



I-1 Chartres Cathedral.

INTRODUCTION

The rocketlike forms of church spires designed and built in the Gothic era dominate the skylines of many European cities even today. Visitors to cities such as Chartres, Strasbourg, Vienna, and Antwerp cannot fail to notice these medieval colossi, which provide the most dramatic and conspicuous visual foci for the urban environment and the surrounding countryside (fig. I-1). Gothic spires such as these defined a scale for building height that remained unsurpassed until the advent of the skyscraper age in the late nineteenth century. The great spires of Cologne Cathedral, in fact, were the tallest structures in the world when completed in 1880 according to the original medieval plans (fig. I-2).¹ It is hard to

¹ The only ancient monuments to reach heights comparable to those of the great Gothic spires were the pyramids of Giza and the Pharos of Alexandria. The 146-meter height of the



I-2 Cologne Cathedral.

overstate the audacity of the Gothic designers who, from the twelfth to the sixteenth century, developed plans for ever more elaborate spires that could reach one hundred or even one hundred and fifty meters into the air. The scale of their ambitions appears especially remarkable since these fantastic tower terminations, which were enormously expensive to construct, served little practical purpose. Bells might hang in their lower stories, and city watchmen might sometimes patrol their balustraded passages, but these spires existed primarily to be seen. Their form, in this sense, was their most important function. Unlike Gothic church buildings,

whose size at least partly reflected population growth and the spatial requirements of an elaborate liturgy, spires served almost exclusively as carriers of symbolic meaning. With their tremendous height and prominence, in fact, great spires acted as visual public address systems for an age without mass media.

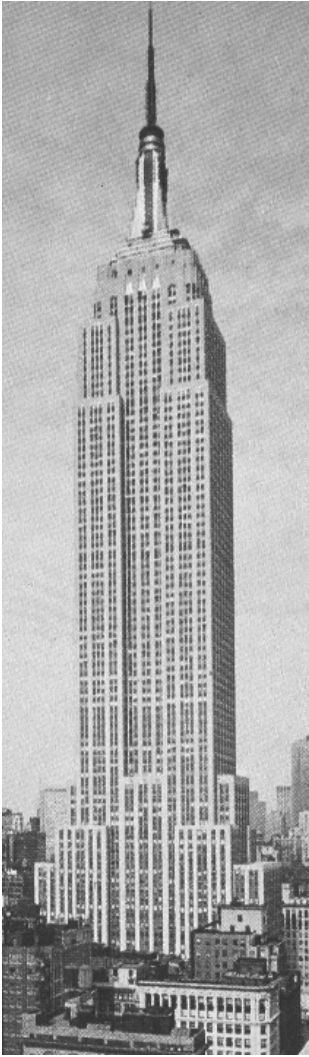
Great Pyramid of Cheops, in particular, remained a record for masonry construction until the completion of the 157-meter Cologne spires in 1880. Ancient Near Eastern ziggurats and the temple pyramids of Central and South America were considerably shorter. The largest Islamic minarets and East Asian pagodas reach heights between sixty and ninety meters, and the tallest South Indian temples and Buddhist stupas reach heights just short of 120 meters, but none of these types achieved the heights seen in European spire construction. The tallest spires of the Gothic age were the enormous but very simple timber spires of Lincoln Cathedral and Old Saint Paul's in London, both of which were roughly 150 meters tall, and both of which collapsed in the 16th century. The tallest surviving medieval structure, therefore, is the much more elaborate stone and iron spire of Strasbourg, which reaches a height of 142 meters. The only postmedieval but preindustrial European structure to seriously challenge the height of the largest Gothic spires was the dome of Saint Peter's in Rome, which reaches a height of 138 meters to the tip of its lantern. It was only with the completion of the 300-meter Eiffel Tower in 1889, and with the flowering of skyscraper construction in the decades that followed, that the vertical scale established by Gothic spire builders was surpassed.



I-3 Strasbourg, from the *Liber Chronicarum* of Hartmann Schedel, 1493 (woodcut).

The spire form has become one of the most ubiquitous and widely recognized of architectural signs, a visual shorthand of sorts for the very idea of “church.” Significantly, however, spires began to appear on the architectural landscape only in the twelfth century, in the same period when the Gothic style itself was emerging. Spires, therefore, should not be taken for granted as simple elements in a timeless and stable system of architectural iconography. Their meaning, or indeed their many layers of meaning, deserve to be understood within a more historically grounded framework that permits their invention and development to be traced over time. This is especially true for the “great spires” considered in this book, because their scale and expense automatically made them vehicles of secular and civic meaning as well as religious symbolism.

Since spires visually announce the presence of God in the Christian community, it is not surprising that the most ambitious spire projects in history were developed in the Gothic era, a period marked not only by the ascendancy of the Christian church but also by the rapid growth of urban centers. The colossal spire of Strasbourg Cathedral, for example, was built to mark the spiritual center of a thriving and virtually independent city-state. Its prominence as a symbol of civic identity comes through clearly in



I-4 New York City, Empire State Building.

the woodcut image of the city published in 1493 in the *Liber Chronicarum* of Hartmann Schedel (fig. I-3).² The great age of Gothic spire construction ultimately came to an end in part because the growth of centralized national governments generally directed resources and loyalties away from the construction of such emphatically local monuments. The visual culture of courtly display made little appeal to the urban and regional audience, so the palaces of absolutist monarchs like Louis XIV could be sprawingly horizontal rather than conspicuously vertical. Spires lost much of their usefulness as community symbols when the scale of the community in question was national, with subjects and citizens beyond the visual reach of even the tallest monuments. Conversely, it was in small but largely autonomous Christian communities like the villages of colonial New England that spires enjoyed their greatest post-medieval popularity.

The importance of spires and spire-like monuments, paradoxically, actually grew with the rise of mass media in the nineteenth and twentieth centuries. The new potential for the widespread dissemination of images made iconic buildings useful for propaganda and advertising campaigns of all sorts. The completion of the Cologne Cathedral spires, for example, marked the culmination of a publicity campaign that had established the building as a symbol of German national pride. In the United

² The *Liber Chronicarum*, better known as the *Nuremberg Chronicle*, was one of the most sumptuously illustrated books of its day. It includes over 1,800 illustrations depicting the history of the earth from its creation to 1493. Particularly noteworthy in this context is the series of woodcut views depicting major cities of the era, in which monumental structures such as the Strasbourg spire naturally played a prominent role. Not coincidentally, cities enjoyed great power and autonomy in the late 15th century, especially in the German world.

States, meanwhile, skyscrapers began to play something of the role in promoting capitalism that spires had played in promoting religion. The Woolworth and Chrysler Buildings in New York, among others, were deliberately designed as charismatic and easily recognizable corporate symbols whose images could be used in advertising. The perceived value of such symbolism was enough to motivate hard-headed businessmen like Frank Woolworth to choose a slender and soaring building form, even though the small size of each floor made the building functionally inefficient. The pretentious symbolism of the Woolworth Building came through clearly in its nickname, “the cathedral of commerce.” Some social critics of the early twentieth century lamented the contrast between the supposedly spiritual Middle Ages and the crassly capitalistic Modern Age, but the resonance between the spire and the skyscraper was widely recognized.³

It makes sense to think of spires as “skyscrapers of the New Jerusalem” because this phrasing captures the simultaneously earthly and transcendent nature of their symbolism and social meaning. Spires served first and foremost as markers of the divine. The heavenward rush of spires, pinnacles, and similar aspiring forms helped to dramatize the role of the church as a representation of the city of God, a fundamental symbolic reading that was well established in the Middle Ages. Medieval viewers must also have realized, however, that the spires on their skylines were simultaneously signs of worldly authority, conspicuous advertisements for the powerful institutions that had commissioned their construction. Public opinions about these institutions, in fact, had a strong bearing on the history of spire construction. Spire projects that seemed to represent only narrow ecclesiastical or aristocratic interests often had to be abandoned for want of popular support, while those of more communal flavor rose steadily thanks to popular donations. Even in cases where the unpopularity of the original spire patrons contributed to a centuries-long work stoppage, as at Cologne, great spires could become *de facto* civic monuments when they were eventually completed. Great skyscrapers like the Empire State Building in New York City and the Sears Tower in Chicago, similarly, have become powerful symbols of their home cities even though they were built by corporate rather than civic interests (fig. I-4). The World Trade Center in New York even became widely perceived as the most iconic physical manifestation of western capitalism and modernism, as its tragic

³ These aspects of the early history of skyscrapers, which contrast with the typical notion of the skyscraper as a strictly functional form designed to pack more usable floor space onto a given plot of land, are discussed in Thomas A. P. van Leeuwen, *The Skyward Trend of Thought* (Cambridge, Mass., 1986).



1-5 Freiburg im Breisgau, Minster.

destruction by terrorists in 2001 all too clearly demonstrated. The size and charisma of colossal structures like these set them apart from lesser buildings, even other skyscrapers.

In the Gothic period, similarly, certain flagship spire projects stood out from the rest. "Great spires" like those of Freiburg im Breisgau and Antwerp were complex and formally sophisticated as well as enormous. At Freiburg, slender pinnacles flank the sleek tower, which dissolves into a network of lacy openwork tracery (fig. I-5). At Antwerp, decorative flying buttresses rise up alongside the successive stages of the tower, whose plan geometries change progressively from square, to octagonal, to rotated square, and then back to octagonal at the spire tip (fig. I-6). With their complex detailing, these great spires beautifully exemplify the dynamic, organic qualities stereotypically associated with Gothic design.

Most spires of their age, however, were far simpler. Indeed, the overwhelming majority were mere toothpicks by comparison, as the view of Strasbourg from the *Liber Chronicarum* suggests. Many small churches of the Gothic period carried the slender timber spires known to the French as *flèches*, or arrows, which the Germans call *Dachreiter*, or roof riders. As the latter term implies, these spires are essentially elements of the lead-sheathed timber roof superstructure. They thus differ fundamentally from complex stone spires like those of Strasbourg and Freiburg, which were structurally integrated with the churches they adorn.



I-6 Antwerp, Notre-Dame.

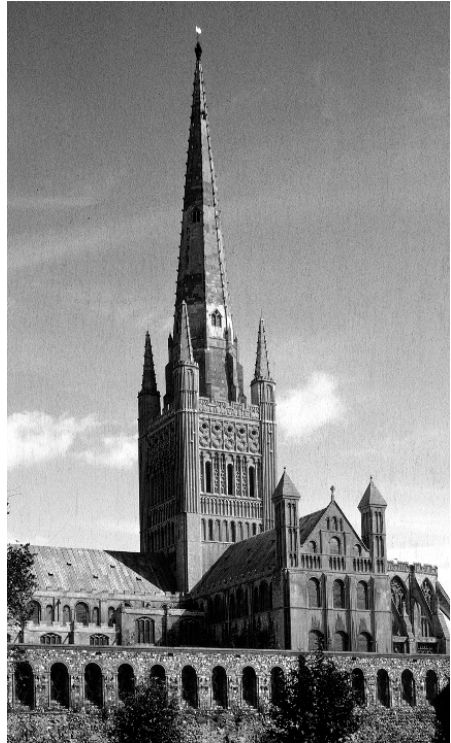


I-7 Lübeck, Marienkirche.

Even the largest timber spires, like the twin pyramidal spires crowning the west facade of the Marienkirche in Lübeck, were structurally distinct from the masonry fabric of the church below (fig. I-7, left; the church's *Dachreiter* is to the right). Timber spires, naturally, are more fragile than their stone cousins, and most of the medieval originals have been destroyed or replaced over the years. The distinction between these spire types was formal as well as structural. Although roughly as large as the great stone spires of Freiburg and Antwerp, the Lübeck spires are extremely simple and even static in appearance, lacking the complex detailing and sophisticated geometries characteristic of the great spire type. For this reason, they would have been far cheaper to construct than the great spires of Freiburg, Strasbourg, and Antwerp, which were built up from elaborately carved stone components.

The formal complexity and resultant expense of "great spires" distinguished them not only from timber spires, but also from the majority

of masonry spires. In England, for example, many slender pyramidal spires were built in the late Gothic period out of relatively simple stone blocks. These were often constructed directly atop older square towers, with no transitional zone in between, as at Norwich Cathedral (fig. I-8). The resulting impression of casual formal disjunction was something that the most ambitious continental spire designers generally sought to avoid. At Freiburg, for example, an octagonal tower story helps to mediate between the octagonally symmetrical geometry of the tapering spire cone and the rectilinear geometry of the supporting tower base below. Many of the most impressive and sophisticated spires of the Gothic



I-8 Norwich Cathedral.

period include such octagonal tower stories. Indeed, the presence of such a story tends to be a defining characteristic of spires in which the progressive transformation of the plan was taken as a problem of high artistic interest. The design and construction of such complex spires presented both challenges and opportunities that the creation of simpler spires did not. Thus, while precise equivalents for the phrase "great spire" appear in no medieval documents, medieval builders and their patrons almost certainly recognized a roughly analogous category.⁴

Great spires occupied a prestigious niche in medieval architectural culture. In both economic and artistic terms, the construction of a great spire was

⁴ The "great spire" concept developed in this book parallels the "great church" concept developed by Peter Kidson and popularized by Christopher Wilson in *The Gothic Cathedral: The Architecture of the Great Church, 1130-1530* (London, 1990), especially 7-8. The definition of the great spire, like that of the great church, takes architectural form as its point of departure, since highly ambitious building projects could involve churches of various ecclesiastical ranks, not just cathedrals.



I-9 Chartres Cathedral, seen rising above the wheat fields of Beauce.

an event of capital importance. Because they combined large scale and intricate detailing, great spires were very expensive, even by the lavish standards of Gothic cathedral design.⁵ Only the wealthiest and most ambitious patrons, therefore, could afford to undertake their construction. In practice, this meant that great spires were planned almost exclusively for the chief religious establishments of their home cities. Because their expense required the support of many donors working for a common goal, great spire projects depended to a striking extent on civic sentiment, a point this book explores in some detail. Great spires, in fact, stand as vivid diagrams of local economic and social history. Because they

were necessarily constructed from bottom to top over a long period of time, they can be read vertically much as tree rings can be read from the center out. In periods of prosperity, spire construction could go forward quickly, leaving a new tower story. In periods of poverty or political chaos, construction typically ceased. The very extravagance of great spire

⁵5. The construction of a two-towered facade block could cost as much as the rest of a major cathedral. This may be seen clearly in the budget for the 19th-century completion of Cologne Cathedral. All the Gothic Revival campaigns on the building up until 1863, including construction of the transepts and nave with their vaults, buttressing systems, and the *Dachreiter* spire on the crossing, cost "only" 2.6 million Taler. Completion of the west facade and its great spires, however, consumed more than four million Taler in the period 1864-80. See Arnold Wolff, *The Cologne Cathedral* (Cologne, 1999), 23. Similar patterns of consumption may be traced in the medieval fabric accounts of Saint Nicaise Abbey in Reims, where annual expenses in the late 13th century evidently associated with the facade block were more than double the expenses in the earlier decades of construction. See Robert Branner, "Historical Aspects of the Reconstruction of Reims Cathedral, 1210-1241," *Speculum* 36 (January 1961): 33; as well as Maryse Bideault and Claudine Lautier, "Saint Nicaise de Reims: Chronologie et nouvelles remarques sur l'architecture," *Bulletin monumental* 135, no. 4 (1977): 300-301. In cities like Ulm and Vienna where the churches themselves were simpler, the relative costs of great spire construction were even higher.

projects naturally makes them more sensitive barometers of local fortune than other more pragmatically defensible architectural elements.

Like the manned space missions of the Cold War era, great spire projects were enormously expensive undertakings whose supposedly transcendent meanings were strongly inflected by notions of pride and patriotism. The initial impetus for both types of project clearly came from the top of the social hierarchy, but neither could go forward for long without a fairly high degree of popular support. The spire-as-spaceshot analogy, in fact, works surprisingly well, and not just because spires and rockets have similar pointed

shapes (figs I-9 and I-10). What the moon shot was to the United States, the completion of a great spire was to a city like Chartres or Strasbourg--an expensive and highly visible symbolic assertion of power, a statement of cultural virility, as it were. In theory, each project concerned transcendent values, whether explicitly Christian or based on a more secular faith in technology, progress, and the destiny of mankind. In practice, however, competition, pride, and patriotism played important roles in both spire-building and the space race. The idea of reaching heavenward has not lost its appeal over the centuries, but the methods of making this goal visible have changed considerably. Medieval burghers could see spires daily with their own eyes, while most observers who followed the progress of the space program did so briefly on television. By the twentieth century, moreover, the scale of social organization and technical challenge had reached the point where only two superpowers, the United States and the Soviet Union, could participate in the space race. In the Gothic era, however, nation-states had not yet displaced cities as the most important



I-10 Saturn V launch, seen rising above the marshes of Florida.

foci for ideas such as citizenship and patriotism. Great spires thus wound together two of the most characteristic aspects of medieval society, Christian piety and civic pride, much as the space program expressed the curious blend of nationalism and idealism characteristic of the 1960s.

Great spires had special status not only for patrons, but also for the Gothic builders who were the proverbial rocket scientists of their day. The challenges of great spire design gave ambitious builders ample opportunity to display their talents. Despite the colossal scale at which they worked, these men sought to keep pace with formal innovations in the design of pinnacles, microarchitectural canopies, and liturgical furnishings. The design of a great spire, unlike that of a simple pyramidal spire, might therefore rank among the principal creative tasks of a builder's career. The construction of these elaborate stone spires, moreover, depended on the development of advanced building techniques such as the use of iron clamps, pins, and brackets. Because the design of great spires provided such engaging aesthetic, intellectual, and technical problems, the field remained impressively vital throughout the Gothic era, while that of simpler spire types largely stagnated.

As this distinction suggests, a developmental perspective can prove helpful in responsibly defining the category of great spires. Although the naive misapplication of biological analogies has given the term "evolution" a bad name in the humanities, a sophisticated evolutionary perspective can offer methodological advantages. Categorization schemes that lack such a developmental component tend to rely upon strict but somewhat arbitrary intellectual partitions, and they generally involve an implicit essentialism that cannot adequately explain the complex interactions characteristic of historical process. In art history as in biology, an understanding of evolutionary process can strengthen taxonomic categorization even as it combats this dangerous essentialism.⁶ Thus, for example, the distinction between the great spires of continental Europe and the simpler spires of England can be observed in a developmental framework without denying the common origin of both types in earlier medieval traditions of spire design. The term "great spire" has legitimacy in this framework because it refers to a group of monuments that share not only certain formal and technical features, but also a coherent developmental history.

The notion of the great spire provides a much-needed interpretive framework within which the issues raised by these spectacular monuments can be profitably explored. The category groups together a class of

⁶ These points are discussed at greater length in Robert Bork, "Pros and Cons of Stratigraphic Models in Art History," *Res* 40 (2001): 177-87.

continental spire projects that influenced each other both over the course of the Gothic era, and throughout much of Europe. French High Gothic and Rayonnant prototypes informed the design of later German spires; in turn, the impact of the German achievement catalyzed Late Gothic developments in France, Spain, and the Low Countries. These connections across time and space, which had important consequences for the history of Gothic design, cannot be appreciated when the spires of each period and region are seen in isolation. Because of the high level of technical skill that was necessary for their construction, in fact, the spread of the great spire type into new territories depended on the substantial continuity of architectural tradition. An integrated developmental approach to the history of great spires, therefore, can offer a valuable perspective on these major monuments and their place in medieval visual culture.

Despite ample evidence that medieval spire-builders worked for four hundred years to outdo each other in scale and virtuosity, no comprehensive study of Europe's great spires has previously been attempted. In fact, spires of all sorts have been largely taken for granted by the art-historical community. A variety of factors have contributed to the relative neglect of spires in the academic literature on medieval art. In general, Gothic architectural scholarship has emphasized interiors over exteriors. Because spires are essentially sculptural objects with little or no interior space, they could not be readily appreciated within the influential scholarly tradition that defined architecture in terms of the shaping of space. In recent decades, this formalist approach to church design has increasingly given way to studies of liturgical and devotional practice, but the emphasis on the internal audience rather than the external urban audience has remained in place. Perhaps the most important factor obscuring the history of the great spire phenomenon, however, has been the fragmentation of the scholarly community along national lines. On the most basic level, this fragmentation makes it harder to perceive the patterns of international artistic interaction that were so important to medieval spire builders. More subtly and ironically, the legacy of nineteenth-century nationalism has made it difficult for many modern scholars to appreciate their countries' own contributions to the history of the great spire type.

France and Germany provide two powerful yet contrasting examples of how nationalistic concerns have hindered the growth of spire scholarship. In France, Early and High Gothic church vessels continue to dominate discussion much as they did in the nineteenth century, despite dramatic changes in research methodology over the past century and a half. For Eugène-Émmmanuel Viollet-le-Duc, the most influential theorist of the

French Gothic Revival movement, the progressive development of church vessels in the twelfth and thirteenth centuries attested to the increasing technical skill of Gothic builders, providing a model of rational architectural development that he sought to apply in the modern world. The early development of Gothic vaulting and abutment schemes certainly makes a compelling academic narrative, and this history of French Gothic in its early years continues to occupy center stage in most surveys of Gothic architecture.⁷ Social, economic, and liturgical perspectives now enjoy great popularity, but the emphasis of most synthetic studies of French Gothic architecture, whatever their methodology, continues to be on the great cathedral vessels erected prior to the Hundred Years War. Spires were not perceived in the nineteenth century as the most outstanding elements of the French Gothic architectural legacy, and they still are not today. Ironically, therefore, the fundamental French contributions to the invention of the great spire type have been almost totally ignored.

In Germany, too, nationalism and a fascination with church vessels contributed to the widespread scholarly neglect of great spires, although these factors interacted in a very different way than they had in France. Indeed, the German turn away from spires can be understood as a deliberate attempt to transcend the limitations of a Gothic Revival movement in which spires had played an important part. In the nineteenth century, great medieval spires like those of Strasbourg were often seen as characteristic products of the Germanic national genius. Many new spires were built in the Neo-Gothic period, both to new designs and in accord with original medieval plans, as at Cologne and Ulm, where the tallest spire in the world was finally completed in 1890 (fig. I-11). By that date, however, it had become clear that Gothic architecture was originally a French invention. Scholars who wished to celebrate the uniqueness of the German architectural achievement thus began to focus on the dynamic spatial qualities of the more characteristically German Late Gothic hall church

⁷ Viollet-le-Duc managed to include valuable observations about towers and spires in his massive ten-volume *Dictionnaire raisonné de l'architecture française du XI^e au XVI^e siècle* (Paris, 1858-68), but many of his successors concentrated on church vessels almost exclusively. In Auguste Choisy's influential *Histoire de l'architecture* (Paris, 1899), for instance, buildings are represented simply by an isometric drawing of a "standard" bay, an approach to architectural representation that permits exploration of the rib vault, the pointed arch, and the flying buttress, while excluding supposedly ancillary structures such as towers and spires. Close to a century later, Jean Bony's widely acclaimed *French Gothic Architecture of the 12th and 13th Centuries* (Berkeley, 1983) still included scarcely a mention of spire design in its eloquent discussion of stylistic evolution, even though the church spire in its recognizable modern form appears to have emerged in the period he considers. The only book-length study dedicated to French towers and spires is Denise Jalabert's *Clochers de France* (Paris, 1968), which is little more than a short catalog of sketches organized by region and rough chronological sequence.



I-11 Ulm Minster, spire.

type.⁸ By the first decades of the twentieth century, in fact, many German art theorists had come to see interior space as the defining element of architecture. The resulting emphasis on interior space exercised a powerful influence on scholarly approaches to architectural history throughout most of the century, with obviously deleterious consequences for the study of great spires. In recent decades the grip of this attitude has relaxed somewhat, but the repudiation of nationalistic attitudes after World War II has tended to prevent German scholars from championing the substantial German contributions to spire design in any systematic way. Most recent studies of German spires, consequently, celebrate local rather than national achievement. Despite the prominence of spires in German cities and in the German Neo-Gothic movement, therefore, the relationships between these major monuments remain substantially unexamined, as does their role in the larger context of European medieval architecture.

Because the examples of the French and German academies so strongly influenced the evolution of intellectual priorities in other countries where researchers studied northern Gothic architecture, such as Belgium and the United States, Franco-German neglect of great spire research has had literally global consequences.⁹ As a result, scholarship on Gothic spires has remained impoverished in a number of significant respects by comparison to other subfields of architectural history. There has been little effort to relate different spires to one another, or to trace an overall developmental history of the type. A critical language for the description of spire components is still lacking. If spires are to achieve recognition among art historians, their basic formal components must be defined and the narrative of their historical development must be at least provisionally charted. The social role of spires, moreover, needs to be framed in a nuanced and historically informed way. Spires must be recognized not only as the carriers of supposedly transcendent universal symbolism, but also as the representatives of actual institutions whose economic and political

⁸ Kurt Gerstenberg argued this point particularly forcefully in *Deutsche Sondergotik*, published in 1913. Wilhelm Worringer and Cornelius Gurlitt also emphasized the spatial qualities of the German hall church type. These authors' views are usefully synopsized and contrasted in Paul Frankl, *The Gothic: Sources and Literary Interpretations Through Eight Centuries* (Princeton, 1960), 641-47 and 669-86. For a more recent example of this spatial emphasis, see Niklaus Pevsner, *An Outline of European Architecture* (Baltimore, 1943), 15. The late 19th century, by contrast, had produced lavishly illustrated catalogs of German towers and spires, such as Conrad Sutter's *Thurmbuch* (Berlin, 1888).

⁹ In England, most authors who deal with spires concern themselves with English monuments rather than their continental cousins, thereby neglecting great spires. Early in the last century, however, E. Tyrell Green attempted to address the full variety of medieval tower forms in his broad-ranging but superficial *Towers and Spires: Their Design and Arrangement* (London, 1908).

situations typically had bearing on both the progress of the projects and on their contextual meaning.

This book presents the first comprehensive analysis of the Gothic great spire type. In the interests of historical precision, this discussion incorporates a series of case studies that consider individual great spire projects in their urban, political, and artistic contexts, relating the formal and structural aspects of each to the circumstances of patronage and reception that determined its history. The concatenation of these social-cum-architectural studies, in turn, makes possible the construction of a plausible history for the great spire phenomenon as a whole. The chapters of this book follow an essentially chronological narrative sequence, because Gothic spire builders and their patrons appear to a striking extent to have reacted to each other's achievements in a competitive dialogic fashion. On one basic level, this narrative chronicles the continuing efforts of Gothic designers to deal with the practical and aesthetic problems posed by the design of great spires. On another level, this narrative helps to explain the complex layering of meanings that great spires would have held for the medieval public.

In very general terms, spires were heirs to ancient traditions associating height with sacredness. Spires were in this sense vertical bridges, linking the city of man to the city of God. Like all Christian belltowers, moreover, they were seen as preachers, making the word of God both audible and visible. In addition, great spires embodied an iconography of enshrinement that had its origins in Roman traditions of tomb tower design. Many reliquaries, shrines, and sacramental tabernacles of the Gothic era, therefore, were crowned with towering spire-shaped canopies. All of these forms were meant to exalt and protect the holy contents whose presence they marked, such as the body parts of saints, or the consecrated wafers that represented the body of Christ. In the case of great spires, the holy body being advertised was that of the church itself. Because great spires were often associated with church facades and portals, though, they could also be viewed as the gatehouse towers of the heavenly city. The symbolism of great spires thus depended in large part on their relationship to ancient traditions of architectural iconography.

The emergence of the great spire type *per se*, however, was a relatively sudden and rapid phenomenon of the mid-twelfth century. The south spire at Chartres, for example, already displays the vertical drive popularly associated with the Gothic style; with its complex transformative geometries, moreover, it also embodies the formal principles of diagonality and partiality that scholars such as Paul Frankl have seen as

quintessentially Gothic (fig. I-1, left tower).¹⁰ This first flowering of French spire design deserves more prominent discussion in the historiography of early Gothic architecture, in which the contemporary rebuilding of Saint-Denis Abbey by Abbot Suger still plays a disproportionately dominant role.

The surprising poverty of great spire production in the thirteenth century, by contrast, appears especially curious given the dramatic progress that was then being made in so many other aspects of Gothic design and construction. Large spires were admittedly constructed in England in the thirteenth and early fourteenth centuries, as at Lincoln, London, and Salisbury, but these relatively simple structures and their lesser progeny like the crossing spire of Norwich (fig. I-8) lacked the geometrical complexity and sophistication characteristic of the great spire type. English builders were likely aware of the great spires of early Gothic France, but they produced a largely separate class of monuments because their receptivity to French spire design, like their receptivity to the French Gothic style as a whole, was highly selective. The failure of French thirteenth-century builders to elaborate on their own early Gothic spire designs, meanwhile, has often been explained in terms of changing ideals of beauty in the years around 1220, as if the monumentality of the High Gothic style simply went out of vogue before the spire projects associated with the great French cathedrals could be completed.¹¹ It can be shown, however, that social factors played the dominant role in this temporary eclipse of the great spire type. Urban unrest in towns such as Chartres and Reims, together with the increased taxation of the upper clergy to pay for Louis IX's crusades, forced the abandonment of many ambitious spire projects, thereby interrupting the competitive dialog of great spire design and construction.

Great spires returned to the forefront of architectural culture in the fourteenth century thanks to the importation of advanced French Gothic design traditions into the German world, where wealthy merchant communities increasingly embraced spire construction as a sign of civic pride. Perhaps the most important formal innovation of this period was the

¹⁰ Frankl saw the rib vault as the fundamental architectural element that contributed to a Gothic sense of diagonality and partiality, but similar claims could be advanced for the diagonally placed tabernacles seen in the Chartres spire. Paul Frankl, *Gothic Architecture*, Pelican History of Art (Baltimore, 1962), 10-14. In a similar vein, Magda Révész-Alexander called the spired towers of Chartres, Freiburg, and Cologne "dynamic towers" because of their restless, quasi-organic visual complexity, in *Der Turm als Symbol und Erlebnis* (The Hague, 1953).

¹¹ Variants of this theory have been proposed by Robert Branner, Hans Jantzen, and Louis Grodecki, among others; their arguments are discussed further in Chapter 4.

invention of the openwork spire type, in which the entire spire cone became an airy lattice of tracery open to the elements. This dramatic idea was probably conceived for the first time in Cologne, where the ambitions of the archbishops had pushed the cathedral workshop to produce designs of unprecedented grandeur. Tellingly, however, the first openwork spire was constructed not in Cologne, where the aggressive policies of the haughty archbishops had alienated the citizenry, but in Freiburg, where the citizenry banded together to pay for the addition of a great spire to the parish church that was their most important civic monument. The completion of the Freiburg spire marked the beginning of a period in which burghers would displace bishops as the most enthusiastic and effective patrons of spire construction, especially in the German sphere, as case studies of spire projects in Ulm, Strasbourg, Prague, and Vienna demonstrate.

This golden age of Germanic great spire construction also produced many of the most ambitious architectural drawings of the Gothic period. Some of these drawings present designs that were realized in the Middle Ages, but others were realized only in the nineteenth century as part of the Gothic Revival movement, as at Cologne and Ulm, while still others, like an unexecuted single-spire design for Regensburg Cathedral, present visionary schemes that verge on architectural fantasy. Because Gothic builders had no analytically coherent theory of structure, they were unable to predict the forces that would arise when their daring plans were implemented. This was especially the case in great spire construction, where each successive stage added to a tower added new and potentially disastrous structural loads. The rise of drawing as a tool of design thus presented substantial challenges for Gothic spire builders. Schemes that may have looked brilliant when drawn up on parchment could prove exceedingly difficult to realize in practice, even given the widespread use of iron reinforcement in later Gothic spire construction. It is a testimony to the skill and determination of Late Gothic builders that they were able to successfully realize any of their fantastic schemes.

Many of these Germanic Late Gothic spire designs, both realized and unrealized, are noteworthy not only for their overall ambition but also for their close relationship with the micro-architectural canopies and baldachins that were becoming increasingly conspicuous in later medieval architectural culture and liturgical practice.

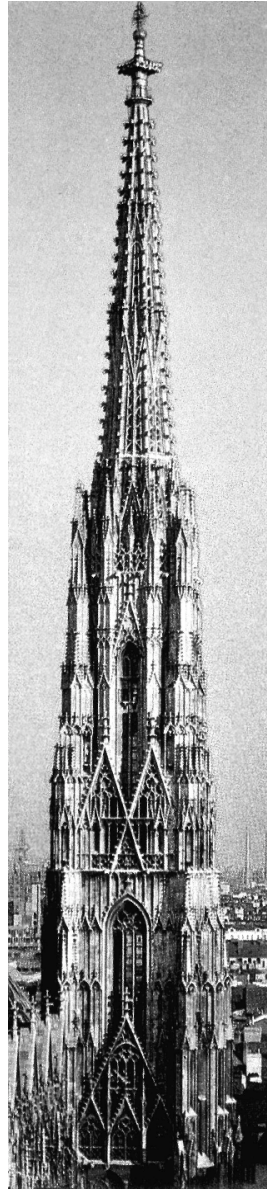


I-12 Three-towered reliquary, Aachen Cathedral treasury.

The slender spire of the Stephansdom in Vienna, for example, closely resembles the delicate pinnacles of the famous three-tower reliquary from the treasury of Aachen Cathedral (figs. I-12 and I-13). Because the construction of full-scale spires presented technical challenges that the production of micro-architectural canopies did not, the forms of great spires are necessarily somewhat more robust than those of their miniature cousins, but the formal and symbolic resonances between the two types are nevertheless striking. By the Late Gothic period, in fact, competition with

the achievements of sculptors, joiners, goldsmiths, and other producers of microarchitecture had come to play an important role in the formal dialog of spire design. The ubiquity of spire-like canopies in micro-architectural contexts, moreover, must have had a dramatic impact on how spire symbolism was perceived by the medieval public. Even without knowing the ancient history of this iconographical resonance, medieval viewers would have looked upon spires with eyes trained to read the great spire form as a shrine marker.

The international response to the German spire-building achievement underscores the extent to which great spires were seen as part of the same package of architectural ideas that had produced the great cathedrals of thirteenth-century France. In general, great spires were built only in those regions that had proven receptive to the French Rayonnant mode. In the German world itself, great spires had been planned in centers such as Cologne and Prague that were closely linked to French traditions, but not in cities such as Lübeck or Munich where the use of brick as a building material had forced a radical simplification of architectural forms. The most impressive response to German spire building came in the Low Countries, and especially in Brabantine cities like Antwerp (fig. I-6), where French influence in church design had previously predominated. Italy and England, which had never really accepted the premises of French Gothic design, proved equally resistant to the great spire type. The importation of German spire builders to centers such as Burgos, however, had a decisive impact on Spanish late Gothic architecture, even though great spires never achieved the popularity in Spain that



I-13 Vienna,
Stephansdom spire.

they had in France, Germany, and the Low Countries. In France, finally, the end of the Hundred Years War permitted a general revival of architectural culture in the later fifteenth century. French Late Gothic builders worked to develop worthy sequels to the great achievements of their twelfth- and thirteenth-century predecessors, and in the sphere of spire design in particular, they succeeded in creating an interesting new great spire type in which a narrow spire cone would rise above a basketwork of interwoven flying buttresses and pinnacles. This form occurs in many small tabernacles and in the north spire of Chartres Cathedral, for example (fig. I-1 right), but few ambitious spire-building projects could be completed in France before the embrace of the Italianate Renaissance mode, especially by the increasingly powerful royal court, brought the Gothic era to a close in the sixteenth century.

Although the Renaissance and the Reformation brought an end to the era of great spire construction, the church spire became the most successful and widely adopted of all Gothic architectural innovations, enjoying great popularity throughout much of the postmedieval period. Indeed, the persistence of the spire form presented quite a challenge to early modern architects, such as Christopher Wren and James Gibbs, who were called upon to design slender spires using the blocky and predominantly static formal vocabulary of classicism. Ambitious spire projects played a prominent role in the Gothic Revival movement of the nineteenth century, especially in Germany, where national and local pride helped propel the construction of numerous great spires closely modeled on actual medieval prototypes. In France, meanwhile, the construction of metal spires like the one at Rouen Cathedral, together with Viollet-le-Duc's structural rationalist writings, helped pave the way for the emergence of the skyscrapers, the buildings that finally surpassed the height scale set by the greatest Gothic spires. In the early years of the twenty-first century, however, great Gothic spires remain the most conspicuous and most iconic monuments in many European cityscapes.

Spire construction was not a sideshow in the pageant of Gothic art, but one of the main events. Unlike the drive to achieve greater interior heights, which had largely run its course by 1300, the drive to create ever larger and more elaborate spires spanned the entire Gothic era, from the twelfth century to the sixteenth. Great spires were exceptionally expensive, even compared to other components of Gothic churches, and the fact that any were completed at all during the Middle Ages bears witness to an astonishing diversion of capital from other more practical projects. The fact that the majority of surviving medieval architectural drawings are of towers

and spires underscores the extent to which Gothic builders and their patrons were fascinated by these structures, the most visible monuments of their day. With their rich iconographical heritage, great spires were effective carriers of sacred symbolism, but their expense and prominence made them powerful symbols of worldly interests as well. As expressions of both religiosity and pride, the great spires of Gothic Europe stand as supreme monuments of an age in which art was used to link the city of man to the city of God.