CONSERVATION AND RESTORATION OF FOUR JAPANNED CHAIRS c. 1815

By Peter Hatchett with a Foreword by Michael Barrington

Foreword

These four chairs, of which the image left is a picture of the best, were given to me as a present by a long-standing client who bought them at Christies knowing my passion for Regencv furniture. I asked Peter to use three of the chairs at BAFRA's second Wood-finishing workshop at the Geffrye Museum at which he was a consultant during the after-lunch session. The fourth and least damaged chair I gave to Margaret Ballardie who, as so many readers will know, is certainly the acknowledged authority on japanwork conservation and restoration in Britain and probably in Europe. I think that, having talked to both Margaret and Peter, there was no divergence of opinion on how the chairs should ultimately be treated.

I am under no illusion that the chairs will henceforth be primarily for decorative purposes since the damage to them overall is little short of catastrophic but well within the bounds of totally successful treatment. Being of beech they are very vulnerable to wood worm, which in parts of the frames has been rife but leaves them structurally weak in spite of any treatment we may use to consolidate the wood. I have since had the chairs treated by Thermo Lignum so we can be certain that there is no active insect attack present.

When the chairs are treated, both conservation and restoration routes will be considered. However, since they are for my family's use and are not museum items, I will take a primarily restoration path to effect the necessary transformation with which we can live and which will involve distressing of what would otherwise be quite garish newly restored surfaces and paintwork. The chairs are to me seriously beautiful objects which I want to be able to admire. They will be fitted with shallow, probably light blue, silk covered pad cushions with ruched vertical panels attached to the seat backs with sewn silk ties. I shall put into the base of each cushion a panel of heavyweight buckram to act as a weight spreader, ie. to ease the ground or sitting pressure should any overweight visitor decide to park themselves there!

A Report with Suggested Treatment

by Peter Hatchett

Description.

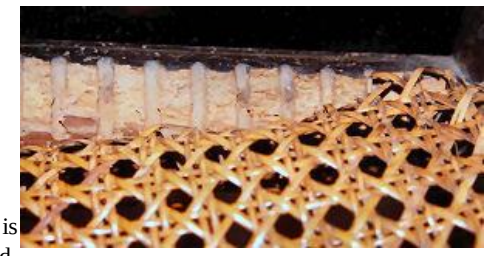
The chairs are constructed in beech with simple parallel crest rails, caned seats and rectangular slightly curved legs. The general construction is of sound workmanship, with mortice and tenon joints connecting all members. The overall finish is spirit varnish of so far unknown type, coloured a dark brown similar to Vandyke brown. The crest rail, general frame and the upper portions of the turned front legs are relieved by painted simulation of vertically grained satinwood panels with painted boxwood and ebony stringing forming a borders to the panels, executed in flat oil paint or egg tempera.

Condition.

All four chairs are heavily attacked by woodworm, leaving much of the timber so badly damaged as to be a mere non-structural honeycomb. Treatment for the woodworm infestation and a means of returning some structural strength to the timber will be dealt with under "Restoration".

One chair has a rear leg broken off at the juncture of rear and side seat rails (image left), due to its 'honeycombed' condition This detached leg has been preserved without further damage and fits well and cleanly to the remainder of the shattered joint.

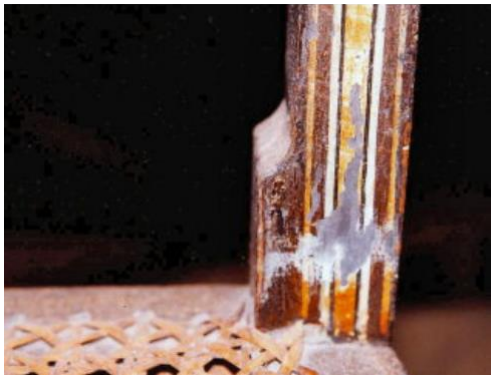
The second chair (picture below) has approximately one third of its rear seat rail missing for the full seat width and along a diagonal line following the run of the caning holes. The whole area is additionally weakened by its honeycombed condition while the cane panel is adrift from the back seat rail but still attached to the other three.



The third chair has had a replacement front seat rail probably within the last 20 years of slightly smaller cross section than it should be but properly fitted and otherwise sound. The painted satinwood panel decoration is very crudely executed and needs repainting.

The fourth chair, the best of the set (pictured at the top of the article) is in reasonably good condition, apart from woodworm. There are some minor chips to the paintwork in the grained panels.

Throughout the brown coloured varnish is wrinkled, probably due to wood shrinkage. Adhesion of the varnish is consequently in doubt. It is probable that the existing finish can be satisfactorily smoothed and the varnish re-bonded with further very thin coats. From the conservation angle, only minimal retouching should be done, but the ultimate appearance required must play a strong part in this decision. (see the four images below)

The caned seats may well not be original and they are in good shape apart from the one detached from the back seat rail which will have to be replaced in No 2 cane suitably coloured and distressed.

Restoration.

Obviously the first step is to treat the woodworm and as you will have read above, this has been done.

Although it may seem that the first priority should be the stabilisation of the honeycombed timber to provide a sufficient replacement of structural strength to allow a measure of functional use, I would not advise this until all the loose joints are re-glued, the broken rear leg refitted and the missing one third of the rear seat rail replaced. The reason behind my thinking is simply that the treatment of worm damaged timber consists simply of the injection of a liquid resin which is absorbed by the porous timber. When the timber dries out after resin treatment it does not allow for full strength jointing when the usual animal glue is used, which in my view is the correct and most appropriate adhesive and one which will certainly be likely to bond with the existing glue in the joints.

In summary therefore, I suggest all joints be made sound and all timber repairs made before injecting the resin consolidant. Remember that until consolidation is done, the honeycombed wood will be fragile and that all cramping involved during restoration must be very carefully done using large softening blocks to spread the compression loads and gentle touch when tightening. I will now consider the repairs before returning to the consolidation treatment.

Repair Work. Carefully check each joint for slackness and any movement, adhesive paper-tabbing defective joints so that all can easily be identified as work progresses and none forgotten. Gently cramp up any joint which is loose or shows a failure to close up tightly. Warm each joint with a heat gun, drill 2-4 holes of approx 2mm dia into each side of the joint for just over 2/3rds of the rail depth, ensuring that holes are not drilled opposite each other. Inject hot glue with firm pressure into each hole, warming the joints as you go to ensure penetration of the glue. Leave in cramps for several hours and then let the chairs stand for 18 hours minimum.

The leg repair is the one requiring most work but is quite straightforward. Firstly make a simple jig so that adjacent seat rails can be aligned accurately. Glue and lightly cramp the rails into the correctly aligned position. Cut a rectangular beech vertical infill to fit easily into the empty space between the tenons and glue all together leaving lightly cramped for a minimum of 18 hours. Turn a 10-15 mm dowel from a piece of sound cleft oak, approximately 5 ins long. Drill the seat rail junction through the new beech infill and also the broken rear leg end to receive the dowel. Ensure that the dowel is an easy fit for a too tight fit will be likely to stress the existing work unnecessarily. If a short length of dowel is tuned with a 45° point is inserted in the seat rail drilling and the leg is offered up, guided by the broken ends to effect perfect alignment of leg to the seat rail junction, the drill centre in the leg end can be perfectly marked. Note that the 45º point should obviate a woodworm hole being fused with the proper intended drilling site ! Also a longer piece of dowel placed in the seat rail drilling will indicate the appropriate drilling angle into the leg. Before gluing up with a dowel of the right length, make sure alignment is perfect, groove the dowel to make an air/glue passage to obviate overpressure and consequent splitting, which can so easily happen. Then apply glue to all meeting surfaces and lightly cramp up to set the joint tight for several hours, checking alignment as you go together with any necessary adjustment,

Remove the cramps and leave for 18 hours. Remember that adjustment of misalignment will be difficult and potentially hazardous to the chair once the glue has set, however well you set about reversing the glue.

This leg repair will be strong enough for gentle use. The 10mm oak dowel may seem light for the job, but so is the structure above and below the fracture line. In my experience, failure in such repairs is much less likely when similar strength follows the line of stress. The use of a material stronger than wood is very likely to result in later fracture adjacent to the dowel ends.

The rear seat rail repair is straightforward. The diagonal split was caused by the caned seat tension acting on the rear seat rail weakened by pest attack and of course by the presence of the caning holes themselves. Cut back the angled face on the rail to remove all signs of the caning holes and true-up ready to receive a replacement piece of beech shaped to bring the rail to nominal and original cross section. I suggest making it slightly oversize leaving final shaping in situ after gluing. Two or three veneer pins partly inserted to discourage slipping will be helpful. Leave cramped up for at least 18 hours and then remove both cramps and veneer pins. Run a piece of masking tape over the caning holes of another chair and mark off before transferring to the repaired rail. I suggest that caning holes be blind drilled vertically into the repaired seat rail to a depth of 3/4 of the rail, rather than through holes at 45º as on the original. I believe that matching the 45º through holes will place too much stress on the repaired rail and that 'blind, caning should be done on this rear rail thereafter; that is putting the ends of cane into the blind holes and securing with pegs.

To reinforce the full width glued joint, which will be subject to considerable stress, I suggest the use of at least six split bamboo dowels of 2.5mm diameter put into drillings between the cane holes and at right-angles to the diagonal glued joint. These very small dowels are tremendously strong and rigid in short lengths. I find it advisable to provide a key to the smooth bamboo surface by making very light horizontal cuts which provide a perfect bond with hot animal glue. Initially I used to make these from split bamboo, but now purchase them very cheaply from the 'Outdoor Department' of John Lewis in Oxford Street, where they go by the name of barbecue skewers!

There are no corner blocks to any of the chair seat frames. I think it would be a useful reinforcement to the joints if small inconspicuous glued beech blocks were fitted. It is open to question whether this course should be followed since originally no corner blocks were fitted. If the chairs were mine I would fit these blocks.

At present the four chairs stand at different heights. I believe that consideration should be given to making the four the same height. It is simple enough to achieve but the ethical aspect needs to be considered. Since there is no evidence that the chairs were originally made with unequal seat heights, I would favour the adjustment, even if it is only to achieve at least visible or apparent equal heights.

The chair requiring a new caned seat can then be passed to a caner who will copy the style of six-way caning, or you may be able to do this yourself. The nearly

complete remnant of the original or last caning can be copied in both colour and texture. Naturally this work should be done after all paint and varnish surfaces have been made good.

Now that the chairs are together it is appropriate to consider how we should deal with the honeycombed frames which are weak and unstable in their present condition. The only practical way of doing this is to introduce into the timber a low viscosity epoxy resin such as BENCON 20. This is a two part consolidant, almost colourless aand with an approx 5 hour working period to gel, then curing at room temperature to full strength in 3 days. The usual method of application is to inject the consolidant into all the worm holes, taking special care to treat holes adjacent to joints. This is a rather laborious procedure but the result is most effective. Allow the low viscosity consolidant an hour to be absorbed into the timber, then allow any excess consolidant to drain out of the flight holes. This is to prevent any heat generated by the curing action stressing the damaged internal structure of the timber. The consolidant will not damage the varnish and paint decoration, but I would advise wiping any spillage or excess from the surfaces with a damp rag, before gelling starts., some 5 hours after mixing the components, or less if very warm.

When injecting the flight holes, I suggest that the run of new caning holes are similarly treated to ensure sound blind-pegging of the new canework. Also the glue injection holes would benefit from the same treatment.

Once the epoxy-resin treatment has fully cured, the flight holes and glue injection holes can be filled before preparing the surface for final finishing. I suggest the use of BENCON 22 epoxy wood. This is again a two part resin paste with hardener producing a dark brown friable wood-like material, providing 50-60 minutes to gel, tool workable after 24 hours and achieving full strength and adhesion after 36-48 hours depending on room temperature. It should be applied with a spatula or artist's palette knife to a clean, dry, non-greasy surface in layers not exceeding 5mm. I suggest the paste be pressed into the flight holes and any other areas to be filled, the surface wiped clean with a rag moistened with white spirit or water, and then, after an hour, any sunken areas can be re-treated. Make sure you look carefully for any areas missed the first time round, for this is so easy to do ! The bond to the surface will be excellent once fully cured.

BENCON 20 and 22 can be obtained from Benring Ltd, Gleadtail, Quarrfold, Buxton, Derbyshire SK17 0TG. Tel: 01298/74026 who developed these products, are specialists in epoxy-resin timber treatment and run an advisory service for restorers. Needless to say it is important to follow the instructions for mixing very carefully.

The Finish.

The poor condition of the spirit varnish, which forms the general finish, raises problems as to the correct remedial treatment. Timber shrinkage has caused wrinkling and loss of adhesion with areas of fine hair cracking. Also there will now be hundreds of filled flight holes to be concealed.

Considering that these chairs will be used in a private home and not in a museum, and must be reasonably functional, I believe that the finishing restoration should be sympathetically aimed at an appearance not too different from that when the chairs were formally in use, relatively undamaged and free from wood worm. With this is mind I will suggest appropriate finishing methods.

Firstly the complete surface of each chair should be very gently rubbed down using 600 grade Lubrisil paper or similar, followed by 1200 grade wet and dry paper, used with soap and warm water to reduce the abrasive bite. The first stage should be confined to the varnished areas, the fine cut abrasive can very lightly touch the painted panels. All abrasion must be very carefully carried out. Wipe down with a damp cloth, frequently washed out, dry thoroughly and leave to dry completely for several hours in a warm atmosphere.

The next stage is to apply two coats of either coloured spirit varnish or coloured shellac to bring back an even colour. Take care to mask off the painted panels with masking tape. Personally I would prefer to use button polish tinted with vandyke brown spirit dye, applied carefully with a rubber in the usual way. Building up very thin coats of diluted shellac, until an even colour is obtained. The thin coats of shellac will fill all cracks and consolidate the original varnish finish.

If a traditional spirit varnish is required in lieu, I would suggest an old recipe, which Inhave used many times. Take 1 oz of Manila copal crystals and 1/2 oz of orange shellac flakes and grind to a fine powder. Add this to a glass bottle containing 2 pints of alcohol, cap-off and shake gently. When the solids have dissolved, leave to stand for 2-3 days of any impurities to settle out. Then carefully decant slowly, through filter papers into a clean glass bottle. Cap-off and leave in a warm room for a couple of days. The varnish is ready to be coloured. A specialist firm such as A P Fitzpatrick Tel: 0207 790 0884 will supply copal crystals and shellac flakes. Apply the varnish with a soft brush. It might be advisable to thin the stock varnish slightly to facilitate brush application; it will also improve hair crack penetration. Once the finish is quite dry (min 2 days in a warm dry atmosphere after feeling touch-dry), de-nib with fine grade nylon pad or 0000 grade wire wool and then remove the masking tape. Use lighter fuel petrol to ease off the tape if the adhesive does not peal away easily. Soften any shellac/varnish edges adjacent the painted panels with gentle abrasion.

Before restoration of the painted panels is started, it would be wise to check if there are any flight holes in these areas. If so the brown epoxy filler needs to be spotted in with a touch of shellac polish mixed with titanium white powder colour to prevent the filler from showing through the semi translucent painted finish. The original panels were probably done in egg tempera and since such finish is stable and allows for blending with most other finishes, I suggest that restoration be carried out in this medium.

Essentially egg tempera is the yolk of an egg mixed with any very finely powdered colour and diluted with water. The easiest method of preparing the paint is to use artists' quality water colours tempered with Chinese or Titanium white. Mix the colour with equal quantities of egg yolk and thin with a little water to an easy brushing consistency. It used to be said the water added should be between 1/6 and 1/8 of the volume of colour plus the egg yolk, but I have never found it necessary to be so exact. To test the paint film, it should be brushed out and allowed to dry on a sheet of glass. It can be peeled off in a continuous, tough, leathery film with a knife; there is enough egg yolk to bind it. If it powders or flakes off there is not enough egg yolk.

It is important to separate the egg yolk completely from the white. The latter is practically pure albumen and water and there is sufficient albumen in the yolk alone for a well balanced tempera emulsion. It may be helpful to describe the easiest way to separate out the yolk. It should be gently poured back and forth in the half-egg shells and then rolled briefly on a paper towel to dry off the layer of clinging egg-white. Then carefully pick up the yolk sac by the thumb and forefinger, so as not to break the skin, and suspend it over a small glass container. The skin should then be punctured at the bottom with a sharp point to allow the yolk to flow out. If the glass container is covered with cling-film, the yolk will be safe to keep and use for 3-4 days, if stored in a cool place. Usually the yolk is separated into several portions, each for a different colour in its own glass jar, thus forming a palette of sorts.

It will be necessary to have a good quality pointed sable watercolour brush, capable of making a parallel stroke 3/16"—1/4" wide min., a nigger or lining brush with 1 1/2" length and a small sable watercolour brush for spotting in small damaged or badly worn areas.

The actual tempera application should present no difficulties after mixing the egg tempera to the right consistency and to the required shades. Dip the brush in to load it fully, then squeeze out half the charge. The object is to produce a uniform, slightly translucent stroke without any build-up at the end. Experiment with a length of Magic Tape (masking tape is far too thick) to delineate the bottom of the stroke and produce a clean cut-off. If the brush is over-loaded, the tempera becomes difficult to control properly. Apply the tempera in single-width strokes, of varying width, vertically to simulate the grain direction. Constantly refer to other panels when over-

painting to keep the effect and colours uniform. Always wait about 5 seconds between strokes, especially when superimposing to prevent edge drag and to avoid smearing. Spotting-in areas of damaged original paint present no problems, match colour and shade as well as possible and aim to keep the same stroke direction as original.

In the case of the existing front seat rail panel to be completely repainted to correct size and effect, I suggest re-making the border lines and any obvious smears and blotches of the original paint by gentle scraping and sanding with fine abrasive paper. Since egg tempera is translucent, such cleaning-off of blemishes will reduce the amount of under-painting required. Set out the overall size and borders to match the other panels; a thin paper pattern will help. Mask off the border area with magic tape and paint in the satinwood grain simulation to match other panels, all as previously described. When satisfactory and completely dry (4 hours in warm room min.). remove the tape and using a small opaque tempera mix, draw in the simulated boxwood and ebony lines with a 'rugger'. Use a scrap of timber ,planed straight, as a guide and steady for the hand. Mistakes must be wiped off with a damp cloth within 2-3 seconds to get a clean removal.

When all the painting restoration is complete, check carefully to ensure there are no missed areas. The final task is to seal and protect the surfaces from wear and spillage. I would suggest a minimum of four coats pf clear shellac applied with a rubber, or in the case of varnish, two coats applied with a brush. The varnish should be mixed as before, but clear shellac flakes used in lieu of the orange shellac, to preserve the colours of the painted panels.

I have suggested the minimum number of sealing coats, build up a good finish even if that number ahs to be increased. When satisfied, leave in a warm atmosphere for at least three days, then de-nib and flat-off the complete surface with medium then fine abrasive nylon pads or gentle abrasion with 0000 grade wire wool, used in a large pad to avoid local over-abrasion. Dust down and wipe off with tack cloth.

Finish either with gentle burnishing with a soft cotton cloth, or if a higher gloss is preferred, wax polish applied with 0000 grade wire wool and then buffed with a cotton cloth pad.