Below is a conservation report published by Sherry Doyal (in "The Conservator, No20 1996) explaining her conservation work on an important piece of country house furniture.

I have written a piece called "Conservation versus Restoration" to discuss the difference in approach that would be taken by the antiques trade (restoration), in comparison to the institutional conservation approach described here; This piece is at the end of this article.

THE TREATMENT OF A WELLINGTON MUSEUM APSLEY HOUSE HALL PORTERS CHAIR

A case study of the treatment of coated fabric

Sherry Doyal

The Victoria and Albert museum employed the author by contract in 1995 to undertake the conservation of upholstered furniture. Among pre-selected projects were several nineteenth century pieces with top coverings of coated fabric. These fabrics are the precursors of the plastic coated fabrics commonly applied to 20th century furniture.

The Apsley house Hall porters chair had been identified as a priority conservation project as the house was undergoing refurbishment and the chair was required for open display for when the house was reopened. The preparation of this chair for exhibition was used as an opportunity to explore repair techniques for coated materials.

HISTORICAL BACKGROUND

Porters' chairs were designed to be used by a manservant tending to door security; a porter may remain at his post throughout the night if necessary. Designs gave some sort to comfort and warmth and; such chairs I usually high sided and were often enclosed overhead, sometimes a pot cupboard is included below the seat.

The first duke of Wellington purchased Apsley house in 1817. The house and most of its contents were given to the nation in 1947 by the 7th duke of

Wellington. The V&A were charged with the administering of the Wellington museum, which opened in 1952. This chair was acquired for the Wellington museum in 1991 from the present duke. The chair was and storage in the attic of country home but a chair of this type appears in Apsley house inventories dating from the house purchase until about 1847.

The curator at the time of purchase Jonathan Voak has no reason to believe that purchased chair and that in the Apsley inventories are not one and the same. There is a verbal history of association between the chair and Apsley to the present duke's period.

The Apsley the house chair has a full hood and enclosed base. The interior of the hood, inside wings, inside arms and seat are all deep buttoned. The inside back is fluted, the scroll arms and seat are piped. The exterior of the frame is close covered and close nailed. The horseshoe shape base has a drop front door on Chains to a cupboard space below the seat.

CONDITION BEFORE TREATMENT

The chair frame was structurally sound although there were some small areas of loss on the scroll arms and at the base. Castors were missing from the base of the chair, this was causing abrasion to the base and damage to the covering fabric which wrapped over and under the base edge. The lack of castors also made an already difficult to handle piece even

The chair, front view

more awkward to move.

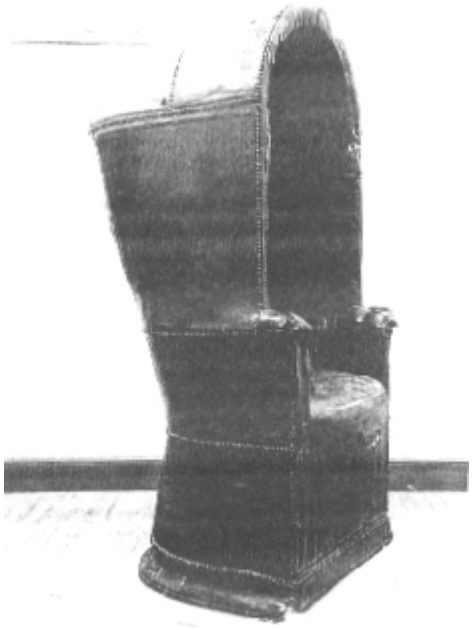
The metals present on the chair of were corroded. The exposed rusty button moulds and corroded close nailing were both disfiguring. The button moulds

were revealed because the textile covering had dropped off as the acidic corrosion by-products had damaged the Cotton substrate of the coated fabric, causing embrittlement. Cast trimming nails had apparently been reused from the original upholstery but some were missing and a variety of replacement and machine made nails of different sizes had been used. The hinges of the drop front flap, which were replacements, had broken.

The under upholstery structure appeared to be relatively sound although loss of some buttons in the deep buttoned areas, notably the seat, was causing stress on surrounding buttons the scroll arms and arm facings were damaged with some loss of fill and resulting deformation. The rest of the under layers visible through holes in the top covering appeared sound although the remains of substantial insect infestation were visible.

The upholstery top covering fabric was in poor condition. The cloth was heavily soiled with both large particulate soiling and adhered soiling; the latter was especially apparent where a damp cloth seemed to have been used to wipe over the surface at some time. The coating was tacky in places so that soils and fabric had adhered to each other, notably at the flutes in the back. The coating has cracked overall. There were some colour changes to the surface and one area on the back seems to have been scorched. The coated fabric top covering was physically much damaged, especially on the outside wings, back and hood. The damage could be categorised as splits, tears, holes (with loss), punctures (no loss), impacts (no hole but distortion) and loss.

The top covering of the hall porters' chair had been heavily repaired in the past with varying degrees of success. In places the splits had been pulled together by stitching. Some stitched repairs had not held because the stitching failed or because the over tight fabric failed. A range of coated fabrics had been used for patching; these were applied with hot melt animal glue and/or gimp pins. The hot glue had caused puckering and distortion of the fabric coating. In areas previous attempts to peel away adhered repairs had resulted in the coating being stripped from the fabric substrate leaving the coating adhered to the reverse of the patch.



The chair, three quarter view

CONDITION: DISCUSSION

Any fabric pulled taut and unsupported over a frame work is vulnerable: part of the upholsterers skill lies in the judgement of 'pull' and grain of weave in the application of tension on textile coverings. Too much 'pull' and the textile will be over-tight this may crush under upholstery, reveal or warp the wooden under structure and/or cause fabric to split. Too little pull and an ill fitting easily creased top covering results. With coated fabrics the upholsterer is sometimes unable to see the grain so that the stresses are not evenly applied.

According to historic texts American cloth was worked warm, applied with hide strainers/pincers and contracted and tightened on cooling. Most of the coated fabric covered items examined by the author appear to have been over stretched by an upholsterer unable to see grain and unable to judge how great would be the contraction on cooling. Splitting relieves when the substrate fabric begins to weaken the inherent stress. In the twentieth century knitted fabric substrates largely replaced woven substrates for coated upholstery fabrics. Fewer skills were required in the application of these fabrics.

TREATMENT BRIEF

The chair was the subject of discussion between staff at The Wellington Museum, the Furniture and 'Woodwork Collection and the Conservation Departments Furniture and Woodwork Section and Textile Section. The curator requested that the chair be conserved so as to appear as it might have in the first Dukes home. However, the present top cover is unlikely to be of that period: a sample of leather, located during preliminary examinations by Ms Wilson may have been a remnant of the original cover. It was thought that the present top covering represented a first recovering of the upholstery and probably dates to circa 1820-40.

Re-upholstery, based on evidence gathered from the chair during stripping of the current top covering, was considered, but restorations using leather are notoriously unsuccessful. The new leather finish is incongruous with the historic frame finish or, as in this instance, with the historic interior within which the piece was to be viewed.

An additional impetus towards conservation was that the coated fabric was identified as the earliest example of this type examined in The Victoria and Albert Museum Collections.

Conservation of the existing covers was agreed. Fumigation of the chair before treatment was recommended, as there was extensive evidence of insect infestation (moth) within exposed upholstery fills. The chair was fumigated with rnethyl-bromide before being delivered to the textile Section. An upholstery conservator (the author) was contract employed within the Textile Section.

It was agreed that the contract conservator's brief would include the removal of unsightly previous repairs, cleaning, and repairs to fabric and upholstery and to make the chair presentable for open display on a low plinth in the hall of Apsley House.

Peeling patch, left back hood

MATERIALS IDENTIFICATION

Simple tests for plastic identification proved inconclusive in identifying the range of fabrics used for the coated cover and repair fabrics. It was thought that the cover coating might be a mastic resin, which was soluble in methylated spirits, may be soluble in acetone and may bloom in contact with water. Samples of the different cloths, patches and adhesives were taken using the silicone carbide method. The samples were run using Fourier Transform infrared Spectrometry (FTIR).

The results were inconclusive for the original material though repairs were identified as being cellulose acetate (or nitrate) coated fabric applied with animal glue and rabbit skin glue. Previous repairs had been adhered to the object and when pulled off without due care some of the coating was removed. Gas Liquid Chromatography also proved inconclusive because the animal glue of the repair contaminated the results. Solubility tests showed that the cover coating was soluble in industrial methylated spirits (IMS) and acetone and insoluble in Stoddard solvent. When the resulting solutions were allowed to dry they separated into black pigment and a transparent yellow binder.

CLEANING THE COATED FABRIC

Surface cleaning was selected because the testing and a review of literature" indicated that cleaning with solutions was to be minimised. The method chosen was as follows:

The loose, gross surface soiling was removed using low powered vacuum suction (a Hoover dustette + crevice tool).

Flat areas were cleaned with an eraser, after test cleans using an art gum eraser(smeared). groom stick (too much pressure required), and a Wishab Akachemie sponge (smeared) a Staedtler Mars Plastic eraser was selected. This was used in tube refill form to fit in an electric eraser tool. The tool was used working with the fabric grain in both a warp and weft direction. A pocket microscope was used frequently to check the surface to ensure that dirt, not the fabric surface, was being removed. Areas around creasing, buttons and close nailing were cleaned with wedges cut from eraser in block form. In a few instances the block erase" was grated with a cheese grater and the grated eraser was brushed into the surface.

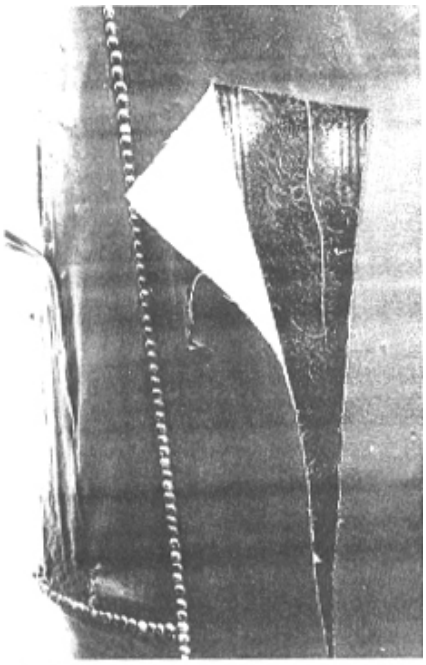
Trial patches were worked as a guide for an overall level of cleaning: the grain of the coating was not completely cleaned. As cleaning progressed it was necessary to continue to vacuum as considerable waste eraser is generated. Around splits in the fabric, barriers of paper, card or Melinex/Mylar (polyester sheet) were used to mask areas to prevent contamination of the object interior by waste eraser.

The friction generated by eraser cleaning is advantageous, as the coated material is more flexible on gentle warming and will therefore take more cleaning. The tool overheats after a time necessitating cleaning in short 'bursts." Care must be taken not to allow tool marks or to allow the eraser to become too worn, which exposes the tool head to the object. A problem was encountered during cleaning; in some areas the eraser tool smeared the surface although it looked no different than an adjacent area by eye (even under magnification or UV examination). In these areas the tool marking was very apparent. This appears to be because a coating has been applied (probably coloured boot polish. These areas were swab-cleaned with Stoddard solvent, which removed tool smear marks.

After eraser cleaning the surface was buffed with a clean cotton flannel

cloth. This 'evens out' cleaning and a dull sheen is obtained. Exterior areas were given a light application of microcrystalline wax as a finish because the chair is to go on open display. It is hoped than this finish will act as a sacrificial layer in subsequent cleaning/housekeeping. It also helped to fill craquelure and mav adhere small flakes. Repair removal Only those repairs which were damaging, disfiguring or which could be improved were removed. Wherever possible patches were removed by mechanical means. Stitching was clipped and removed with tweezers. Staple lifter (Diamond Head) and side cutters were used to remove gimp pins and tacks used to secure parts of the patches. Adhered patches were peeled away where possible without disturbing the coating. A scalpel and/or a micro spatula were used to ease separation and also to ease animal glue splashes from the coating.

Where repair bonds were to strong a poultice of Laponite and de-ionized water gel was applied to soften glue so that it could be scraped from the surface. This was not successful in releasing the coated fabric where it had become attached to the more absorbent un-coated textile upholstery layers below. A poultice of the gel sandwiched in acid free tissue paper with a covering layer of Melinex was applied to the fabric (using miniature bull dog clips for one hour initially and building up to five hours) without success.



Split and peeling patch- left outside back

Heat and water were considered for reversing the bond. The technique employed needed to be finely directed so a steam pencil set at 80 degrees C was considered, it was found that too much vapour condensed for this method to be applied directly to the object with confidence. A condensation barrier was therefore made; it consisted of an embroidery hoop stretched with a Reemay spun bonded polyester to give a non-stick surface against the object and a layer of Goretex (polytetrafluoroethylene) sandwich in polyester. This was used between the steam pencil and the object and stopped condensation at the object surface. The glue was softened enough to break the bond but was not so salt as to allow residues of adhesive to be wiped/cleared away easily. The gloss of the residues was disfiguring swab cleaning with unstimulated saliva reduced residue and gloss.

METALS TREATMENTS

The close nailing of corroded, Japanned, ferrous metal was cleaned first with a stiff nylon bristle brush (the bristles were taped for part of their length in order to make the brush stiffer), tamped firmly on the surface. A vacuum cleaner (Hoover dustette with extension hose and crevice tool) was used to remove loosened corrosion and particulate soiling caught between nails. This was followed by the use of an eraser around and between the nails to pick up finer soiling. After this the nails were further cleaned as required using a glass bristle brush with vacuum cleaner running to remove glass powder and loosened coarse corrosion. The nails and coated cloth immediately surrounding the nails were then swabbed with Stoddard solvent to remove very fine dust and to degrease the metal.

After cleaning, the nails were painted with a coating of 2.5% tannic acid solution on a fine brush taking care not to apply acid to the coated cloth (a dry swab was kept at hand to clear any accidental spread of the solution). This solution acts as a rust converter on the nails. A second coat was applied after the first had dried in order to build up the treatment and the colour which was blue / brown.

Hinges and chains securing the drop door of the cupboard below the chair were similarly treated omitting the glass bristle brush cleaning, as it was not required.

Exposed button moulds inside the chair were treated in the same way as the close nails. The colour change caused by the treatment masks missing Japanning on the nails and, on the buttons, missing coated fabric coverings.

Replacements were required for the missing castors and broken hinges on the cupboard flap. An exemplar hall porter's chair from Audley End and measurements from the Apsley chair were used to select brass castors.

The dome heads nails on the chair varied in size and were a mix of cast ferrous metal and machined brass. Where the nails were missing a standard size replacement was used. This was a Fisco No 1660 Old Gold Speckled. This brass nail was chosen because its slightly rough finish gave a 'key' to the coating applied. This was burnt umber (a dark and a light) and ivory black pigments mixed in a solution of 6 gms Paraloid B72 in 200 mls of acetone. The nails were coated by brush on top and under the head with a final coat of the resin/solvent mixture only the mixture was chosen as a seal and for cosmetic reasons. The solvent evaporates quickly which results in a rough finish, which is more in keeping with the chipped enamel and corroded appearance of the original nails. The nails were tapped into piece in existing holes to give spacing using a wooden dowel as a punch between the tack hammer head and coated nail. In places micro-crystalline wax was buffed on the line to match gloss of object nails. The author prefers not to use original tack or nail holes as the evidence of original nailing in the frame can be muddled, especially in x-ray. In this instance, however, the nails had already been either reused or replaced and the top cover surface is 'scarred' by previous nail positions.

REPAIR OF THE COATED FABRIC

A full support for the fabric was not considered because it would require removal of the top cover. This would be time expensive and ill advised as the coated cloth lacks the strength to be re-applied and the appearance would be likely to suffer.

Patched repairs were preferred: they were to be adhered not stitched because stitching would disfigure the coating. An exception was made for a very wide split where previous stitch holes were re-used to loosely lace the edges together before patching. The adhesive chosen was Beva 371 (ethyl vinyl acetate + modifying resins and wax) because it could be heat

The chair (three quarter view) in situ *Apsley House* after conservation

reactivated and was soluble in Stoddard solvent As part of the process of adhesive selection the melting temperature (therefore working time) and solubility of the coating were considered.

The repair patches were to serve two purposes: physical and cosmetic. Physical repairs were required to support tears, draw splits together and protect exposed under- upholstery. Cosmetic repairs were desirable both to mask the raw white edges of the exposed substrate fabric at tears and the missing areas of coating where the previous repairs had been torn away. The repairs were to aim to match texture, gloss, and colour of the coated fabric and to fill gaps between splits and between support and object surface.

Initially repairs to perform both physical and cosmetic functions such as those used by leather conservators were considered. However, finally a double patch system was chosen: a support patch applied to the reverse of the coated fabric and a cosmetic patch of replica coating film applied over the coated fabric.

PATCHES

A lightweight, plain weave, untreated cotton was selected as a patch support material, and dyed to grey/brown with Ciba-Geigy Solophenol dyes. It was found necessary to mercerize the cotton before dying to obtain a deeper colour within a recommended 4% depth of shade for good colourfastness.

The fabric was coated with adhesive in The National Maritime Museums spray booth. This facility was used because a 'web' of adhesive directly on the patch fabric was required. Adhesive on an additional carrier layer of fabric (such as net, crepeline, or leno weave) needs extra manipulation through slits, which may cause damage. Adhesive web + support fabric has better drape qualities than an independent adhesive film support fabric and does not have the shine of a film (which matches the presence of a patch more noticeable).

The method of application of the patches to the chair posed some difficulties, as it was not always possible to support a patch while heat and pressure were applied. Several methods of providing temporary support for the patch were tried. These included tin plates and magnets to apply pressure, inflated balloons/condoms (stronger) and temporary acid free card slips which were inserted between the wooden framework of the chair and the top covering fabric. The latter was the most frequently used but always results in a small area of unsupported repair because space to remove the temporary support must be allowed. The acid- free card system also had the advantage of reproducing curves in the framework (for example the outside hood) to ensure that sufficient patch material was inserted.

The technique evolved by the author was as follows;

As much dust as possible was removed from the reverse of the coated fabric where access permitted. The back of the coated fabric remains tacky; soiling rising from the under-upholstery sticks to this.

The card support was inserted.

The Beva 371 web coated support patch was cut to size allowing about 20mm extra all round and rounding the corners of the patch. Sometimes a Melinex tracing of the damage was used to cut the repair patch.

The support patches, web covered with silicon release paper, were inserted through the damage: sometimes it was necessary to roll these two layers, insert through the slit and unroll inside the object.

Once the patch was in position all or, on large patches, part of the silicon release paper was withdrawn and the heated spatula was used to

warm the adhesive through the overlying coated fabric: finger pressure was applied until the object cooled. The warming of the coated fabric allowed distortions to be smoothed and temporarily improved the flexibility of the damaged edges.

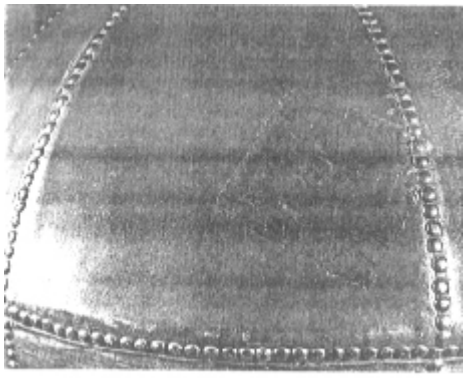
The card support was removed before it adhered the last part of the patch.

The support patches were not entirely effective when first applied. They are not strong but the support patches served to draw the edges of damage together, infill areas which could not be pulled together and reshape around curves. On the proper right scroll arm the edges of the patch were tucked beneath under upholstery layers and it was possible to regulate additional fill and blind stitch the scroll to rebuild the arm. The adhesive left exposed in gaps made a good bond with the cosmetic patches, which were applied, over the damaged areas. In short, these initial patches acted as a preliminary stage of the repair but would not stand alone as a repair and the cosmetic patch came to have a support function as well.

COSMETIC REPLICA FILM PATCHES

A mould of the coated fabric was made using silicon dental putty: the technique was based on that developed by the Canadian Conservation institute. Provil was chosen as the moulding material because it is addition curing and releases hydrogen on curing.

The site chosen for making the cast was the flat area to the proper right side of the cupboard door in the front base of the chair. This area was in relatively sound condition and is backed by timber so that it is possible to press down on the putty. Between the putty and the surface a barrier layer of microcrystalline wax was selected from alternatives that included melinex, cling film or polythene. This layer acts not as a release, as talc would, but as a barrier to reduce the risk of substances leaching from the putty into or onto the object or vice versa. After casting, the area was wiped dry, swabbed with Stoddard solvent to dry and clear any residue and then microcrystalline wax was re-applied as a finish coating (see cleaning).



New pieced patch, left hood

The mould was used to produce coloured, textured repair film. The mould needs to be 'seasoned' as the first film produced is uneven and shiny (this seems to be due to silicone left at the surface). Subsequently after each casting the mould is washed with brushed on white soap and water, dried and swabbed with Stoddard solvent to degrease and remove small residues of varnish. The mould was given five coating of tinted varnish laid at right angles to each other. The tints were experimented with to achieve depth of shade, colour and gloss required.

Acid free paper pulp (Arbosil) and Japanese Kizukishi paper were included in the layers to increase the peel strength of the film. The finished system for this project consisted of the following layers: black + umber varnish; umber + paper pulp varnish: back varnish: black varnish + a layer of Japanese paper: black varnish. Coats had to dry between applications and it was found that twelve hours drying before peeling from the mould was necessary or the film became glossy.

Having produced a cosmetic layer a method of applying it to the object was required. The most effective method of applying the replica coating film was backed by Beva 371 prepared film heat set to the object surface with a spatula iron. The temperature set at 80'C (actual temperature at 61'C at body of iron and 58'C at tip) when checked with Rototherm. The bond was good and the technique quite quick, however, when cut a little larger than the damage, with rounded corners, the patches did look like the results obtained from a tire puncture kit. Alternative methods were tried, for example, 'softening' the edges of the patches by casting film to the traced size/shape of the holes with the paper layer being given water torn edges.

Beva 371 was applied by brush to these and which were allowed to dry on silicon release paper before heat setting them to the object; the effect was rather like a fly squashed on the object. Tearing the film to shape was found to be satisfactory, as the edges are uneven and less noticeable than when cut. The torn to shape patches were backed by Beva film. This technique proved quite adaptable but some patches had to be made up by over lapping pieces of film. Missing piping on the scroll arms and moulding this film over a piping cord, which was withdrawn after the film cooled, made up seat aprons.

BUTTONING SEAT

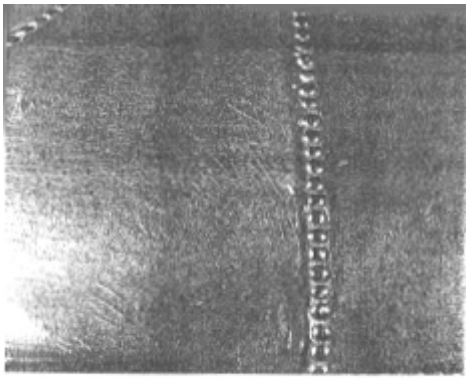
Three buttons were missing from the seat. These were replaced using metal-covered buttons prepared in a bench button press. The button backs being of the metal loop type. The buttons used were of a slightly larger size than the original buttons to spread stress on coated cloth top cover. The textured film was applied to dyed cotton using Beva 371 film (to give adequate thickness and flexibility to form round the button mould. This 'sandwich' was put through the press while still warm. The backs of the buttons were coated with Paraloid B72 (3gms:100mls) as corrosion of buttons parts is an observed problem. Additionally a 'washer' of dyed cotton cloth was inserted between each button and the seat cover when the buttons were applied.

The buttons were stitched through the seat using 100% polyester thread (Guttermanns Marca col. 682) which was 3 plied using a drop spindle and 'whipped' to 6 ply to give a suitable thread thickness. This was waxed with bee's wax to set ply and assist in drawing through the fillings. A roll of dyed cotton cloth was tied under the knot under the seat to spread stress. Each button was positioned and a slipknot applied. The seat top was then warmed with a heated sandbag (50 degrees C in a domestic oven for 30 minutes) which was left in position for 15 minutes before the buttons were drawn down. This was to allow the coated fabric top covering to become more flexible before pressure was applied. After drawing down the sandbag was allowed to cool in position. This was repeated three times to bring the seat down to the required position. The button ties were then tied off in a reef knot and trimmed.

The four buttons missing from the proper left wing were not replaced as there was no access for buttoning without removing outside covers.

EVALUATION OF REMEDIAL TREATMENT

The chair has been returned to open display at Apsley House. The appearance was greatly improved from a distance (4 m) but on examination the chair is obviously a fragile item. It sits in the hall, near the main entrance and with its back to a north-west-facing window, which looks out onto the heavy traffic of Hyde Park Corner. The conditions are not ideal for conservation but if the chair were displayed in a case the hall would not keep its atmosphere as a home. Or if the chair were removed from the house to a museum environment the loss of scale and setting would diminish its importance. The treatment is a compromise, which could be adapted to the changing conditions of open display.



Three new patches in area to left of nails after conservation

AFTER-CARE

Preventive conservation recommendations were made, for example moving the chair should be avoided in cold weather, the coatings are stiffer, tighter and more fragile then. A period replica textile case cover might be used to buffer the chair from extreme fluctuations (windy or rainy open days when the door will be opening and closing) or the chair might be moved further from the door. Surface cleaning using light vacuum suction will help reduce dust build-ups especially in the summer when the surfaces may become tacky. A blind at the window will help to deflect solar gains in temperature that may cause distortions or repairs to lift. If the coated fabric continues to move on display the repair film will crack and the Beva film stretch to accommodate some movement in the object. Should

movement occasion further damage the patches are simple to remove by warming and peeling away and can be replaced re-using the mould and ready prepared Beva. A range of colour and gloss films could be prepared at the conservation department and the repairs made in situ.

CONCLUSION

The work was undertaken between February 1995 and the house opening on June 15th 1995. 318 hours included research and development object movement and all treatment time by the author and others involved in the project. The time required to develop the treatment may be off set against those coated fabric covered items which still await treatment.

Mixed media objects of this type encourage inter- disciplinary collaborations between conservators. Such projects give the contract conservator an opportunity to work with, learn from and share information within a large institutional conservation department divided into sections and groups. This has a value that is not easily quantified.

SAFETY

During cleaning of metals an apron, hyper allergenic latex gloves with a lining pair of cotton gloves and a dust mask were worn to protect against glass dust and the vacuum was run throughout cleaning. Earplugs were worn to protect hearing. Spectacles were worn and seemed to give adequate eye protection (goggles misted).

When using solvents a portable extraction system was used. During preparation of Beva 371 sprayed support Carbosorb plus fold-flat disposable nuisance-level odour/organic vapour/acid gas respirators gloves and overalls were worn.

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This article will now be discussed in a short piece entitled "CONSERVATION VERSUS RESTORATION"

CONSERVATION VERSUS RESTORATION

The Conservation led treatment of the "Porters hall Chair" from Aspley house, undertaken by Sherry Doyal is a well documented example of the extremely thorough and almost uncompromisingly ethical approach to an objects preservation that the institutional sector can often afford to pursue.

The treatments carried out were within the constraints of a wider agenda that saw the project as part of continuing research and development into the long-term understanding and conservation of "American Cloth"(7).

This approach is compared with the possible priorities, fiscal and practical constraints and ethical compromises of the private/trade workshop.

Where relevant the addition of a number thus; (2) denotes the U.K.I.C. Code of ethics number.

TREATMENT BRIEF; PUBLIC INSTITUTION

The chair was to be Conserved/Restored to a condition whereby it could be reinstalled in the Hallway of Aspley House, the original position and context, but not to be sat upon or used as a chair in the practical sense(2,3,4,7,8).As mentioned in the introduction the approach here is very much object led.

From the very beginnings of the Victoria & Albert museum's assessment of this project the problems posed were the subject of discussion between themselves, staff at the Wellington museum conservation department (Furniture and textiles) and no doubt extensive literary research.

This is bound to afford the Conservator heading the project with a much more rounded and more highly informed treatment brief than would be possible if one person were to make all the decisions.

Porters hall chairs are not unusually rare, most are covered in leather, however this example is thought to have been recovered c1820-40. It was decided at this point that the fabric covering the chair was the earliest example of its type known within the V&A collection.

From this point on the top priority was the conservation of this valuable resource(2).

Due to insect infestation the chair was fumigated in Methyl Bromide before work began.

In the authors view a mistake due to the fact that as recently as 1994 it was accepted that Methyl Bromide could interact with some materials; "Polished metalwork was prone to tarnishing, rubber and some types of plastics have been known to show signs of degradation,". "There can be an odour akin to that of rotting cabbage given off when some organic materials such as wool leather and horse-hair are treated, which in itself shows some evidence of degradation of the material" (Rob Paynton and Kate Starling Cons/news#53mar1994)

This subject is covered in more depth by the author in "Thermo Lignum process"

TREATMENT BRIEF; TRADE

The necessary projected requirements for the private sector are likely to differ fundamentally from those above given that the chair will more than likely be destined for an environment in which its use as a chair, ie; to sit on, will be mandatory.

Also unlike the above scenario it is highly unlikely that an aftercare regime could be successfully managed, so the piece will have to withstand the likelihood of handling outside of that which is the norm within a Conservation environment(3).

The trade restoration approach would be quite different from the brief outlined above. There is a high probability that the initial appraisal would be made by the dealer/owner of the piece and the Conservator/restorer chosen to carry out the work.

This inevitably leads to a much less well-informed overview from the object's perspective. Financial considerations may well form a large part of the decision making process if the piece is intended for subsequent sale, and even if the piece is a privately owned heirloom these fiscal considerations are likely to be a high priority.

The institutional sector has a much larger pool of expertise on which to draw and as none of the conservators involved have any vested interest in the piece their views are likely to be unbiased by other non object based factors. The question of pre restoration insect treatment here relies on the ethical and long-term view being taken by the owner of the piece and the level of their knowledge and expertise.

The very fact that the above institutional approach still took a more invasive approach than was necessary shows that it is hard to get it right first time even with a team on your side.

THE PRACTICAL BRIEF;

CLEANING PUBLIC;

INSTITUTION

The cleaning methods used to remove loose dirt and surface accretions from the cloth covering the chair are extremely non invasive, the technique does not remove any more original material than is necessary, conservation of the original surface being priority and aesthetic considerations taking second place for the moment.

The work is time consuming but considered necessary in order to preserve as much of the objects integrity as possible(1,2,3,4).

CLEANING;

TRADE

The trade could take two approaches here, depending on the owner of the piece and their ethical stance, the restorers' ethical position, financial considerations, which inevitably depend to some degree on current market fashion and preference(3).

Approach 1

Strip off the American cloth and prepare the frame and upholstered superstructure for re-upholstery in leather.

Some opinions may suggest this as a true restoration due to the fact that the piece was almost definitely originally covered this way.

Whether or not this is so depends entirely upon the perceived importance of the c1830 restoration.

We could presume that parties undertaking this approach consider the American cloth to be of no significant historical and/or academic importance.

Approach 2

It is possible that the owner/dealer may be aware or open to persuasion (8) of the ethical considerations that are raised by the willful

destruction of this recovering, that is after all c170 years old! It is unlikely however that the resources would be available or fiscally viable to carry out such careful work to the same meticulous detail as the V&A led project.

It is more likely in the author's opinion that a suitable solvent would be used to clean the piece, and this cleaning would be undertaken with the aesthetic appearance being the top priority.

The ethical aspects of reversibility and historical context being of secondary consideration to the decorative potential.

METALS TREATMENT;

PUBLIC INSTITUTION

The original metalwork was treated with tannic acid in order to stabilize the rusted surface layer, conservation led and ethically acceptable.

The replacement of the missing dome head nails as carried out by Sherry Doyal is in the authors' opinion a good example of how the differences between the private and public sectors can diminish to negligible proportions in an instant.

It seems questionable to me that the replacement of these missing nails would afford much in the way of consolidation to the fabric of the chair and therefore their primary purpose can only be deemed as aesthetic(3).

This of course leads to the acceptance that this is an intervention outside the remit of any conservation driven ethic.

These nails are then "faked" to resemble the appearance of the original nails. Of course it has to be noted that the aesthetic appearance is highly academically important to the understanding of the piece as a whole(3).

METALS TREATMENT;

TRADE

Approach 1

It is likely that such an approach would also replace the close nailing in its entirety, from a conservation perspective a questionable ethic.

Approach 2 The replacement of the missing dome head nails as carried out by the trade is likely to be similar to that above with these nails "faked" to resemble the appearance of the original nails.

The most conscientious restorers would attempt to also leave in situ as much of the original nailing as possible(3).

REPAIRS TO COATED FABRIC AND PATCHES;

PUBLIC INSTITUTION

A dual patching system was chosen by Sherry Doyal to effect the repairs to the split and damaged American cloth covering the piece.

The inner patch, made of cotton was to provide the structural strength and a cosmetic patch applied to the outside of the fabric the necessary visual amalgamation. Each inner patch was "mercerized" (treated with an alkali to increase its dye uptake and strength), and carefully placed before being bonded into position.

Ethically this well in tune with the U.K.I.C. code as virtually none of the original material needs to be removed and these patches were bonded into place using Beva 371, an adhesive that is fully reversible with the reapplication of heat.

So in effect almost no negative intervention has taken place(1,3,4).

REPAIRS TO COATED FABRIC AND PATCHES;

TRADE

As Approach 2 would be pursued by a trade restorer it is highly unlikely that they would have the access to the spray booth at the National Maritime museum.

Furthermore it is quite possible that the trade would have to put the strength of the repair at the top of the priority list and a reversible solution may not fulfill this criteria.

It is therefore reasonable to assume that the restorations carried out may be compromised ethically in order to achieve practical viability.

BUTTONING;

PUBLIC INSTITUTION

Again there is much evidence in the approach taken here as regards the longevity of the piece as a whole with "washers" of the mercerized cotton being strategically placed to counteract the possibility of future corrosion damage and attention being paid to reversibility and non invasive stabilization.

This conservation led approach is further galvanized by the decision not to re-button the left inner wing, as doing so would cause the intervention to encroach into an undamaged area(2,5).

BUTTONING;

TRADE

It is unlikely that the commercial re-leathering that I have called Approach 1 would involve the insertion of cotton washers and the coating of the button backs with paraloid B72.

It is also unlikely that the commercial repairs that I have called Approach 2 would involve the insertion of cotton washers and the coating of the button backs with paraloid B72.

Financial factors usually dictate the brief and of course it is unlikely that the integrity of the object will take top priority.

AFTERCARE;

PUBLIC INSTITUTION The aftercare regime recommended by the conservator in question was a reasonably attainable set of measures that would serve to

reduce temperature fluctuation damage and lower the impact of the (ultra-violet light) falling on the piece(8).

Again the longevity of the piece being the only consideration. AFTERCARE; TRADE It is reasonable to assume at this point that a client who chooses to re-leather such a piece will want to use the piece for its original purpose.

In some ways whether or not an aftercare regime is recommended to the new/old owners that chose Approach 1 is irrelevant, as the surface is new and of no historical significance.

The frame however may well suffer as a consequence of being used as a chair in this practical sense It is more likely that those choosing Approach 2 would understand the need for an aftercare regime, possibly a similar regime to the one suggested for Aspley house(8).

CONLUSIONS

It is obvious that in most instances the institutional sector is more likely to have the resources, both academic and practical, to pursue the most ethically sound and unbiased route toward the best long term outcome for any given object.

This of course leads to the acceptance that anything less than this level of appraisal is an inescapable compromise of objects integrity.

Just how much of a compromise this is varies from conservator to conservator, restorer to restorer and from piece to piece.