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SECTION A – RESEARCH METHODOLOGY & BACKGROUND INFORMATION

1.0 Introduction and background history

1.1 Clients brief (aim of research project)

Figure 1). View of the interior at time of sampling

Although archive references record the original decorative scheme undertaken by Wren on completion of the Sheldonian Theatre in 1668, the details of the decoration had not been fully researched. A restoration program of the painted ceiling panels by Streeter provided an ideal opportunity to discover more information on the original scheme and also to understand how his had been altered and developed over time.

There have been known alterations within the auditorium, notably the re-arrangement of the seating on the Vice-Chancellors Gallery and the installation of a replacement organ in 1876. The research would hopefully highlight the schemes relating to these alterations. The historic significance of the current scheme was also in question.

The research was initially prompted by the discovery that the large bolection panel beds at the southern end of the auditorium have a canvas and timber substrate. This panelling is currently partially obscured by the hanging oil paintings (as seen below). It was suggested that these panels may have originally held figurative paintings, and the investigation of these in particular was included within this research.

(see figures 29 & 30 with accompanying text)

Figure 2). South East corner of the interior
Transcript of : British History On Line – The Sheldonian Theatre (www.british-history.ac.uk)

Additional date headings have been inserted noting the scheme numbers, which in turn relate to the scheme charts and annotated photomicrographs within this report.

1668 (decorative scheme 1)

For centuries, the public ceremonies of the University were performed in St. Mary's church. With the Restoration came the wish to have a secular building where they might be celebrated with suitable dignity and 'without the sacrilege of those times during the Rebellion'. (1) The University approached the City about a site in March 1663, and by 1664 had successfully negotiated the lease of some land and of six tenements in Canditch. (2) Bishop Sheldon, a former Warden of All Souls, soon to become Archbishop of Canterbury, was the inspirer of the project, and when his £1,000 subscription in 1664 failed to attract others he shouldered the whole cost of £12,200. (3)

The architect was Christopher Wren, then Savilian Professor of Astronomy at Oxford. On 29 April 1663 a model of the theatre (costing £10) made to his specifications by the Oxford mason, Mr. Bird, was shown to the Royal Society, and in the following year the Vice-Chancellor's Accounts record the payment of £6 17s. 6d. for a 'Present of Plate for his (i.e. Wren's) paines about ye theater by appoyntment of ye Delegates'. (4) His design was in part a reconstruction of the theatre of Marcellus as illustrated by Serlio in his Architecture, 1540; it is possible that he intended to imitate the double-order scheme of the Roman building, for Wren's son said that the Oxford Theatre would have been 'executed in a greater and better Style, with a View to the ancient Roman grandeur' had Wren not been limited by expense. (5) The English architect's original contribution to the Roman-theatre plan was the roof, and the encircling gallery within; a characteristic device used later in many of his London churches. (6) His ingenious handling of the problem of the roof, a complicated wooden structure, constructed without cross beams and supported only by braces and screws though the ceiling spanned an area of 70 ft. by 80 ft., excited contemporary (and later) admiration. It is described at length by Plot (1676). (7) Wren owed the idea to Dr. Wallis, 'the most learned prodigy of the age', who made a model of this type of roof for the Royal Society in 1650 and later wrote a mathematical treatise on it. But Wren first put theory into practice.

The curious round windows of the roof, 'so contrived that they admit air and exclude rain'; the bivalve wooden windows of the upper gallery, 'so ingeniously contrived that notwithstanding their great weight yet can never sink so as to be brought out of square as 'tis usual in such windows', also inspired praise. Both sets may be seen in their original state in Loggan's engravings (1669) of the 'stupendous fabrick'. (8)
Building operations began with the pulling down of the houses leased from the city, of a part of the city wall, and of the 'University's embattled wall that parted them from the area lying before the Convocation House door, and on the north side of the Divinity school'. (9) By 26 July 1664 work was sufficiently far advanced for a ceremonial laying of the foundation stone. The Vice-Chancellor, a number of bishops, the heads of houses and others descended to the foundations and laid each a stone 'with the offering of gold & silver on them'. (10) From this month the accounts of the undertaking, hitherto administered by the University, were kept with meticulous care by Dean Fell, (11) officially appointed Treasurer, and give a detailed picture of the progress of the work during the next five years. (12)

Thomas Robinson was the master mason. He employed a team of craftsmen and labourers, many of whom were regularly at work till the end. The traditional nature of the mason's craft is well illustrated by the number of family groups engaged Robinson's three sons, John, Francis, and Thomas, for instance; there were also several members of the Dewe, Sedman, Freeman, and Evans families. All were paid 1s. 6d. per day; their labourers 1s. In the first year the highest bill paid to Robinson was only £18 odd for a week, but by 1667 when six days a week were worked instead of the usual five the bills reached between £23 and £36 a week during May. At that time as many as 41 skilled masons were at work with 20 labourers. The master carpenter was Richard Frogley (Plot's 'able carpenter') who was regularly engaged on University work. He, too, employed a number of craftsmen, each paid like himself at 1s. 6d. per day. (13) It was their crowning task to construct Wren's elaborate roof. As the building progressed other local men were engaged—the master joiner, Robert Minchin, (14) the glazier Bernard Rawlins, (15) the stone-cutter Bird, Samuel Wilkins, brass worker, John Dewe, master plasterer, and John Showell, iron worker, while London craftsmen were taken on to complete the beautification of the building.

The material used was obtained from various places. For the free-stone, Dr. Fell obtained the lease of a quarry at Shotover from Squire Brome Whorwood. (16) This Headington stone was used for the massive arcading of the ground story (except on the south side), which is now 'sadly decayed but still unpatched', (17) the smoother Cotswold stone being used for the upper story and so lending it a lighter look. There is record of Thomas Robinson's visit to Burford (26 Aug. 1664) to negotiate purchases from the local quarries, and from then on supplies of Burford stone came regularly to Oxford by water, by way of Radcot Bridge and High Bridge. Thomas Strong, for example, 'one of the great Cotswold builder-quarrymen who were to raise the new London', sent supplies in Nov. 1665, and one of the last bills for Burford stone was paid in Oct. 1668—£20 12s. for 309 ft. at 1s. 4d. the foot. John Ward was another important supplier, sending stone from Burford as well as from Barrington Quarry. (18) There is no reference to the harder Taynton stone, to be used so extensively forty years later at Blenheim, or of Windrush stone, but Mr. Arkell suggests they may be included in the term 'Burford', used in a generic sense. There is one reference in the accounts to stone from Bladon, probably used for paving. (19)
A variety of districts was drawn on for timber, partly, no doubt, because of the scarcity of trees in the county at this date, partly because of the need for specially selected wood for the great beams of the roof and for the fine panelling of the interior walls. Bletchington, Buckingham, Bicester, Islip, Holton, are among the places mentioned, while New College, Christ Church, and Brasenose supplied material from their estates.

The lead for the roof (48 fother costing £777 odd with carriage) came from Derby. (20)

Though we have the weekly wage bills and the names of all the workmen, details of the work done are rarely given. Wood tells us that by the winter of 1664 the foundations had been brought up level with the surface: (21) by the following winter Fell’s accounts show that the Oxford smith, John Showell, was already at work on ‘the 14 first windows, ye lockets & uprights’. (22) By the summer of ‘66 the work of decoration had begun: on 14 Sept. William Bird, the well-known Oxford mason and stone-cutter, is first mentioned as carving capitals and keystones. (23)

‘The outside being in a manner completely finished’ in 1667, the middle row of houses in Canditch on the North side of the Theatre was bought and pulled down to the end that the new building ‘might look more graceful’. (24) The Vice-Chancellor and University also obtained the City’s consent ‘to make a pair of faire staires to their new erected Theatre in the street towards Canditch and to wall in soe much of the street before the said staires as shall be needful to fence in the sayd stayre case’. (25) By the autumn the joiners and wood-carvers were busy on the interior of the building. The wood-work in the upper gallery and staircases was done by Oxford men—the Frogleys (Richard, and his son Arthur, soon to be employed on the Library of University College), (26) and John Rainsford. Robert Minchin was employed specifically on the ‘windores and dores’, and so, too, was his son-in-law, John Griffin, who was paid at the high rate of 2s. a day ‘for hanging dores and casements and setting up windores’. (27)

But the more elaborate wainscoting and woodcarving was done by two London craftsmen, the brothers William and Richard Cleer. They and their servants made frequent journeys down to Oxford, but mostly their work was done in the London workshop and sent to Oxford by John Bossom’s barge. (28) William Cleer’s total bill reached £1,347 3s. 2d. The following items are characteristic of his contribution: wainscoting 12 doors at 40s. a piece and two pair of ‘double wainscoting dores’ at £10 on the stair cases; 180 ft. capital moulding at 18d. a foot and panelling in the passage, little staircase, rooms and lobbies; about 30 yds. Bollection work at 10s. a yard in the front gallery with ‘wainscot, dore cases 6 pedestalls to ye columns, 12 pilasters with their pedestalls at 60s. a peice, 2 balconyes at £6 10 a peice’. Among his charges for the ‘ovall gallerye’ occur: ‘103 yds. Bolution work, £5 1. 10; 74 yds. modellin (29) comish £74; for ye upper comish &carving £200. For 22 collumns at £3 a peice £66. For 2 procters seates &2 dore cases £70’. He did the wainscoting in the Vice-Chancellor’s gallery and the pit at a cost of £96 and £79 16s. respectively. (30)
Richard Cleer was the artist-carver. He and his six assistants carved all the decorative woodwork of the lower cornice ('304 medallions at 1s. a piece, … 222 ft. Eggs, Teeth, Archetts, small leaves, & Lace at 2s. a ft., … 264 flowers at 6d. a piece'), the 16 masque heads under the upper galleries, the carving over the ‘Front outward dores’ ('great Raphaell Leaves, Oaken Leaves, Acorns and Husks at 6s. 6d. per ft.'); the shields with arms over the four main doors; ‘lace about ye windows in the upper part of the staircases, the balconies with ‘anticke supporters’, the 17 flambeaux on the two tables, capitals, pedestals, the ‘dore-cases’ under the proctors’ seats and so on. His total bill amounted to £288 15s. 9d. Outstanding amongst all this superb work are the proctor’s rostrums, the masterly Vice-Chancellor’s chair, (31) and ‘the Pulpitt in the Pitt’, the latter very elaborately worked with festoons, water leaves, folding leaves, berries, and beads. (32) Work such as this gives him the right to rank as ‘probably the leading craftsman in wood before the rise of Grinling Gibbons’. Mr. Hussey thinks that he may have been one of ‘the originators of the elaborate open-work carving typical of Charles II’s reign’.

The year 1668 was notable for the painting of the ceiling. Robert Streeter, recently appointed Serjeant Painter to the Crown (1660–79), (33) and Pepys' ‘famous history painter’ and ‘very civil little man’, had been commissioned to paint the canvas. Pepys reports how he found Dr. Wren and friends inspecting the paintings and saying that they would be better than Reuben’s ceiling to the Banqueting House, but that he contented himself with the admission that they ‘will certainly be very noble’. (34) The sections were sent down by water and put up by John Wilkins, the London joiner, at a charge of over £210. (35) In April, the painter himself, his son and servants came to Oxford, and we may take it that the canvas was by then fully completed and in position. It created a great stir: ‘That future ages must confess they owe To Streeter more than Michael Angelo’ was poetic licence, (36) but Plot thought it ‘well worthy of examination’. Later opinion was more critical: in 1687 James II dryly commented ‘twas pittie Varrio did not paint it’, and Lord Orford called it ‘a very mean performance’.

It was designed to suggest the Roman theatre open to the sky, and had gilded ropes (in carved wood) stretched from side to side, supporting a red drapery which could be unfurled by cherubs to protect the audience. Each compartment was painted separately and is a self-contained composition. The subject symbolizes the Restoration—the triumph of Religion and the Arts over Envy, Malice, Rapine, and Ignorance. (37)

The inside painting of the Theatre was done by an Oxford craftsman, Richard Hawkins, (38) at a cost of £235 3s. 1d. (see separate bill included in this report)

The bills for the first half of 1669 show that the finishing touches were being put. In the early months painted pieces and boards of wainscot were arriving by barge; also 2 'long chests of gold ware and 4 peices of cloth'; much work was done to make the cellars usable; Lord Howard's and some of Mr. Selden's marbles came down by water, were repaired and set up by Bird (the inclosing walls in which the marbles were set (40) with their flaming urns on top must have been built earlier); the iron railings with their spaced stone plinths and surmounting heads were completed, William Bird being the carver; holly sets (on Evelyn's advice) were planted to keep the curious from damaging the marbles. (41) So, the 'Theatre, a work of admirable Contrivance & Magnificence' and 'the first public Performance of the Surveyor in Architecture' was finished. (42)
In July came the first Encaenia, vividly described by Evelyn. The Theatre’s dedication was celebrated ‘with the greatest splendour and formallie’; there was ‘a world of strangers and other companie … from all parts of the nation’; speeches and music from 11 till 7 o’clock. Wren and Dr. Fell were presented by the archbishop with gold cups costing £204 7s. and made curators. (43)

Repairs and structural alterations to the Theatre are recorded in the separate "Theatre Accomp\'t" presented by the Curators and kept with the Vice-Chancellor’s accounts from 1670 on. Sheldon gave £2,000 (invested by the Curators in land at Lechla de) for repairs, and the surplus for the encouragement of printing; this sum was augmented in 1806 by a bequest of £2,000 from Dr. Wills, late Warden of Wadham. (44) The first substantial payment relates to £100 paid to ‘Mr. Smith’ (i.e. Bernard Schmidt) for the organ in 1671, and over £225 to Richard Frogley and others for ‘building ye new Print House of ye theatre under the East wall’. (45) The Theatre had been designed to house the University Press; the attics were used for book stores, compositors and correctors occupied rooms built under the galleries and printing presses were put in the basement. But the printers’ business overflowed into the area of the Theatre, and this unsatisfactory arrangement was now partly mitigated by the additional building. (46) In 1680 the ‘Prospect’ was still further improved by the purchase of garden ground near the Theatre costing £100. (47)

The scare about the safety of the ‘roof’, described by Elmes (Wren’s biographer) as contrived to annoy Sir Christopher, led the Vice-Chancellor to commission William Townsend in 1720 to make a thorough examination. He reported that the roof was in as good condition as twenty years earlier, when it was found to have sunk about two inches in the middle owing to the shrinkage of the timbers and the great weight of books laid on it. He prophesied ‘that the whole Fabrik … is … like to remain and continue in such good repair & condition for one hundred or two hundred years yet to come’. (48)

**1720-27 (decorative scheme 2)**

Between 1720 and 1727 much repainting was done in the Theatre by Witherington, the painter, and a new organ made by Renatus Harris was installed. (49) (This was the organ on which Handel performed his *Athalia* accompanied, as Hearne says, by his ‘crew of lousy German fiddlers’.) It was at this time, too, that the picture of Archbishop Sheldon and Queen Anne ‘was fix’d’. (50) And perhaps now, also, was completed the interesting painting of Sir Christopher Wren by Antonio Varrio, Sir Godfrey Kneller, and Sir James Thornhill. (51) It depicts the Professor of Astronomy seated in front of an open volume showing a design for the Theatre. In 1737 the beautification of the building was completed by the erection in the niches of the south front of two statues of Sheldon and Ormonde, carved out of white marble at a cost of £223 7s. by Henry Cheere of Westminster. William Townsend, who put them in position, was also paid out of the Theatre account a mysterious £42 18s. for ‘other work’. Could this have been for the statue of Charles II in classical armour, standing over the north door and of which there is no direct mention? (52)
1761-62 (decorative scheme 3)

No further change of moment occurred until the seventies when several large bills occur in the accounts—notably £373 16s. to Mr. Kettle for painting, gilding, lining, &c. in 1761–2 (Theatre Account). It is to Kettle, who was presumably Tilly Kettle (1740–98), ‘an ingenious portrait painter in London’ that we owe the present colouring of the interior. The brown painted woodwork was picked out with gilding and the ‘gallery parapets were painted to simulate Sienna and statuary marble’. (53) According to Dallaway, Penny, the Professor of Painting in the Royal Academy restored Streeter’s painting in 1762. (54) If so, he must have been commissioned by Kettle, for he does not appear in the Theatre accounts. In the year 1767–8 sash windows were substituted for the original ones by Henry Keene at a cost of £148. (55)

Large-scale redecoration and repairs appear to have been done again in the nineties. There is a reference to a payment of over £195 to an unidentified Mr. Taylor. (He was not one of the carpenters, masons, or painters usually employed.) Payments of £278 odd to Mr. Tawney, the regular Theatre carpenter, and of smaller sums to the painter and plasterer were made in the same year (1792–3), apparently for work at the Theatre: in 1798-9 more painting was done, and the ornamental marble was cleaned and repaired. In 1800 it was decided that the Theatre must be re-roofed, as according to Dallaway it was ‘in danger of falling’. (56) Bodley’s Librarian, writing to Gough on 6 Jan. 1802, reports that the University’s architect, Mr. George Saunders, was expected in Oxford soon and that he was at that time preparing in his London home ‘a new roof for our Theatre which we expect will be completely finished before July’. (57) Work was in full swing in 1801 as Valentine Cox says the Encaenia that year was held in the Radcliffe. He has an interesting account of the operations; of how the roofless building looked like an ancient amphitheatre, and how the allegorical paintings were successfully ’peeled off’ and restored in ‘perfect condition’. (58) He lamented the ‘unscrupulous’ removal on the plea of lightening the roof of the 10 or 12 circular windows (richly ornamented and partially gilded) of the original design. He thought the old roof more ornamental, and the old cupola more elegant, with its streaming gilt flambeau, than its larger and more conspicuous successor. (59) (The present octagonal structure was designed by Blore in 1838.) (60) Dallaway, on the other hand, admired the new roof, but lamented the reinstatement of the balustrade and considered a solid parapet ‘would have been more accordant with good taste’. In contemporary drawings (notably Mackenzie’s done in 1820) (61) the Theatre, bereft of cupola and round windows, looks comparatively undistinguished.

1826 (decorative scheme 4)

In 1826 further restoration was undertaken. The large sum of £705 paid to Dixon, decorative painter, (62) must have been for the new gilding and painting of the Theatre, and for the repair and restoration of the ceiling which is recorded in Brewer’s History. (63) In 1899, on the advice of Professor Church, (64) the paintings, having been damaged by damp, were once again taken down, relined, and restored.
At some point in the 19th century it seems that the stone work of the building was in part refaced, the upper stage on the east, west, and north side with Bath stone, and the bay on the south-west corner with Clipsham. (65) Possibly the work was done in 1838, or in 1868 when the heads of the 'Caesars' (as Max Beerbohm calls them in Zulika Dobson) or of the 'metaphysic sages' in Robert Bridges’s possibly more correct phrase, were restored 'before the most decayed and choppiest should quite defy a faithful copyist'. By 1919 the thirteen restored heads (the fourteenth was cut out when the Clarendon was built) were 'rotted worse than the originals'. (66)

On T. G. Jackson’s advice a new rostrum-staircase was put in in 1906 by Symm & Co.; (67) and in 1911 one bay of the west front was refaced and the cornices of the west and north fronts were repaired. In 1934 electric light was permanently installed after half a century of debate (the proposal to put it in was rejected in 1880 on the grounds that it was ‘not desirable to increase facilities for musical and other entertainments in the evening’); and in the following year some major structural alterations were undertaken as a result, wider exits from the upper gallery and two fireproof staircases on the north side being added. In 1936 Mr. W. R. J. Dodd agreed to reconstruct the galleries with steel columns and teak joists at an estimated cost of £8,250. In 1950 the Minutes of the Curators record agreement on ‘the urgent necessity for renovating the exterior stonework’. Elegant and strong in design, marvellously rich in craftsmanship, the Theatre has admirably served its purpose for nearly 300 years, and still provides a dignified and superb setting for ceremonial occasions.

Further references referred to in this document include:

- 1876-7 the Oxford University Gazette ref May 13th 1902
- Photographic images post 1876
- 8th November 1937, Journal of the Royal Institute of British Architects
- 12th April 1956, Report to the University of Oxford, W. Godfrey Allen
Footnotes for this article only

1 Wood (Gutch), Hist. Univ., ii, 795.
2 Council Acts, ed. Salter & Hobson (O.H.S., xcvi), 308, 322; cf. Oxford City Properties, ed. Salter (O.H.S., ixvii), 285; Univ. Arch., S.E.P. nos. 1–15; Vice-Chancellor’s Accounts, 1662–3, record £458 paid to the occupiers of the tenements; ibid. 1663–4 shows a payment to the City for ‘land destined for the site of the Theatre’, but the rent was actually £3 16s. 4d. a year with 2 capons and 2 pullets (valued at 13s.).
3 MS. Bodl. 898, f. 187 b.
4 V.C.'s Accs. 1662–3; cf. Wren Soc., xiii, 3. Evelyn states that he was shown it at Oxford in October 1664, Dr. Wren ‘not disdaining my advice in some particulars’. Dallaway (Observations on English Architecture (1810), 137 seq.) says this ‘plan’ was given to the Museum of the Royal Society. A part of the latter’s collections was given to the BM in 1781, but there is no trace now of the model in either institution (Teste Mr. W. A. H. King of the British Museum).
5 Wren Soc., xix, 91; cf. ibid., iii, pl. XVI for a reproduction of the drawing in St. Paul’s Library which may have been Wren’s first idea for the South elevation. The editors suggest that some alteration in plan may account for Evelyn’s misstatement about the cost of the Theatre—£25,000 instead of about £12,000.
6 For an account of Wren’s building see Christopher Hussey in Country Life, lxvii, 714–20 and 750–5; Wren Soc., xix, 91–9; ibid., v, pl. ii, iii.
7 Plot, Natural History of Oxfordshire (1677), 272–3; cf. Parentalia, ed. Stephen Wren, 335. For a diagram of the roof see Plot, tab. XIII.
8 Oxonia Illustrata (1675). There is a view of the north end and of the south front: the originals are at All Souls College. The architect’s own drawings appear not to have survived.
9 It was in this wall and not in the City wall that some of Selden’s marbles were placed in 1660 (V.C.’s Accs. 1660–1, f. 323). See ibid., 1663–4 for the purchase of timber and stone for the new building.
10 Wood (Gutch), ii, 795.
11 V.C.’s Accs., 1663–4, f. 341.
12 MS. Bodl. 898, ‘An Account of Monies laid out in the building and adorning of the Theatre in the University of Oxford.’ References to this source will not be given whenever the matter referred to can easily be found under the year.
14 He worked at the Schools along with Frogley and Hawkins the painter (ibid. 1661–2).
15 He worked for Wren at Trinity College also (Hussey, op. cit., 752).
16 MS. Bodl. 898, ff. 14, 15 b.
17 W. J. Arkell, Oxford Stone, 49.
18 MS. Bodl. 898, ff. 23 b, 24 b, 28 b, 29, 34 b, 48, 56 b, 107, 109, 139 b, 156, &c.
19 Ibid., f. 41.
20 Ibid., f. 185.
21 Wood (Gutch), ii, 796.
22 MS. Bodl. 898, f. 25.
23 He invented a method of staining marbles (Plot, op. cit., 277).
24 Wood (Gutch), ii, 796; Univ. Arch., S.E.P. X 7a.
25 Oxford City Properties (O.H.S.), 285. Under the year 1666–7 the V.C.’s accounts show £365 paid for the purchase of houses in the Middle Rowe, the City received £50 'for their damage in ye middle Rowe and ground in the street'.
26 For Arthur Frogley see 'Receipts & Expenses connected with the Library, New Chapel & east side of Large Quadrangle' (Univ. Coll. Arch.).
27 MS. Bodl. 898, ff. 98, 102 b, 104, 105, 109 b, &c.
28 Ibid., f. 112 seq. For the Cleers' other work see Wren Soc. xx, 45.
29 i.e. for modillion work.
30 MS. Bodl. 898, ff. 177–8 b.
31 Mr. Hussey says this was certainly designed by Wren.
32 MS. Bodl. 898, 179–80 b.
33 See Wren. Soc. iv, 47, and Burlington Mag., Apr. 1944, p. 81 for an article by Mr. Tancred Borenius (I owe this reference to Mr. Howard Colvin). Streeter was paid over £426 for his Theatre paintings (MS. Bodl. 898, f. 334).
35 MS. Bodl. 898, f. 183 b.
36 Urania, or a Description of the Painting of the Top of the Theatre at Oxon, as the Artist lay'd his Design. R. O. Whitehall (1669).
37 Plot citing William Soper of Wadham (Natural History of Oxfordshire, 274–6).
38 He was also employed on the Schools (V.C.’s Accs. 1661–2) and he, or possibly his father, worked on Mr. Greenward's Buildings at Univ. Coll. (1663–4).
39 MS. Bodl. 898, f. 182 b.
40 V.C.’s Accs. 1668–9. By 1749 the marbles had been moved to the long gallery called the Picture Gallery (J. Pointer, Oxoniensis Academia (1749), 154 et seq.).
42 Parentalia, 335.
43 MS. Bodl. 898, f. 188.
44 University Registry, Curators' Minute Book, 1872–1951.
45 V.C.’s Accs. 1670–1.
46 Ibid., 1671–2. From 1669 to 1759 books printed in Oxford bear a representation of the Theatre.
47 Theatre Acc. 1680–1.
48 Elmes, Life of Sir Christopher Wren, 517.
49 Theatre Accs. 1722–7. The organ cost £249. It was replaced in 1876 by one built by Henry Willis with a case designed by T. G. Jackson. See Recollections of T. G. Jackson, 143, 149.

50 Hearne, Collections, vii, 326 (O.H.S. xviii); Theatre Accs. 1737–8, f. 24.

51 If a piece of plate (£20 9s.) sent to Sir James Thornhill in 1727–8 was connected with this picture, then it was probably already installed (V.C.’s Accs. 1697–1735, sub. Theatre Acc. 1727–8). For a description of the portraits in the Sheldonian see Mrs. Poole, Cat. of Oxford Portraits, i, 132–4.

52 Bird carved the cartouche of arms over the north door, and Mr. Hussey suggests that he also carved the statue. For further information about Bird, see Mrs. J. C. Cole’s article in Oxoniensia, xiv, 63.

53 Hussey, op. cit., 753.


55 James Dallaway, Observations on English Architecture (1806), 139 n.

57 Mr. W. Delamotte, Benjamin West’s pupil, was paid £100 for ‘cleaning & repairing’ them (V.C.’s Accs. 1802–3); cf. Dallaway’s note in Walpole, op. cit., iii, 16.

58 G. V. Cox, Recollections of Oxford (1870), 46–7.

59 Murray, Oxford Handbook (1884). It was executed by James Gardiner, an Oxford builder. The dome and basement were covered with copper, painted and sanded to imitate stone.

61 He was paid £15 15s. (Theatre Acc. 1820–1). Over £3,000 was paid to the architect, the builder (Mr. D. Harris), and the timber merchant (Mr. Cossar), in addition to the £1,000 odd allowed Mr. Harris from the sale of old material. (Theatre Acc. 1801–2, 1805).

62 Ibid., 1826.


64 Report by Professor Church read 4 Mar. 1899 (and afterwards printed) mentioned in the Curators’ Minute Book, 1872–1951.


67 For this and succeeding alterations see the Curators’ Minute Book, 1872–1951.
2.0 Examination of Cross-sections

The paint fragments removed from the elements of each gallery area were examined at 40x magnification under a binocular microscope and representative cross-sections mounted in polyester resin for further cross-sectional analysis. The mounted samples were viewed at a range of magnifications from 40 to 500x under both simulated daylight and ultraviolet light in order that the stratigraphy and chronology of the decorative schemes could be understood and cross-referenced. Some basic media analysis of the paint layers was also undertaken using fluorescence techniques under UV illumination and chemical spot testing.

Photomicrographs (photographs taken through the microscope) of key cross-sections were taken for inclusion within this report to support and clarify the information detailed. These graphically show, in cross-section, small samples of paint removed from various areas/elements. They illustrate the build-up of paint layers (successive decorations), through the buildings history. These are included within this report and are annotated with strata diagrams and explanatory text. The annotations describe the original decorative scheme and the relevance of the later layers.

The colour descriptions detailed within this report are described using basic generic terminology; in addition, the colours seen in the photomicrographs should be viewed as representative only. The colours of the surviving paint layers may have altered since they were first applied due to various factors. Pigments may have faded when exposed to strong light or atmospheric pollution, causing a lightening or darkening of the colour. Darkening of the paint media may also have altered the appearance of the paint (Drying oils within paint darken in the absence of light).
3.0 Research Findings & Conclusions

Scope of research

List of areas and elements sampled:
(for full list with cross-section references see Appendix I)

East and West corridors:
Coving
Door architraves
Doors

Auditorium:
Upper Gallery –
Comice
Upper wallfaces
Windows
Waistscot panelling
Large bolection panelling
Later stair panelling
Seating
Gallery fronts
Twin tiered balcony sections

Lower gallery –
Comice
Lion corbels
Column capitals
Column shafts
Column bases
Column plinth
Later columns supporting organ
Seating
Altered elements of seating
Flambeau balustrade
End panels and large volutes
Lower gallery fronts
Replaced lower gallery grille areas

Proctors rostra incl:
Overdoors
Door architraves
Doors

Organ case
## 3.1 East and West Corridors

Extensive cleaning back works during the twentieth century has removed the majority of evidence for the earlier decorative history. However, survival of early paint material at substrate level provides sufficient evidence for identifying the earliest decorative scheme, which is predominantly based around the ‘Cedar Colour’. Information on lost schemes has been re-instated by extrapolation of associated elements.

Note: the scheme numbers referred to here do not relate directly to those within the auditorium, although seven schemes have been applied in both areas.

Within these circulation spaces there is only fragmentary evidence for the earliest decorations and far more frequent redecoration within recent times.

**Figure 3.** Chart recording the decorative schemes of the Auditorium Lower Gallery

<table>
<thead>
<tr>
<th>Element</th>
<th>Ceiling and coving</th>
<th>Door architraves</th>
<th>Doors</th>
<th>Wall wainscot panels</th>
<th>Wall plastered surfaces</th>
<th>Staircases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheme details</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. scheme extant 2008</td>
<td>Modern white alkyd</td>
<td>Pale brown alkyd</td>
<td>Pale brown alkyd</td>
<td>Pale brown alkyd</td>
<td>Pale cream alkyd</td>
<td>Pale brown alkyd</td>
</tr>
<tr>
<td></td>
<td>paint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>paint</td>
<td>oilpaint</td>
</tr>
<tr>
<td>6.</td>
<td>Modern off-white alkyd</td>
<td>Orange/brown alkyd</td>
<td>Orange/brown alkyd</td>
<td>Orange/brown alkyd</td>
<td>Pale cream alkyd</td>
<td>Dark grey alkyd</td>
</tr>
<tr>
<td></td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>paint</td>
<td>oilpaint</td>
</tr>
<tr>
<td>5.</td>
<td>Pale cream alkyd</td>
<td>Pale cream alkyd</td>
<td>Warm brown alkyd</td>
<td>Pale cream alkyd</td>
<td>Pale cream alkyd</td>
<td>Buff coloured</td>
</tr>
<tr>
<td></td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>alkyd oilpaint</td>
</tr>
<tr>
<td>4. post 1950 (date for introduction of alkyd systems)</td>
<td>Pale cream alkyd</td>
<td>Pale cream alkyd</td>
<td>Pale cream alkyd</td>
<td>Pale cream alkyd</td>
<td>Pale cream alkyd</td>
<td>Strong orange/brown alkyd oilpaint</td>
</tr>
<tr>
<td></td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>alkyd oilpaint</td>
</tr>
<tr>
<td>3. 1876 (traces only)</td>
<td>Yellow/cream lead</td>
<td>Yellow/cream lead</td>
<td>Yellow/cream lead</td>
<td>Yellow/cream lead</td>
<td>Yellow/cream lead</td>
<td>Pale grey lead</td>
</tr>
<tr>
<td></td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
<td>oilpaint</td>
</tr>
</tbody>
</table>

**Extensive disturbance to all painted surfaces, undertaken mid C20th**

| 2. early second scheme | Lead white oilpaint | Pale brown lead oilpaint | Pale brown lead oilpaint | Pale brown lead oilpaint | Lead white oilpaint | Pale brown lead oilpaint |
| 1700-22 Witherington Scheme |                      |                         |                          |                          |                        |                      |
| 1. original scheme 1698 Wren & Hawkins Scheme | Stone coloured lead | Stone coloured lead | Rich brown lead | Rich brown lead | Stone coloured lead | Rich brown lead |
|                     | oilpaint | oilpaint               | oilpaint                | oilpaint               | oilpaint               | oilpaint            |
|                     | STONE COLOUR | STONE COLOUR | STONE COLOUR | STONE COLOUR | STONE COLOUR | STONE COLOUR |
| **Substrate** | Fine plaster | Oak | Oak | Oak | Lime plaster & gypsum | Oak |
The research within the corridor and stair areas has identified evidence for seven decorative schemes. The first two of these appear to be early and date to the period immediately after the construction of the Theatre in 1668. This scheme is extremely significant as it continues the known palette of stone colour and cedar colour known to have been used within the auditorium as referred to within the bills and archive references. The continuation of this palette throughout indicates that the scheme for the building may have been conceived as a whole during the formulation of the architect’s concept, to provide a distinct theme throughout the interior spaces.

It appears that the concept of uniform decoration continued for some time during the early period as the second scheme is also directly related to that applied within the main interior. The walls and coving are plain lead white, but the joinery is painted in a pale brown lead oilpaint, which is also used throughout the main auditorium.

Unfortunately, later extensive cleaning back of the painted decoration, which was undertaken at some time during the mid C19th has removed all evidence of the schemes applied during the intervening period. (See previous page for the record of the surviving schemes within these areas).

**Figure 4.** Detail of the sample location site within the corridor

**Figure 5.** Sample no. SheldThtr/Int/ 1.148
West corridor, ceiling coving

Description of layers:
- Current modern off-white alkyd oilpaint
- Penultimate scheme of modern off-white alkyd oilpaint
- Intermediate schemes lost
- Original scheme 1668 Stone coloured lead opt
- Substrate Fine plaster (not shown)
It is presumed that the current colour scheme is a loose interpretation of the ‘Cedar Colour’ originally employed by Wren for the joinery of these areas.

The research within the stair and corridor spaces has shown that there was originally a core colour palette executed throughout the interiors which was based upon standard door, joinery and wallface treatments. Here the cedar colour used within the auditorium is seen to be used for the door faces of the circulation spaces.
3.2 Auditorium

Notes:

- The scheme numbers relate to the auditorium overall. At upper levels there have been only six schemes at lower levels seven schemes.
- The dates attributed to each scheme are taken from archival references and images and are detailed further within this report.
- Colours of original scheme detailed in bold, where no evidence exists a suggestion is made in italics.

**Figure 8.** Chart recording the decorative schemes of the Auditorium Upper Gallery (no scheme 4 was applied in these upper gallery areas)

<table>
<thead>
<tr>
<th>Element</th>
<th>Scheme details</th>
<th>Upper plaster wallfaces</th>
<th>Windows</th>
<th>Wainscot panelling</th>
<th>Large canvas covered bocetoons panels</th>
<th>Later stair screen panels</th>
<th>Seating generally</th>
<th>Gallery fronts and entablatures</th>
<th>All elements on balcony sections</th>
<th>Doors</th>
<th>Door architraves</th>
<th>Organ case</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. 1963 Scheme extant 2008</td>
<td>Oil gilding and cream alkyl oilpaint</td>
<td>Orange/brown alkyl oilpaint plus varnish</td>
<td>Pale cream alkyl oilpaint</td>
<td>Pale cream alkyl oilpaint</td>
<td>Pale cream alkyl oilpaint</td>
<td>Orange/brown alkyl oilpaint plus varnish</td>
<td>Retained with retouching</td>
<td>Retained with retouching</td>
<td>Pale stone colour alkyl oilpaint</td>
<td>Retained with retouching</td>
<td>Current pale brown/stone coloured oilpaint</td>
<td></td>
</tr>
<tr>
<td>6. 1936 incl. zinc oilpaint</td>
<td>Gold paint and warm cream lead oilpaint including sand</td>
<td>Warm stone coloured zinc based oilpaint</td>
<td>Warm stone coloured zinc based oilpaint</td>
<td>Warm stone coloured zinc based oilpaint</td>
<td>Mid cream plus varnish</td>
<td>Warm stone coloured zinc based oilpaint (Woodgraining scheme?)</td>
<td>2 tone marble scheme (some later retouching)</td>
<td>Warm stone coloured zinc based oilpaint</td>
<td>Pale marble scheme</td>
<td>Scheme 5 retained</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. 1876 Relates to Organ replacement</td>
<td>Pale grey lead oilpaint</td>
<td>No evidence. Element either extensively cleaned back or replaced</td>
<td>Pale grey lead oilpaint</td>
<td>Pale grey lead oilpaint</td>
<td>Pale grey lead oilpaint</td>
<td>Yellow/cream lead oilpaint</td>
<td>Pale marbling scheme</td>
<td>Pale marbling scheme</td>
<td>Woodgraining scheme</td>
<td>Woodgraining scheme</td>
<td>Mid brown lead oilpaint with gilding</td>
<td></td>
</tr>
<tr>
<td>3. 1761-2 Kettle Scheme</td>
<td>Pale peach coloured lead oilpaint</td>
<td>Warm cream lead oilpaint</td>
<td>Warm cream lead oilpaint</td>
<td>Warm cream lead oilpaint</td>
<td>Pale brown lead oilpaint</td>
<td>Lead white oilpaint</td>
<td>Pale marbling scheme</td>
<td>Pale marbling scheme</td>
<td>Pale brown lead oilpaint</td>
<td>Rich brown lead oilpaint (Cedar Colour)</td>
<td>Lead white oilpaint</td>
<td></td>
</tr>
<tr>
<td>2. 1720 Witherrington Scheme</td>
<td>Pale blue lead oilpaint</td>
<td>Mid grey distemper</td>
<td>Warm cream lead oilpaint</td>
<td>Warm cream lead oilpaint</td>
<td>Pale marbling scheme</td>
<td>Rich brown lead oilpaint</td>
<td>Pale marbling scheme</td>
<td>Pale marbling scheme</td>
<td>Rich brown lead oilpaint</td>
<td>Rich brown lead oilpaint</td>
<td>Pale stone coloured lead oilpaint</td>
<td></td>
</tr>
<tr>
<td>1. Original scheme 1668 Wren &amp; Hawkins Scheme</td>
<td>Pale stone coloured lead oilpaint</td>
<td>Dark stone coloured lead oilpaint</td>
<td>Pale stone coloured lead oilpaint</td>
<td>Pale stone coloured lead oilpaint</td>
<td>Pale stone coloured lead oilpaint</td>
<td>Rich brown lead oilpaint</td>
<td>Rich brown lead oilpaint</td>
<td>Rich brown lead oilpaint</td>
<td>Rich brown lead oilpaint</td>
<td>Rich brown lead oilpaint</td>
<td>Pale stone coloured lead oilpaint</td>
<td></td>
</tr>
</tbody>
</table>

| Substrate | Fine plaster | Lime plaster | Timber | Oak | Oak | Oak | Oak | Oak | Oak |

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**Notes:**

- The scheme numbers relate to the auditorium overall. At upper levels there have been only six schemes at lower levels seven schemes.
- The dates attributed to each scheme are taken from archival references and images and are detailed further within this report.
- Colours of original scheme detailed in bold, where no evidence exists a suggestion is made in italics.

**Figure 9). Chart recording the decorative schemes of the Auditorium Lower Gallery**

<table>
<thead>
<tr>
<th>Element</th>
<th>Scheme details</th>
<th>Seating</th>
<th>Flambew’s seating</th>
<th>Plasters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cornice</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. 1963</td>
<td>Pale cream alkyd oilpaint</td>
<td>Modern marbling scheme</td>
<td>Modern loose woodgrained finish</td>
<td>Modern marbling scheme</td>
</tr>
<tr>
<td></td>
<td>Scheme extant 2008</td>
<td>Modern marbling scheme</td>
<td>Re-touch and applications of over–varnish</td>
<td>Modern marbling scheme</td>
</tr>
<tr>
<td></td>
<td>(post 1950)</td>
<td>Modern marbling scheme</td>
<td>Modern loose woodgrained finish</td>
<td>Modern marbling scheme</td>
</tr>
<tr>
<td><strong>Lion corbels</strong></td>
<td>Pale cream alkyd oilpaint</td>
<td>Modern marbling scheme</td>
<td>Modern loose woodgrained finish</td>
<td>Modern marbling scheme</td>
</tr>
<tr>
<td>6. 1936 based on accompanying Zinc paints</td>
<td>Pale cream lead oilpaint</td>
<td>Re-touch and applications of over–varnish</td>
<td>Mid tone marbling scheme</td>
<td>Woodgraining to match existing</td>
</tr>
<tr>
<td></td>
<td>Pale cream lead oilpaint</td>
<td>Re-touch and applications of over–varnish</td>
<td>Mid tone marbling scheme</td>
<td>Softwood</td>
</tr>
<tr>
<td><strong>Column capitals</strong></td>
<td>Pale stone coloured oilpaint</td>
<td>Re-touch and applications of over–varnish</td>
<td>Oak woodgraining scheme</td>
<td>Oak woodgraining scheme with oil gilding to details</td>
</tr>
<tr>
<td>5. 1876</td>
<td>Strong cream lead oilpaint</td>
<td>Pale stone coloured oilpaint</td>
<td>Re-touch and applications of over–varnish</td>
<td>Oak woodgraining scheme with oil gilding to details</td>
</tr>
<tr>
<td></td>
<td>Strong cream lead oilpaint</td>
<td>Pale stone coloured oilpaint</td>
<td>Re-touch and applications of over–varnish</td>
<td>Oak woodgraining scheme with oil gilding to details</td>
</tr>
<tr>
<td><strong>Column shafts</strong></td>
<td>Pale stone coloured oilpaint</td>
<td>Re-touch and applications of over–varnish</td>
<td>Oak woodgraining scheme</td>
<td>Oak woodgraining scheme with oil gilding to details</td>
</tr>
<tr>
<td>4. 1826 Dixon re-paint</td>
<td>Pale marbling scheme</td>
<td>Re-touch and applications of over–varnish</td>
<td>Oak</td>
<td>Oak</td>
</tr>
<tr>
<td></td>
<td>Pale marbling scheme with varnish over</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pale marbling scheme with varnish over</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Column bases</strong></td>
<td>Pale marbling scheme</td>
<td>Re-touch and applications of over–varnish</td>
<td>Oak</td>
<td>Oak</td>
</tr>
<tr>
<td>3. 1761-62 Keelie Scheme</td>
<td>Off-white lead oilpaint</td>
<td>Cream marbling scheme</td>
<td>Cream marbling scheme</td>
<td>Oak</td>
</tr>
<tr>
<td></td>
<td>Off-white lead oilpaint</td>
<td>Siena marbling scheme</td>
<td>Siena marbling scheme</td>
<td>Oak</td>
</tr>
<tr>
<td><strong>Column plinths</strong></td>
<td>Off-white lead oilpaint</td>
<td>Grey marbling scheme</td>
<td>Grey marbling scheme</td>
<td>Oak</td>
</tr>
<tr>
<td>2. 1720-22 Witham scheme</td>
<td>Off-white lead oilpaint</td>
<td>Grey marbling scheme</td>
<td>Grey marbling scheme</td>
<td>Oak</td>
</tr>
<tr>
<td></td>
<td>Off-white lead oilpaint</td>
<td>Grey marbling scheme</td>
<td>Grey marbling scheme</td>
<td>Oak</td>
</tr>
<tr>
<td><strong>Later columns</strong></td>
<td>Off-white lead oilpaint</td>
<td>Red marbling scheme</td>
<td>Red marbling scheme</td>
<td>Oak</td>
</tr>
<tr>
<td>1. Original scheme 1668 Wren &amp; Hawkins scheme</td>
<td>Off-white lead oilpaint</td>
<td>Stone coloured lead oilpaint</td>
<td>Stone coloured lead oilpaint</td>
<td>Oak</td>
</tr>
<tr>
<td></td>
<td>LEAD WHITE</td>
<td>STONE COLOUR</td>
<td>STONE COLOUR</td>
<td>Oak</td>
</tr>
<tr>
<td><strong>Seating</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Later and altered seating</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Fine plaster</th>
<th>Oak</th>
<th>Oak</th>
<th>Oak</th>
<th>Oak</th>
<th>Oak</th>
</tr>
</thead>
</table>
Notes:

- The scheme numbers relate to the auditorium overall. At upper levels there have been only six schemes at lower levels seven schemes.
- The dates attributed to each scheme are taken from archival references and images and are detailed further within this report.
- Colours of original scheme detailed in bold, where no evidence exists a suggestion is made in italics.

**Figure 10. Chart recording the decorative schemes of the Auditorium Lower Gallery**

<table>
<thead>
<tr>
<th>Element</th>
<th>End panels</th>
<th>Large end panel volute/scrolls</th>
<th>Lower gallery fronts at column plinth level</th>
<th>Replaced gallery front grilles</th>
<th>Proctors rostra</th>
<th>Over doors beneath proctors rostra</th>
<th>Door architraves</th>
<th>Doors</th>
<th>Lower Gallery fronts including guilloche moulding</th>
<th>Coats of arms/cartouche</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. 1963</td>
<td>Modern loose woodgrained finish with gilding</td>
<td>Modern loose woodgrained finish with gilding</td>
<td>Modern marbling scheme</td>
<td>Modern loose woodgrained finish with gilding</td>
<td>Orange/brown alloyed oilpaint plus varnish</td>
<td>Orange/brown alloyed oilpaint plus varnish</td>
<td>Orange/brown alloyed oilpaint plus varnish</td>
<td>Orange/brown alloyed oilpaint plus varnish and gilding</td>
<td>Scheme 4 retained on surrounds, arms repainted</td>
<td></td>
</tr>
<tr>
<td>Scheme extant 2008 (post 1990)</td>
<td>Warm stone zinc based oilpaint</td>
<td>Warm stone zinc based oilpaint</td>
<td>Pale marble scheme</td>
<td>Warm stone zinc based oilpaint</td>
<td>Scheme 5 retained / retouched</td>
<td>Scheme 5 retained / retouched</td>
<td>Oak woodgraining scheme</td>
<td>Re-touch and applications of over--varnish</td>
<td>Oak woodgraining scheme</td>
<td></td>
</tr>
<tr>
<td>6. 1936</td>
<td>Oak woodgraining scheme</td>
<td>Oak woodgraining scheme</td>
<td>Oak woodgraining scheme</td>
<td>Oak woodgraining scheme</td>
<td>Pale cream lead oilpaint (marbling?)</td>
<td>Pale cream lead oilpaint (marbling?)</td>
<td>Pale cream lead oilpaint (marbling?)</td>
<td>Oak woodgraining scheme</td>
<td>Pale cream lead oilpaint (marbling?)</td>
<td></td>
</tr>
<tr>
<td>Incl. zinc oppilants</td>
<td>1826 Dixon re-paint</td>
<td>Pale cream lead oilpaint with varnish and gilding</td>
<td>Scheme 2 retained / retouched</td>
<td>Brown red lead oilpaint with varnish</td>
<td>Scheme 2 retained / retouched</td>
<td>Brown red lead oilpaint with varnish</td>
<td>Mid brown lead oilpaint</td>
<td>Pale marbling scheme</td>
<td>Pale grey marbling with gilding on surround</td>
<td></td>
</tr>
<tr>
<td>3. 1761-62</td>
<td>Brown red lead oilpaint with varnish</td>
<td>Brown red lead oilpaint with varnish</td>
<td>Scheme 2 retained / retouched</td>
<td>Brown red lead oilpaint with varnish</td>
<td>Scheme 2 retained / retouched</td>
<td>Brown red lead oilpaint with varnish</td>
<td>Mid brown lead oilpaint</td>
<td>Pale marbling scheme</td>
<td>Pale grey marbling with gilding on surround</td>
<td></td>
</tr>
<tr>
<td>Kettle Scheme</td>
<td>2. 1720-22 Witherington scheme</td>
<td>Rich brown lead oilpaint (Cedar Colour)</td>
<td>Rich brown lead oilpaint (Cedar Colour)</td>
<td>Rich brown lead oilpaint (Cedar Colour)</td>
<td>Rich brown lead oilpaint (Cedar Colour)</td>
<td>Rich brown lead oilpaint (Cedar Colour)</td>
<td>Rich brown lead oilpaint (Cedar Colour)</td>
<td>Pale marbling scheme</td>
<td>Pale marbling scheme</td>
<td></td>
</tr>
<tr>
<td>1. Original scheme 1668 When All-ckins</td>
<td>Rich brown lead oilpaint CEDAR COLOUR</td>
<td>Rich brown lead oilpaint CEDAR COLOUR</td>
<td>Stone coloured lead oilpaint STONE COLOUR</td>
<td>Rich brown lead oilpaint CEDAR COLOUR</td>
<td>Stone coloured lead oilpaint STONE COLOUR</td>
<td>Stone coloured lead oilpaint STONE COLOUR</td>
<td>Rich brown lead oilpaint CEDAR COLOUR</td>
<td>Dark grey marble scheme</td>
<td>Stone coloured lead oilpaint CEDAR COLOUR</td>
<td></td>
</tr>
<tr>
<td>scheme</td>
<td>1668</td>
<td>Rich brown lead oilpaint CEDAR COLOUR</td>
<td>Stone coloured lead oilpaint STONE COLOUR</td>
<td>Stone coloured lead oilpaint STONE COLOUR</td>
<td>Stone coloured lead oilpaint STONE COLOUR</td>
<td>Stone coloured lead oilpaint STONE COLOUR</td>
<td>Rich brown lead oilpaint CEDAR COLOUR</td>
<td>Stone coloured lead oilpaint CEDAR COLOUR</td>
<td>Stone coloured lead oilpaint CEDAR COLOUR</td>
<td></td>
</tr>
<tr>
<td>1. Original scheme 1668 When All-ckins</td>
<td>Rich brown lead oilpaint CEDAR COLOUR</td>
<td>Rich brown lead oilpaint CEDAR COLOUR</td>
<td>Stone coloured lead oilpaint STONE COLOUR</td>
<td>Stone coloured lead oilpaint STONE COLOUR</td>
<td>Stone coloured lead oilpaint STONE COLOUR</td>
<td>Stone coloured lead oilpaint STONE COLOUR</td>
<td>Rich brown lead oilpaint CEDAR COLOUR</td>
<td>Stone coloured lead oilpaint CEDAR COLOUR</td>
<td>Stone coloured lead oilpaint CEDAR COLOUR</td>
<td></td>
</tr>
</tbody>
</table>

Substrate: Oak, Oak, Oak
The research has shown that the picking out of the guilloche moulding with gilding has no precedence within this interior as it is limited to the current scheme only. The use of ‘Cedar Colour’ for this lower gallery front including the guilloches is also a misinterpretation of Wren’s original scheme. The sample show in figure 12 (adjacent) clearly shows a coarse grey oilpaint which is in fact the true colour of the original scheme.
The adjacent figure 14 shows that the original scheme was a plain pale stone colour.
The base of the pilasters and columns is formed from a complex series of mouldings respecting the Composite architectural order.

The current scheme treats all of these separate mouldings in a uniform marbled effect. The research has shown that originally a combination of grey and very dark grey, (almost black) lead oilpaints was used.
Detail of the Upper Gallery, which abuts the ceiling panels. The gilding of the upper cyma moulding is again a relatively modern introduction. The scheme prior to the current is identified within the archive as a gilded scheme. The research has shown that in fact a cheaper gold paint was used, (see scheme 6 adjacent).
Figure 19). The Proctors Rostra.

With current extremely ‘glossy’ cedar colour and extensive use of gilding.

Figure 20). Sample no. SheldThtr/Int/ 8.133

Proctors rostra tongue moulding

Description of layers:

- Current scheme (7) Modern loose woodgrained finish with oil gilding
- Intermediate schemes lost
- Scheme 4, Pale cream lead oilpaint (marbling?)
- Scheme 3 Brown/red lead oilpaint
- Scheme 2, a repeat of the original cedar colour
- 1668 Wren & Hawkins Scheme: Original scheme of cedar coloured lead oilpaint
- Substrate: Oak
The current decoration treats the door elements and the Proctors Rostra as a single architectural element. This does not reflect Wren’s original concept for these twin features.

The research has shown that the original scheme treated these as if they were in fact two different types of substrate material. The door and the ‘box’ of the proctor’s rostra were painted in cedar colour, to represent timber. The door, architrave and overdoor were painted to represent stone, i.e. a stone colour. So in effect we have a timber ‘box pulpit’ style structure atop a large projecting stone corbel forming the apex of a stone door surround.
This sample clearly shows that the original scheme was in fact a plain stone colour and that the marbled finishes are based upon a strong historic precedent which was formed during the second scheme.
Figure 25). Detail of the lower gallery and corner twin balcony elements

Figure 26). Sample no. SheldThtr/Int/15.4 x150
Column east gallery

Description of layers:

Scheme 7
Current scheme of modern alkyl oilpaint marbling decoration

Scheme 6
Retouching and additional varnish schemes

Schemes 4-5 (1826 plus additions)
Pale marbling scheme with additional varnish layers, ultimately making the finish very dark
The inserted organ columns were painted dark to match this

Scheme 3
Sienna marbled lead oilpaint finish

Scheme 2
Pale grey marbling scheme

1668 Wren & Hawkins Scheme
Original scheme of a rance marble effect lead oilpaint finish

Substrate
Oak (not shown)

This colourful sequence of schemes represents the various changes in the painted marble effects which have been undertaken on the columns and also the pilasters supporting the gallery. Importantly, it also shows the vibrancy of the original rance marbled scheme.
3.3 Research conclusions:

The research exercise has identified a total of seven schemes within the main auditorium of the Sheldonian Theatre. The first of which ties in very closely to the description recorded in the bill from Richard Hawkins dated 1668 and referred to earlier within this document.

1668 – original scheme

The original interior scheme was based primarily around an interplay of two basic colours, Stone Colour and Cedar Colour, with supporting decorative details in dark red marble (Rance), and shades of dark grey coloured lead oil paints. The cornices ceilings and corbels were plain lead white. The use of this basic colour palette was combined to great effect, creating the appearance of a predominantly stone interior, with dark wood fitting out. This was highlighted by the marbled paint finishes created on the columns and grounded in the dark grey bases and lower panelling. With accents of the copper colour and gilding which was applied to the flambeaus encircling the lower gallery level.

The use of the stone colour both on wallface plaster, joinery and panelling would allow the interior architecture to be really appreciated by the viewer and not camouflaged as it is at present by the extensive marbled decoration. Cedar colour was limited to those elements which it was considered should be understood to be timber. Doors, seating, areas of panelling, and marbling to columns and column bases. One can see the rationale within this, and its direct relationship to the concept of the Sheldonian as a Roman amphitheatre. A stone encircled space, with exotic hardwood fittings and ornate marble columns.

During the earliest phase of this research exercise it was suggested that the dark grey of the column bases and also the dark grey of the lower gallery front panels may have been grey granite or marbled finishes. A further phase of the research has involved more extensive uncovering on-site, particularly of these grey finishes. These have shown that for both of these elements that only plain colour was used, not marbling. The lower gallery fronts would be exposed to a fair degree of mechanical damage and abrasion, so on reflection the suggestion of a marble effect was misplaced. The grey of the bases to the marble columns were also plain oilpaint finishes, not marbling. The lack of marbled effect on these elements does not detract from the quality and significance of these finishes. It is know that the joinery was predominantly a ‘cedar colour’ not a cedar woodgrained effect. These grey ‘stone’ colours reflect the fashion at that time for plain colour to suggest a material other than that used.

It was worthwhile undertaking a small degree of research within the main circulation spaces (see 3.1 as this has effectively revealed a deliberate link between the decoration of these areas. It has provided decorative evidence that could with some degree of certainty be recreated throughout the interiors of the Sheldonian with informed confidence that it does follow Wren’s original concept for the interiors of this building.
Figure 27. Transcript of the original bill for painting, Richard Watkins 1668

Continued on the following page

(The Nineteenth Volume of the Wren Society 1942)

This records the decorative scheme of ‘cedar color’, ‘stone colour’ and the copper colour and gold of the flambeau. This is very much as found within the research

Richard Hawkins his Bill for Painting at the Theater.

<table>
<thead>
<tr>
<th>Description</th>
<th>£</th>
<th>s</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>For 32 yards once primed outside at 5d. per yard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>,, 99 yards Cedar colour inside, 1d. per yd.</td>
<td>000</td>
<td>13</td>
<td>04</td>
</tr>
<tr>
<td>,, 499 yards in both stair-cases, Cedar colour at 1s. 2d. per yard</td>
<td>005</td>
<td>15</td>
<td>06</td>
</tr>
<tr>
<td>,, 287 yards stone colour in the 2 Cornishes at 1s. 6d. per yard</td>
<td>023</td>
<td>17</td>
<td>06</td>
</tr>
<tr>
<td>,, 72 yards ston-couler in ye wainscot above the Cornish 1s. 2d. per yd.</td>
<td>021</td>
<td>10</td>
<td>06</td>
</tr>
<tr>
<td>,, 220 yards and an halfe, in the windowes ston-colour in oile at 1s. a yard</td>
<td>004</td>
<td>04</td>
<td>00</td>
</tr>
<tr>
<td>,, 578 yards cerad in the ovall Galleries at 1s. 2d. per yard</td>
<td>011</td>
<td>00</td>
<td>06</td>
</tr>
<tr>
<td>,, 30 yards cedar colour in the Proctors seats at 1s. 2d. a yard</td>
<td>033</td>
<td>15</td>
<td>04</td>
</tr>
<tr>
<td>,, 155 yards cedar colour in ye upper front Gallery 1s. 2d. per yd.</td>
<td>001</td>
<td>15</td>
<td>00</td>
</tr>
<tr>
<td>,, 114 yards and an halfe stone color in the lower front Gallery and Pedestalls at 1s. 2d. a yard</td>
<td>008</td>
<td>02</td>
<td>00</td>
</tr>
<tr>
<td>,, 61 yards stone colour in the Vicechancellor’s Gallery, and dore-cases under the Proctors seats at 1s. 2d. a yd.</td>
<td>006</td>
<td>13</td>
<td>07</td>
</tr>
<tr>
<td>,, 198 yards cedar colour in the Vicechancellor’s Gallery and pitt at 1s. 2d. per yard</td>
<td>003</td>
<td>11</td>
<td>02</td>
</tr>
<tr>
<td>,, three hundred and 13 yards cedar color in ye chequer stairs skreen outward doors, and doors under ye Proctors seates not being veined at 1s. the yard</td>
<td>015</td>
<td>13</td>
<td>00</td>
</tr>
<tr>
<td>,, oyle us’d about and in mold for ye Plasterers</td>
<td>000</td>
<td>01</td>
<td>00</td>
</tr>
</tbody>
</table>
For 405 yards in ye passages, Lobbies Composing offices, and 2 Stair-cases in ye same offices, cedar color at 1s. 2d. the yd. 023 12 06
`` 22 Columns and 12 Pelasters, ye Columns at 11s. a peice, and ye Pelasters at 10s. a peice, being don like Rance with a high varnish 028 00 00
`` 17 Flambeauxes being don over with copper ye flames guilded at 4s. a peice 003 08 00
`` painting 6 shields stone couler and 1s. 6d. a peice 000 09 00
`` 2 Lions heads and faces at 6d. a peice 000 01 00
`` painting 2 great scrowles with cedar couler, 2s. 6d. a peice 000 05 00
`` painting 24 scrowls to ye stands 6d. a peice 000 12 00
`` 15 maske heads painted at 8d. a peice 000 10 00
`` 5 chairs painted with cedar colour at 2s. a peice 000 10 00
`` 2 desques and stands at 1s. 3d. a peice 000 02 06
`` 2 little chairs by ye Vicechancellors 000 01 06
In the 4 partitions wth raile and ballister wth a board where ye Organ stood 53 yards at 1s. 2d. a yd. 003 01 10
In ye 5 doors in ye Court 35 yards at 1s. a yard 001 15 00
For painting ye Candlestickes in oyle being ston, and don 8 times over
`` gilding ye Flambeaux 000 15 00
`` 17 Miteres and Labells wth a great G painted and guilded at 18s. a peice 015 06 00
`` painting ye Kings Arms wth ston-colour in oyle, being don 8 times o're 000 13 00
`` gilding ye Capital letters under it and painting ye stone 001 13 04
`` gilding ye Imperial crown wth ye palm branches letters and pedestalls 001 10 00
`` painting ye shield wth my Lords Arms wth ye freeze wth ston-colour and writing ye Motto wth blacke 001 00 00
`` gilding the Crown and Lawrell to ye Divinity school being ye front of Theater 001 10 00

Total £235 03 01

Decem. 3d. 1669. Received then in full of this Bill, and of all Accounts concerning the Theater in the University of Oxford, the summ of eighty five pounds twelve shillings wch said summe wth 150li. before received makes up the summe of £235 12 00

By me Rich: Hawkins.

Goody Bewe for 22 days sweeping and washing at 6d. per day and 1s. for a mop and bessoms 000 12 00
For writing ye letters on ye Antiquities 000 04 00
20 statues painted and guilded 1s. a peice
1720-27

The archives record that between 1720 and 1727 repainting was undertaken by Witherington. Although there does not appear to be any detail within the archive of the colours and effects used during this scheme, the research has fortunately revealed clear evidence. This second scheme, takes the basic colour palette of the original and uses this as a basis for the formulation of a more fashionable early eighteenth century decoration. The cedar colour is again applied to the doors, and the proctors rostra, but with a paler brown for the seating generally. The columns are again marbled but with a distinctly pale marbling finish not a dark red as previously. Interestingly, the balcony fronts are marbled for the first time, which is a marked departure from the original plain stone coloured finish. It is the move to a wider use of marbling at this time which sets a precedence for the rest of the schemes until and including the present late twentieth century scheme. The panelling is painted in a warmer cream colour not a pale stone as before.

1761-62

The decoration at this time is recorded as being undertaken by Kettle. The details of this scheme within the archive are more specific than the previous decoration. The archive records ‘The brown painted woodwork was picked out with gilding and the gallery parapets were painted to simulate sienna and statuary marble’. These elements are clearly evident within the third scheme, which has been identified within the main auditorium. The proctors rostra are painted in a brown oilpaint with oil gilded elements. This does appear to be the first use of gilding within the interior. The column shafts are painted with a Sienna marble effect, and the main balcony fronts are again painted with a paler marble effect, presumably the statuary marble referred to within the archive description.

Interestingly it is noted that in 1798-9 more painting was done and the ornamental marble cleaned and repaired. No clear evidence for repainting was found within the samples removed for analysis. However, the marbled finishes showed some minor retouching and the application of further coats of varnish.

Figure 28). Watercolour of the interior by John Buckler dated 1815

Based upon the research we believe that the decoration recorded by Buckler within his image is scheme 3 dating from the 1760’s, surviving at that time and is fairly accurately recorded.

The joinery is generally dark brown, the gallery fronts a pale creamy-marbling and the columns decorated with a strong marbling scheme.
1826

There is a further reference to painting within the Theatre in 1826, when Dixon was paid £705. There are no clear references of the scheme, which was undertaken. However, scheme 4, is very distinctive and significant. This scheme includes the first evidence of a mid oak woodgraining finish. This is typically early nineteenth century in appearance and was high fashion in the 1820's. It is limited to the faces of the doors at lower gallery level, which again was a typical attribution for this type of finish in the 1820's.

1863

Although no decorative scheme was undertaken in 1863, this date is of particular reference as it is the only date for which we can attribute any archive evidence to the treatment of the high level bolection panels at the southern end of the auditorium (see figure 30 adjacent). It was initial investigations into these areas which prompted the full research within the interiors.

Figure 29). Illustrated London News, June 27th 1863

The panel beds of these elements are covered in a canvas, which prompted discussions as to whether there was at any time figurative painting within them. Figure 29), is taken from the Illustrated London News June 27th 1863, recording the occasion of conferring the degree of DCL on the Prince of Wales. This clearly shows the high level panels at that time and the ashlar detailing on them. From this evidence it is not know if this is a painted design on the panels or a plastered wallface framed by the timber mouldings, which has been lined out in imitation of ashlar work.

Figure 30). The high level bolection panels

Interestingly the window reveal shown adjacent to the panel in the illustration is also lined out and evidence for the finish around this areas was identified behind the later timberwork containing the workings for the organ. (see figure 31).
Figure 31). Lined out ashlar effect identified behind the organ casing

It is possible that the lining out as seen above was continued across the panel beds, or the painted ashlar finish may have been created in a trompe l’oeil effect on to the canvas. At the time of the research and limited revealing on the canvas the researchers were seeking to identify any figurative work which may have existed. The research revealed only stone colour, which it was thought directly related to the schemes on the wallfaces. There is a possibility that the stone colours relate to this ashlar design, and at some future point this could be investigated further.

What is particularly interesting to note is that the illustration of 1863 does not show an oil painting hung on the face of these return panels. Instead it shows the paintings hung on to the face of the upper south gallery and across the lower face of the organ fitted at that time. This is again recorded within figure 32). With no paintings hung on the side return panels (pre 1876 as it shows the earlier organ and only two pairs of supportive columns flanking the south entrance door).

Figure 32). pre-1876. detail shows only two pairs of columns beneath the organ
1876

The photograph below shows the current organ in-situ with the flanking pairs of pipes (now removed) It also shows the re-arrangement of the picture hang and the earliest evidence for paintings being hung on the side return panels at high level. Importantly it shows three pairs of columns beneath the organ, providing us with a datum within the paint layers. Which ties directly into a later period of scheme 5, (see figure 9, later columns). The scheme at that time combines darker woodgraining with a darker marbling on the columns. This darker marbling is in fact the earlier marbling (scheme 5) darkened as a result of many applications of resin varnish. When these later columns were inserted they were given a darker marble finish than the originals so that to the viewer they appeared as a perfect match.

Figure 33). Interior post 1876
The photographs shown above was used as a postcard image, and is dated c.1905. This shows the interior very much as seen in the previous figure 33), but from this wider angle the pair of columns inserted centrally between the existing pairs and directly under the organ are more visible. This was obviously necessary as a strengthening of southern upper gallery, in order to support the much larger organ. The datum for the insertion of the organ is taken from the Oxford University Gazette, May 13th 1902, which records a necessity for cleaning the pipes ‘This not having been done since its erection in 1877’.
The two images above show the Vice Chancellors Gallery prior to and after the alterations of 1936, which created two side access steps to the Gallery (as can be seen in figure 36). Again the works undertaken and the necessary joinery works, provide us with a date to insert into the paint strata. This has allowed a post 1936 date to be attributed to scheme 6), which coincidentally also includes the only use of zinc based oil paints within the history of the building. Zinc oil paints became very popular for a relatively short period after the 1920’s and up to the beginning of the Second World War as a reaction to the know hazards of using lead oil paints. The zinc oil paint scheme retains elements of the previous scheme, but as previously also brings the decoration up to date. Joinery panels are painted a warm stone colour obscuring the existing wood graining finishes, ceilings and cornices are painted a pale cream over the earlier strong cream. The Journal of the RIBA (8th November 1937) records the works undertaken at that time, involving the strengthening of the columns and the incorporation of steel framing. It also notes that Mr Dodd decided to gild the cyma of the cornices. The research has revealed that in reality a cheaper bronze based gold paint was used.
The final phase of works and subsequent redecoration was undertaken in the early 1960's after the publication of a report by W. Godfrey Allen in April 1956. This earlier report used the original building accounts with Dr. Oakeshott producing a breakdown of Wren's original treatment of the interior. Although the report does not propose a full re-instatement of the original colour scheme, it does suggest the extensive use of a 'cedar colour' to lighten the tone and impart a warmth of colour. This no doubt explains the current use of a disturbing orange/brown finish which dominates the internal space. In effect, the scheme was not altered until the 1960's when floor strengthening works cause widespread disruption within the interior.

It appears that based upon Godfrey Allen's proposals, the scheme undertaken between 1962-3 made an attempt to return to a decoration within the spirit of Wren's original intention. The current research exercise has brought together all of the threads of previous research and decorative schemes, which should now allow for a redecoration to be proposed which would both reflect the original intention, respect the archaeological and decorative history and re-unite the separate interiors into a more harmonious whole.
3.4 Details of the Organ Case (1876)

The current organ and its case was erected within the auditorium in 1876, replacing the earlier organ, assumed to have been fitted by Wren in the 1660’s. The scheme chart (Figure 8) shows the details of the decorative schemes applied to it. There being only evidence for two decorations spanning over three scheme periods. The current stone colour and gilded scheme was undertaken c.1963 and relates to the scheme current throughout the interior at the time of this research. Prior to this schemes the finish original to the organ (1876 scheme) was retained for a significant period.

The 1876 scheme consisted of a mid brown (mid oak timber coloured) lead oilpaint with gilded detailing. The scheme may not have been specific to the interior at the time of its insertion, possibly being a standard manufacturer’s finish, or a generic scheme which would easily be accommodated into any public interior of the period.

Three options for the redecoration of the Organ Case:

It is understood that the desire at this time is to reinstate the original 1668 scheme within the interiors of the Sheldonian Theatre. As such the decisions to be made regarding the decoration of the later C19th Organ case could initially be considered to be quite complex. There are three main options that could be undertaken:

1). Reinstate the first scheme ‘original’ to the Organ Case
2). Decorate the Organ Case in with the 1668 scheme.
3). Adapt the ‘original’ Organ Case scheme to more closely resemble Wrens intention for the interior

Option 1). Reinstate the first scheme ‘original’ to the Organ

From an ethical standpoint to reinstate the mid brown lead oilpaint and gilded scheme could be argued to be the most satisfactory decision. The Organ Case was inserted into the auditorium during the 1870’s and its decorative finish at that time was a generic dark wood colour with gilded detailing. Its redecoration in a facsimile of that 1870’s scheme could be seen to be true to the piece as an individual element. However, it may not sit well against the original Wren schemes of 1668 across the rest of the interior, the ‘original’ oak colour is not tonally compatible with Wren’s ‘Cedar Colour’. The Wren scheme does not include any elements of gilding, however the 1876 Organ Case was highly decorated with gold leaf. There is a risk that by re-instating the high Victorian scheme to the Organ Case it will become the major decorative focus for this interior and detract from the restrained elegance of Wrens C17th scheme.
Option 2). Decorate the Organ Case in with the 1668 scheme.

The evidence for Wren’s decoration, both archival and material shows that there was a deliberate intention to create a unified interior of cool stone colours, dramatic grey detailing and high gloss marbled surfaces. There is a deliberate intention to create a stone interior with timber coloured fittings (cedar colour). No gilding was used originally. Unfortunately, there is no evidence for the treatment of the C17th organ case.

The later organ case is a dominating feature within the interior. It may be possible to detract from its prominence by decorating it in the stone coloured lead oilpaint which forms the principal background to the Wren scheme. This would allow for the interior to be read more completely and draw the eye away from the central feature. It would to a degree also allow for the organ case to disappear into the wallfaces against which it is sited.

Option 3). Adapt the ‘original’ Organ Case scheme to more closely follow Wren’s intention for the interior.

From this research exercise we know that the Organ’s Case was originally (i.e. in the 1870’s) painted in a mid brown colour, i.e. a timber colour, with gilded details. A third option for integrating this later feature into the C17th scheme is more of a compromise and require careful consideration.

We know that the 1870’s Organ Case was originally painted to resemble a medium toned hardwood (possibly a mid oak colour). We also know that Wren’s original 1660’s scheme for the interior incorporated timber fittings painted in a hardwood colour (Cedar) and presented as if supported on stone detailing. For example the ‘timber’ proctors rostra, supported on ‘stone’ door surrounds and pediments. By combining the two intentions, it is possible to integrate the later organ case into the earlier scheme. Not in a way that attempts to lose it into the background joinery could, but still retaining it as an architectural feature and focus for the space.

If the Organ Case were to be painted in the Cedar Colour it would then appear as if it were a timber element (as per the 1876 intention) and yet would sit harmoniously within the C17th Wren scheme. Its location within the interior, supported by the stone coloured balcony, resting on the ‘marbled’ columns reflects the ‘timber’ and stone treatment originally applied to the Proctors rostra. In fact, the use of cedar colour may have been Wren’s original intention for the original organ case, now lost, as this would appear to be his ethos for timber fittings sited within his stone ‘amphitheatre’ space.
Appendix I  Sample Location List/Cross-section Reference
### SHELDONIAN THEATRE, OXFORD

Sample Location List Cross-section Reference – 14th April 2008

#### Sample no. SheldThtr/Int/ 1

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>146:</td>
<td>Ceiling coving</td>
</tr>
<tr>
<td>147:</td>
<td>Ceiling coving</td>
</tr>
<tr>
<td>148:</td>
<td>Ceiling coving</td>
</tr>
<tr>
<td>149:</td>
<td>Ceiling coving</td>
</tr>
<tr>
<td>150:</td>
<td>Ceiling coving</td>
</tr>
</tbody>
</table>

**West corridor**

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>151:</td>
<td>South East door case</td>
</tr>
<tr>
<td>152:</td>
<td>South East door architrave</td>
</tr>
<tr>
<td>153:</td>
<td>South East door architrave</td>
</tr>
<tr>
<td>154:</td>
<td>South East door architrave</td>
</tr>
<tr>
<td>155:</td>
<td>South East door architrave</td>
</tr>
<tr>
<td>156:</td>
<td>South East door architrave</td>
</tr>
<tr>
<td>157:</td>
<td>South East door</td>
</tr>
<tr>
<td>158:</td>
<td>South East door</td>
</tr>
</tbody>
</table>

#### Sample no. SheldThtr/Int/ 2

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>159:</td>
<td>South East door</td>
</tr>
<tr>
<td>160:</td>
<td>Seating adjacent to Proctors rostra west, panel bed</td>
</tr>
<tr>
<td>161:</td>
<td>Seating adjacent to Proctors rostra west, panel stile</td>
</tr>
</tbody>
</table>

**East corridor**

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>162:</td>
<td>Later front seating Panel stile</td>
</tr>
<tr>
<td>163:</td>
<td>Panel stile to the original front seat panelling</td>
</tr>
<tr>
<td>164:</td>
<td>Balcony front west, Guilloche top flat moulding</td>
</tr>
<tr>
<td>165:</td>
<td>Balcony front panel stile</td>
</tr>
<tr>
<td>166:</td>
<td>Staircase south east corner, newel post</td>
</tr>
<tr>
<td>167:</td>
<td>Staircase south east corner, baluster</td>
</tr>
<tr>
<td>168:</td>
<td>Staircase south east corner, handrail</td>
</tr>
</tbody>
</table>

**1st floor Gallery Cornice**

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:</td>
<td>Top flat moulding</td>
</tr>
<tr>
<td>2:</td>
<td>Large cyma</td>
</tr>
<tr>
<td>3:</td>
<td>Lower quadrant</td>
</tr>
<tr>
<td>4:</td>
<td>Corbel side flat</td>
</tr>
<tr>
<td>5:</td>
<td>Corbel side flat scroll</td>
</tr>
<tr>
<td>6:</td>
<td>Corbel side anthemion</td>
</tr>
<tr>
<td>7:</td>
<td>Corbel lions beard</td>
</tr>
<tr>
<td>8:</td>
<td>Overdoor to stairs, top flat edge</td>
</tr>
<tr>
<td>9:</td>
<td>Upper cyma</td>
</tr>
<tr>
<td>10:</td>
<td>Water leaf</td>
</tr>
<tr>
<td>11:</td>
<td>Drip moulding</td>
</tr>
<tr>
<td>12:</td>
<td>Small quadrant</td>
</tr>
</tbody>
</table>
13: Lower cyma
14: Acanthus frieze background
15: Acanthus frieze background return
16: Doorframe return

Ground floor gallery, south wall pilaster

1: Pilaster plinth panel stile
2: Panel moulding
3: Panel edge

Sample no. SheldThtr/Int/ 4
4: Raised panel bed
5: Top roll moulding
6: Acanthus moulding
7: Middle flat face
8: Tongue & water leaf
9: Large upper covetto moulding
10: Plaster shaft base flat fascia
11: Large roll moulding
12: Lower covetto

Sample no. SheldThtr/Int/ 5
13: Small twin roll moulding
14: Upper roll moulding
15: Plaster shaft outer flat edge (2)
16: Cyma moulding
17: Panel bed

18: Wallface adjacent to pilaster
18a: Timber wallface adjacent to small balcony
19: Door to stairs, architrave middle flat

Sample no. SheldThtr/Int/ 6
20: Door architrave cyma

Upper Gallery ceiling cornice

1: Large cyma
2: Upper water leaf
3: Large fascia (2)
4: Underside background
5: Paterae nm as3
6: Modillion side
7: Modillion acanthus
8: Background frieze (only later layers)
9: Egg and dart, egg
10: Dart
11: Egg surround
12: Roll moulding
13: Lower fascia
14: Foliate cyma bud
15: Foliate Cyma arcade

Sample no. SheldThtr/Int/ 7
16: Foliate Cyma dart
17: Timber wallface
18: Canvas frame outer water leaf
19: Small flat moulding
20: Large cyma
21: Bead & reel moulding (good colour match)
22: Covetto moulding
23: Canvas

Ground floor gallery, rear wallface panelling

101: Panel top flat moulding
102: Panel top quadrant moulding
103: Panel top small cyma moulding
104: Panel stile
105: Top panel bed
106: Middle panel bed
107: Panel transom
108: Bottom panel bed

Sample no. SheldThtr/Int/8

109: Panel bottom frame

Upper Gallery panelling, south west corner

110: Bevelled panel frame moulding adjacent to panel bed (2)
111: Chamfered panel stile moulding edge
112: Raised panel bed
113: Sloping plaster cill at top of lower panelling
114: Top panel large roll moulding
115: Tongue moulding
116: Panel top flat moulding

117: Panel large quadrant moulding
118: Panel stile

119: Chamfered panel stile edge moulding
120: Bevelled panel bed

121: Bevelled panel frame moulding adjacent to panel bed (Varnish ??)
122: Bevelled panel bed edge

123: Bevelled panel bed centre

124: Outer flat edge to panel bed moulding
125: Panel edge acanthus moulding
126: Door architrave outer flat
127: Door architrave middle flat
128: Door architrave inner flat
129: Door to stairs stile
130: Door to stairs panel moulding
131: Gallery stair panelling, stile New?
132: Gallery stair panelling, panel bed

Sample no. SheldThtr/Int/9

132a: Top small moulding
133: Top tongue moulding
134: Drip moulding

135: Carved shell moulding
136: Rostra front main frame
137: Side carved panel stile
138: Open foliate panel outer edge
139: Foliate carving

Proctors Rostra, East
Upper gallery South, window panelling adjacent to organ

140: Top panel moulding
141: Lower roll moulding
142: Panel stile
143: Panel bed
144: Panel bed return to stairs
145: Panel stile

Samples 146-199 did not have an allocation

200: Large sample from ground floor west door

Proctors Rostra West

201: Main flats
202: Acanthus scrolls
203: Rear centre post

Sample no. SheldThtr/Int/ 10
204: Main side scrolls (face) (Au)
205: Base flat fascia
206: Base water leaf
207: Lion mask
208: Panel background
209: Side volute swag
210: Overdoor upper acanthus & background

Sample no. SheldThtr/Int/ 11
211: Overdoor Drip moulding
212: Overdoor Dentil
213: Overdoor Cyma panel & water leaf moulding
214: Overdoor bracket scroll
215: Overdoor bracket 2nd acanthus
216: Overdoor bracket double waterleaf
217: Architrave outer flat
218: Architrave waterleaf
219: Architrave central fascia
220: Architrave small waterleaf
221: Architrave inner fascia
222: Door stile

Sample no. SheldThtr/Int/ 12
223: Door panel mouldings
224: Door panel bed
225: Vice-Chancellors gallery, volute scroll
226: Vice-Chancellors gallery, acanthus
227: Gallery front above Prince of Wales cartouche
228: Gallery front above Prince of Wales cartouche, swag
229: Gallery front above Prince of Wales cartouche, moulding
230: Gallery front above Prince of Wales cartouche, large fascia
231: Gallery door to South east stair
232: Gallery seat panel
Sample no. SheldThtr/Int/ 13

301: Cara/rear
302: Balcony acanthus
303: Upper base plaster fill
304: Balustrade base
305: West balcony balustrade base
306: West balcony column skirting
307: Later column organ support
308: Later column organ support, covetto moulding
309: North end column shaft
310: North end column capitol acanthus rib
311: North end column capitol acanthus leaf
312: North end column capitol volute
313: Not allocated

Sample no. SheldThtr/Int/ 14

314: Organ cherub leg
315: Organ background
316: organ acanthus moulding
317: Upper galley front panel stile outer flat
318: Upper galley front panel bolection moulding
319: Upper galley front panel bed
320: Upper galley front panel bead & reel moulding
321: East stairway, ground floor outer door
322: East lower guilloche moulding
323: East lower guilloche moulding, centre concave
324: East lower guilloche moulding, centre paterae
325: East lower guilloche moulding, outer edge
326: East lower panel stile
327: East lower panel bed

Additional samples
B1: Flambeau gadrooning (2)
B2: Flambeau main body
B3: Flambeau torch
B4: Column east gallery
Appendix II Material Analysis
MATERIAL ANALYSIS

The material analysis undertaken within the first phase of this research was only at a minimum level. No positive pigment identification was undertaken. Where pigment names were given these were based upon visual identification only.

The cross-sectional samples were viewed under both simulated daylight and ultraviolet illumination. This allowed the stratigraphy of the samples to be fully understood and provided an insight into the first appearance of schemes containing zinc compounds, which assisted with the dating of the layers.

Ultraviolet fluorescence was undertaken using an excitation filter of BP 340 – 380 nm wavelength. (Identification of metal driers and extenders within paint media)

Chemical spot testing was undertaken using Sodium sulphide (Na₂S · 9H₂O) at 15% solution in distilled water. This chemical test identifies the presence of lead compounds within oilpaint films.

Following client consultation it was decided that further analysis was required, this included both pigment and media identification. Analysis was undertaken using Polarised Light Microscopy, FTIR, SEM and EDX.

The results of this further analysis are detailed on the following pages:
Sheldonian Theatre Auditorium – further material analysis

Experimental procedures:

Polarised light microscopy
The sample was crushed between glass slides to separate the pigment particles and mounted on microscope slides with Meltmount 1.66 resin and examined with a swift polarising microscope.

FOURIER TRANSFORM INFRA-RED (FTIR) ANALYSIS
A sample of each paint was placed onto the diamond window of a Durascope diamond ATR attachment linked to a Perkin Elmer 1000 Fourier transform Infra red spectrometer. Each sample was pressed against the window using a metal anvil and scanned sixteen times. The background scan was automatically subtracted and the scans averaged to produce a spectrum. Each sample was thus analysed by reflectance FTIR.

GAS CHROMATOGRAPHY-MASS SPECTROSCOPY (analysis of Oils/resins/waxes)
Samples of the each paint were returned to a Reactivial and were derivatised and subjected to chromatographic analysis by gas chromatography and mass spectroscopy (GC-MS). The sample was heated with three drops of 5% methanolic solution of 3-trifluoromethylphenyltrimethylammonium hydroxide to 60°C for 5 hours. The mixture was then subjected to thermal decomposition at 250°C in the injection port, before analysis by GC-MS in order to look for evidence of drying oils, waxes and resins in the paint. The GC-MS instrument used was a “Thermo Focus” GC fitted with a “Thermo DSQ” Mass spectrometer.
Results

Grey Paint

Polarised light microscopy

The following substances were recognized by their optical properties: roughly equal amounts of lead white and chalk a few quartz particles. Also some opaque black particles which appeared to be charcoal were present.

Fourier Transform Infra Red (FTIR) Analysis

The initial investigation of the sample was carried out via FTIR spectroscopy. The extenders found by polarizing light microscopy were also indicated by infrared analysis. The infra red spectrum (figure 1) indicated that the paint contain lead white (peaks at 1393, 1044, 837, 770 and 679 cm$^{-1}$) (cf. Figure 2) and also chalk (peaks at 1393, 873 and 712 cm$^{-1}$) (cf. Figure 3). The signals for the quartz are less obvious but may be present since there is a broad peak around 1050 and peaks at 770 and a small peak at about 695 cm$^{-1}$ (cf. figure 4). The Infrared seems to show a roughly equal quantity of lead white and chalk and a much smaller proportion of quartz.
The infrared spectrum also showed strong C-H peaks at 2917 and 2849 cm\(^{-1}\) and a carbonyl peak (1731 cm\(^{-1}\)) and C-O stretch (1120 cm\(^{-1}\)) (indicating the presence the esters in an oil. There was also a peak at 1537 cm\(^{-1}\) probably due to the carboxylate ions in metal soaps showing that the pigment or drier is reacting with the deteriorating oil to produce metal soaps from the fatty acids. Lead stearate is reported to have a peak at 1541 cm\(^{-1}\)[1] Hence a GC method, which would analyse oils and diterpenoid resins, was chosen for further investigation.

**FTIR spectrum of lead white**

![FTIR spectrum of lead white](image)

02/03/01 10:42 Gary Askwith
X: 4 scans, 4.0cm\(^{-1}\)
Lead White (basic lead carbonate)
FTIR spectrum of chalk

FTIR spectrum of Quartz
GC-MS analysis

The GC-MS (Figure 5) gave a chromatogram showing mainly peaks for palmitic acid, stearic acid and azelic acid, as their methyl esters. The peak areas for the fatty acids were measured.

<table>
<thead>
<tr>
<th>RT: 11.03 - 39.59</th>
</tr>
</thead>
<tbody>
<tr>
<td>Az: 18.46</td>
</tr>
<tr>
<td>P: 25.34</td>
</tr>
<tr>
<td>NL: 1.12E8</td>
</tr>
<tr>
<td>TIC F: MS shelgrey</td>
</tr>
<tr>
<td>Az/sub: 6.6</td>
</tr>
<tr>
<td>Az/seb: 13.6</td>
</tr>
<tr>
<td>Az/P: 1.1</td>
</tr>
<tr>
<td>P/S: 1.9</td>
</tr>
</tbody>
</table>

Table 1: ratio of acids, analysed as methyl esters, in sample A by peak area (Az = azelate, P = palmitate, S = Stearate, Sub = suberate, seb = sebacate)
The azelate to palmitate ratio is 1.1 (Table 1) which shows that the binder contains a drying oil. The palmitate to stearate ratio is 1.9 which is within the ranges for linseed oil (Table 2). The peaks for sebacate and suberate were extremely small which suggests that this oil has not been heat bodied[5].

There are peaks for dehydroabietic acid, methyl ester (podocarpa-8,11,13-trien-15-oic acid, 13-isopropyl-, methyl ester); 7-methoxydehydroabietic acid, methyl ester; and 7-oxodehydroabietic acid (Figure 6). This mixture of abietanes indicates coniferous resin, possibly pine resin [6,7]. This may be an additive in the paint or may come from the timber substrate. However this is unlikely as the substrate is a low resin level oak, not a resin rich pine timber.

<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>linseed oil</td>
<td>1.1 - 2.3</td>
<td>1.5</td>
<td>1.1 - 2.1</td>
</tr>
<tr>
<td>walnut oil</td>
<td>2.2 - 3.6</td>
<td>2.5</td>
<td>2.5 - 4.2</td>
</tr>
<tr>
<td>poppy oil</td>
<td>2.9 - 3.7</td>
<td>5.0</td>
<td>2.9 - 6.5</td>
</tr>
<tr>
<td>egg</td>
<td>-</td>
<td>3.0</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Table 2: Palmitate to Stearate ratios for artists' media
Gas chromatograph of Grey Paint; detail 29-39 mins; de = methyl dehydroabietate, 7-methoxy = methyl 7-methoxytetradehydroabietate, 7-oxo = methyl 7-oxodehydroabietate
Cedar Paint

Polarised light microscopy

The following substances were recognized by their optical properties: a large quantity of lead white and smaller amounts of chalk and quartz. Also some red material was present.

Infra red Spectroscopy

The initial investigation of the sample was carried out via FTIR spectroscopy. The infrared spectrum (figure 7) indicated that the paint contain lead white (peaks at 1394, 1045, 770 and 680 cm⁻¹) (cf. Figure 2) and also a smaller amount of chalk (peaks at 1394, 873 and 712 cm⁻¹) (cf. Figure 3). There may also be some quartz present since there is a broad peak around 1050 and peaks at 770 and a small peak at about 695 cm⁻¹(cf. figure 4).

The infrared spectrum also showed strong C-H peaks at 2917 and 2849cm⁻¹ and a carbonyl peak (1731 cm⁻¹) and C-O stretch (1120 cm⁻¹) (indicating the presence the esters in an oil. There was also a peak at 1515 cm⁻¹ probably due to the carboxylate ions in metal soaps showing that the pigment or drier is reacting with the deteriorating oil to produce metal soaps from the fatty acids. Hence a GC method, which would analyse oils and diterpenoid resins, was chosen for further investigation.
GC-MS analysis
The GC-MS (Figure 8) gave a chromatogram showing mainly peaks for palmitic acid, stearic acid and azelic acid, as their methyl esters. The peak areas for the fatty acids were measured.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Az/sub</td>
<td>5.7</td>
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<td></td>
</tr>
<tr>
<td>Az/seb</td>
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<td>Az/P</td>
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<td></td>
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</tr>
<tr>
<td>P/S</td>
<td>2.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: ratio of acids, analysed as methyl esters, in sample A by peak area (Az = azelate, P= palmitate, S = Stearate, Sub = suberate, seb = sebacate)

The azelate to palmitate ratio is 2.3 (Table 3) which shows that the binder contains a drying oil. The palmitate to stearate ratio is 2.1, which is within the range for linseed oil (Table 2). The azelate/suberate and azelate/ sebacate ratios are greater than that expected for a heat bodied oil which suggests that this oil has not been heat bodied [5]. There are also very tiny peaks for dehydroabietic acid, methyl ester (podocarpa-8,11,13-trien-15-oic acid, 13-isopropyl-, methyl ester); 7-methoxydehydroabietic acid, methyl ester; and 7-oxodehydroabietic acid (Figure 9). This mixture of abietanes indicates coniferous resin, possibly pine resin [6,7]. This may be an additive in the paint or may come from the wood.
Gas chromatograph of Cedar Paint; detail 29-36 mins; de = methyl dehydroabietate, 7-methoxy = methyl 7-methoxytetradehydroabietate, 7-oxo = methyl 7-oxodehydroabietate
CONCLUSIONS

Both paints contain linseed oil as the binder and traces of coniferous resin. The pigments present in both paints include lead white (basic lead carbonate) and the extenders present include Chalk and quartz in both paints. There seem to be equal proportions of lead white and chalk in the grey paint and much smaller amounts of quartz. There is less chalk than lead white in the Cedar paint and still only small quantities of quartz.

Basic oilpaint constituents as identified are as follows:

A lead white pigment base combined with equal quantities of calcium carbonate (extender). To this a drying oil was added. The samples show that the ratio of palmitate component to stearate was found to be 1.9. This confirms that the drying oils used were linseed oil, not poppy oil or walnut oil. It is know that Wren used these other oils for very high quality work. However, they were very expensive and the scale of the decoration at the Sheldonian may have made their use prohibitive. Further analysis of the linseed oil identified extremely small amounts of suberate and sebacate, indicating the use of the paler of raw linseed oil, not the darker boiled linseed oil. Linseed oil was frequently ‘boiled’ in order speed up the drying time, (polymerisation) often with the addition of metal driers, but during the heating process the oil darkened and as such was not used in better quality interior work.

Black Pigments

The black pigments in the grey paint were identified by their optical properties (Polarising microscopy). The results show they were charcoal based, which suggested charcoals from either fruit stone (peach etc), ivory or wood. The first two have been discounted as historical accounts describe them, as being extremely slow drying in oil, as such; the use of these pigments seems extremely unlikely to be used in this location on this scale of project. The addition of wood based charcoal as a pigment was common with numerous materials being used to prepare it. However, a distinct blue cast was noticed in the uncovered paint layer; this distinct cast suggests carbonised vine stem & tendrils. The resulting pigment was often sold under the name Blue Black due to the characteristic blue cast. The dark grey colour identified on the column & pilaster bases is comprised of the same charcoal black materials, but with greater concentrations of the black pigmentation.

Cedar Colour

The pigments identified were iron oxides in the form of yellow ochre and haematite in the form of naturally occurring red ochre. These ochre’s are found extensively in the British Isles. Importantly, Whitney in Oxfordshire was recorded being a good source for these lower grades of red ochre’s, while the yellow ochre’s may have been sourced only 4 miles from Oxford at Shotover Hill another high quality quarry. This source of the pigment was the most famous, probably on account of its high quality and productivity.
Robert Plot in his Natural History of Oxfordshire (1677) published a detailed account of the extraction of ochre at Shotover in the second half of the seventeenth century. The diggings were, he indicated, on the east side of the hill to the right of the road from Oxford to Wheatley, the vein, which was between two and seven inches in thickness, lying at a depth of between seven and thirty feet. The ochre was of two kinds, the stone ochre, which was ready for use as soon as dry, and the clay ochre, which, he continued,

"because of the natural inequality in its goodness, they wash and steep two or three days in water, and then beat it with clubs on a plank into thin broad cakes, of an equal mixture both of good and bad: they then cut it into squares like tiles, and put it on hurdles laid on trestles to dry, which when thoroughly done 'tis fit for the Merchant."

He also mentioned that a bed of slightly more reddish colour underlaid the yellow, and that elsewhere in the vicinity, at Garsington and Pyrton, there were deposits of less good quality; while ochre obtained from between Ducklington and Witney, which lie just over ten miles west of Oxford, was employed for inferior purposes.

Identified components for each paint system and NCS colour reference:

- **Dark grey wainscot**: S7005-R50B  
  Raw linseed oil, lead carbonate, charcoal black.

- **Cedar Colour**: S5030 –Y60R  
  Raw linseed oil, lead carbonate, yellow ochre and red ochre (haematite).

- **Rance Marble**: (trial boards supplied)  
  Raw linseed oil, lead carbonate, charcoal black, and red ochre (haematite), gloss varnish - resin based

- **Stone Colour**: S2005-Y20R  
  Raw linseed oil, lead carbonate, yellow ochres.

- **Column bases**: 9500-N  
  Raw linseed oil, lead carbonate, charcoal black.
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