Fowler Museum at UCLA recently showcased barkcloths from 2 distinct regions of the world in a unique exhibition titled *Second Skins: Painted Barkcloth from New Guinea and Central Africa*. Several of the barkcloths needed to be displayed vertically against the wall and were lent to the Fowler without any mounting mechanisms. Barkcloths pose many mounting challenges due to their inherent nature and varying methods of fabrication. Many can have irregular shapes; some have very thin web-like structures while others are thick and hardened. Others have undulating edges or heavily creased areas. Installing barkcloths vertically is also challenging in that the cloth should not be stitched, tacked or adhered to supports for fear of causing permanent damage to the barkcloth fibers in the form of holes, fraying and non-removable residues. Several barkcloths were lent to the Fowler Museum with attached linen tape and adhered paper hinges from previous mounting and its removal without damaging fibers and applied low binder pigments was extremely difficult and, in some cases, virtually impossible. This paper illustrates the use of a mounting system utilizing magnets. Rare earth magnets securely held the barkcloths in place during the 5 month exhibition, were easily installed and, most importantly, caused no damage to the fibers of the pieces.

The Exhibition

The exhibition was comprised of 21 barkcloths from the Ömie of Papua New Guinea in the South Pacific, 43 barkcloths from the peoples who live in and around the Ituri rainforest in the Democratic Republic of the Congo, and 5 ivory barkcloth beaters which are not discussed in this paper. The exhibition focused on the juxtaposition of the two separate traditions of fabricating painted clothing from barkcloths, or the inner bark of trees.

While the barkcloths are similar in terms of material, they are quite different stylistically, and in terms of size, thickness and weight. The Omie barkcloths are generally larger and thicker, and consequently heavier, than the Ituri barkcloths. The Omie barkcloths that were on exhibit ranged in scale from 71"x 35" to 33" x 31", and had general thicknesses ranging from 0.0313"-0.0625", with some thin areas measuring a mere 0.0156". The Ituri barkcloths ranged in dimensions from 43" x 21" to 22" x 10" and were much thinner at 0.0156"-0.0313"

The exhibition was designed for the Omie barkcloths to all be hung vertically on, or against, the wall, while the majority of the Ituri barkcloths lay on fabric covered slant boards, inclined no more than 10 degrees. 5 Ituri barkcloths containing graphic highlights or that exemplified text panel descriptions were hung vertically above the others. Of the Omie barkcloths, 8 had no mounting mechanisms for hanging vertically. The other Omie pieces had either stitched muslin sleeves or adhered Japanese tissue loops that were threaded with rods or dowels for installation.

Research

Several strategies were considered for mounting the barkcloths vertically, which required research and investigation. Stitching or tacking the barkcloth was deemed unacceptable as permanent holes would be created. The holes could also enlarge throughout the display period as the weight barkcloth hangs from only a few points (Bishop Museum, 1996). Adhered Japanese tissue loops or sleeves were another consideration, but several lenders expressed concern with applying, and possibly reversing, adhesives on the delicate fibers of the barkcloth. On the other hand, lenders were intrigued and accepting of the use of rare-earth magnets due to their non-invasive nature.

Rare earth magnets were successfully used for wall mounting paper-based artworks at the Solomon R. Guggenheim Museum [Keynan et al. 2007] and at the J. Paul Getty Museum [Seija Rohkea personal communiqué 2012]. A step by step guide for the construction of a magnet mount for flat works is available online through the Objects Specialty Group Conservation Wiki [Holbrow and Taira 2011]. Magnets were also tested for mounting barkcloths at the Australian Museum [AICCM newsletter, 2009] with excellent results. In the case of the latter, Scanning Electron Microscopy analysis of the barkcloth fibers beneath the magnets revealed no visible damage from magnetic compression.

Magnet considerations

Since the barkcloths varied considerably in size, thickness and weight, testing of a variety of magnets and support structures was absolutely critical to finding the perfect mounting strategy. The goal was to find a magnet that could hold the weight of the barkcloth but with a low profile and unobtrusive to the viewer. Magnets are rated in by their residual induction (measured in Gauss) and their coercive force (measured in Oerstads), combined together to form the Maximum Energy Product (measured in Gauss-Oerstads or MGOe). The MGOe is fixed for a given magnet alloy. Rare earth magnets such as Neodymium-Iron-Boron and Samarium Cobalt magnets have an MGOe of 35 and 26, respectively, while a ferrite magnet will measure 1-6 MGOe. However, MGOe of a magnet is only half the story, because the strength of the magnet is determined by its overall size. A large ferrite magnet can be stronger than a small Neodymium magnet.

Therefore, commercially, the strength of the magnet is measured in terms of its pull in lbs. The pull of the magnet is the weight required to pull a magnet free using perpendicular force. Neodymium-Iron-Boron and Samarium Cobalt magnets have a high pull relative to their size, which made them ideal for unobtrusive mounts.

As the magnet is removed from an attractive surface, the depth of penetration of the magnetic field lessens until the separation is too great for there to be an attraction. Because of the thickness of the Omie barkcloths (2-4/64ths), the size and pull of the magnet had to compensate for the minor depth of penetration.

Neodymium-Iron-Boron and Samarium Cobalt magnets were both assessed, with the nickel plated Neodymium-Iron-Boron magnets testing far superior. The surface of the unplated Samarium Cobalt rubbed off to the touch, the magnets easily chipped, and the MGOe was less requiring a larger profile of magnet.

Nickel plated Neodymium-Iron-Boron grade 35 MGOe magnets with a diameter of 1/2", a thickness of 1/8", and a pull of 4.7 lbs were chosen for mounting.

Another consideration was the iron alloy backing plate that attracts the magnets and holds the barkcloth in place. While flat stock of galvanized steel has commonly been used in the past [Holbrow and Taira 2011; Keynan et al. 2007], another option is a thin steel magnetic receptive tape with a transparent pressure-sensitive rubber-based adhesive on one side named FoilMAG from Adams Magnetic Products. Both a steel plate and the tape were tested.

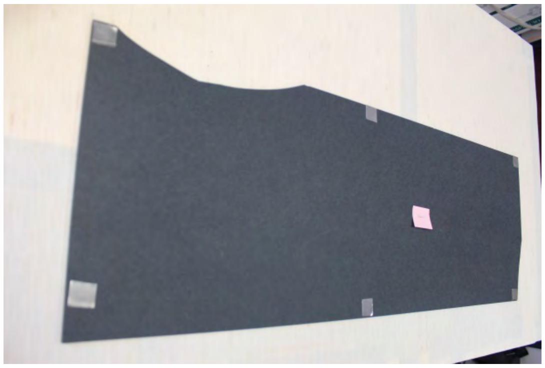
For the purposes of mounting the barkcloths the steel tape was much easier to work with. The galvanized steel flat stock had to be cut, recessed into a backing board and adhered in the exact location. The flat stock needed to be cut to the same dimensions of the magnet, because during testing the magnet tended to drift to the edges and corners of the flat stock causing the barkcloths to sag. The tape was easy to cut with sheet metal sheers and stuck effortlessly to the surface of the backing board, with a minimal profile of 0.01"-0.03". The tape could be removed and adjusted relatively easily. Many of the barkcloths had very undulating structures when hung vertically and extra magnets (and tape) were needed to "tack down" areas that drooped. The barkcloths also slightly sagged when hung vertically, requiring minor adjustments.


Magnet test

Practical Application

Once the testing was complete, the mounts were constructed for all wall hung barkcloths. For each piece, 1/8" Gatorboard backing was cut to the dimensions of the barkcloth minus a ½" on all sides in order to hide the backing boards from the viewers. Cleats were added to the back of the boards for hanging on the wall. The tape was then attached to the board.

Oddy tested, color matched, thin fabrics were wrapped around the board and taped to the back. The barkcloths were then placed on the fabric. The magnets were laid out on a strip of sheet metal, custom painted with Acrylic paints to match the various barkcloths, left to cure, and then placed above the barkcloths in the steel tape areas.


Custom cut board with steel tape


Barkcloth hung with unpainted magnets


Painted magnets

While the adaptability of the steel tape to the variations of the pieces was critical to successful mounting, the tape did have its own issues. For one, the thinness of the tape worked fine with the thin Ituri barkcloths where the depth of penetration was adequate, but was a concern with the 0.0625” thick Omie barkcloths. In this case, 3 layers of tape were stuck together which created a much better magnetic bond.

In two instances, additional magnets were attached to the reverse as well. 2 Large Omie barkcloths were hung in portrait orientation with narrow widths from which the weights of the pieces were held. The magnets at the reverse provided further strength to the bond of the front magnets, even though the depth of penetration was limited by the 1/8" Gatorboard.

Barkcloth hung with painted, hidden magnets

Conclusion

The magnets worked flawlessly through the duration of the exhibition at the Fowler Museum. The magnets proved to be the perfect solution for mounting the complex and unique barkcloths without damaging the fibers. The use of the steel tape allowed for easy adaptability to undulating structures, sagging areas and the inconsistent shapes and depths of the material.