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Author(s): Harry H. Hilberry

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THE CATHEDRAL AT CHARTRES IN 1030

By HARRY H. HILBERRY

SIXTY-FIVE years ago M. René Merlet published a reconstruction of the cathedral of Chartres as he believed it to have stood at the end of the third decade of the eleventh century (Fig. 1b).¹ Owing to the importance of the building and paucity of evidence regarding comparable structures of the same period the Merlet reconstruction has been useful, and it has been repeatedly cited and reproduced, but the passage of time has brought increased knowledge about mediaeval art in general and about this building as well. Some aspects of Merlet's reconstruction are clearly wrong and need correction; the old data can now be elaborated to give a more complete and accurate idea of the building. It is the purpose of this report to present an examination of the evidence regarding this building and new reconstruction studies based on that evidence.²

There are two prime sources for information about the great church built under Bishop Fulbert's orders between 1020 and 1028. Very considerable remains of the church itself exist incorporated in the substructures of the Gothic cathedral. There is also a picture of the building, dateable between 1028 and 1030, which provides surprising and interesting suggestions about the superstructure³ (Fig. 4). It was the discovery of the picture which inspired Merlet's reconstruction, and difficulties with the interpretation of the picture are responsible for some of the questionable details of the result.

Merlet assumed that André de Mici, the miniaturist, had painted a view of the upper parts of the new cathedral but had imagined the lower aisle walls away to permit us to observe the bishop talking to the people of Chartres inside the building. For the exterior Merlet denies any possible doubt that the artist was attempting to record exactly what he saw and even identifies the spot from which the view was taken, a tower some 550 feet south of the building and about 160 feet high. Editing the manuscript by eliminating the text above and the interior scene below and supplying a few lost details of apse and chapels, Merlet arrives at a view of the building marred only by the artist's "ignorance profonde des lois de la perspective . . ."⁴ (Fig. 1a). It is this edited version of the eleventh-century drawing which is usually reproduced with the reconstruction view which repre-

¹ René Merlet and l'Abbé Clerval, *Un manuscrit chartrain du XI^e siècle* (Chartres: Imprimerie Garnier, 1893).

² I first met the Merlet reconstruction in the classes of Professor Kenneth John Conant at Harvard University. Professor Conant has since given invaluable aid and encouragement in this study. Without him it would not have been undertaken, let alone brought to completion. Much appreciation is also due to J. Lunn Mowers and Estelle S. Hilberry, the former for much photographic help during the development of the study as well as with the final plates, and the latter for model building and much assistance with the text and notes.

³ Merlet and Clerval, *op. cit.* (hereafter referred to as Merlet-Clerval). There is a photographic reproduction of the original, a colored version (redrawn), and an edited version showing only the upper part of the original picture.

⁴ Merlet-Clerval, p. 56, and p. 72.

sents Merlet's essay at correcting the miniaturist's technical inadequacies.⁵

That Merlet's concept of the eleventh-century artist's intentions and procedure was anachronistic should not demand extensive demonstration. The combination of exterior and interior scenes and the hierarchical scale of the figures are perfectly normal for the period and there would have been no occasion for us to be surprised if there had been, in addition, a view of the west door, a section of the nave from the south, and details of the east end. In assuming that the picture gives useful information about Fulbert's church, Merlet appears to have been right, but in assuming it to be a fumbling attempt at representation in a post-mediaeval sense he makes misunderstanding of the picture inevitable.

On the basis of his interpretation of the miniature Merlet reaches three conclusions about the building:

1. Both towers shown were detached, one near the southwest corner of the façade, the other beside the church on the north near the apse⁶ (Fig. 5d).

2. The towers were not built as part of this church but belong to the one burned in 1020 and were probably built in the ninth century.⁷

3. The church had no transepts in 1030.⁸

It appears that only the statement about transepts will hold up, and even in that case the structures which Merlet assumed to be transepts added to the building after 1030 were probably already in existence before that date. The assumptions about the towers are interdependent. Merlet noted the similarity between these towers and those of the Carolingian monastery church of St Riquier (Centula),⁹ and, having no evidence of the persistence of such building traditions into the eleventh century, he was prepared to consider the possibility that the Chartres towers belonged to the earlier period. Of course, to survive the fire which destroyed the predecessor of Fulbert's church the towers would have had to be isolated from it; so, if the towers were of Carolingian date, they must have been detached towers, and if they were (as Merlet sees them) detached, then there is no problem with respect to their existence in the eleventh century.

One reason why the Merlet reconstruction has survived so long is the fact that from the chosen angle of view the towers compose with the mass of the church, and even in the perspective view give something of the effect of axial towers, one at the west and the other over the chevet (Fig. 1b). Had Merlet also shown a view from the west or northwest, the result might have been less persuasive. From such angles the composition of the eleventh-century church as he reconstructs it seems very strange (Fig. 5b). But if the towers are then seen with the mass of the still earlier church, it becomes obvious that the assumption concerning their survival

⁵ George H. Forsyth, Jr, *The Church of St. Martin at Angers* (Princeton: Princeton University Press, 1953), fig. 150 reproduces these two. Otto von Simson, *The Gothic Cathedral* (New York: Pantheon Books, for the Bollingen Foundation, 1956), pl. 30 reproduces the edited version of the original miniature as the Merlet reconstruction.

⁶ Merlet-Clerval, pp. 56, 66, and 74 to 77.

⁷ *Ibid.*, pp. 66, 67, and 74 to 77.

⁸ *Ibid.*, pp. 56, 60, 63, 64, 66, and 81.

⁹ The Carolingian complex at Centula is known through an early seventeenth-century engraving based on an eleventh-century miniature which is now destroyed.

is untenable¹⁰ (Figs. 5a and 5c). Neither in location nor in scale do they make any sense. Wherever they were they scale to the larger building and so presumably belong to the rebuilding after 1020. Recognition of this fact seriously weakens the argument for locating the towers as Merlet has indicated, since there is no longer a need to explain their survival of the fire.

As to the location of the towers, the miniaturist has been quite specific about one of them and for the other leaves room for a possibility which Merlet rejects (Fig. 4). It may be noted that the scene in the interior of the church is not divorced from the exterior above. Lines connect the two so that it is obvious that the bishop is shown advancing into the nave from two clerics who are in the chevet. The men and boys attend in the nave while the women watch from a compartment clearly indicated as the lower story of the west tower. Far from indicating a detached tower, the miniature emphatically connects the tower and church, indeed shows *an axial western tower and porch*. At the chevet the artist emphasizes the way the forms build up until the sanctuary roof reaches the height of the nave ridge and is crowned by a tower.

A great deal of what is now known about the surviving early structures at Chartres is due to studies and excavations carried out since Merlet's reconstruction was first published. Merlet himself contributed materially to the new knowledge but it should be pointed out that as late as 1926 he saw no reason to revise his earlier conclusions.¹¹ Most important of the new discoveries for the understanding of Fulbert's cathedral were the recovery of the *puits des Saints-Forts*¹² and the exploration of the eleventh-century west façade. The latter exploration uncovered foundations on the axis of the church at the west which were interpreted at the time as foundations of a porch added to the church about 1050.¹³

Merlet accepted as eleventh-century work the lateral structures flanking the east end of the crypt (Fig. 6a) but he assumed them to be the substructures of a transept and assigned them to a date just after a fire in 1030.¹⁴ He argues that the miniature denies a transept; therefore, while early, these structures must be later than the date of the picture. He does, however, identify part of the masonry on

¹⁰ Parts of the church destroyed in 1020 are still in existence. Fig. 5c shows in black those parts so identified. (Redrawn from a plan published in 1926, see note 11.) The lateral chapels as shown are necessary to bring the sacred well inside the walls of the church. The west front might have been east of the point indicated but it is most unlikely that it was further west. The shape of the church indicated in Fig. 5a is not intended as a reconstruction (since this building also probably had an axial tower or towers if any) but only an indication of the approximate mass of the building for comparison with Merlet's towers.

¹¹ René Merlet, *The Cathedral of Chartres*, Short Monographs of the Great Edifices of France (Paris: Henri Laurens, 1926). This is a short guide, but the main conclusions of the original study are restated without change.

¹² René Merlet, "Le puits des Saints-Forts et l'ancienne chapelle de Notre-Dame-sous-Terre," *Congrès Archéologique de France* (Paris: A. Picard & Fils, 1901), pp. 226-255.

¹³ Eugène Lefèvre-Pontalis, "Les façades successives de la cathédral de Chartres au XIe au XIIe siècle," *Congrès Archéologique de France* (Paris: A. Picard & Fils, 1901), pp. 256-307, the eleventh-century façade is treated on pp. 258-276.

¹⁴ Merlet-Clerval, pp. 60, 64, 66, and 81.

the north as much earlier and reconstructs with it the base of his north tower.¹⁵ Here his pictorial convictions have betrayed him, for the tower as he reconstructs it would be about 180 feet high, some 115 feet of which would be masonry, standing on a Carolingian wall barely three feet thick.¹⁶ This simply isn't possible. It can also be demonstrated as highly improbable that the cathedral ever had transepts before the great Gothic ones were built, and if this is so, the existence of the lateral compartments of the crypt *is not at all inconsistent with a quite literal interpretation of the miniature*.¹⁷ The special utility of the extra space on the north is obvious when it is noted that the miraculous well was in a niche in the crypt aisle at that point. It may be added that the shrine of the famous *Virgini pariturae* was and still is also in this area.

Merlet makes no special mention of the deep niches on the inner walls of the crypt aisles. These may have been built to provide additional chapel space, but it seems more likely that they provided communication with the crypt of the ninth- and tenth-century church. It is also possible that the inner crypt retained three windows opening directly on the crypt ambulatory, but if so, they would have been little more than peep holes near the floor of the outer crypt.

The evidence with regard to an axial tower on the west is complicated. Excavations in the Gothic nave uncovered the main west wall of the eleventh century cathedral.¹⁸ The foundations of the south and west walls of the supposed axial tower were in areas where subsequent building would cause their destruction. However, in the place where the north wall of such a tower might be expected, it does in fact appear.¹⁹ The excavators report a wall about the same thickness as the main façade wall which they traced downward almost twelve feet without reaching the footing. This masonry is of the eleventh century but, according to the report, not keyed into the masonry of the main west wall. A check of the report, however, indicates that the pit dug to examine the wall was well to the west of the important corner, and the statement about the two masses of masonry being unkeyed can be asserted for only one or two courses.

As early as 1900 M. Albert Mayeux proposed a reconstruction with the western tower on axis;²⁰ nevertheless, convinced that the miniature indicated Carolingian towers northeast and southwest of Fulbert's church, M. Merlet and M. Lefèvre-Pontalis assumed these axial foundations to be the support of a modest wooden-roofed porch erected about 1050. Since the miniature clearly indicates an axial tower and one scaled to Fulbert's church, it would seem necessary to accept this wall as a *reasonable substructure for such a tower* rather than as an extravagant base for a minor porch.

Taking the foregoing into consideration, it is possible to revise Merlet's

¹⁵ *Ibid.*, pp. 65–66.

¹⁶ Plans (*ibid.*, pp. 65 and 67), and an elevation (p. 71) make it possible to get dimensions which are approximate but close enough to make the relative height of tower and thickness of wall clear.

¹⁷ See below p. 565.

¹⁸ Lefèvre-Pontalis, *op. cit.*, p. 259, plan p. 262.

¹⁹ *Ibid.*, pp. 260–262, diagram of north wall excavation pit opposite p. 261.

²⁰ Albert Mayeux, *La façade de la cathédral de Chartres du Xe au XIIIe siècle* (Chartres, 1900).

reconstruction plan of the crypt of the cathedral in 1028–30 as is shown in Figure 6a. The value of attempting to restore the plan and interior of the church proper might appear to be questionable, since no part of it survived the rebuilding after the fire of 1194. While it must be admitted that many details are not susceptible of proof and others must be cavalier restorations, it nonetheless seemed well worth exploring and presenting further details of the plan and interior (Figs. 6b and 3).

An important key to the arrangement of the east end of the church is the location of the altar. There is evidence that it was located between or just east of the second pair of piers west of the apse. This position apparently had been the site of the altar in the Carolingian church and the altar was maintained on the same spot in the Gothic cathedral until 1520.²¹ This helps to explain a number of things in both the crypt and the miniature. A transept behind the altar is most improbable, but lateral chapels flanking the sanctuary make good sense and are not inexplicable in terms of the miniature. The very heavy east and west walls of the lateral chapels also appear to be logical, since the eastern ones are part of the lateral wall including the arch opening into the apse and the western ones similarly flank the lateral arch which seems demanded to set off the sanctuary from the nave. If a timber *campanarium* were erected over the altar and the roof of the sanctuary brought up to it as a hipped roof, the effect would be exactly what the miniaturist has suggested, a sanctuary surrounded by chapels with roofs rising to the full height of the building and there crowned by a tower resting on and rising out of the roof.

The exact forms and precise location of ambulatory columns, sanctuary and nave piers, openings into the lateral chapels, the chapels, the openings in the porch under the tower are almost hopelessly lost. It is just possible that beneath the pavement in the Gothic transept the bases of two of the nave piers might be preserved, but other than that there is little hope for new information. One detail of the plan is based entirely on negative evidence. The side entrances in the easternmost bays of the nave are placed at the only spot where windows or other structures still preserved in the crypt do not make them impossible. It seems highly unlikely that the only entrances to the main church would be one west door and a narrow steep stair from the choir to the inner crypt, so modest lateral doors have been indicated. The main elements of the plan are sufficiently obvious but with so many matters of detail beyond proof it is important to underline the fact that the plan is *only a reasonable schematic diagram*. Even then it serves to give us a better idea of the building and makes a cavalier restoration possible.

Merlet quite logically suggested the church at Vignory as a parallel example of a church with an apse lighted only by windows in ambulatory and chapels.²² The cathedral at Chartres was much larger but otherwise, except for the lateral chapels, very similar to Vignory in scheme.

The church of Saint-Pierre in Chartres also invites comparisons.²³ Built as an

²¹ Merlet, *The Cathedral of Chartres*, p. 78.

²² Merlet-Clerval, pp. 68–70.

²³ *Église Saint-Pierre de Chartres* (Chartres: Imprimeries Moderne, 1954).

abbey church it has been altered and rebuilt and is now a parish church. The oldest part of the building is an axial tower on the west. This tower probably dates from the eleventh century and it is crowned by a wooden stage (but of much later date).²⁴ More interesting is the arrangement of the choir and apse.²⁵ The superstructure is Gothic but much of the plan and some lower walls are twelfth century, built while Fulbert's cathedral still stood. As might be expected in a monastic church, the choir is much elongated. By exception, however the monks' choir and sanctuary are both flanked by lateral chapels parallel to the axis of the church, and this arrangement, along with the fact that the building clearly had no transept, is sufficiently unusual to be noteworthy. Considering the proximity of the cathedral, it is reasonable to see in this rare arrangement a reflection of the older and more famous building and hence some confirmation of the restored lateral chapels of the cathedral (Fig. 6b).

The fact that the western towers and lower parts of the west façade of the present cathedral at Chartres were built as a narthex for the church of 1020 does not rigidly determine vertical dimensions for that building, but the probability that levels already established would be respected is considerable.²⁶ Since accepting levels from the later western works gives quite reasonable dimensions for the various parts of the earlier building, it is possible to present a cavalier restoration of the eleventh century interior with some confidence in the proportions and general effect (Fig. 3). By building a model it is possible to get a very telling impression of the qualities of light and space. But *in matters of detail everything must be recognized as one of many possibilities*. Arguments could be advanced for more elaborate piers and arcade forms.²⁷ The triforium might have been blind or, on the other hand, more elaborate.²⁸ The miniaturist seems to indicate blocky capitals on such columns as he includes in his interior but it is dangerous to presume far in accepting these as evidence. The openings in the lateral wall above the choir arch make structural sense, but can not be proved to have existed, let alone to have been of any given form, size, or arrangement.²⁹ With all these reservations, it still seems justifiable to say that Figure 3 gives an idea of what Bishop Fulbert's great church was like.

For the exterior reconstruction it is necessary to reconsider the André de Mici

²⁴ *Ibid.*, p. 20.

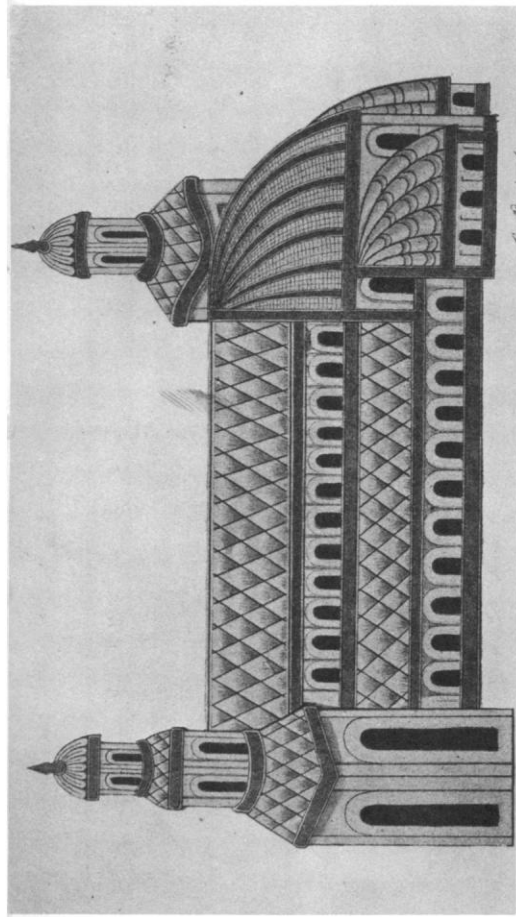
²⁵ The plan, Fig. 7c, is redrawn from that published in the 1954 guide, opposite p. 41 with Gothic elements of the plan reduced to outline for clarity.

²⁶ Merlet (Merlet-Clerval, pp. 71-72) makes this assumption and it gives good results both inside and out.

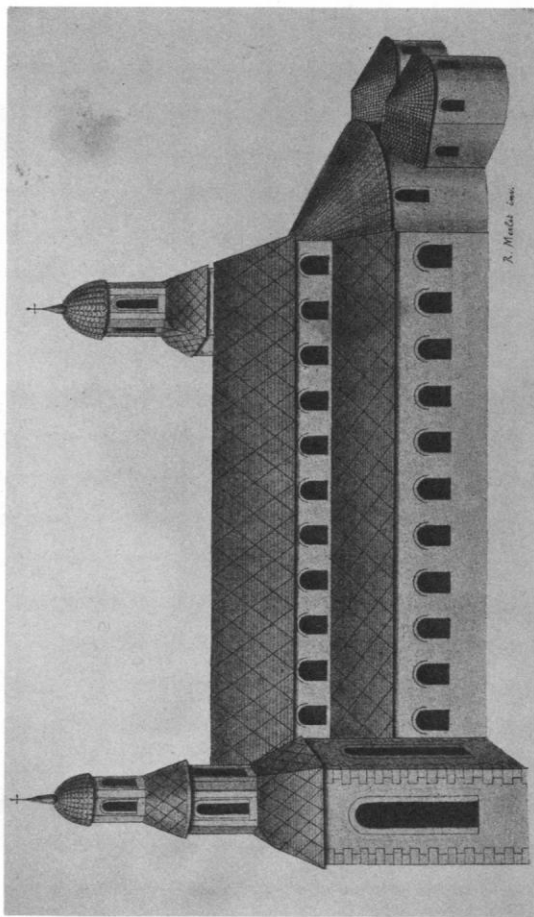
²⁷ Such for example as those of the church at Chivy (Aisne), at St Remi, Reims, or at the abbey church at Bernay. St Remi, as a big church, is a tempting parallel, but very simple piers such as those of the churches at Château-Landon, Montiérender, and Vignory are equally likely. The other similarities with Vignory are one argument for the form shown but the choice was suggested most strongly by the general conservatism of the whole Chartres design.

²⁸ A true two-story elevation such as at Château-Landon or Bernay does not seem likely. Blind triforia appear mostly in Italy or Germany, often with columns rather than piers. This is not impossible, but again Montiérender and Vignory suggest more probable parallels. A more elaborate triforium similar to St Remi is another good possibility.

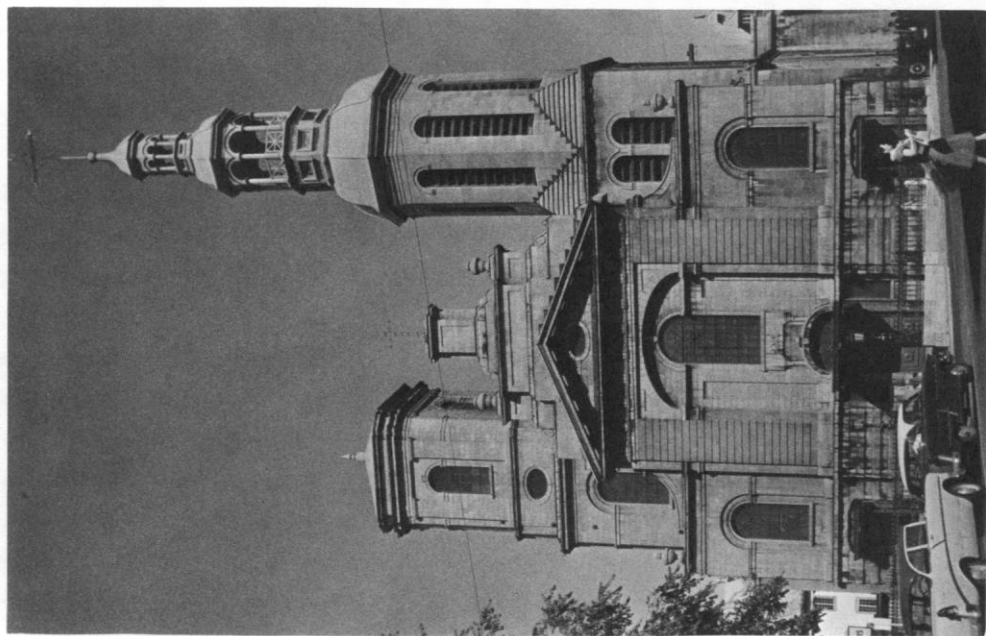
²⁹ This detail is also suggested by Vignory.



a



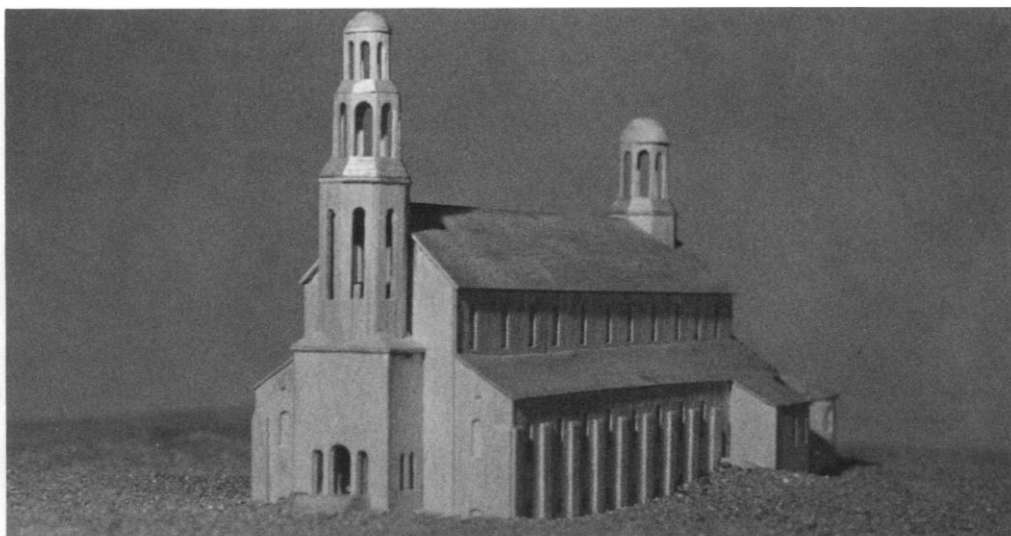
b



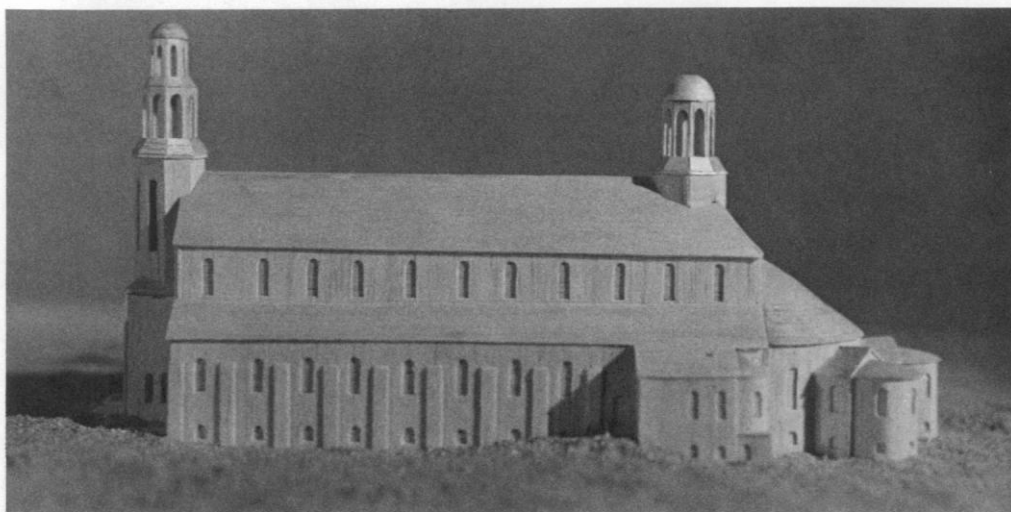
c

FIGURE 1. a. Merlet, Edited version of the miniature. b. Merlet, Reconstruction of Chartres Cathedral c. 1030. c. Québec, Cathedral. Southwest tower 1684 and later.

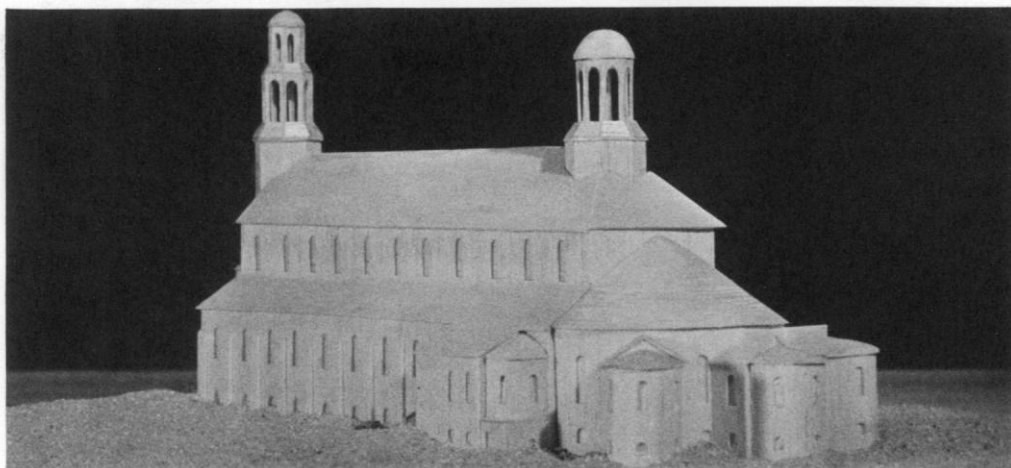
Photograph, J. Lunn Mowers



a



b



c

FIGURE 2. Chartres Cathedral c. 1090. Cavalier restoration, Harry H. Hilberry; model by Estelle S. Hilberry. a. Exterior from the southwest, b. Exterior from the south, c. Exterior from the southeast.

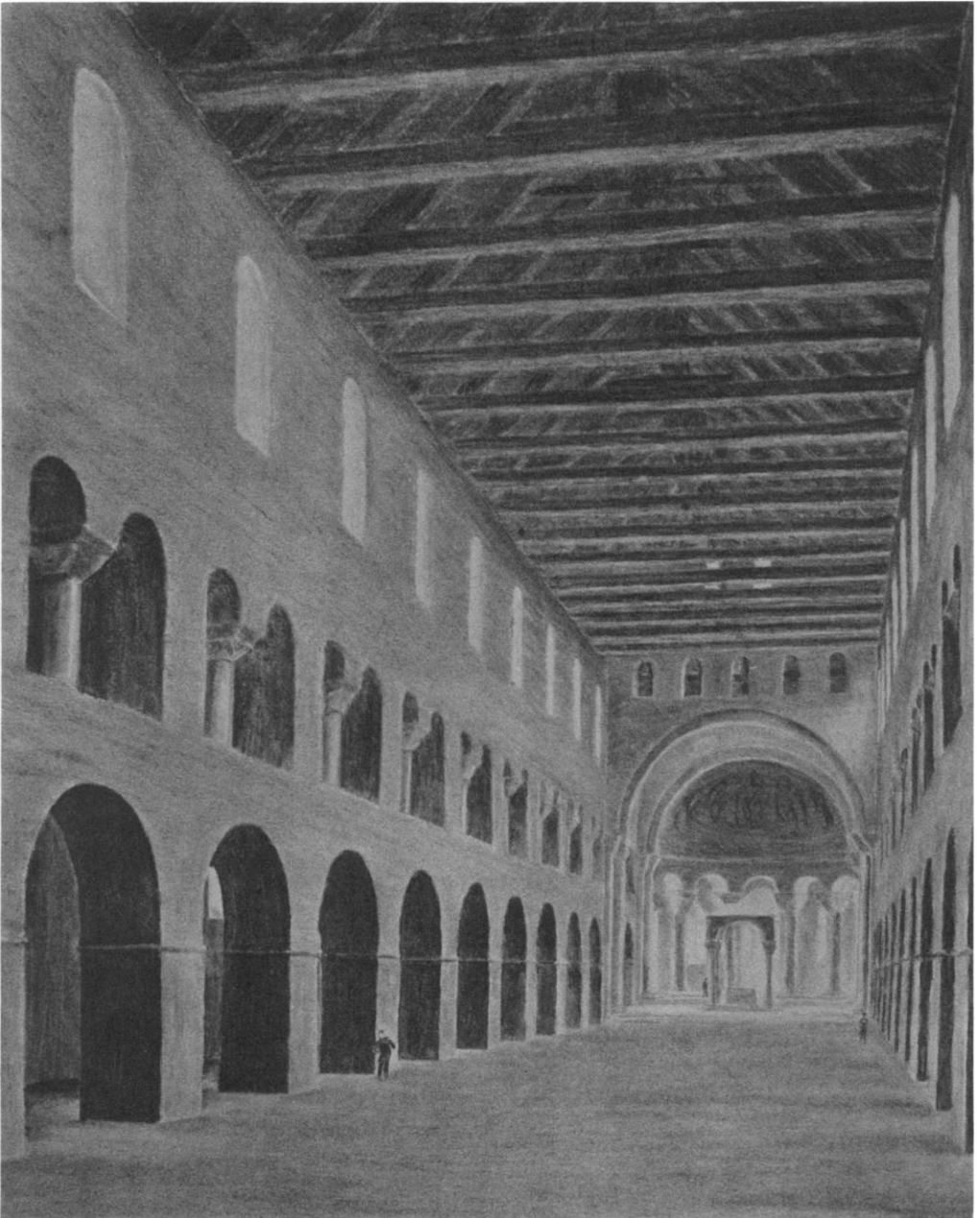
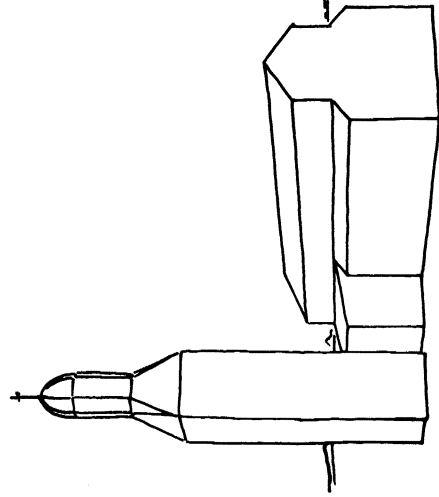


FIGURE 3. Chartres Cathedral c. 1030. Interior, cavalier restoration, Harry H. Hilberry

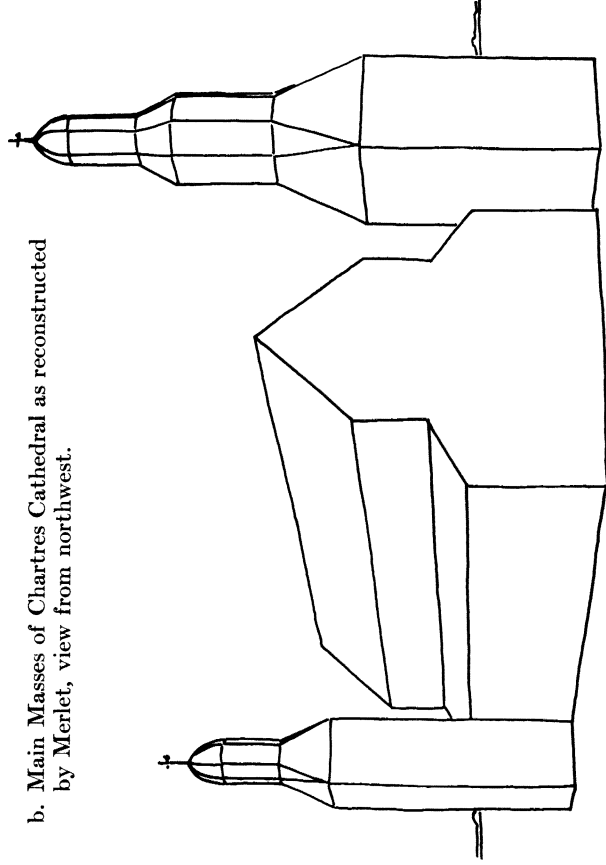


FIGURE 4. André de Mici, Chartres c. 1030

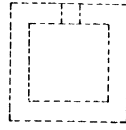
a. Chartres Cathedral before 1020,
Towers as proposed by Merlet.



b. Main Masses of Chartres Cathedral as reconstructed
by Merlet, view from northwest.



c. Plan of Chartres Cathedral before 1020,
Towers as proposed by Merlet.



d. Plan of Chartres Cathedral crypt as reconstructed by Merlet.

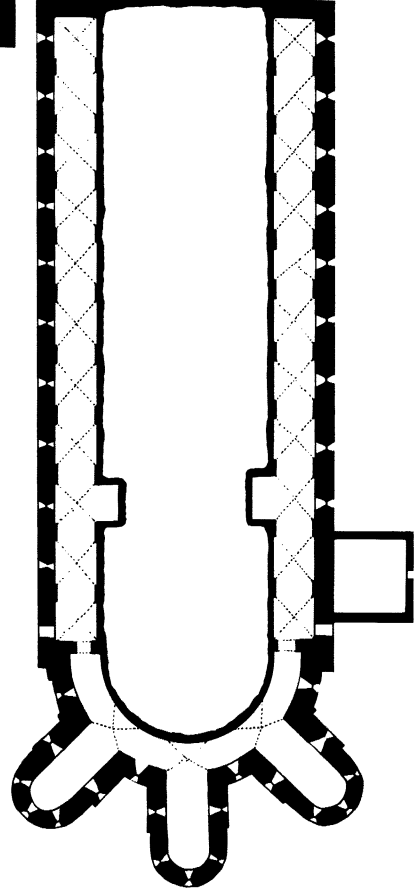
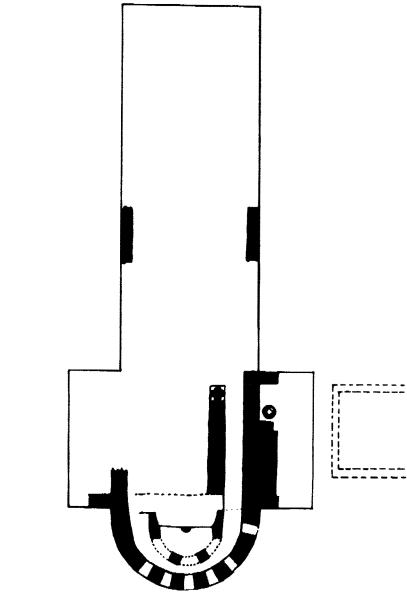
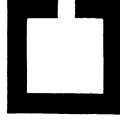


FIGURE 5.

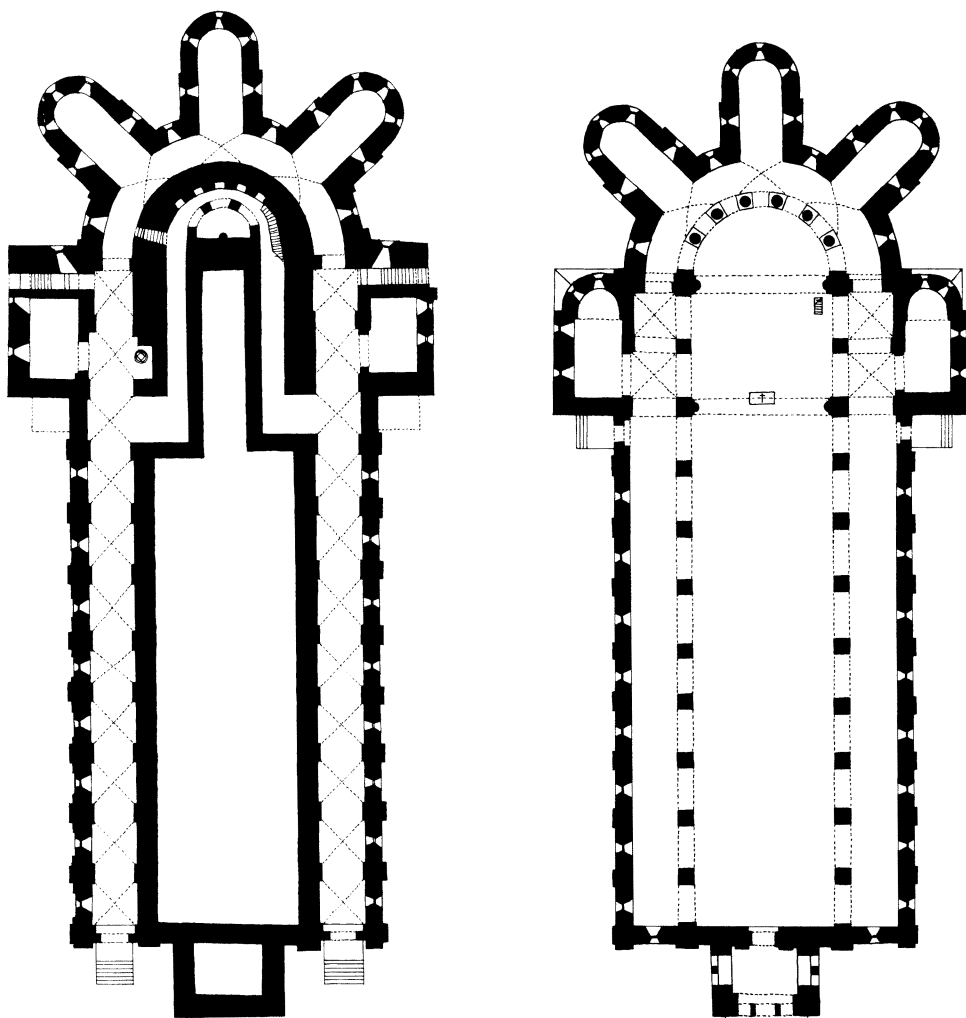
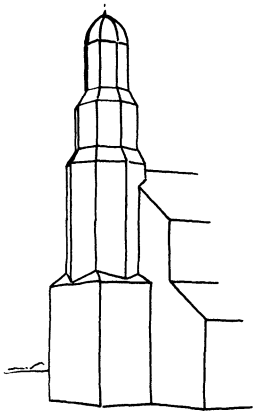
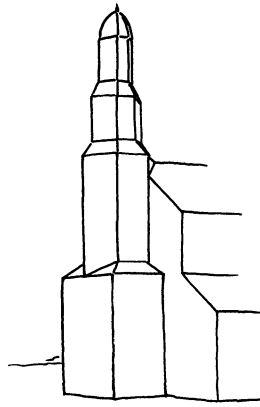
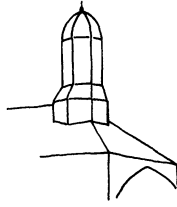


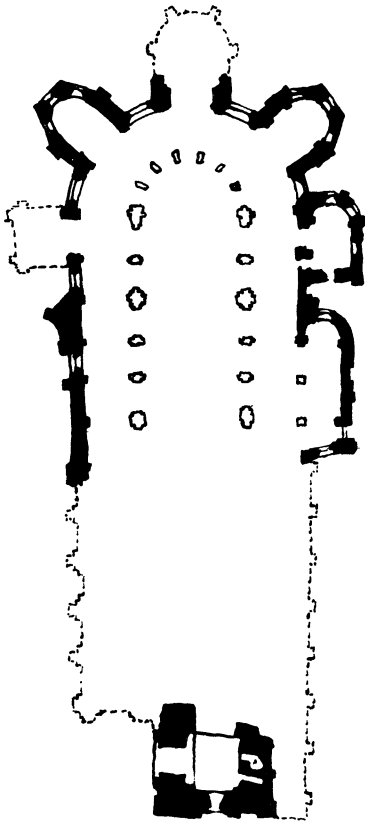
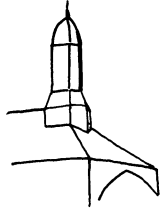
FIGURE 6. a. Chartres Cathedral c. 1030. Crypt plan; diagrammatic reconstruction, b. Chartres Cathedral c. 1030, diagrammatic reconstruction. Plans by Harry H. Hilberry.



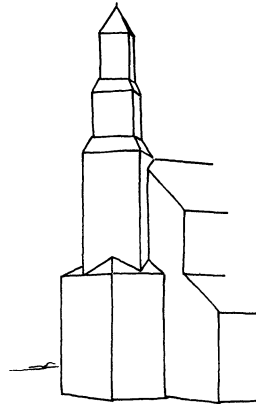
a



b



c



d

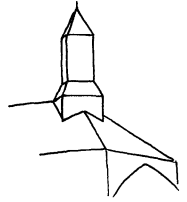


FIGURE 7 a, b, and d. Tower Diagrams. a - Octagonal forms, b - Hexagonal forms, d - Rectangular forms, c - Saint-Pierre, Chartres. Plan indicating Romanesque elements.

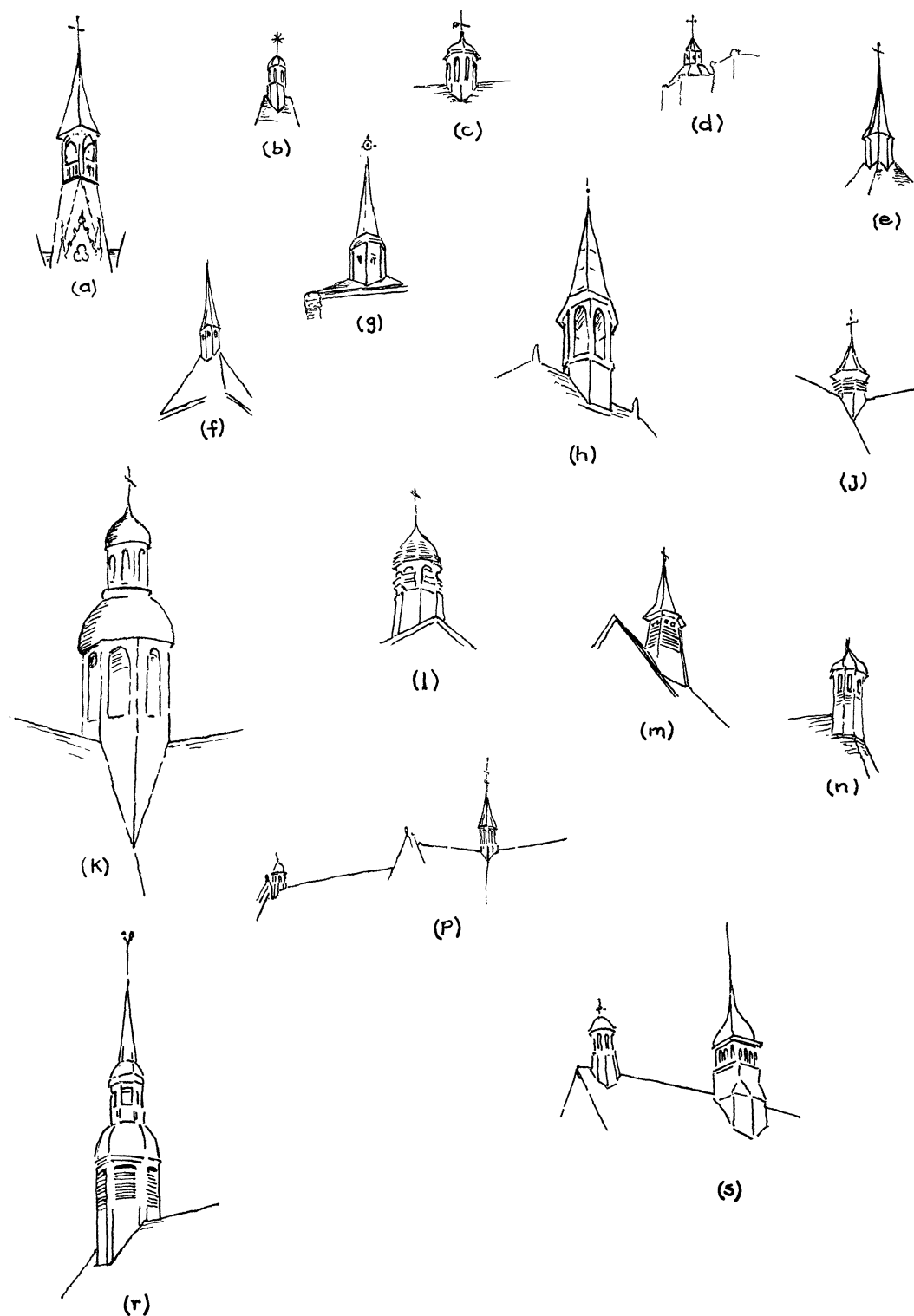


FIGURE 8. a. Bordeaux, City gate. b. Dreux, Hôtel de Ville. c. Heilbronn, Rathaus. d. Brussels, Sainte-Gudule. e. Antwerp, Cathedral. f. Saint-Benoît-sur-Loire, Abbey Church. g. Planeret, Chapelle Sainte-Aroye. h. Ebreuil, Saint-Léger. j. Brussels, Notre-Dame-au-Sablon. k. Tours, cathedral. l. Felletin, Chapelle Bleue. m. Saint-Michel-de-Vienne, Chapelle de la Borne. n. Besson, Chapelle de Bost. p. Cléry, La Basilique. r. Armenonville-les-Gatineaux, Chapelle. s. Saint-Léry, Parish Church.

miniature (Fig. 4). There are a number of things to be noted, though it may not be possible to account for everything. An example of the problems is provided by the clearstory windows. Why are there twelve? A window above each arch of the arcade in nave and choir would make eleven. This could mean that the artist, counting inside the church, included a window in the east wall above the roof of the apse but it does not seem probable. An exterior count might include a south window at clearstory level in the western tower if the tower view is thought of as being a view from the west. This seems still less likely, and the apparent alternative then is to assume that the artist miscounted, put in a row of windows without worrying about number, or misjudged his space and had to put in an extra to fill out the row. The eleven windows in the side aisle are not much easier to explain. An inside count including a window in the west wall and the one lateral chapel window that lights the choir aisle would total eleven and explain why the easternmost aisle window in the manuscript is indicated as part of the sanctuary. Accepting such a theory, however, raises the question why the choir clearstory windows are not comparably treated. The ambiguities of the drawing are such that answers to such questions as these can hardly be more than guesses, but with regard to generalities and some details the miniature still has possibilities.

The side aisle never could have overlapped the ambulatory wall as seems to be indicated and it is highly improbable that the outer ambulatory wall was as high as it is shown. The half dome of apse and chapel clearly reflect familiarity with the interior rather than the appearance of the exterior. Are all of these then meaningless? I think not. There is the possibility that the size of the apse is only indicative of its importance but in view of the location of the high altar it is more probable that the artist has indicated here a sanctuary surrounded by chapels with roofs building up to the full height of the building and crowned by a tower. The artist also seems to be saying that the apse had no clearstory. The extension of the side aisle into the chevet area is obviously deliberate and does indicate the continuity of the aisle around the apse. This may be all that the artist intended. The fact that part of the ambulatory and chapel detail is gone from the miniature complicates interpretation. With that detail lost and so much of the connecting material between the exterior and interior scenes missing at that point, what remains is thoroughly ambiguous. The arch detail at the lower right is probably the ambulatory but even that is not certain.

The most interesting part of the miniature is the tower detail. No eleventh-century towers like these still exist complete and if Merlet's assumption that they are Carolingian survivals is to be rejected it becomes necessary to uncover other evidence that the tradition continued, as well as translating the drawing into acceptable architectural forms. Were it not for descriptions the problem would be different, since knowledge of St Riquier at Centula is also based on an eleventh-century drawing and the staged towers shown there could be eleventh century. However, there is sound evidence that such forms did exist in the ninth and tenth centuries.³⁰ The Centula towers do represent a Carolingian tradition,

³⁰ Forsyth, *op. cit.*, pp. 212–218, devotes a whole appendix to tenth-century tower design and marshals a wealth of evidence.

and evidence for the persistence of the tradition is important.

The essence of the problem lies in the fact that these staged towers were wooden. There is no occasion for surprise that wood structures so exposed to weather and fire have a limited life expectancy but if it is unreasonable to expect eleventh-century, or even later examples, to have survived, what evidence can there be? The best of it seems to be in the demonstrable persistence of the wooden tower forms to a much later time and in the translation of some of the characteristic wooden forms into masonry.³¹ Both of these are illustrated by the "old" tower on the cathedral of Québec which is probably more like the western tower at Chartres than any other monumental structure in existence (Fig. 1c).

The cathedral of Québec was built, altered, devastated, and rebuilt many times between 1647 when the cornerstone was laid and 1922 when the last major fire forced reconstruction.³² The one part of the building of major interest in the context of this study is the south tower of the façade, which was built between 1684 and 1687. The stone octagon is part of this work and, while the upper stages have been replaced, they are in the tradition of the original design.³³ The Chartres tower had been destroyed and forgotten for half a millenium when the tower at Québec was built. There can be no question of direct imitation, but a direct relationship exists nonetheless. There were once more than two dozen versions of the wooden stages of this belfry type in New France and several still exist.³⁴ The fact that the parish churches of New France were mostly very much alike was due to the control exercised by the bishop but the forms were traditional ones and this appears to have been particularly true of the belfries. The typical example exhibits a peculiarity which can be attributed to a carpenter-joiner tradition, the polygonal upper stages are placed with corners on the longitudinal axis of the church. This detail of the belfries of New France suggests that the whole tower may be an old traditional one rather than a watered down, provincial, carpenter's attempt at imitating baroque prototypes.³⁵

Alan Gowans, in searching for French provincial parallels of the French colonial churches, found his best example hardly more than ten miles from Chartres at

³¹ Pictorial evidence does exist but it poses great problems. There are numerous towers in manuscript illuminations all through the Middle Ages, and others appear in sculptures. Until a representational concern can be assumed on the part of artists, however, it is very difficult to prove anything about the pictures. Later, with artists like Fouquet, building details have a certain authority, but especially in the case of minor details, it is difficult to go beyond saying that a given practice was known at the time. Prints of lost or altered buildings have obvious value but again they must be used with great caution.

³² Alan Gowans, *Church architecture in New France* (New Brunswick, New Jersey: Rutgers University Press, 1955), pp. 105, 120, 149-150, and Plates X, XI, and XIX.

³³ *Ibid.*

³⁴ The oldest such belfry still in existence in Canada is that of the third church of Sainte-Anne de Beaupré, now removed to the commemorative chapel. It is dated 1696 (*ibid.*, Pl. VIII).

³⁵ One suggestion that the form is traditional lies in the fact that the structural reason for the form seems to have been forgotten. Many of the Canadian examples have belfries rising directly from the roof. It is in framing a timber turret into a roof that the placement of a timber on the axis has special utility, but in most of the Canadian examples the hexagon or octagon is raised on a square stage which is placed with sides on axis.

Armononville-les-Gatineaux. The clocher is seventeenth-century, a hexagon, with corners on axis³⁶ (Figure 8r). These seventeenth-century belfries with their strong suggestion of influence from the old craft tradition hardly constitute proof that the ninth- and tenth-century tradition was alive in the eleventh but the similarities are striking. There is a good deal of other evidence which suggests the wide currency and persistence of a wooden tradition, such as the other structures shown in Figure 8.³⁷ These examples, however, share the disadvantage of late or indefinite dates. The Gothic *flèche* sometimes retains elements of this tradition,³⁸ and there is reason to suspect that some Cistercian belfries were even closer.³⁹ Still, it must be admitted that evidence preserved in wooden structures can not be said to prove a continuity of tradition.

The octagonal stone stage of the Québec tower presents another challenge (Fig. 1c). The normal mason's solution for putting an octagon on a rectangular base, logically enough, continues four sides from the base and supports the other four across the corners. On the Québec tower the octagon is rotated with corners on the axis, which gives a *minimum* of directly supported masonry wall and a maximum amount of wall set on diagonals across the corners of the base. This is obviously a translation into stone of wooden framework in the tradition already discussed. Comparable examples from earlier periods might be considered some confirmation of the continuity of a wooden tradition, early examples of which are now lost. In stone such examples might survive, and in fact they do. Not in great numbers, probably because the form is irrational in stone, but enough exist to be noteworthy. One stone example which does not survive must be mentioned. The crossing tower of the cathedral at Beauvais was only a little over a hundred years earlier (1569) than the tower at Québec. The details were Gothic and there were three octagonal stages plus a spire, but the lower octagons were stone and set on the diagonal. About a century earlier two handsome towers of a similar character were built in the Low Countries, the one completed tower of the cathedral at Antwerp (late fifteenth century) and the tower of the town hall in Brussels (first half of fifteenth century). The bell tower of Saint-Michel-aux-Lions at Limoges (fourteenth century) has three of these octagonal stages but gives a very different effect as there is little taper to the design. Two thirteenth-century Italian

³⁶ Gowans, *op. cit.*, pp. 93-95 and Pl. XLIV and XLV.

³⁷ Except for the turret on Sainte-Gudule, which is reported in seventeenth-century engravings, all of these examples are still, or have been until recently, in existence. Other parallel examples include Tours, Notre-Dame-la-Riche; Meung-sur-Loire, Saint Liphard; Louvain, Saint Pierre; Felletin, Église du Moutier; Paris, Saint Eustache (at crossing and over the apse of axial chapel); Morgny-en-Thiérache, farm building.

³⁸ The *flèche* on the cathedral at Paris, the preparation for a *flèche* on the cathedral at Le Mans, and the much larger tower-like *flèche* on the cathedral at Geneva are samples.

³⁹ The Cistercian strictures against large towers could be expected to encourage the building of wooden belfries. That they existed is beyond question, but only the supposedly-exceptional masonry examples have survived. Seventeenth- and eighteenth-century drawings and engravings of Cistercian establishments show many examples, but each picture of this sort is a problem, for neither the reliability of the draftsmanship nor the date of a belfry existent in the eighteenth century are simple to establish. Marcel Aubert, *L'Architecture Cistercienne en France* (Vanoest: Editions d'Art et d'Histoire, 2nd ed. (1947), *passim*, reproduces many of these drawings and prints.

examples are traceable to French prototypes through Cistercian connections.⁴⁰ Romanesque versions appear as crossing towers on Obazine (Corrèze) and the church of Saint-Georges, Branssat (Allier). The clocher of Saint-Léonard (Haute-Vienne) has two such stages of octagons. One of the most intriguing churches with a tower of this type is the parish church at Evaux (Creuse). There is a wooden octagon (presumably seventeenth century) where a crossing has been suppressed, and on the axis at the façade a tower. The tower has three rectangular stages, an oval stage, and on that an octagon crowned by a spire. The base of the tower is eleventh-century, the spire seventeenth, and the octagon probably thirteenth.⁴¹

It is obvious that this list involves a wide span of time and a wide geographic spread. It is probable that an intensive search among parish churches and other lesser known buildings would turn up many more, but the common factor of an apparent influence from a continuing wooden tower tradition is already clear.⁴² Combined with the evidence of the survival of such a tradition implied by the later wooden examples, and with the evidence against considering the Chartres towers to have been Carolingian survivals, this would seem to justify us in accepting the towers shown in the miniature as parts of Fulbert's rebuilding in the early eleventh century.

The reconstruction of these towers must be based on an interpretation of the miniature, but with due attention to structural logic. The miniaturist gives us some license for generalizations (Fig. 4). He seems to indicate that the towers are similar in form and he emphatically indicates both of them with solids on the axis which we face. Since the pictures are doubtless conceptual this may mean a view of the façade tower from the west and the eastern tower from the south but in any case the angular setting of the forms is clear. A literal interpretation would suggest rectangular forms but while this is possible for the sanctuary tower it is not good at the façade (Fig. 7d). A hexagon is better, for viewed from any corner just two sides would show and views such as the artist gives would appear (Fig. 7b). There are two reasons for rejecting hexagonal forms. In the first place, they do not frame into the roof as well as octagons;⁴³ in the second place, hexagons placed with a corner on the building axis would present sides, not corners, in a lateral view. This proves nothing with regard to the west tower but seems more meaningful at the east. The one argument against octagonal shapes (Fig. 7a) is the fact that more than two sides would show in any view but they wouldn't show much and André de Mici might be expected to present them just as they appear in the miniature (Fig. 4).

⁴⁰ Aubert, *op. cit.*, T.I., p. 374. Fossanova and Sainte-Marie de Ferentino are cited as having crossing towers similar to Obazine; see below.

⁴¹ Louis Lacrocq, *Les Églises de France, Creuse* (Paris: Librairie Letouzey et Ané, 1934), pp. 61-63.

⁴² A different kind of translation of wooden forms into masonry is suggested by such churches as Sant Pons de Corbera, Saint Vorles de Chatillon-sur-Seine, or the church at Cruas. The Cistercian establishment at Sénanque is a later example.

⁴³ In order to set a corner post on the converging roof hips the tower must be moved well east of the center of the sanctuary bay or made very large.

In addition to the problems of form, proportion, and detail, the eastern tower poses a problem in location. The natural position, directly over the altar, is tempting but unlikely. The tower would be well supported if placed slightly to the west, centered over the wall separating nave and choir, but the wall then blocks it up. If it were farther east, it would be well behind the altar, for it is most unlikely that one corner would be supported on the masonry wall and the rest carried on trusses. A position over the center of the choir is also centered on the converging hips of the main roof in such a manner that the posts of an octagon would come naturally on major truss elements. This results in a relationship of roofs and tower quite obviously like that described by the miniature. No other location and arrangement seems to have comparable probability.

There is also a position problem with regard to the western tower's, vertical relationships. The lowest of the stages of the tower as shown in the miniature extends below the base used by the artist for the aisle walls. It was this projection which Merlet read as an indication that the tower was detached and nearer to the viewer than the rest of the church. If the painting is considered as a whole, it is clear that the most important part of it is the interior scene, and the concern of the artist was to get the whole tower in without using up too much of his page with sky over the nave. By sliding the tower down the artist could give it the size and importance which it merits without sacrificing space in the center of the page. Since the figures below are minor and the porch space relatively low and cramped, this device gives the additional advantages of expressing the nature of the building and aiding in the composition of both the interior scene and the page as a whole. Unfortunately, it also leaves considerable ambiguity about levels on the tower in relation to levels on the nave and aisles.

The bottom of the lowest octagonal stage of the tower probably came either at the level of the aisle eaves, the bottom of the clearstory, or at the nave eaves. There does not seem to be any conclusive evidence, but the suggestion of a conspicuously tall first stage makes the upper position questionable. The location of the top of the rectangular part of the tower at the level of the bottom of the clearstory appears to result in more satisfactory proportions without the complicated intersection of the main roof and the lowest of the octagonal roofs which are problems if the rectangular section stops at the aisle eaves. The design as shown in the reconstructions is not the only one which can be proposed as consistent with the miniature and possible on the foundations which exist. But while the details of the tower tops must of necessity suggest, rather than present reality, it can be said with some confidence that the towers were very much like those shown in the reconstruction (Fig. 2).

The fire which destroyed Fulbert's big church cleared the way for what is probably the most loved and admired of the great Gothic structures. That can hardly be a matter for serious regret, but the church that went up in flames was a noble structure, large in scale, and handsomely composed. Part of the building as shown by the miniaturist was destroyed almost immediately after 1030.⁴⁴ Addi-

⁴⁴ Merlet-Clerval, p. 57. The roof was burned off in 1030.

tions and changes were made in the eleventh and twelfth centuries, so that even if the building had survived we could know it only in a much altered form. Thanks to André de Mici and the skill of the architects who built the Gothic cathedral without destroying the older crypt, it is still possible to recreate a somewhat pale and shadowy ghost of the church in its original form. It is still possible to get an idea of the spacious dignity of the interior and the effective massing of the exterior of Fulbert's great cathedral as it was when nearing completion in 1030.

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