

PART III: PRIDE, PIETY, AND COMMUNITY: THE GOLDEN AGE OF SPIRE CONSTRUCTION IN THE HOLY ROMAN EMPIRE

Chapter 5: Innovations in the Rhineland

It was in the Rhineland in the decades around 1300 that the design of great spires finally began to catch up with the dramatic strides made over the previous century in other facets of Gothic architectural production, especially in France. In Strasbourg, Cologne, and Freiburg, in particular, up-to-date French Rayonnant ideas about the skeletalization of form were decisively brought to bear for the first time on the problem of spire design. One major consequence of this process was the invention of the openwork spire type, which would subsequently enjoy great popularity, especially in the German-speaking world. This first flourishing of Rhenish spire design paved the way for the emergence of the Holy Roman Empire as the superpower in spire construction in the late Gothic era. The innovative spire projects of the Rhineland thus occupy a pivotal place in the overall history of the Gothic great spire phenomenon, at the geographical boundary between the French and German spheres, and at the chronological boundary between the periods often identified as the High and Late Middle Ages.¹

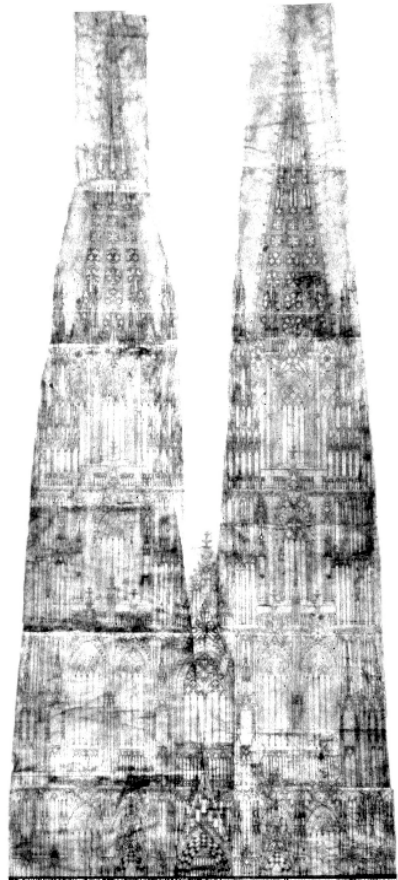
The flowering of Rhenish spire design coincided with the establishment of drawing as a crucial tool of architectural planning and formal invention. With the exception of Villard de Honnecourt's notebook, the vast majority of the earliest surviving Gothic architectural drawings were associated with the Rhenish spire and facade projects of Strasbourg, Cologne, and Freiburg. The freedom of expression provided by drawing, which was unconstrained by the slow pace and technical demands of actual construction, allowed spire designers in the Rhineland to develop bold, innovative, and cohesive plans for spired facades whose completion the draftsmen could scarcely hope to see in their lifetimes. The existence of such drawings allowed the designer's formal vision to exercise an influence across both space and time. In the temporal dimension, the survival of a great drawing like the so-called Plan F for Cologne Cathedral could inform and constrain the planning of subsequent generations in the local workshop, to the extent that the cathedral completed in 1880 conformed substantially to the intention of the designers working in the early fourteenth century (fig. 5-1). In the spatial dimension, the existence of such

¹ Much of the material in this chapter first appeared in Robert Bork, "Into Thin Air: France, Germany, and the Invention of the Openwork Spire," *Art Bulletin* 85, no. 1 (March 2003): 25-53.

drawings and humbler sketches fostered the rapid exchange of architectural ideas, especially along major trade routes such as the Rhine River.

The Rhineland became a lively laboratory for spire design in large part because it was there that French architectural ideas intersected with patronage circumstances conducive to the development of ambitious spire projects. In Cologne, as in France, the cathedral-building enterprise was largely the affair of the local bishop and cathedral chapter. In Strasbourg and Freiburg, however, civic pride and popular enthusiasm played a newly prominent role in the patronage situation, providing a powerful impetus for spire construction. The competitive dialog between spire projects that had largely lapsed in thirteenth-century France, therefore, resumed with new energy in the Rhineland in the decades around 1300. The patrons and spire designers active in Cologne, Strasbourg, and Freiburg were clearly aware of each other's projects, from which they drew inspiration as they developed their own schemes.

Intercity competition may have played a healthy role in catalyzing the development of Rhenish spire projects in the Gothic era, but it has greatly complicated scholarly attempts to understand the overall history of these projects. The close artistic links between the Strasbourg, Cologne, and Freiburg workshops, and the evident speed of communication between them, makes it difficult to authoritatively establish the location where certain key ideas, such as the openwork spire format, were actually



5-1 Cologne Cathedral, Plan F.



5-2 Freiburg Minster.

invented. The Freiburg spire was certainly the first openwork spire to be completed (fig. 5-2), but the openwork spire concept might first have been developed in Cologne. The masterful Cologne Plan F, which shows the entire Cologne Cathedral facade complete with openwork spires, may antedate the Freiburg spire.² Claims and counterclaims about the relative chronology of the two designs have been published for over a century, but no consensus has yet emerged. Relative dating has been seen as an important issue in this case because the two designs resemble each other far too closely to be independent conceptions.

Both incorporate not only the openwork spire pyramid--which even by itself would be a remarkable coincidence--but also such features as prominent gables at the spire base and corner pinnacles with statue niches alongside the octagonal tower story immediately below. Differences of detail suggest that two different workshop traditions were involved in the two projects, as discussed below, but the fundamental similarities between them remain striking.

Since art-historical scholarship has long emphasized questions of originality and influence, debates about the relative chronology of the Cologne drawing and the Freiburg spire have taken on a certain partisan cast, with champions of each project tending to dismiss the other as a mere copy. Such interpretations obviously have a bearing on the perceived artistic value of these spires, the most conspicuous monuments in their

² The dating of Cologne Plan F has been repeatedly revised, with earlier datings generally finding favor in more recent scholarship. Helen Rosenau in 1931 dated the drawing to the 1320s. Hans Kaufmann initially agreed, but by the 1950s he had begun to advocate a date of around 1300. Arnold Wolff has also argued strongly for a dating around 1300. These arguments are usefully summarized in the most recent and detailed study of Plan F, Marc Steinman's "Die Westfassade des Kölner Domes: Der Riss F und der Südwerktorso" (Ph.D. diss., University of Bonn, 1999), esp. 2-4. Steinmann argues that the drawing could have been completed as early as 1280, but this revisionist assessment depends on optimistic reading of the evidence, especially the evidence from numerous tracery comparisons. Even he, though, stops short of claiming priority for the Cologne workshop in the invention of the openwork spire, admitting that the idea must have been adopted at roughly the same time in Freiburg.

home cities. Local patriotism, therefore, has inflected discussion of the Cologne-Freiburg priority problem. Studies of Freiburg Minster tend to explain the Freiburg spire without any appeal to influence from Cologne. Studies of Cologne Cathedral, conversely, tend to be dismissive of Freiburg. In 1986, for example, Cologne Cathedral's supervising architect called the idea of Freiburg's priority "one of the most obstinate myths in the history of architecture."³

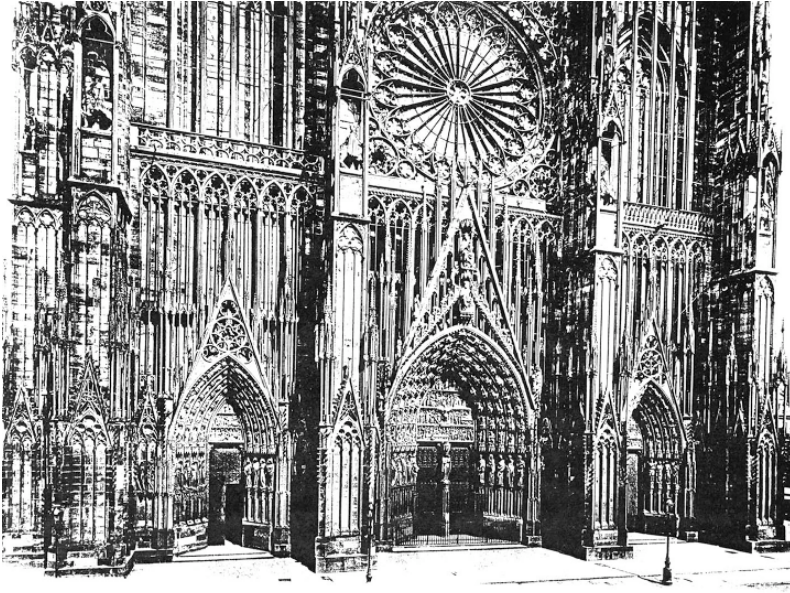
Those who advocate the priority of the Cologne workshop in the invention of the openwork spire generally explain this innovation in terms of the consistently high ambition of the Cologne Cathedral workshop, one of the most important centers for the transmission of French Gothic design into the German world. Cologne's Cathedral was clearly intended from its inception in 1248 to be the greatest of churches, a building in which all the most advanced French Rayonnant architectural ideas would be synthesized into a coherent whole of unprecedented grandeur.⁴ Those involved in the Cologne project tried to develop optimal solutions for every problem of Gothic design, and their embrace of the openwork spire concept makes good sense in this context.⁵ The fact that the pinnacle and tracery forms seen in Cologne Plan F derive directly from those seen in the building's choir, moreover, suggests that most of the facade design was based on local sources, rather than outside influences.

Those who advocate the priority of the Freiburg project, however, generally explain the brilliance of the Freiburg spire through influence from Strasbourg rather than Cologne. Ernst Adam, for example, optimistically dated the Freiburg project early, based on formal analogies with Strasbourg

³ Arnold Wolff, *Der Gotische Dom in Köln* (Cologne, 1986), 18.

⁴ Arnold Wolff has been the most active scholarly champion of Cologne Cathedral in recent decades. Wolff has noted the close relationship of Cologne Cathedral to its French precedents, even calling it the youngest and most attractive sister of great French cathedrals like those of Reims and Amiens. See Wolff, *Geschichtliches und Baugeschichtliches zum Kölner Dom* (Cologne, 1970). As noted above, Wolff sees no need to invoke influence from Freiburg to explain the appearance of openwork spires in Cologne Plan F. The priority of Cologne is also accepted by Christopher Wilson in *Gothic Cathedral*, 154, who says that "The pierced tracery of these spires is a more inventive stroke than one can find in any northern French facade design later than c. 1270." Similarly, Pablo de la Riestra writes in "Gothic Architecture in German Lands," *Gothic: Architecture, Sculpture, Painting*, ed. Rolf Toman (Cologne, 1998), 200, that "the influence of the design of Cologne Cathedral facade, the so-called 'F-Plan' can clearly be seen" at Freiburg.

⁵ Hans Kaufmann nevertheless argued, in one of the few articles to address the Cologne vs. Freiburg priority problem directly, that the simpler tracery in Cologne Plan F was actually later than that of Freiburg, because he believed that the Cologne approach was more systematic, and hence more advanced. Kaufmann himself admitted, however, that datings based on such interpretations of tracery could be highly subjective. See "Die Masswerkhelme des Freiburger Münsters und des Kölner Doms," in *Festschrift Kurt Brauch*, *Kunstgeschichtliche Beiträge zum 25 November 1957*, 121-22.



5-3 Strasbourg Cathedral, west facade, lower zone.

Cathedral.⁶ Since the Strasbourg nave was begun in roughly 1240, Adam proposed a similar date for the simpler but closely related Freiburg nave. This allowed him to propose a start date of roughly 1250 for the blocky lower portions of the Freiburg tower, which were built together with the western nave bays.⁷ Adam explained the design of the far more elaborate upper tower octagon and spire in terms of a second wave of influence from Strasbourg, coming this time from the Strasbourg facade workshop. Dendrochronological evidence has shown that Adam's optimistically early dating of the lower tower block has to be revised by several decades, but his association of the Freiburg spire with the Strasbourg facade has proven durable.⁸ The Strasbourg facade (fig. 5-3) has been widely interpreted as a precursor for the Freiburg spire not only because it includes spectacular

⁶ See Ernst Adam, *Das Freiburger Münster* (Stuttgart: 1968). A more recent exposition of Adam's basic argument appears in Wolf Hart and Ernst Adam, *Das Freiburger Münster* (Freiburg im Breisgau, 1978).

⁷ Adam, *Das Freiburger Münster*, 13-16.

⁸ The dendrochronological findings are cited, for example, in Heike Mittmann, *Das Münster zu Freiburg im Breisgau*, (Lindenberg, 2000), 7-10; and Rüdiger Becksmann, Friedrich Kobler, and Peter Kurmann, "Das Freiburger Münster: der Bau und seine Originalausstattung," in *Geschichte der Stadt Freiburg im Breisgau* (Stuttgart, 1993), 347-52.

screens of openwork tracery, but also because many of its details of tracery form and buttress articulation resemble those of the Freiburg spire. Most recent literature on the Freiburg spire, therefore, emphasizes the importance of the Strasbourg connection, with little or no allusion to the potential impact of ideas from Cologne.⁹

These opposing views of the Cologne-Freiburg priority problem have, to a surprising extent, simply passed each other by. This is unfortunate, because celebrations of one project at the expense of the other tend to obscure the complex patterns of interaction and reaction that characterized the artistic relationship between the Cologne, Freiburg, and Strasbourg workshops. The "Eureka" moment when the openwork spire type was first conceived cannot be definitively located within a single workshop, as the continuing disagreement about the priority question suggests. Instead, it can be most plausibly located in the space of artistic exchange between all three.¹⁰ When these three great Rhenish spire projects are considered side-by-side in their historical contexts, it becomes clear that the Freiburg spire project drew on influences from both the Cologne and Strasbourg workshops, which served as conduits for different sets of French architectural ideas. The resultant narrative of intercity interaction and competition helps to clarify not only the overall patterns in the early history of Rhenish spire design, but also the specific changes of artistic direction evident in Strasbourg, Cologne, and Freiburg.

Strasbourg

The Strasbourg Cathedral workshop occupies a curious place in this narrative because it played a crucial role in the invention of the openwork

⁹ Scholars actually working in Freiburg have a particular investment in the Freiburg-first scenario. If they mention Cologne at all, it is usually because the completion of the Cologne spires in the 19th century underlines the enduring appeal of the openwork spire paradigm supposedly inaugurated at Freiburg. See Mittmann, *Das Münster zu Freiburg im Breisgau*, 11; and Manfred Sass, "Der Kühnste Turm der Christenheit: Eine statisch-konstruktive Glanzleistung des Mittelalters," *Münsterblatt* 7 (2000): 18. More frequently, discussions of Freiburg simply leave Cologne out of the picture, concentrating on the connections between Freiburg and Strasbourg. See Becksmann et al., "Das Freiburger Münster," 351-53; Matthias Untermann, "Das Freiburger Münster im Spiegel der mittelalterlichen Baukunst in der Regio," *Münsterblatt* 7 (2000): 12; and Jane Turner, ed., *The Dictionary of Art* (New York, 1996), s. v. "Freiburg im Breisgau," by Virginia Roehrig Kaufmann. Discussions of the drawings related to Freiburg also tend to privilege the Strasbourg connection. See, for instance, Reinhard Liess, "Die Rahnsche Riss A des Freiburger Münstersturms und seine Strassburger Herkunft," *Zeitschrift des Deutschen Vereins für Kunstgeschichte* 45 (1991): 7-66. Liess, not coincidentally, made his reputation primarily with his publications on Strasbourg Cathedral.

¹⁰ Norbert Nussbaum and Paul Crossley both attempt to sketch some of this interaction in their superb survey texts. See Nussbaum, *German Gothic Church Architecture* (New Haven, 2000), esp. 58-59, 234; and Crossley's work in the revised edition of Frankl, *Gothic Architecture* (2000), esp. 176-78, 339-41.

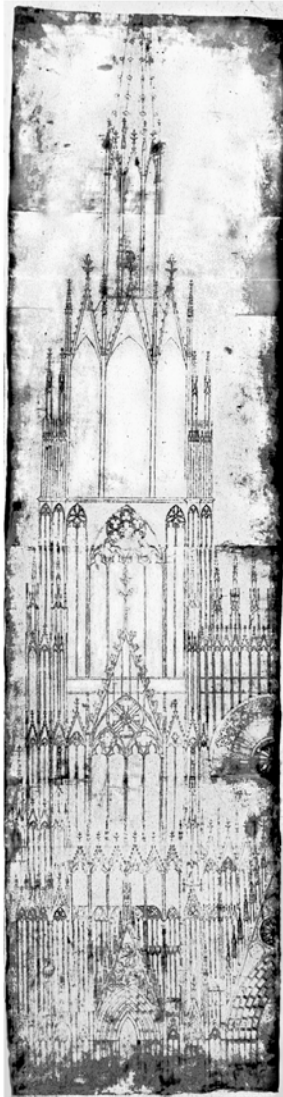
spire type even though there is no evidence that openwork spires were planned for Strasbourg Cathedral itself until the fifteenth century. The only earlier drawings that show the full vertical extent of the Strasbourg facade, the so-called Strasbourg Plans B and B1 (figs. 5-4 and 5-5),¹¹ show related versions of a spire design that differs radically from the Cologne-Freiburg type.¹² The spires in the Strasbourg drawings are narrow and pencil-like, and they poke out from the wider drum story below rather than emerging smoothly from the tower core like the wider spires of Cologne and Freiburg. It is thus hard to explain the overall shape of the Freiburg spire in terms of influence from Strasbourg. Moreover, neither the original Strasbourg Plan B nor the more detailed Plan B1 shows any tracery in the tapering spire cone itself. The Strasbourg facade workshop was the site of daring experimentation in openwork construction in the later thirteenth century, however, and its innovations were destined to have an impact not only in Freiburg, but also in Cologne. Thus, while the "Eureka" moment of the openwork spire's invention cannot be conclusively located within the Strasbourg workshop, the designers of the Strasbourg facade clearly helped to establish the artistic climate in which this invention became possible.

Over the course of the thirteenth century, three variations on the French Gothic style had been developed in the Strasbourg Cathedral workshop.¹³ The first appeared in the south transept, begun around 1225. Here the heavy mural forms of the architecture remained stereotypically Romanesque, but the rose windows and sculptural programs influenced by those of Chartres attest to the new importance of French Gothic prototypes. A giant step beyond this hybrid mode was taken around 1240 with the beginning of work on the cathedral's nave. In this second phase of Strasbourg Gothic, the most current French Rayonnant models were fully

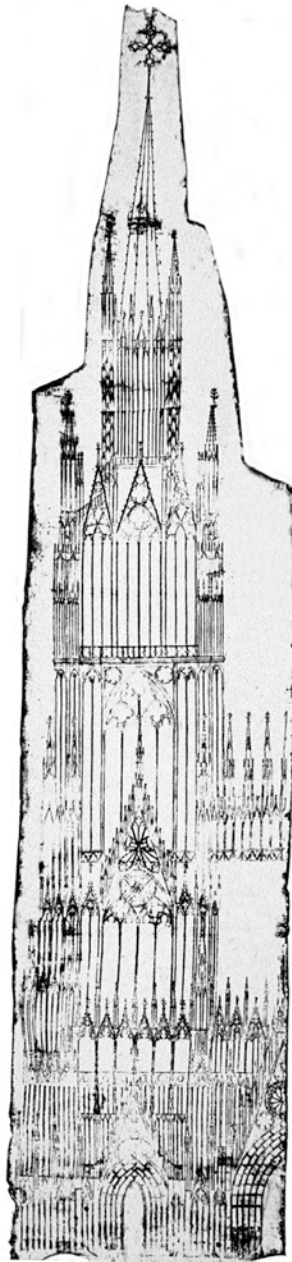
¹¹ The only other surviving medieval drawing to show the full extent of the Strasbourg facade is the Berner Riss discussed in chapter 7, which dates only from the 15th century.

¹² The relationship between Plan B and Plan B1 is somewhat controversial. The meticulously detailed lower portions of Plan B were probably executed in the 1270s, but the more cursorily rendered spire zone may have been drawn in later. Thus, while Plan B1 has generally been seen as a copy after Plan B, it is conceivable that the spire of Plan B1 was drawn before that of Plan B, as Roland Recht has argued in *Le Dessin d'architecture: origine et fonctions* (Paris, 1995), 62-63; and Recht, *Bâisseurs*, 381-88. Reinhard Liess has argued, however, that even the upper portions of the original Plan B were conceived before the execution of Plan B1. See "Der Riss B der Strassburger Münsterfassade," in *Orient und Okzident in Spiegel der Kunst* (Graz, 1986), esp. 178-80. Liess's view seems more plausible given the close geometrical relationship between the upper and lower portions of the drawing, as discussed in Robert Bork, "The Constructive Geometry of Plan B for Strasbourg Cathedral," paper presented at the International Medieval Congress, Leeds, Eng., July 2002.

¹³ For a recent and concise survey of this development, see Roland Recht, *La Cathédrale de Strasbourg* (Strasbourg, 1993), 35-55. See also Barbara Schock-Werner, "Le Chantier de la cathédrale de Strasbourg," in Aceto, ed., *Chantiers médiévaux*, 223-26.



5-4 Strasbourg Plan B



5-5 Strasbourg Plan B1

assimilated. With its glazed triforium and compound piers, the Strasbourg nave closely resembles that of Saint-Denis Abbey, begun just a few years earlier, although the retention of the previous cathedral's Ottonian foundations gives the Strasbourg vessel much wider proportions. A third phase began in the 1270s, as the Strasbourg workshop turned to the planning of the cathedral's elaborate west facade.

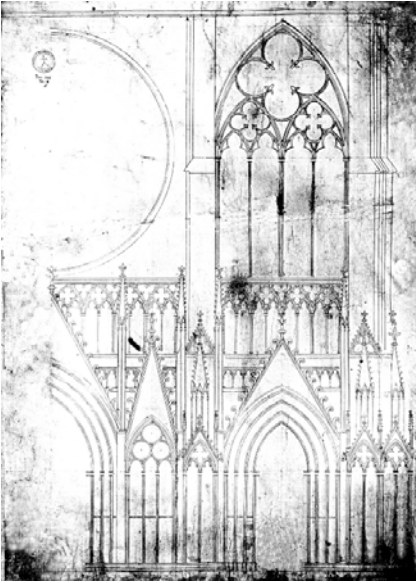
The grandeur of the Gothic campaigns at Strasbourg expressed not only the power of the church, but also the pride and wealth of Strasbourg's burghers, who by the late thirteenth century had established themselves as the dominant players in local politics and civic life. Already in the 1240s, as construction of the nave was getting under way, the burghers had begun to take an unusually active role in the administration as well as the financing of the cathedral building project.¹⁴ In 1252, moreover, a city altar was established in the cathedral's new roodscreen, creating what Henry Kraus has called "an area of divinely protected civil sovereignty in the very heart of the bishop-and-chapter's church."¹⁵

Burgher control over the cathedral fabric would reach new heights in the later thirteenth century, but only after a crisis in the 1250s and early 1260s temporarily interrupted the traditionally warm relations between Strasbourg's bishops and the citizenry.¹⁶ The death of emperor Frederick II in 1250 had removed the external threat that had driven the bishops into alliance with the townspeople. Bishop Heinrich von Stahleck soon undertook to recover episcopal rights surrendered to the city in the preceding decades. These unpopular initiatives were pursued further by his brash young successor Walther von Geroldseck, whose forces were defeated by an army of Strasbourg's citizens at the Battle of Hausbergen in 1262. Following the battle, Strasbourg emerged as an effectively independent city-state. Bishop Walther died soon after, and his successors re-established amicable relations with the civic government. The privileged status of the city altar was reaffirmed, and a public altar was founded in 1264 for gifts to the cathedral building fund. The founder of this "fabric altar" was a burgher named Heinrich Wehelin, whose initiative played a decisive role in establishing the independence of the cathedral fabric from clerical control, and who served in the 1280s as the fabric administrator. Civic control over the fabric was formally recognized only in 1286, but the political stage for this development had been set in the wake of the battle two decades

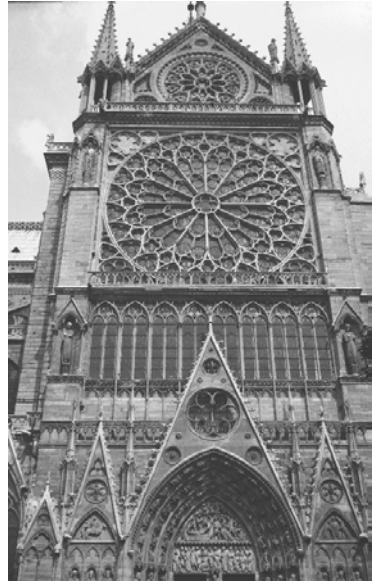
¹⁴ Schock-Werner, "Le Chantier," 225.

¹⁵ Kraus, *Gold was the Mortar*, 117.

¹⁶ *Ibid.*, 110-18.



5-6 Strasbourg Plan A



5-7 Paris, Notre-Dame, south transept facade.

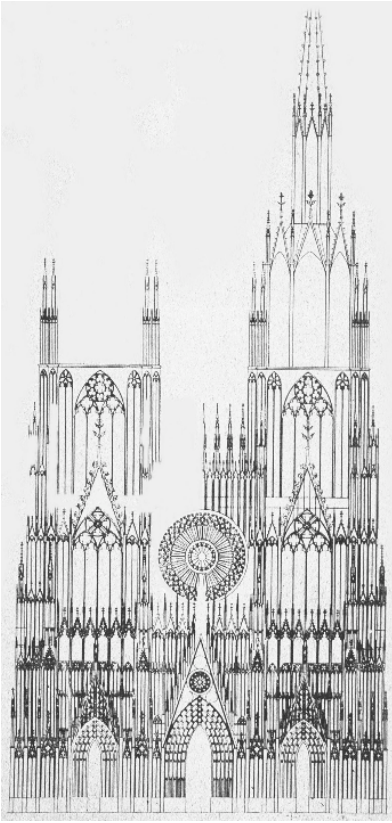
earlier.¹⁷ Enthusiastic lay donation in the 1260s and 1270s contributed to the rapid completion of the nave, setting the stage for the even more ambitious construction campaigns on the cathedral's west facade, which would come to serve effectively as a civic monument.

The drawings related to the planning of the Strasbourg facade represent increasingly daring extrapolations of French Gothic precedents, Parisian ones in particular. The drawing known as Strasbourg Plan A (fig. 5-6), probably the oldest of the set, shows the right half of a facade, but only up to the top of the rose window.¹⁸ Tower and facade design, evidently, were not yet fully integrated when this drawing was produced, probably in the 1260s. The detailing of the Plan A suggests that the designer was inspired by the slightly earlier transept frontals of Notre-Dame in Paris (fig. 5-7).¹⁹

¹⁷ This interpretation of the political events in Strasbourg follows Kraus, who sees a close connection between the battle of Hausbergen and its political fallout, on the one hand, and the city's assumption of control over the cathedral's fabric administration, on the other. Schock-Werner ("Le Chantier," 226) invoking the research of Peter Wiek, hesitates to make this socio-political linkage so directly, but Kraus plausibly asserts that "to seek to depoliticize this unique development is to strip it of reality" (*Gold was the Mortar*, 117).

¹⁸ The drawing and its bibliography are briefly discussed in Recht, *Bâtitseurs*, 381-82.

¹⁹ This is not to say that the designer of Plan A was informed by Parisian precedents exclusively. Plan A recalls the west facade of Saint-Nicaise in Reims, both in its overall



5-8 Strasbourg Plan B, modern redrawing showing only the original portions at left, and the whole facade scheme at right.

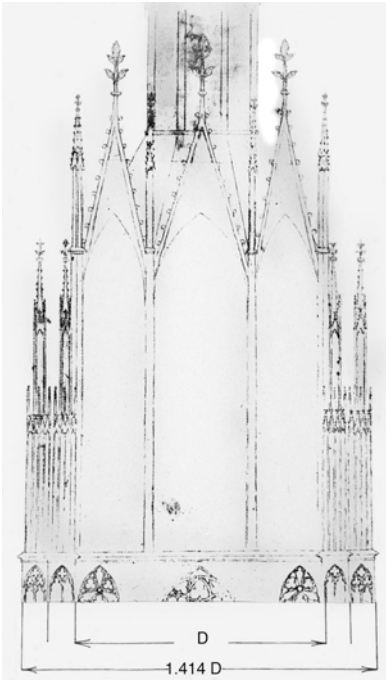
The rose window sits within a clearly defined square armature, the buttresses appear flat and striplike, and, in an especially telling detail, small gabled lancets wedge in between the main central portal and the buttresses that flank it. As at Paris, the main portal gables are perforated by rosettes. Altogether, therefore, the Plan A facade would probably have had much the same flat, brittle quality as the Paris transept frontals.

In the amazing drawing known as Strasbourg Plan B (fig. 5-4), these Parisian ideas were transformed by the elaboration of surging tracery motifs, which cover the entire facade with a screen of linear pattern. The insistent repetition of narrow lancet triplets suggests a certain “mullion mania” on the part of the anonymous designer,²⁰ but Parisian features such as the gabled lancets beside the portals may still be discerned underneath the virtuoso detailing. In Plan B, moreover, the flatness of the Paris transept frontals was modified but not totally rejected. The close resemblance of Plan B to the current Strasbourg

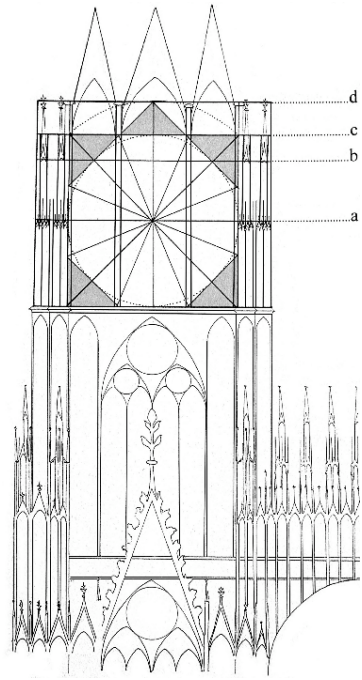
facade suggests that its designer was already conceiving of the facade as a solid structural mass with a delicate openwork tracery screen hanging in front of it (fig. 5-3). This bifurcation of the wall surface and the salience of the main buttresses gives the Strasbourg facade a degree of spatial depth

organization and in its treatment of certain small details such as the triangular ornaments on the principal buttresses, as noted by Recht, *Le Dessin*, 36.

²⁰ Plan B has formerly been attributed to Erwin von Steinbach, but most scholars today believe that at least the lower portions of Plan B were executed before Erwin became head of the Strasbourg workshop. For the details of this argument, see the sources listed in Crossley’s rev. ed of Frankl, *Gothic Architecture*, 337-38, esp. n. 111.



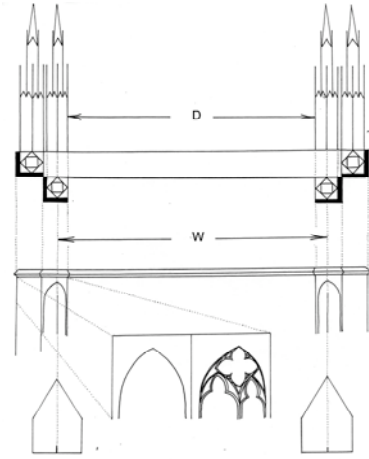
5-9 Strasbourg Plan B, proportional relationship between widths of square tower base and octagonal drum story.



5-10 Strasbourg Plan B, relationship between pinnacle doublets and an octagon equal in size to the base of the drum story.

not seen in the Notre-Dame transept frontals, but the planarity and linearity of the tracery screen itself still owes a great deal to those Parisian prototypes.

Significantly, the facade in Plan B remains rigidly flat and foursquare all the way up to the tops of the boxy tower stories, which make no aesthetic concession to the spires above. The transition from tower to spire in Plan B is problematic in terms of drawing style as well. The sketchy treatment of the spire zone in Plan B contrasts dramatically with the meticulous detailing of the drawing's lower zone. The color of the ink also changes from red in the lower facade to black above. These differences of facture are dramatized in a modern redrawing by Reinhard Liess (fig. 5-8), which shows the presumably original red-inked portion at left, and a mirror image of the complete drawing at right.



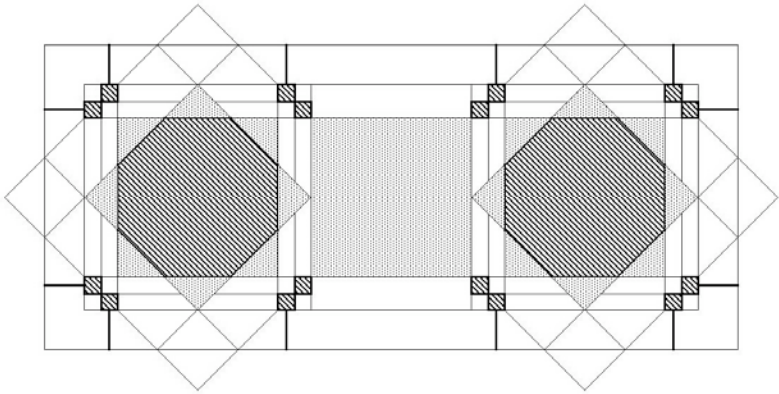
5-11 Strasbourg Plan B, schematic redrawing showing the relationship between the pinnacle doublets (top) and the main axes of the side aisles (bottom). The detail in the center shows the asymmetrical tracery motif resulting from the downward projection of the pinnacle axes.

The disjunctions of form and facture between the lower portions of Plan B and the spire zone have led to controversy about the dating of the drawing, or more precisely the dating of its unusual spire design. The highly detailed lower section of Plan B has been unanimously dated to circa 1275, based on its apparent role as a precedent for the first campaign of construction on the Strasbourg facade, which was undertaken in 1277. Some authors, including Jean Bony and Reinhard Liess, have argued that the Plan B spire design was conceived together with the rest of the drawing in the 1270s. Bony, in particular, called attention to the close formal relationship between the Plan B spire design and the Montjoies of France, which were also products of the 1270s. Other authors, including most recently Roland Recht, have argued that the spire zone was added to the drawing only in the mid-

fourteenth century.²¹

Geometrical analysis can provide a valuable perspective on the history and character of Plan B, and on the relationship between the upper and lower portions of the drawing in particular. Such an analysis reveals that the upper and lower parts of the drawing exhibit precisely the same geometrical logic. This unity suggests that the spire zone was conceived by the 1270s, or soon thereafter, by someone intimately familiar with the design methods employed by the original master of the red ink. As in the cases of Auxerre and Laon discussed previously, the key geometrical system in Strasbourg Plan B was that of quadrature, based on the relationships between rotated squares and octagons. In the Strasbourg drawing, though, this system clearly determined the proportions of the facade in elevation as well as in plan.

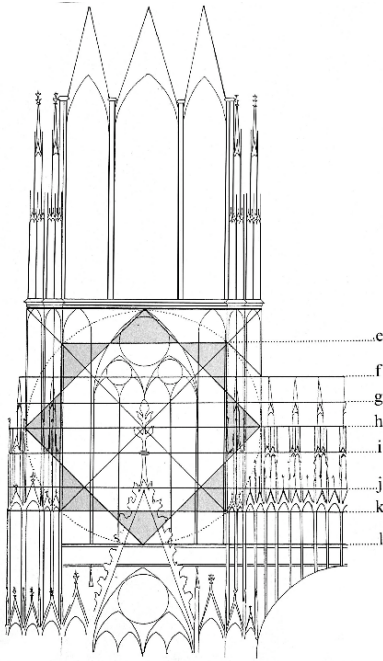
²¹ Jean Bony, *The English Decorated Style: Gothic Architecture Transformed, 1250-1350* (Ithaca, 1979), 20-21; Recht, *Le Dessin*, 62-63.



5-12 Schematic ground plan of facade block defined by Strasbourg Plan B.

The key clue to the geometrical structure of Plan B is the simple proportional relationship that governs the upper margin of the boxy tower story, drawn in red ink just below the prominent horizontal molding that separates this story from the octagonal spire drum above (fig. 5-9). The total width of the tower is precisely 1.414 times greater than the spacing between the inner faces of the narrow pinnacle doublets, here called D; this is exactly the ratio one finds between two successive squares in a quadrature sequence. Even the blocky-looking tower section, therefore, already seems to incorporate the rotational geometries first declared explicitly in the more cursorily rendered octagonal drum immediately above. The same figure, rotated into a vertical plane, defined the proportions of the narrow pinnacle doublets flanking this drum (fig. 5-10). The top and center of the octagon, for example, define the middle and top of the pinnacle shafts, while the tip of the star extrapolated from this octagon defines the tips of the pinnacles. Since these pinnacles and the boxy tower story were drawn in red ink by the presumably original draftsman, this quadrature figure appears to have been seen as fundamental to the design from its inception.

Several telling details of the Strasbourg Plan B articulation system, together with the geometrical structure of the drawing as a whole, suggest that the upper margin of the boxy tower story was the first portion of the drawing to be executed. The tracery doublets in the buttress flanges of this



5-13 Strasbourg Plan B, schematic geometry of tower story.

free tower story are subtly asymmetrical, because the draftsman divided them with the the same centerline that he used in defining the pinnacle doublets above, which are biased slightly inwards towards the tower centerline (fig. 5-11). It appears that the pinnacles were drawn first, and then projected downwards to define the centerlines of the buttresses, which together define the horizontal proportions of the facade block as a whole. As figure 5-12 shows, therefore, the quadrature system governing the design of the tower story determines the relative widths of the nave and side aisles in Plan B. As figures 5-13 and 5-14 show, moreover, the progressive unfolding of analogous quadrature figures from the tower story downwards defines the proportions of the lower facade in elevation.²² Each free tower story

can be inscribed precisely in a square, as can the clerestory-level tower bay immediately below. The location of the rose window appears to have been determined by dropping diagonals from the upper balustrade of the facade. This detail confirms the downwards flow of the design process used by the master of the red ink.

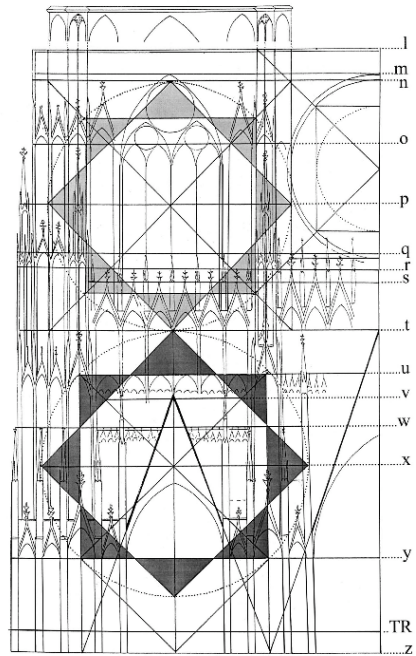
The same quadrature-based geometrical design system seen in the lower reaches of Strasbourg Plan B was also used to determine the forms and proportions of the spire zone. The same figure that was used by the master of the red ink to define the slender pinnacle doublets atop the boxy tower story was used by his less meticulous successor to shape the large octagonal spire drum between them. As shown in figure 5-15, the unfolding of diagonals from this figure helps to locate the base of the

²² Above the level defined by the tip of the main portal gable, these figures retain the scale defined by the open spacing between the upper tower pinnacles. Below this level, the figures are slightly larger, because their width is determined by the centerlines of the tower pinnacles rather than the space between them. The uniformity of the geometrical armature in the portions of Plan B drawn by the master of the red ink is nonetheless striking.

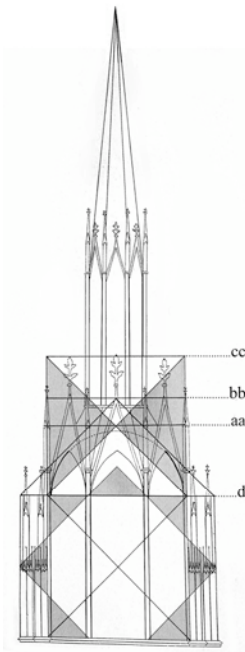
slender tower story above, whose height precisely equals the space between the pinnacle doublets, as shown in figure 5-16. The tip of the spire, which was trimmed off at some point during the drawing's long history, appears to have been located by stacking two more of these standard square figures on a groundline determined by a smaller quadrature system at the junction of the spire base and the narrow story immediately below (fig. 5-17).

The striking coherence of the geometrical armature in Plan B argues strongly against a decades-long gap between the conception of the lower facade and the spire zone. The draftsman responsible for the geometrical layout of the spire zone appears to have had an intimate understanding of the design methods used by the

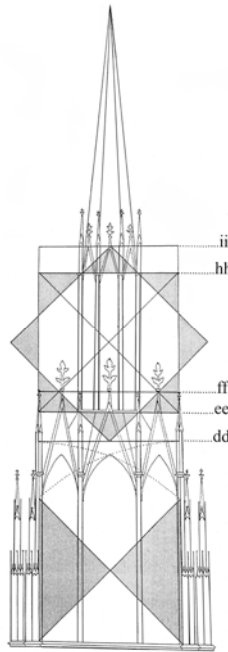
master of the red ink. The widespread popularity of quadrature in Gothic design does not suffice to explain the precise and essentially seamless continuity of geometrical conception in Plan B. This contrast between this geometrical continuity and the obvious differences of facture between the upper and lower halves of the drawing suggests that Plan B occupies an intermediate point in facade planning, between the vertically truncated Strasbourg Plan A and the completely unified Cologne Plan F. At this point seven centuries after the fact, it is effectively impossible to determine the exact circumstances of the Plan B's creation, but it seems likely that the spire design was developed by someone trained in the immediate circle of the master of the red ink. On this basis, the unusual spire design seen in the drawing can be provisionally dated to the 1270s or soon thereafter, as Bony had proposed. The conception of the Plan B spire zone, in other words, appears to have followed directly on the heels of the construction of the Montjoies of Saint Louis. Strasbourg Plan B thus deserves recognition



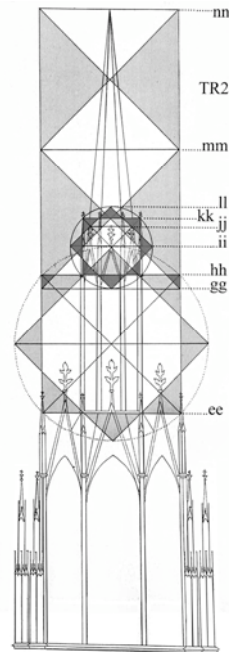
5-14 Strasbourg Plan B, schematic geometry of lower facade zone.



5-15 Strasbourg Plan B, geometry of drum zone.



5-16 Strasbourg Plan B, geometry of lantern zone.



5-17 Strasbourg Plan B, geometry of spire zone.

as the first drawing in which ideas drawn from micro-architectural shrines were systematically applied to the development of a full-scale spire scheme.

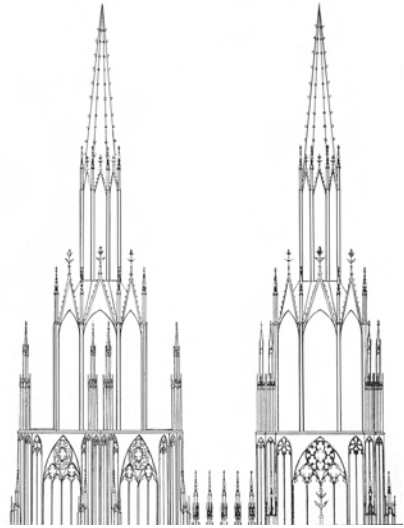
The development of this innovative micro-architecturally-based approach to spire design makes good sense in context of Strasbourg facade program. The Strasbourg facade as foreseen in Plan B, and as built, was far more complex in its articulation than any previous facade scheme. Slender pinnacles and narrow tracery panels cover the entire Strasbourg facade, whose mass is hidden by this surging screen of linear ornament. Simple pyramidal spires like those of Saint-Nicaise in Reims would have looked ridiculous atop such an elaborate facade. The tentative slotting seen in the Saint-Nicaise spires did little to reduce their murality (fig. 3-17). The surprisingly impoverished tradition of French thirteenth-century spire design, in fact, had little to offer to the creators of Strasbourg Plan B. By drawing on the innovative pinnacle and shrine forms developed in the micro-architectural sphere, however, the designer responsible for the

conception of the Plan B spire zone was able to develop a revolutionary spire format whose complexity, verticality, and craginess would effectively complement the character of the Strasbourg facade. The narrow pencil-like form of the Plan B spire, for example, harmonized with the form of the many pinnacles cladding the lower facade and its buttresses. In this sense Plan B provides a worthy Rayonnant updating of the formal resonance between large and small scale spire forms introduced in the earlier spires of Chartres and Laon.

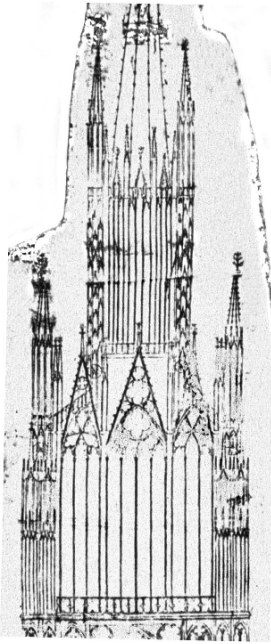
The innovative invocation of micro-architectural prototypes in Strasbourg Plan B may have been well motivated, but it did not result in complete aesthetic success.

The junction between the boxy square-planned tower story and the octagonal spire drum above would have looked somewhat awkward, especially when seen from a diagonal, since large air gaps would have been obvious between the drum and the flanking pinnacle doublets, as shown in the left portion of figure 5-18. This problematic junction resulted directly from the mixed formal parentage of the scheme: the designers of wayside markers such as the Montjoies of Saint Louis had not needed to worry about effecting a geometrical and aesthetic transition to a square tower story, after all. It is no wonder, therefore, that the appropriation of their design solution into Plan B produced an impression of ad hoc superposition rather than seamless organic growth. In this respect, the adoption of the Montjoies as a prototype resulted in the turning away from the tradition of smooth, soaring, spire profiles that had been inaugurated in the twelfth century.

The awkwardness of the Plan B spire profile was apparently recognized soon after the design was drawn up, since this spire format never gained the widespread popularity won by the roughly contemporary but very different openwork spire type developed at Cologne and Freiburg. The openwork spire format provided a more elegant solution to the problems of



5-18 Strasbourg Plan B, redrawing showing frontal view (at right) and view from diagonal (at left).



5-19 Strasbourg Plan B1, upper zone.

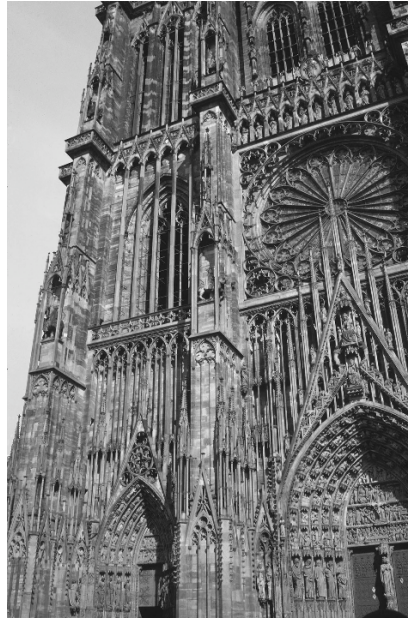
advanced Rayonnant spire design, because it allowed the designers to achieve effects of great complexity and sophistication without sacrificing the smooth profiles of the established great spire tradition. Indeed, the Freiburg spire looks like a Rayonnant interpretation of the south spire of Chartres, in which the mural surfaces of the older structure were recast as openwork tracery panels (fig. 5-2). Because the openwork solution was so elegant, the creators of Plan B probably would have used it if it had been known to them. The fact that they did not provides further evidence for the early dating of the unusual spire scheme seen in Plan B. The only direct offshoot of the Plan B spire design may be seen in the copy of Plan B known as Plan B1, which elaborates on the original drawing by including tracery panels in the spire drum, slender staircase turrets flanking the spire, and similar turrets flanking the pinnacle doublets atop the boxy tower story (fig. 5-19). Nearly every other ambitious spire project developed in the German sphere looked back more

directly to Cologne and Freiburg than to the Strasbourg Plan B spire design.

Despite this unenthusiastic reception of the Montjoie-derived spire scheme, Strasbourg Plan B deserves recognition as one of the most important documents in the history of Gothic facade and spire design. The incorporation of micro-architectural references in Plan B may not have been a complete aesthetic success, but the basic idea of making such references would eventually re-emerge to greatly enrich Late Gothic spire design. From a certain perspective, therefore, the Plan B spire format was simply ahead of its time. The more carefully detailed lower portions of the drawing, moreover, defined a level of formal complexity and sophistication that many later spire designers would strive to equal, often by borrowing design motifs pioneered in the Strasbourg facade workshop. The conception of the openwork spire, for example, may well represent the application to spire design of the openwork tracery panels displayed so

spectacularly in the Strasbourg facade, which were already foreseen in Plan B.

Favorable patronage circumstances in the 1270s and 1280s allowed work on the Strasbourg cathedral facade to begin in substantial conformity with the grandiose Plan B.²³ The first stone of the facade was placed in 1277 by bishop Conrad von Lichtenberg, who supported the construction project by issuing a series of indulgences in its favor early in his episcopate before devoting himself to fighting in his family's feudal wars. More enduring support for the building enterprise came from Strasbourg's burghers, and from the city government itself. Donations poured into the fabric altar, and the project was effectively managed by



5-20 Strasbourg Cathedral, west facade.

its first official burgher administrators, Ellenhardt "The Great" and Heinrich Wehelin, who worked directly for the city council.²⁴

As work proceeded on the lower facade, a number of small deviations from Plan B began to appear, most of which emphasized the transparency and linearity of the outer openwork wall screen. The central gable over the main portal, for example, was treated as an openwork lattice of vertical mullions (fig. 5-20), rather than as a flat sheet with rosette perforations, the more Parisian solution seen in the portals of Plan B (fig. 5-21) and in the side aisle portals of the present building. These vertical divisions within the main gable, combined with the placement of slender pinnacles along its top edges, reduce the formal autonomy of the gable by blending it into the vertical rush of the tracery panels behind it. This dizzying design combines elements from the lower and upper portions of Plan B. The tracery screen

²³ The most fundamental distinction between the lowermost portion of the extant facade and the scheme in Plan B is one of proportion: in the drawing, the aisles are fully 82.5% as wide as the nave, but in the building the equivalent figure is just under 77%. The geometrical logic behind the former ratio is outlined in Bork, "Constructive Geometry." The relationship between the drawing and the construction of the actual facade is carefully discussed in Roland Recht, *L'Alsace gothique de 1300 à 1365* (Colmar, 1974), 36-54.

²⁴ Schock-Werner, "Le Chantier," 225-26; Kraus, *Gold was the Mortar*, 117-20.



5-21 Strasbourg Plan B, detail of portal zone.

wall and the pinnacles on the gable margin are already present in the Plan B portal zone, drawn in the red ink of the presumably original draftsman, but the gable format copies that of the clerestory gable, where the black lines representing the vertical mullions seem to have been added only after the fact. Such a chronology of draftsmanship helps to explain the formal tension between the fragile linearity of the Plan B clerestory gable and the rich plasticity of the massive crockets that adorn its diagonal sides. The design of the lower facade, as executed, represses both strong diagonals and large plastic forms, pulling together instead all the

most linear and calligraphic elements from the various portions of Plan B to create a consistent vertical rush.

The same formal tendencies are manifest in the next facade story, which diverged further from Plan B. These changes may well have been introduced by the famous builder Erwin von Steinbach, who despite his vast reputation in the Neo-Gothic era seems to have become head of the Strasbourg workshop only in 1284, too late to have been the mastermind behind Plan B.²⁵ The clerestory windows over the aisles were screened off by a row of giant vertical mullions, the so-called "Harpstrings," terminating in a series of small gables that took the place of the much larger clerestory gables in Plan B. In the facade buttresses, large boxy canopies framing equestrian statues replaced the diagonally planted pinnacles foreseen in Plan B, and the gabled triforium zone was eliminated (figs. 5-20 and 5-21). The net effect of all these changes was to underline the relative dominance of horizontal and especially vertical lines over diagonals. The Strasbourg facade in its present form, therefore, can be thought of as a massive masonry box veiled by openwork screens of vertical tracery.

In technical as well as aesthetic terms, the Strasbourg facade occupies an intermediate point between traditional masonry buildings and openwork

²⁵ See n. 20, this chapter.

spires, in which metal components played a crucial structural role. Metal had been used occasionally in early medieval construction, but it was used far more frequently in the Gothic period. Metal clamps, dowels, and pins were necessary to hold together slender elements such as pinnacles and tracery mullions.²⁶ By deploying such metal-reinforced elements with unprecedented enthusiasm, the builders of Strasbourg Cathedral were able to wrap a dazzling calligraphic skin around their facade. Since these components still attach directly to the facade, however, the Strasbourg facade does not yet exhibit the degree of technical audacity seen at Freiburg, where the use of metal chains and pins allowed the whole spire to become a genuinely skeletal structure.

In cultural terms, meanwhile, perhaps the most significant aspect of the Strasbourg facade project was the high level of burgher involvement in administration as well as funding of the building process. Thanks to active popular and civic support, the facade of Strasbourg cathedral grew into an impressive monument in its own right, dwarfing the rest of the church. This situation contrasts dramatically with that in French cathedral cities like Chartres and Reims, where ambitious spire programs were left incomplete after periods of political unrest.²⁷ The process of facade construction in Strasbourg was admittedly long, slow, and complicated by conflicts such as the popular uprisings of 1332 and 1349, which forced the city's ruling oligarchy to cede more power to the lower classes. After each such slowdown, however, the facade project quickly regained the privileged place in popular and civic life that it had enjoyed at its inception. The triumphant completion of the cathedral's spectacular spire in 1439 marked the climax of a building effort that had enjoyed enthusiastic burgher support for most of its history.²⁸ By that time, the Strasbourg workshop had left the Plan B spire design far behind. The very different spire that dominates the city's skyline even today (fig. 1-2) is a sophisticated

²⁶ The use of iron in Gothic construction is a major topic whose importance is only beginning to be appreciated. Recent articles on the subject include: Arnold Wolff, "Stein, Blei, und Eisen," in *Festschrift Martin Grassnick aus Anlass der Vollendung seines 70. Geburtstages* (Kaiserlautern, 1987), 161-65; Alain Erlande-Brandenburg, "L'Architecture rayonnante et le métal," in *Les Bâisseurs du Moyen Âge*, Les Dossiers d'archéologie, no. 219 (Dijon, 1996), 46-55; and Jean-Louis Taupin, "Le Fer des cathédrales," *Revue monumentale* 13 (1996): 18-27. Architectural metal will also feature in Robert Bork, ed., *De Re Metallica: The Medieval Uses of Metal* (Aldershot, Eng., forthcoming).

²⁷ Even in Amiens, where relations between the citizens and the bishops remained cordial throughout most of the cathedral construction process, the church vessel retained its relative primacy, and the cathedral facade never became a civic symbol as it did in Strasbourg. In fact, the unusually flat facade of Amiens Cathedral seems to have been left largely unadorned in its upper reaches long after the rest of the structure was complete. See Murray, *Cathedral of Amiens*, esp. 93-96.

²⁸ Kraus, *Gold was the Mortar*, 118-30.

elaboration of the openwork spire type introduced at Cologne and Freiburg in the years around 1300.

Cologne

The Cologne Cathedral workshop ranked with that of Strasbourg as one of the most important centers for the importation of French Gothic architectural ideas into the German world, but its history unfolded very differently, and in response to different artistic and social forces. Cologne's Gothic cathedral was conceived all along as the definitive Gothic cathedral, the physical fulfillment of Rayonnant Gothic ideals.²⁹ Since the later builders remained remarkably faithful to this thirteenth-century vision, Cologne Cathedral has a systematic formal coherence that contrasts with the brilliant eclecticism of Strasbourg Cathedral. The Cologne workshop, however, was not totally immune to change. The openwork spire design seen in Plan F, in fact, was probably introduced to keep pace with the dramatic advances in openwork articulation seen in the Strasbourg workshop. The dramatic vision in Plan F remained unrealized at the end of the Middle Ages, not only because its grandeur presented the builders with a colossal task, but also because Cologne Cathedral was never embraced by the local burghers as Strasbourg Cathedral was. This was not surprising, since its construction reflected principally the ambitions of Cologne's powerful archbishops, who valued their role as territorial princes more than their relations with the local citizenry.

The roots of this political situation lay deep in Cologne's illustrious past. Founded by the Romans in the first century, and already equipped with a cathedral in the fourth century, Cologne was one of the oldest and most cosmopolitan cities in Germany.³⁰ In the Carolingian era, Cologne became the seat of archdiocese, and the cathedral was rebuilt as one of the largest churches of its day.³¹ Archbishops such as Otto the Great's brother Bruno became important players in imperial politics, setting a standard that their

²⁹ On the striving for perfection and normativity in the Cologne Cathedral shop, see, for example, Frankl, *Gothic Architecture*, 164, 180; and Wolff, *The Cathedral of Cologne*, vol. 6 of *Great Buildings in Europe*, trans Margaret Maranuk-Rohmder (Stuttgart, 1989), 94-103.

³⁰ Valuable sources on the urban history of Cologne include Carl Dietmar and Werner Jung, *Kleine Geschichte der Stadt Köln* (Cologne, 1996); Erich Dusterwald, *Kleine Geschichte der Erzbischöfe und Kurfürsten von Köln, 795-1801* (Sankt Augustin, 1974); Edith Ennen, "Erzbischof und Stadtgemeinde in Köln bis zur Schlacht von Worringen 1288," in *Bischofs- und Kathedralstädte des Mittelalters und der frühen Neuzeit*, ed. Franz Petri (Cologne and Vienna, 1976), 28-47; and Arnold Stelzmann, *Illustrierte Geschichte der Stadt Köln*, ed. Robert Frohn. (Cologne, 1962). Important primary sources may be found in Herbert Knauf, ed., *Quellen zur Geschichte Kölns im Mittelalter*, vol. 2 of *Ausgewählte Quellen zur Kölner Stadtgeschichte* (Cologne, 1958).

³¹ For the early history of Cologne's pre-Gothic cathedrals, see Wolff, *Cathedral of Cologne*, 5-12; and Otto Doppelfeld and Willy Weyres, *Die Ausgrabungen im Dom zu Köln* (Mainz, 1980).

Gothic-era successors would seek to emulate. Over the course of the eleventh and twelfth centuries, though, the increasingly wealthy merchant citizens of Cologne repeatedly challenged the authority of the city's prince-archbishops. In 1074, for example, the citizens revolted against Archbishop Anno, temporarily driving him from the city. Three decades later, Cologne's citizens broke with Archbishop Frederick I by supporting emperor Henry IV against his rebellious son, the future Henry V. As thanks for their support, the elder Henry overrode the protests of the archbishop by granting the citizens the right to build new city walls beyond the borders of the old Roman fortifications.³²

The central role of Cologne in imperial politics was further underlined in the reign of Frederick Barbarossa. Among the most important events in Cologne's history was the arrival in 1164 of the relics of the three Magi, which had been brought from Milan by Reinald von Dassel, who was both archbishop of Cologne and imperial chancellor. This move was calculated to buttress Barbarossa's authority, since possession of the relics of these prototypical Christian kings was seen as conferring kingly legitimacy. Cologne's numerous churches already possessed many prestigious relics, but the relics of the Magi suddenly made the city one of the largest pilgrimage centers north of the Alps. Barbarossa's other major contribution to civic identity was his decision to emulate Henry IV by affirming the right of Cologne's citizens to further expand their city walls, despite the protests of archbishop Philip, Reinald von Dassel's successor.³³ These great walls embodied the pride of Cologne's merchant citizenry, but the cathedral must have been seen as representing episcopal interests that only rarely overlapped with those of the city.

By the early thirteenth century, Cologne's archbishops had begun to think about replacing their aging cathedral. The relics of the Magi deserved a more splendid architectural setting than the old Carolingian cathedral, which would have looked quite primitive next to more recent buildings such as the nearby church of Gross St. Martin, a fine exemplar of the sophisticated local tradition of Romanesque design. Already in 1216, therefore, Archbishop Engelbert I von Berg pledged five hundred taler to the construction of a new cathedral. This initiative produced no immediate result, but the archbishops would continue to be the greatest champions of the cathedral construction project in the decades and centuries to follow.³⁴

³² Ennen, "Erzbischof und Stadtgemeinde," 36; Dietmar and Jung, *Kleine Geschichte der Stadt Köln*, 51-55.

³³ Dietmar and Jung, *Kleine Geschichte der Stadt Köln*, 55-58.

³⁴ For a short synopsis of Engelbert's career, see Düsterwald, *Kleine Geschichte der Erzbischöfe und Kurfürsten*, 81-85. The importance of the bishops in the cathedral construction project is clearly acknowledged in the crucial recent study of building finance

The close association of the cathedral with the archbishops deserves comment because the conflicted political position of the archbishops on both the local and international levels appears to have had dramatic consequences for the design of the cathedral and for the history of its construction. The fact that Cologne's new cathedral was built in the Gothic style, for example, has been plausibly associated with the international political ambitions of Archbishop Conrad von Hochstaden, during whose episcopate the project was undertaken. Conrad had been personally invested as archbishop by Emperor Frederick II in 1238, but he soon rebelled against his former patron, giving his support to the papist anti-emperor William of Holland. Conrad thus hoped to establish a largely autonomous Rhenish kingdom in which the new emperor would serve the church.³⁵ Because Cologne Cathedral contained the relics of the Magi, with their connotations of righteous Christian kingship, its reconstruction beginning in 1248 was surely meant to underline Conrad's power as an ecclesiastical elector and literal kingmaker.³⁶ Although the cathedral chapter was nominally in charge of the project, the first stone of the new structure was laid by Conrad von Hochstaden, in the presence of William of Holland and other prominent supporters of the papist cause. This entourage then proceeded to Aachen, where Conrad crowned William several days later. Pope Innocent IV supported the building of the cathedral, which he called "the mother and mistress of all German churches," by granting indulgences for donations to the fabric fund.³⁷ Despite these indulgences and other later and more forceful inducements, the wealthy merchants of Cologne gave predominantly to their own parish churches rather than to the cathedral. The aggressive policies of Conrad von Hochstaden and his successors surely played an important role in alienating the burghers. Observing that his predecessors had lost power to the city council, Conrad attempted to restore episcopal prerogatives by force, but his military initiatives against the city in 1252 and 1257 met with failure. Conrad von Hochstaden died

in the early years of the Cologne project, Wolfgang Schöller, "Die Kölner Domfabrik im 13. und 14. Jahrhundert," *Kölner Domblatt* 53 (1988): 75-94.

³⁵ On Conrad, see Düsterwald, *Kleine Geschichte der Erzbischöfe und Kurfürsten*, 89-96; and Stelzmann, *Illustrierte Geschichte der Stadt Köln*, 104ff.

³⁶ Christopher Wilson finds further support for this interpretation in the iconography of Cologne Cathedral's choir screen, which depicts the emperors as the junior partners of Cologne's archbishops. The screen itself dates only from the early 13th century, but Wilson believes that the iconography may well date to Conrad's episcopate. See *Gothic Cathedral*, 151-53.

³⁷ Schöller, "Kölner Domfabrik," 92.

in 1261, and he was buried in the axial chapel of the new cathedral that was destined to be the greatest monument to his episcopate.³⁸

The reconstruction of the cathedral in the French Gothic style must be seen in this context as part of a self-conscious program of political display. The sudden invocation of French prototypes, and the decisive rejection of Cologne's proud Romanesque heritage, should probably be attributed at least in part to the prestige of the French king Louis IX and his court. Conrad von Hochstaden's territorial politics were self-serving rather than pro-French, but the archbishop may well have been impressed with the example set by this "most Christian king," and the architecture of Cologne Cathedral may thus have been intended, like the contemporary architecture of Henry III's Westminster Abbey, to signal the political pretensions of its patron. On this level, Conrad's metropolitan church can be read as a cathedral version of Louis IX's Sainte-Chapelle, protecting the relics of the Magi just as the Parisian building protected the crown of thorns.³⁹ As the case of Strasbourg demonstrates, though, the adoption of the French Rayonnant style did not automatically imply a regal subtext. Architectural symbolism can be blunt as well as nuanced, after all. The overwhelming political message of both the Cologne and Strasbourg projects was simply that the patrons had the power and sophistication to outdo the most fashionable current buildings on their own terms.

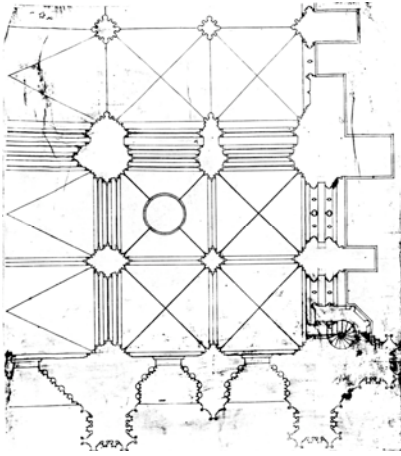
The first master of the Cologne Cathedral workshop, Gerhard, based the design of his building a wide variety of up-to-date and impressive French Gothic prototypes.⁴⁰ The plan of the Cologne choir suggests his knowledge of Amiens and Beauvais; the compound piers resemble those of Saint-Denis, and the placement of statues on the choir piers evokes the Sainte-Chapelle. The overall plan of Cologne Cathedral, which was established already early in the project, combines the grandest features of Amiens Cathedral and Notre-Dame in Paris.⁴¹ The five-aisled nave and massive western facade block of Cologne, in particular, follows the same basic plan as that of Notre-Dame, with giant towers that each correspond to a two-by-two grid of aisle bays. Gerhard probably intended from the first to crown these towers with enormous spires. Since Gerhard's design synthesized the most ambitious elements of French Gothic architecture, it

³⁸ Ennen, "Erzbischof und Stadtgemeinde," 42; and Stelzmann, *Illustrierte Geschichte der Stadt Köln*, 105.

³⁹ Wolff, "Geschichtliches und Baugeschichtliches," 21.

⁴⁰ For a comprehensive discussion of the first campaigns in the Cologne Cathedral choir and the succession of masters, see Arnold Wolff, "Chronologie der ersten Bauzeit des Kölner Domes 1248-1277," *Kölner Domblatt* 28-29 (1968): 9-229. See also Peter Kurmann, "Köln und Orleans," *Kölner Domblatt* 44-45 (1979/80): 255-76.

⁴¹ This point was made by Helen Rosenau in *Der Kölner Dom: Seine Baugeschichte und historische Stellung* (Cologne, 1931), 16-18.



5-22 Cologne Plan A

would have been natural to crown these towers with spires to outshine those already constructed at Chartres, Laon, and Senlis.

The surviving drawings from the Cologne workshop attest to substantial, albeit incomplete, continuity in the planning of the cathedral's facade. The radical changes of intent seen at Strasbourg have no parallel at Cologne, where the building seems to have been conceived as a whole all along. Even the drawing usually considered to be the oldest of the set, the so-called Cologne Plan A (fig. 5-22), already describes a

facade block very similar to the one eventually built, although it was later decided to enlarge the towers slightly and to reduce the number of portals from the five to three. Those refinements appear in Plan F, the great elevation drawing showing the cathedral's openwork spires (fig. 5-1). The complex detailing of Plan F suggests that it was drawn up in the 1280s or later, but its lucid overall organization suggests that it may well be an updating of a facade scheme already established in the mid-thirteenth century.⁴²

Cologne Plan F represents a logical and systematic solution to the formal and geometrical problems posed by the placement of two large spires atop a five-aisle facade. The facade zone is divided into five slices to reflect the disposition of the aisles behind. Each tower thus has two windows in each face at the clerestory level. In the first free tower story, immediately above, the window number drops to one per face, as the governing geometry of the tower shifts subtly from square to octagonal (figs. 5-1 and 5-23). The significance of this transition becomes apparent only in the next story, as the four large corner pinnacles taper away to reveal the octagonal tower core

⁴² Plan A has usually been dated to roughly 1280; see, for example, Recht, *Bâtisseurs*, 406. Steinmann, however, proposes a date in the 1260s, to accord with his revisionist dating of Plan F to the 1280s ("Die Westfassade," 161-65). Hans Böker, meanwhile, has recently argued that Plan A actually dates to the second quarter of the 14th century, based on the unprecedented complexity of its molding profile designs and its close relationship with drawings of the Parler workshop that are now preserved in Vienna. See "Spurensuche am Original: Neueste Ergebnisse der gotischen Baurisforschung, 1 Oct.-15 Nov. 15" (Vienna, 2002), 18-19. The suggestion that the overall shape of the facade was already determined in Gerhard's tenure appears in Wolff, *Cathedral of Cologne*, 23.

and spire base. These basic features of the Cologne facade design were probably determined already in Gerhard's tenure as master.

The rational, progressive, three-dimensional transformation of the facade into the spires at Cologne contrasts radically with the situation in Strasbourg Plan B, where the octagonal spire drums sit awkwardly on the boxy towers and facade block below. This contrast is not surprising, since the Cologne and Strasbourg projects drew on different French sources. The Strasbourg facade workshop was influenced principally by the flat style of Notre-Dame's transept frontals, but the Cologne workshop was informed by a wider range of precedents, many of which were more plastic than the Parisian transepts. The two-into-one window format seen at Cologne,



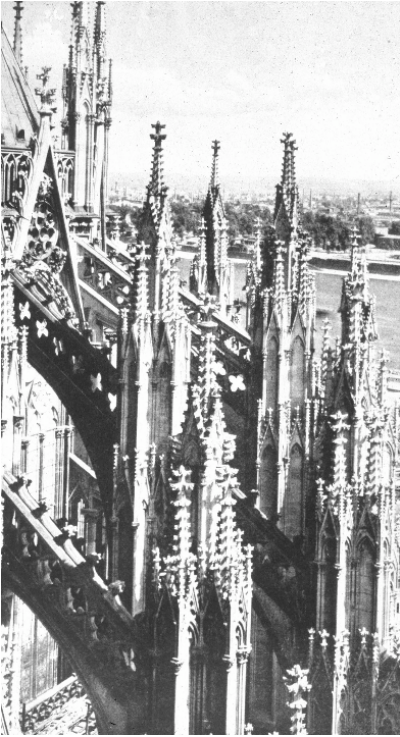
5-23 Cologne Cathedral, upper portion of southwestern tower.

for example, is also seen in the western towers of Chartres, Laon, Senlis and Reims cathedrals. In all these buildings, the designers sought to mediate the transition from square tower to octagonal spire through the sensitive deployment of pinnacles and corner turrets. The Cologne design is particularly uncompromising because it includes two octagonal tower stories rather than just one, allowing the geometrical unveiling of the spire to proceed slowly and methodically.⁴³

Most of the detail forms seen in Plan F derive from those in the cathedral's upper choir, which was built between roughly 1270 and 1300 to the designs of Gerhard's successor, Master Arnold.⁴⁴ In these designs,

⁴³ The overall massing of the Cologne Plan F facade design results from a bold but logical extrapolation of French prototypes. The tremendous size of the spires seen in Plan F was unprecedented in French architecture, at least in absolute terms, but only because spire design had faltered in France while other facets of Gothic design progressed. The spires of Plan F are large enough to recover the proportional relationship between spires and church vessel seen in the 12th century at Chartres, and in the 13th at Laon and Senlis. The large spires also grow quite naturally from the broad bases of the Notre-Dame type towers.

⁴⁴ Wolff, *Cathedral of Cologne*, 13-14. The upper choir wall may have been standing as early as the 1280s, according to Steinmann, "Die Westfassade," 1.



5-24 Cologne Cathedral, flying buttresses and pinnacles of choir.

Arnold reinterpreted the Amiens upper choir in richer and more muscular form. Arnold rejected the openwork flying buttress design seen at Amiens, but he appended rows of openwork quatrefoils to the back of each of the solid flying buttresses that he built instead (fig. 5-24). Instead of placing just one pinnacle atop each pier buttress, Arnold placed a cluster of five, grouped into a Greek cross plan reflecting the shape of the buttress below. Perhaps most tellingly, he repudiated the brittle fragility of the Amiens choir gables, treating the Cologne choir gables as opaque sculptural forms rather than as transparent openwork frames. In this respect his inclinations lie diametrically opposed to those of the Strasbourg facade designers, who let their portal gables dissolve into the linear texture field of the screen wall behind (fig. 5-20). Thus, while horizontal and especially vertical lines dominate

the Strasbourg facade, diagonals define the gable-crowned upper margin of the Cologne choir (fig. 5-25). The repetition of these gable units in front of a continuous horizontal balustrade, however, gives the Cologne upper choir a tectonic clarity that contrasts with the explosive restlessness of the Strasbourg facade, in which the continuity of the horizontals was deliberately subverted by the buttress articulation.

Many features of Plan F follow from the methodical wrapping of the upper choir's articulation system around a facade block whose basic form had been foreseen in the middle decades of the thirteenth century. The complex corner pinnacles of the Cologne facade, for example, are systematic amplifications of the cruciform buttress pinnacles seen in the choir. Given the narrow proportions of the nave vessel, moreover, it made sense to treat the upper nave window as a six-lancet window under a large



5-25 Cologne Cathedral, south flank of choir.

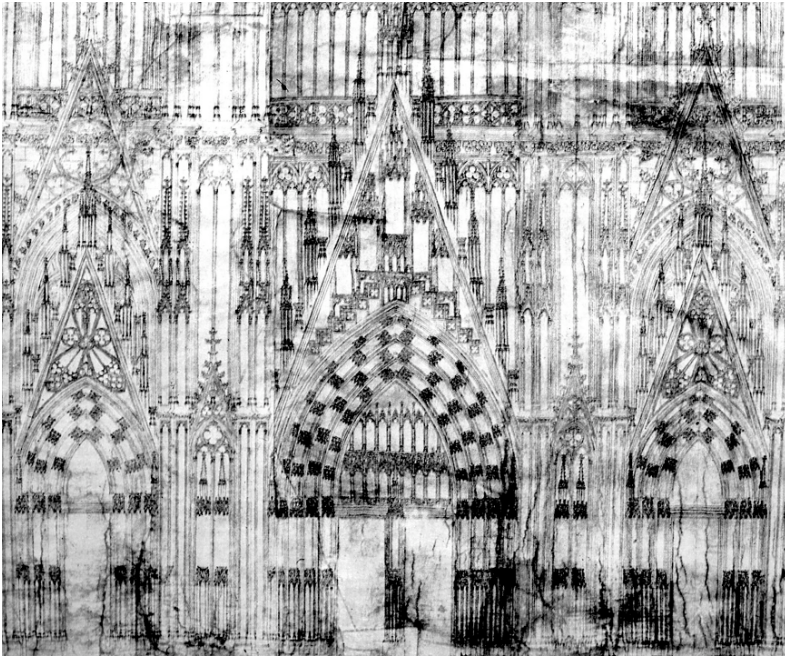


5-26 Cologne, Plan F, detail of upper tower zone.

gable, a slightly larger cousin of the four-light windows seen in the towers.⁴⁵ All of these windows, with their opaque gables, follow the model established in the upper choir. The repetition of these gabled window units across the facade contributes to the orderly character of Plan F. The gable crown at the base of each spire, in particular, recalls the upper margin of the choir (figs. 5-25 and 5-26).

Despite this general impression of order and continuity, several features of Plan F suggest that the members of the Cologne workshop modified their designs in response to the innovations of the Strasbourg facade workshop. The three portal gables shown in Plan F (fig. 5-27) are of the pinnacle-crowned type seen at Strasbourg, and the central one is subdivided

⁴⁵ On the logic of this scheme, which involved the elimination of the traditional French rose window, see Wilson, *Gothic Cathedral*, 154. On possible precedents for this scheme, see Steinmann, "Die Westfassade," 121-23.



5-27 Cologne Plan F, detail of portal zone.

by vertical mullions that frame statue niches like those seen in the central portal at Strasbourg. Since this idea of vertical gable subdivision already appears in the clerestory of Strasbourg Plan B (Fig. 5-21), and since it accords much more closely with the taste for linear ornament seen in Strasbourg than with the more plastic character of the Cologne choir, this idea probably came to Cologne from Strasbourg rather than vice versa.⁴⁶ The gables of the lower tower windows, just below the triforium, are pierced with rosettes like those at Strasbourg, and the large niche canopies in the principal facade buttresses of Cologne Plan F, similarly, recall those of the Strasbourg facade.⁴⁷

⁴⁶ This point deserves emphasis because the close formal harmony between this gable format and the earlier work at Strasbourg provides one of the only clues as to its origin. Steinmann has nevertheless argued, based on his proposed dating of Cologne Plan F to the 1280s, that the motif may have come from Cologne to Strasbourg. The controversial dating of the so-called Strasbourg Plan C, which includes such a gable, prevents this drawing from resolving the debate firmly on Strasbourg-first side. See "Die Westfassade," 108-11.

⁴⁷ The decision to reduce the number of doors in the Cologne facade from 5 to 3 may also have had something to do with the growth of influence from Strasbourg, since this change

In view of these Cologne-Strasbourg connections, the appearance of openwork spires in Cologne Plan F begins to look like part of a competitive reaction to the innovations of the Strasbourg facade workshop. The overall shape of the Cologne facade may well have been determined in the middle decades of the thirteenth century, but the openwork spire idea was almost certainly added to the mix at a later point in the design process. The Cologne workshop was sophisticated enough to come up with the openwork spire idea, but Master Arnold's repudiation of the openwork forms of the Amiens upper choir suggests that some new goad to the exploration of openwork must have intervened between the design of the Cologne choir and the creation of Plan F. The Strasbourg workshop was surely the most important source of this pressure, although some of the tracery detailing of Plan F also suggests connections with work undertaken in the transept frontals of Rouen Cathedral in the closing decades of the thirteenth century. It probably took several years for these new ideas about openwork to be fully assimilated in Cologne. Thus, while Plan F has sometimes been dated as early as 1280, it can more plausibly be dated to circa 1300 or later, and attributed to Arnold's son and successor Johann.⁴⁸ The Cologne workshop may well deserve credit for inventing the openwork spire type--there is no drawing from Strasbourg that shows openwork spires as Plan F does, after all--but the Strasbourg workshop certainly helped establish a context in which the development of innovative openwork forms became a high priority.

The lavish execution of Plan F deserves note in this connection because it suggests that the draftsman saw the problems of the Cologne facade design as finally and successfully resolved. The members of the Cologne workshop must have breathed a sigh of relief when the openwork spire

tended to emphasize the vertical continuity of the facade and buttress tracery, which was stressed in the Strasbourg facade, rather than the horizontal continuity of the jamb statues, which had been stressed in many earlier French facades, such as those of Reims and Bourges cathedrals. Even the older Cologne Plan A, meanwhile, shows that the tracery of the Cologne facade windows was meant to be hung in two layers. This treatment of the wall as a tracery sandwich was a major leitmotiv in the Strasbourg facade, but it was all but unknown in the Cologne choir.

⁴⁸ Steinmann's meticulous research has demonstrated that each of the motifs in Plan F was in circulation by roughly 1280, but his assertion that Plan F was actually created this early does not follow as obviously from this evidence as he implies. Steinmann treats many of his examples as *termini ante quem* for Plan F, when the influence in many of these instances might be less direct. In short, while Steinmann succeeds in showing that Plan F could conceivably have been produced soon after 1280, he fails to demonstrate that this early dating is more plausible than the dating to roughly 1300 proposed by Wolff. Böker's revisionist dating of Cologne Plan A to the second quarter of the 14th century suggests that Plan F may date even later than had formerly been suspected. This would make Plan F later than the Freiburg spire, but earlier and humbler drawings of the openwork spire scheme had probably been developed in the Cologne workshop long before Plan F was drawn up.

concept was first developed, because it allowed them to move beyond the old-fashioned murality of thirteenth-century French spires without abandoning the elegant transformative geometries that the Cologne facade had inherited from them. The openwork spire type was thus both more radical and more traditional than the Montjoie-like spire seen in Strasbourg Plan B. Excitement about the openwork spire design may even have contributed to the decision to represent the Cologne facade not just in a workshop drawing, but in a presentation drawing legible to a wide audience. No previous medieval drawing had shown a facade complete in all its details from left to right and top to bottom, just as the building would appear when finished. Most earlier medieval drawings, even Strasbourg Plan B, can best be understood as laboratories in which design ideas were worked out. Cologne Plan F, by contrast, was clearly meant to communicate ideas that had been carefully worked out beforehand. The drawing was probably intended to encourage clerical patrons, lay donors, and later generations to implement the project, but the details of exactly who commissioned the drawing, and when, unfortunately remain unclear.⁴⁹ The most striking fact about the history of Plan F is that it fulfilled its purpose only in the nineteenth century, since the patronage situation in medieval Cologne was not as conducive to spire construction as that in Strasbourg or Freiburg.

Three principal factors conspired to prevent the completion of the Cologne facade in the Middle Ages. The first was the simple fact that work had begun at the other end of the cathedral, since the building's clerical patrons naturally saw the completion of their liturgically privileged choir as their highest priority. A related problem was the sheer ambition of the foreseen cathedral, which was to be both larger and more elaborate than any cathedral in France. Virtually every stone in the building required complex and expensive detail carving, especially after Master Arnold introduced his rich decorative vocabulary the upper choir in the 1270s. With such a labor-intensive design, work could proceed only slowly, even under the best of circumstances. Another major obstacle to completion of the Cologne Cathedral facade, however, was the troubled relationship between Cologne's archbishops and the local citizenry, which surely played a role in dampening popular enthusiasm for the cathedral construction project.⁵⁰ Ironically, therefore, the same episcopal ambition that had driven the Cologne Cathedral workshop to the vanguard of Gothic design may have

⁴⁹ For a discussion of Plan F's possible functions, and a survey of the literature on the topic, see Steinmann, "Die Westfassade," 188-91.

⁵⁰ Schöller, "Kölner Domfabrik," 92.

indirectly prevented the workshop from actualizing its visionary plans by the end of the Middle Ages.

The death of Conrad von Hochstaden in 1261 had not brought an end to the confrontations between the citizens of Cologne and her archbishops. Conrad's successor Engelbert II von Falkenburg soon fell into the familiar pattern of trying to restrict urban rights by force majeure, attacking Cologne unsuccessfully in 1263 and 1265 before taking up residence in Bonn, thirty kilometers to the south.⁵¹ That move marked an important step in the geographical and political divorce of Cologne from her archbishops: none of Cologne's later medieval archbishops lived in the city for any extended period. The decisive defeat of Engelbert's successor Siegfried von Westerburg at the battle of Worringen in 1288, moreover, resulted in a dramatic restriction of episcopal authority, and Cologne became a free city in all but name. In the early years of the fourteenth century Emperors Albert I and Ludwig of Bavaria supported the rights of the city in order to restrict the power of archbishops Wibold von Holte and Heinrich von Virneburg.⁵²

The impact of such conflict and tension on the cathedral-building enterprise can best be appreciated in relative rather than absolute terms. The fact that work on Cologne Cathedral went forward relatively smoothly in the politically turbulent late thirteenth century, even in the critical years around the battle of Worringen, clearly demonstrates that the cathedral project was not tied directly and definitively to the popularity of the archbishops. Public opinion could, however, have a bearing on the fate of the venture, since it was funded entirely by donations rather than by prebends or the sale of church property. Until the early fourteenth century, the numerous indulgences granted by the archbishops to support the cathedral fabric fund proved fairly effective--surprisingly effective, in fact, given the political situation at the time.⁵³ Local pride and excitement about the grandeur of the new building go some way to explaining this initial willingness to give. Most local donations went to Cologne's many parish churches rather than to the cathedral, however, and the archbishops had to

⁵¹ Engelbert was subsequently captured by the count of Jülich, an ally of the Cologne citizenry, but even this did not prevent him from causing trouble for the city, since he managed in 1268 to foment a short-lived rebellion by disenfranchised members of the ruling oligarchy. See Stelzmann, *Illustrierte Geschichte der Stadt Köln*, 109; and Dietmar and Jung, *Kleine Geschichte der Stadt Köln*, 63.

⁵² Dietmar and Jung, *Kleine Geschichte der Stadt Köln*, 63-68.

⁵³ The financing of the cathedral in this period is authoritatively discussed by Schöller. As he notes in "Kölner Domfabrik," most of the necessary funding came from donations gathered in the Cologne region, although questors for the project went as far as England in 1257, with their successors operating regularly in the diocese of Mainz in the 1280s (92, 104ff). Indulgences to support the fabric fund were granted by Engelbert von Falkenburg in 1264, by Siegfried von Westerburg in 1280, and by Wibold von Holte in 1300 (81).

deploy a variety of coercive measures to channel some of this income to the cathedral project.⁵⁴ The association of Cologne Cathedral with the frequently troublesome archbishops, moreover, effectively prevented the building from becoming a civic monument in the same strong sense as Strasbourg Cathedral, at least in the Middle Ages.⁵⁵ The different roles of these two cathedrals in the political life of their home cities had a strong bearing on their contrasting histories, and on the contrasting histories of their facades in particular.

The Cologne facade project never benefitted from the enthusiastic popular support that propelled facade construction in Strasbourg. Cologne Plan F was probably produced in the early fourteenth century as the focus of architectural planning shifted from the nearly completed east end to the western block, but progress towards the construction of the facade block was agonizingly slow. Donations to the fabric fund fell off following the completion of the choir in 1322. New indulgences were granted in 1324, 1327, and 1329 in an attempt to revive flagging donation levels,⁵⁶ but work seems to have slowed to a crawl in the middle decades of the fourteenth century, even though the city remained prosperous.⁵⁷ The recent discovery in the southwestern tower foundations of a coin minted in the 1350s suggests that work on the first above-ground story of this tower was begun no earlier than 1360.⁵⁸ By 1388, when Cologne's university was founded, only the lower story of the cathedral's south tower had been

⁵⁴ In 1279, for example, Siegfried von Westerbürg ordered that all usurers, robbers, and counterfeiters pay penalties to the fabric fund. A year later, as he was granting a new indulgence, he forbade foreign questors from operating within Cologne (Schöller, "Kölner Domfabrik," 85-86). Because this ordinance proved ineffective, his successor Wikbold von Holte in 1298 threatened to excommunicate anyone, layman or priest, who in any way hindered donations to the cathedral-building project. Recognizing that most of the gifts from Cologne's citizenry went to parish churches rather than to the cathedral, he also pressured the parish priests of the city to donate a fraction of their income to the cathedral, and even urged the priests to extort money for the fabric fund during confessional. Heinrich von Virneburg supported the project no less aggressively (*ibid.*, 86-87).

⁵⁵ Today, the cathedrals of Strasbourg and Cologne play more comparable roles, as visually dominant tourist destinations, although contrasting urban situations amplify the formal and historical distinctions between the two buildings.

⁵⁶ The indulgences are discussed in Schöller, "Kölner Domfabrik," 88.

⁵⁷ Archbishop Walram von Jülich and the cathedral chapter were encumbered by debts in the 1330s and 1340s, and they found it difficult to work together (Schöller, "Kölner Domfabrik," 88). Significantly, however, the Cologne workshop remained committed to the high standard of quality that had characterized its work all along. The 15-meter deep foundations of the western tower block are the largest and most elaborate in the history of medieval architecture, and the sculptures of the tower portal are masterpieces of the late 14th-century Parler school. For the foundation size, see Arnold Wolff, "32. Dombaubericht von Oktober 1990 bis September 1991," *Kölner Domblatt* 56 (1991): 60. This report supersedes older estimates that the foundations were "only" 7 meters deep.

⁵⁸ For the discovery, see Ulrich Back, "Die Domgrabung XXXIII: Die Ausgrabungen im Bereich des Südturmes," *Kölner Domblatt* 59 (1994): 193-224, esp. 200-202. Steinmann discusses the implications for the dating of the tower construction in "Die Westfassade," 194-96.

completed, along with the adjacent southern aisles of the nave. A second tower story was added between 1395 and 1411, giving the cathedral a large belfry for the first time, but tower construction was abandoned at this point just above the projected height of the nave vaults.⁵⁹ Subsequent campaigns at the cathedral, which were slowly pursued into the sixteenth century, involved the construction and furnishing of the north aisles rather than the completion of the facade.⁶⁰ These facts together suggest that the tower project was seen as a preamble to the construction of the nave rather than as a symbolically important end in itself.⁶¹ In all these respects, the situation in Cologne recalls that of French cathedral cities like Reims far more than that of Strasbourg. Cologne Cathedral never came to represent the interests of the medieval citizenry as Strasbourg Cathedral had, and construction of its facade languished as a consequence.

Freiburg

The openwork spire of Freiburg Minster closely resembles those seen in Cologne Plan F, but its urban and political context could hardly have been more different than that of the Cologne facade. While Cologne was an ancient episcopal city, Freiburg was a new foundation of the high Middle Ages, which became the seat of a diocese only in 1827.⁶² The Freiburg spire project, therefore, was associated not with a cathedral, but with the citizens' principal parish church. This fact helps to explain why it was Freiburg, a far smaller town than Cologne, that managed to complete the first openwork spire. The Minster was the spiritual home of Freiburg's citizenry, whose civic pride helped push the spire project to its successful completion. In this sense the situation in Freiburg resembled that in Strasbourg. In artistic terms, too, Freiburg Minster was closely connected

⁵⁹ The 2nd story of the south tower stump was built under the supervision of Master Andreas von Everdingen between 1395 and 1411. See Wolff, *Cathedral of Cologne*, 14. Because of the substitution of solid buttresses for openwork tabernacles seen in this story in Plan F, the facade has a slightly blockier and more brutal appearance than in the drawing. Despite these slight deviations, the Cologne workshop remains remarkable for its close adherence to the architectural vision established in the decades before 1300.

⁶⁰ For the late Gothic campaigns on the nave, see Arnold Wolff, "Mittelalterliche Planzeichnungen für das Langhaus des Kölner Domes," *Kölner Domblatt* 30 (1969): 144. The names of 3 north nave masters survive: Nicolas van Büren, ca. 1425-1445; Konrad Kuyn von der Hallen, d. 1469; and Johann von Frankenburg, fl. 1491. Arnold Wolff, "Der Kölner Dombau in der Spätgotik," in *Beiträge zur rheinischen Kunstgeschichte und Denkmalpflege*, vol. 2 of *Albert Verbeek zum 65. Geburtstag* (Düsseldorf, 1974), 137-50.

⁶¹ Arnold Wolff, conversation with author, Cologne, October 1993. By contrast, the construction of the new town hall tower in the first decades of the 15th century was clearly meant as a manifestation of civic pride, following the reform of the Cologne civic constitution in 1396. This belfry tower stands in the tradition of civic belfries in the Netherlands. See Dietmar and Jung, *Kleine Geschichte der Stadt Köln*, 82.

⁶² Peter Kalchthaler, *Kleine Geschichte der Stadt Freiburg* (Freiburg im Breisgau, 1997), 111.

to Strasbourg Cathedral. The surviving drawings associated with the Freiburg spire project, however, suggest that the design of the Freiburg spire was shaped by ideas from Cologne as well as Strasbourg. Indeed, since the triumphant completion of the Freiburg spire in the years around 1330 launched the golden age of openwork spire construction, the Freiburg spire project played a key role in spreading ideas from the thirteenth-century workshops of Cologne and Strasbourg into the German Late Gothic world. The completion of the Freiburg spire also established a model of burgher patronage in spire construction that would later be echoed in many other German cities.

The citizens of Freiburg did not have to contend with a bishop, but their political and urban life was strongly shaped by their changing relationship to the local aristocrats who acted as lords of the city.⁶³ The early history of Freiburg was intimately bound up with the Dukes of Zähringen, who in the late eleventh century decided to transfer their seat from Zähringen to a new castle built on the hilltop overlooking the future site of Freiburg. The foundation of the city is usually dated to 1120, when the city market was formally established by Duke Berthold III and his brother Conrad. Sensing that its growth could strengthen their hand in the region, the Zähringers established a liberal civic constitution that earned the new city the name of Freiburg, or Free-town. Their progressive policies, together with the city's location along major trade routes and the expansion of silver mining in the region, allowed Freiburg to grow rapidly throughout the twelfth century. The physical layout of the city originally established by the Zähringers was as progressive as its constitution, incorporating one of the first coherently planned street grids established since antiquity. The only interruption in this overall grid was the Münsterplatz, the plaza surrounding the city's parish church. This zone served as the principal site of the city's public life; the granary, the counting house, and many merchants' residences all fronted on the plaza, where the citizenry would assemble in time of war.⁶⁴ The Gothic spire that eventually rose from this plaza, therefore, stood at the functional and spiritual heart of the city.

The form and purpose of the church located on the Münsterplatz changed in a variety of dramatic ways in the time between the foundation of the city and the construction of the spire. The first parish church on the site was dedicated to Saint Nicholas, the patron of merchants.⁶⁵ This building was

⁶³ Kalchthaler's *Kleine Geschichte der Stadt Freiburg* provides a useful synopsis of the city's history; other useful secondary sources on the subject include Leo Alexander Ricker, *Freiburg: Aus der Geschichte einer Stadt* (Karlsruhe, 1962, repr., Freiburg, 1982), and Theo Ueberdick, *Wie Freiburg Freiburg wurde* (Freiburg, 1985).

⁶⁴ Ricker, *Freiburg*, 31; and Adam, *Das Freiburger Münster*, 6.

⁶⁵ Ricker, *Freiburg*, 21-22; Adam, *Das Freiburger Münster*, 8.

apparently fairly typical of Rhenish Romanesque parish churches, with three apses in echelon and a single tower on axis with the nave.⁶⁶ The spired tower of the current Minster should surely be seen as a Gothic version of this tower. In the early thirteenth century, Duke Berthold V began a rebuilding program involving the demolition of the original church and the construction of a new Romanesque building modeled on the nearby cathedral of Basel.⁶⁷ The new church was to be dedicated to the Virgin Mary rather than to Saint Nicholas, and its east end was to serve as the Zähringer family mausoleum. Because the church on the Münsterplatz was the main public monument in Freiburg, it would remain a site of political and symbolic negotiation throughout the city's history.

A new chapter in the history of Freiburg and its Minster began in 1218 when Duke Berthold V died without a male heir. In the division of the Zähringer territories that followed, the old Zähringer castle became the property of the Reich, while Freiburg and its immediate environs came under the authority of Berthold V's brother-in-law, Egon of Urach. Members of the Urach line would rule as counts of Freiburg until 1368, when the citizens of Freiburg finally bought their freedom after a series of increasingly acrimonious struggles with the counts. Egon I and his son Conrad I, however, enjoyed good relations with the city, promoting urban growth and contributing to the rebuilding of the Minster.⁶⁸

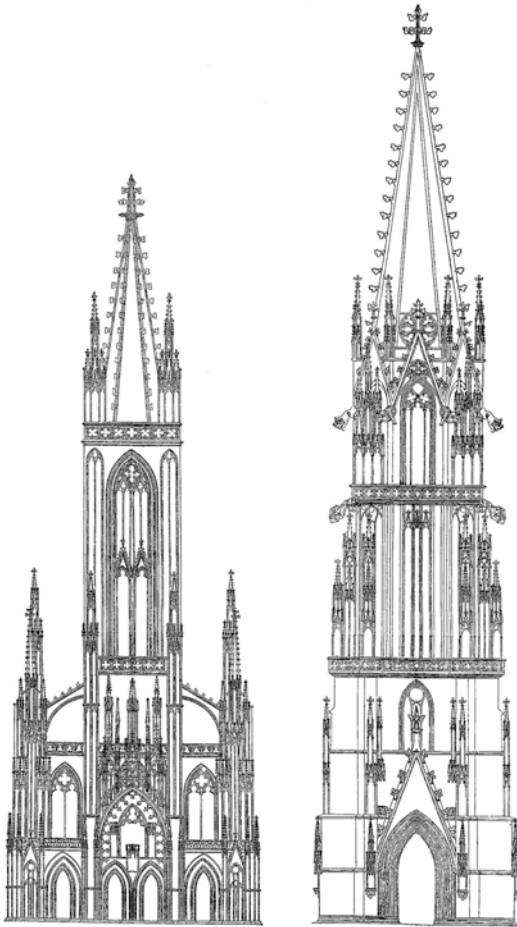
The extinction of the Zähringer line corresponded, in terms of the Minster's architecture, to the abandonment of the Romanesque style and the embrace of the Gothic. The eastern bays of the Gothic nave were built in a somewhat fumbling Gothic mode, with details suggesting that the workshop responsible for the Romanesque choir and transept had been pressed into service in the new style.⁶⁹ The western bays of the nave were built in a far more assured manner by a group of builders evidently trained in the Strasbourg nave workshop. The western bays of the Freiburg Minster nave can be understood as a reduced copy of the Strasbourg nave, in which the triforium was eliminated to produce a two-story elevation. Work on these western nave bays was probably begun in the 1250s, with construction of the blocky lower stories of the west tower beginning by

⁶⁶ On this first incarnation of the church, see Becksmann et al., "Das Freiburger Münster," 343.

⁶⁷ Ibid., 343-47. These campaigns are also discussed in Hart and Adam, *Das Freiburger Münster*, 21-34; and Mittmann, *Das Münster zu Freiburg*, 7.

⁶⁸ Kalchthaler, *Kleine Geschichte der Stadt Freiburg*, 26-30, 38; Ricker, *Freiburg*, 32.

⁶⁹ See Becksmann et al., "Das Freiburger Münster," 347-50; Mittmann, *Das Münster zu Freiburg*, 7-10. Adam notes that these first Gothic bays were plagued by technical as well as aesthetic shortcomings; see *Das Freiburger Münster*, 13.



5-28 Tower schemes from Rahn Plan A (left) and Rahn Plan B (right).

1280.⁷⁰ No masonry breaks separate the nave from the tower block, which suggests that one workshop was responsible for both. It is unclear, however, how far planning for the upper tower and spire had progressed when work was begun on the lower tower stories.

⁷⁰ See Mittmann, *Das Münster zu Freiburg*, 10; and Becksmann et al., “Das Freiburger Münster,” 351-52. This dating should be seen as more plausible than the dating of the tower base to the 1250s that had been proposed by Adam in *Das Freiburger Münster*, 17-18.

The early history of the Freiburg spire project remains murky, but several medieval drawings survive to offer glimpses into the spire planning process. Perhaps the most important of these is the drawing known as Rahn Plan B (fig. 5-28, right), which is presently preserved in Fribourg, Switzerland, another city founded by the Zähringers. It shows the right-hand half of a tower in which the characteristic blocky tower base, gabled spire base, and openwork spire of Freiburg are already apparent, although only the lowest tracery panel of the spire has been drawn in. The details of the design differ significantly from those of the current Freiburg spire, and the style of draftsmanship suggests that the drawing was produced around 1400 as a copy of a lost original, but scholars agree that Rahn Plan B records an early version of the Freiburg spire.⁷¹ On the reverse side of the same sheet, and drawn in the same hand, is the so-called Rahn Plan A (fig. 5-28, left), which shows a very different design for a single-spired facade featuring a delicate lower story, a slender but blocky upper tower story terminating in a horizontal balustrade, and a simple spire with no indication of openwork articulation. Because this design differs in so many fundamental respects from the current Freiburg tower and spire, it has rarely been connected with the Freiburg spire project.⁷² In 1991, however, Reinhard Liess argued that the Rahn Plan A design was developed by members of the Strasbourg facade workshop in the 1270s as a proposal for what to build at Freiburg. His case for the drawings's connection to Freiburg can be criticized as circumstantial,⁷³ but his attribution of Rahn Plan A to the Strasbourg facade workshop is compelling.

Rahn Plan A has much in common with Strasbourg Plan B, despite the obvious distinction between the single- and double-tower formats (figs. 5-8 and 5-28). Crucially, both designs feature boxy square-topped towers that make no concession to the presence of the spires above. In both, the front tower face is articulated with a single four-light window flanked on each side by a slender subdivided lancet. The large outboard pinnacles in Rahn Plan A feature tiny decorative flying buttresses, as do the smaller pinnacles flanking the boxy tower stories in Strasbourg Plan B. Many other details of pinnacle design and tracery form support the idea that the Rahn Plan A

⁷¹ For a brief discussion of Rahn Plan B and its associated bibliography, see Recht, *Bâtisseurs*, 414. For a more detailed--but also more opinionated--discussion, see Liess, "Die Rahnsche Riss A."

⁷² Indeed, art historians ever since Georg Moller in the early 19th century have often associated it with the 14th-century planning for the tower of the collegiate church at Thann, even though the formal match to Thann is no closer than that to Freiburg. See Recht, *Bâtisseurs*, 414; and Liess, "Die Rahnsche Riss A," 10-11.

⁷³ Liess cites principally its geometrical relationships with the more obviously Freiburg-oriented Rahn Plan B, along with the simple fact that they are both on the same sheet of parchment. Liess, "Die Rahnsche Riss A," 11-12.

design was developed by someone trained in the Strasbourg facade workshop.⁷⁴ There is at least one anomalous detail of Rahn Plan A, however, that suggests influence from a source other than Strasbourg. The corner pinnacles flanking the main spire, above the upper balustrade, differ both from the needle-like pinnacle doublets that flank the spire drums in Strasbourg plan B, and from the delicate pinnacles seen in the lower portions of Rahn Plan A itself. These fairly wide upper pinnacles look exactly like the pinnacles built by Master Arnold in the Cologne upper choir.⁷⁵

Ideas from Cologne surely played a role in the creation of Rahn Plan B, the drawing that records the oldest known design for Freiburg's openwork spire.⁷⁶ Rahn Plan B incorporates not only the wide corner pinnacles seen in Rahn Plan A, but also a gable crown at the spire base just like that seen in Cologne Plan F (Compare figs. 5-26, and 5-28). Everything about these gables derives from the articulation of the Cologne upper choir: their opacity, their treatment as solid sculptural forms with prominent crockets, and their strong salience above the balustrade, which gives the upper margin of this zone an emphatic zig-zag quality. The Rahn Plan B design also has a muscularity more characteristic of Cologne than of the Strasbourg facade, in which the brittle style of the Parisian transept frontals

⁷⁴ Ibid., 30-42.

⁷⁵ Because Rahn Plan A is an elevation drawing, it is impossible to say whether these pinnacles were meant to have the same cruciform cross section that the Cologne pinnacles had inherited from the Amiens buttresses that were their model. It is also possible that they were supposed to have triangular cross-sections like the corner pinnacles of the current Freiburg spire. Such triangular pinnacle geometries appear already in the early 13th-century spires of St-Denis Abbey and St-Étienne in Caen--as noted by Hans Kaufmann in "Die Masswerkhelme," 121-22--but they had played no role in the planning of the Strasbourg facade. The draftsman of the original Rahn Plan A design, in fact, may not have understood the 3-dimensional implications of his work if he was borrowing a motif from another elevation drawing. The whole spire zone of Rahn Plan A appears almost as an afterthought, since the emphatic balustrade separates it so forcefully from the rectilinear tower below. The fact that the surviving drawing is a copy makes it impossible to tell whether there was a difference of drawing style between the upper and lower zones in the original of Rahn Plan A, as there so clearly is in Strasbourg Plan B, but both drawings give the impression that the design of the boxy tower story was carefully refined while big questions about the spire zone remained open. Perhaps the Strasbourg-trained draftsman responsible for the majority of Rahn Plan A had finished his design up to the upper tower balustrade, and was then casting about for ideas when he learned of the Cologne pinnacle format. The Cologne workshop may have played a role in this design process even if the triangular plan geometry was intended, since the Cologne workshop drew on a greater variety of French and Norman sources than the Strasbourg workshop, and since the members of the Cologne workshop seem to have had a long-standing interest in the 3-dimensional subtleties of French-style spire design. The possible links between Cologne and Caen are particularly tantalizing in this respect, not only because some of the details of Cologne Plan F resemble those of the cathedral transept frontals in nearby Rouen (see Steinmann, "Die Westfassade," 45), but also because the discreetly perforated early 14th-century spire of St-Pierre in Caen provides one of the earliest non-German analogs to the openwork spire type. The St-Pierre spire was completed in 1317; see Prentout, *Caen et Bayeux*, 43-44.

⁷⁶ No openwork is visible in the spire zone of Rahn Plan A.

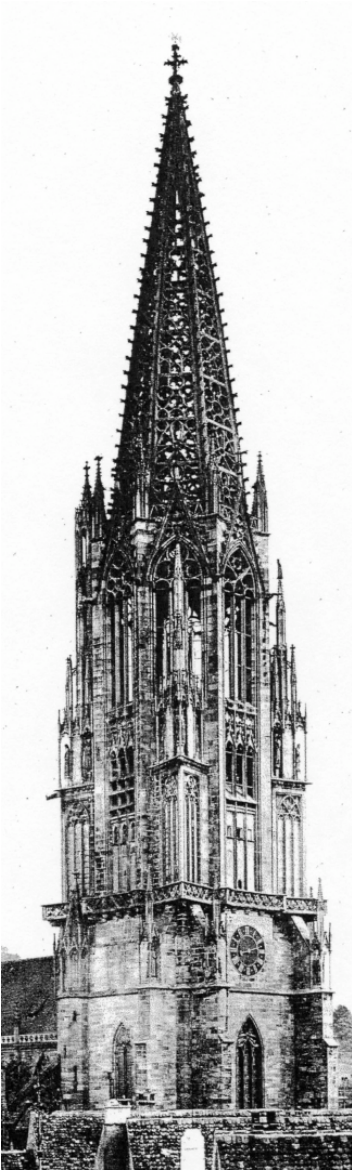
lived on. This quality of Rahn Plan B manifests itself particularly in its progressive transformation from square to octagon and its use of the pinnacle as richly plastic form. These features begin to leave behind the boxiness of the Strasbourg facade and Rahn Plan A, giving the drawing some of the crystalline three-dimensional presence that makes the present Cologne and Freiburg spires so rich and visually interesting.

Rahn Plan B seems to document a moment when new ideas from Cologne had just begun to affect a Freiburg workshop previously dominated by influences from Strasbourg. The Freiburg nave derives clearly from that of Strasbourg, and Rahn Plan A--whether it was meant for Freiburg or not--certainly appears to reflect the thinking of someone trained in the Strasbourg facade workshop. Even Rahn Plan B, despite its inclusion of Cologne-style ideas about tower shape and gable articulation, should probably be seen as a product of this same circle rather than as a product of the Cologne workshop itself. As Liess pointed out, Rahn Plan B still preserves certain characteristic features of Rahn Plan A, such as the counterpoint between strongly salient horizontal balustrades and a narrow tower story that rises in a single thrust with a punctuation point in the middle,⁷⁷ features that a Cologne-trained designer would have been unlikely to include. The main central window opening in the Rahn Plan B tower, moreover, is a slender triple lancet figure of the kind seen all over the Strasbourg facade, but never in Cologne.

The chronology of these interactions can be established only roughly. Even if it was seriously proposed for Freiburg in the 1270s, the Strasbourghish Rahn Plan A must have been rejected by the time work started on the blocky lower tower story of Freiburg Minster around 1280. It is unclear whether construction of the Freiburg tower was begun before or after the original of Rahn Plan B was drawn up, since the lower portions of the drawing are substantially consistent with the built structure. This original Rahn Plan B may well predate Cologne Plan F, but it can be dated no earlier than circa 1280 given its dependence on the Cologne upper choir. Since Cologne Plan F is an elaborately executed presentation drawing, it must fall fairly late in the history of design development at Cologne.⁷⁸ Related but less ostentatious sketches were surely produced in the Cologne workshop years, if not decades, before Plan F. Such products of the Cologne spire design tradition, with their complex geometries, solid

⁷⁷ Liess, "Die Rahnsche Riss A," 51-52.

⁷⁸ Steinmann, in "Die Westfassade," does not accept this logic, because he tends to treat Plan F as a source of formal motifs, rather than a receptor of them. By contrast, Böker sees Plan F as product of the 1340s, in which a certain nostalgia for the classic forms of the late 13th century was combined with a newly plastic articulation style. Discussion with the author, Vienna, January 2003.



5-29 Freiburg Minster, west tower and spire.

gables, and thick pinnacles, could well have been known to the designer of Rahn Plan B, even if Plan F itself had not yet been drawn up. Indeed, Rahn Plan B can be most easily understood as the reaction of a Strasbourg-trained master to these new ideas coming out of the Cologne workshop.

Rahn Plan B may well be the surviving drawing closest to the "Eureka moment" when the openwork spire concept was invented. Less refined and complete than Cologne Plan F and the present Freiburg spire, it records the messy but fruitful collision of ideas from both Cologne and Strasbourg. No one today can say with assurance who first came up with the openwork spire idea: Strasbourg was better known for openwork than Cologne, but there is no record of the openwork spire idea itself in Strasbourg, and all the early drawings of openwork spires include opaque gable crowns of the Cologne type. The near simultaneity of the openwork spire designs for both Freiburg and Cologne attests, in fact, to the rapid spread of this new and exciting idea, which made all other contemporary spire design options look awkward or old-fashioned by comparison.

The design of the current Freiburg spire can be readily understood as a streamlining of Rahn Plan B, in which the contrast between the blocky tower base and the soaring spire was made into a virtue (Fig. 5-29). Many of the details of the final spire design were probably still being refined as the lower

tower block was rising in the 1280s and 1290s. The weathering of the wooden belfry at the junction between the two zones, which was exposed to the elements until the upper tower was built up around it, may even reflect some hesitation within the workshop about how best to handle this transition.⁷⁹ The balustrade in this transitional zone is given the shape of a twelve-pointed star wrapping dramatically around the triangular corner pinnacles, and the upper balustrade seen in Rahn Plan B is entirely eliminated, so that the octagonal upper tower core rises cleanly and without interruption.⁸⁰ The row of three small gables in the middle of each tower face provides a subtle point of punctuation, reflecting the fact that there really are two stories within this octagonal core: the enclosed belfry story below, and the open-air tower hall above. The importance of this horizontal partition is disguised, however, both by the continuity of the bladed flanges that define the corners of the octagonal tower core, and by the displacement of the horizontal punctuation points in the corner pinnacles away from the story division in the tower core. This trick is also seen in the lower facade of Strasbourg Cathedral, where the horizontal breakpoints in the main buttresses were shifted away from those in the facade wall (fig. 5-20). The byplay between the smooth corner flanges of the Freiburg tower and the delicate tracery of the windows they frame resembles the relationship between the simple square frame and elaborate tracery of the Strasbourg rose window. Many other details of the present Freiburg design seem to derive from Strasbourg, as well.⁸¹

On these bases, it is tempting to see the current Freiburg spire as the Strasbourg workshop's definitive critical rejoinder to Cologne Plan F and its lost antecedents. One can imagine that Strasbourg-trained designers were busily involved with the construction of the Freiburg nave and with the design of Rahn Plan A, when they suddenly became aware that the Cologne workshop had stolen the march on them by developing ambitious new tower designs with complex transformative geometries, richly sculptural pinnacles, and even openwork spires. Neither the Montjoie-derived spires of Strasbourg Plan B nor the rather feeble spire of Rahn Plan A could match the new Cologne designs in sophistication. Rahn Plan B seems to represent a first attempt to cram the basic ideas of the Cologne

⁷⁹ See n. 8, this chapter.

⁸⁰ The corner pinnacles in Rahn Plan B were probably intended to be triangular in plan like those of the current tower; a drawing closely related to Rahn Plan B (Germanisches Nationalmuseum, Nuremberg) already shows such a geometry in the plan at its base.

⁸¹ The slender openwork stair turret on the northeast face of the Freiburg tower resembles those tucked behind the western buttresses of the Strasbourg facade, for example, while the trumpeting angels and tiny decorative flying buttresses adorning the pinnacles echo motifs seen in Strasbourg Plan B.

tradition into the Freiburg single-tower framework. Subsequent revisions to the design would produce the present Freiburg spire, whose streamlined elegance compares favorably with the systematic but almost plodding richness of Cologne Plan F. The smooth elision of the octagonal tower stories in Freiburg contrasts with the clear and explicit stacking of gabled stories seen in Plan F, for example.

In Freiburg, the main spire form predominates over the details, instead of getting lost in them as the Cologne spires seem to. Many subtle features of the Freiburg design contribute to this effect. The pinnacles flanking the tower core are lower and leaner than those of Cologne, and their triangular geometry pushes their central axes in against the main tower. All of the gables, pinnacles, and crockets of the Freiburg spire are smaller than their analogs at Cologne, and the main spire is larger compared to the tower base. The Freiburg spire has a subtly convex profile, so that it is wider and airier than the strictly pyramidal Cologne spires. The tracery panels of the Freiburg spire, moreover, are slenderer than those of Cologne, because--unlike the Cologne panels--they are not all organized around circular roundels that shrink as the spire sides converge. The cumulative impact of these refinements gives the Freiburg design a lyrical elegance that the impressive but relentless Cologne Plan F lacks.⁸² The greatest difference between the Cologne and Freiburg spire projects, of course, is that only Freiburg's was completed in the Middle Ages.

The successful construction of the Freiburg spire depended both on the daring extension of Gothic building practices and on the strong financial support that the project received from Freiburg's citizenry. In the technical arena, the Freiburg spire deserves to be recognized as the first large-scale monument whose overall form was unrealizable without the structural use of metal.⁸³ At Freiburg, a series of metal clamps was joined into a chain at each level of the spire cone.⁸⁴ Because these metal tension rings helped to contain the horizontal thrust of the spire pyramid, the walls of the tower below could be rendered as thin bladed flanges. Metal dowels, meanwhile, anchor the vertical elements into place. Similar techniques had been used in the Strasbourg facade and other earlier Rayonnant monuments, but construction of the Freiburg spire entailed a quantum leap beyond these projects, none of which required a large openwork structure designed to stand free as the spire did.

⁸² Kaufmann, in "Die Masswerkhelme," read the systematic relentlessness of Cologne Plan F as a sign of its later date.

⁸³ In this sense the Freiburg spire might be seen as the distant cousin of the modern structures, such as the Eiffel Tower and the steel-framed skyscraper, that eventually eclipsed its height.

⁸⁴ See Hart and Adam, *Das Freiburger Münster*, 197; and Sass, "Der kühnste Turm," 19-20.

Since the dating of the Freiburg spire project has now been fairly firmly established on dendrochronological and archaeological grounds, its relationship to the history of local politics and patronage can be reliably charted. The relatively popular count Conrad I died in 1271, as work on the western nave bays of the Minster was proceeding. Most of the western tower and spire was completed in the reign of his unpopular son Egon II, who ruled until 1316. During this period the citizens of Freiburg took over control of the building project, as the interests of the count and the city diverged.⁸⁵

In 1299, in the very period when the planning for the Minster's elegant upper tower octagon and spire must have been getting under way, the simmering frustration between the citizens and Egon II broke into open conflict at the Battle of Betzenhausen. In response to another of the count's tax increases, the citizens had taken up arms and begun to take siege equipment against the count's castle. Egon received military support from his brother-in-law, Bishop Conrad von Lichtenberg of Strasbourg, the same prelate who had laid the first stone of the Strasbourg Cathedral facade in 1277. After a long day of battle near the village of Betzenhausen, the Bishop was killed by a member of Freiburg's butcher's guild, and his forces fled the field. This victory did not earn Freiburg its independence; indeed, the citizens were forced to erect a cross of atonement for their offense, and relations with Egon II were temporarily patched up.⁸⁶ The battle does suggest, however, the lengths to which the citizens of Freiburg were willing to go to protect their interests.

Strong civic and burgher control over construction and financing of the Minster was established in the years after the battle when the upper tower and spire were under construction, continuing a trend that had already begun in the thirteenth century. The fabric was administered by a committee of burghers that reported directly to the city council. The oldest surviving records of this committee's membership, dating from 1311, show that the chair was a man named Gottfried von Schlettstadt who had served as Freiburg's mayor in the 1290s.⁸⁷ As at Strasbourg, therefore,

⁸⁵ The city government became progressively more inclusive even as the obligations of living under Egon II's rule grew more oppressive. In the 1270s, Egon II dragged the citizenry into his unsuccessful campaign against Rudolph Habsburg by ordering them to destroy the castle of Zähringen, which had become property of the Reich upon the death of Berthold V, and the Dominican Abbey of Adelhausen, in which Rudolph's sister lived. Egon and the citizens surrendered to Rudolph after he besieged the city, and they were forced to pay reparations in addition to rebuilding the structures they had destroyed. In this way the merchant citizens of Freiburg were forced to pay for the imprudence of the count, much to their displeasure. See Ricker, *Freiburg*, 32; and Kalchthaler, *Kleine Geschichte der Stadt Freiburg*, 30-32.

⁸⁶ Ricker, *Freiburg*, 33-34.

⁸⁷ Kalchthaler, *Kleine Geschichte der Stadt Freiburg*, 33, 36-40.

there was a strong civic component to the fabric administration. Donations from the city's patricians, merchants, and guild workers poured into the Minster's fabric fund in the early decades of the fourteenth century, thanks in large part to the prosperity that came to the city from the exploitation of nearby silver mines.⁸⁸ The names of individual donors are particularly well documented in the stained glass of the nave,⁸⁹ but the successful completion of the Minster's great openwork spire in the years around 1330 also attests to this high level of local prosperity and popular support.

The contrasting fates of the Cologne and Freiburg spire projects reflect their contrasting roles in urban life and popular imagination. Cologne Cathedral existed primarily to serve the archbishops and the chapter, whose interests were often opposed to those of the local citizenry. It is thus no wonder that lay donations went largely to local parish churches rather than to the cathedral fabric fund. This situation, combined with the cathedral's elaborate design and the clerics' understandable privileging of the cathedral's east end over the west facade, prevented the realization of Plan F in the Middle Ages. Freiburg Minster, by contrast, served the local citizenry directly as the town's principal parish church, and its construction was actively supported by the city government as well as by the citizens themselves. In this context, it is interesting that the spire rose from the Münsterplatz to rival the height of the counts' hilltop castle in the very years when the citizens of Freiburg were asserting their rights in the face of Egon II's oppressive arrogance. Indeed, while the history of tension between Cologne's archbishops and the city tended to undermine donations to the cathedral fabric fund, the conflict between Freiburg's citizens and the local count may actually have fired popular enthusiasm for the spire project. Egon's ancestors had admittedly been major patrons of Freiburg Minster, and statues of the counts flank the main portal in the blocky lower portions of the western tower as representatives of secular authority, but by 1300 the initiative in the construction process had shifted to Freiburg's citizens,⁹⁰ and the triumphant completion of the world's first openwork spire surely attests more to their power than to his.

The history of fourteenth-century Freiburg underlines the divergence of fortunes and interests between the local counts, on the one hand, and the citizens whose donations permitted the completion of the spire, on the other. Egon II was succeeded as count in 1316 by his perpetually indebted

⁸⁸ Kalchthaler, *Kleine Geschichte der Stadt Freiburg*, 38. The first surviving records of burgher donations to the fabric fund date from 1297, according to Conrad Kunze, *Himmel in Stein: Das Freiburger Münster* (Freiburg, 1980), 112.

⁸⁹ Mittmann, *Das Münster zu Freiburg*, 44-49.

⁹⁰ Kalchthaler, *Kleine Geschichte der Stadt Freiburg*, 38.

son Conrad II, who was forced to grant new rights to the city in exchange for loans to pay off his debts.⁹¹ In the first half of the fourteenth century, meanwhile, the builders of the Minster were able to complete not only the world's first openwork spire, but also the upper portions of the nave and the "Hen Towers," two small openwork spirelets atop the stair turrets of the Romanesque transept. By the middle of the century, planning had begun for the construction of a new Gothic choir,⁹² but this project did not get very far, because the latter half of the fourteenth century turned out to be a difficult time for Freiburg. The Black Death claimed many lives, and the local economy began to deteriorate as income from silver mining in the region declined. In addition, the city's resources were exhausted by conflict against the counts, which turned particularly nasty in the 1360s.⁹³ In 1368 the Bishop of Constance arranged a settlement by which the citizens of Freiburg would buy their freedom from the counts for 15,000 silver marks. Because the city could ill afford to pay this enormous sum, the city council decided that Freiburg would place itself under the protection of the Habsburgs, who in return would provide money to help cover the ransom. Even so, the city had no money left for construction of the Minster's choir, which was therefore interrupted for over a century.

The period of prosperity and autonomy that had produced Freiburg's openwork spire was relatively short-lived, but the achievement of the Freiburg spire builders had a long-lasting and profound impact on the subsequent history of Gothic architecture, especially in the German world.

⁹¹ In 1327, for example, he granted the city the right to mint its own coins and to enter freely into alliances. After mortgaging many of his other land holdings, he won 4,000 silver marks from the city for the promise not to mortgage the city of Freiburg itself. Kalchthaler, *Kleine Geschichte der Stadt Freiburg*, 35.

⁹² The ground plan of the new Gothic choir has often been attributed to Johannes of Gmund, who was probably a member of the Parler family of builders. See Mittmann, *Das Münster zu Freiburg*, 11; and Becksmann et. al., "Das Freiburger Münster," 355-58. Recently, however, Thomas Flum has convincingly associated the choir plan with the anonymous master of the Freiburg spire. Both designs feature rotational geometries and salient bladed forms very different than those seen in most examples of Parler design. See "Zur Baugeschichte des Freiburger Münsterturns," *Umění* 49 (2001): 256-61. See also idem, *Der Spätgotische Chor des Freiburger Münsters: Baugeschichte und Baugestalt* (Berlin, 2001), esp. 124-25. The identity of the spire designer at Freiburg remains unclear, however. A number of names survive in the records of the tower project, but none has been conclusively identified with the master in charge of the design process. See Becksmann et. al., op. cit. 354-55.

⁹³ The citizens of Freiburg objected to Count Egon III's ever-higher taxes, and they refused to grant him any more loans. In 1366, therefore, Egon III made a reckless plan to assault the city by night so that he could kill or imprison the members of the city council, but his plan to bribe the city's night watchman failed. The irate citizenry responded by destroying the count's hilltop castle using cannons fired from the Münsterplatz, among other places, but the count had already escaped. In the following year the citizens of Freiburg and allied cities waged a fruitless war of attrition against the forces of the count and his aristocratic associates. See Ricker, *Freiburg*, 34-35; and Kalchthaler, *Kleine Geschichte der Stadt Freiburg*, 43-45.

The openwork spire type became the tower termination of choice for many of the most ambitious builders of the day. The patterns of later Gothic spire construction underline the importance of two themes already seen in the early history of openwork spires in the Rhineland: first, that openwork spires were most closely associated with buildings informed by the French Rayonnant style; and second, that the construction of truly colossal openwork spires depended to a striking extent on burgher and civic patronage. As the subsequent chapters show, however, aristocratic and episcopal patrons did play a crucial role in spreading the openwork spire type throughout the German-speaking world, and beyond.