THE RE-TUFTING OF AN HUNZINGER ARM-CHAIR

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Abstract- George Hunzinger (active 1860-1898) was an innovative furniture designer whose manufacturing and production techniques inspired others. His designs were not linked to any particular revivals. An armchair owned by Munson-Williams-Proctor Institute in Utica, NY, displays Hunzinger's stamp, dated 1869. Though it no longer has its original show cover, evidence of original materials was discovered in the seat during treatment. An identical chair owned by the Brooklyn Museum of Art was used as the original document for this work. As part of the treatment, the ornate tufted seat with a vertical center decorative panel needed to be recreated, while still maintaining the original materials in the seat. This led to the need to identify and use innovative materials.

The presentation will discuss the treatment of this chair, the materials used, and the methods employed to achieve the original profile of the tufted seat and sling back. In addition, a comparison of the various non-invasive tufting techniques will be discussed.

Título- Decorando de nuevo un sillón Hunzinger. **Resumen-** George Hunzinger (activo entre 1860-1898) fue un diseñador innovador de muebles cuyas técnicas de manufacura y producción inspiraron a otros. Sus diseños no estuvieron ligados a ningún renacimiento en particular. Un sillón perteneciente al *Munson-Williams-Proctor Institute* en Utica, NY, fechado en 1869, muestra el sello de Hunzinger. A pesar de que el revestimiento original ya no se encuentra presente, se descubrió evidencia de materiales originales en el asiento durante el tratamiento. Un sillón idéntico, perteneciente al *Brooklyn Museum of Art* fue utilizado como documentación primaria para la realización de este trabajo. Como parte del tratamiento, el asiento tapizado ornamentado con un panel central vertical decorativo necesitó ser recreado, manteniendo a su vez los materiales originales del asiento. Esto generó la necesidad de identificar y utilizar materiales innovadores.

Esta presentación desarrollará el tratamiento de este sillón, así como los materiales utilizados y los métodos empleados para conseguir el perfil original del asiento tapizado y el respaldo. Además, se realizará una comparación de las diversas técnicas no invasivas para redecorar este tipo de materiales.

Titre- Le re-capitonnage d'un fauteuil Hunzinger. **Résumé-** George Hunzinger (actif de 1860 à 1898) est un dessinateur de meubles innovateur dont les techniques de fabrication et de production ont été une source d'inspiration pour d'autres. Ses créations ne sont pas reliées à un renouveau stylistique particulier. Un fauteuil présentement au Munson-Williams-Proctor Institute à Utica, New-York, porte la marque Hunzinger, datée 1869. Bien que le fauteuil n'ait plus son recouvrement original, au cours du traitement des éléments de matériels originaux ont été découverts dans le siège. Une chaise identique du Brooklyn Museum of Art a été utilisée comme référence pour ce travail. Le traitement, tout en conservant les matériaux originaux du siège, incluait la restauration du siège orné capitonné avec au centre un panneau décoratif

vertical. Pour réaliser ce projet, il a été nécessaire d'identifier et d'utiliser des matériaux innovateurs.

La communication discutera du traitement de cette chaise, des matériaux utilisés, et des méthodes employées pour atteindre le profil original du siège capitonné et du dossier. De plus, une comparaison des diverses techniques de capitonnage non-invasives sera discutée.

1. INTRODUCTION

The chair created by George Hunzinger and held by the Munson-Williams-Proctor Arts Institute Museum of Art (MWPAI) is an example of nineteenth-century innovation and invention that can be seen in both the chair's design and upholstery techniques **(Fig. 1)**. This chair also represents characteristics of the period of the "height of the Upholsterer's skill". The author hopes that the conservation treatment devised for the return of the upholstery profile will be considered as equally innovative as Hunzinger's original design.

This paper will briefly discuss the chair's placement within nineteenth-century design, the prototype at the Brooklyn Museum of Art (BMA), and the conservation techniques used on the MWPAI chair. During the treatment it became apparent that the MWPAI chair might also provide clues to the internal structure of the BMA chair, which will also be discussed.

1.1 GEORGE HUNZINGER (1835-1898)

After apprenticing at his father's cabinetmaking shop in Tuttingen, Germany, Hunzinger immigrated to America in 1855, arriving in New York City as a trained craftsman. He first worked for Auguste Pottier of Herter, Pottier & Company and Pottier and Stymus fame, till 1860 when he opened his own shop. Like other furniture makers in New York after the Civil War, Hunzinger sought to satisfy the growing middle class by producing furniture that was both presentable and functional. He developed twenty-one patents between 1860 and 1897, many representing his wide interest in furniture beyond chairs. These patents included new techniques for swivel top tables, convertible beds, and nesting tables. His obituary mentioned that he followed no particular school in his designs.

Hunzinger's primary contribution to chair design was to invent a cantilevered seat from the classical design of four vertical legs supporting a seat. Once structurally successful, he created at least two-dozen design variations on this chair. Through his mastery of machine manufacturing and marketing, Hunzinger was able to offer not only the various designs, but also the same chair style in several finishes and upholstery materials. When viewing several of these chairs side-by-side today, one can clearly see Hunzinger's sense of mixing and matching elements to give his middle class customers the sense of having custom furniture made, while keeping his manufacturing costs down.

2. BACKGROUND OF THE MWPAI CHAIR

The BMA had originally purchased the subject chair from Hamish Hogs Antiques (Helen Hersh) in Brooklyn, New York. They then sold it to MWPAI. The proceeds from this sale make it

possible for BMA to purchase a different chair with the original upholstery fabrics.

Hunzinger's maker mark is impressed into the rear leg of the chair. His 1869 patent describes a diagonal chair brace design. The result is that the chair appears as if it could fold, however it does not. Hunzinger made several different designs all with the same diagonal bracing. The folding quality represented in this chair is further accentuated by the use of the sling back, reminiscent of cross-frame chairs.

2.1 ALTERATIONS

The chair had been reupholstered, with an attempt to follow the original intent. The decorative textile design of this newer show cover dates it to the 1920-1930s time period, about the time a newer fabric would have been needed due to wear and tear. The seat back remained a sling-style and a decorative panel was positioned at the center of the seat with a rep fabric. However, at this time the profile of the seat was dramatically altered. The most pronounced changes were the removal of the tufting and the creation of the seat from a scroll-style to a more square profile. During this alteration decorative turned elements were removed from both sides of the front chair rails. Many of the attached trims were also ostensibly duplicated.

The reason for the change is not known, though clearly there was an understanding of the aesthetics of the decorative style. Was it perhaps because the lashing cords at the front edge roll failed distorting the original profile? Or was it possibly because the rounded front was too foreign or unseemly at the time?

3. EXAMPLE CHAIR AT THE BMA

When this chair came into the BMA collection, the scrolled front shape of the seat was a real surprise to the curator **(Fig. 2)**. Previously, the shape of the seat for this style of chair had been considered to be square, much like the MWPAI chair. It is highly unusual that it survived intact, as these chairs were popular with the middle and upper middle classes, and were functional along with being decorative. In comparison, more upholstered chairs created by Hunzinger's contemporaries the Herter Brothers, survived intact as they catered to more of an upper class clientele.

3.1 SHOW COVER

The BMA chair is relatively unchanged, with the show cover fabrics and trimming in remarkably good condition. When compared against protected or hidden locations under the seat, the golden ochre rep show cover shows even fading.

On either side of the decorative panel is an alternating 2-1-2 diagonal tuft pattern. The sides and back are vertical and the show cover is folded to match the points of the fold on the outer side of the tuft. The edges of the seat are trimmed with a z-twist cord that surrounds the seat and terminates around each of the side finials. The decorative panels' designs are each oriented to match their position on the chair.

3.2 SEAT CONSTRUCTION

The seat's structure is composed of six narrow-gauge springs[1]. The ends of the springs are also looped to the next coil. The webbing at the bottom of the seat has been replaced with modern jute webbing. Like MWPAI's chair, fragments of the original jute are present. A thin cord is also present that was possibly left from the original tying system. The cake has some replacement materials that can be viewed from the bottom. One to two rows of stitching are present to shape the cake.

3.3. OTHER KNOWN EXAMPLE CHAIRS

Since the start of this treatment other examples of the chair have come to the conservator's attention. An image of one with what appears to be the original show cover was found on the World Wide Web. It appears that the fabric was a silk cotton blend. The silk warps have deteriorated, leaving the stronger weft threads present. It could have been a silk and cotton or wool rep. The color scheme is also different, showing more reds. But the major difference is that there are more tufts to the seat, creating a 2-1-2-1-2 diagonal pattern on each side of the decorative panel. The fabric at the back no longer survives.

Another privately-owned chair is very similar to the BMA's chair and quite complete **(Fig.3)**. It has show cover fabric of a deep blue silk that is highly deteriorated, exposing the muslin layer below.[2] The back has the same design as the BMA's chair but with a different center panel. The seat also follows the same 2-1-2 tufting pattern.

Both of these examples had silk thread components further lead in the show cover fabric that further led to their deterioration. All of the example chairs show the variety of choices that Hunzinger provided to his clientele.

4. EXAMINATION OF THE MWPAI CHAIR

4.1 ORIGINAL LAYERS FOUND

During the removal of the current show cover of the MWPAI chair, fragments of the original show cover were, discovered under close examination, a dark rust rep weave fabric. Horsehair was the most popular upholstery fabric during the third quarter of the nineteenth-century, but rep gained favor among the middle classes in the 1860s. Due to its durability and long lasting properties, rep became a common fabric in the nineteenth-century, widely used for upholstery, hangings and clothing. It is a ripped plain weave fabric, created by a thicker thread element in one direction. It was woven in wool, silk, cotton, and their various combinations, and was both pieced and yarn dyed. Visual variations were used by combining different colors for the warp and weft, as well as by altering the spin to the thicker thread. The fabric's dimensionality worked as a good complement to the deep tufting and provided interest next to the highly decorative central panel. It appears that Hunzinger used wool rep extensively; however, it might just be that more chairs employing rep survived.

4.2 SPRINGS

Six hourglass-shaped springs are present in the seat frame, positioned in two rows of three, and three half springs are attached to the front rail **(Fig. 4)**. Each spring is composed of ten coils with the ends anchored to the coil. Where the springs have been burnished, the metal's surface is shiny. Darkened areas of the metal are present where the cord had come into contact.

All of the springs had been retied and were supported with jute webbing. A strip of original jute webbing was still present, folded in half length-wise to secure the front row of springs to the front rail of the chair. Additional fragments of jute with brown warps are found under the newer jute.

The shape of the front row of springs is only half of an hourglass; they were each cut in half **(Fig. 5)**. These three springs, because of their shape, actually assist in creating the rolled front edge without the need of additional materials. This area of the seat receives the most tears. Without the springs, this area would have to be packed with filling materials and secured with stitching, still vulnerable to collapse. This alternative would have required extensive labor and materials.

4.3 LASHING CORDS

Two campaigns of lashing cord are present on all of the springs; both follow the same side-to-side and front-to-back pattern **(see Fig. 4)**. No diagonal tying is present.[3] The earlier cord is slightly narrower, 1/8" vs. 3/16" thick, but both have the same tightness of twist. The older cord is only present at the tops of the springs. The bottom sides of the springs are stitched to the newer webbing with the thicker cord. The older cords at the front rail are short and appear to have maintained the rounded front edge profile.

Due to the completeness of the first tying on the tops of the springs, the shape of the seat was more easily determined. Measurements from the BMA's chair were also used to confirm the actual size. The position of the front springs could also be understood since the short loops of cord that had once been tacked down were still present. These three springs are hidden in the BMA's chair due to the rounded rail.

4.5 WEBBING

The earlier webbing has stripes of brown warps. Jute was commonly used in the late nineteenth century. The earlier webbing had three webs that ran front-to-back. Side-to-side webbing could not be located. However, at each corner folded webbing fragments were located. It appears that diagonal webbing was used that would support the outer four coil springs, due to the shallowness of the seat. From the examination of the BMA chair, it is possible that a similar diagonal treatment was also present.

4.6 TUFTING TIES

A thinner cord, 1/16" thick, is also present on the chair **(see Fig. 5)**. It is located on several tacks (the longest at the front rail), and also embedded in the horsehair cake. These cords are obviously from the tufting; their location on the front rail being an indication of how the tufting at the front was secured. The ties could not be threaded to the underside of the seat, so they had to be secured directly to the rail itself.

4.7 SPRING COVER CLOTH

The springs were covered with a jute layer secured to the top surfaces of the chair rails. Evidence of an earlier layer was found below the current jute.

4.8 SEAT CAKE

With removal, the stitched seat cake shows some of what appears to be original horsehair. The cake is covered with a jute fabric similar to that found over the springs. Protected near the stitched edge are fragments of an older, highly deteriorated jute that did not allow extensive examination for past evidence of the original profile.

Buried within the horsehair are more fragments of the show cover, a fine lashing cord, a green wool bullion fringe, a bundle of pale yellow silk threads, and a strip of black pile fabric. The green bullion matches the green bullions on the BMA chair, and the other example chair with the blue silk show cover. Since these two example chairs have the same fabric design on the back, it is possible that the MWPAI chair also had the same back fabric.

5. TRADITIONAL SPRINGS AND TUFTING TECHNIQUES

5.1 A BRIEF HISTORY OF UPHOLSTERY SPRINGS

The first use of spiral springs in upholstered furniture in the United States was in the late 1820s. Springs were found stapled to the wooden bottoms of Empire sofas. The idea was borrowed from exercise horses of the eighteenth-century. Their introduction was considered to be a cost and labor saving innovation. They filled a void that would previously have been filled with horsehair, requiring extensive time to create the stitched edges. However, early springs seats quickly became lumpy and uncomfortable. The full use of springs was accelerated not only by the numerous advances and patents both in iron blending and spring design, but also through the method of tying and securing the springs to create an evenly comfortable seat. It wasn't until the 1850s that the hourglass design of springs was developed after which full integration occurred (Britton and Porter 2005). Springs were not essential for deep tufting; however, they were often found together.

5.2 DEEP TUFTING TECHNIQUES

The Victorian era saw the height of the deep tufting style[4] and was generally considered a very comfortable type of seating. It coincided with the height of the upholsterers' talents, who were

able to cover just about any surface or shapes found on furniture, and even tufting on walls. The shapes between the tufts became quite elaborate, going beyond the simple squares, rectangles or diamonds to the "star" tufting that radiated from the center. Star tufting is a variation of pleated tufting in the US, a technique used by Hunzinger for the round backs chairs. It was a very expensive form of tufting, due to the necessary skill, but still it was applied to all types of fabrics. Through the use of a designed fabric, a kaleidoscope effect could almost be created, an effect further heightened with contrasting colors that even included the buttons themselves in the design. The French came later in adopting the style of deep tufting, but once they did they were enthusiastic[5]. Whether the deep tufts actually added to the comfort of the sitter is not known, as the materials have all degraded. Deep tufts could also be quite hard, but with a soft appearance[6].

Since the beginning of the pursuit of comfort through soft seating, upholsterers have been using the addition of internal stitching as a way to support and stabilize seats and backs. A form of quilting was first used, which also became decorative, to help hold the layers together with the padding (Spicer 2005). Later individual localized points were used with a decorative bundle of threads, called tufts. The tufts prevented the cord from tearing through the show cover fabric. These wrapped bundles worked well as long as the stuffing layers remained thin. The show cover fabric between the tufts remained smooth. The construction of early mattresses followed the same techniques. As the layer of padding became thicker, buttons were used as part of the securing system. The deeper wells created also created the folded effect. The 1830s were a transitional period with buttons becoming the norm in the 1840s. The same fashion sensibility was also present in the upholstery of carriages.

The tying cords and button receive an extreme amount of stress in creating the individual tufts. The buttons or tufts are required to compress and hold all of the layers between it and the seat. The ties anchored on the backside or in the underside of the seat are small cords, knotted or tied to a bundle of scrap fabric. A thin cord is desired, so as not to puncture too large of a hole in the display fabric. However, the need for strength must also be balanced, as the fabric also needs to be held securely in place in order to be manipulated. When the upholstery of tufted furniture fails it is due to the breakage of these ties.

The amount of stress and the deterioration is evident on the BMA chair, where some of the buttons do appear to have been replaced at some point (now aged well to blend with the originals). Currently two buttons have been completely lost.

Evidence of tufting can often be found since upholsterers reused as much of the materials within a chair or sofa as possible. A thorough examination of all layers can be useful. A ghosting pattern of dirt might be seen on the muslin cover to indicate that tufting was present, or actual holes in the fabric. Unfortunately in case of the MWPAI chair this layer was not kept. At some future time the thin cord found buried in the horsehair cake might be the start of an investigation.

6. ALTERNATIVES TO TRADITIONAL TUFTING

6.1 NOMEX® SUPPORT

On an Egyptian Revival Armchair[7] a sheet of Nomex was positioned within the chair frame back, to support the tufting ties. All of the original layers on the chair's back were present, but had become unattached to the chair's crest rail and had completely collapsed over time. The Nomex was custom cut to fit smoothly against the back of the original under-upholstery. When possible the Nomex was slipped to the front of the frame between the frame and the secured sewing edge. The sheet was secured with ethafoam blocks and hot melt glue. All efforts were made to maintain the original curve and profile of the inside back. The tufting ties pierced the Nomex and were secured behind with fabric bundles in the traditional manor. The Nomex ensured the proper placement and spacing of the tufts, allowing for the original deep tufting to be seen.

6.2 MAGNETS

This conservator participated in a traveling exhibition project where many of the individual artifacts were secured to a removable deck support with neodymium rare earth magnets[8]. Extensive experimentation was done using magnets of many different sizes. This conservator became aware of their strength and versatility, and later felt that they could be useful for this upholstery project.

These magnets do pose some risks. The force of one magnet becomes stronger when next to others; therefore their strength of attraction can lead to fingers being pinched. The use of a wooden tool with a hole can prevent harm when trying to separate one magnet from the other. They can easily jump out of partitioned boxes, therefore keeping them divided in lidded containers is recommended.

Their magnetic field can also harm electronics such as computers, televisions, and magnetic strips on credit cards. They can be chipped but they cannot be tooled. Fascinatingly, they lose all magnetic strength when in contact with high temperatures; a characteristic discovered when hot melt glue was applied to the magnets to mount them onto the display decks.

However, the benefit in using the magnets with this upholstery project was that their strength allowed the conservator to easily represent the tufting of the front area without the need of altering the wooden structure of the rail.

7. TREATMENT

After full inspection of the upholstery layers, it was decided to keep the interior structure in the chair for the treatment. The later jute webbing was reinforced with an added layer of 4" wide cotton webbing, stapled to the underside of the rails, and woven in the same manner. The stress of the lashing cords was also reduced with additional lashing and the collapsing of the springs with polyester cord. The springs along the front rail were secured down to the front rail.

The spring cover cloth was replaced with a polyester woven fabric that was secured to the added stitching edges along the outer side edges of the seat rail[9] **(Fig. 6)**. Large-sized metal fender washers were stitched in position to the cover cloth. Stitching was done in several locations around the perimeter of the washer to provide an even attachment. Due to the number of tufts in the seat this step could be time consuming. The washers could have been secured with hot melt glue or another adhesive, but without a true mechanical fastening, there was a concern that the stress over time would cause the glue to release. The washers were positioned to match with the position of the deep tufting of the BMA chair[10].

The shaping of the seat continued with layers of loft resin-free polyester batting **(Fig. 7)**. The vertical sides of the seat were defined with the thicker batting that was cut to shape. Holes in the batting were cut for the tufting depressions. The magnets were employed as layers of batting were applied, since they could easily be removed while determining the correct depth, with no harm to any fabric layer. A top layer of muslin was attached and positioned to act as a barrier between the batting and the show cover. At this point the size and shape of the foundations matched closely with both chairs. Creating the holes for the tufting created a well for the button to enter, thus reducing the stress applied. The size of the hole slightly decreased with each layer of batting. This allowed the batting to conform more to the intended shape of the desired wells for the buttons.

The diameter of the magnets selected matched the size of the buttons and had small holes in their center. The fabric was secured with a thick solution of Acryloid 48N bulked slightly with fume silica. The surface of the magnet was abraded slightly and degreased. A mold was created in which the covered magnet could sit to hold the layers tightly together during adhesive drying.

The new show cover was woven to match the fragments found on the chair and woven by Thistle Hill Weavers of Cherry Valley, New York. The trims were also made by Thistle Hill based on the BMA's chair. The decorative panels were reproduced in needlepoint by Cass Daley Designs of Colorado Springs, Colorado.

The show cover was applied in two sections, one on each side of the central panel. The direction and position of the folds from the tufts were all determined by the BMA chair. Once the tufts were determined and secured, the decorative elements were all applied with stitching **(Fig. 8)**.

8. CONCLUSION

This technique of using magnets is probably not appropriate for all instances. Direct stitching of the tufting could have been performed with this chair, but the large wooden element prevented easy access to the underside of the seat to stitch the tufts located along the front rail. The lack of access to this location made the magnets useful. Aesthetically, the magnets allowed for adjustments of the tufts in order to better match the original chair. The locations of each of the tufts could be fine-tuned as necessary. In addition, not stitching ensured that the older lashing cords attached to the springs would not be pierced with the needle while doing the tufts, thus both weakening and deteriorating the evidence. The use of the magnets achieved the goal for the treatment.

Finding a match between the magnets and washers in order to create the necessary strength takes some adjusting. In this instance the metal springs did not affect where the magnets were positioned. This technique might be most useful in supporting an inside back, where a solid sheet of metal could be cut and inserted into a chair frame, providing a palette on which to position the deep tufts. It is possible that further research will reveal a fabric with embedded metal that could be used, thus eliminate the time-consuming washer attachment.

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NOTES

1. Elizabeth Lahikainen examined and treated the chair (1997), in preparation for the exhibition at the BMA.

2. Since being illustrated in the BMA exhibit catalog, the chair has unfortunately been completely reupholstered.

3. Another Hunzinger chair, owned by the Museum of Fine Arts, Boston, MA, was treated by Heather Porter. The chair has very similar springs and lashing cords, but with an additional diagonal lashing pattern. This chair also retains its original chair back under-upholstery layers that show the tufting pattern and where a decorative panel was positioned.

4. As with many things, the terms used to describe tufting and buttoning are different between the United States and other English speaking countries. In the US we tend to describe the technique that is flat as "buttoning" and the deeper type where the show cover is folded as "tufting" or "deep tufting". In the UK, they tend to reverse the terms to describe more the item that holds down the show cover. Therefore, the flatter style with a tuft is "tufting" and the deeper type secured with a button is "buttoning." In the late nineteenth-century US, both terms became generic enough to describe both techniques. Another term also used is pleated tufting. In this paper, I refer to the term as used in the American tradition.

5. Katherine Grier discusses this technique as a "French novelty" in upholstery, but the evidence appears to prove that the innovation arrived in the US through both German and French immigrants.

6. The enjoyment of comfort sought by the sitter was inhibited by the social habits and dress of the time.

7. The armchair is attributed to M&H Schrenkeisen (active 1859-1903). Owned by MWPAI, (1986.82.2) along with its matching sofa.

8. Maine State Museum, *Uncommon Threads*: *Wabanaki Textiles, Clothing and Costume.* Held at the Maine State Museum during May 2009 – May 2010. The exhibition will travel in the Northeast and in Canada.

9. The stitching edges were created from narrow strips of Nomex® cut to fit the tacking edges. The strips were tightly covered with cotton fabric and attached with brass tacks in original holes.

10. The depth and position of the tufts were each measured from the BMA chair.

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SOURCES OF MATERIALS

Magnets
K & D Magnetics Inc.
2520 NW Boca Raton Blvd.
Boca Raton, FL 33431-6608
(561) 392-2103
www.kdsmagnets.com

Cotton webbing
TestFabrics, Inc.
415 Delaware Avenue
PO Box 26
West Pittston, PA 18643
(570) 603-0432
www.testfabrics.com

Nomex
Active Industries, Inc.
20 Solar Drive
Clifton Park, NY 12065
(518) 371-2020

Fender washers
These can be found at most hardware stores.

Needle punch batting
Buffalo Felt
14 Ransier Drive
West Seneca, NY 14224
(716) 674-7990, x207

Loft Batting
Gaylord Brothers
P.O. Box 4901
Syracuse, NY 13221-4901
(800) 448-6160
www.gaylord.com

Replacement Show cover and Trimmings
Decorative panel
Cass Daley Designs
C 915 N Sheridan Avenue,
Colorado Springs, CO 80909
(719) 632-6314
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Show cover & trims
Thistle Hill Weavers
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GWEN SPICER is a textile, upholstery and objects conservator with 25 years experience, including 15 years in private practice. She earned her MA in Art Conservation from Buffalo State College, and has since taught and lectured around the world. In her private practice, she assists many individuals and organizations of all sizes with storage, collection care, and exhibitions, and has become known for her innovative conservation treatments. Ms. Spicer also provides expertise in the areas of housekeeping strategies, integrated pest management, and disaster planning. She is a Fellow and active member of the AIC.

Fig. 1 The MWPAI chair before treatment (1993.21). The treatment was implemented for the exhibition *The Fabrics of the Home* (April 4, 2009-August 6, 2009), an exhibition that showcased rich upholsteries and wallpapers of the Victorian Era.

Fig. 2 The BMA chair with the original shop cover and trimmings (1992.208). The cantilevered seat design can be seen.

Fig. 3 Chair in private collection with the same 2-1-2 tufting pattern on the seat. The decorated back panel is the same design as the BMA chair.

Fig. 4 The springs and lashing cords found within the chair's seat.

Fig. 5 Detail of a shortened spring attached to the front rail of the chair. Both campaigns of lashing cord and the original tufting tie can be seen.

Fig. 6 The metal washers stitched to the replacement spring-cover cloth.

Fig. 7 Batting layers applied with cutout holes for deep tufting to be inserted and secured with the covered magnets.

Fig. 8 The MWPAI chair after treatment.