

BAINBRIDGE CONSERVATION

LONDON

Report and Proposal Kings College Chapel joinery

7 June 2023

Kings College Chapel
Kings Parade
Cambridge
CB2 1ST

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Background

Many elements of the Chapel quire woodwork have been in continual use for some 500 years. The conservation work of February 2023 has ensured the immediate future stability of around 50 elements; of which many were a high priority, in terms of potential future damage to both fabric and persons using the quire. Some 56 person days have been spent working on site, totalling around 370 hours.

Another element of this programme was to thoroughly assess the condition of all the woodwork, review all previous reporting and identify and report on elements that might require future work. In some cases we have undertaken practical trials in order to create a suitable methodology. Archival research shows us that, aside from ad hoc repairs and repairs around the de/re-installation of the lower stalls during the late 1960s reordering, the last major treatment to the woodwork was done in 1950. This report outlines a series of treatments that may be undertaken over a period of years, to ensure long-term stability, preserve authenticity and the aesthetic presentation of this internationally significant artefact.

This report should be read in conjunction with the treatment report on the February 2023 works.

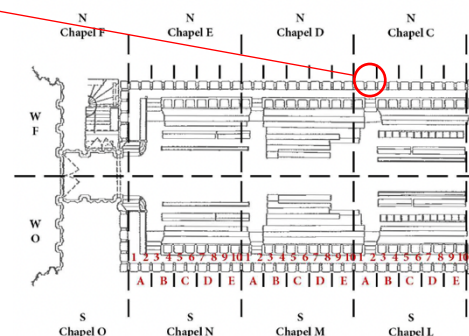
There are three distinct elements proposed:

1. The cleaning and structural repair to high-level canopies, arcading and cartouches, requiring a temporary fixed scaffold to be erected.
2. Cleaning, structural repairs to the 30 unfixed armorial panels.
3. Re-carving and replacement of losses (some recent), to elements of the 16th century carving.
4. Re-instatement of the 17th century Cornelius Austin panelling (detailed in separate report).

Proposal

1. The cleaning and structural repair to high-level canopies, arcading and cartouches, requiring a temporary fixed scaffold to be erected.

During the February 2023 conservation work a small scaffold was erected in over north, chapel C stalls 1-2, panel A



Schedule

- A. Repairs to the damaged cartouches in this bay.
- B. Trial cleaning methods
- C. Repairs to the slipped canopies (treatment outlined in main treatment report)

A. The urns and cartouches on the top of the canopies have various losses and detaching elements. The cartouches were last worked on in 1950, when it appears they were all re-attached to wooden battens that are screwed and glued along the bottom of the cartouche and then screwed to the top board of the canopy. The cartouche is made from a single board and the problem with the '50s gluing and screwing method is that it constrains the board across the grain. This has resulted in compression set shrinkage splits along the grain on many of them. Three cartouches were treated as part of this trial. In one example the carved figure is detached in 2 parts. This was re-adhered using warm hide glue and a bulked epoxy over hide glue isolation layer. An additional oak fillet was adhered along the back of the break using warm hide glue.

Some of the cartouches are loose, some detached altogether and some of the small turned urns on the tops are missing. Although the general propensity of the cartouche elements is to fall on to the top board, it is not impossible for them to fall down into the quire, so checking and stabilisation of all is recommended.

Detached but extant elements may be re-attached, wholly missing elements may be re-carved to the extent that the loss is noticeable from ground level. There are around 30 missing pieces – some may be extant; most are the small turned urns. There were also other loose elements in this whole high-level area – the winged angel heads on the frieze are nailed on and some appear to be detaching, and some of the applied mouldings in this area are also loose. It's not possible to tell the exact condition of every element without close inspection, but from ground level viewing combined with the trial treatment, we have a good idea of the amount of work required.



Before treatment detail



After treatment



Trial bay cartouche after cleaning



reverse of object left replacement figure, stamped '1950'



One of the fine 16th century cartouches detached on the west screen. AV equipment on top (may have been the culprit)

B. Trial cleaning methods

The surfaces were very dusty. There have also been various campaigns of darkening through the application of dark waxes, and possibly stains. The low-level surfaces (especially the panelling above the stalls), are very dark. This is most likely caused by the repeated application of furniture polishes and possibly a linseed oil-based reviver (which darkens with age).

The surfaces were first vacuum cleaned and then ingrained dust was removed using deionised water and a cloth / cotton swabs. The addition of surfactants did not make any difference to the efficacy of the cleaning. There was no colour change to the surfaces, although some areas of the carving appeared brighter and glossier as old wax finishes were buffed. Careful inspection of the treated bay can show the difference – the finer areas of carving are more visible and the grey haze of the surface dust is now gone. However, the change in appearance is not dramatic. There are sound conservation reasons for the removal of dust, as over time it can become bonded to the surface and become increasingly difficult to remove. I would recommend this procedure be done to the whole quire.

Some tests were done on the dark low-level panels and areas. Compared to the higher areas these are so dark the wood grain is almost obscured. Although some cleaning trials in the past had removed all surfaces and revealed a very pale wood surface (see Hugh Harrison report 2013) it a very dramatic change in appearance that would be hard to make a good conservation argument for doing. I used denatured alcohol and white spirit in various permutations, with cloth application and light abrasion from very fine wire wool to try and create a surface that was more closely matched to the higher areas. Although it is technically possible to create a lighter surface, it is very time consuming. Replicated in this area over the whole quire it would be prohibitively expensive to do and not justifiable given the greater conservation needs of the quire. The lightened test areas were returned to their previous state using lightfast stain and paste wax.



Detail before treatment



Dust on surfaces before treatment



Cleaned bay after treatment (right of red line).



Typical dark colouring of the lower area



Trial lightening of top left corner



Trial lightening seen in middle panel (and opportune sunlight through the stained glass), the general darkness of the bottom panelling compared to the other areas is apparent.

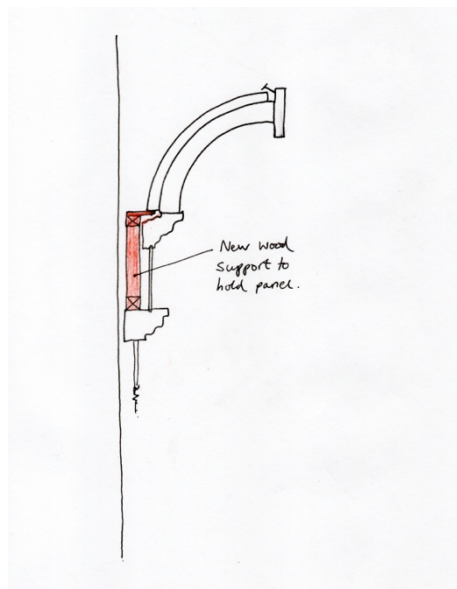
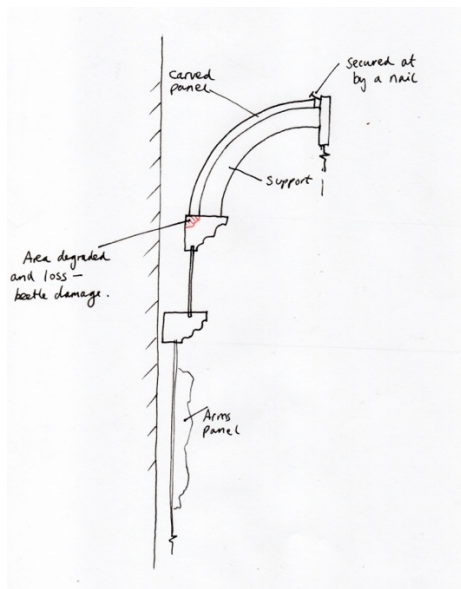
C. Repairs to the slipped canopies

The detail of the treatment is outlined in the treatment report. As one of the canopies also slipped during cleaning (it was barely holding on), it is possible that other canopies in the quire are at risk. Although the cause of the slippage was a specific case of woodworm damage, it is possible it may occur elsewhere in the quire. At least one other canopy panel is slipping so an allowance should be made for checking and securing the others.

For points A-C there is potentially 3-4 weeks work per side, although scaffolding and work could be phased into discrete blocks to reduce the impact on chapel life.



Slipped canopy panel in the trial bay, before treatment



Method for supporting slipped panels

2. Cleaning and structural repairs to the unfixed armorial panels

A scaffold is not required for cleaning or repair, and the panel in the trial bay above was cleaned using the same methods as the rest of the surface. Some residues, possibly from previous pest treatment (crystalline deposits), were removed using white spirit.

The treatment method to the arms panel in the trial bay (in the report) is reproduced below. All the panels in the quire have the same issue: they're not fixed in the frame and can fall back against the wall. They are also quite vulnerable, being made from three boards adhered together and then repaired (ca. 1950), with battens on the backs, which has exacerbated shrinkage cracks. The falling back of the panel is not just unnerving it is potentially damaging, as well as the handling required to get it back into a vertical position. I think this treatment should be put into the conservation management plan for future work. Although there is not an imminent risk of damage, there is potential for the panels to gradually decline in condition.

There are 30 panels in total, 15 on each side and it is obviously the quantity that makes this work a large project. The trial panel took about 2-3 days on site, with half a day off-site preparing materials. So with some efficiencies of scale, it would be around 4-6 weeks of site work, which could be phased in blocks.

Fixing the armorial panels. Treatment report from trial bay

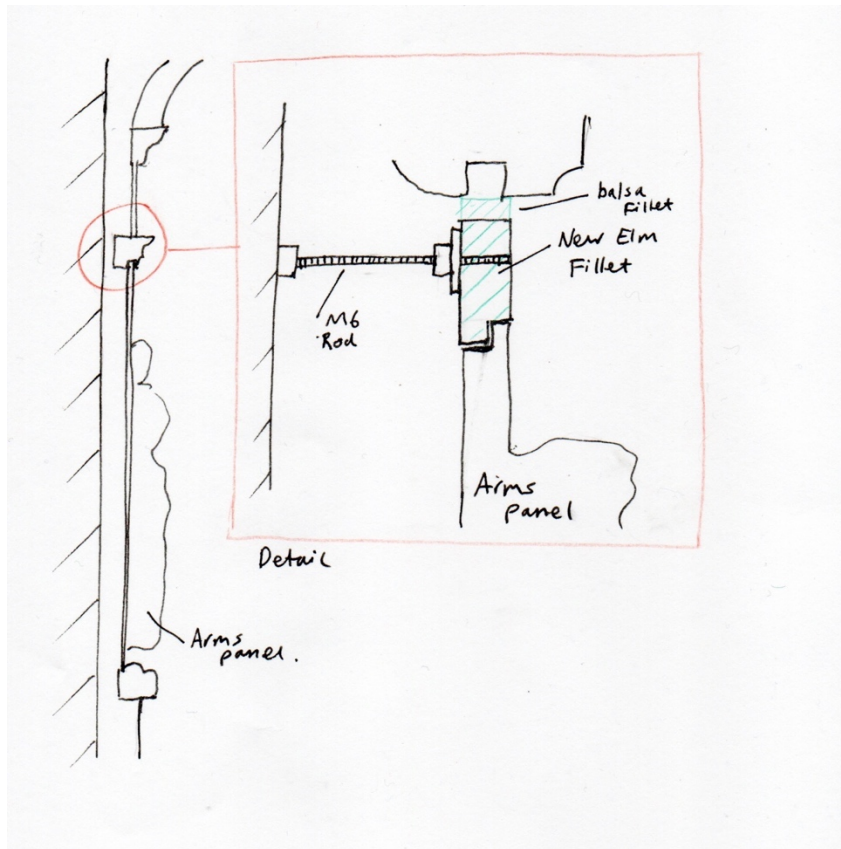
The armorial panels are of a typical frame and panel construction and would originally have been held within grooves in the rails at the top and bottom. Whilst they are still held within the grooves in the bottoms, shrinkage across the panel has caused them to come out of the top groove. All the panels have a shrinkage gap of around 10-30mm visible at the top and subsequently if they are touched they fall back against the chapel wall. As well as being unnerving and visually disruptive this movement has the potential to cause further damage. The panels are constructed from three boards glued together, and there are many splits and repairs (potentially from the 1950s campaign) which are fragile and deteriorating.

A version of the method suggested by Harrison in 2013 was trialled for filling the loss and securing the panel in trial bay North Chapel C panel A.

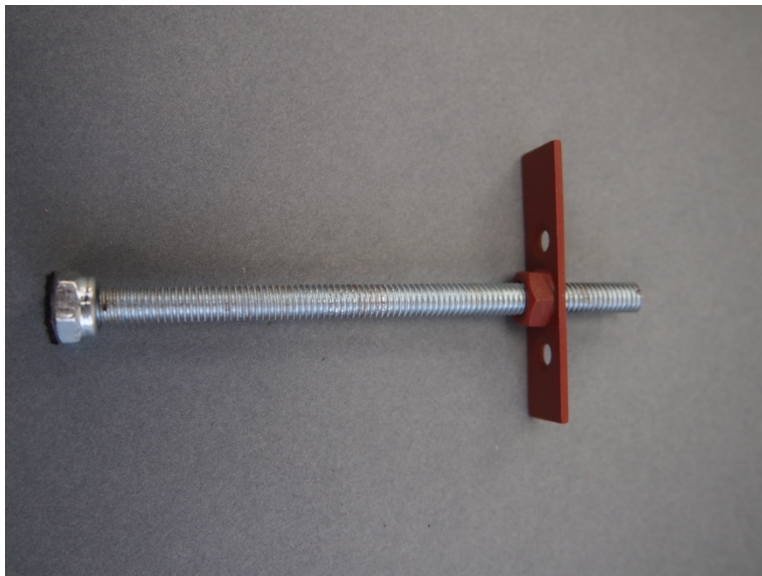
English elm wood was sourced and a replacement fillet cut to fit into the top rebate of the panel. The original surface was prepared with an isolation layer of warm hide glue and Japanese tissue. The elm fillet was attached using epoxy bulked with microballoons. The isolation layer means that the fillet may be easily removed in the future without damaging the original material. A 6.5mm hole was drilled in the middle of the fillet to accommodate a M6 threaded rod, brazed to a small threaded plate which was screwed to the reverse. A slot was cut into the end of the rod to allow it to be screwed against the back wall, pushing the panel into the right position and preventing further movement. Once in position the hole was filled with an elm wood plug. As a 10mm gap had to be left at the top of the panel to allow it to be moved back into position, the gap was subsequently filled with a balsa wood fillet and toned to match using shellac and earth pigments.

Various small repairs to loose carving was done using warm hide glue. Areas damaged by woodworm were consolidated using 5-15% w/v polyvinyl butyral in denatured alcohol. The larger splits (caused in part by nailed battens on the back), were filled with balsa wood and toned to match using shellac and pigments.

The technique worked well and the panel is now stable. If it is done to the other panels I would use two threaded screws rather than one central one to make it a bit more secure and easier to make adjustments.



Drawing showing fillet and threaded rod support.



Threaded rod. The red painted element screws to the back of the new fillet. The nyloc nut at the end makes contact with the chapel wall. It has a felt pad on the end to prevent any scratching of the surface.



During treatment, the balsa fillet being fitted in the large shrinkage gap on the bottom board.



Elm fillet being fitted in position on top of the panel.



Area with the panel removed. A large quantity of dust was cleaned



Back of the panel with various batten repairs

3. Re-carving and replacement of losses (some recent), to elements of the 16th century carving.

Several areas of carving missing from the highest quality 16th century screen were identified for potential replacement. There are many small losses throughout, however the ones noted here are perhaps the more visually obvious and significant regarding meaning and interpretation.

The last major works to the woodwork was in 1950 undertaken by the local firm Rattee and Kett. Documented in the Domus Bursar's files is an incident where a separate firm of cleaners, engaged at the time to vacuum the entire stalls, knocked off 21 pieces of wood, including the Vice Provost's cherub.¹ This was re-instated, although the base was not found and not all the 21 pieces were reinstated or documented. Given the descriptions of the cleaning firms actions, (5 cwt of dust removed – if accurate that's 250 Kgs, which seems extraordinary), it would not be surprising if many more pieces disappeared into the vacuums.

For the proposed loss replacements, all new carving can be first modelled in wax and the exact form agreed. They would then be carved separately in oak to fit the loss exactly. The process would be entirely reversible (so no damage or interference with the original material) and the new pieces would be identifiable on close examination, but be indistinguishable on general viewing. There are a number of methods of achieving this, from simply inscribing the date on a reverse side (as our 1950s carvers did for the replacement cartouche figure), to other indicators in the surface finishing. Clear photographic documentation would also accompany the work.

Carved elements identified for discussion:

A. Fingers 4 and 3 held in blessing on the Christ carving over the Provost's stall.

A photograph from 1985 shows the 4th finger intact and gives a good indication of the placement of this finger. The third finger placement can be deduced by the angle of the lost area. Arguably the blessing hand is one of the more important elements of the iconography of the carving. The recent nature of the loss of the 4th finger (some time post 1985, but no institutional memory of when), is another strong argument for this replacement.



1985 photograph Provost stall Christ carving (KCPH/5/7)



Current condition Provost stall



¹ GBR/0272/KCAR/8/1/2/15: Woodwork, 1948-1954

- B. Spear, arm of St George and leg of horse in Provost stall carving
Filling of shrinkage cracks in the boards

These are older losses and due to the inherent vulnerability of the limbs they may well have been lost for some centuries.



- C. Two missing angels from the Provost stall column.
Potential for replacing the heads on the angels in the corresponding north column – based on the Provost stall example.



Extant Provost stall angel (three per column)



Heads missing from angels on the corresponding north column

- D. Crown surmounting the coat of arms above the Provost stall



Current condition of the crown



Extant detail of the North crown

Initial costing and scheduling for proposed work

The critical and most urgent repair work has been completed in the February 2023 works. The elements discussed in this report should be factored into a longer-term plan of necessary conservation work. From a conservation risk-management perspective, the ranking for treatment priority should follow (highest to lowest):

1. The cleaning and structural repair to high-level canopies, arcading and cartouches, requiring a temporary fixed scaffold to be erected.
2. Cleaning, structural repairs to the unfixed armorial panels.
3. Re-instatement of the removed Austin panelling
3. Re-carving and replacement of losses (some recent), to elements of the 16th century carving

Given the ongoing financial cost of storing the Austin panelling, there is an argument for moving this element higher up the list.

1. Cleaning and repairs to high level canopy work	£
1.1 scaffold covering north south and west returns	20,000
1.2 Cleaning and conservation repair work	50,000

Note on phasing.

Due to the disruption caused by scaffolding the entire quire for eight weeks it would be possible to phase the work. It may be divided into 2 or 4 packages and spread over say 4 years. For example, half the north side may be worked on year 1, at a cost of £17,500 over a 3 week period (or whatever can be negotiated with the Chapel calendar). An inflationary cost should be added to account for annual increases in working costs.

2. Cleaning, structural repairs to the 30 unfixed armorial panels.	84,000
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£2,800 per panel. During the trial it took around 4 days to do the work to one panel and most of the work was carried out on site, with minimal disruption to chapel business. The panel was worked on in a small working area east of the quire. For efficiency a work area outside of chapel would be required to allow for some machine sawing of new timber. This could be housed in a small work tent. Two or three panels could be worked on at any one time, which would minimise general disruption and space requirement. Again, the work could be phased in batches – you do get some inefficiency in repeated set ups, but I think a maximum of 4 batches at £21,000 each time, where 7-8 panels are completed over a period of 4 weeks.

3. Re-carving of lost elements	13,000
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Itemised costing of new carving can be provided after discussion. This sum is for doing all elements listed. The armorial crown over the Provost's stall can only be accessed via scaffold – cost not included as it could potentially be phased with the high-level work. A specific scaffold for the crown access would cost £2,500 (Rise scaffolding).