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Conservation of Paintings

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December 2002

CONSERVATION REPORT

PROPERTY	**:**	Holy Trinity Parish Church, Penn, Bucks
ARTIST	**:**	Unknown
SUBJECT/TITLE	**:**	The Penn Doom
DATE	**:**	1414-1448 (First Scheme)
DIMENSIONS	**:**	(h) 198cm x (w) 366cm x (t) 15mm approx
MEDIUM/SUPPORT	**:**	Oil on oak

TECHNIQUE :

Support[1]

CONSTRUCTION

The painting is executed on sixteen vertical oak boards, which for the purposes of identification have been numbered in this report from left to right, as viewed from the front, 1-16 (*B/w prints: Figs.1 & 2*). The boards are chamfered at the edges so that they overlap slightly, and they were originally fastened together by three horizontal battens on the reverse.[2] The boards seen in profile are slightly wedge-shaped, the thinner end of the wedge towards the centre of the tree. Boards 2-16 are arranged so that the innermost rings of the wood all point towards the left hand edge of the panel, so that the oldest, hardest, wood is on the outside, while the extreme left hand board is the other way round. This suggests that this board formed the edge of the original painting, as it does now. The widest board has been reserved for the centre of the painting, showing the figure of Christ enthroned. This board has been taken from the widest part of the tree, near the base. The direction of the tree's growth has been inverted, so that the growth rings can be seen to flare outwards towards the

[1] The information in this section was provided by Mr Ian Tyers, ARCUS Dendrochronology Laboratory, University of Sheffield. For a fuller account of his investigation, see his project report 572d March 2002.
[2] See slides of the reverse of the boards for marks left by the battens. There is a diagram of the construction in section in Rouse, E. Clive, 'The Penn Doom' Records of Buckinghamshire 17 1961-5 p 96

top of the board. The left hand fifteen boards are all wavy-grained and deeply knotted, which indicates that they were fast grown, in open parkland rather than forest. The boards have saw marks at 45º in two directions on the back face indicating that they were trestle sawn. The saw marks are smooth, showing that the wood was probably worked green, and the backs of the boards have not been planed or thinned further. The backs of the boards have a weathered appearance, with raised rays, possibly from having been in contact with a damp wall. The boards are less weathered, and the saw marks better preserved, in the areas where the horizontal battens were attached. This indicates that the battens were part of the original construction. The saw marks appear to change direction near the sloping edges at the top of the painting. This is further evidence that the shape is close to the original, and that not a great deal of material may have been removed from these edges. Some of the boards, such as 12 and 14 have different, more modern tool marks on their ends where they have been cut down (*Figs.3,4,5,6 & 7*).

The right hand board is completely different with a straight grain, no knots and is much slower grown. There are few visible tool marks on this board. The presence of housings and chamfers suggest that this wood has been re-used, perhaps from a cupboard door or chest.

Seven of the boards, numbers 1,8,9,12,13,15 and 16, were selected for dendrochronology or tree-ring analysis. Four of the boards were prepared for analysis across the full width of both ends, and one end only of the other three boards was prepared. The preparation consists of cleaning the wood with a scalpel blade and fine brushes to highlight the boundaries of the growth rings. The widths of the ring sequences were measured to an accuracy of 0.01mm through a microscope attached to a computer-based measuring system. Although no sapwood was present, there was evidence of the heartwood/sapwood boundary on three of the boards, and therefore the dating of these boards could provide a date range for the felling of the trees used.

Geographical origin

The sequences of rings obtained were compared. The sequences from five of the boards were sufficiently similar to show that these boards are derived from a single tree. The sequences were then checked by computer, and visually, using graphs, against a set of European master tree-ring chronologies, to find the closest match. The conclusion of this analysis was that the tree used to produce the support of the Penn Doom grew in the South East of England. Penn

was, and still is, heavily wooded, so local oak may well have been used, but this cannot be proved by the tree ring evidence. The matches for board 16 show a completely different origin: from the Eastern Baltic region of Europe (modern Poland and countries to the East and North). There was extensive trade in oak planking from this region into Western Europe from the fourteenth to mid-seventeenth century.

Date

The dendrochronological evidence indicates that the tree used to provide the boards for the Penn Doom was felled some time after *c.*AD 1414 and probably before *c.*AD 1448. The nature of the distortion of the boards and opening of the knots indicate that the wood was used fairly 'green', probably seasoned for a maximum of six months, so the date of felling is probably fairly close to the date of the execution of the first painting. The last board, of Baltic oak, was probably felled between AD 1388 and 1404. The last board has been re-used. Whether it was originally incorporated into the structure or added as a later restoration cannot be established by examination of the wood alone.

Paint layers[3]

There are two superimposed painted schemes, both depicting Christ in Majesty and the Last Judgement. A third scheme of stars is scattered over the whole panel, regardless of the pictorial composition.

FIRST SCHEME

Preparation

In raking light it appears that some smoothing of the boards by planing or scraping may have been carried out. The wood was prepared with an extremely thin chalk ground, which was not visible on all the samples, and which barely fills the wood grain. This is in complete contrast to the meticulous preparation of a smooth, white gesso ground typical of small scale work. In the Manuscript of Eraclius, considered to correspond with English twelfth and thirteenth century practice, there is a description of a more cursory preparation 'to adorn any

[3] Pigment sampling and analysis was carried out by Ms Catherine Hassall. For more detail of methods, and exact locations of samples, see her report no X343b, June 2001

wood with divers colours'. After scraping the wood flat it is sanded with the herb 'shave grass'[4], and any major fissures in the wood may be filled with a mixture of wax and lead white.[5]

The design was outlined in coarsely ground charcoal black. Visible in infra-red reflectography (*B/W print: Fig. 8*), the outlines appear to be in a fluid medium. In the manuscript of Petrus de S. Audemar, thought to be of Northern French origin, from the late thirteenth, or early fourteenth century, it is stated that 'on walls, or on wood, we take charcoal, made of leather, or of hay, or of wood of any kind, except oak, which on account of its hardness can scarcely ever be ground. If you wish to lay black over other colours on parchment...know that you must take charcoal tempered with egg…and on wood, with oil'[6]

Paint Medium

Clive Rouse asserted, presumably on the basis of visual examination, that the earlier scheme was 'probably executed in tempera'[7]. Presumably by this he means a proteinaceous medium such as egg, glue or casein. In fact, FTIR analysis of the binding medium of the first scheme produced a spectrum which closely matched that of aged oil.[8]

Painting method

The same coarse charcoal black used for outlining was used to represent the hill, leaving spaces for the figures. Tufts of foliage were added over the black in pale yellow (*Figs.9 & 10*). Sometimes these scattered motifs were applied through a stencil, but these appear to be painted. It is tempting to look for parallels with the oak leaf and plant motifs found in the floor tiles for which Penn was famous during much of the fourteenth century.[9] However,

[4] The twelfth century writer, Theophilus, also refers to the use of this plant as an abrasive, as 'the grass called shave–grass, which grows up like a rush and is knobby. You should gather this in the summer and dry it in the sun'. Hawthorne,JG &Smith, CS, Theophilus, On Divers Arts New York 1979 p27. Philip Walker states that some rushes pick up silicates in their growth, and were mentioned as abrasives by Sheraton as late as the early nineteenth century. Walker, P 'The making of panels, History of Relevant Woodworking Tools and Techniques' in The Structural Conservation of Panel Paintings Los Angeles 1995 p185

[5] Merrifield, MP Mediaeval and Renaissance Treatises on the Arts of Painting in oil,miniature, mosaic, and on glass New York 1999, originally published London 1849 p228

[6] Merrifield, ibid. p 138

[7] Rouse, EC op.cit. p104

[8] For plentiful evidence that oil medium was used for painting on wood in northern Europe as early as the twelfth century, see Eastlake, CL Methods and Materials of Painting of the Great Schools & Masters New York 1960, originally published London 1847

[9] See Hohler,C 'Mediaeval Pavingtiles in Buckinghamshire' in Records of the BuckinghamshireArchaeological Society XIV, 1941/2, especially examples P25, P27 and P30 depicting animals surrounded by foliage.

much closer parallels are found in tapestry, another form of wall decoration. The 'Apocalypse of Angers', dating from the late fourteenth century, for instance, has similar tufts of grass scattered over the foreground.

A thin layer of lead white was selectively used to block in the sky and some of the areas to be coloured. It was not found in sections taken from the darkest colours. The Manuscript of Eraclius describes a similar preparatory layer: 'mix plenty of white-lead very finely ground, with linseed oil, and lay an excessively thin coat of it wherever you intend to paint with a brush of ass's hair adapted for that purpose'. The author recommends a second coat of the same with less oil medium, warning of the danger of the paint wrinkling if there is excess oil present.[10] The sky was built up in three layers: indigo blue was worked wet-in-wet into the white base coat, and a much paler shade worked over the top. This is also described in the Eraclius Manuscript thus, in Chapter LVIII, 'On the care which must be taken with regard to the nature of colours, and of the way of mixing them together…' 'mix indigo with white lead; shade with indigo; lay on the lights with white lead.'[11]

The colours of the drapery were blocked in, then some lighter highlights were added. Then the outlines and folds were reinforced with darker lines. Sometimes the outlining was carried out in black, such as the fold lines of St Michael's pink robe, and sometimes in a darker shade of the base colour, such as the Virgin's red lead robe, which is outlined in red iron oxide. The white souls were outlined in red iron oxide, as described by Theophilus in the twelfth century[12]. Hair was painted in mixtures of red and yellow ochre, the facial features were added in pure red ochre, the lips with vermilion. The rainbow appears to have been represented with red, green, black and white only. This exactly follows the detailed instructions given by Theophilus for painting 'the band which represents the appearance of the rainbow'. The colours are graded successively from black on the outside of the bow, to white in the middle, with one stripe each of pure red and green.[13]

[10] Merrifield, op.cit. p 228
[11] ibid. p 256
[12] Hawthorne, JG & Smith, CS op.cit. p 20
[13] ibid. pp 23-25

Pigments

GREEN

The green of the first scheme consists of pure verdigris, copper acetate, in a matrix of dissolved copper green, formed by the reaction of the verdigris with the oil medium to form copper oleate.[14] As this pigment is semi-transparent it is invariably painted over white.

REDS

Vermilion was used sparingly, for the lips and for the initial letter of the inscriptions, but it was found nowhere else in the first scheme.

Red lead was used as an undercoat for bright red, in Mary's dress and St Michael's wings, for instance. The production of red lead by heating white lead is regularly described in the literature. In the Manuscript of Petrus de S. Audemar, it is stated that 'it can be laid … on parchment, distempered with egg, but on wood, in oil.'[15] The red lead was modelled with an organic red lake, which was also used mixed with white for pink draperies and flesh colour.

A fourth red, a pure dark red iron oxide (haematite) was used as modelling for the red lead, and for outlining hands, facial features and the risen souls.

BLUE

Indigo was used in the sky. No other blues were found. The indigo is most likely to have been obtained from the indigenous plant, woad. 'Baghdad indigo' was imported from Asia, and was therefore more expensive, although the pigment is identical.[16]

BLACK

Charcoal was used for black throughout, and mixed with lead white for the grey of the tombs in the foreground. Although black was used for some of the final outlining, many of the outlines which now appear black do not consist of charcoal black but discoloured lead pigment, probably red.

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[14] Roy, A ed. Artists' Pigments Vol 2 Washington 1986 p135
[15] Merrifield, op.cit p140
[16] Kirby, J 'The price of quality: factors influencing the cost of pigments during the Renaissance' in Neher,G & Shepherd,R Revaluing Renaissance Art 2000 pp25-26

YELLOWS

Yellow garments and the foliage on the grass were painted with a mixture of ochre and lead white. There is also some chalk in the mixture, which could have been a substrate for a now faded organic yellow. Haloes, and objects such as St Michael's scales, which were intended to be gold, were painted in orpiment.[17] Orpiment is a yellow arsenic sulphide, used in both its naturally occurring and artificial forms. It was used worldwide as a pigment from ancient times.[18] It is mentioned in Mediaeval and later texts that orpiment was incompatible with lead white and red lead, as it causes them to blacken. It is also incompatible with verdigris. The 'Strasburg Manuscript'[19] on the other hand, recommended the mixing of orpiment and red lead to make a gold colour for flowers. There seems to be some doubt as to whether the orpiment itself blackens. Recent research has shown that it can oxidize to a dull white, and also attacks the fatty acids in the oil binding medium, rendering the paint liable to flake.[20] Blackened lead-containing pigment was found in the hair of the angel carrying the column, in the neckline of the extreme left hand figure and in the outline of the scales. All of these areas are touching orpiment, and were once either white, or more probably red lead. Catherine Hassall suggests, convincingly, that this discolouration could have prompted the repainting of the Doom, as it would have created serious problems of legibility, especially in areas seen against the black hill.[21]

Digital Image of the First Scheme

The information about the earlier scheme, gained by visual examination under magnification, and supported by pigment analysis, was complete enough to be used to compile a digital image, to give an impression of the first painting (*Colour print: Fig. 11*). The process is

[17] Theophilus refers to 'things which in a painting are made of gold or orpiment'. Hawthorne, JG & Smith, CS, op.cit. p71
[18] Fitzhugh, EW ed. Artists' Pigments Vol 3 Washington 1997 pp 47 - 66
[19] ibid.p52 The manuscript is thought to date from the fifteenth century, but to describe earlier techniques.
[20] Dubois, H et al. 'Breakdown processes of orpiment- and realgar-based sixteenth century paints' in Deterioration of Artists' Paints: Effects and Analysis Extended Abstracts of presentations of the Joint Meeting of ICOM-CC Working Groups Paintings 1&2 and The Paintings Section UKIC London 2001
[21] Stephen Friar says of Dooms painted directly on the wall that 'There is evidence to suggest that they were routinely repainted every fifty years or so'. Friar,S A Companion to the English Parish Church Stroud 1996 p165

described in detail by Clare Richardson in her report.[22] The main purpose of the image is to make visible how the colour scheme differs from the later painting, together with the main compositional changes. It was beyond the scope of this project to include all the minor changes of outline, and therefore the outlines seen in the digital image belong to the second scheme.

SECOND SCHEME

Medium

The medium of the second scheme was analysed and found to be oil.

Preparation

A pale pinkish ground layer consisting of lead white and red ochre was applied to block out all of the sky and the inscriptions, and all of the foreground, including the figures of the Virgin Mary, Saint Michael and the risen souls, except for the area to be occupied by the two figures rising from tombs. The figures of the Apostles, Angels, Christ and the rainbow were not obscured, enabling the second painter to copy these parts of the composition more or less faithfully. This is confirmed by the infra-red reflectogram images made by Nicholas Eastaugh (*B/W print: Fig.12*), which show minor changes in outline, and a general simplification of the forms, especially the drapery. The drapery of the earlier scheme is seen to be more complex and delicate, and the outlines drier and more angular.

Painting method

The foreground hill was painted in two layers to produce a flat, green expanse. The first, more opaque layer consisted of a mixture of verdigris and lead white, the second glazing layer contained verdigris dissolved in oil (copper oleate). The dissolved copper pigment has darkened and turned slightly brown, but would once have been as vivid as the other colours. The two souls rising from tombs were painted over the green, hence the greenish tinge to their complexions (*Fig.13*). The figures and the rainbow were repainted, following the earlier outlines fairly precisely, but changing the colours. The colours mixed with lead white had a stiff texture, but in the green and orange paint, the ratio of oil to pigment was very high, and the paint was more fluid. In a number of areas the richly bound paint has dribbled and

[22] Appendix III and see *Fig. 11*:'Digital reconstruction of First Scheme'

disturbed underlying areas (*Figs.14 & 15*), in the orange robe of the second figure on the left, for instance. The fact that the figures were being painted over an old, well-dried paint film, that is, a substrate which was not very absorbent, may have exacerbated this effect. Droplets of paint may be seen around the green halo of the same figure, where the paint has not wet the dried underlayer thoroughly enough to form a smooth film (*Figs.16 & 17*). A wide variation in paint texture is found across the painting: the difference between the stiff, heavy decorative cloud at the left hand end of the rainbow, and the fluid, wet-in wet application on the right is very marked, even to the point of suggesting the work of different hands (*Figs.18 & 19*). It is also noticeable that the faces and hands of the Apostles on the left, and the figure of Mary, are outlined in red only, while the hands of all the other figures, and the faces of the rising souls are outlined in both red and black (*Figs.20 & 21*). The hairs of Christ's beard have been incised into the soft paint with a blunt point, but this technique does not appear to have been used elsewhere. The trimming on Mary's red mantle, formed by groups of three dots, and the jewel fastening the mantle of Christ, now appear as bare wood (*Fig.22*). It is possible that these were once represented by applied ornaments of some kind.

The whole repainting has the air of having been executed rapidly and confidently. The modelling layers and details have been worked wet-in wet into the base colour so that they blend along the edges of the brush strokes. This can be seen particularly well in the hair and costumes of the angels (*Fig.23*). It is evident from the runs and drips in the paint, and the fact that the paint continues into the chamfers at the edges of the boards, that the second scheme at least was painted in situ after the assembly of the wooden structure. There is a depiction of a painter working up a ladder to paint a statue of the Virgin and Child in the Smithfield Decretals.[23] An oyster shell used as an artist's palette, probably during the first half of the fourteenth century, was excavated at Boyton Parish Church in Wiltshire.[24] Horns were also used as containers for paint. The horns were kept upright by standing them in a board with holes, in the manner of ice-cream cones. However, the scale of the Penn Doom suggests larger quantities of paint applied generously from a bowl such as that held by the painter in the manuscript illumination.

[23] British Library, Royal MS 10 E.iv, f. 209 v Reproduced in Alexander,J & Binski, P Age of Chivalry Royal Academy exhib.cat 1987 p382
[24] ibid. p391

Pigments

GREEN AND BLUE

The green and blue were verdigris and indigo, as in the first scheme.

REDS

Vermilion was much more widely used than in the first scheme. It was mixed with red lead on the rainbow and the Apostles' robes, but used pure for Christ's robe, probably because it was a relatively costly pigment. Rosamund Harley points out that Mediaeval manuscripts containing recipes for pigments or drugs usually include instructions for making vermilion, but that later sources include the information less frequently, which indicates that the pigment became more easily obtainable commercially.[25] This could be one reason why it is used more plentifully on the second scheme than the first. However this is not borne out by the prices listed by Jo Kirby, as, with one exception, the price of vermilion appears to have risen steadily and almost doubled from 1s 4d per lb in Eton in 1487 to 2s per lb in Oxford in 1549. Red lead, by contrast, seems fairly stable over the same period, at around 2d per lb.[26] Both the pure vermilion and the vermilion/red lead mixtures were modelled with a dark red iron oxide of almost pure haematite. The same red was used over the yellow of the hair and robes of the angels. An organic red lake was found in the pinks and flesh tones.

YELLOW

The only yellow found in the second scheme was lead tin yellow. This pigment has not been found on works dating from before 1300 and, although this does not prove it was unknown before this date, orpiment is frequently found before that time, which does suggest that it could be adopted as a replacement for that recalcitrant pigment[27]. It also appears from Jo Kirby's lists of prices from existing accounts that in 1515 one grade of lead tin yellow was cheaper than orpiment.[28] However, on the Dauntsey Doom, whose pigments were also analysed by Catherine Hassall, she found that on the sixteenth century 'Last Judgment', a

[25] Harley, RD Artists' Pigments c.1600 –1835 London 1970 p126
[26] Kirby, op.cit pp37-38
[27] Roy, A op.cit. p 86
[28] Kirby, op.cit pp37-38

manufactured orpiment for the haloes replaced the lead tin yellow used for stars in the earlier, possibly fifteenth century scheme.[29]

All the pigments found on both schemes were in common use up to the Reformation. While it is well known that painters' contracts and guild regulations could specify pigments and regulate against the substitution of cheaper ones, Jo Kirby has pointed out that there was also a hierarchy of appropriate pigments for certain uses. Lists of pigments for particular purposes were given in the guild Statutes of Tournai, dated 1480, and the list for the painting of playing cards is very close to the pigments used on the Doom. In other words, the most costly pigments such as ultramarine, azurite and metal leaf, were absent. The manufactured pigments, verdigris[30] and vermilion, were 'mid-price', red and white lead, although manufactured, were made throughout Europe and were relatively cheap. The cheapest of all were the naturally occurring native ochres and earths, which may well have been sourced from Oxfordshire and the West country, but all the pigments found on the Doom would have been available in London, if not in Oxford.

THIRD SCHEME

Star shapes can be seen scattered over the whole surface of the painting, without regard for the pictorial composition (*Fig.24*). Samples taken from inside the star shapes contain fragments of paint from both pictorial schemes, showing that the stars post-date both of them. Presumably the Doom picture must first have been blotted out with a layer of paint, but no trace of this survives, so it may have been a distemper or whitewash which has flaked off or been washed off, perhaps by Rouse along with the plaster. The star shapes do not appear to have been painted, but could have been applied to the surface. They may have been made of tin, possibly glazed with a yellow varnish to make them look gold. They are very unlikely to have been copper or silver as there is no blackening or copper staining under them. The stars may have been three dimensional, as they seem to have trapped air: samples taken from the star shapes show a build-up of smoke particles which were not found in any other samples. If the stars had a raised design, they would have been pulled off, damaging the underlying paint layers, before the boards were plastered over. The date of the stars is uncertain, and could be from any time after the Reformation to before the alteration of the church roof and re-use of

[29] Hassall, C Report No W84b
[30] ibid. The price of verdigris appears to have remained stable at around 1s per lb from 1487 - 1535

the boards in 1736. Ann Ballantyne thought this style of decoration was typical of the late seventeenth century.

Board 16 (*Fig.25*)

Dendrochronology has shown that the last board on the right has a different origin and date of felling from the rest of the Doom. This suggests, although it cannot be proved, that it was inserted some time after the initial construction. The board is in a more fragile state than the rest of the painting, and only faint traces of paint are visible on the surface. These were analysed to try and find out where this board belongs in the history of the object, but the results were inconclusive. Traces of yellow ochre were found on this board, and also on the edge of the adjacent board 15. The yellow rests on top of paint from the second scheme on board 15, and therefore post-dates it, but as there is no intervening whitewash layer, it appears that the yellow must be pre-Reformation. Catherine Hassall suggests that the yellow could have splashed over from other decoration. A single paint layer was found consisting of a grey mixed from charcoal black and lead white. Another area sampled was a smear of red ochre. The pinkish ground belonging to the second scheme was not seen. Although all twelve Apostles are present, more space at this side would be necessary for the last two words of the scroll. The traces of paint are faint enough for any number of imaginative interpretations, but in fact cannot be linked with any certainty to the composition cut off at the edge of board 15. The areas of red form roughly horizontal bands, which are repeated down the length of the panel. The horizontal black lines appear in part to continue the lines of the scroll, but they are also found across the whole panel, and do not form any suggestion of a coherent image. There is also no trace of the star pattern, although the marks from the nails and laths are present. It is recorded in the 1637 Visitation of the Church under Archbishop Laud that 'it rains into the South Aisle', and repairs were ordered to be carried out.[31] It is possible, therefore, that this piece of recycled wood was inserted much later as part of a repair, and that the traces of paint are from a different decoration entirely.

Date

The date of the first scheme is established fairly conclusively by dendrochronology as being between 1414 and 1448, which more or less agrees with Rouse's dating on stylistic grounds to the very end of the fourteenth century or soon after 1400. He doubts whether the

[31] Jenkins, JG A History of the Parish of Penn London 1935 p. 106

repainting of such a work would have been carried out less than fifty years after its execution, which puts the later painting towards the end of the fifteenth century. Rouse comments that 'the great effusion of blood, to which the late Mr Aymer Vallance drew attention, is characteristic of the treatment of the subject towards the end of the fifteenth century'[32]. Dating by the costumes of the visible painting should be done with caution, since the later painter was mostly following the outlines of the earlier composition. The costume and hairstyles of the Virgin and Christ are close to those of Anne of Bohemia and Richard II, respectively, from their funerary effigies, which belong to the last years of the fourteenth century. The two angels in yellow, on the other hand, appear to be wearing the short, padded jackets with high collars, and the hairstyle of the mid to late fifteenth century, during the reign of Edward IV.[33] A trumpet in four sections, similar to that held by the angels, was excavated from the Thames foreshore and is believed to date from the late fourteenth century.[34]

Even assuming that the later painter was following the outlines of the earlier figures fairly faithfully, these dates are slightly too early, even for the first scheme, as we now know that the tree which supplied the wood was not felled before 1414. This fact argues in favour of the Doom being of provincial production, in a style that lagged behind the capital, rather than that, as Rouse suggested, 'an artist from the city is most likely to have been employed, at any rate at the later date.'[35]

Iconography

The iconography of the painting is described in detail by Rouse. Pauline Plummer has pointed out how the earlier scheme, with St Michael weighing souls in a balance, is similar to that of Rogier van der Weyden's Beaune altarpiece, of the 1440's. Panofsky comments that the inclusion by Rogier van der Weyden of the weighing of the souls at this period, like the flat, diagrammatic depiction of the scene, was unusual and looked back to the thirteenth century.[36] Rouse has no explanation of why this figure, and that of the Virgin, together with the small figures of risen souls, should have been obliterated in the second scheme, apart from the general simplification of the repainting. Given that change would come to an

[32] Rouse, EC op cit p102
[33] See Planché, JR History of British Costume London 1847 p253 Figs a,b,c, and Houston, MG Mediaeval Costume in England and France p147 fig. 262
[34] Alexander,J & Binski, P op.cit. p439
[35] Rouse, EC op.cit p102
[36] Panofsky,E Early Netherlandish Painting Harvard 1953 p269

English parish church later than the cultural centres of Europe, it may also represent a shift in taste. There may also have been a practical reason why the detail was omitted from the lower part of the painting, as by this time it could have been obscured by the railings of the Rood loft.[37]

Rouse states that the iconography of the composition 'presents no particularly unusual features when compared with many Doom paintings'.[38] The scene is enacted in the last of the York Mystery plays: God, with the apostles in attendance, commands his angels 'blawes youre bemys belyve, ilke creatoure for to call', 'There schall thei see the woundes fyve That my sone suffered for them all' , 'Mi blissid childre, as I have hight, On my right hande I schall thame see: Sethen schall ilke a weried wight, On my lefte side for ferdnesse flee. This day ther domys thus have I dight, to ilke man as he hath served me'.[39]

In the earlier scheme, the Virgin stands close to St Michael in the centre of the composition at Christ's feet, where she would intercede for the souls being judged. Since she also appears at the head of the apostles on Christ's right hand, she would have been represented twice, a fact upon which Rouse does not comment. He does however deal with the omission from the painting of any depiction of processions to the Heavenly City or the Jaws of Hell. He suggests that the 'unusually full texts on the inscribed scrolls', from the Gospel of St Matthew[40], may have replaced the actual depiction of Heaven and Hell in the original painting.[41] Paul Binski, discussing the evolution of monumental brasses, points out how in the later fourteenth century, black letter inscriptions became more lengthy, their meaning integral to the understanding of the pictorial image.[42] Text was also used in stained glass and painted images, to identify the Evangelists, for example, by the opening words of their Gospels. Eamon Duffy, in The Stripping of the Altars, is at pains to emphasise the spread of literacy down the social scale in the fifteenth century, and the widespread use of primers, or

[37] See Appendix IV.
[38] Rouse, op.cit p98
[39] Happé, P English Mystery Plays 1975 pp 634-5 'Blow your trumpets quickly to call every creature. There shall they see the five wounds that my son suffered for them all. I shall see my blessed children, on my right hand as I have promised, and the cursed on my left side shall flee for fear. On this day I have ordained each man's fate as he has served me.'
[40] Matthew Ch25 v.34, v41
[41] The scrolls were overpainted in the second painting, and it has been suggested that the composition might have wrapped around onto the side walls of the Church. Investigation of the walls by Catherine Hassall did not find anything to support this, as the walls have been completely re-plastered.
[42] Alexander,J & Binski, P op.cit. pp 172 & 231

books of hours, for devotion. He concedes that the laity would not have been fluent readers of Latin, but would have recognized phrases familiar from the liturgy, and the image of the Doom was used in the primers as an illustration for the Penitential Psalms.[43]

The other notable omission from the Doom as it is now seen, is any suggestion of the position of a three dimensional Rood group, as may be seen in the unpainted silhouettes on the Wenhaston and Dauntsey Dooms. The three central panels were X-radiographed (*B/W prints: Fig.26*), to confirm that, even on the earlier scheme, no such reserves had been left and in fact the figures of Mary and St Michael are standing much too close to one another for there to be any space for any more incident. The question of how the Rood group related to the Doom is inseparable from the question of where the Doom was originally displayed in the Church. This is considered below.

The Doom before 1939

No record of the commissioning of the Doom, or other record of its provenance has ever been discovered. Chacombe Priory was the proprietor of Penn Church from before 1241 to the Dissolution. Rouse states that 'The house was a small and unimportant Augustinian foundation, and had, as far as is known, no artistic reputation in its scriptorium.'[44] He could not, however, necessarily have known that the Parish Church of Ss Peter and Paul in Chacombe, like any Mediaeval church, was indeed decorated with wall paintings, believed to date from the fourteenth century. Only one fragment, of the Crucifixion of St Peter, was discovered and revealed in 1982.[45]

Miles Green, archivist to the Penn PCC, has looked into the question of the original location of the Doom in great detail.[46] Rouse considered that the Doom originally formed a tympanum, filling the upper part of the Mediaeval chancel arch, and was repainted to coincide with its removal to the higher position in which it was found in 1939. This, according to Rouse, accounted for the repainting in brighter colours and simplified forms, because it was designed to be seen from further away. The Doom as a tympanum is backed up by the fact that it is painted on a solid support rather than directly on the wall, as many

[43] Duffy, E The Stripping of the Altars Yale 1992 Chapter 6.
[44] ibid. p 102
[45] I am grateful to Mrs Betty Cameron for this information, and for showing me the painting.
[46] See Appendix IV. This work has been submitted for publication to the Records of the Buckinghamshire Archaeological Society

were. The exact shape of the Mediaeval chancel arch is not known. Rouse includes in his article a diagram of the Doom inside a pointed arch, which would mean that a considerable amount of material had been removed to make it the present shape. However, the braces under the tie-beam, which are probably contemporary with the early fifteenth century chancel arch, form a depressed four-centred arch. If the masons had used the same shape for the chancel arch, then the Doom only needed to be a few inches wider and taller than it is now.[47]

Miles Green has shown that while the Doom fits neatly into the present position above the tie-beam, there was not in fact room for it to have done so before the roof was raised in the 1730's. The Doom must therefore have remained in its position as a tympanum under the Mediaeval chancel arch until then. Indeed, the report of the Bishop's Visitation of 1637 refers to 'the wainscot which is over the separation of church and chancel', which required repair.[48] By then the Doom picture would have been obscured, either by whitewash, or possibly the decoration of applied stars, but the description of 'wainscot' implies that it was recognisably wood panelling, and not yet plastered over.

It is not clear from Jenkins' history of Penn what the response of the church was to the various Edwardine Injunctions, the Marian period and the eventual permanent imposition of Protestantism[49]. On the one hand, Lollardy and followers of the teachings of Wycliffe were an active minority in South Buckinghamshire, but 'in Buckinghamshire as a whole, the progress of the Reformation appears to have been accepted by the people without much demur'. Miles Green considers that the balance of evidence is that Penn accepted the Protestant reforms largely without protest, but it is not known at what point the Doom was finally concealed. No particular evidence was found on the Doom that the Royal Arms had been attached to it, as was sometimes the case. In 1709, according to Jenkins, at the same time as the Arms of Queen Anne were hung up, the Sentences, or religious texts were 'written and repainted'. He states that 'the usual position of the Sentences was in the space above the chancel arch'.[50] At any rate, when the Mediaeval roof was raised in the 1730's, the planks, for so they would have appeared, were removed, trimmed a little, and re-used as a base for lath and plaster over the new brick wall at the top of the nave, which is only the thickness of a single 9 inch brick.[51] Although the builders re-used the wood, they do not

[47] The saw marks on the reverse support Mr Green's proposal. See p2.
[48] Jenkins,JG op.cit p107
[49] ibid. pp 26 & 80-87
[50] ibid p139
[51] This information supplied by Miles Green

seem to have been very careful in the way they dismantled it: the losses of wood across the central line correspond to the position of the central joining batten, which must have been wrenched away.[52]

The existence of a Rood is confirmed by parishioners' wills leaving money as late as 1549 to the 'rood light'. Although the setting of lights before images was banned in the Edwardine Injunction of 1538, the light on the Rood loft was specifically exempted. There are still two pairs of hooks on Penn's tie-beam. From these *corona lucis* chandeliers for the candles could have hung. According to Ms Ballantyne these hooks may also have been used to suspend the Lenten veil, which hid the Sanctuary and Rood from view during Lent. In 1951, the entrance to the Rood loft was also discovered. The position of the Rood, however, is not immediately obvious. There is a slot in the bottom centre of the tie-beam, and another groove on the nave side of the tie-beam, slightly off-set from the slot, either of which could have secured the top of the Doom. It has been suggested that this could also have been the location of fixings for the vertical element of the Crucifix, but it is inconceivable that the Rood would have passed straight in front of the most important elements of the Doom painting. An alternative scheme favoured by Ann Ballantyne is that there could have been room for a small-scale Rood group below and between the figures of Mary and St Michael. The blank outlines of the Rood group seen on the Wenhaston Doom occupy almost the full height of the painting, but the carved Christ crucified illustrated in The Age of Chivalry, although dating from the thirteenth century, is much smaller in scale. The figure itself is less than a metre high, although the cross would have added to this dimension. The carving, believed to be by an English artist, although it is Norwegian, is described as being 'from a small rood or altar cross, such as was standard in most English churches before the Reformation'.[53] The second painting would allow slightly more room for this arrangement, but still does not overcome the problem of the statues being partially hidden by the railing of the Rood loft. The only remaining possibility would seem to be that, after the painting of the Doom, the Rood would have had its base rather than its top secured in the slots on the tie-beam, and was displayed in the roof space above the beam and the Doom, so as not to obscure the Doom itself. While this is not the most common arrangement, it is certainly the most feasible in this case, and there are other examples, such as at Raunds in Northamptonshire and at Cawston in Norfolk, for instance.

[52] Ann Ballantyne has suggested that the complete loss of the lower part of the central board was caused earlier by iconoclasts violently destroying an attached Rood.
[53] op.cit pp 231-2

Conservation History

After the accidental discovery of the painting in June 1938 during repairs being carried out under the Rev. Kenneth Mumford, it was restored and reassembled by Clive Rouse. The painting is documented and discussed in some detail in the article 'The Penn Doom' by E. Clive Rouse in Records of Buckinghamshire 17 1961-5, which includes a brief record of his conservation treatment.

The wooden boards had been taken down, broken up and left out for rubbish – 'a collection of moth-eaten whitewashed boards'[54]. Rouse removed the plaster and split oak laths covering the painting 'by hand', protecting the paint surface with a sheet of card. Most of the 'hundreds' of nails, which had attached the laths could not be drawn out without damage and had to be cut flush with the surface. Nail holes were 'filled with putty and toned down', 'and an oil primer used on the cut nails'. The materials applied are not specified further. A coat of whitewash and dirt was removed mechanically by scraping and brushing with a sable brush, then cleaned with damp cotton wool swabs and 'a mild solvent where necessary'. The solvent is not specified. Rouse also took the step of cleaning off some parts of the later composition to reveal elements of the earlier painting concealed by 'the later green foreground and other parts where they did not materially affect the later composition'. These areas include the inscribed scrolls in the sky, the figures of the Virgin Mary and St Michael and the resurrecting souls in the foreground. Rouse does not specify the locations where the later paint was removed, or the method he used.

The paint was found to be flaking in a number of areas. The paint layers were consolidated with a 'wax fixative' and two coats of white beeswax in turpentine were applied as a protective layer and to enhance the colours. No retouching of losses was carried out, and the boards were mounted on 'a toning oak framework' without infilling of the missing parts. The visual effect of this mounting can be seen in Plate 1 of Rouse's article. The backs of the boards and the new support were treated with insecticide, and a protective curtain fitted to hang in front of the panel, which was displayed at ground level on the wall of the South aisle. By 1950, Rouse complained to the Bishop of Buckingham that up to two years previously, 'the curtains which were specially made and paid for out of the Restoration Fund as part of

[54] Unpublished letter from E.C Rouse to Rev. WH Davies 7th April 1964. All copies of Rouse's correspondence were kindly supplied by Ms Ann Ballantyne

the general preservation of the painting have been removed and misappropriated to another use'.[55]

The painting was lent by the Church to the Victoria and Albert Museum in 1952[56], for several months while building work was being carried out in the Nave. The Museum authorities re-mounted the boards onto a softwood framework covered with linen canvas – unsuitably, in Rouse's view[57]. Also according to Rouse, one or two of the fragments, which he had recovered after two days 'combing through the rubbish tip', were removed and not replaced. The Museum recommended to the Church that the Doom should be displayed in 'its original position, as it will never be seen in its correct perspective unless it is at the height for which it was intended by the artist who painted it'[58]. The spacing of the two left hand boards was altered by the Museum, to Rouse's disapproval, presumably so that the Doom could be fitted into the space above the Chancel arch, where it now hangs. However it was not until February 1967 that the Rev. Oscar Muspratt wrote somewhat defensively to Rouse to say that a Faculty application to move the Doom had been made. His primary reason for removing the Doom from its low level position was that 'we have been increasingly bothered by crowds of unruly visitors invading the church in connection with motor car rallies organised by social clubs of various kinds. They have shown scant regard for the building and its normal usage'[59]. This at least struck a chord with Rouse, who was not in favour of the move, 'though one has, I suppose, to take defensive measures in view of the behaviour of modern church visitors'.[60] Mr Muspratt had thought that at the Victoria and Albert Museum a high position 'was proved to be an admirable siting'. He attempts to mollify Rouse by promising that suitable curtains will be installed and that 'we will have special electric light focused on it to make the whole picture wonderfully easily seen'. He proposes that visiting experts could examine the painting more closely 'either by means of some magnifying device or even by the use of a ladder'.

In the same letter, Mr Muspratt asks Rouse's advice on 'what to do with the missing bits of the Doom'. In his opinion, the 'best proposal that has come up so far is that the canvas

[55] Letter from E.C Rouse to the Archdeacon (sic)of Buckingham dated 30th May 1950, and reply dated 1st June 1950 from the Bishop of Buckingham. The curtains had apparently been appropriated for the choir stalls.
[56] PCC Report for 1952 and unpublished letter from Rev.O. Muspratt to R. Edwards, Keeper of the Dept of Woodwork March 1952 V&A Nominal file 52/758
[57] Rouse, op.cit p95 and letter to Rev. O Muspratt 28th February 1967
[58] PCC Report for 1952
[59] Letter from Rev. O Muspratt to E.C Rouse, 23 February 1967
[60] Letter from E.C. Rouse to Rev. O. Muspratt, 28th February 1967

mounting should be painted some suitable neutral colour or shade to harmonise with the surrounding portions of the picture at these particular points'. He regarded this as 'far more acceptable, obviously, than attempting in any way to repair the damaged woodwork itself'. Rouse's reply was that 'if anything is done to it…the best plan would be to fill in the missing spaces with natural coloured wood', adding that 'as you know, I never did like the way the Victoria and Albert re-mounted it'. Accordingly it is recorded in the list of work completed at Holy Trinity Church, Penn, for May 1967[61], that 'the fine mediaeval painting of the "Doom" was taken down from the South wall of the South Aisle'. It was repaired with oak – unpainted – by Mr Ivor Newton of Haddenham, Bucks and refixed in its original position over the Chancel Arch.

CONDITION :

The painting was examined *in situ* on 20th July 1999. The condition was found to be generally good, although the reverse of the painting was not visible. A split in board 3 appeared to be more open than in the 1938 photograph. Several small damages around the edges of the boards had loose fragments and splinters of wood. The surface consolidation carried out in 1938 appeared to have been largely effective and no active flaking was detected when the painting was examined in raking light. The irreversible striped effect caused by the lath and plaster covering had already been noted by Rouse. The paint layers under the laths have been better preserved, but the second scheme has been partially lost where it came into contact with the plaster. The canvas on the auxiliary support had a thick coating of black dust, and the waxy coating on the paint surface had imbibed a thick film of black dirt, dulling the colours it was intended to enhance.

TREATMENT :

Removal

On 7th June 2000, the Doom was detached from the wall of the Church, lowered and delivered to the conservation studio, by JPW Transport. The painting had been attached to the wall by means of screws passing through the wooden auxiliary support, the heads of which were concealed by the canvas covering of the support. The screws were found to have rusted into position, and required drilling out to remove them. The entire assembly required

[61] Copy from the log book kindly supplied by Mr John Wood, Convener of the Church Fabric Committee

five men to handle it, and it was noted that the wooden support flexed considerably as it was handled.

Surface cleaning

The reverse of the panel support was cleaned by brushing and vacuuming, to remove a quantity of dust (*Figs.27 & 28*). It could be seen that there was debris trapped between the canvas and the lower horizontal member of the auxiliary support. The canvas was also distorted by an attachment on the back of one of the wooden inserts.

The front of the painting was cleaned with purified water, which removed a black film of dirt (*Fig.29*). This was followed by cleaning with white spirit, which thinned the dirty waxy coating on the surface. The bright red and orange colours were slightly sensitive to white spirit, suggesting that they may originally have been underbound, and have therefore absorbed the wax applied by Clive Rouse. During cleaning, any areas of potential flaking were recorded.

Temporary Support

As any further treatment required access to both sides of the painting, a temporary structure was devised to support it across the middle of the studio (*Figs.30 & 31*). Softwood uprights were bolted through the spaces in the bannister rail of the mezzanine floor. The uprights were braced by two pairs of horizontal beams bolted together on either side of the bannister. One pair was placed at the top of the uprights, one at the level of the mezzanine floor, with the inside beam resting on the floor. At ground level, the uprights were attached to a single beam resting on the floor by means of 'L' section mending plates. The Doom was attached to this framework by means of straps threaded through the wooden auxiliary support. When access to portions immediately behind the uprights was required, the straps could safely be slackened off sufficiently, without releasing the painting completely from the framework. The lower edge of the painting rested on foam blocks.

Removal of oak inserts

It was concluded at a site meeting that the appearance of the oak inserts was almost universally disliked. The main objection was to their colour, but their aesthetic intrusiveness was compounded by the fact that they did not respect the joins in the original boards, nor, in

one case, the direction of the grain (*Fig.32*). In addition, because of the difficulty of cutting the wood accurately to fit the losses, the hard oak was in many places tightly pushed against the original material, risking the propagation of cracks from the damaged edges. It was therefore decided that there were sufficient conservation and aesthetic grounds to remove the inserts. This was done by unscrewing them from the reverse. The screws were all attached into the auxiliary support except for the last insert on the right, which had an additional nail into the original panel. Although the wood appeared on the reverse to be English oak, the colour, aptly described as 'ginger', appeared to have been applied as a stain. Where the canvas covering the auxiliary support was revealed by the removal of the inserts, a considerable quantity of dust was removed from it by vacuuming.

Removal of boards from the support

Four boards, nos 1,9, 10 and 11, were initially removed from the auxiliary support for the purpose of radiography, by unscrewing from the reverse. This offered the first sight of the reverse of the original wood. Although dirt and cobwebs were plentiful on the backs of the boards and the canvas of the support (*Fig. 33*), the original wood appeared sound, with no evidence of live woodworm. Board 16 had suffered more insect damage and was more fragile than the rest. Boards 1 and 9 had been packed out from the support with loose slivers of wood. Boards 11 and 12 had been joined together with a screwed metal mending plate. It was necessary to cut an opening in the canvas to gain access to these screws. Also clearly visible on the radiograph, a long split in panel 1 had been repaired near the bottom with a 5cm screw inserted at an angle across the split. The screw was loose and there were loose splinters of wood on either side of the crack. The panels showed a tendency to bow convexly along the grain when left unrestrained for any length of time, so they were removed in small numbers from the support for treatment, and replaced in rotation.

Repairs to boards

The screw was removed from the split in board 1. Old animal glue was removed from the repair with moisture. Loose splinters of wood either side of the split were repaired with fish glue. The screw hole was packed with slivers of balsa wood attached with fish glue to support the splinters. The split itself was too wide to be re-joined, so slivers of balsa wood were inserted to bridge the gap across the widest part and glued with fish glue. The balsa is soft enough to be compressible in response to movement in the original wood, so should not provoke further cracking. Repairs to loose and unsupported splits and splinters in other

boards were made with fish glue, inserting slivers of balsa as necessary to bridge voids in the wood. Old repairs and fills were not removed as long as they were not damaging. A fill was removed from the complex break in board 7, as it prevented the correct re-alignment of the break, and a metal mending plate was removed from the upper edge of board 14, joining an otherwise unsupported split in the wood.

The reverse of the boards was treated with 'Cuprinol Woodworm Killer' (0.2% permethrin) as a preventive measure. A 3% solution of 'Paraloid B72' acrylic resin in xylene was applied to the painted surfaces by brushing, to consolidate and protect them, without alteration of the surface gloss. 'Paraloid B72' acrylic polymer is considered to be a Class A conservation material, which does not become insoluble or degrade significantly in normal conditions of exposure.[62]

Replacement of the auxiliary support

When the Doom was lowered from its position, it was noted that the softwood framework was not only extremely heavy, it was very flexible and difficult to handle. Removal was made extremely difficult by the fact that the screw heads were hidden in the canvas weave, and the screws had rusted into position. Once the oak inserts had been removed, it was clear that the whole design of the support would have to be reconsidered, as, while the canvas covering was found to be inoffensive in colour, it was now damaged and dirty, and had no particular connection with a Mediaeval panel painting. What was required of the support was that it would be rigid, stable and preferably lighter than the existing one. It should be possible to reattach the boards by the existing screw holes. It should also either be visually acceptable itself in the large gaps in the original painting, or permit the attachment of inserts which would not be damaging to the original, and whose surface could be treated in an appropriate way. It should also have an adaptable and reversible provision for re-hanging, either in a different position in the Church, if this were ever decided, or at an exhibition venue.

A new auxiliary support was therefore designed and assembled by Mr Mark Slattery, Deputy Head of Art Handling at the National Gallery. The new support was fabricated from high tensile aluminium by D&D Fabrications of Tamworth, Staffordshire. A metal support is completely stable in an uncontrolled environment, unlike wood which will impose stresses on

[62] Horie, CV Materials for Conservation London 1987 pp 106-109

the original boards by its own moisture response. Perforated aluminium sheeting was welded to the front of the framework to provide a surface for the attachment of the boards.

Untreated aluminium in pollution-free conditions corrodes to form a protective film of aluminium oxide, but this layer can be disrupted by various agents including dust and very high relative humidity. The weak acid emitted by oak can also dull the surface of untreated aluminium. Once the oxide layer has been attacked it becomes porous, traps pollutants and corrodes at an accelerated rate.[63] The metal structure was therefore powder coated in an epoxy finish to prevent corrosion. The colour of the coating was chosen to be neutral and unobtrusive should any small areas be visible from the front, although clearly the appearance of the perforated aluminium would require concealment in the larger gaps in the original.

The structure consists of three separate frames, which are bolted together (*Fig. 34*)[64]. This was partly governed by the dimensions of the oven required for baking on the epoxy finish, but also adds to the rigidity of the structure. The support is free-standing on its own feet, removing any strain from the original panels. The feet are designed to tilt in order to accommodate the irregular profile of the beam on which the Doom rests. Three sets of feet of differing heights have been supplied, the longest of which is designed to be used in transit to keep the lower edge of the panel well clear of the ground. Adjustable attachment points have been supplied at the top of the frame, with provision for alternative positioning nearer the centre of the top, if required. The structure is sufficiently strong to allow the painting to be lifted by these points if necessary, facilitating re-hanging. Carrying handles have also been incorporated into the design. It is thought that the weight of the new support is in the region of 43-45 kilos, but as neither the old structure, nor the panels alone were weighed, it is not certain that there has been a significant saving in weight. However, there are significant gains in ease of handling, rigidity and permanence, which all contribute to the long-term conservation of the object.

The boards were attached to the aluminium support with stainless steel screws. Soft plastic washers were placed between the screws and the support to help absorb any movement in the boards. All the boards were re-attached by screwing into existing holes, which were located

[63] Green,L &Thickett,D 'Modern Metals in Museum' from Proceedings Symposium '91 – Saving the Twentieth Century, Ottawa 1991
Adams,C & Hallam D 'Finishes on Aluminium – a Conservation Perspective' ibid. I am grateful to Jacqueline Ridge of the Tate Gallery for drawing my attention to these articles.
[64] Digital photos of the construction of the support can be found on CD-Rom accompanying the complete report.

through the perforations in the metal. It was only necessary to make one new hole, in board 2, to achieve a secure fixing.

Treatment of large lacunae

It is clear from the correspondence relating to the Doom since its discovery in 1938 that the question of how the large losses in the boards should be treated has always been a vexed one. Rouse's preferred choice was a solid oak support, which was seen behind the original boards. This was replaced by the Victoria and Albert Museum with a canvas covered support. After the painting's return to the church, the exposed canvas was covered by stained wooden inserts. Although this was the closest in theory to Rouse's first idea, the visual effect was almost universally disliked, and the hard wood risked damaging the fragile edges of the original material. There is less of a tradition of mimetic, invisible retouching of large scale wall paintings than there is in the restoration of easel paintings, but even in the latter, significant losses have always posed the problem of how to integrate the loss acceptably without falsifying the work. The fundamental problem with any so-called 'neutral' retouching is that it inevitably interferes with the forms and colours of the original. No colour is truly neutral, and what blends with one area of the painting will stand out in another, while a flat area of colour will impose its own meaningless outline on the forms of the original.

The design of the new support meant that the large losses in the wood required infilling with a material more visually appropriate than the perforated aluminium. The material chosen was a very soft wood called jeluton. This wood has a completely bland texture, which is easy to work, and is sufficiently soft that it should not impose any stress on the original wood if it is in contact with it. The inserts were carved by Mr Jock Hopson, taking particular care to continue the line of the edges of the boards. The natural colour of the jeluton is a pale yellow (*Fig.35*). Several samples were painted out to gauge the effect of different surface treatments. It was agreed that the most acceptable was based on the colour of the original wood, as seen through the losses in the original paint, with the minimal addition of colour where appropriate to the particular area of the painting. As one of the objections to the earlier wooden inserts had been their extreme flatness, the surface of the jeluton was distressed with a variety of tools such as wire brushes and scrapers. A particularly useful tool for imitating the deep grain of the oak was a small folded section of the wire mesh used to support plaster. The painting of the wood was carried out with 'Plaka' casein paints. Having established a

base coat of 'wood colour', touches of colour were applied, and almost completely removed by scraping, until the desired effect was achieved. In this way, the appearance of large blank areas of flat brown was broken up and blended with the surrounding composition without any attempt to reinstate the unknown missing elements of the composition. In the smaller losses, the least application of coloured paint created the illusion of a complete paint surface almost immediately. The painted surface was brushed with a 3% solution of 'Paraloid B72' acrylic resin in xylene, to saturate the colours slightly more and protect the surface. The extremely matte finish of the 'Plaka' resulted in some of the colours having too cold a tone. This was corrected where necessary by applying another coat of 'B72' with the addition of the dry pigments: burnt umber, indian yellow and alizarin orange (*B/W print: Fig.36*).

Any such treatment has to be a compromise, and theoretical resolutions of the problem have not yet yielded the perfect solution in practice. In this case, the expectations of both the parishioners of Penn, and the academic and museum world, had to be taken into account. As no irreversible treatment has been applied to the Doom panels themselves, the work can be undone or modified whenever this becomes appropriate (*Fig.37 & colour print: Fig.38* [65]*).* One immediate effect of the present method of inpainting is that the sense of the lines of apostles sweeping upwards towards the figure of Christ has been restored, and with it some of the original power of this uncompromising image.

[65] Photograph reproduced with permission of the Victoria & Albert Museum, London