II

ASPECTS OF THE ANGLO-NORMAN DESIGN OF DURHAM CATHEDRAL

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SINCE EMBARKING on my detailed structural survey of Durham Cathedral in 1976, I have become enthralled by all aspects of the building, and particularly by its design and construction. The Cathedral yields many clues as to how it was built, together with a number of fascinating indications of minor changes in design as the building work proceeded, frequently causing one to ponder what might have been the intentions of the original designer, or "First Master", and how they came to be modified by his successors. One is led, above all, to consider the parts of the original Master Design which have been lost during the course of later developments and alterations, and especially the terminations of the four main arms of the structure—the two Transepts, the Nave, and the Quire. For instance, precisely what was the design of the Eastern Apse, and what was the form of the original Quire Vault?

Bishop Walcher of Lorraine, the first Norman Bishop of Durham, was succeeded by William of Saint-Calais in 1080 and, after due consultation, he reformed the Convent of Durham by introducing monks of the Benedictine Order from Wearmouth and Jarrow to Durham in May 1083, displacing the previous lay clergy. Bishop William was himself a Benedictine, and had been Prior of Saint-Calais in Maine, and Abbot of Le Mans before his appointment to Durham. It is highly probable that he had been intending to replace the century-old Saxon cathedral in Durham with a new cathedral from the start of his episcopate, but this was delayed by him having to spend a period of exile back in France between 1088 and 1091. When he returned to Durham he rapidly set about the new work, for in 1092 demolition of the old Saxon cathedral commenced, and the new foundation stones were ceremoniously laid in July 1093. The Durham monk, Symeon, informs us that the work was well advanced by 1096 when the Bishop died, and that the work was continued by the Prior and monks until the next Bishop, Ranulf Flambard, was appointed in 1099.[1] The great Translation of the Shrine of St. Cuthbert into the completed Quire Apse was made in 1104, and the Nave had been finished by the time of Flambard's death in 1128, receiving its crowning vault by 1133, forty years after the foundation stone was laid.

Accepting that in many respects the design of Durham Cathedral represents the culminating achievement of the Norman Romanesque school in England, one is bound to speculate on the processes behind this achievement, and what brought

them about. Bishop William must have been the driving force, seeking to provide a worthy shrine for the most important Saint in Northern England and Southern Scotland. It is not likely, however, that Bishop William was the designer, but he would have been familiar with the great churches already under way in England—Canterbury, Lincoln, Winchester and Worcester and the abbeys of St. Augustin Canterbury, Bury St. Edmunds and St. Albans. He will have known the important churches in Normandy, and even possibly the great Rhineland churches such as Speyer and Mainz which were being built at this time, and all this knowledge must have had its influence on the Durham scheme.

Thus, it has long been recognized that the Double Bay system employed in Durham derives from the nave of Jumièges, which Durham's First Master Mason or designer must have known directly or indirectly. The severely logical character of his work suggests that he was Norman, but he does not seem to have come to Durham directly from Normandy, for the cushion capitals he used are usually found only in English work, and their presence shows that he is not transplanting French Norman design en bloc. Faced with evidence of such English elements, John Bilson, writing in 1922, would have liked to think that the master came from Winchester, where the monks had moved into their choir in the Spring of the year when Durham was started.[2]

At Durham, parts of the old Saxon Cathedral will have continued in use by the monks while work proceeded on the new Quire. The old minster almost certainly lay where the Cloister now stands,[3] though if it stood near the middle axis of the present Cloister, this would suppose that the 1080/1083 monastic buildings were set out from the first with the demolition of the old cathedral in mind.

The Quire

The Quire and Crossing were laid out on the grandest of scales, and the proportions of the arcades and triforium galleries are near-perfect, compared with the earlier Jumièges, which was never intended to receive a high-vault, even though both its aisles and triforium galleries had groin-vaults. Such unribbed groin-vaults were commonly used in the aisles and crypts of earlier churches both in Normandy and England, as at Boschervilles (with its aisle apses) and the transepts at Winchester.[4] In contrast, from its very inception and first setting out, Durham was planned to have the newly-introduced rib-vaults. Every vault rib in the Quire Aisles at Durham has its shaft rising from floor level, and this logic leads to the omission of the expected second shaft where the transept aisles abut the quire aisles, for there is only one rib to be carried at this point.[5] (fig. 1)

Within the Quire itself the Triforium stage is prepared with triple attached shafts above the cylindrical intermediate piers to receive the ribbed high-vault. The centre shafts of these triple groups must have been intended for transverse ribs, the two flanking shafts for the diagonal ribs, while the major shafted piers will have had triple transverse arches similar to those still across the Transepts. This Norman high-vault of the Quire may have been finished in time for the 1104 translation of St. Cuthbert's Shrine, at which date the apse vault was certainly finished, for William

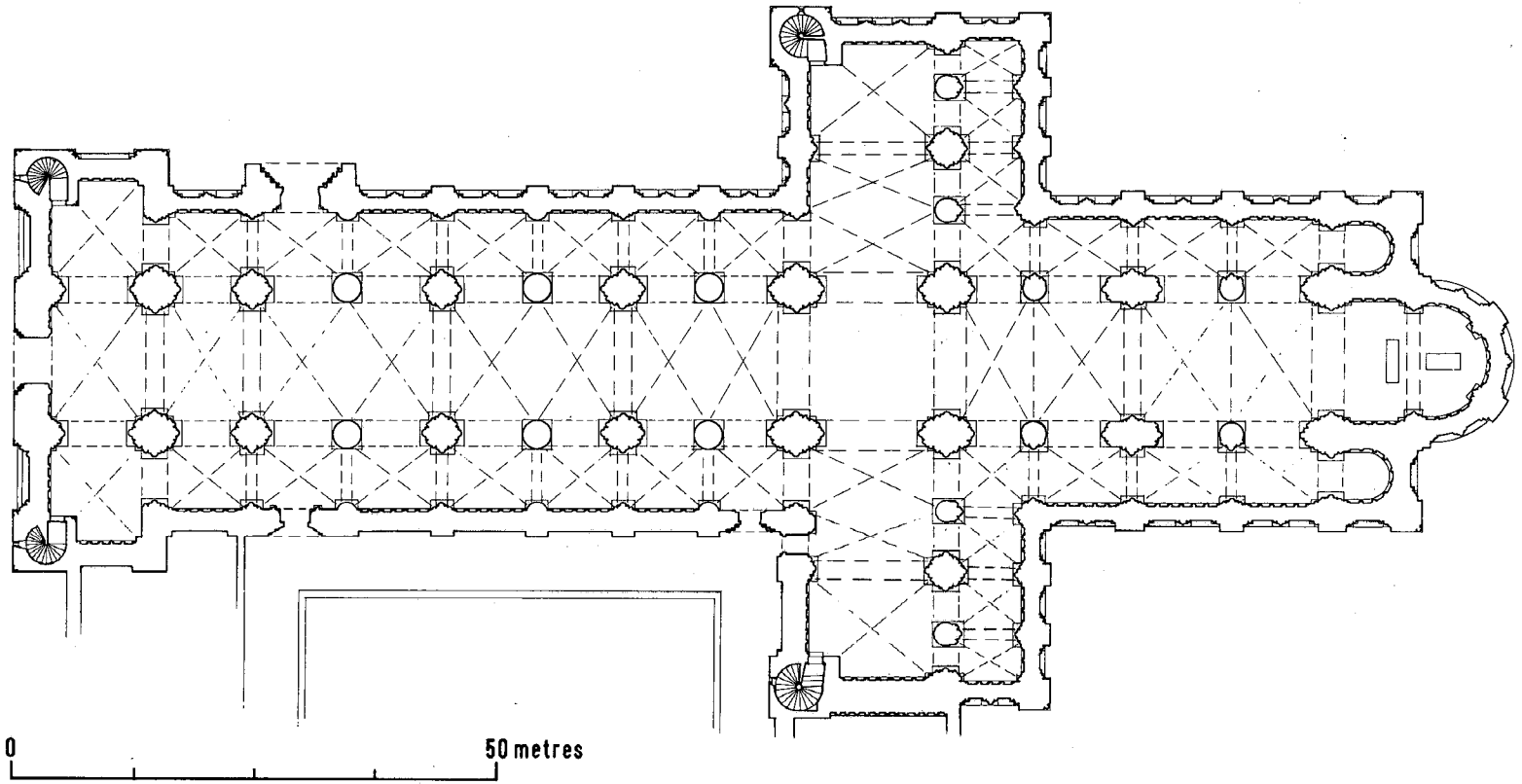


Fig. 1 Durham Cathedral: Plan as set out and built 1093 to 1128, (eastern apses based on Bilson).

of Malmesbury records the miraculous removal of the scaffold by the Saint on the eve of the ceremony.[6] The Apse and Norman high-vault of the Quire only survived until the 13th century when the present high-vault was inserted in association with the major works round the Feretory, and the construction of the Chapel of the Nine Altars. The lines of the lunettes of the Norman high-vault are still visible against the walls of the Quire clerestory, with the 13th century infill walling above.

A recent writer has speculated that the Sanctuary and Apse vaults were set at a comparatively low level, and that the first high-vault design was changed to a sexpartite vault[7], such as was inserted into the nave of St-Étienne, Caen, but I see no good reason to accept this, and prefer to think that the First Master's design was carried through to completion in the Quire, with every shaft in the Quire carrying a rib of the high-vault.

The Quire Triforium galleries of Durham have the highly unusual feature of semi-circular transverse arches to every bay. These arches clearly have their origins in the vaulted galleries of such churches as Jumièges, and the great pilgrimage churches of France, on the routes to Santiago de Compostela;—the semi-circular tympanum arches over the galleries of the latter church help to resist the thrust from the tunnel vaults of the nave. The ambulatory of Gloucester Abbey also has semi-circular transverse arches between groin-vaulted bays for similar constructional reasons. The Durham designer may have had thoughts of such gallery vaults, but is more likely to have been moving towards what his Gothic successors realized—that the counter-thrust of a flying buttress accurately placed near the springing of a high-vault was all that was required.

Here we come to two of the very curious features of Durham. The water-tables and creasings at Durham show that the aisle roofs over the galleries were once set about 18 inches below their present level. Evidently some form of gabled treatment was employed to fit the roofs over the transverse arches of the Quire Triforium, but so far a satisfactory conjectural arrangement has not been devised.[8] What these changed roof levels have done is to preserve a very unusual feature of the Quire Clerestory. Tucked under the later aisle roofs are the sills, nook-shafts and splayed outer jambs of the original clerestory windows, all *in situ*, and abandoned in the later adaptations and repairs. The rare feature is the long external splays which these windows had, different from any others in the Cathedral, and more like the two Late Saxon/Early Norman windows in the middle stage of the tower at Jarrow.[9] (fig. 2)

The Transepts

Moving now into the Transepts, the design details at triforium level begin to change from those of the Quire, and preparation is made for the type of vaulting eventually to be adopted in the Nave. On the eastern sides of the Transepts, double intermediate shafts replace the triple shafts of the Quire, and carry the diagonal ribs in pairs, omitting the minor tranverse ribs which the Quire must have had. A further minor change was to span the end bays of the transepts in single quadripartite vaults, so

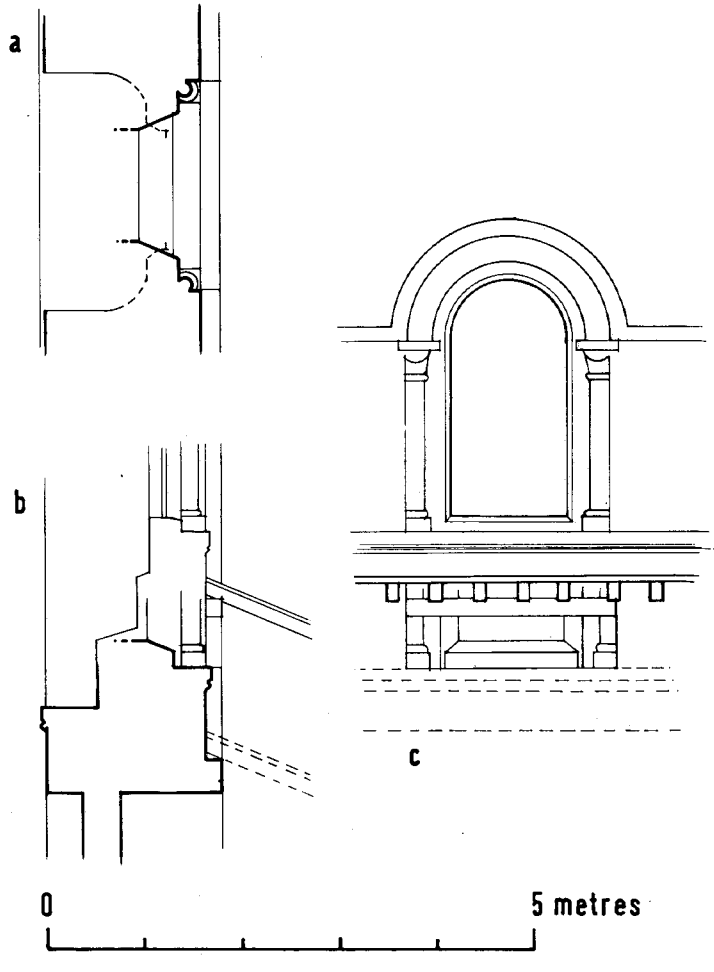


Fig. 2 Durham Cathedral: Hidden window sills and jambs of clerestory below Quire Aisle roofs. (a) plan, (b) section, (c) elevation with older sill level below present roof.

that there was no use for the second pairs of shafts in these bays, which consequently were allowed to continue up to the vaults.

But this was looking to the future, so far as the transept vaults were concerned, for there were major changes or interruptions in the design of the transept west walls and in the transept vaults. Most scholars tend to assume that this interruption and the plain treatment of the western sides of the Transepts coincides with the period between the death of Saint-Calais in 1096 and the accession of Flambard in 1099, when the convent was continuing the work without episcopal support. Whether this was the cause or the date of the hesitation has been argued elsewhere,[10] but in

the South Transept, where the upper parts must have been proceeding in advance of the North Transept, the idea of the high-vault was abandoned, and the clerestory walks were built with tall square piers. Quite clearly a timber ceiling was envisaged (and probably constructed), and it was only after the North Transept had been vaulted successfully that the vault was inserted into the South Transept, fascinating modifications being made in the passageways and their tunnel vaults to accommodate it.

The south gable of the South Transept has retained its major "aisle-level" window, with moulded arch and nook-shafts, protected by the Song School beyond, and saved when the large Perpendicular window obliterated the Norman design of the intermediate parts of the gable. If we take the design in the adjacent bay of the west wall of the transept, we can reconstruct in conjectural form just what the original form of the intermediate stages of the transept termination would have been. The triforium level wall-walk remains in its essentials, and one can still reach the ends of the high-level clerestory wall-passages with their tiny groin-vaults. From these one can deduce that the clerestory arcade, with its tall square piers, would have continued across the gable. At triforium level the design of the gallery is rather more hypothetical (fig. 3a), except that a direct comparison may be made with the interior of the west gable of Holy Island Priory, where the wall-passage has a little arcade carried on cylindrical monoliths. Here at Holy Island incidentally, we have a miniature watching chamber or tribune reminiscent of the great western tribune at Jumièges.

The upper parts of the North Transept at Durham were built later than those of the South Transept and received a different clerestory with miniature shafted arcadings similar to the transepts at Winchester, and La Trinité, Caen, and subsequently adopted throughout the nave clerestory at Durham (fig. 3b). The north gable of the North Transept lost its Norman windows when the large 14th century window was inserted, but one can easily imagine the sort of design the north gable might have adopted. Again there are the little groin-vault returns in the ends of the clerestory walks, whilst another fascinating feature is the flight of steps beginning to climb up from the clerestory walk over the eastern crossing arch, presumably to the (intended) Norman crossing tower. Externally the elevational treatment of the Norman windows of the North Transept gable is easy to reconstruct from the surviving evidence on the west face of the transept, and by comparison with the South Transept. (fig. 4)

The Nave

The two eastern bays of the Nave Aisles are of the same build as the Transepts, the Nave Aisles being more imposing than the Quire Aisles, for the great cylindrical intermediate piers had been increased in diameter to carry the vault ribs, thus avoiding the need for attached shafts on the sides facing into the aisles. The double bay system was continued in the Nave, and it is interesting that it is not so much the major multi-shafted piers punctuating the double-day divisions which give the Nave its character, but the immense cylindrical secondary piers with their bold

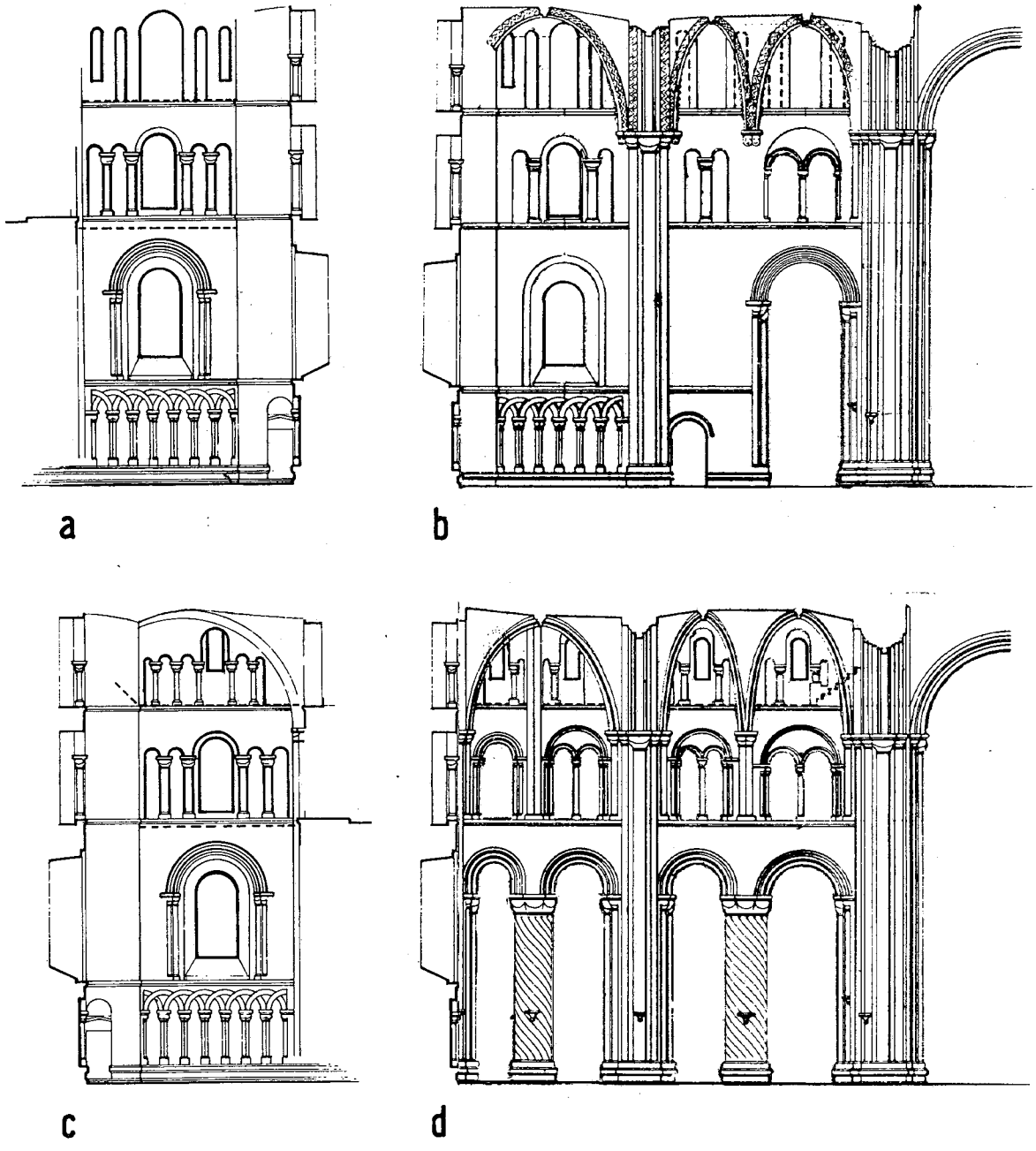


Fig. 3 Durham Cathedral: Transept terminations (a) South end of S. Transept (upper parts conjectural), (b) West wall of S. Transept (existing), (c) North end of N. Transept (conjectural), (d) East wall of N. Transept (existing).

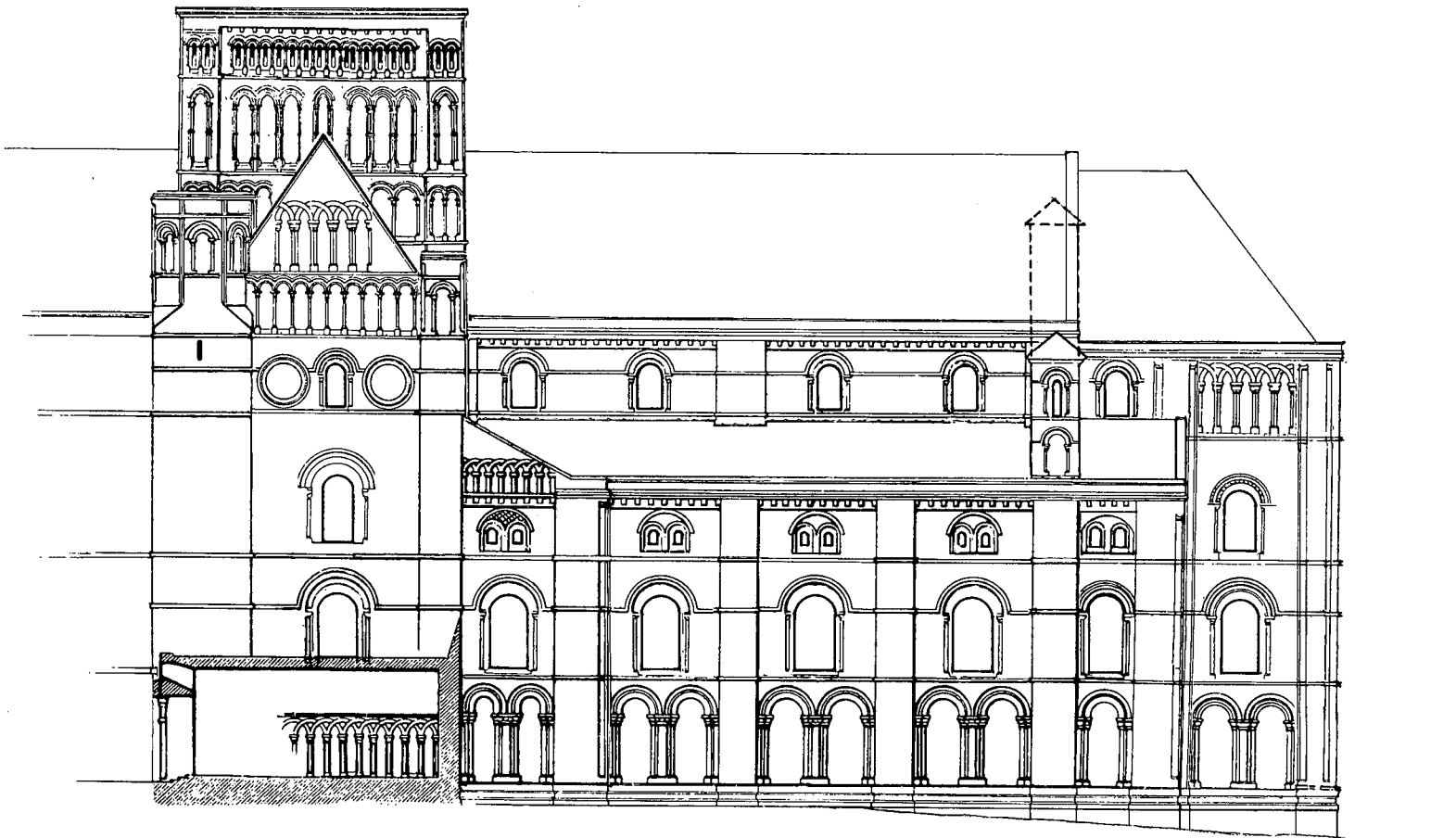


Fig. 4 Durham Cathedral: South Side of Quire (apse conjectural) and South Gable of S. Transept.

patterning. The first two arches of the Nave Arcades on each side are moulded like those of the Quire and Transept Arcades, and it is not until one comes to the more western arches, built during Flambard's long episcopate, that the decorative zig-zag or chevron is used. The division between the first main building programme and the second can be seen in these eastern nave bays, with the triforium having one plain arch and one chevroned, and both bays of the clerestory having the chevron decoration. (The North Transept is entirely without chevrons, while in the South Transept only the later vault has them.)

The Nave Triforium has quarter or quadrant arches across its gallery, now with two additional heavy rings of stone inserted during the 1915 repairs, but originally with single orders lightly abutting the thrust from the high-vault.[11] The origins of the arches must be the half tunnel vaults such as those of St-Étienne in Caen, and of which an English example is the choir gallery of Gloucester Abbey. (fig. 6b)

A glimpse of contemporary building methods is provided by a number of thin oak shuttering boards still to be found in position within the containing arches behind the triforium gallery openings, left there by the original builders. Here again the earlier roof lines of the aisles can be seen clearly, while at least part of the former nave aisle gable arrangement can still be discerned—the awkward valley gutters which the gablets produced had evidently been eliminated as early as the 13th century.[12]

Durham's innovative role continued with the introduction of pointed transverse arches to the double bays of its nave vault (the transepts still have semi-circular transverse arches). The remarkable use of pointed arches for purely structural purposes at Durham, prior to 1133, caused complete disbelief amongst French architectural historians at the end of the last century, and we owe much to John Bilson and his lifetime's work for so clearly establishing the chronology of the Durham vaults.[13] But a significant date which he may have overlooked was 1128, when the third great abbey church of Cluny was dedicated in the presence of the Pope. Cluny III had pointed arches, and a pointed tunnel vault, and its fame that year must have spread across Europe—the year when the Durham nave was said to be complete and ready to receive the nave high-vault.

The West Front

The west end of the Cathedral presents another field for study. The 'Grand Design' of the West Front with its flanking towers would have been conceived by the First Master, and must have been built up to its central gable level by the time of Flambard's death in 1128. We know that its western towers had lead covered timber spires until 1658, and one would like to think it was timber for these spires that a witness in a 1225 lawsuit saw being brought from beyond the River Derwent for use on the western towers.[14] This was in Bishop Philip of Poitou's time between 1195 and 1208. Those dates would correspond with what can still be observed of the constructional techniques and Transitional design of the upper parts of the towers.

There are no surviving English examples which could provide analogies enabling

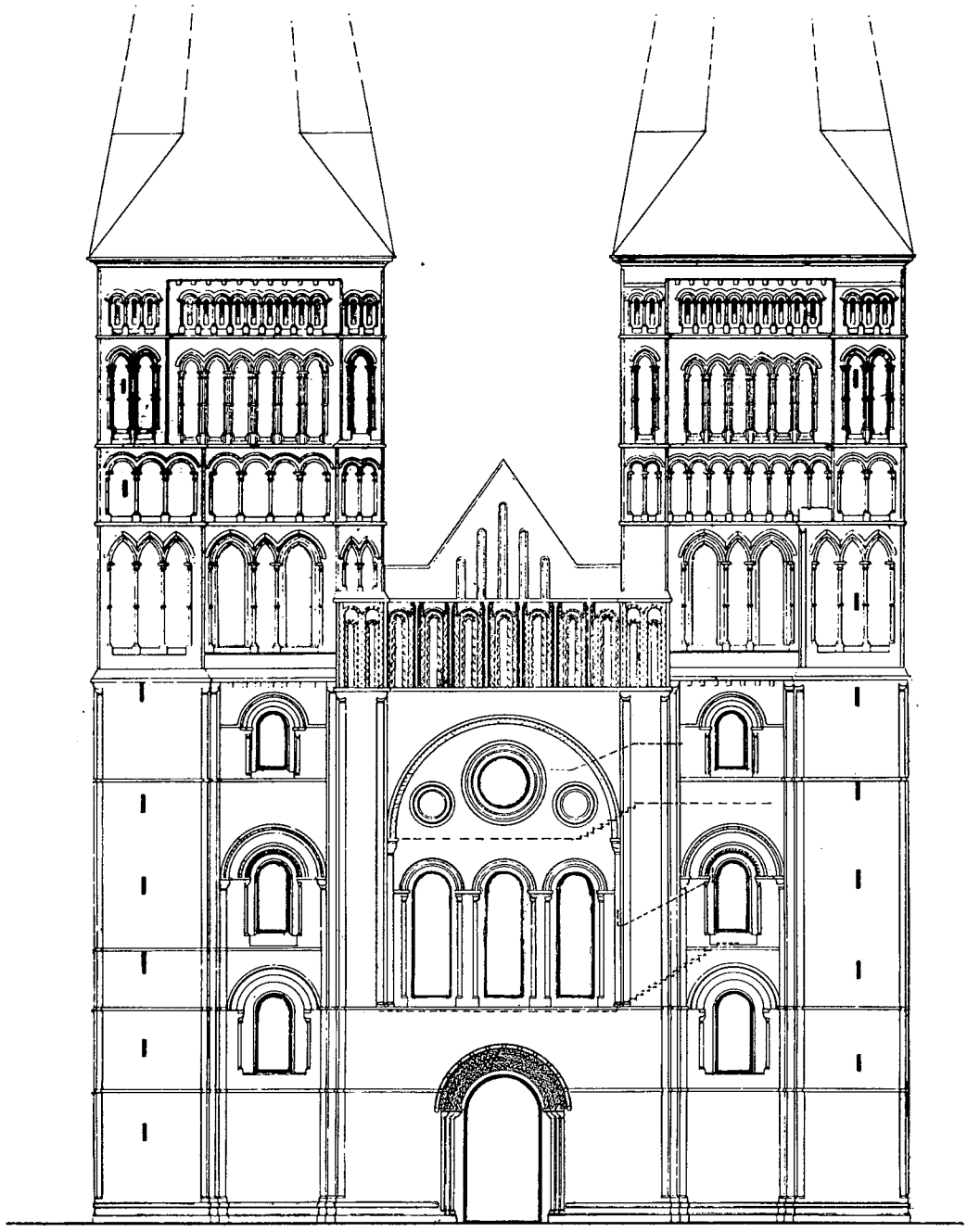


Fig. 5 Durham Cathedral: West Front—"The Grand Design" with three windows in the central space (conjectural). Upper Stages of towers completed *c.* 1210.

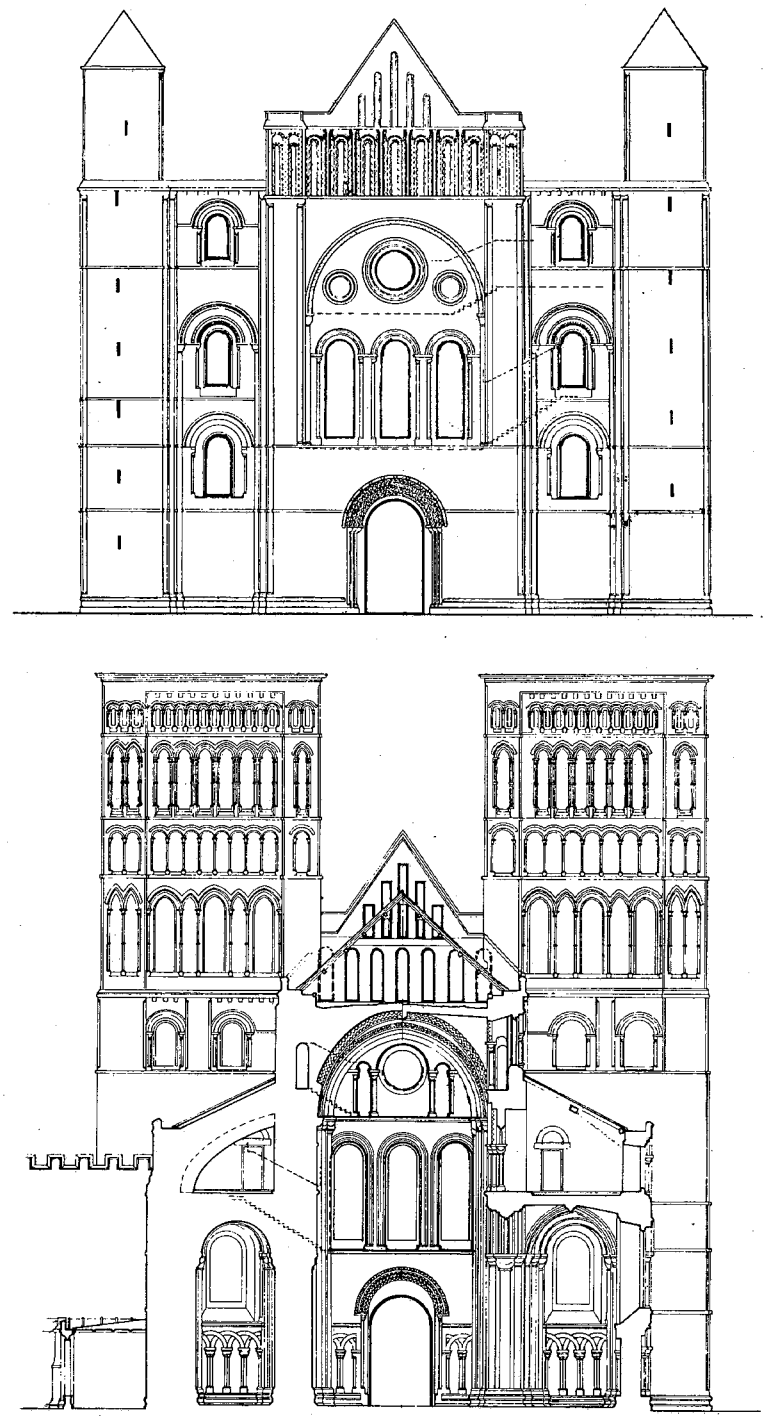


Fig. 6 Durham Cathedral: (a) West Front before the construction of the Galilee Chapel *c.* 1175 and completion of the W. Towers (cf. Holy Island Priory), (b) West termination of Nave internally (conjectural).

us to reconstruct the design of the Durham West Front, for all have been drastically altered. We must therefore search abroad for examples. Caen in Normandy gives us the austere abbey churches of the Conqueror's St.-Étienne and Queen Matilda's La Trinité, and there is the stately St-Georges at Saint-Martin de Boscherville near Rouen. Each of these is helpful in illustrating the arrangements of windows in Norman-Romanesque west fronts, and thus in suggesting something of Durham's appearance. More important, however, is the evidence still surviving within the present fabric, much of it hitherto un-noticed. (fig. 5)

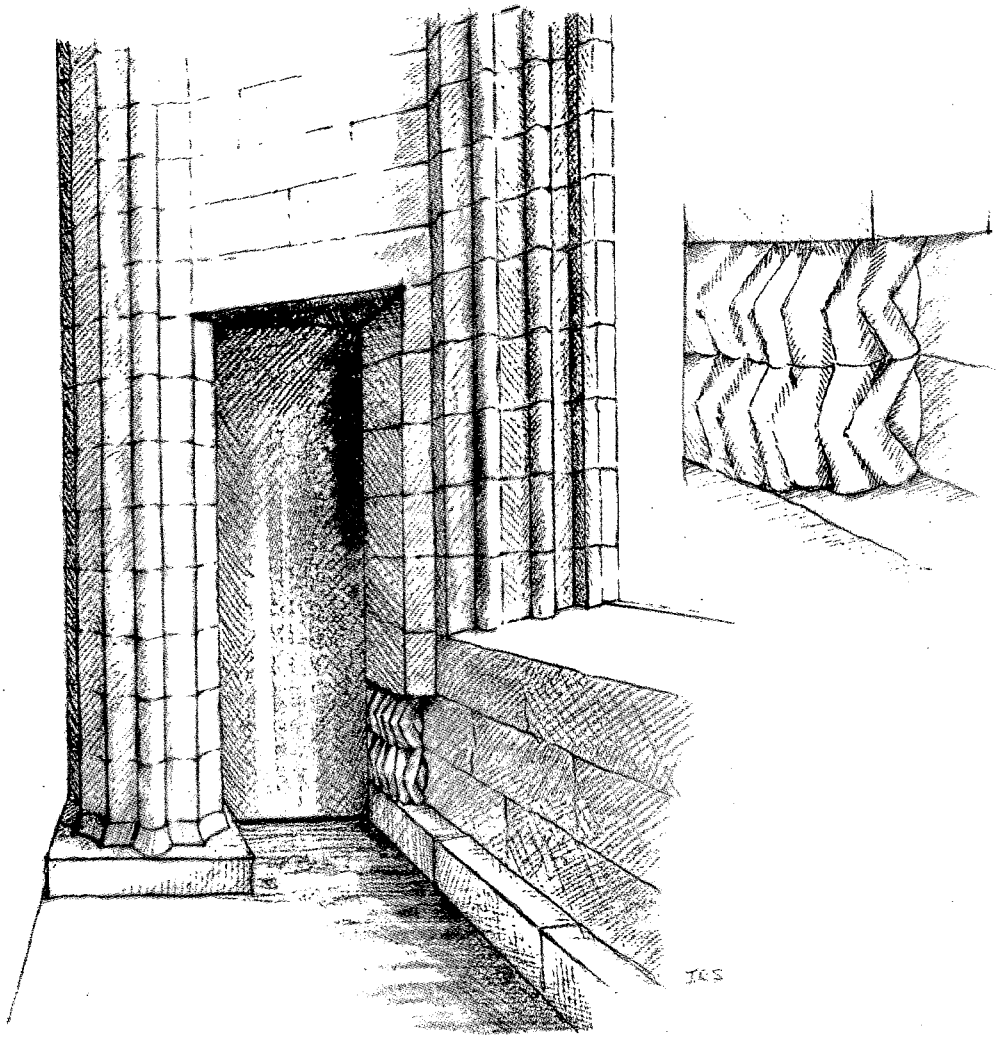
The present great west window was inserted in the 14th century, and obliterated its Romanesque predecessors. The main west door has been obscured by the construction of Bishop Hugh of Le Puiset's Galilee Chapel (*c.* 1175) and the insertion of Cardinal Thomas Langley's tomb (*c.* 1435). But just what preceded the present window, and filled the very large Norman containing arch in the centre of the West Front, is both intriguing and elusive. The whole West Front is a subtle composition of round-headed arches and attached shafts, all carefully graded in size and scale. The gable upstand itself has an elaborate display of chevron-work, and the North West Tower has one (redressed) window surround with the chevroned margin brought down the jambs—one of the few uses of this form of decoration on the Cathedral.[15]

At the start of my detailed survey of Durham Cathedral, I had assumed that the inner reveals of the west window belonged to its 14th century rere-arch. More recently, I have come to realize that the moulded inner jambs course with, and belong to, the Romanesque 12th century work, at least as far up as the capitals at triforium level. The moulded bases on the main west window platform conform with this hypothesis in their details and jointing, belonging to the 12th century west end work, and not to the 14th century, while if one takes the inner jamb plan and compares it with the inner moulds of the triforium arches, they are practically the same. Furthermore, just above the window platform, and tucked away at the southern corner of the west window, are two chevron-worked jamb-stones apparently still *in situ*, and almost certainly part of the Norman west window arrangement. (plate II)

The original Norman steps and passages down to this west gallery or wall-walk still survive intact, the upper parts of the 14th century window reveals now filled with reused Norman walling. At clerestory level the Norman passageways lead off the main staircase of the South West Tower and start down some steps for what will have been a second wall passage across the west gable just below clerestory level, probably at the main nave capital level.

All these clues combine to suggest a tripartite arrangement of chevron-enriched windows in the west gable at the principal level above the west door, with the walkways at two levels. How the tympanum of the great containing arch might have been filled is more conjectural, though I do not think it would have been triple stepped windows—I would suggest roundels as a possibility, for we know they existed on the North Transept. (fig. 6a)

Internally, these triple windows would allow quite a noble arrangement, with



Durham Cathedral: Gallery below west window – chevroned jambstones in situ, and moulded responds and bases of the former inner arcading.

chevron decoration on the inner faces of the outer window surrounds, and arcades or colonnades to the walkways at two levels. (fig. 6b) A somewhat similar arrangement survives at St-Georges, Boscherville. Up into the steeply pointed west gable itself, we still have surviving a remarkable hidden "Westwork" of arcading and vaulting stabilizing the gable, and all part of the original work. (It is a feature in which I delight, and too few people know of its existence.)

Above the gable level the two west towers have the squarish stones which we would expect of 12th century work, rather than the longer stones usually employed in the 13th century in the Cathedral—this ties up with the 1195—1208 date suggested. The upper stage of the southern tower is octagonal internally, carried on bold squinch arches, and was clearly prepared for a great stone spire, but the north tower was not, hence the subsequent timber and lead-clad spires.

The Eastern Apse

So at last we turn back to the east end of the Cathedral, to consider what we know about the Romanesque apse, which was taken down in the 13th century when the Chapel of the Nine Altars was built. From 1235 on there are references to the stone vaults above the Shrine of St. Cuthbert being full of fissures and cracks and threatening to disintegrate..[16] The subsequent construction of the new east end started in 1242, the new high altar was dedicated in 1253, and work continued on the chapel until 1279.

Of the Romanesque apse we know comparatively little, and until the end of the 19th century it was thought that there might have been a great ambulatory, as with most English greater churches. However, excavations in 1895 under the direction of Canon Greenwell and Charles Hodgson Fowler, revealed the 11th century apse foundations and plinths, parts of which can still be inspected under the Feretory, and so determined that the central apse had been without an ambulatory, but clasped by Aisle apses which had been square externally.[17] Internally the great apse was found to have continued the interlacing wall arcading of the rest of the church round its base, and with two sets of shaft bases projecting inwards, clearly indicating that the apse itself was divided into three major bays. The 1895 excavations could not be taken under the Neville Screen and Sanctuary pavement in order to determine the plan further west.

At the present triforium level there are what might be some important clues to the design of the upper parts of this Romanesque Apse. The Quire Triforium arches are tall and narrow near the Crossing, and step down to being lower and wider towards the east. Further, the shafted jambs to these Quire Triforium openings all point east and west, except for the surviving easternmost shafts which point north and south into the Quire, just as the later Nave Triforium jamb shafts point into the Nave. There must be some significance in this modification of the eastern responds, and it is logical to suggest that the Quire Triforium must be stepping down, so that the design could be accommodated to fit under the Apse semi-dome.

The roofs of most Romanesque apses are lower than the main body of the church—Pisa and Mainz Cathedrals, and Chapaise in Burgundy, are widely scattered examples—and it could be such as these which caused John James, in his recent paper, to assume that the Durham apse and sanctuary bay would be so much lower than the high vault.[18] I believe we have better models in such churches as St.-Nicholas, Caen, where the apse eaves are only slightly below the sanctuary eaves. (fig. 4) The Choir of La Trinité Caen with its groin vault shows how the junction with the apse could be very subtle, and producing only the slightest step-down to

the apse semi-dome. The great pilgrimage church of Santiago, started on French models in 1075, shows an equally subtle merger of choir vault and apse. Peterborough Abbey is our nearest example of an apse without ambulatory, started later than Durham, and never intended for a vault, though evidently there was to have been a transverse arch on the chord of the apse. Externally Peterborough does show a slight step down in the parapet, now marked by Pearson's pinnacles. Bilson helpfully gives several comparable apse plans[19], and it is interesting that Peterborough and the Normandy examples are usually sub-divided into five bays, compared with the three bays of Durham.

The Durham Apse was separated from the Quire by a Sanctuary bay, for the Shrine of St. Cuthbert had to be accommodated as well as the High Altar. The plan of the Cathedral provided for a structural Quire of two double bays (much longer than most abbeys and cathedrals at this date, where the monks' choir was more usually under the crossing), and then the rectangular Sanctuary bay flanked by the square-ended aisle apses, before the semi-circular Apse. The Quire vault would have had a transverse arch at the entrance to the Sanctuary, and probably a second arch at the Apse. However the Apse was narrower than the Quire, and it is tantalizing that excavations were not possible in the Quire to determine the width of the Norman Sanctuary, and help solve the mystery of how the transition from the Quire to Apse was achieved. Bilson proposed a possible plan with the Sanctuary given the same width as the Quire, and with extra orders of shafts to the Sanctuary Arch corresponding to those of the Crossing arches.[20] (fig. 7) But there are at least two other possibilities: (a) an ordinary transverse arch at the entrance to the sanctuary with the main arch at the chord of the apse, or (b) the main arch at the entrance to the sanctuary, with the sanctuary as narrow as the apse and all the attached piers within this area of the same projection. I am perhaps more attracted to this latter plan because it would tend to stress a five-division system for the Durham apse similar to Peterborough—the alternatives stressing a three bay system. How any of these might have worked in elevation or section would be entirely a matter of conjecture, but it is perfectly feasible to develop a scheme for the apse treatment using surviving design elements from the rest of the Norman Cathedral. The two sets of spiral stairs which start upwards from the triforium galleries above the sites of the Quire Aisle Apses indicate that turrets must have been intended here, but there is no positive evidence to suggest that there were to have been twin towers flanking the Apse, such as occur in the Rhineland, and which have been propounded at Hereford.[21] (fig. 8)

I should end with what from a Durham standpoint is the best surviving Normandy example of an apse, the former Abbey Church of Saint-Georges at Boscherville. The apse has pleasing proportions and distribution of fenestration externally, and steps down neatly from the chancel roof. Inside all is light and grace, with the attached triple shafts of the ground floor stage carrying round the arcading corresponding to the choir arcade. Above, the triforium stage has free-standing columns carrying the ribs of the semi-dome, while the early groin vault of the chancel shows that this form of vault can function over rectangular bays. Again the

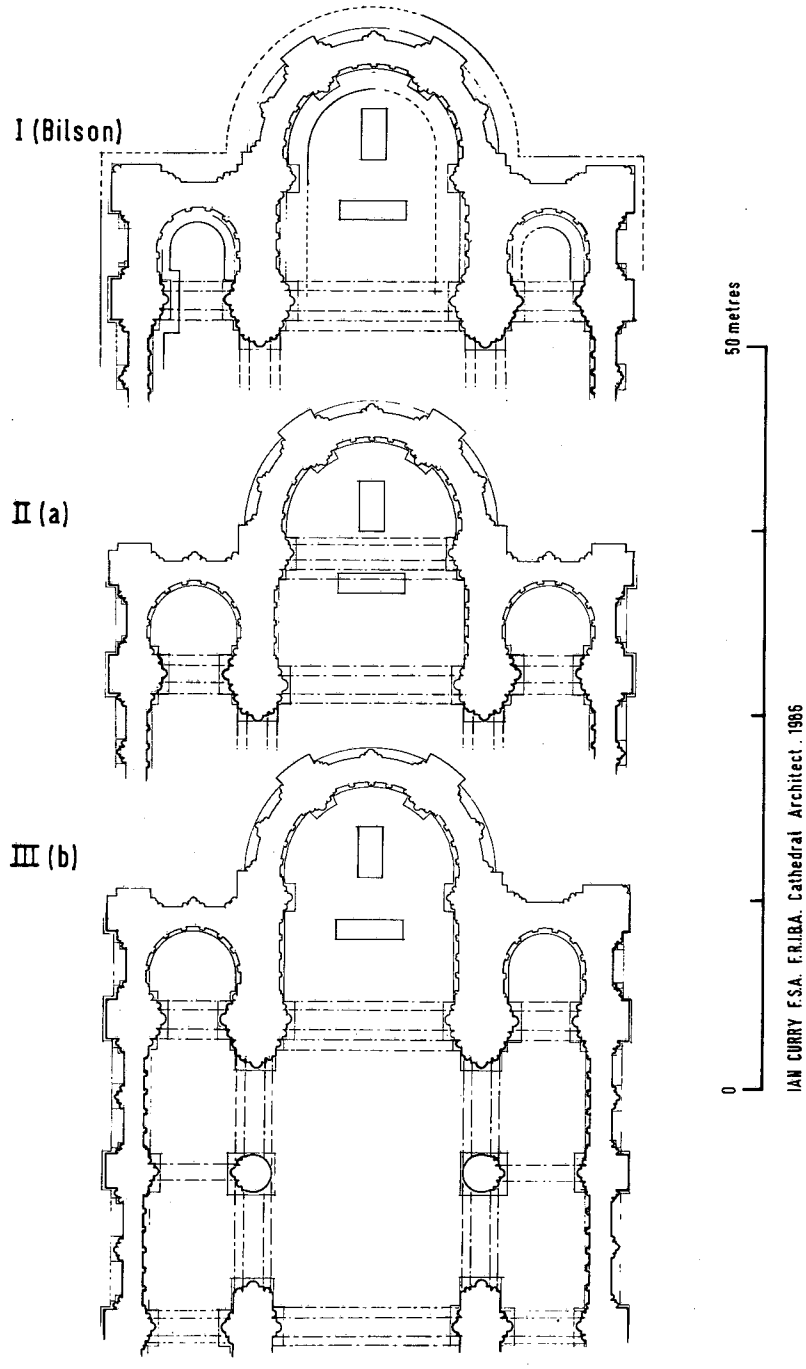


Fig. 7 Durham Cathedral: Plans of Eastern Apses—I Based on Bilson (major arch at entrance to wide sanctuary bay). II(a) Sanctuary bay as continuation of Quire and major arch on chord of Apse. III(b) Major arch at entrance to combined Sanctuary and Feretory of five divisions.

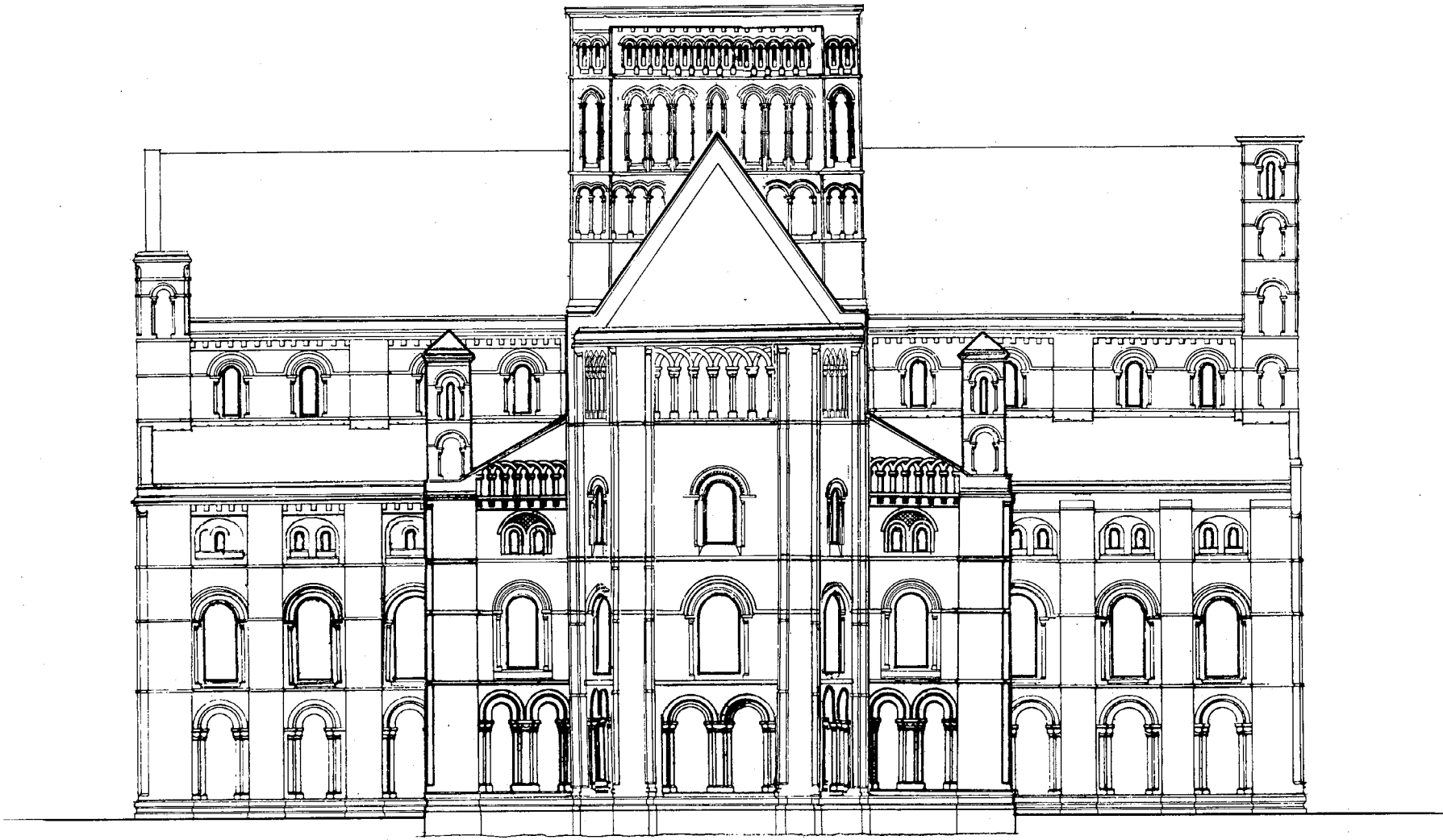


Fig. 8 Durham Cathedral: East Elevation with Apse (conjectural) and Transepts (existing).

junction of chancel vault and apse is handled with subtlety, creating an extremely successful ensemble. If Durham had had anything so fine one would have been well satisfied.

NOTES

[1] Martin G. Snape, on Symeon: "Documentary Evidence for the Building of Durham Cathedral and its Monastic Buildings", p. 21, *British Archaeological Conference Transactions for 1977* —Mediaeval Art & Architecture of Durham Cathedral 1980.

[2] John Bilson: "Durham Cathedral—The Chronology of its Vaults." pp. 101–60. *The Archaeological Journal*, 2nd Series Vol. XXIX 1922.

[3] Eric Cambridge: The Anglo-Saxon Cathedral at Durham—"A New Approach to Church Archaeology" Briggs/Cambridge/Bailey, pp. 91–7, *Archaeologia Aeliana* 5th Series Vol. XI 1983.

[4] In the more prestigious Romanesque designs the groin-vaults were articulated with transverse arches between the bays. The Crypt Chapel of Durham Castle is an example.

[5] J. Bilson: as note 2, p. 120 and plate III,

[6] William of Malmesbury—N.E.S.A. Hamilton, Rolls Series LII (1870) 175–6.

[7] John James: "The Rib Vaults of Durham Cathedral", pp. 135–45, Gesta International Centre for Medieval Art Vol. XXII/2 1983, Syracuse University Press.

[8] Ibid. J. James does attempt one such arrangement for the quire aisles. Rather better evidence exists for the gablets over the nave aisles (see note 12).

[9] The presence of these sills below the quire aisle roofs in the bays immediately adjacent the crossing had been noted by R. A. Cordingly and D. McIntyre.

[10] J. Bilson, p. 159; M. G. Snape, p. 22.

[11] This strengthening of the triforium arches was carried out under the direction of Mervyn Macartney in 1915, much to the disgust of the Society of Antiquaries of London—*Proceedings of Soc. Antiquaries Lond.* 2nd Series Vol. XXVII 1915–16, pp. 44–56.

[12] R. W. Billings shows the Nave South Aisle gablets as they still could be seen in 1843, Plate VIII "Architectural Illustrations and Description of the Cathedral Church at Durham" 1843. The remains of those to the Nave North Aisle can still be seen externally.

[13] J. Bilson: see note 2.

[14] M. G. Snape, *BAA Transactions 1977/80*, p. 23.

[15] This treatment also occurred on the Slype doorway, and must be of similar date. It had been employed also in the refacing of the south side of the Nave by Pickering in 1849. See Ian Curry, Durham Cathedral Lecture 1985 "Durham Cathedral and its Architects", p. 22, Dean & Chapter of Durham 1985.

[16] M. G. Snape, *BAA Transactions 1977/80*, pp. 23–5.

[17] John Bilson "Recent Discoveries at the East End of the Cathedral Church of Durham", p. 1–18, *Archaeological Journal* 2nd Series Vol. III, 1896.

[18] J. James—see note 7 above.

[19] J. Bilson, as note 17. Plate III facing p. 17.

[20] Ibid, as note 17. Plate II, facing p. 9.

[21] Evidence proposed at Hereford by Sir Alfred Clapham: see N. Pevsner, *Buildings of England—Herefordshire* 1963 p. 146; also *Cathedrals of England*, N. Pevsner & Priscilla Metcalf 1985.