

BAINBRIDGE CONSERVATION

LONDON

Treatment Report King's College Chapel Joinery

Kings College Chapel
Kings Parade
Cambridge
CB2 1ST

1 June 2023

Conservator: Tristram Bainbridge ACR

BACKGROUND

Following an inspection in 2018 of the choir joinery by Caroe Architecture a schedule of 55 repairs and points of investigation was developed which addressed the priorities for treatment: from urgent stabilisation of elements to more general repairs and fuller condition assessments. These were carried out over eight weeks of on-site treatment from January to February 2023. This report makes a note of each treatment undertaken.

The project budget was sufficient to allow for many small repairs (for the most part re-attaching and stabilising loose elements), not identified in the initial schedule of work. In addition to the stabilisation work, the project allowed for the investigation and trialling of future treatments. The outcome of the trials are proposals for the cleaning and stabilisation of the high-level canopies and the cleaning and stabilisation of the armorial panels. The recommendations from this are outlined in a separate report and proposal. Finally a photographic survey was undertaken of all wooden elements of the quire and screen.

SCHEDULE OF WORK

No.	Part
1	West elevation - Bay 3 (edge numbered sequentially north to south): Re-fix loose wainscot capping to north of side of the bay.
2	Ante-chapel and organ screen, west elevation - central Portal, north side: Remove redundant fixing hook at head of frieze above capital in central portal, north side.
3	Screen central doors: Secure iron strap and loose door handle to south side door. Repair split in the upper pierced panel on the meeting stile side on the rear of this door.
4	Screen Passage: Investigate movement of central panel to the east of screen passage to ascertain if whether there is a structural issue. Provide report and recommendations.
5	Collect 2no salvaged fragments which have previously fallen from the screen and re-fix to original locations.
6	Conduct careful review of the screens and joinery to identify any further components which might be loose and need to be re-secured.
	Joinery Repairs: Quire Stalls, North Side
	High Stalls
7	Bay NC, stall 3: Repair split running through the centre of the cartouche and urn, zone A.
8	Bay NC, stall 5: Repair break in the arch head. Include provisional sum for replacement of the lost finial.
9	Bay ND, stall 3: Repair split on the west side of the cartouche.
10	Bay ND, stall 4: Reinstate lost section at the apex of the arch at the head which appears to have been repaired before and fallen off again.

BAINBRIDGE CONSERVATION

LONDON

11	Bay ND, Cartouche 6: Repair break on the east side, just beneath the flourish under the Angel's tail.
12	Bay ND, stall 8: Repair break in the stile on the east side.
13	Bay ND, Quire Stalls: Investigate movement in the column shaft between bays six and seven. Remove string/tape from this column shaft to the column in Quire stalls sector NC.
14	Bay ND, Quire Stalls: Check unfixed canopy above quire stall 10 and re-secure. Investigate slipped panel above stall 9 and secure if required.
15	The great armorial panels, north side: Panel D which has a crack about 300mm up, which runs through, just beneath the armorial surround. Around this, there is worm damage and there appear to be some crystals on the face which may be some past treatment method coming to the surface. Review and provide recommendations.
16	Bay ND, Lower zone of the stalls and misericords, stall 2: Polish in where sign has been removed from the back panel.
17	Bay ND, Lower zone of the quire stalls and misericords: Remove chewing gum from beneath the misericord of stall 10.
18	Bay ND, Lower zone of the quire stalls and misericords: Inspect and re-secure floorboards as required.
19	Bay NE, Quire Stalls: Repair the central split in the cartouche above stall 6.
20	Capitals of the support in the arcade, zone D: Investigate loose/unfixed armorial panels which bridge between two stall bays, to determine whether they are adequately secure. Provide report/recommendations.
	Low Stalls and Choir Benches
21	Bay NE, Lower Quire Stalls: There is a large and wide split in the floor of the easternmost of the north side lower stalls underneath the misericords. Make assessment on whether split can be stabilised or repaired; submit recommendations.
22	Bay NE, Lower Quire Stalls: Repair damaged veneer behind easternmost seat.
23	Bays NC and ND, Choir 1, north side: Repair deep radial splits in the book board of Choir 1 at its easternmost end, and the further splitting along the length of this section. Locations as shown on the drawing.
24	Bay NE, Choir 2: Repair split in baluster. Location shown on the drawing.
25	Generally, Lower Quire Stalls and Choir 1: Re-fix loose balusters.
26	Generally, Lower Quire Stalls: Remedy less severe instances of stiff, stuck or noisy misericords by lubricating hinges. Repair more severe instances where sticking of the hinged elements are due to deformation of the shape of the stalls themselves.
27	Generally, Choir 2 front stalls: Inspect fixings to choir 2 front stalls; identify those which are loose and tighten to improve rigidity.
28	Conduct careful review of the north side Quire Stalls to identify any further components which might be loose and need to be re-secured.
	Joinery Repairs: Quire Stalls, South Side
	High Stalls
29	Bay WO, Stall 4, Provost Stall: Consider re-carving missing angel on northern post.
30	Bay WO, Stall 4, Provost Stall: Secure handrail, possibly at bottom newel.
31	Bay WO: Record damage to crown surmounting armorial cartouche over Provost stall and consider repair

BAINBRIDGE CONSERVATION



LONDON

32	Bay WO: Consider reinstating the missing elements from the spandrel carving behind the Provost stall.
33	Bay WO: Carefully ease or lubricate stiff misericords in two of the stalls in this bay.
34	Bay WO: Repair break in the seat of stall 1.
35	Bay WO: Reinstating loss to cornice in the corner.
36	Bay SN: Replace or reinstate missing section from stall divider at column 5 which currently allows the column to rotate.
37	Bay SN: Repair split in plain panel below and to the west of Panel B.
38	Bay SN: Stabilise splits in plinth panels beneath panel D.
39	Bay SN: Repair large wide split in the plain panel beneath carved Panel E in stall 9.
40	Bay SN: Improve fixing of 'King's College Only' sign.
41	Bay SM: Re-secure raised riser in the President's stall and repair and secure supporting colonette behind female sculpture.
42	Bay SM: Repair split through the cartouche of stall 9.
43	Bay SM: the great armorial panels, south side: Repair large split to the left side of stall 2.
44	Bay SM: Remove electrical fixture if redundant and Screw down loose floorboards in stall 2
45	Bay SM: Repair loose male sculpture on priest's stall.
46	Bay SL: Re-secure columns between bays 7 and 8.
47	Bay SL: Attend to jammed misericord in stall 6.
48	Bay SL: Affix sign currently attached with blue tac.
	Low Stalls and Choir Benches
49	Bay SM, Lower Quire Stalls: Secure lip to low stall console which has warped and is pulling away.
50	Bay SM, Lower Quire Stalls: Repair damage to decorative panel behind western stall; location shown on the drawing.
51	Bay SL, Lower Quire Stalls: Repair broken hinge on stall. Location shown on the drawing.
52	Bay SL, Lower Quire Stalls: Repair damaged balustrade. Location shown on the drawing.
52	Generally, Lower Quire Stalls and Choir 1: Re-fix loose balusters.
53	Generally, Lower Quire Stalls and Choir 1: Remedy less severe instances of stiff, stuck or noisy misericords by lubricating hinges. Repair more severe instances where sticking of the hinged elements are due to deformation of the shape of the stalls themselves.
54	Generally, Choir 2 front stalls: Inspect fixings to choir 2 front stalls; identify those which are loose and tighten to improve rigidity.
55	Conduct careful review of the south side Quire Stalls to identify any further components which might be loose and need to be re-secured.
	Side Chapel K
56	Stabilise head of spandrel by securing fixings at side, memorial chapel K

BAINBRIDGE CONSERVATION

LONDON

TREATMENT

1	<p><i>west elevation - Bay 3 (edge numbered sequentially north to south): Re-fix loose wainscot capping to north of side of the bay.</i></p> <p>This element was re-adhered using warm hide glue.</p>
2	<p><i>Ante-chapel and organ screen, west elevation - central Portal, north side: Remove redundant fixing hook at head of frieze above capital in central portal, north side.</i></p> <p>The central fixing hook was removed, and on inspection two additional hooks (in-line with the central hook above the capitals either side of the opening) were also removed. They are likely have been a fixing for a curtain, and there was much evidence of old holes from previous fixings. The holes were filled with soft balsa wood and toned to match using acrylics.</p> <div data-bbox="264 801 983 1279"></div> <div data-bbox="1035 801 1434 1279"></div>
3	<p><i>Screen central doors: Secure iron strap and loose door handle to south side door. Repair split in the upper pierced panel on the meeting stile side on the rear of this door.</i></p> <p>The iron strap was re-secured using the existing fixings. On inspection the looseness of the door handle was not thought to be overly problematic and that an intervention to repair it fully may be quite interventive, requiring the re-heating and brazing of metal parts. As the handle is rarely in use and not in imminent danger of loss the suggestion is to not treat and monitor.</p> <p>Splits in the door panels:</p> <p>There are numerous splits in the pierced and plain door panels. Understanding the construction is key to understanding the cause of the failure and potential solution.</p> <p>The door is potentially a mixture of 17th and 16th century elements. The pierced and plain panelling in the doors are interesting as it rather than being a panel held within a groove or rebate within the stiles and rails (thereby allowing for wood movement), they are nailed on to the back of the panel opening with additional securing by iron straps. The carving on the rails and stiles of the door appears to be 16th century (the demi-lune carving is 17th century along with the 1636 date), so it's possible that the panels were added in the 1630s, potentially replacing an earlier design. The whole door would have required disassembly to incorporate new panels, hence the additions. The panels have a moulded decorative edge, which suggests a design choice for an unconventional joinery method. I suspect the iron straps were part of the 17th century construction (to allow for wood movement), but subsequently repaired with nails all around the edges. The nailing has caused the panels to be constrained, preventing seasonal movement and causing compression set shrinkage cracks.</p> <p>Treatment options:</p>

BAINBRIDGE CONSERVATION

LONDON

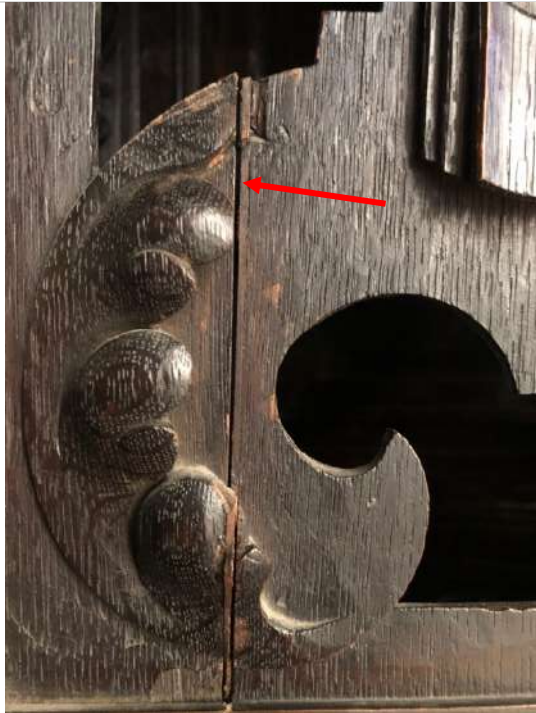
Any repairs or addition hardwood fillets to the shrinkage gaps without addressing the panel constraint will only exacerbate the damage, causing further splits in the future. This is because the wood never stops moving seasonally and filling the shrinkage gap 'reloads' the compression set condition allowing for further shrinkage elsewhere. This is demonstrated by a historic fill on one of the panels where a shrinkage crack has opened up next to the filled area. The gaps are unsightly (especially the bottom, plain panels which have been covered from behind with gaffer tape), but generally stable as they are. Should they be repaired fully each panel would need to be removed, removing all the nails, the panel reglued and then re-inserted. A fitting or clip in addition to the iron bars should be added to support the panel but that allows for wood movement.

This may be trialled on the bottom (gaffer taped non fretwork) panels as a potential solution.



BAINBRIDGE CONSERVATION

LONDON



Old repair (red) and subsequent new shrinkage gap



Bottom panel split – covered with gaffer tape residue

4

Screen Passage: Investigate movement of central panel to the east of screen passage to ascertain if whether there is a structural issue. Provide report and recommendations.

The splits in the portcullis panel on the centre East end of the screen passage ceiling were stable. This element is a thick piece of wood (as opposed to the panels surrounding it, which appear to be relatively thin), and there was no movement detected in the board. There has been a small amount of wood movement in the thin panels, but the panel structure has allowed for this. No treatment is required.



5

Collect 2no salvaged fragments which have previously fallen from the screen and re-fix to original locations.

BAINBRIDGE CONSERVATION

LONDON

These salvaged fragments were re-attached using warm hide glue.



- 6 Conduct careful review of the screens and joinery to identify any further components which might be loose and need to be re-secured.

4 small loose elements were re-adhered using warm hide glue
A photographic assessment of losses and areas of wear and damage was undertaken.

NORTH SIDE

7

- 8- These are all treatments that would require a scaffold to access. The budget for these elements was re-assigned to the setting up of scaffold in N. Chapel C stalls 1-2 for cleaning trial and structural work.

- 12
13 Bay ND, Quire Stalls: Investigate movement in the column shaft between bays six and seven. Remove string/tape from this column shaft to the column in Quire stalls sector NC.



There is a small crack in the narrowest point of the column which manifests as a wobble in the column shaft when pulled in one direction. It was not possible to remove the column from the canopy (due to the round tenon construction at the top), so it was stabilised in-situ by the addition of epoxy resin applied over an animal glue isolation layer.

BAINBRIDGE CONSERVATION

LONDON

- 14 *Bay ND, Quire Stalls: Check unfixed canopy above quire stall 10 and re-secure. Investigate slipped panel above stall 9 and secure if required.*



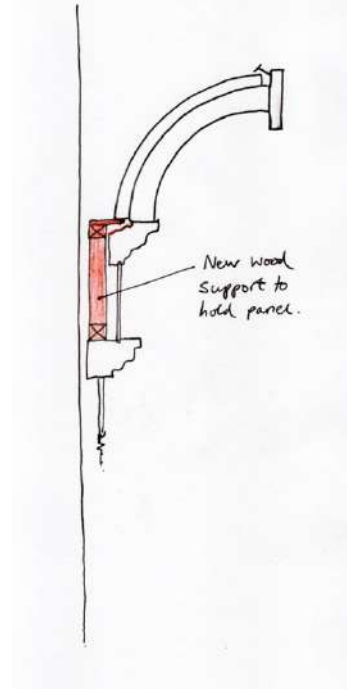
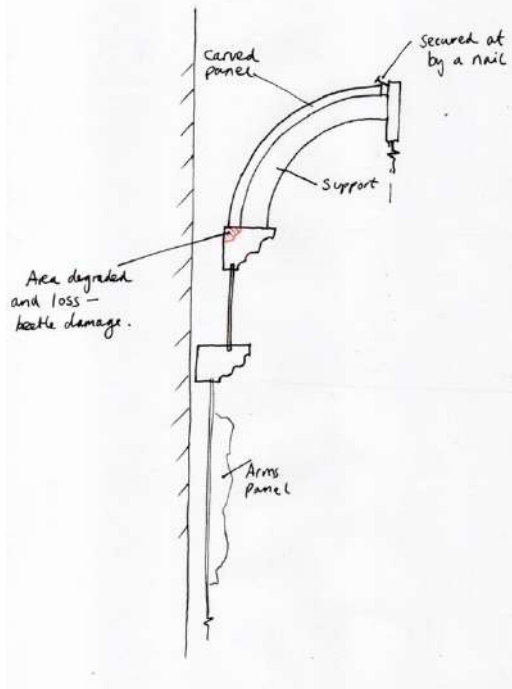
Slipped canopy panels



BAINBRIDGE CONSERVATION

LONDON

The carved canopy panels are supported on the bottom by the top frieze moulding, simply resting on that and the two arched sides and secured at the top by a nail. The panels had slipped as a large area of the top frieze moulding had been eaten away by furniture beetle. The treatment of these panels was possible as scaffold gave sufficient access to this area. A minimally interventive approach saw the construction of a simple wooden frame that sits on top of the top arms panel rail and provides the correct support along the width of the canopy panel. The top of the new wood was toned out using acrylics. Both panels were supported in this way.



Behind the panelling, with one panel removed.



Wooden support in place

BAINBRIDGE CONSERVATION

LONDON



Post treatment supported panel. The loss in the frieze top moulding is evident. New support shown (red arrow)

- 15 *The great armorial panels, north side: Panel D which has a crack about 300mm up, which runs through, just beneath the armorial surround. Around this, there is worm damage and there appear to be some crystals on the face which may be some past treatment method coming to the surface. Review and provide recommendations.*

It is likely that the crystals are a residue from previous woodworm treatments, but may also be related to historic applications of furniture cleaning wax, candle smoke and moisture. They are readily removable with aliphatic hydrocarbons. Further crystals are evident on the other panels. The worm damage was consolidated using a 5-10% w/v solution of polyvinyl butyral in denatured alcohol. Successively increasing concentrations were applied until the area was stabilised.

The crack was stable, for now, but a fuller treatment on this and the rest of the panels is recommended.

As part of this work all the armorial panels were inspected and there were 25 instances of crumbly carving, degraded by historic furniture beetle activity. These were not part of the initial schedule of work but were added as the areas were particularly vulnerable to damage in the near future (ie they were crumbling away if you touched them). These were consolidated using the same method as described above. The panels were: (Panels labelled 1-15 West to East on both sides, along with associated chapel number.)

North side

E3
E4
E5
D6
D7
D8
D9
D10
C11
C12
C13
C14
C15



Example areas from E4

BAINBRIDGE CONSERVATION

LONDON

South side

N3
N4
N5
M6
M8
M10
L12
L13
L14



Example from L12

- 16 Bay ND, Lower zone of the stalls and misericords, stall 2: Polish in where sign has been removed from the back panel.

The four “Members of King’s College Only” signs, some of which are attached to the seat backs using blue tac. Successive campaigns of blue tacking has disfigured the surface, pulling of the top layer of finish and become engrained. We removed the blue tac and retouching the damaged areas using shellac and earth pigments.

The signs are modern (post 1950), the lettering painted on varnished plywood. The first question is are they redundant? If everyone knows the back rows are for College members only then I would suggest they be disposed. Currently they are placed under the misericord, resting against the back panels. If they need to be kept then this could be the simplest solution for their future use.



Damage on stall back, North
Chapel C stall 2



After treatment

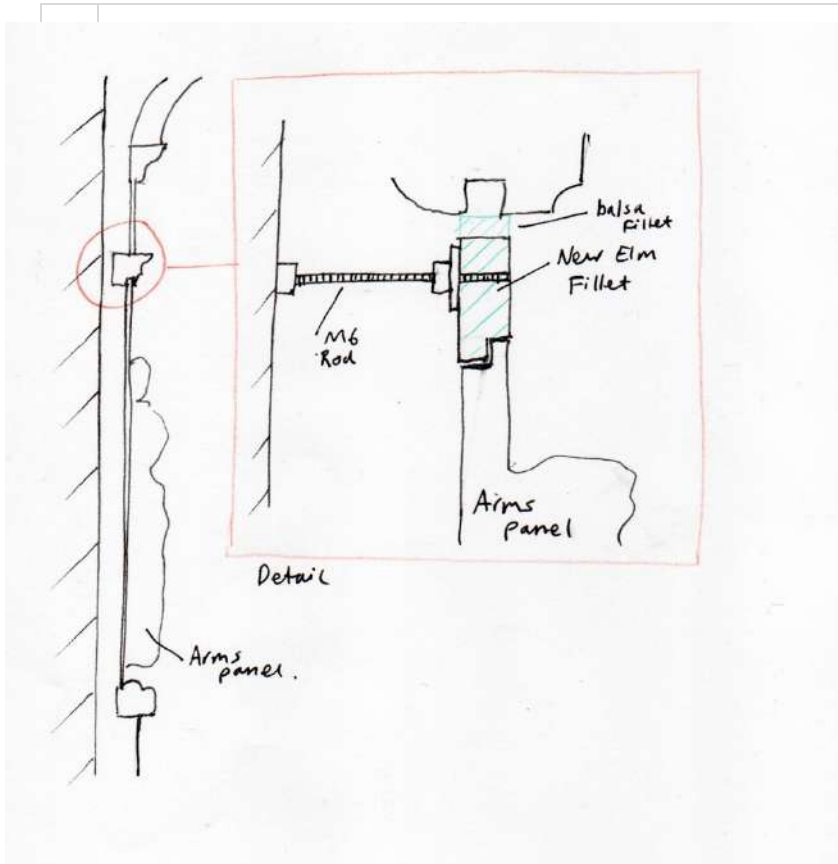
BAINBRIDGE CONSERVATION

LONDON

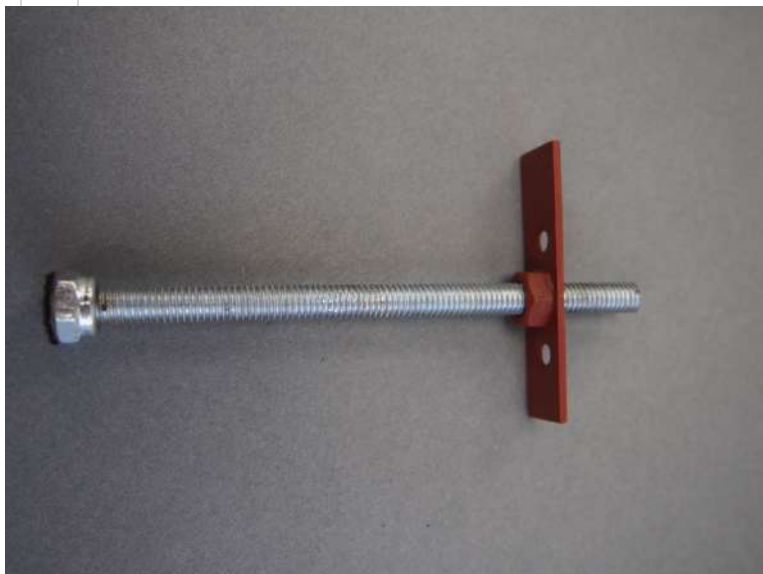
17	<p><i>Bay ND, Lower zone of the quire stalls and misericords: Remove chewing gum from beneath the misericord of stall 10.</i></p> <p>All misericords were checked; 14 gobs of chewing gum were removed.</p>
18	<p><i>Bay ND, Lower zone of the quire stalls and misericords: Inspect and re-secure floorboards as required.</i></p> <p>Loose boards on the steps leading into the stalls of ND were very wobbly. The carpet was lifted and the loose boards secured with the addition of two wedges of oak and 2 screws.</p>
19	<p><i>Bay NE, Quire Stalls: Repair the central split in the cartouche above stall 6.</i></p> <p>High level work requiring a scaffold for access. No treatment undertaken.</p>
20	<p><i>Investigate loose/unfixed armorial panels which bridge between two stall bays, to determine whether they are adequately secure. Provide report/recommendations.</i></p> <p>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.</p> <p>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 11.</p> <p>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.</p> <p>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.</p> <p>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.</p>

BAINBRIDGE CONSERVATION

LONDON



Drawing showing fillet and threaded rod support.



Threaded rod. The red painted element screws to the back of the new fillet. The ni-loc 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.

BAINBRIDGE CONSERVATION

LONDON



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



Elm fillet being fitted in position

BAINBRIDGE CONSERVATION

LONDON





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



The condition of the back of the panel with various batten repairs

BAINBRIDGE CONSERVATION

LONDON

	Low Stalls and Choir Benches
21	<p>Bay NE, Lower Quire Stalls: There is a large and wide split in the floor of the easternmost of the north side lower stalls underneath the misericords. Make assessment on whether split can be stabilised or repaired; submit recommendations.</p> <div></div> <p>This split looks dramatic but is not a structural issue, the surrounding wood is very solid with barely any movement. It's likely due to an original split or knotted area in the timber which has dropped out and worn over time. The split was filled, mostly for aesthetic reasons, but also to prevent the build-up of dust (and pest potential) and prevent further wear to the area. Rather than a matched solid wood fill, the loss was packed out with balsa wood around 10mm shy of the top surface, and the area coated with a hide glue isolation layer. The final area was filled with an epoxy bulked with microballoons and toned to match using shellac and earth pigments.</p>
22	<p><i>Bay NE, Lower Quire Stalls: Repair damaged veneer behind easternmost seat.</i></p> <p>The loose elements were re-adhered using warm hide glue and a fillet of oak was added (using warm hide glue) and toned using shellac and earth pigments. The area around the two draw pin holes was also loose, this was stabilised again using warm hide glue.</p>

BAINBRIDGE CONSERVATION

LONDON



Before treatment



After treatment

- 23 *Bays NC and ND, Choir 1, north side: Repair deep radial splits in the book board of Choir 1 at its easternmost end, and the further splitting along the length of this section. Locations as shown on the drawing.*




Before treatment



After treatment

BAINBRIDGE CONSERVATION

LONDON

	<p>The bottom triangular section of this spit had been previously repaired by way of a long screw. This was removed to facilitate the re-gluing of the loose element. The splits were stabilised using warm hide glue and filled using balsa wood. They were toned to match using shellac and earth pigments.</p>
24	<p><i>Bay NE, Choir 2: Repair split in baluster. Location shown on the drawing.</i></p> <p>The split was re-adhered using warm hide glue.</p>
25	<p><i>Generally, Lower Quire Stalls and Choir 1: Re-fix loose balusters.</i></p> <p>In all 58 balusters across the quire were loose, wobbling or rotating freely within their sockets. Small balsa and beech wooden wedges were used to fill the gaps in the round mortices and secure them. Any visible sections of new timber were toned to match using shellac and earth pigments.</p> 
26	<p><i>Generally, Lower Quire Stalls: Remedy less severe instances of stiff, stuck or noisy misericords by lubricating hinges. Repair more severe instances where sticking of the hinged elements are due to deformation of the shape of the stalls themselves.</i></p> <p>This and some other misericords are a little stiff, but generally can be lifted with some gentle pressure. There may be some degree of seasonal movement in the timber which would mean it would be harder to move them in the summer months when RH is generally higher. An interventive solution would require the removal of material from the edges of the board, as the stiffness occurs as the board rubs against the standard housing. As the misericords (especially the lower, less elaborately carved ones), are rarely lifted up I would suggest no treatment is required. Removal of original material is an irreversible action and if the daily choir functioning can be achieved without this intervention, then no treatment would be preferable. A discussion may be needed on the frequency and critical nature of the board lifting, in order to make a decision.</p>

BAINBRIDGE CONSERVATION

LONDON

- 27 *Generally, Choir 2 front stalls: Inspect fixings to choir 2 front stalls; identify those which are loose and tighten to improve rigidity.*



The two front stalls on the whole quire were checked, with new animal glue injected into weak joints, existing metal brackets tightened, and repairs made to loose reading desks. There were a number of splits and detaching of lips in the reading desks as they are quite vulnerable and prone to being leant on. Although all loose elements were addressed, an eye should be kept on them in case of future damage.

- 28 *Conduct careful review of the north side Quire Stalls to identify any further components which might be loose and need to be re-secured.*



BAINBRIDGE CONSERVATION

LONDON

Nine mouldings and one carved element were identified in the 'bits' box and re-adhered using warm hide glue. Various loose mouldings of the same type around the quire were identified and secured.

Including: S, Chapel N, choir 1 x 2 mouldings.



Before



During



Before



During

BAINBRIDGE CONSERVATION

LONDON



North Chapel E front stall (before)



N chapel C front stall (before)



South, Chapel M, bay D middle column
(before)



South, Chapel M, Bay B (before)

BAINBRIDGE CONSERVATION

LONDON



North, Chapel C bay B, loose moulding, low stall (before)
And the same on North, Chapel C bay E low stall

Joinery Repairs: Quire Stalls, South Side High Stalls

29 Bay WO, Stall 4, Provost Stall: Consider re-carving missing angel on northern post.

A proposal for the replacing this lost carving, amongst others is in the separate report on future work.

30 Bay WO, Stall 4, Provost Stall: Secure handrail, possibly at bottom newel.

BAINBRIDGE CONSERVATION

LONDON



Before treatment



After treatment

The handrail was wobbling at the newel and at the connection to the stalls (a threaded bolt). It was also missing two spindles. One spindle was found in the stalls and re-attached using bulked epoxy resin and steel pins. The missing spindle was made from new quarter sawn oak and re-attached in the same manner. It was toned to match using black light fast stain, shellac and black earth pigment. The metal newel was secured by inserting thin brass shims under the wobbling connection (due to the age and degradation of the screws, removing the plate would have been difficult and damaging). The shims were secured in place with epoxy resin after an isolation layer of Paraloid B-72 20% w/v had been applied to the areas. The nut holding the threaded bolt connecting the handrail to the stalls was tightened.

- 31 Bay WO: Record damage to crown surmounting armorial cartouche over Provost stall and consider repair



Discussion on loss replacement in report on future work

BAINBRIDGE CONSERVATION

LONDON

- 32 Bay WO: Consider reinstating the missing elements from the spandrel carving behind the Provost stall.



Discussion on loss replacement in report on future work

- 33 Bay WO: Carefully ease or lubricate stiff misericords in two of the stalls in this bay.

See point 26

- 34 Bay WO: Repair break in the seat of stall 1.
No treatment required

- 35 Bay WO: Reinstale loss to cornice in the corner.
A slightly complex loss as the cornice is adhered cross grain of the pilaster (which is 16th century) and bridges the gap between the 16th and 17th century elements. The cornice profiles between the two are slightly different. A compromise profile was made which is visually not intrusive and was carved out of quarter-sawn English oak. It was adhered using warm hide glue and toned using shellac and earth pigments.



Before treatment



After treatment

BAINBRIDGE CONSERVATION

LONDON

- 36 *Bay SN: Replace or reinstate missing section from stall divider at column 5 which currently allows the column to rotate.*

Along with movement in the column, the stall cap on which it sits is loose and has also split along the widest point. These caps are the 17th addition to accommodate the columns and canopy. They fit on top of the standard by way of a dovetail housing joint. As the board is constrained it has split. There is considerable movement in this joint. The cap was pulled out as far as it would go and warm hide glue injected into the housing joint. A balsa wood fill was added to the split, adhered with hide glue and toned using shellac and earth pigments.



Before treatment



After treatment

- 37 *Bay SN: Repair split in plain panel below and to the west of Panel B.*

The split and the following three in similar locations were filled using a balsa wood fillet. This was adhered in place using warm hide glue and colour matched using earth pigments and shellac. The use of balsa wood is to prevent future compression set shrinkage splits (see point 3). The fill is aesthetic rather than structural and may appear to open up again in the future (the appearance of the balsa wood being compressed), however this is preferable to a damaged panel which may be the outcome if a solid oak fill had been used.



Before treatment

BAINBRIDGE CONSERVATION

LONDON

- 38 *Bay SN: Stabilise splits in plinth panels beneath panel D.
See point 37*



- 39 *Bay SN: Repair large wide split in the plain panel beneath carved Panel E in stall 9.
See point 37*



Before treatment



After treatment

- 40 *Bay SN: Improve fixing of 'King's College Only' sign.
See point 16*

- 41 *Bay SM: Re-secure raised riser in the President's stall and repair and secure supporting colonette behind female sculpture.*

There two sculptures either side of the quire steps fixed to the reading desks. The turned columns that support them are potentially later additions, possibly added in the 17th century when the adaptations were taking place. There are three sets of steps into the quire and the pairs of sculptures are extant on the West and middle steps. There are none on the Easterly steps, however there is evidence of there having been sculptures on these steps as well. In addition to a rectangular hole, now filled with oak and covered by the raised risers, there is also a round hole coming out by the canopy (to hold the round mortice end of the colonette). So, we could argue that these were extant from the 1680s, and maybe the earliest date of their loss is in the 18th century. This end of the quire has some heavy carved graffiti – some of which is 18th century, so one could speculate that this end of the quire suffered more abuse.

The female figure was loose and detaching from the base. The legs had been previously repaired by the addition of iron rods attaching the upper part of the legs to the base. The losses had been filled with a filler (possibly

BAINBRIDGE CONSERVATION

LONDON

linseed oil putty), which was degrading and had fallen out of one of the legs. The surfaces were also heavily encrusted with white dust and embedded dirt. Excessive handling and waxing had caused the surface to appear very shiny on some surfaces, which contrasts poorly with the dirt in the crevices.

The sculpture was removed from the stall by taking out the various screws and nails and softening the glue joint between the stand and the desk with warm water. The surfaces were cleaned using de-ionised water and a non-ionic surfactant. The wax build-up was reduced using white spirit and cotton swabs. The degrading old fill material was removed. The iron rods were effective in securing the sculpture to the base so they were retained and a new fill was applied. The fill material was epoxy resin, bulked using phenolic microballoons. The original surfaces were isolated using warm hide glue. There were breaks and old wood repairs (the back of the thighs), which encapsulated the iron rods. These were retained as evidence of historic repair and use. The new fills were designed to be visually unobtrusive and provide a structural support but given the state of the old repairs there was not enough evidence for an accurately carved fill, but the treatment here doesn't prevent that from happening if desired in the future. The new fills were toned to match using shellac and pigments, the gloss modulated with wire wool and an application of paste beeswax.

The sculpture was put back in place re-using old screws where they were functioning and the stand was fitted and adhered in its socket using warm hide glue.



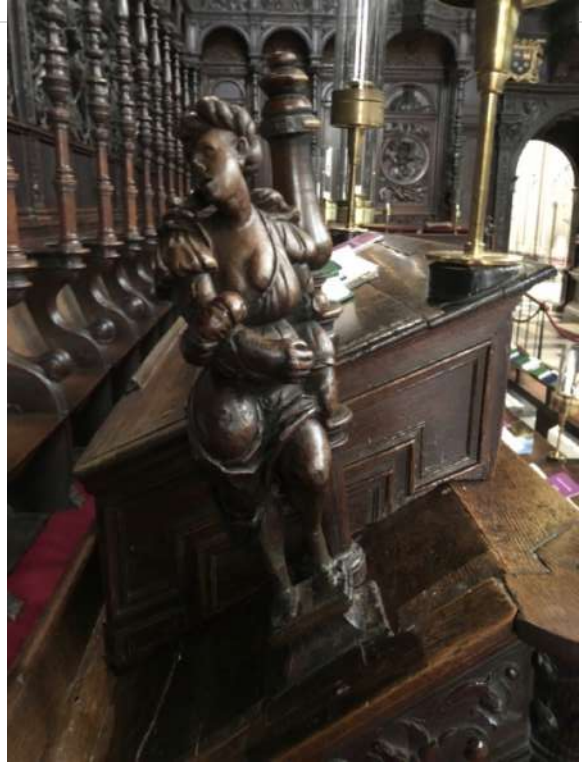
Before treatment

BAINBRIDGE CONSERVATION

LONDON



After treatment (pre re-attachment)






After treatment

The wobbling raised riser (reading stand) in this point was repaired by the addition of two oak strips, adhered using warm hide glue to the underside short sides and toned to match using shellac and earth pigments.



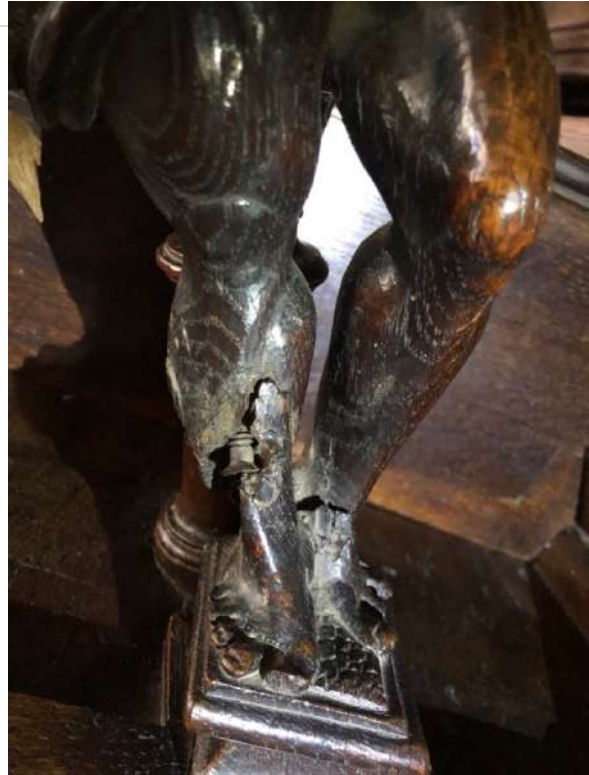
BAINBRIDGE CONSERVATION

LONDON

42	<p><i>Bay SM: Repair split through the cartouche of stall 9.</i></p> <p>High level treatment requiring scaffold, no treatment.</p>
43	<p>Bay SM: the great armorial panels, south side: Repair large split to the left side of stall 2.</p>
44	<p><i>Bay SM: Remove electrical fixture if redundant and Screw down loose floorboards in stall 2</i></p> <p>This, and the corresponding fixture in the opposite bay ND, was removed, the surface cleaned, the screwholes filled with hard coloured wax and the loss of surface toned using watercolours.</p> <div>    </div> <div> <p>Before</p> <p>During</p> <p>After</p> </div>
45	<p><i>Bay SM: Repair loose male sculpture on priest's stall.</i></p> <p>This sculpture had a very similar treatment to its opposite number (point 41). Again, the breaks were at the foot/ankle area, although in this case there were no iron rods only repair screws (which were ineffective). The screws were removed and the breaks re-assembled. A 4mm carbon fibre rod was inserted in the old repair screw hole and adhered in place using warm hide glue and epoxy bulked with phenolic microballoons. After toning with shellac and pigments it was re-adhered in place using warm hide glue.</p>

BAINBRIDGE CONSERVATION

LONDON



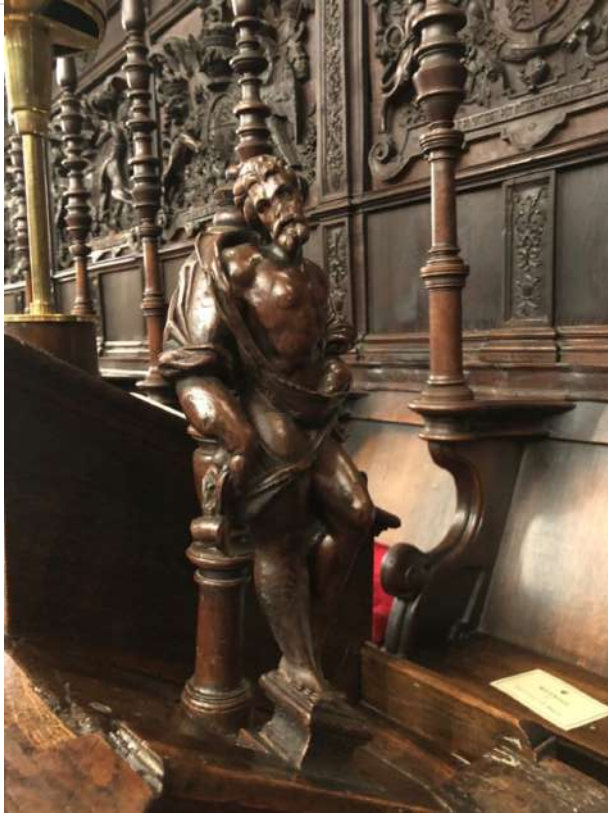
Before treatment



After treatment, before re-attachment

BAINBRIDGE CONSERVATION

LONDON



After treatment

- 46 *Bay SL: Re-secure columns between bays 7 and 8.*
This was secured in the same fashion as point 13

- 47 *Bay SL: Attend to jammed misericord in stall 6.*
See point 26


- 48 *Bay SL: Affix sign currently attached with blue tac.*
See point 16

Low Stalls and Choir Benches

- 49 *Bay SM, Lower Quire Stalls: Secure lip to low stall console which has warped and is pulling away.*
This was re-attached using warm hide glue.
- 50 *Bay SM, Lower Quire Stalls: Repair damage to decorative panel behind western stall; location shown on the drawing.*
Area stabilised with warm hide glue.
- 51 *Bay SL, Lower Quire Stalls: Repair broken hinge on stall. Stall 9 Location shown on the drawing.*
The misericord hinges are metal and cleverly hidden in the seat boards. A small square housing is let into the standard and the pivoting element on the seat is let in to the thickness of the board, secured through the seat by two metal pins.

BAINBRIDGE CONSERVATION

LONDON

	<p>In this instance the square housing had worn out of the standard and abraded the surface around it. It was moving fairly freely, but due to the geometry of the board and hinge it could not be removed. It was possible to fix the housing in place, isolating the surrounding timber with animal glue and providing a bulked epoxy fill to secure it.</p> 
52	<p><i>Bay SL, Lower Quire Stalls: Repair damaged balustrade. Location shown on the drawing.</i></p> <p>Loose elements were re-adhered using warm hide glue.</p>
52	<p><i>Generally, Lower Quire Stalls and Choir 1: Re-fix loose balusters.</i></p> <p>See point 25</p>
53	<p><i>Generally, Lower Quire Stalls and Choir 1: Remedy less severe instances of stiff, stuck or noisy misericords by lubricating hinges. Repair more severe instances where sticking of the hinged elements are due to deformation of the shape of the stalls themselves.</i></p> <p>See point 47</p>
54	<p><i>Generally, Choir 2 front stalls: Inspect fixings to choir 2 front stalls; identify those which are loose and tighten to improve rigidity.</i></p> <p>See point 27</p>
55	<p><i>Conduct careful review of the south side Quire Stalls to identify any further components which might be loose and need to be re-secured.</i></p>
56	<p><i>Stabilise head of spandrel by securing fixings at side, memorial chapel K</i></p> <p>Examined, no treatment required</p>
57	<p>As per point 55 the following elements were identified over the whole Quire, and their treatment included within this phase of work.</p> <p>N Chapel D, West side Choir 1</p> <p>The foot on the choir bench was loose and detaching. Due to various movement in the bench and legs there was a void under the foot so a new piece of shaped oak was required to bring the broken element up to the</p>

BAINBRIDGE CONSERVATION

LONDON

same level. It was re-attached using warm hide glue. The losses in the foot were filled with epoxy bulked with microballoons and toned using shellac and pigments. The original surfaces had hide glue isolation layers.



Before treatment



After treatment

58 *S Chapel L, low stall*

Similar to the issue noted in point 36 the top of the standard with a wide split across the grain. As the cap piece is well jointed to the top of the standard it isn't a major structural issue, although the column section can be pulled out some 10mm away. The gap was extended, cleaned and re-adhered using warm hide glue and a balsa wood fillet inserted into the gap. It was toned with shellac and pigments.



During treatment



BAINBRIDGE CONSERVATION

LONDON

59

Loose carved figures.

All the carved figures were checked and 6 were loose and requiring securing. In most cases this was achieved by injecting warm water into any potential glue -joint areas and wiggling the sculptures to allow for penetration of adhesive. The joints or cracks were then injected with warm hide glue. The beast sculptures (S Chapel N, high stall) are a continuation of the wood of the column on which they sit (ie. They're not carved separately and attached), which not only is evidence of highly skilled carving, but makes good structural sense as there is no glue joint to fail. This is the same for the small plinths for the figure sculptures on the West stalls – the plinth and sculpture are carved from a single piece of wood.



S, Chapel N West Side figure and column



North putto

BAINBRIDGE CONSERVATION

LONDON



S, Chapel N, West End, East figure.



N, Chapel D, West End, West Figure



N, Chapel D, West End, West Figure



N, Chapel E, West End, East Figure

BAINBRIDGE CONSERVATION

LONDON



Moulding (red arrow)

These mouldings, a continuation of the attic base of the pilasters, are part of the 17th century work. They are interesting as they're not properly attached to the stalls and the corner returns on one side are mostly unfinished and cut very crudely. They're attached on the sides by way of 1 or two nails and then glued to the panel on the back. A glue joint where the grain of the two pieces go in different directions is not a happy one and consequently 36 of the mouldings are loose and detaching.

The loose mouldings were encouraged further to come away to enable cleaning of the glue joints. Dust was vacuumed away and old animal glue softened using water thickened with Laponite (synthetic silicate). They were re-adhered along the bottom and sides using warm hide glue.



Mouldings removed and surfaces cleaned for re-adhesion.

The following mouldings were treated:

North
Chapel E
1,2,3,7,8,9

Chapel D
1,3,4

BAINBRIDGE
CONSERVATION

LONDON

Chapel C

2,3,4,5,7,8

South

Chapel N

1,3,5,7,8,9,10

Chapel M

1,2,3,4,5,6,7,8

Chapel L

1,3,4,8,10

DRAWING

