

PART II: THE EARLY HISTORY OF GOTHIC SPIRES

Chapter 3: Diffusion and Experimentation in Early French and English Spire Design

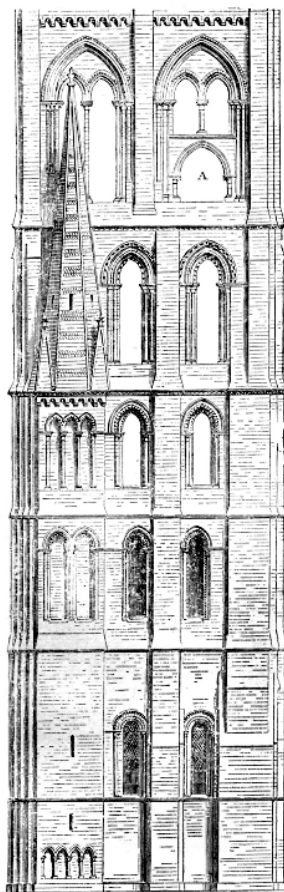
The years between roughly 1150 and 1300 witnessed rapid development in many aspects of Gothic architectural design, but the dramatic increases in scale and formal elaboration evident in the construction of church vessels in this period were not paralleled by comparably impressive developments in great spire design and construction. The twelfth-century south spire of Chartres continued its reign as the largest and most sophisticated monument of its type long after ambitious thirteenth-century church vessels had replaced or overshadowed the structures built in its day. Not until the fourteenth century would great spire design reclaim a place at the cutting edge of Gothic architectural culture.

Although innovation in great spire design was unspectacular by comparison to progress in other areas of thirteenth-century architecture, the invention of the great spire in the environs of Chartres paved the way for the rapid acceptance of spires as a new monument type of the Gothic era. This history of this diffusion process remains little studied, and poorly understood. In general terms, however, two divergent traditions of spire design appear to have emerged early on from the Chartres group: the Anglo-Norman and the eastern French. The eastern French group would ultimately contribute more to the history of great spire design, but few spires belonging to this group were actually completed in the thirteenth century, for reasons explored in the following chapter. Conversely, many large spires were constructed in Normandy and England, but these for the most part lacked the complex transformative geometries characteristic of the great spire type. These statements together begin to explain both the relative retardation of great spire design in the thirteenth century and its apparent opposite, the successful establishment of the church spire as a popular monument type.

Before examining the problems that befell the ambitious spire projects of eastern France, it is appropriate to briefly consider the Anglo-Norman tradition of spire construction and its gradual decoupling from the main line of continental great spire design. From the Anglo-Norman perspective, the most dramatic contribution of the twelfth-century Chartres group was the perfection of the tall pyramidal spire cone. Norman interest in the spire form had begun to manifest itself already in the middle decades of the twelfth century. The rear face of the north tower of Rouen Cathedral, for

example, incorporates a staircase turret with a large slender pyramidal termination (fig. 3-1), and a similar form may have been planned for the tower as a whole early in its history.¹ The twelfth-century portions of the tower, however, remain boxy and foursquare, serving today as the base for a similarly rectilinear Late Gothic tower story. The complex and geometrically subtle transition from square to octagon effected at Chartres, in fact, proved to be far less influential in England and Normandy than the basic idea of the spire form. Unlike the later great spires of eastern France and Germany, the early spires of England and Normandy generally lacked the mediating octagonal story introduced in the Chartres group. Initially at least, this was probably because most spires in these regions were additions to previously existing square-topped towers, rather than entirely new structures.

In Normandy, large stone spires were often added to prestigious monuments of the Norman Romanesque. At Saint-Étienne in Caen, for example, thirteenth-century spires with aediculae on all eight faces crown the blocky western towers constructed in the days of William the Conqueror (fig. 3-2). The construction of two similar spires atop the western facade block of Bayeux Cathedral, meanwhile, required significant reinforcement of the Romanesque fabric.² To see these projects as deliberate attempts to "Gothicize" Romanesque buildings might be an over-extrapolation, but the addition of spires certainly gave a dramatic new silhouette to these



3-1 Rouen Cathedral, rear face of northwest tower, (19th-c. drawing).

¹ See Viollet-le-Duc, "Clocher," 3:371-72.

² For Bayeux, see Jean Valléry-Radot, *La Cathédrale de Bayeux*, Petites monographies des grands édifices de la France (Paris, [1922]), 81. For Saint-Étienne in Caen, see Henri Prentout, *Caen et Bayeux* (Paris, 1909), 22.



3-2 Caen, Saint-Étienne, spires.



3-3 Coutances Cathedral.

monuments, one more characteristic of the Gothic era than of the Romanesque.

At Coutances Cathedral, a substantially Gothic structure was built up around remains of an earlier Romanesque church following a fire in 1218 (fig. 3-3). The western towers of Coutances do achieve an octagonal cross section well below the base of the spire cone, but the effect is very different than at Chartres. The tower octagons grow out of the arcuated square story below in a crisply modeled transitional belt at the level of the nave roof. One scarcely notices the octagonal form of the towers, however, because of the forest of turrets and aediculae that surrounds them. Slender corner turrets of square section emerge from the same belt as the main towers, racing past the base of the spire cone to terminate in corner pinnacles. Airy aediculae decorate the four cardinal faces of the spire cone at this level. Meanwhile, large stair turrets with their own smaller satellite turrets flank the western outboard angles of the facade. This gives the whole composition a restless, striving, appearance. Together with the cathedral's masterful central lantern, these spires form perhaps the finest ensemble of towers actually completed in the thirteenth century.

Norman builders generally pursued an additive rather than transformative aesthetic in their spire designs, following the model of Saint-Étienne in

Caen more closely than those of Chartres or Coutances. The handsome fourteenth-century spire of Saint-Pierre in Caen, for example, departed from the Saint-Étienne model principally in its greater decorative elaboration (fig. 3-4).³ A pinnacled balustrade runs around the top rim of the Saint-Pierre tower, emphasizing its square plan. A series of textured belts divides the faces of the spire cone into trapezoidal panels, every other one of which was pierced by a small rosette. These details of articulation are interesting in light of their possible connections to contemporary English and Rhenish practice: similar belts occur in several English spires, and the



3-4 Caen, Saint-Pierre.

rosette perforations invite comparison with the far more radical voiding of structure seen in the openwork spire of Freiburg. The overall form of Saint-Pierre's spire, however, remained conventionally Norman in its murality and blockiness. Most later Norman spires have similarly traditional forms. The conservative tenor of the Norman tradition also affected Breton cities such as Saint-Pol-de-Léon, where the tower and spire of Saint-Pierre were copied virtually line for line even in the fifteenth century.

In England, as in Normandy, the impressive pace of early spire development faltered after the first decades of the fourteenth century. Using timber rather than stone as their principal medium, English builders were soon able to construct huge spires whose scale remained unmatched by continental builders working in masonry until the end of the Middle Ages. By 1221, Master John the Carpenter had erected a sixty-meter spire over the crossing tower of Saint Paul's cathedral in London, bringing the structure's total height to approximately 135 meters. Although probably inspired by large continental spires, the London spire was far simpler than the great south spire of Chartres. It was, in fact, nothing more than a colossal octagonal pyramid, placed directly on the square masonry crossing tower without an octagonal tower story to mediate the transition. Such

³ Prentout, *Caen et Bayeux*, 43-44.



3-5 Salisbury Cathedral.

direct juxtaposition was typical of English and Norman spire-building practice, but the example of Saint Paul's was unusually stark because there were not even corner pinnacles to disguise the junction, as engravings from the sixteenth century show. This colossal timber spire survived repeated small fires, but it eventually collapsed in a storm on 4 June 1561, damaging the cathedral's choir and necessitating repairs by Inigo Jones. The scale of the destroyed spire becomes apparent when one considers that it reached roughly thirty meters higher than the lantern of Christopher Wren's dome, which replaced it on the site.⁴

An even higher spire was erected at the cathedral of Lincoln in the early fourteenth century. At the behest of Bishop Dalderby, the stone crossing

⁴ G[eorge] H[enry] Cook, *Old Saint Paul's Cathedral* (London, 1955), 32.

tower was enlarged between 1307 and 1311, and a new timber spire was added to achieve a total height of roughly 160 meters.⁵ If these reports are correct, the spire of Lincoln was the tallest to be completed in the Middle Ages. Unfortunately, it collapsed in 1548, and no detailed records of its appearance survive. There is every reason to believe, however, that it belonged to the same basic class as the London spire, perhaps with a greater degree of decorative elaboration.

The largest surviving English spire is that of Salisbury, which reaches to 123 meters (fig. 3-5). Like the Lincoln spire, it was completed in the early years of the fourteenth century. While the spires of London and Lincoln were constructed of timber with a lead covering, however, the spire cone of Salisbury was of stone, erected around a wooden armature that served as an internal scaffold during construction. Far more elegant than the lost spire of Saint Paul's in London, the spire cone of Salisbury has pinnacles at its base, filling in the corners where it joins with the square tower below. With its pinnacles, belts of textured decoration, and thin walls reinforced by iron cramps, the spire of Salisbury resembles its Norman contemporary, Saint-Pierre in Caen.⁶ In both formal and technical terms, therefore, the Salisbury spire appears to represent a successful synthesis of English and Norman spire-building practice.

Despite its daringly lightweight construction, the Salisbury spire was heavy enough to cause distress in the cathedral's crossing piers, necessitating the addition of pier braces and flying buttress struts in the later Middle Ages. Analogous interventions had to be made at the cathedral of Wells, where the weight of the boxy masonry crossing tower and now-destroyed timber spire caused the foundations to subside into the soil, which--naturally enough for a town named Wells--was too waterlogged to support the new structures.⁷ Even in England, where church vessels were typically lower and more robustly proportioned than they were in France, adding a large spire to a central crossing tower was a dangerous undertaking.

⁵ The figure of 525 feet (160 meters) has been proposed by the Rev. James Herbert Srawley in *The Story of Lincoln Minster* (London, 1947), 39. The tower, which survives, reaches to 268 feet, with an internal vault height of 125 feet. See G[eorge] H[enry] Cook, *Portrait of Lincoln Cathedral* (London, 1950). For a more recent discussion of the spire, see Peter Kidson, "Architectural History," in *A History of Lincoln Minster*, ed. Dorothy Owen (Cambridge, 1994), 44.

⁶ The use of iron at both Salisbury and Saint-Pierre is documented, but the earlier history of the iron reinforcement in spire construction deserves further study. For Salisbury, see Tim Tatton-Brown, "Building the Tower and Spire of Salisbury Cathedral," *Antiquity* 65 (March 1991): 89-96. For Saint-Pierre, see Prentout, *Caen et Bayeux*, 46.

⁷ Robert Mark, *Experiments in Gothic Structure* (Cambridge, Mass., 1982), 78-91.



3-6 Lichfield Cathedral.

The cathedral of Lichfield, with twin stone spires over the west facade and another slightly larger one over the crossing, stands as one of the few medieval churches with a complete multi-spired ensemble (fig. 3-6). The even more ambitious multi-spired schemes developed in thirteenth century France were abandoned incomplete, and few later Gothic buildings were designed with more than one or two truly large spires. The three spires at Lichfield, although substantially rebuilt after having been severely damaged in the seventeenth century during the English Civil War, still convey much the same impression that they would have when newly

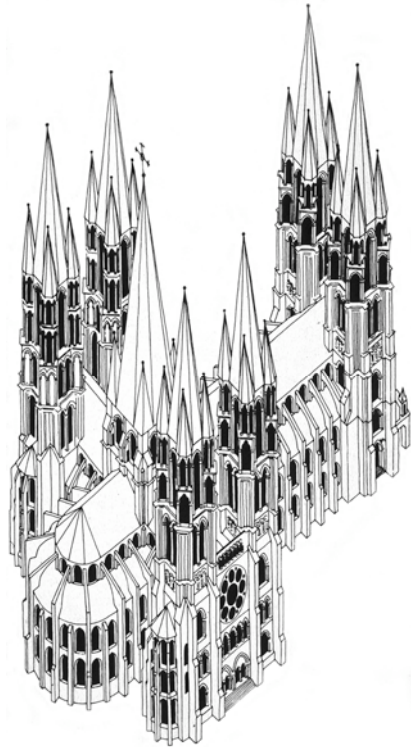
constructed in the 1320s.⁸ Known collectively as the "Ladies of the Vale," the Lichfield spires are simple pyramids, but small gabled windows cut into their faces subtly enliven their appearance. The assortment of pinnacles at the base of the western spires, moreover, gives each associated tower a fairly complex silhouette, at least by English standards.

Following the completion of the Lincoln, Salisbury, and Lichfield projects, English spire design entered a largely stagnant period that lasted until the end of the Middle Ages. Many spires were constructed, in both stone and timber, throughout the fourteenth and fifteenth centuries, but most if not all were reduced or simplified copies of the Salisbury scheme, which typically lacked the graceful profile of this prototype. Octagonal spire cones were placed directly atop square towers without the complex mediating elements characteristic of the continental great spire tradition. Octagonal tower stories, in particular, were all but unknown in England. English architectural culture emphasized the design of majestic foursquare towers such as Canterbury's "Bell Harry," rather than the design of spires with interesting geometries. Despite an impressive beginning, therefore, the English spire-building tradition ultimately turned out to be less vital

⁸ See Dieter Kimpel, "La Cathédrale de Lichfield," in Francesco Aceto, ed., *Chantiers médiévaux* (Paris, 1996), esp. 198-200; also William Anderson and Clive Hicks, *Cathedrals in Britain and Ireland* (New York, 1978), 66.

than its continental counterpart, from which it remained largely segregated in the later Middle Ages.

To pick up the thread eventually leading to the great spires of the later Middle Ages, one must return to north-eastern France of the late twelfth and early thirteenth century, where the seminal workshop was that of Laon Cathedral. From the perspective of spire arrangement, Laon may be seen as a Gothic reinterpretation of Tournai's Romanesque cathedral, with twin-towered transept frontals surrounding a crossing tower of squat proportions. At Laon, a twin-towered west facade joined this ensemble around the crossing for a total of seven towers (fig. 3-7).⁹ This configuration was later adopted at Reims Cathedral, and it was amplified at Chartres Cathedral to a nine-tower scheme by the addition of two towers flanking the choir. In all of these



3-7 Laon Cathedral, ideal plan (reconstruction).

cases, it appears, spires were meant to crown the towers. For reasons to be explored in detail in the following chapter, none of these ambitious projects was carried through to completion. At Laon, however, enough progress was made to demonstrate the leading role of this workshop in the early development of great spire design.

The towers of Laon Cathedral further develop the themes of progressive geometrical transformation introduced at Chartres, Vendôme, and Étampes, infusing them with new airiness and vertical élan. In the Chartres group, the octagonal story of the tower remains relatively squat, despite its important role in mediating the transition between the lower tower and the spire cone. At Laon, however, the octagonal stories of both the western and

⁹ See Dany Sandron, "Laon: La Cathédrale aux sept tours," *Umění*, 49, no. 3-4 (2001): 203-10.

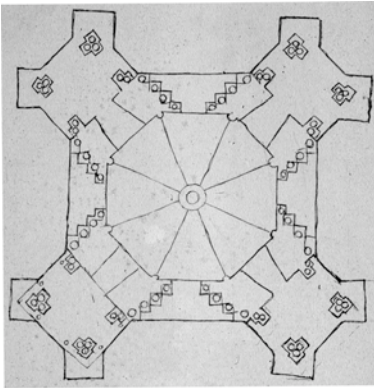


3-8 Laon Cathedral, towers of west facade.

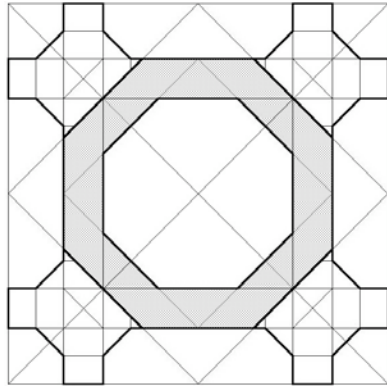
the transept towers are much taller, registering as stories in their own right rather than simply as transitional zones (fig. 3-8). The octagonal stories of Laon attain greater prominence not only because of their greater height, but because their cardinal faces are unscreened by gables or other decorative elements, allowing the play of light and shade to emphasize the slender proportions of the major tower lancets. As at Chartres, these single lancets of the

octagonal story surmount a pair of similar lancets in the square story below, this shift of axes announcing the new geometry of the octagonal upper stories. This arrangement of windows, essentially unknown in the Anglo-Norman group, became typical of great spires on the continent.

The octagonal tower stories of Laon are dramatic for their apparent lightness and geometrical dynamism as well as their height. Instead of registering as octagonal prisms into which window holes have been punched, like the octagonal story at Chartres, the Laon towers register as assemblages of shaft bundles with one bundle at each corner of the octagon. The treatment of the corner turrets at Laon also contributes to this impression of lightness and dynamism. The diagonal faces of each octagonal tower story are flanked by fragile-looking two-story aediculae, through which light and air pass freely. The upper aediculae of all Laon's completed towers are octagonal in plan, like the tower core itself. The lower aediculae of the south transept are also octagonal, creating a disposition later copied at the cathedrals of Bamberg and Naumburg in Germany. The lower aediculae of the north transept and the western facades, however, are diagonally planted squares in plan, giving these towers a sense of rotational dynamism.



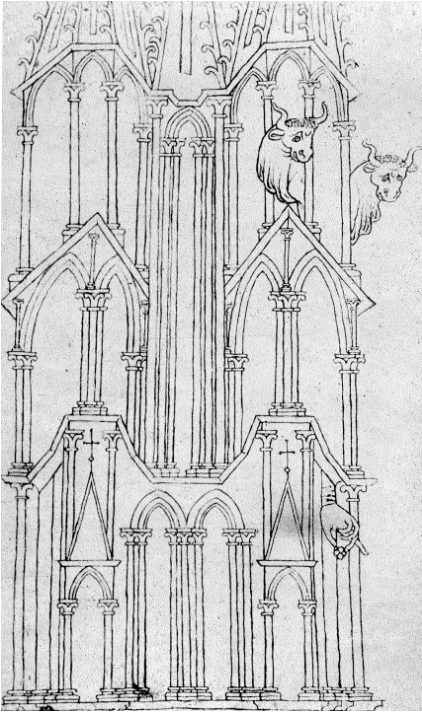
3-9 Villard de Honnecourt's plan of the Laon west tower.



3-10 Ideal geometry based on Villard's plan drawing.

The geometrical logic behind the design of the Laon towers can be plausibly reconstructed, thanks in part to the survival of a plan drawing from the early-thirteenth-century notebook of Villard de Honnecourt, the oldest surviving set of Gothic architectural drawings (fig. 3-9). Most recent scholarship suggests that Villard was not a master builder himself, and his drawings lack the geometrical precision of later Gothic design drawings, but his clear conversancy with the workings of contemporary French cathedral workshops makes his notebook an invaluable document for anyone interested in how these buildings were conceived. Villard took a particular interest in the Laon towers, which he sketched in both plan and elevation. The plan drawing, though slightly distorted owing to Villard's freehand technique, provides enough information to show how the overall geometry of the Laon tower was generated.¹⁰ As figure 3-10 shows, the inner walls of the main tower octagon can be extended to intersect precisely at the outer wall of the square tower base. The outer walls of the main tower octagon, analogously, can be extended to intersect with the great square circumscribing all the salient tower buttresses. These geometrical relationships are precisely analogous to those discussed previously in the case of Saint-Germain at Auxerre.

¹⁰ This geometry, developed independently by the author in 2001, agrees substantially with that proposed by Walter Ueberwasser in *Von Mass und Macht der alten Kunst* (Leipzig, 1935). The alternative geometrical scheme proposed by Maria Velte in 1951 accords far less readily with the evidence of Villard's drawing. See *Die Anwendung der Quadratur und Triangulatur bei der Grund- und Aufrissgestaltung der gotischen Kirchen* (Basel, 1951), 100. For a critical perspective on these reconstructions, see Conrad Hecht, *Mass und Zahl in der gotischen Baukunst* (Hildesheim, 1979), esp. 206-9.



3-11 Villard de Honnecourt's elevation drawing of Laon Cathedral west tower.

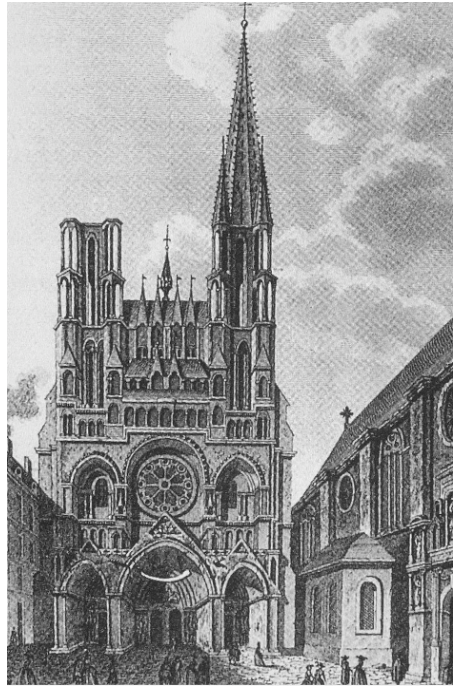
The existence of Villard's drawing effectively confirms what the proportions of the Auxerre tower had already begun to imply: that the quadrature system based on rotated squares, whose use is well attested in drawings and written texts of the Late Gothic period, had already been applied to spire design by the period around 1200. The design of the Laon tower is more detailed and subtle than that of the earlier Auxerre tower. Compared to some late Gothic drawings, though, Villard's Laon tower plan looks almost like a simple student exercise. This very simplicity allows the plan to serve as an architectural Rosetta stone of sorts, a basic text that helps to make the geometrical language of Gothic spire designers decipherable. Since simple quadrature relationships fully determine the

overall proportions of the tower design in Villard's drawing, it is easy to produce a geometrically rigorous redrawing of this Laon tower scheme. As shown in figure 3-10, a series of fairly straightforward permutations on the quadrature system suffice to locate all the key elements in the plan. The centers of the corner aediculae line up precisely with the centerlines of the main octagon walls and, in an elegant touch, the diagonally planted corner flanges flanking the salient tower buttresses define octagons exactly half as large as the interior of the large central octagon.

In its three-dimensional outlines, as well as in its plan geometry, the Laon tower design exemplifies the Gothic tendency to replicate analogous forms across a range of scales, a tendency that relates closely to the principle of "partiality" identified by Frankl. The diagonally planted lower aediculae of the northern and western towers, with their square plans, echo the form of the square-planned tower substructures, just as the upper

octagonal aediculae echo the form of the upper tower core. This system of formal resonances was meant to continue above the current tower tops, with corner pinnacles crowning each of the aediculae to surround each main spire. An elevation drawing by Villard de Honnecourt (fig. 3-11) shows the pinnacles and spire base of the west facade's southern tower, the only one to be crowned with its intended spire. Prior to the spire's destruction in the French Revolution, its appearance was recorded not only by Villard, but by the eighteenth-century artist Tavernier de Junquières (fig. 3-12). As these documents indicate, the pinnacled aediculae acted as miniature formal doubles of each spired tower, just as their geometrical structure in plan echoed that of the tower as a whole. The sophisticated plan of the Laon towers reflects the designer's interest in replicating the basic spire shape in the pinnacles, unfolding the plan, as it were, from around the central octagonal spire cores. Unlike most previous towers, which had fairly blocky outlines until the transitional zone right at the spire base, the Laon towers visually anticipate their function as spire supports.

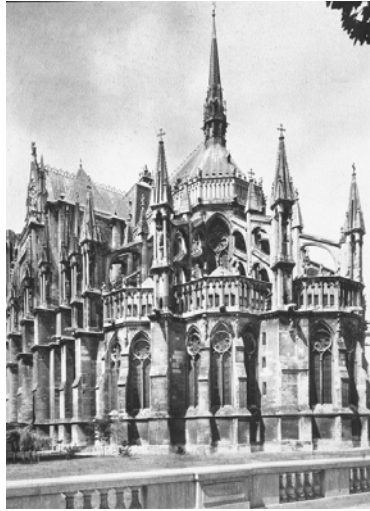
At Laon, pinnacles were deployed for the first time not only in the spire zone, but also in the lower reaches of the facade. Four large pinnacled tabernacles stand against the four main facade buttresses just above the portal zone, and a second set of smaller tabernacles appears just above the rose window zone. The Laon facade pinnacles were crucial precedents for the pinnacles used in the west facade of Amiens Cathedral, the transept facades of Chartres Cathedral, and the entire perimeter of Reims Cathedral. The impact of this widespread pinnacle placement on the appearance of



3-12 Laon Cathedral, west facade and spire (18th-c. engraving).



3-13 Soissons Cathedral, chevet.



3-14 Reims Cathedral, chevet.

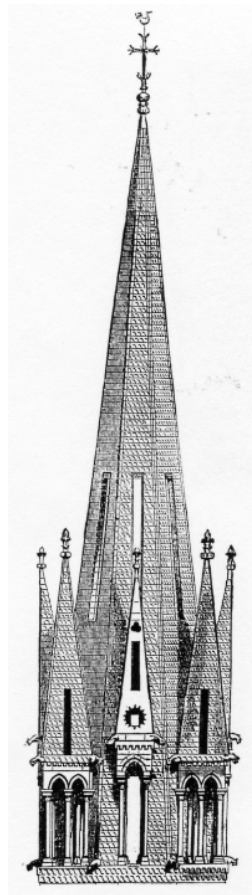
Gothic churches can scarcely be overstated, as a comparison between the eastern chevets of Soissons and Reims Cathedrals demonstrates. The Soissons chevet, like the Laon facade, was designed in the 1190s, but it does not yet incorporate decorative pinnacles, and it thus has a rather sober and even blocky character (fig. 3-13). The Reims chevet, designed only two decades or so later, looks both luxurious and explosive, thanks largely to the exuberant presence of many crocketed pinnacles (fig. 3-14). This pinnacle form, too, may well have been invented in Laon.

The Laon workshop appears to have played a leading role in the early development not only of spire-supporting towers, but also of pinnacles and spire cones themselves. The elevation drawing by Villard d'Honnecourt and the view of the facade by Tavernier de Junquières reveal that the Laon spire and its four surrounding corner pinnacles had slotted faces and crocketed corner flanges. These features would become common in spires of the later thirteenth century, but both would have been novel in the years around 1200 when Laon spire was probably under construction.¹¹ Crockets and slots begin to transform the spire cone from an essentially static pyramidal

¹¹ In his discussion of the Villard drawing, Hans Jantzen claims that "these were to be open spires, the ribs decorated with crockets, the first time that this motif appeared in Gothic architecture." *High Gothic: The Classic Cathedrals of Chartres, Reims, and Amiens*, trans. James Palmes (New York, 1962), 106. For the 18th-century engraving and the dating of the western towers and spire to circa 1200, see W[illiam] W. Clark, *Laon Cathedral*, vol. 1, *Architecture* (London, 1987), 11 and 44, respectively.

form into an elaborate composite object with interior space and a hierarchy of visual scales. Both features, unlike surface decoration, alter the silhouette of the spire cone and the way it appears against the sky. Together, they helped give the Laon spire cone a characteristically Gothic complexity in keeping with the restless quality of the towers below.

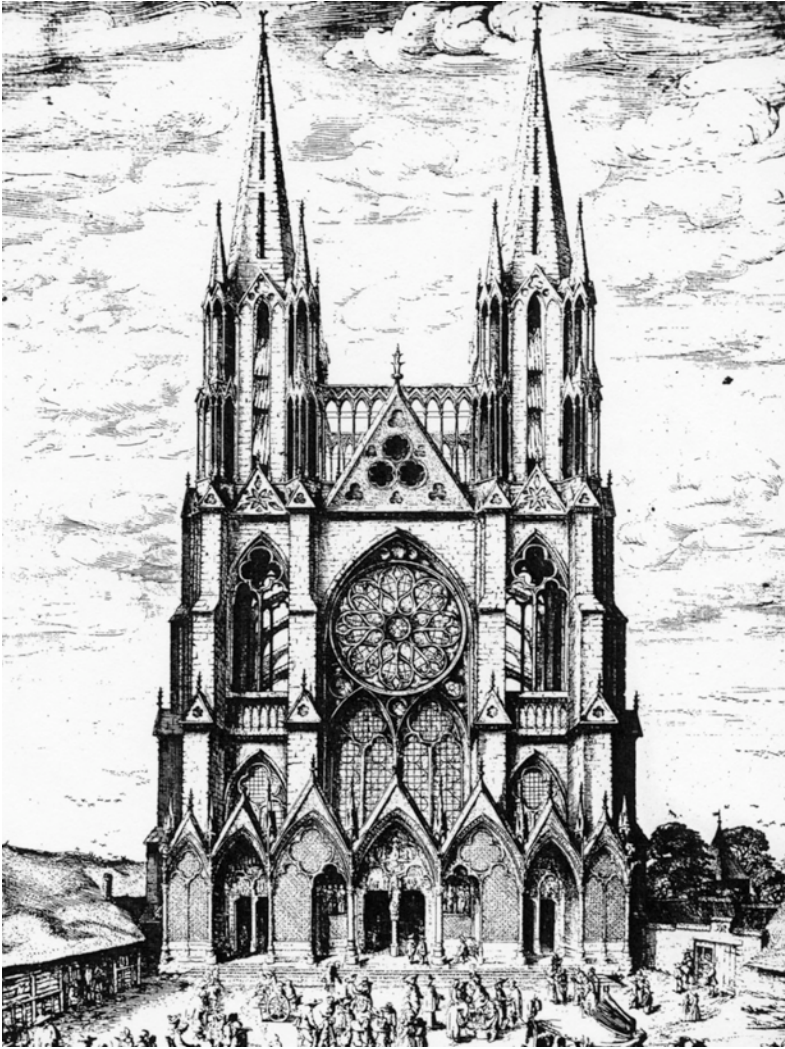
The incorporation of crockets appears to have stemmed entirely from formal considerations, but the slotting of spires may have been influenced by practical considerations as well. Large spires are subject to substantial wind loads, a fact that medieval builders could have grasped qualitatively despite their lack of modern analytical techniques. Conceivably, therefore, they may have introduced spire-slotting in order to reduce wind loading; in addition to reducing the spire's sail area, slotting permits air to bleed through the structure from the windward to the leeward side.¹² Alternatively, they may have come up with spire-slotting simply to save weight, since heavy spires require the support of massive substructures. In practice, dead weight rather than wind load appears to have been the primary structural constraint on great spire design.¹³ The only major medieval spires to blow down were made not of stone, but of timber. Pier buckling and foundation failure, however, would continue to plague great spire projects throughout the Gothic era.



3-15 St-Denis Abbey, north spire (19th-c. drawing).

¹² The general idea that spire slotting was introduced to reduce wind forces has been proposed by Jacques Thiebault, in *Les Cathédrales gothiques en Picardie: Étude architecturale* (Amiens, 1987), 36. Aerodynamic studies of slotted and non-slotted smokestacks indicate that slotting reduces the wind load on these towerlike structures to less than half their original value. See E. L. Houghton and N. B. Carruthers, *Wind Forces on Buildings and Structures: An Introduction* (New York, 1976), 190-92.

¹³ Aerodynamic effects can be exceedingly subtle, but a simple calculation based on average wind pressures suggests that the wind-induced stresses in a typical great spire would be less than 10 percent as great as those induced by dead loading. By comparison to High Gothic church vessels, with their large sail areas and slender supports, the towers supporting great spires were massive structures. For the basic equations of wind-loading calculation, see Mark, *Experiments*, 22.



3-16 Reims, Saint-Nicaise Abbey (17th-c. engraving).

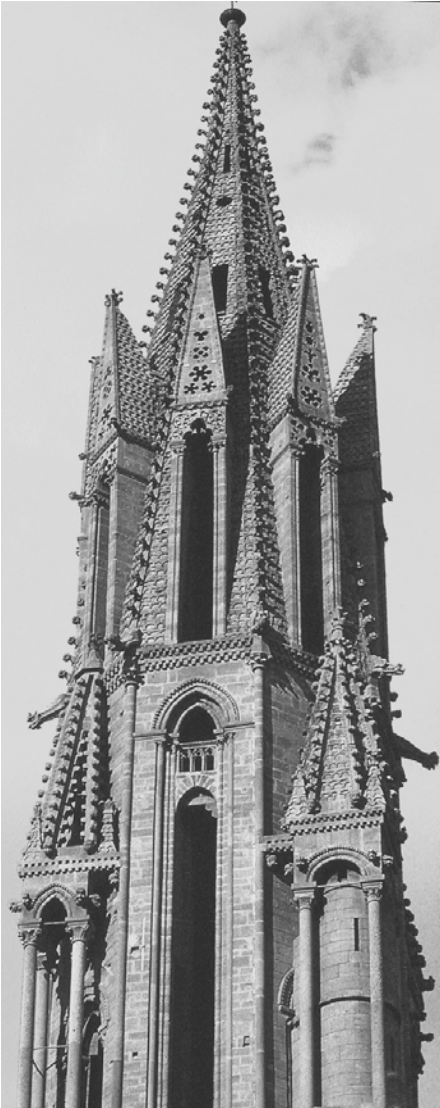
The case of Saint-Denis suggests that spire-slotting was indeed meant to save weight. Early in the thirteenth century, a slotted spire was added to the north tower of Suger's west facade, which had never been designed to carry such an additional load (fig. 3-15). By the nineteenth century the

structure had begun to show dangerous signs of distress, and the spire was dismantled by Viollet-le-Duc, who marveled at its lightweight construction.¹⁴ Like the Norman spires of Bayeux Cathedral and Saint-Étienne in Caen, the spire of Saint-Denis rested directly on the square-topped tower below, without an octagonal transitional story. This format probably reflects another attempt to save weight. As a result, however, the Saint-Denis spire does not fully qualify as a great spire in the sense defined in this book.

The twin spires of the now-destroyed abbey church of Saint-Nicaise in Reims were completed several decades after the Saint-Denis spire, but they retained something of its simple, streamlined, aesthetic, as a surviving seventeenth-century engraving shows (fig. 3-16). Like the Saint-Denis spire, those of Saint-Nicaise included vertical slots but not decorative crockets. The towers underneath, meanwhile, were comparable to those of Laon, with airy two-story aediculae flanking a narrow tower core. At Saint-Nicaise, however, the play between airiness and mural solidity was more pronounced than at Laon, in keeping with the aesthetic direction established lower in the facade by Hugh Libergier, one of the first Gothic designers known to posterity by name. Unlike most facade towers of the thirteenth century, moreover, the towers of Saint-Nicaise rose essentially free above the upper margin of the clerestory zone; they were linked only by a fragile openwork arcade that lay behind the plane of the main roof gable, rather than by a more emphatically horizontal arcade. This treatment of the roof-tower junction made the spires of Saint-Nicaise appear to soar higher above the facade than they actually did, while simultaneously continuing the play on solid and void seen throughout the facade, where curious details such as the skewed placement of the gables over the portals seem to deny the distinction between the mass of the main facade buttress and the openness of the portals. Because this brittle, mannered, sensibility differs from the tectonic clarity stereotypically associated with High Gothic design, Saint-Nicaise is often seen as a seminal monument in the development of the Rayonnant Gothic manner. The spire cones of Saint-Nicaise, however, remain structurally and visually conservative. Indeed, French spire design as a whole remained remarkably conservative throughout the thirteenth century, in part because so few great spires were actually completed in this period.

With the loss of the Laon, Saint-Denis, and Saint-Nicaise spires, the spire of Senlis Cathedral stands as the best surviving indicator of French great spire design trends in the first half of the thirteenth century (fig. 3-

¹⁴ Viollet-le-Duc, "Flèche", 5:434-39.



3-17 Senlis Cathedral, spire on southern tower of west facade.

17). This elegant structure, erected over the cathedral's southwest tower in the 1240s, still visually dominates the surrounding region, if in a less emphatic manner than the later and larger spires of the German sphere.¹⁵ The spire cone of Senlis, like that of Laon, had slotted faces and crocketed corner flanges. The overall silhouette of the Senlis spire was more streamlined than at Laon, in large part because of the different treatment of the corner aediculae, which are only one story tall at Senlis rather than two-storied as at Laon. As a result, the corner pinnacles at Senlis terminate far lower relative to the main spire. These corner pinnacles are biased inwards with respect to their supporting aediculae, so that their sloping sides continue the profile of the spire cone. Meanwhile, eight slender gables continue the vertical surfaces of the tower core into the zone of the spire.¹⁶ This contrapuntal arrangement gives a surging visual momentum to the Senlis spire, making it a worthy High Gothic successor to the Early Gothic spire of Chartres. Indeed, because none of the other major cathedrals of

¹⁵ See Thiebault, *Picardie*, 36; and Marcel Aubert, *La Cathédrale de Senlis*, *Petites Monographies des grands édifices de la France* (Paris, [1911]), 22.

¹⁶ A comparable gable format is seen in the smaller early thirteenth-century spire of Vernoillet, which lacks the octagonal transitional story characteristic of great spires.

France were completed with great spires in the thirteenth century, the spire of Senlis provides the single outstanding example of great spire design in this otherwise fruitful period for French Gothic architecture.

This state of affairs probably would have shocked an observer of the architectural scene in the first decades after 1200. Such an observer would have had good reason to imagine that great spires would soon dominate the skylines of most French cathedral cities. Following the example of Laon, the High Gothic cathedrals of Chartres and Reims were designed to support complexes of nine and seven spires respectively. Transept towers were also planned for the cathedral of Beauvais, where their lower stages were the first part of the new Gothic fabric to be constructed. For reasons explored in the following chapter, however, none of these ambitious projects was carried through to completion.