

# CHURCH WOODWORK IN ENGLAND

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The following chronology of the construction of church woodwork has been assembled from individual examples that I have been fortunate to work on as a conservator or examine closely. The list is not comprehensive. However, the examples that I use are mostly quite closely dated and do therefore show what was being done at a particular time. This is a chronology that has all the setbacks of a list, so I have headed the text with dates, this having the merit of easier access should anyone want to check a construction type at a given date.

## *1100s*

The earliest joinery that I have been involved with is the south aisle door at All Saints', Staplehurst in Kent, which has been dated by Jane Geddes<sup>1</sup> to c1100. It had been previously dated to the mid eleventh century because of its pictorial ironwork, causing it to be known as 'the earliest door in England'. This accolade has now been accorded the door to the Chapter House outer vestibule at Westminster Abbey<sup>2</sup> (circa 1070) though St. Botolph's, Hadstock, Essex, claim that they have two doors as old as the Westminster door, making their doors the earliest in England. The Staplehurst door is made from a number of quarter sawn boards approx 37mm thick jointed at their edges with rebates. On the back of the door are 6 oak ledges<sup>3</sup> of 'D' section that are fixed with iron nails through the straps on the front of the door.<sup>4</sup> The nails are not clenched over at the back but pass through roves (see Figure 1) and are then cut off and riveted. The roves have a wide central section and then taper as they clasp the ledge. It is notable that none of the other nails fixing the decorative ironwork on the front of the door penetrate through to the back of the door. The ledges are pinned additionally with oak pins to the boards. Geddes suggests that the doors were made by a carpenter and then passed to a blacksmith who fixed all the ironwork separately.

## *1130s*

In the course of surveying the seventeenth century Night Stairs door at Bristol Cathedral preparatory to writing a schedule of repairs, I noticed on the back of the door that all the board joints joggled over approx 20mm approx 300mm from the bottom of the door and 350mm (max) from the top. The split curl terminals to the strap hinges suddenly struck me as not quite seventeenth century. Further investigation revealed the rebates along the board edges and it then became obvious that the date in studs on the front of the door merely recorded the refurbishing in 1667 of a door made circa 1130.<sup>5</sup> Unfortunately the door at Bristol was rehung in the last century when all the ledges were taken off so it is not known if the nails were riveted over roves. The real breakthrough at Bristol was the discovery of the counter rebates, (Figure 1).

Where the joints joggle over, the rebate changes direction so that, for instance, at the

top of the door, Board A projects over Board B, and below the joggle, the situation is reversed with Board B projecting over Board A. Additionally the counter rebate joints were reinforced with oak dowels, but they were not seen elsewhere along the edge of the boards. A real insight into the original craftsman's work methods can be seen where board edges with indentations were made good by shaping projections in the adjacent boards. With our traditions of straight edges, this is a delightful reminder that it was not always so.

The counter rebate shows quite a step forward in construction understanding whereby the horizontal steps in the joints are used to prevent the boards slipping vertically and thus the door from sagging. This was previously achieved by the use of numerous ledges on the back of the door and straps and strap hinges on the front of the door. Thus the 1250mm wide door at Staplehurst required six ledges and straps, but the 1550mm door at Bristol Cathedral only has four ledges. This technique was further developed so that, for instance, at Peterborough Cathedral in the early thirteenth century the main west doors incorporate three or four counter rebates along each edge and the prosaic ledges have been exchanged for a decorative lozenge-shaped lattice work forming an interior cross bracing. Although the counter rebates have been described as a development in construction understanding, in fact the recessed concave shaped cleats used in the door in Westminster Abbey<sup>6</sup> possibly some fifty years earlier, show the same constructional understanding and the technique is just as advanced in terms of practical execution. This suggests that the leap in construction understanding was more like a hop and that several techniques were available at much the same time, and there is no clear line of development.

#### 1230s

Moving forward perhaps seventy five years, we come to the nave ceiling at Peterborough Cathedral dated 1225–1230, the largest construction of its type in Europe. Here we find essentially the same components being used as are found in the door at Westminster Abbey; boards, ledges and nails. The only difference in the construction is that the boards are nailed to ceiling joists, not ledges. There is no hint of dividing the ceiling into smaller framed units that could be made on the ground and lifted in place in the ceiling.

The boards in this case are slightly tapered in profile and are some of the first to be found to have been imported from the north of Europe. The timber has been dendrochronologically analysed and identified to have originated in the southern Denmark/northern Germany area. The boards were tested throughout the ceiling and the date varied little, showing that the work was carried out as one operation. Maybe the tapered shape of the boards led to the clinker type construction<sup>7</sup> but it is worth noting that the north and south transepts were boarded to a similar technique using English oak some fifty years earlier (1170s). However, the oak boards used for these ceilings were quite different being English (local) and up to 450mm in width and only 10mm thick and not tapered. One new concept is the shaping of some of the visible board edges with a half round mould, and grooving some others with three shallow grooves on the front face near the outer edge of the board, (Figure 2). As these could never be seen from the ground, it is assumed they were made to facilitate the painting of stripes along the face of these boards<sup>8</sup>.

The clinker construction would have been a simple job if the odd gap between the overlapping boards ninety feet above the floor had been acceptable. It appears that it was not, so each face of each adjacent board was fitted so that no gaps occurred. A tedious job considering that each board has to be fitted along the entire length of both edges. In addition the lozenge design of each panel requires the ends of all the boards to meet at a mitre and the fact that the board is not lying parallel with the back frame means that the mitred edge has itself to be angled to ensure a clean fit with the neighbouring board. Also, where the sloping ceilings on each side meet the flat ceiling in the centre, each board end has to be cut and angled to ensure a tight fit with its neighbour. Other technical achievements are seamless scarf joints at least 100mm long used to join two boards together in their length and the use of wooden dowels in the butt joints of the flat base boards. The quality of the work can be seen in Figure 3.

#### 1260s

At this point I should like to bring in the Westminster Retable,<sup>9</sup> considered to have been made in the 1260s and which continues the same construction concept of boards nailed to bearers. The frame was added on top of the boards and interestingly has mitred corners, and the highest decoration is added as another laminate to the front. The boards are butt jointed and reinforced with iron dowels or spikes, not oak dowels as used at Peterborough thirty years previously. As a retable is not a structural piece, strength in the jointing of the boards is not important. Why, therefore, use iron spikes?<sup>10</sup> One small technical detail of interest is that the spikes had been positioned towards the back edge of the boards allowing for the recessing of the front face to form the decoration once the retable had been constructed.

The rood screen (or just the chancel screen?) at Stanton Harcourt, Oxfordshire has always been dated to the mid-late thirteenth century, i.e. coeval with the Westminster retable. I have my personal doubts about the date of the screen as a whole but can quite see that the arcade tracery and shafts are of this period. The screen is reputed to be the earliest surviving in the country and the support of the tracery (all carved from a single board) by timber shafts is one of the first examples of timber construction not based on the plank and ledge system.<sup>11</sup> The screen was used as the example for new screens inserted in the 1990s in the White Tower in the Tower of London and in the course of their survey<sup>12</sup> prior to designing the new screens it was found that the shafts were attached to the arcade board with iron dowels – an interesting comparison of this technique with that at Westminster Abbey.

#### 1300s

At Kingston Lacy, Dorset, a panel was found in the 1990s, thought to be a retable and dated by Charles Tracy as early fourteenth century. The construction is still that of a layer of boards at the back, to the front of which are pinned a second laminate of components that form the architectural design. These elements are also pinned to each other horizontally with oak pins. In this case the pins have not been so cleverly positioned so that when the mouldings were carved, substantial portions of the pins were exposed. Ugly though these pins look now, it should be remembered that the whole surface was once fully polychromed, so the pins would never have been seen.

In the fourteenth century at last we find the earliest examples of timber construction where the properties of timber were better or even fully understood.<sup>13</sup> Look for instance at the intermediate shafts of the gable fronts of the choir stalls at Winchester Cathedral (1308 *et seqq*). They are so slender as to be hardly conceivable as a calculated structural element particularly compared with the apparent lack of understanding of wood as a structural material only a few years previously. In fact, they have performed structurally perfectly well.

In the story of timber construction, the Bishop's Throne at Exeter Cathedral, 1313, stands out as a milestone. Quite suddenly this major three-dimensional piece appears, bearing little resemblance in appearance to anything seen before. It almost seems an expression in the successful potential of timber construction. Unfortunately I have never studied the construction in detail, so I am not able to comment on it. (Figure 4).

#### 1320s - 1370s

I should like to suggest that joinery of the early to mid-fourteenth century tended to the inventive as there was little tradition to determine how something should be made. At this time many of the great sets of cathedral choir stalls were made and an example of the inventiveness can be seen in the construction of the seats, which is perhaps illogical when compared with the simplicity of the frame. Figure 5 shows the hotch potch of ideas that make up the constructional concepts, illustrated here by the stalls at Whitefriars, Coventry.<sup>14</sup> A massive but structurally unnecessary back rail on edge (the seat rail) sits on the main frame into which one tenon in each standard fits into the top edge; the standards, which are made from a single piece of oak, tenon down into a joist in the main frame; the huge capping rail spans six or more stalls then sits on the standards requiring in this case twelve tenons (for six stalls) to fit exactly into the underside. Of the oak needed for this piece, probably 40% is cut out to form the space to sit in. The construction certainly achieves its aims, is simple in terms of the number of components used, but is wasteful in terms of materials and shows no reference to frame construction.

In this period the frame as a structural unit was developed and became widely used,<sup>15</sup> such as the quire screens at Exeter cathedral of the last quarter of the fourteenth century, (Figure 6). These screens typify frame construction, a system that has not changed to the present date. The frame employs the minimum material to create the strongest two-dimensional structure; three dimensional structures are made from the same frames linked at corner posts. There is a continuous sill at the base and a continuous timber at the top (the head) linked with posts mortice and tenoned top and bottom and then pinned. The structure uses the strength of timber on end to support the head, it incorporates a deep head and sill to allow for lengthy tenons, which helps create lateral and longitudinal stability, in this way the size of the timber is kept to the minimum, which not only reduces the cost but also enables more slender construction to be carried out. This is a criterion aimed for up to the present day. Of course all screens are more complicated than this, usually incorporating a transom rail and panels that help provide resistance to longitudinal raking. The joints were all mason's mitres secured with pins.

Proof, if needed, of the understanding of the properties of the frame is well illustrated by the tread wheel windlass from St. Mary and All Saints Church, Chesterfield, now in the Chesterfield Museum. It was used to build the tower of the church circa 1370, see



Figure 7. Both wheels have narrow rims connected together with bridle joints and linked to the axle with spokes tenoned at each end. Note there are only four spokes; the remaining timbers link the rims to the spokes and brace the spokes from the rims.

The old board and ledge system continued throughout the fourteenth century with such notable examples as the retable at St. Mary Magdalene, Thornham Parva, Suffolk (1340s–50s), though here the boards are dowelled together with oak dowels not iron spikes. At Lancaster Priory on the stalls (1350s) the technique of creating three quarter circle hollows in the edge mould of the gables is achieved by simply building up the depth of the mould in two pieces with the joint between the two located in the three quarter circle. The incised three quarter circle (much loved at this time) was incredibly time consuming when carved out of the solid, but very simple when half of the circle could be carved out of the meeting face of two laminates. Even later, the Jesse Tree Ceiling in the Lady Chapel at St Helen's Church, Abingdon (1391) was constructed in exactly the same manner as the retable at Kingston Lacy.

Doors, being suited to a laminated construction, continued to be made this way up to early eighteenth century. The system comprised three layers of boards, the inner being horizontal, the centre vertical and an outer often decorative layer whose structural purpose was to cover the holes where the two opposing inner layers of boards crossed. I have even seen an eighteenth/nineteenth century softwood door made in this way at St. Mary and St. Peter's, Salcombe Regis, Devon.

#### 1500s

The mason's mitre is, structurally, a strong joint but visually it is not so successful as it appears to shorten the rails with joint lines where the rails meet the posts, (see Figure 8), the roodscreen at St. Mary the Virgin, Holne, Devon. It seems that in the early sixteenth century some effort was made to improve the appearance by various forms of scribed joints or by letting the rails into the sides of the posts, although still using the mortice and tenon joint. This either eliminated the inset joint line at each end of the rail or brought it closer to the true intersection line. Indeed, at St. Michael's, Mere, Wilts (Figure 9) a most interesting scribed mason's mitre can be found whereby the stool of the mason's mitre has been cut back to the general angle of the moulds on the posts thus allowing the moulds on the rails to nearly intersect truly with those on the posts.

#### 1700s

The use of the frame and panel was varied slightly in the eighteenth century when the moulds were more usually applied rather than being moulded from the solid piece. The moulds were made individually and nailed individually and in the case of cornices with modillions, the plinth and the plinth mould were made and applied separately. Thus appears a production line with specialist carvers concentrating on a very few designs that were produced at great speed and therefore little cost. Specialist joiners ran lengths of moulding and then the actual bench joiner cut these into lengths, cut the mitres and pinned them into position, much as an assembly line.

#### *Seasoning*

I have not mentioned seasoning because little has to date been written about it. There is

the well known reference to seasoning the logs for the Bishop's throne at Exeter Cathedral in ponds in Chudleigh, and my own foreman, who I am sure was merely passing on workshop knowledge from generations back, attested to the fact that oak should be left in streams to wash out the sap.

### *Gluing*

With the simple construction of building up architectural forms (Kingston Lacy) or moulds (Lancaster Priory) using layers of boards, the concern would be warping of the different layers, as it is unlikely that the wooden pegs linking them would constrain the timber. This problem is reduced by using quarter sawn timber, or gluing the components together.<sup>16</sup>

### *Carpenter's numbers*

I have not mentioned carpenter's numbers which I have not found before 1391 (on this type of woodwork), the date of the ceiling at St. Helen's, Abingdon. Here the numbers are pure Arabic, not the anglicised Arabic we use today.

### *Polychromy*

I have little mentioned polychromy, but the extent of polychrome on all woodwork up to the mid-sixteenth century should not be underestimated.

### *Continental techniques*

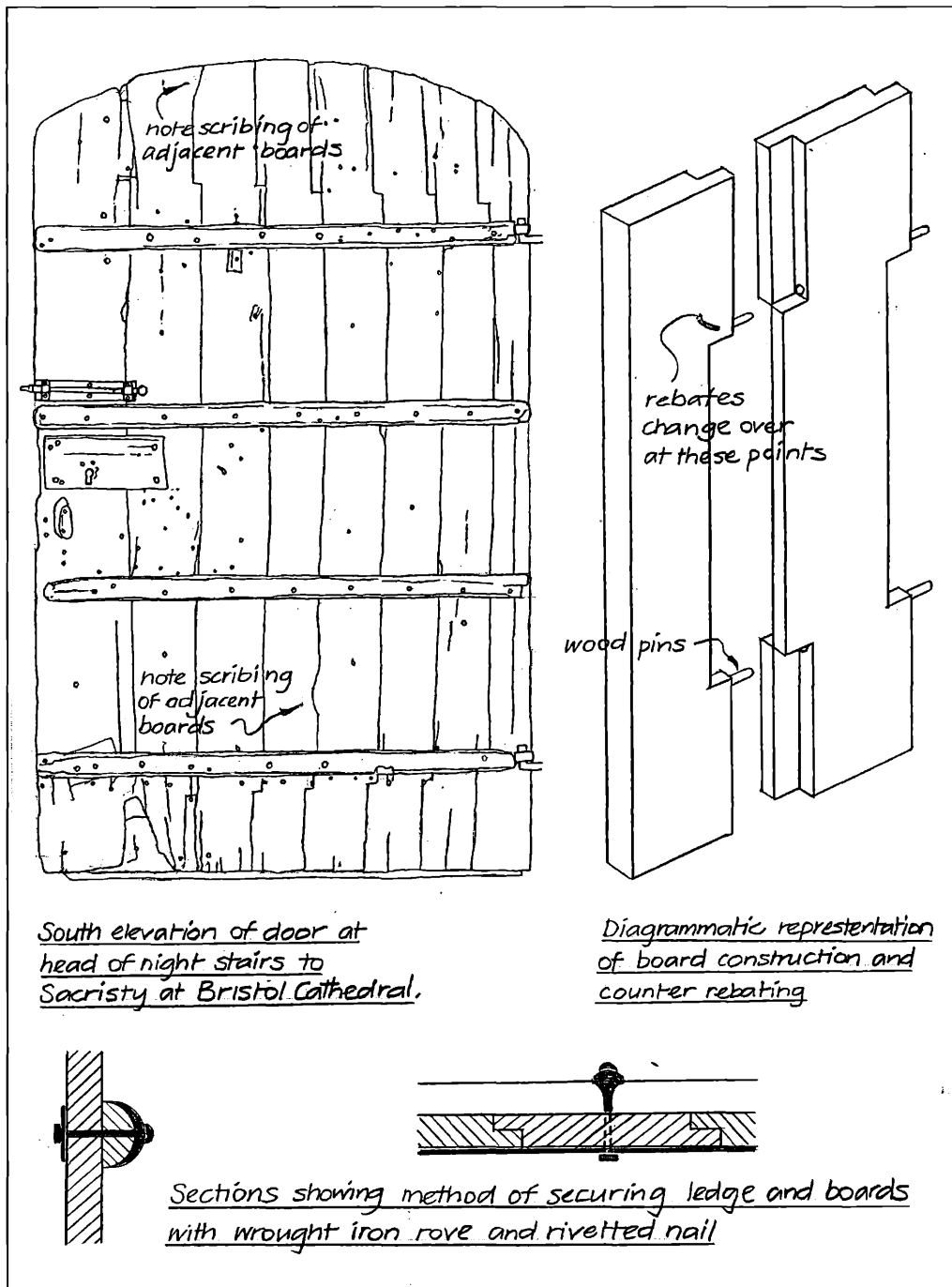
From my knowledge of late fifteenth century northern French joinery techniques onwards, I can say that their concepts were quite beyond ours in England. Although they used the mortice and tenon they hid it wherever possible; all their moulds were scribed. I mention this because our efforts at hiding mason's mitres such as at Mere (and nearby Queen Camel, Wilts) may be the result of a talented local joiner or it may be Continental influence. When studying any unusual woodwork, the Continental dimension should never be forgotten. See, for example, the chancel screen at St. Peter, Ardingly, Sussex, identified by Charles Tracy as likely to be by the same Flemish joiners who are thought to have been involved with the construction of the woodwork at Henry VII's Chapel, Westminster Abbey.

### *Conclusion*

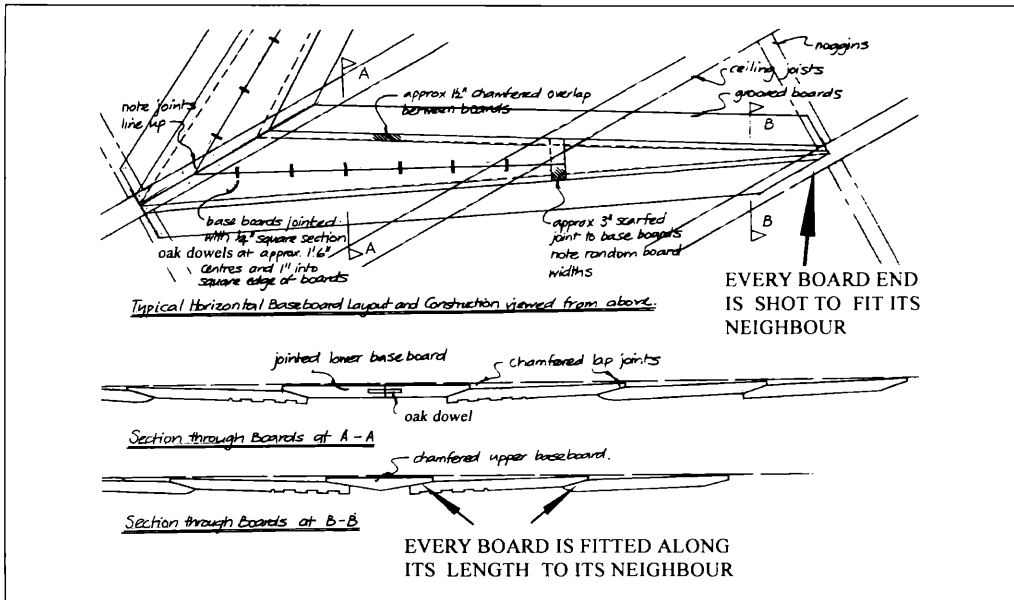
As Hewett pointed out, the concave sided recessed cleats on the vestibule door at Westminster Abbey are beautifully made; the manual skills of the joiner<sup>17</sup> have never therefore changed. Twelfth century joinery survives at St. Etienne, Obazine, which combines the plank and ledge system with heavy frame type construction, so perhaps early joinery will be found in England which informs us about the construction of three dimensional pieces of this date as well.

## REFERENCES

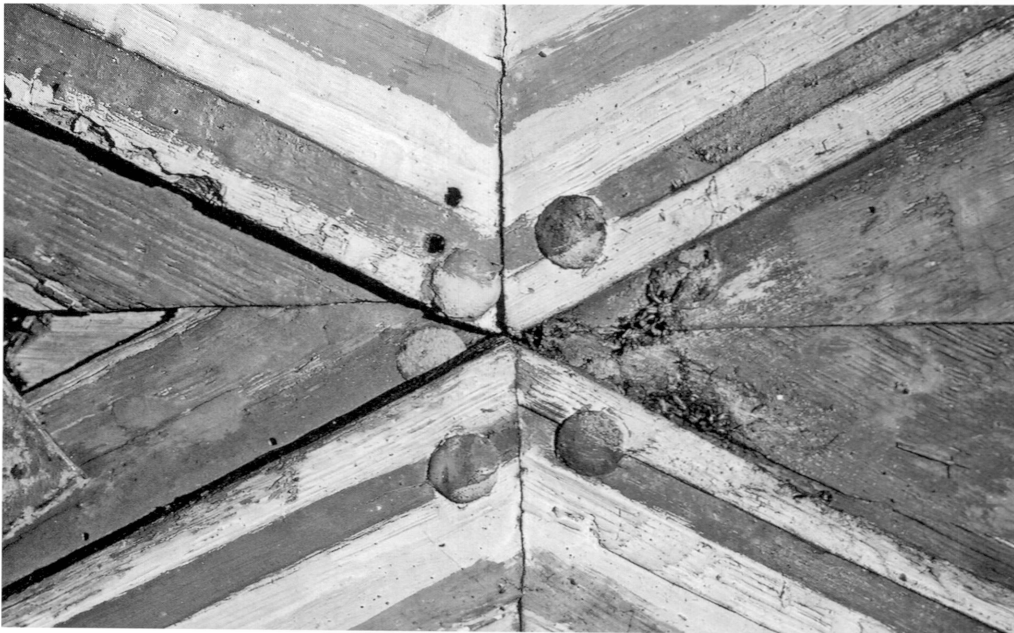
1. Jane Geddes *Medieval Decorative Ironwork*, Society of Antiquaries of London, 1999.
2. It is interesting that in all the recent furore over the 'discovery' of this door at Westminster Abbey, it was in fact drawn up by Cecil A. Hewett and illustrated in his *English Historic Carpentry* (1980) with his conjectural date mid-eleventh century which has now been confirmed. No-one recently though, has remarked on the extremely high quality of the joinery.
3. Only the top three are original.
4. The top strap is decorative, consisting of a winged dragon.
5. I have compared the Bristol door to that at St. Mary's, Kempley, Glos. whose construction and strap hinges are very similar and where dendrochronology has dated other coeval woodwork in the church to 1120–1140. Sheffield University Dendrochronological Laboratories examined the Bristol door when it was taken off its hinges for repair, but no boards were found in good enough condition to enable them to be analysed for dating.
6. Two on one side at the top and bottom of the door and one on the other in the centre. The recessed cleats allowed the door to be flush both sides and apparently traces of leather have been found underneath the nail heads indicating that the door was leather covered and also possibly polychromed.
7. It has been suggested that since shipbuilding was an important industry on the nearby river Nene, some ship building techniques may have found their way into the construction of this ceiling. Countering this is the tapered shape of the boards that would have required considerable handwork to flatten and maybe make unreasonably thin. It is thought that splitting out the boards from the log formed the taper.
8. The face of some boards in the north and south transepts were similarly grooved. There is evidence that the grooves in the boards in the nave were made and painted at ground level before fixing.
9. Which I have not worked on, but have been lucky enough to examine.
10. Suggested by Dr Spike Bucklow, the lead conservator on this object at the Hamilton Kerr Institute, as a means of securing the joints tight by the future expansion of the spikes as they corrode. My own caveat is to ask if they had the equation of the resistance of the oak versus the expansion power of the iron? Too much iron and too little oak will result in the oak splitting, not something to look forward to with an object so heavily gessoed and polychromed. An interesting thought though.
11. See also the earliest known choir stalls at Rochester Cathedral, Charles Tracy, *English Gothic Choir-stalls 1200–1400* The Boydell Press 1987
12. Pers comm. Martin Caroe RIBA Prior to designing the new screens it was found that the shafts were attached to the arcade board with iron dowels – an interesting comparison of this technique with that at Westminster Abbey.
13. Are they the earliest, or merely the earliest that have survived?
14. Charles Tracy *JBAA*, CL (1997) dates these stalls to the mid 1380s but this construction is completely standard for all choir stalls from the 14<sup>th</sup> century to at least the 16<sup>th</sup> century. The north choir stalls at St. Mary's, Abergavenny (1510s) are quite different having a framed construction with no seat rail.
15. Framed construction has been known since at least the Egyptian period and a wonderful example of a perfectly framed table from Niya, N. India can be seen at the British Museum dated 1<sup>st</sup>–4<sup>th</sup> centuries AD.
16. Charles Tracy, *English Gothic Choir stalls 1200–1400* Appendix II, shows that 40 lbs of glue was purchased in 1357 for the construction of the stalls for St. Stephen's Chapel, Westminster but little other evidence seems to be available. It will be interesting to see when the conservation of the Thornham Parva and Westminster retables is published whether any sign of glue was found.
17. I use this term deliberately because most of the objects I have discussed are small scale compared with for instance, roofs or spires where the term carpenter may be more appropriate in view of the architectural and structural aspects of that work.



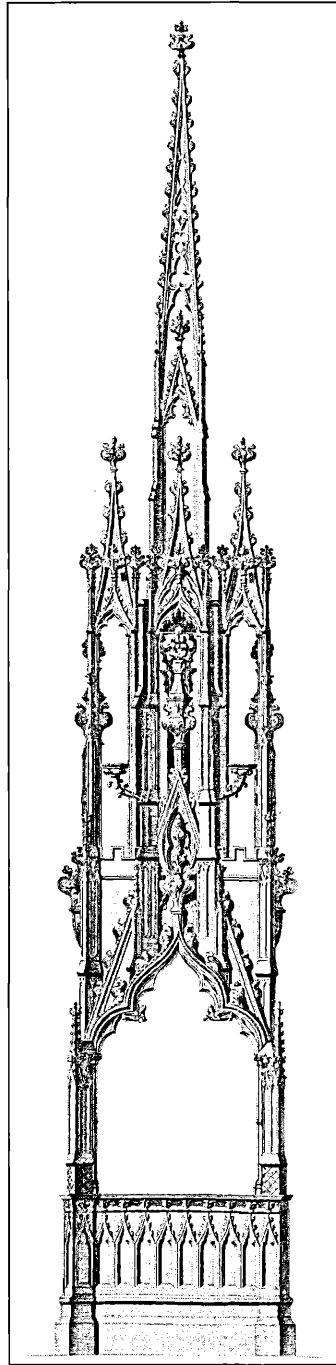
1. Bristol Cathedral, Night Stairs door  
Drawing by P. Ferguson



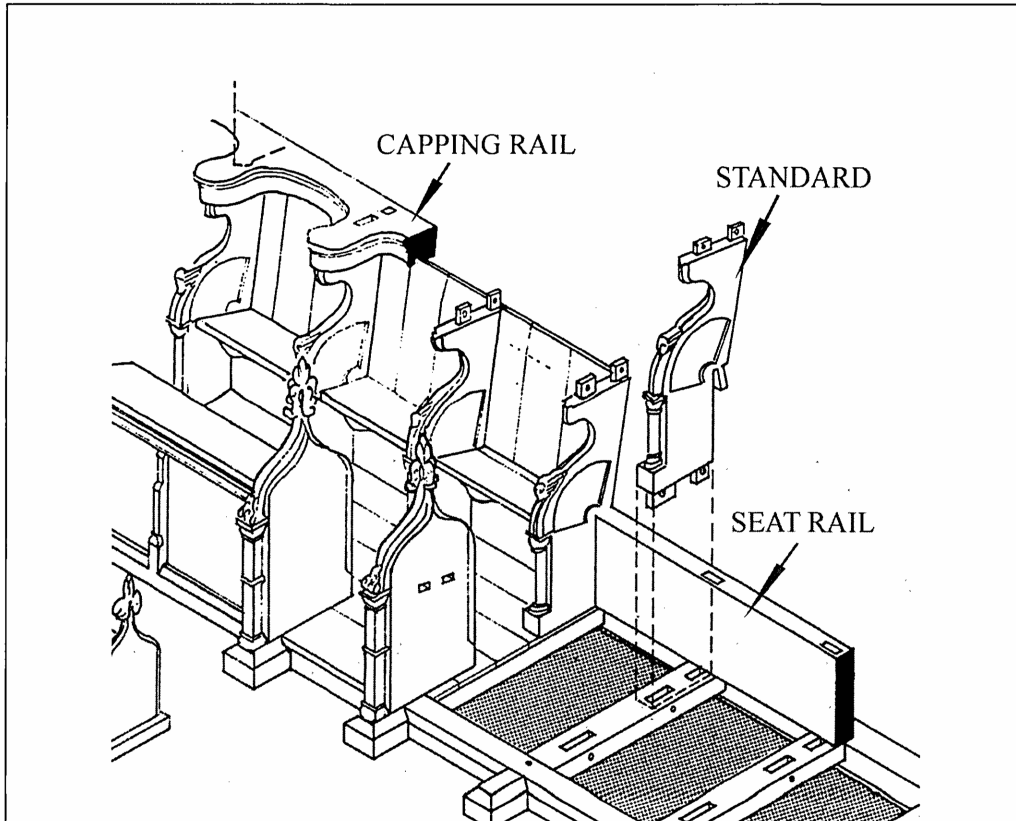
2. Peterborough Cathedral, Nave ceiling  
Drawing by P. Ferguson



3. Peterborough Cathedral, Nave ceiling



4. Exeter Cathedral, Bishop's Throne  
*Drawing by John Carter 1797*



5. Whitefrairs, Coventry, Choir stalls  
*Drawing by P. Woodfield*

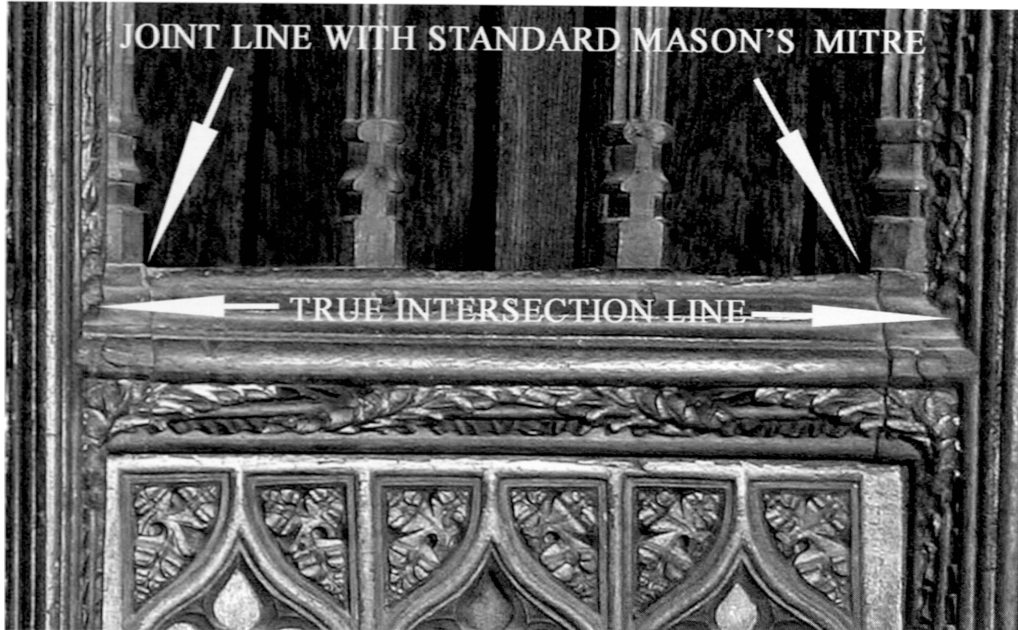


6. Exeter Cathedral, South Quire Entrance screen  
*Photo: author*

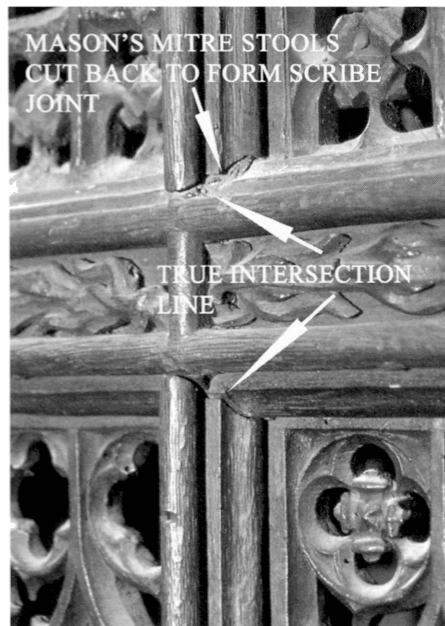




7. Windlass from St Mary and All Saints Church, Chesterfield  
*Chesterfield Museum*



8. St. Mary the Virgin, Holne, Devon, Roodscreen  
*Photo: author*



9. St. Michael, Mere, Wilts, Roodscreen  
*Photo: author*