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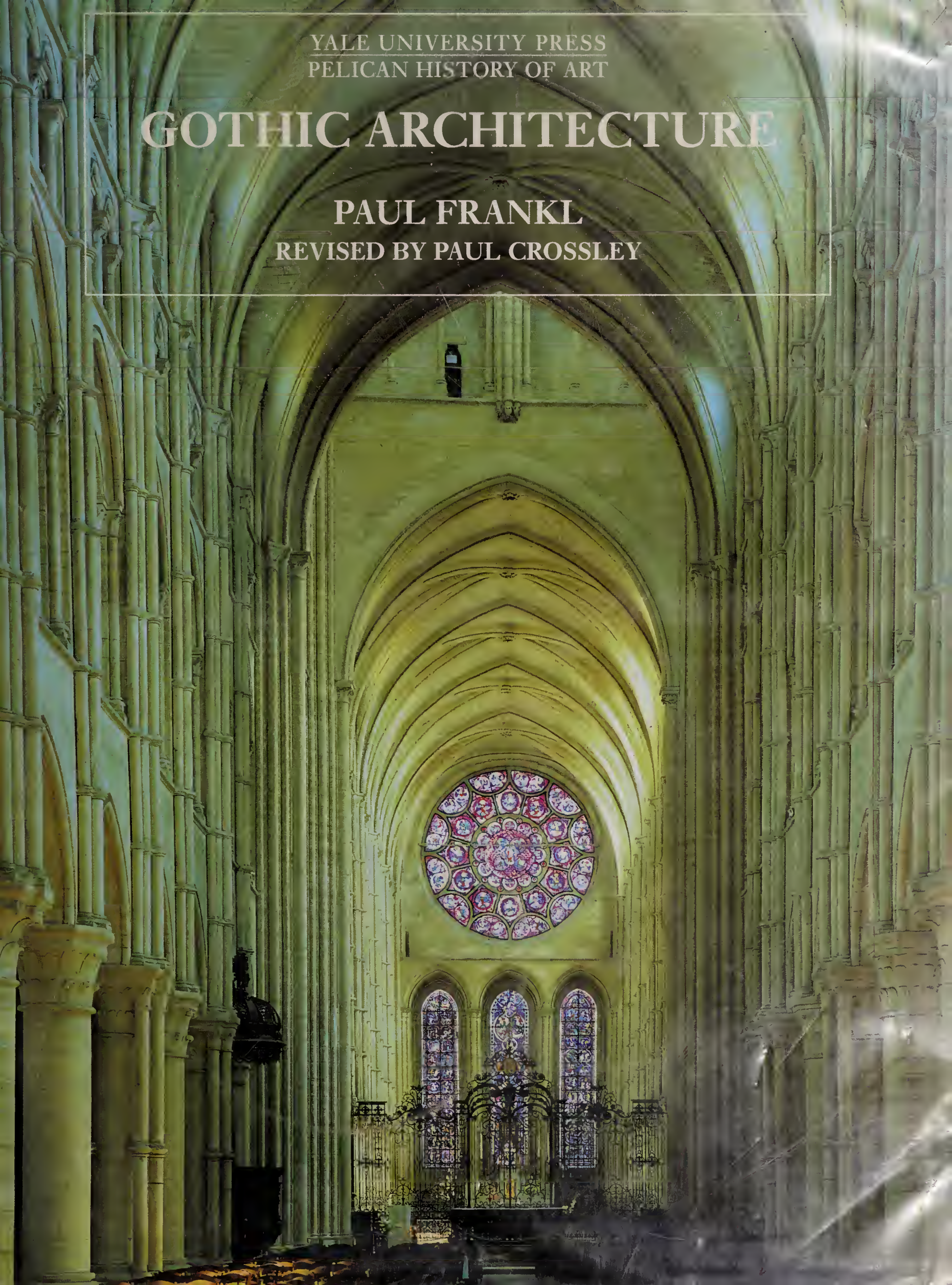
PELICAN HISTORY OF ART

GOTHIC ARCHITECTURE

PAUL FRANKL
REVISED BY PAUL CROSSLEY



Gothic Architecture
Paul Frankl
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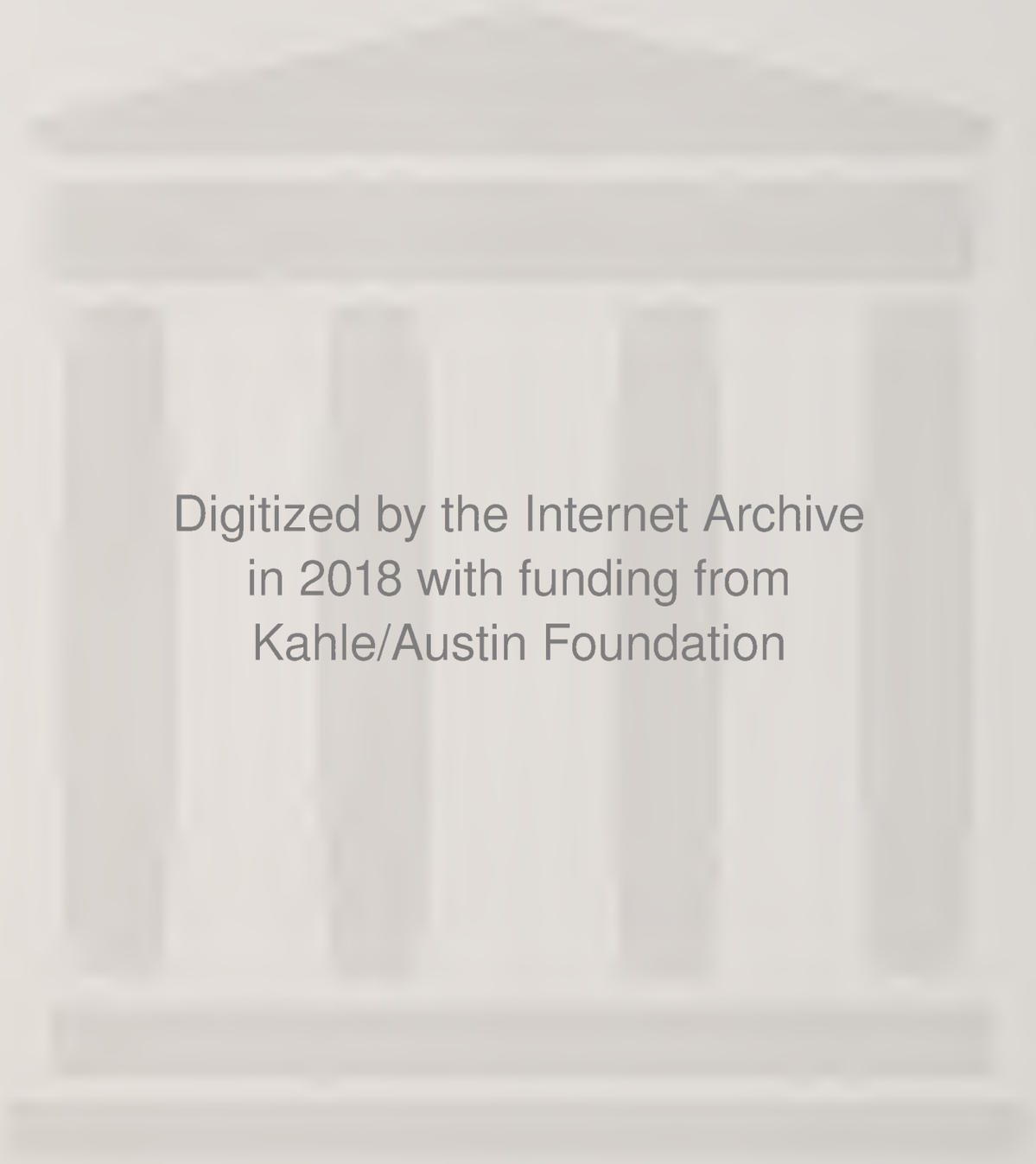
This magisterial study of Gothic architecture traces the meaning and development of the Gothic style through medieval churches across Europe. Ranging geographically from Poland to Portugal and from Sicily to Scotland and chronologically from 1093 to 1530, the book analyzes changes from Romanesque to Gothic as well as the evolution within the Gothic style and places these changes in the context of the creative spirit of the Middle Ages. This book is a history – a view of things created, and more than that, an analysis of the essence of the Gothic style and of the ideas that inspired its development.

In its breadth of outlook, its command of detail, and its theoretical enterprise, Frankl's book has few equals in the ambitious Pelican History of Art series. It is single-minded in its pursuit of the general principles that informed all aspects of Gothic architecture and its culture. In this edition Paul Crossley has revised the original text to take into account the proliferation of recent literature – books, reviews, exhibition catalogues, and periodicals – that has emerged in a variety of languages. New illustrations have also been included.



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PELICAN HISTORY OF ART

FOUNDING EDITOR: NIKOLAUS PEVSNER

PAUL FRANKL

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Paul Frankl
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Gothic Architecture

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During the fifteen years this edition has taken to complete (it was meant to be five) 'Frankl' has distracted me more than it ought from my long-suffering children, Nicholas and Katy, and from my wife, Joany. Despite all that, they have tolerated and supported me in every way. It is to Joany that I and the readers of this edition owe their greatest debt.

Paul Crossley
Courtauld Institute

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Introduction

by Paul Crossley

Frankl's Text: Its Achievement and Significance

THE NEW EDITION

In its breadth of outlook, its command of detail and its theoretical enterprise, Frankl's *Gothic Architecture* has few equals in the ambitious Pelican History of Art series. As a comprehensive study of the Gothic style and its roots in the spirituality of the Middle Ages it is still unsurpassed. But its very qualities have always made it something of an outsider. Published in 1962, a few months after the author's death at the age of eighty-three, it seemed to belong to a foreign intellectual world – not the England and America of the 1960s but the academic Germany of the 1920s and 30s. One American reviewer summed up the book as 'curious';[1] another found it 'difficult to review because of Frankl's highly personal combination . . . of theory and fact'.[2] No volume in the Pelican series depends so heavily on a theoretical matrix, no comparable study pursues so intently the general principles which inform all aspects of Gothic architecture and its surrounding culture. To explain Frankl's theory critically is one of the main purposes of this edition, and particularly of this Introduction.

Our second aim is to bring Frankl's text up to date in the light of recent literature on Gothic architecture. This has proved to be a daunting task. Geographically, Frankl's subject stretches from Poland to Portugal, from Sicily to Scotland; chronologically it ranges from Durham in 1093 to Halle an der Saale in 1530. While it might just have been conceivable that Frankl (who was prodigiously learned on the literature of Gothic) could have read everything of importance on medieval architecture within those vast limits, it is now clear that any pretence to inclusiveness would be futile. The proliferation of literature on Gothic architecture in the last forty years – books, reviews, exhibition catalogues and periodicals – in a variety of languages, has made it technically impossible for any editor to be an authority on the whole period. Indeed, it is doubtful if anyone today could write a book of such scope. Worse still, Frankl's text is not as advanced as its 1962 date might suggest. Effectively, it was written between 1947, when Nikolaus Pevsner, the general editor of the series, commissioned it, and 1956; it then took six years to translate the finished text from German into English and prepare it for publication. In those six years there appeared a number of works which decisively altered our understanding of Early and High Gothic in Europe.[3] The editor of this edition was therefore faced with the task of mastering almost half a century of scholarship on every aspect of European Gothic architecture. Complete coverage of this colossal body of information and commentary is inevitably a futile quest, but the challenge cannot be avoided. If Frankl's text is to be of real use it has to be represented in terms of what we now know and think. I have therefore included as much recent literature as I can master, though some readers will no doubt spot the gaps left unplugged, and find my treatment selective, even arbitrary.

The new edition is intended to make Frankl's book, which has long been out of print, once again usable as an introduction to the study of Gothic architecture. With that in mind, I have added to, or altered, the text in four ways. Firstly, the Introduction explains Frankl's theoretical method and tries to clarify those areas of his argument where the student might find him obscure or misleading. It also assesses Frankl's influence in the historiography of the Middle Ages, and sketches out general trends in the more recent study of Gothic architecture. Secondly, I have been forced to alter Frankl's text on points of fact rather than opinion (though the distinction is not always clear), sometimes quite radically, but without, I hope, disturbing the unique tone of his writing. Where he was wrong or misleading I have either omitted the material or re-written it, as I believe he would have done himself. The third, and most extensive revision concerns the footnotes. Here I have had the space to correct, supplement and discuss Frankl's text, and to update his treatment of individual buildings in the light of the latest research. The footnotes are therefore pointers to a more recent literature and at the same time commentaries – some of them extensive – on matters of style, chronology, patronage and meaning. They sometimes amount to resumés of the latest thinking on the subject in hand. They are best read in parallel with Frankl's text. The fourth component of the revision is the bibliography. It is bound to be incomplete, but its aim is to be reasonably comprehensive for a synoptic survey of this kind and to point readers to a secondary literature that they might otherwise have missed.

PAUL FRANKL (1878–1962)

Paul Frankl was born in Prague on 22 April 1878, into an old Jewish family of writers and scholars. He first studied architecture, but then took his doctoral degree at Munich University under Berthold Riehl, submitting his dissertation on south German stained glass in 1910.[4] To the end of his life, medieval stained glass remained one of his special interests. A second, equally long-term, fascination was the theory of art and its relationship to art history. His period at Munich brought him under the spell of one of the founding fathers of German and European art history, Heinrich Wölfflin, Professor of the History of Art at the university from 1912 to 1924. Wölfflin became his teacher, mentor and life-long

inspiration. In 1914 Frankl published his *Habilitationsschrift* on Renaissance and post-Renaissance architecture, entitled *Die Entwicklungsphasen der neuren Baukunst*,[5] which he respectfully dedicated to Wölfflin (it was translated into English in 1968 under the title *Principles of Architectural History*).[6] *Die Entwicklungsphasen* was a response to Wölfflin's *Renaissance und Barock*, and an application of Wölfflin's theoretical principles from the history of Renaissance painting to that of architecture, but it was also a radical criticism of his master's formalism, and its method anticipated the character and scope of Frankl's theoretical ambitions to the end of his life. Appointed to the chair of art history at Halle-Wittenberg University in 1921 Frankl began to apply these theoretical concerns to the third area of major interest in his scholarly career – medieval architecture. In 1924, in Wölfflin's *Festschrift*,[7] and in his seminal study on Romanesque architecture, *Die frühmittelalterliche und romanische Baukunst* (Wildpark–Potsdam), published in 1926, Frankl grappled with defining the general stylistic laws governing Gothic and Romanesque architecture. The exercise led to an increasing immersion in basic theoretical principles, in particular, the mystery of artistic style and its categorization. Frankl's ambition to create a 'systematic' art history, in which all art forms, from all periods, could be presented within a framework of explicitly stated general principles, led to what he hoped would be the crowning work of his career, *Das System der Kunstwissenschaft* (Brn0, Leipzig, 1938). This ponderous treatise, 1063 pages long, firmly identified Frankl as one of the last representatives of an heroic period of German philosophical art history. What Alois Riegl and Heinrich Wölfflin had begun at the turn of the new century Frankl hoped to complete and extend in his own encyclopedic project: to uncover those general conceptions of art which give meaning to the variety of its styles and purposes. *Das System*, with its organization of all artistic data into broad categories such as 'things', 'persons', 'places' and 'time', and then into increasingly complex subcategories such as 'membrism', 'akyrism', 'regularism', 'limitism' and 'harmonism', constitutes probably the most ambitious morphological and phenomenological study of the visual arts ever undertaken. But its length, its language and its armature of abstractions (it makes little reference to specific works of art) condemned it to a very limited readership. Published in 1938 with a limited print run in Brno (Moravia) between the Munich crisis and the outbreak of the Second World War, much of the first edition was destroyed by fire. Frankl's Jewishness ruled out any circulation in Germany; while in the English-speaking world, particularly in America, where Frankl was soon to make his home, it found few sympathizers. The demise of *Das System* was one of the great disappointments of Frankl's career, and right up to the last days of his life he was preparing a shorter and more accessible version, which was eventually published in 1988.[8]

In 1933/4 the Nazis expelled him from his chair in Halle, and in 1938 he came to the United States, where in 1940 he was accepted as a member of the Institute for Advanced Study at Princeton, a position he held until his death. At Princeton he worked on what is considered his greatest book, *The Gothic. Literary Sources and Interpretations through Eight Centuries*, which appeared in 1960 – a vast and erudite commentary on almost everything that had been written about Gothic architecture from Abbot Suger to the 1950s. And while he was finishing this *summa* he was writing *Gothic Architecture*, a book which was to become his memorial. On 29 January 1962 he closed the envelope which contained detailed comments on the plate proofs of the book, and left his desk in the Marquand Library in Princeton. On 30 January he died.

FRANKL'S ART-HISTORICAL 'PROGRAMME'

To cite these major studies gives a one-sided impression of Frankl, as the grand theorist and historiographer. A glance at his bibliography[9] will show that less than a quarter of his published work was devoted exclusively to general art-historical problems; the rest – a massive sixty-two articles, books or reviews – dealt with 'practical' art history, most of it on medieval subjects, and the majority on architecture.[10] Frankl's qualities as a conventional, what he called 'a philological', art historian – his erudition, his visual acuity, his intellectual finesse and rigour – injected new life into Anglo-American scholarship in the years after the Second World War. It was Frankl who first untangled the geometric 'secrets' of the medieval mason in the controversy over the building of Milan Cathedral, and laid the foundations for a proper appreciation of constructive geometry in the medieval mason's craft.[11] It was Frankl who first truly appreciated the 'eccentric' Gothic of St Hugh's choir at Lincoln and recognized its kinship with the styles of a much later period, particularly German Late Gothic.[12] And it was Frankl's recognition of the 'classic' qualities of French High Gothic which introduced English-speaking scholars to the visual refinements of Amiens Cathedral and the chronological complexities of Chartres.[13] Equally impressive was the scope of Frankl's interests. They speak of his desire to subsume all art into his 'system': church architecture from the Early Christian period to the Baroque; stained glass from Chartres to Peter Hemmel; Rubens and Rembrandt. One of his last articles was a study of Boucher's *Girl on the Couch*,[14] where he moves effortlessly from the erotic gossip of Louis XV's court to the theoretical notion of 'akyrism', a term he coined to describe the changing contexts and meanings of artistic forms and images (see below).

Indeed, the breadth of Frankl's art historical interests grew out of the principal strength of his work – its constant need to organize historical facts into theoretical systems. It was this interaction of history and theory which gave coherence and purpose to Frankl's achievement.[15] Although Frankl's work 'develops' over his long life, and shows an impressive range of interest, its stages seem less like radical departures into new fields than variations on one underlying theme, one single, central vision. The Greek poet darkly suggested that 'the fox knows many things, but the hedgehog knows one big thing'.[16] Frankl was a hedgehog. His first publication was on German Late Gothic stained glass, as were three in the last year of his life.[17] There is a sense in which his theoretical arguments were present *in toto* right from the beginning, and merely worked themselves out –

achieved greater clarity and self-realization – in the course of his long career. *Die Entwicklungsphasen* of 1914, for example, established the general theoretical method which, with progressively greater refinements, was to inform *Das System* of the 1930s and *Gothic Architecture* of the 1950s. Frankl was known to friends and colleagues as one of the 'soldiers of science' (*Soldaten der Wissenschaft*),[18] and there is a whiff of the military commander in the strategic pattern of his career, as if he had carefully mapped it out from the start, arranging all his projects consistently, often simultaneously, towards a pre-determined end. In the 1940s and 50s particularly, his creative concerns with theory and with Gothic overlapped with the publication of a number of articles on individual buildings, with preparing the new edition of *Das System*, with the completion of *The Gothic* and with the writing of *Gothic Architecture*. *The Gothic* opens with the claim that 'in this book have been assembled comments and commentaries on Gothic which have to do with its basic principles',[19] while *Gothic Architecture* sets out to 'clarify by examples' the 'few basic principles' of the Gothic style, to chart 'the logical process' by which . . . the Gothic style . . . developed from one basic principle'.[20] *The Gothic* was to uncover those principles via written testimony, *Gothic Architecture* via the buildings themselves. Both were the double prongs of a single enterprise – to lay bare, via the definition of theoretical principles of style, the forces which shaped the Gothic church and, beyond them, the 'root' of those forces themselves, the common source which informed all aspects of medieval art, architecture and culture. In both books this final 'essence' is identified as 'the personality of Jesus Christ'.[21]

Gothic Architecture is therefore no ordinary synoptic survey; its direction and energy is informed by a metaphysical quest, whose religious and intellectual credentials are remote from our own. Its narrative is conventionally chronological, beginning with 'Transitional' and ending with 'Late Gothic', but unlike the great French surveys of the nineteenth and early twentieth centuries, it does not split the building into its main constructional features and discuss their development separately.[22] Whereas the usual text books, including Frankl's own exemplary general history of pre-Romanesque and Romanesque architecture,[23] deal with the subject in terms of 'regional schools' and country by country, Frankl's Gothic is not a national but a European phenomenon, where buildings from France, Spain and Germany share the same sections, even the same paragraphs. This internationalism we now take for granted, but for Frankl it was a hard-won article of faith. By temperament an individualist and a liberal internationalist, Frankl had been a victim of the worst excesses of xenophobia and racism, and he shied away from all national categories in the history of art. Gothic, he argued, is 'a spiritual problem common to Normans, Frenchmen and Englishmen', not a physiological one (p. 124). Although Nikolaus Pevsner, the general editor of the Pelican History of Art, favoured separate volumes on British art, and had commissioned Geoffrey Webb to write a study of medieval architecture in the British Isles,[24] Frankl insisted on including English architecture in his book.[25] And while Pevsner postulated the existence of permanent national traits in his popular *Englishness of English Art*, written in the same years as Frankl's text, Frankl strongly rejected the influence of biology in artistic creation and refused to admit that Gothic architecture showed 'any common national denominators', though he recognized national versions of the style.[26] Frankl's book is also distinguished from most other surveys of its period, and indeed from his own survey on Romanesque, by its emphasis on theory and its long discussions on the general problems of style, which take up as much as the last third of the book.[27] Here the usual proprieties of the text book – 'balance' and 'objectivity' – are replaced by a passionate, at times poetic, immersion in what the author felt to be the secrets of the Gothic.

FRANKL'S ARGUMENT

Gothic Architecture begins with a statement which tells us what the book is about, and what it is *not* about: 'the subject of this volume is the meaning and the development of the Gothic style in medieval church architecture' (p. 33). The book therefore concentrates on *church* architecture; secular building is touched on only as far as it is dependent on religious building. And while the 'meaning' of Gothic is discussed in the second section, the real meat of the book, its first 260 pages, is an account of the development of the Gothic style as a history of forms. But that formal history is underpinned by a half-hidden theoretical structure, which has to be understood if Frankl's narrative is to have any sense and direction. The structure is a refined mental scaffolding built up around Frankl's conception of style. 'By style is meant a unity of *form* governed by a few basic principles. In this book these principles will be clarified by examples' (p. 33).

The Physiognomy of Style

Before he begins his analysis of the stylistic principles of Gothic Frankl mentally fits his observations into four broad categories peculiar to the medium of architecture, categories which he had already set up in *Die Entwicklungsphasen* as early as 1914, and which reappear in *Gothic Architecture* (especially pp. 48–50) in more implicit form, and with slight changes in nomenclature. Architecture, firstly, involves a quality peculiar to it and it alone: 'spatial form' (in *Die Entwicklungsphasen* he called it 'spatial composition') – the organization of the space we move in, the space that extends around us. Secondly, architecture treats mass and surface in certain ways. Under a heading which Frankl calls 'mechanical forces' (*Die Entwicklungsphasen* describes this category as 'corporeal form'), he describes how architecture supports and transmits physical force (weight and support) and, more importantly, how those forces are expressed (or, in the case of Gothic, denied) by pillars, walls, capitals or buttresses.[28] Frankl's third category, 'optical form' ('visible form' in *Die Entwicklungsphasen*) touches on the observer's perception of the building, and deals with the mental images which the purely optical qualities of the architecture imprint on the viewer's memory, 'the abstractions', as he put it, 'corre-

sponding to that on which the science of optics depends' (p. 48). We are here dealing with the superficial qualities of architecture – light, colour, and surface effects – and with the 'articulation' of its members – plinths, jambs, mouldings, arches, responds etc. But 'optical form' also includes the kinetic experience of the building as we move round it, and the memory of those impressions compressed into a single, synthetic mental 'image'. Although we see a building as a continuous series of different and isolated views, its members have a dominant shape or disposition, so that the various partial images will, according to Frankl, cohere into a single mental image of the whole. 'Optical form' presupposes a unifying and syn-thesizing act of perception.[29] Frankl's fourth category of analysis, 'purposive intention' (*Zweckgesinnung*) is concerned with the function of architecture in terms of social or religious intention, and is discussed in Part Two of the book, quite separately from the evolution of forms in Part One.

Into the first three general categories of all architecture – spatial, mechanical and optical form – Frankl inserts the 'basic principles' which (he believes) underlie the Gothic style. For most art historians, 'style' is a conventional term used to classify periods, movements or the individual characteristics of artists; it is a descriptive framework for a common set of forms. But it does not correspond to any 'thing' or 'essence' in reality. To Frankl and his teachers, trained in the Hegelian *Kunstwissenschaft* of late nineteenth-century Germany, style was something quite different; not a conventional label used as a convenient way of organising similar particulars into general categories, but a real, active entity – a powerful and objectively existing fact. 'To regard stylistic classification as conventional', Frankl warns us, 'leads to superficiality. We are not trying to find comfortable divisions, but to find the essence of each individual work and its position on the ladder of development' (p. 90). 'Style', in *Gothic Architecture*, and in all the outstanding works of German critical art history in the first half of the twentieth century, is an actual phenomenon, a mysterious force or pressure, working within artistic forms and shaping them in conformity with a series of fundamental 'principles'. 'Style', says Frankl, 'is a unity of *form* governed by a few basic principles' (p. 33); and by 'principles' Frankl means a deep stratum of abstract concepts that distinguish all forms of art within a given style. These concepts, deduced from the particular characteristics of individual works of art in a specific period, shape the forms of art in much the same way as the laws of the natural sciences determine physical behaviour. To clarify these concepts still further, Frankl pairs them with their 'polar opposites' – those concepts which determine the very different qualities of the previous, or succeeding, artistic styles. Both sets of concepts can then act as coordinates, as theoretical constructions and imaginary pure cases, against which the actual historical works of art can be judged to incline to one pole or another. 'Polar opposites', Frankl reminds us, 'are necessary if history, which is *per se* a continuous chain of networks, is to be meaningfully organized.'[30]

Frankl's 'principles', expressed as 'polar opposites' can be demonstrated quite simply within his three broad categories – spatial, mechanical and optical – of architectural experience. Spatially, Romanesque buildings work by 'addition', Gothic by 'division'. Where Romanesque builds up its compositions from a series of independent spaces, Gothic conceives its interiors as wholes, which are then divided and subdivided. The Romanesque chevet (e.g. Saint-Benoît-sur-Loire) consists of sharply isolated elements – apse, half-dome, aisles, radiating chapels and ambulatory, joined in juxtaposition and superposition; the Gothic east end of Amiens Cathedral allows the chapels to merge with each other and with the ambulatory, suggesting that all the individual spaces are (descriptively, not genetically) the subsequent *divisions* of a pre-existing whole.[31] Mechanically, the Romanesque is a style of 'structure'; the Gothic – at least the Late Gothic – a style of 'texture'. In Romanesque, and in much of Early and High Gothic, architectural elements behave, or seem to behave, structurally: load and support are clearly distinguished, the structural parts keep, or seem to keep, each other in balance under pressure and counter-pressure. The forms of Gothic architecture – at least in its later phases, from *c.*1300 onwards – are 'textural' rather than 'structural'. 'Texture' is a noun used by Frankl to describe all things which cover (Latin *tegere*) some structure or are stuck to it, or held up by it (like mosaic). Unlike structure, they are not, or do not seem to be, self-supporting (p. 49). In later Gothic 'textural' architecture, capitals are omitted from arches and piers to replace the impression of weight and support with that of continuous flow, as if the building was a vertically rising stream of force, an organism growing like a plant. Ribs (which may never have had any real structural function) lose their structural appearance and emboss the surface of the vault, or hang from it, as decorative meshes or pendants.

The polar opposites within Frankl's third category of architectural experience, 'optical form', elicit some of his most penetrating analyses. Optically, Romanesque forms are 'frontal', Gothic are 'diagonal'. The elements of Romanesque architecture – piers, shafts, arches – are placed with their axes parallel to the main axes of the church – north–south for the bay divisions and east–west for the aisles. Their axes therefore form angles of 90 degrees, and they demand to be seen frontally. Although the main axes of aisles and bays in the Gothic church run the same way, the pier axes are set in a diagonal position (turned 45 degrees), and this diagonality is applied everywhere, in the ribs, the flying buttresses, the profiles, the pier bases. With this diagonality goes an increasing multiplicity of images, so that a Gothic building demands to be seen from a variety of viewpoints, where a Romanesque one (and a Renaissance one) are best seen from a single position. 'Frontality versus diagonality' thus generates another polar contrast – 'unity versus multiplicity'.

These fundamental visual distinctions allow Frankl to draw useful comparisons between the sculptural effects of walls, shafts, arches and mouldings in the interior elevations of Romanesque and Gothic churches – what he calls Romanesque and Gothic 'relief'. 'Romanesque relief' – for example a wall shaft and its backing dosseret at the bay divisions of the nave at Vézelay – is conceived as one layer lying *behind* another; it is read through from the plane nearest to the spectator (the shaft) to the most distant (the wall

against which the dosseret is placed), creating a recession through steps, each step arranged frontally to the viewer. 'Aesthetically this type of relief keeps the visitor at a distance from the final plane of the wall-surface itself. He feels that there is a boundary holding him at a respectful distance' (p. 70). 'Gothic relief', on the other hand (for example the choir elevation of Noyon Cathedral(conceives its layers as projecting *in front* of each other, and – in a way which completely reverses the visual procedure of 'Romanesque relief' – is read first from the plane furthest from the spectator: from the outermost plane of the wall (sometimes this is the window) to the innermost. Unlike Romanesque recessions, these planes – often in the form of clusters of vault responds or orders of arches – are not arranged frontally but diagonally to the viewer, and are read as a series of continuous projections and recessions. Whereas 'Romanesque relief' establishes boundaries, 'Gothic relief' seems to abolish them, to 'embrace' the viewer by coming forward from the core of the wall. In a corresponding projection outwards, also beginning at the plane of the clerestorey windows, 'Gothic relief' proceeds from window jambs, to wall buttresses, to flying buttresses, to the outer buttress uprights which project as they descend (pp. 70–2, 86–7). This identical process of 'relief', taking place either side of the window plane, suggests the seamless expansion of the interior space onto the exterior. No frontal steps or boundaries prevent this smooth, recessive fusion of inside and outside. The windows and walls between the projections seem no more than screens, optically removable. All forms are potentially 'open' to the viewer. In that sense, the suggestive concept of 'Gothic relief' moves from the category of optical form to that of spatial form. The relief 'draws us into this spatial unity, which is ours as well as theirs. The Gothic choir embraces us; it unites us with the building, and by opening both inwards and outwards it also unites the interior with the exterior' (p. 72).

In the wake of these main polarities, Frankl developed further sets of polar opposites, not in order to distinguish Romanesque and Gothic, but to contrast buildings, or stylistic tendencies, within the Gothic style itself. One set, borrowed from Wölfflin, was the contrast between a style of 'being' and a style of 'becoming'. Romanesque was judged to be a 'style of being', and Early and High Gothic seen as retaining some aspects of that style – namely, a concentration on separate and self-contained forms that express the static and immutable. But other aspects of earlier Gothic betray a change towards a style of 'becoming', in which forms appear organic and incomplete. The result was an aesthetic tension, or 'balance', which was broken only with the emergence of Late Gothic. Late Gothic architecture shook off all remnants of the style of 'being' and emerged as a style of pure 'becoming' of 'growing and flowing' of 'passion' and 'yearning' (pp. 227, 258).[32] Another, less strict, polarity within the Gothic style Frankl identified as the contrast – or the 'alternatives' – between 'akyrism' and 'the norm' (p. 65). 'Akyrism' (from the Greek *akyros*, meaning 'improper') was developed by Frankl out of the related and rather diffuse idea of Mannerism, a label popular in the years either side of the Second World War. Frankl gave 'akyrism' a more specific meaning than Mannerism; it refers to the translation of a form which had a certain position, structure or meaning into a similar form but with a new position, structure and meaning.[33] Thus, at Lincoln Cathedral, Gothic ribs which in earlier Gothic vaults suggested a structural purpose (strengthening the four edges of a groin vault) are transformed into purely decorative arches called tiercerons (ribs which run across the flat surfaces of the vault, not its edges) (p. 101). Thus, in the ambulatory at Coutances Cathedral the staircases are re-shaped to look like oriels (p. 165). The 'attractive' akyrisms of Coutances are contrasted (p. 161) with the choir of Cologne Cathedral, which, for Frankl, is the consummate expression of 'the norm' – a notion which goes beyond the idea of 'the average' or 'the standard' to evoke uniqueness, perfection, the realization of an absolute 'Gothic-ness' to which other cathedrals seem mere approximations. Just as the square is the absolute image of the regular quadrilateral to which all rectangles and trapeziums approximate, so Cologne, claims Frankl, 'is *the* Gothic choir, *the* final solution' (p. 164).

All these polar concepts, particularly the principles of 'division', 'diagonality' and 'texture', are seen as descriptions of the essential governing forces of the Gothic style. If one polar contrast could include them all it would – for Frankl – be the opposition between 'totality' and 'partiality'. Romanesque, he argues, is a style of 'totality', where parts appear 'as wholes within a whole'; Gothic is a style of 'partiality', where the parts are no longer sub-wholes but dependent fragments of a larger whole ('*partes* not *tota*') (p. 49). The purpose of Part One of *Gothic Architecture* was to submit the whole history of Gothic, from the 'Transitional style' of the early twelfth century to the latest Gothic of the early sixteenth, to the concept of partiality; to assess how specific Gothic buildings exemplified ever more clearly the 'essential principles' of Gothic by integrating hitherto separate forms into the open and interdependent parts of an all-encompassing whole. 'The central thread of this book is the logical process by which changes from the Romanesque to the Gothic style, and those within the Gothic style until its fulfillment in the late Gothic phase, developed from one basic principle' (p. 33–4).[34]

Critical in this long process of stylistic refinement is the rib vault. The first sentence of *Gothic Architecture* lays down categorically that 'the Gothic style evolved from within Romanesque church architecture when diagonal ribs were added to the groin-vault' (p. 41). Throughout the text, the rib is identified as *the* key element in Gothic architecture, and for that reason Frankl's Introduction (pp. 41–50) devotes a long discussion to the construction, behaviour and shape of various types of rib vault. Its technical tone conceals a concerted attack on a technical theory – a theory which counts among the most influential in the historiography of Gothic. It revolved around the belief, current since the middle of the nineteenth century among the French 'Rationalists', that the rib was the progenitor of Gothic, the key element of the style. For Viollet-le-Duc and his followers Gothic developed according to the laws of structure and statics by making its structural parts – shafts, arches, flying buttresses and ribs – one and the same as its visual 'skeleton'. More than any other feature of the Gothic church, the rib, by carrying and strengthening the vault cells, demon-

strated to the Rationalists the truth of the dictum that form followed structure.[35] For Frankl, and for many of his German contemporaries, the idea that styles developed from technical or structural – that is material – procedures was anathema. To reduce the formal and theological complexities of the Gothic cathedral to matters of structural development ignored the aesthetic and psychological urges underlying artistic creativity; it constrained the free exercise of the mind with materialist notions of craft, technique and function. Frankl's *Gothic Architecture* is a raid on the Rationalist camp to steal its most precious asset, the rib, and transform it from a structural into an aesthetic principle. Whatever the statical properties of a given vault actually are (sometimes they support the vault cells, sometimes they do not) the importance of the rib, for Frankl, is primarily aesthetic. If the Rationalists saw the groined rib vault as the generator of the Gothic *structural* system, Frankl saw it as the driving force behind the *aesthetic* character of all Gothic buildings. The four-part rib vault, he argued, was the first element in the church to embody the three fundamental principles of Gothic: spatially it *divided* the whole vault compartment into four interdependent fragmentary spatial parts (it therefore also obeyed the principle of 'partiality'); optically, the diagonal direction of its ribs disturbed the frontality of the Romanesque and required the viewer to stand *diagonally* in relation to all forms and to experience the space in recession, not in the flat; and mechanically, it had, by the beginning of the fourteenth century, lost any sense of weight or support and become *texture* – a continuous stream of decorative lines embellishing the vault cells. And all three principles then spread from the vault to the rest of the structure, making the whole elevation skeletal, slender, diagonally organized and spatially open. This process did not proceed at an equal pace throughout the building. The interiors of churches became 'Gothic' quicker than the exteriors, which had to wait for the advent of the flying buttress to transform them, like the interiors, into open, skeletal ensembles. But the essential lines of development all sprang from the single source of the rib vault. Gothic architecture developed from the top downwards. Successive generations of architects, going right back to the first rib vault at Durham 'had organically developed the principles that seemed to be inherent in the original introduction of the rib' (p. 259). Part One of *Gothic Architecture* is an exercise in charting 'the logical process' by which the inherent principles of the rib vault transformed the Romanesque into the Gothic, and the Gothic into the Late Gothic.

But what drove this 'logical process'? What mechanisms allowed the law of partiality to permeate the whole structure with increasing conviction? Are there theoretical principles which account for changes of style, and if so, what are they? Frankl's answer is twofold: stylistic change is both 'immanent' and 'transcendent'; each sphere of human activity develops autonomously by following its own demands and solving its own problems, but each discipline also responds to a 'common root' at the centre of a civilization, a generating force which determines the evolution of the separate strands of a culture. Like 'the double root of style' – the purely visual tradition and the mood and social attitudes of the age – which Wölfflin identified as the joint conditions of High Renaissance art, Frankl's mechanisms of change are both intrinsic and extrinsic.[36]

Intrinsic Mechanisms of Stylistic Development

It comes as no surprise that technical and material factors play no part in Frankl's theory of stylistic transformation, though his rejection of the Rationalist explanation of Gothic style left him exposed to the charge of 'aestheticizing' a style which, by any account, is remarkable for its structural achievements. We will not find, in *Gothic Architecture*, long disquisitions on the structural behaviour of the flying buttress. In fact, the structure of the flyer is given only eleven lines in the whole book, before its aesthetic qualities are once again emphasized (p. 56). Nor can we expect a consideration of the part played by the use of brick in the Late Gothic of the German lowlands or the Lombardy plain, either in facilitating the construction of complex vaults, or in simplifying Rayonnant tracery or pier forms. Function, too, hardly comes into the reckoning as a constituent of style. By placing a section on the purposes of church architecture in Part Two (pp. 274–300), Frankl effectively cordons off his discussion of medieval liturgy – of screens, crypts, choirs, altars and processions – from the history of the buildings in Part One. The whole remarkable process of building a Gothic church – the logistics, the workforce, the financing – clearly touched Frankl's interests, for he devoted long sections of *The Gothic* to these problems.[37] But his avowed hatred of 'materialism' and his aversion to any kind of Marxism left him convinced that questions of economics and production were irrelevant to the mystery of architectural creativity. There is nothing in this book on the financing of the cathedrals, on the growth of architectural drawing, on professional specialization in the lodges, on quarries and cut stonework. Frankl was passionately *parti pris* about the style he loved.

If material phenomena, and all problems surrounding productivity, can be denied as agents of change, what factors really drive stylistic evolution? Disentangled from Frankl's text, they might be described as 'dialectic' and 'directional'. Frankl believed that all styles or artistic genres, including the Gothic, develop dialectically, by way of conflict and resolution, towards greater integration and order. Developments are set in motion by opposing elements within the style (e.g. between interiors and exteriors, or between two-dimensional and three-dimensional forms) which demand reciprocal adaptation. Gradually, by a process of adjustment, these are reconciled and integrated into a temporary balance, out of which new tensions arise, requiring new efforts of integration. In this pursuit of order and synthesis the style develops its inherent principles with ever greater clarity and conviction, almost like a process of self-realization. Frankl sees the increasing sophistications of Gothic relief, for example, as an indication of how 'the Gothic style, so to speak, discovers its own true nature' (p. 70). And he traces the evolution of the High Gothic cathedral in France as a problem-solving exercise, with each cathedral a 'correction' of the last, until 'the final solution' is reached in the

choir of Cologne. Frankl's step-by-step self-realization of the Gothic, culminating in the normative perfection of Cologne, and later in the Late Gothic, recalls the deterministic drive of Hegel's Divine Spirit, impelled by the need to resolve contradictions, moving in dialectical steps to a higher and higher plane of articulation. But its more immediate sources lie in the teleological evolutionary schemes of Riegl's study of the Dutch group portrait, and in Wölfflin's history of the Roman triumphal arch.[38]

If Frankl's 'dialectical' process is presented as overcoming a difficulty, his 'directional' model looks more like seizing an opportunity,[39] or submitting to a set of demands. Here the style itself, at first largely through the rib vault, pointed the way forward to a clearer articulation of its latent principles. Evolution came not from conflict and adjustment but from 'listening' to the implicit requirements of the forms and seeing their potential for new types of partiality. 'The problem facing Gothic architects was . . . of strengthening the tendency towards partiality and of widening its scope until it embraced every part of the building' (p. 268).

What was the role of the architect in this evolution towards the 'essential Gothic'? In Part Two of *Gothic Architecture* Frankl is at great pains to deny the deterministic and super-personal overtones of his model of evolution. He emphasizes the imaginative energy of the medieval architect, 'which demanded these changes, devised them, and finally realized them' (p. 266). He proclaims his disbelief in the idea that 'the final solution' of the Gothic style, in the last Late Gothic buildings, 'existed in some other sphere outside our world since 1093, waiting for [its] own realization'. Historical development, he argues, is not goal-oriented, but is 'immanent' within the process of history itself:

> Immanence, on the contrary, operates the other way round. The introduction of the rib-vault proposed a general sense of direction, leading to a goal which could not be foretold, but could only be realized through a strict adherence to this direction. This is not like a search for the North Pole, which already exists, but is a chain of creations, providing a chain of surprises, which culminates in the final surprise of the ultimate Late Gothic style (p. 268).

But Frankl's system is far too teleological to resemble a chain of surprises, and his appeal to the individual creativity of the architect as a counterweight to determinism looks patently disingenuous. As so often in the book, the theoretical pronouncements of Part Two do not integrate logically or historically with the visual analysis of Gothic buildings in Part One. Nothing in Part One suggests that Gothic develops through the surprising accidents of human choice. On the contrary, it is styles – or forms themselves – which change, demand, require. 'The side views of Romanesque churches are wonderfully closed; those of Gothic churches are wonderfully open. This is what the two styles demanded' (p. 87). The 'demands' of the pointed arch sharpen the oculus into the spheric triangle (p. 146). 'The Gothic style adapted itself to the demands of the rib so successfully that patrons and architects must have thought the Romanesque completely superseded'. Frankl's language suggests that individuals were mere spectators, at best enablers, of processes beyond their control. Even Peter Parler, the most individualistic of Gothic architects, acts as the executor, not the maker, of style. He may have displayed a genius for novelty in building polygonal apses with even numbers of sides (conventional apses have odd numbers), but Frankl reminds us that 'the important fact for the historian is that, by building an even number of sides, architects were demonstrating yet another consequence of the diagonal emphasis first established in a rib design' (p. 205). Architects may *demonstrate* stylistic principles, but it is the principles themselves, via the rib, which impel change. As early as 1914, in *Die Entwicklungsphasen*, Frankl had described the development of style as 'an intellectual process overriding national characteristics and individual artists.[40] Like his mentors Riegl and Wölfflin, Frankl never shook off the notion that style (and its 'principles') is a force inherent in the forms themselves; it is, to borrow Riegl's famous formulation, a *Kunstwollen* ('that which wills art'), a kind of 'aesthetic will', with requirements of its own at particular historical moments. Just as, in Riegl's *Stilfragen*, the later Greek Corinthian capital brought the Greek palmette to the end towards which it had been consistently striving for centuries, so Frankl's Late Gothic church brought the rib vault to the culminating point towards which Gothic had been working since Durham.[41] The task of artists is perfectly to adjust their own intentions to the purposes of the *Kunstwollen*. Architects, 'these men of genius' as Frankl calls them, 'were firmly bound by the whole process of development' (p. 268).

Frankl's quest for the mainsprings of Gothic evolution did not end, however, in the forces of style working through form. His theory of historical change was too Hegelian to ignore the development of Gothic as the concrete manifestation of a Gothic 'spirit' at work at the centre of medieval civilization. While each sphere of human activity, including Gothic architecture, developed 'immanently', solving its own artistic problems within its own separate traditions, it was also plain to Frankl that every aspect of medieval culture was, in turn, subject to a higher and all-embracing generating force at the centre of medieval civilization as a whole. The rib (and its ramifications) as the 'root' of Gothic history was no longer adequate. 'We are seeking,' he says, 'a secret force which provided every sphere of human activity with the spiritual factor, the spiritual aim, and the spiritual sense of direction by which all immanent processes converged, by which all spheres remained related to one another, and which created a style common to all cultural spheres' (pp. 298–9). The final, generating point of the Gothic style lies outside the history of forms altogether, in the history of culture.

Extrinsic Mechanisms: Frankl and Cultural History

In the final section of *Die Entwicklungsphasen* Frankl introduced to his theoretical structure a fourth element of architectural analysis, logically different from the three formal elements of 'spatial', 'corporeal' and 'visible' forms. Frankl called it 'purposive intention' (*Zweckgesinnung*), a variation of the Vitruvian category of *commoditas*. Although it

includes relations between form and function, the category goes well beyond 'commodity' (in the sense of the accommodation of design to use) and embraces the 'content' of architecture – its relations to ideology, culture and social behaviour.[42] In the same way, *Gothic Architecture*, having dealt with the formal attributes of the style in Part One, devotes a lengthy Part Two (called misleadingly 'the general problems of the Gothic style') to the non-formal categories of Gothic, that is, to the 'creative wealth of the spirit of the Middle Ages', and its possible relations with architecture. In both books, the clear-cut division between the visual tradition and its surrounding culture poses serious problems for Frankl's contextual analysis of style.

Frankl's paradigm of cultural history is clearly Hegelian. It resembles Gombrich's celebrated diagram of the 'Hegelian wheel' – in which the various manifestations of a culture, visible on the circumference, lead back, via their own spokes, to the hub which gives them meaning and shape, the *Zeitgeist* or *Volksgeist*.[43] For Frankl the spokes represent the immanent developments of each sphere of human activity, controlled from the centre not by Hegel's 'Mind', but by a force equally transcendent – the essential, spiritual, character of the society in question: 'The ring that forces the diverging lines towards each other until they converge – here, as in the case of architecture and the fine arts – is Man, or Society, which strives after unity, after a harmonious civilization, after a style common to every cultural sphere' (p. 297). The crowning realization of *Gothic Architecture*, indeed of all Frankl's publications on Gothic, is the conviction that the root of Gothic, of 'Gothic Man' and 'Gothic Society', was the personality and teaching of Jesus Christ. Taking his cue from Dvořák's *Idealismus und Naturalismus in der gotischen Skulptur und Malerei*,[44] with its emphasis on Christianity as the dominant ideal of the medieval 'world view' (*Weltanschauung*), Frankl identified the root of Gothic in terms of his all-important concept of 'partiality', now transferred from a description of forms to a description of mental and spiritual attitudes. All aspects of high and late medieval culture can, he states, be traced back to an interdependent relationship between man, God and society, expressed in terms of 'partiality'. The principle conviction of 'Gothic civilization', and its Christian values, 'is that man is a fragment of creation, who can find his totality only by taking his place within the kingdom of God'(p. 300). Personally, therefore, men saw themselves not as isolated individuals, but as dependents. Institutionally, the Gothic period coincided with the moment when the Christian church, under Innocent III, Saint Dominic and Saint Francis, saw itself for the first time as a fully unified entity, in which every individual was a part. All barriers, all isolations and individualities, were dissolved into a superior whole. Spiritually, the same 'partiality' was at work. Where Romanesque art and architecture present a God who is 'unapproachable, *tremendum*', Gothic forms 'symbolize the disappearance of the boundary between Man and God', the reconciliation of man to God through Christ's suffering, and the 'absolute dependence' of mankind on divine grace. This world and the next were in no real sense divided. 'Out of this fundamental meaning of partiality . . . the style of partiality appears' (p. 277).

How this spiritual energy from the centre of the Hegelian wheel invigorated the 'spoke' of Gothic architecture, and what influence other spokes of Gothic art and culture had on the architectural one, are the essential issues of Part Two. Two points in Frankl's discussion are worth noting. In the first place, he sees the relationship between Gothic architecture and other cultural phenomena as radial and not concentric. The characteristics which the spokes share derive largely from the common, unifying hub, not from cross-connexions between spokes. Frankl is convinced that the immanent development of various spheres of activity, the closed nature of their traditions, immunizes each from the other. What Gothic architecture and scholasticism had in common is the shared 'form of thought' (p. 295) which informed the *Weltanschauung* of architect and cleric; their similarities did not come about in an architectural–theological dialogue between the masons's lodge and the schoolroom. Faced with long sections on 'Gothic Painting' and 'Gothic Sculpture' in Part Two the reader should not expect a disquisition on the relationships of meaning and liturgical use between the architecture of the great cathedrals and their sculptural and stained glass ensembles, critical though this might seem in any attempt to relate the building to the culture of its day. Frankl treats Gothic sculpture and painting not as common bearers of meaning for the public they address, but as separate problems, of a largely stylistic nature. He discusses the different tempi at which the Gothic style developed in various media, and the rare moments – at Late-Gothic Blutenberg, or the choir of St Lawrence in Nuremberg – where all art forms, created simultaneously, obey the same *Kunstwollen* (p. 294). Once again, it is the autonomous responses of each medium to the demands of the Gothic *Kunstwollen* at the centre of medieval culture that fascinates Frankl. 'The internal, immanent process of the Gothic style is not guided step by step by connexions with other spheres, even where such connexions exist; its direction of development simply springs from the same common root' (p. 277).[45]

The second important point about Frankl's model of cultural history is its concentration on style. The influence of separate cultural spheres on Gothic architecture is largely seen in terms of their power to shape the stylistic features of the church. Thus the section on 'function' and 'purpose' contains only a cursory consideration of crypts, altars, screens, processions, because these same activities can co-exist with many different architectural styles. And it is not surprising that Frankl is keen to underplay the influence of utilitarian motives, including economic and financial constraints, on the final shape of the church by invoking the power of the architect's 'margin of freedom' in creative design (p. 270). For the same reason, Frankl underplays the influence of theological doctrine, literary symbols or poetic concepts on 'the understanding of the Gothic style' (p. 274). Their presence in the church – often evoking the idea of the Heavenly Jerusalem, or the Twelve Apostles, or the Trinity – Frankl calls 'the symbolism of meaning' (pp. 271–4), though nowadays we would place this category of sign under the umbrella of 'architectural iconography'. Frankl has many interesting things to say about the status of these architectural signs as metaphors and representations and

not as literal images, but he is reluctant to promote them as symbols of a specifically Gothic *Weltanschauung*. For one thing, they do not determine style, since similar literary symbols or theological concepts had found, over the centuries, very different formal expressions. Christian churches from the very beginning had symbolized, in their different ways, the Kingdom of God on earth. Besides, the symbolism of meaning is allegorical and conventional – what he calls, pejoratively, 'intellectual'. As a conventional sign system it has no necessary, visual, relationship with what it symbolizes (Durandus called the tiles on the church the warriors that defend it against the heathens); and as embodiments of literal meaning these symbols belong as much to the 'separate' spheres of theology, literature, painting or sculpture. As such, they can have only a limited influence on the equally 'autonomous' world of architecture. Frankl's reservations on the influence of function, economics and mental concepts on the shape of the church severely underplayed the role of patrons in Gothic architecture.

The real bridge between Gothic architecture and contemporary patterns of life was provided by what Frankl called the 'form symbol'. The concept refers to the expressive and emotional power of architecture as form or style (pp. 274–6). If symbols of meaning require knowledge and intellect to decode their messages, form symbols appeal simply and immediately to an aesthetic sense – an 'artistic sense', which 'enables a man to apply his aesthetic feelings to the meaning of a building and deduce the meaning from its form, even if he has read no learned books on the subject of this meaning' (pp. 277–8). The spectators' 'aesthetic feelings' are, for Frankl, exercises in empathy, in the projection of their own emotions, at times their own bodily states, onto the building. We endow every part of a Gothic church, from its spaces to its tracery, with moods and postures which are our own, just as we respond to its own silent language of bodily forms. 'In the symbolism of form, we can see splendour or asceticism, oppression or verve, sterility or elastic vitality, a cheerful enjoyment of life or sombre depression. One says of space that it spreads, it rises, that it is quick or slow in tempo, that it circles, it spirals, or it concentrates'. 'Perfectly to understand the symbolism of form is like understanding the mime of a great actor' (p. 276). In the rare moments when Frankl allows himself emotive description – for example on the nave of Amiens (p. 122), or the choir of Cologne (p. 164) – empathy offers an emotional entrée into the elusive and overwhelming power of a great cathedral. More importantly, empathy also suggests a link to its surrounding culture. For the architect, as well as the viewer, projects his emotional and bodily states, in ideal form, into his creation. 'The architect lives perpetually in this realm of empathy in which forms are felt' (p. 276). And the architect, as the executant of the deepest feelings of a culture, tacitly communicates, through his building, the cultural temper, the *Lebensgefühl*, of his age. 'A man who feels in a Gothic way, and who stylizes himself accordingly, requires, for divine services, not only a building which fulfills its utilitarian purposes . . . but also a building which, through its Gothic form, symbolizes what that particular man feels' (p. 275). Empathy theory, therefore, makes the temper of the age immanent in the style. Architectural style takes on the psychology of its maker and the mentality of its period, until 'style' and 'man' merge to create that strange hybrid – 'Gothic Man': 'Gothic man reflects God in a Gothic way, and Gothic church architecture is art because Gothic forms symbolize the conception of God that was valid in the Gothic age' (p. 277). Frankl genuinely believed that it was directly through this anthropomorphic psychological construct of 'Gothic Man' that the Gothic 'spirit' – its 'partiality' in the deepest sense – entered the anatomy of Gothic architecture, and propelled the style towards its ultimate formal and spiritual partiality in the Late Gothic. The shape of the church, as a form symbol, is the transparent indicator of the mood of the age. Thus the exterior of Romanesque Tournai cathedral is 'warlike, proud and unapproachable' (p. 91), presumably because Frankl believed that 'Romanesque Man' came from a society dominated, like its style, by the concept of 'totality' – it was a world both individualistic and aggressive. 'The leading men of the Romanesque period stood side by side, socially and politically, as autonomous individuals, as barons – whether in friendship or enmity'.[46] The exterior of Laon, by contrast, is 'so much more friendly', presumably because 'Gothic Man' felt himself to be a humble and dependent part of a greater whole. Collective psychology replaces Hegel's *Zeitgeist* at the centre of the cultural wheel.

FRANKL'S ACHIEVEMENT

Frankl's theoretical structures need such lengthy explanation because in no other volume in the Pelican History of Art is theory so obviously the motor of art historical narrative. When Frankl began writing *Gothic Architecture* in 1947 he had published very little 'empirical' art history on the subject.[47] His real investigations into Gothic began in the domain of theory, with two articles published in the mid-1920s on the origins of the Gothic system. Not surprisingly, they anticipate all the antithetical principles which he was to use a quarter of a century later: 'diagonality and frontality', 'structure' and 'texture', 'addition' and 'division', 'partiality' and 'totality'. Even the rib vault was here recognized as the primary formal agent of stylistic change.[48] When he came to write the Pelican volume just after the war the theoretical structure was therefore in place, waiting for a new and extensive mass of empirical evidence to demonstrate its truth. The rich, detailed history of Gothic in this book was to show the 'law' of partiality inexorably unfolding in individual buildings.

By now it is quite clear that Frankl was, to borrow Karl Popper's pejorative term, an 'historicist' – a believer in 'spirits', 'rhythms', 'patterns' or 'laws' which determine the evolution of history.[49] 'Historicism', in Popper's sense of the word, means much more than the imposition of general patterns on the detailed stuff of history in order to make it intelligible and coherent; it contends that history is driven by superhuman 'forces' and 'principles' towards a preordained end, and that all historical experience and thought can be synthesized by some sort of general Mind or Spirit. When *Gothic Architecture* appeared in 1962 historicism – particularly in the Hegelian variant beloved by Frankl – was

profoundly unfashionable in a world dominated by post-war analytical philosophy. It lacked scientific rigour. It was blamed for sloppy, 'continental' thinking, for bombast and obfuscation, and – worse still – for the political evils of totalitarianism, whether of a Marxist or a fascist kind. The critique of historicism launched in the post-war years by Popper and his allies, notably Ernst Gombrich,[50] now looks almost as problematic and doctrinaire as the deterministic assumptions of historicism itself.[51] Looking back on those controversies of over a half century ago, it is now a little easier to appreciate the merits of the historicist cast of mind and to disentangle from its schematic generalities the lasting achievements of its practitioners. Historicist systems, particularly in the hands of the founding fathers of stylistic art history, Riegl and Wölfflin, have always depended on the deft combination of apparently opposite skills: on the one hand, a grasp of empirical detail and a talent for visual analysis, and on the other, a capacity to offer the broadest explanations of stylistic change. Not surprisingly, Frankl was a master of both, and in that mastery lay, paradoxically, the justification for Frankl's claim to be a 'scientific' art historian. The breadth of his vision remains unsurpassed in any single-author survey of Gothic architecture. His building types range from chapels and monasteries to parish churches and cathedrals; his chronology encompasses nearly half a millenium; his Gothic Europe extends from Naples to Durham. Frankl's narrative proceeds on a colossal front, throwing up insights and juxtapositions which nation-based surveys would have missed: the tracery of the choir of Sees in Normandy and of the nave of Minden in Westphalia (p. 168); the slender columns of Saint-Serge at Angers, and those in the contemporary Lady Chapel of Salisbury (p. 124); the 'autonomous' (or 'harp-strong') tracery of the west front of Strasbourg and the undercroft windows of St Stephen's Chapel in Westminster (p. 173). This synoptic sweep, with its command of detail and its sharp eye for nuances of form and physiognomy, comes straight from Wölfflin, the acknowledged master of twentieth-century 'formalism'.[52] Frankl rightly senses a new conception of the Gothic exterior in the lavishly decorated clerestorey and flyers of Reims Cathedral; and his description of their crockets as 'reminiscent of pointillism' (p. 116) exactly conveys their 'painterly' denial of mass. West façades inspired some of his most telling observations, perhaps because their structural similarities provided the neat framework within which to observe subtle changes of detail (pp. 138–46). He senses (what later scholars went on fully to articulate) the transitional nature of the west façade of Laon, between Early and High Gothic (p. 90). His analysis of the west façade of Cologne Cathedral (pp. 178–9) – the conformity of its details subtly extended across its layered and tapering storeys – remains unsurpassed.[53] He is particularly sensitive to Rayonnant architecture (though he calls it 'High Gothic'), probably because its metallic delicacy suggests to him an 'unworldliness and spirituality' which he identifies as the essence of Gothic (p. 298). His analysis of the general character of the style – its sharpening of profiles, its piers without capitals, its desire 'to use pure light as the only building material' (p. 176) – is consistently accurate. At Saint-Urbain at Troycs, or Saint-Nazaire at Carcassonne, he conveys the linearity and brittleness of Rayonnant (pp. 166–8); at Saint-Ouen at Rouen he captures its ethereal elegance: 'Some of the shafts are so slender that they look almost like mere lines; they are so delicate that their third dimension almost disappears, and the whole elevation amounts to almost nothing more than a surface crossed by lines of varying thickness, pointing upwards – floating dreamily in space, elegant yet ascetic' (p. 176). Often dismissed as an 'academic' and 'doctrinaire' style by writers of Frankl's generation, this sympathetic analysis of Rayonnant prepared the way for its rehabilitation in the 1960s.[54]

Descriptions of this quality are not random insights; they are closely allied to Frankl's theoretical inclinations, or to his personal taste. Where buildings, or elements of buildings, conform to his polarities, or come close to his sense of the spirituality of the Middle Ages, then he is capable of deep understanding. The polarity of 'diagonality versus frontality' shapes an impressive separate section on the development of capitals and bases (pp. 84–6); the polarity of 'structure versus texture' allows a similarly useful exercise for the evolution of the rose window (pp. 266–7). The 'addition versus division' polarity neatly corresponds to the 'still Romanesque' or 'Transitional' narthex of Saint-Denis, and the 'unity and grace' of the fully Gothic choir (p. 67). Especially versatile as an analytical and descriptive tool was Frankl's principle of 'Gothic relief' (see above), which belongs to 'optical form' in that it dominates the surface effects of interior elevations or façades, but also shares characteristics of 'spatial form' since the relief divides the total space into a skeleton of interdependent parts. 'Gothic relief' gives him an immediate purchase in the analysis of the west façade of Saint-Denis, and is particularly helpful in defining the spatial fluidity and sculptural subtlety of Noyon Cathedral (pp. 70–2) and of the early Gothic in the Aisne valley and the Laonnois in the 1160s–80s. The concept also defines what he calls 'the Gothic profile' of early Rayonnant window tracery at Amiens and Saint-Denis, although here with a subtler and more wiry relief. The principle of repetition by division in the clerestorey tracery of both buildings results in ultra-fine projections and recessions of the tracery mullions and the wall and vault shafts, creating a flowing connexion between one bay and the next – the whole effect described with Frankl's customary clarity and patience (pp. 119–21, 126–7). Frankl's most surprising application of the principle of 'Gothic relief' is to the exteriors of the great High Gothic cathedrals. The 'Gothic relief' that had hitherto dominated the interior now extended to a half-open, half-closed composition of flying buttresses, pinnacles and pyramid roofs. The result was an 'organic unification' of the whole church (pp. 106–14, 116). At Chartres, Le Mans, Reims and elsewhere vaults, piers, shafts and buttresses are united into a single visual, as well as constructional, system – they form (following the 'law' of partiality) the fragments of a whole, a whole which is the church itself. Frankl's descriptions of this phenomenon, and of the most spectacular of these exterior ensembles, the choir of Le Mans (p. 118), rank among the most searching in the literature of Gothic.

Frankl's polarities of 'akyrism' and 'the norm' offered positive insights into buildings hitherto labelled as 'eccen-

tric' or 'academic'. *Akyros*, the mutability of the functions and meanings of forms, was Frankl's key to rescuing a whole category of architecture dismissed by the general surveys as 'provincial' or eccentric because it refused to obey the norms of the mainstream, that is, the Gothic of the Ile-de-France. Inventive and unorthodox types of vault, especially those where ribs acquired new aesthetic purposes, fascinated him. The triangular vaults of the ambulatory at Notre-Dame in Paris, the spider-like vaults of Saint-Quiriace in Provins, and the decorative nets and liernes of early thirteenth-century Anjou, were, for the first time in a general survey, given as much prominence as the conventional elements of Gothic. Frankl's most influential application of 'akyrism' came in his analysis of St Hugh's choir in Lincoln Cathedral. He was the first to appreciate that the oddities of this building, particularly what he called its 'crazy' vaults, were not the product of changes of plan, still less of the 'madness' of the architect, but reflected a consistent aesthetic intention, at odds, certainly, with mainstream French Gothic, but curiously prophetic of the dissonances and richness of the Late Gothic style, especially in Germany (pp. 101–2).[55] Frankl's 'akyrism' helped to undermine conventional Franco-centric histories of Gothic and to open up new, pluralistic approaches to the development of Early and Late Gothic in Europe.

'The norm' – what Frankl defines as 'a unique case' (p. 164) – poses problems of definition and application. At times it may mean nothing more than the sense of a single blueprint connecting a set of very similar buildings, such as the southern French cathedrals of Toulouse, Narbonne and Rodez (p. 169). Or it may refer to the very real tendency in thirteenth-century great churches in northern France to conform to increasingly refined standards of regularity and consistency, as each cathedral competed with, and 'improved on' its immediate predecessors. Thus, for Frankl, 'Reims was a correction of Chartres: Le Mans is a correction of Bourges' (p. 116). But in some passages of Frankl's writing there is a clear implication that the 'norm' means something close to a metaphysical entity – the transcendent existence of a single, perfect mental model of the Gothic cathedral to which all actual cathedrals aspired. At Reims and Amiens, he admits, 'one can feel the tendency towards the norm', but it is the absolute clarity and regularity of Cologne Cathedral which makes it '*the* Gothic choir, *the* final solution' (p. 164). Frankl's Platonic language may not command agreement, but the idea of French cathedral Gothic as the search for a paradigm is not wide of the mark, for we know that the cathedral builders had a competitive and corrective view of precedents, and entertained definite ideas about what a great Gothic church should look like. Certainly, Frankl's emphasis on the aesthetic perfection of Cologne was timely. Just as his idea of akyrism rescued 'odd' buildings from undeserved obscurity, so the idea of the norm undermined the widespread prejudice that later thirteenth-century great churches, particularly Cologne, were 'doctrinaire'. Frankl was the first to locate Cologne Cathedral in its proper place as the supreme achievement of French Rayonnant.

Allied to the idea of the norm is Frankl's concept of 'the classic', which touches no less profoundly on our sense of *quality* in architecture. Like akyrism, 'the classic' can describe a work of any period, not necessarily from Classical or Neoclassical art. It refers to 'summits of achievement' at which 'the highest degree of the particular harmony inherent in the premises of any style are reached' (p. 122). 'Classic' buildings are the fruits of what we defined earlier as Frankl's dialectic model of architectural evolution, where the inherent tensions in the components of a style are integrated step by step into a final and ideal solution. Classic solutions, such as the nave of Amiens Cathedral, embody that short-lived moment of equilibrium. Here a host of polar opposites are reconciled: a sense of the infinite within finite bounds, of flowing movement in repose, of the supernatural within the natural, of 'solid matter overcoming its own mass', of unity in multiplicity. 'The formal conditions imposed by the rib vault organically permeate the whole structural system' (p. 122). No other description of Amiens approaches so closely the paradoxical sense of harmony and 'perfection' latent in this most exhilarating of Gothic cathedrals. But the virtues of the 'classic' are not confined to High Gothic. They also infuse the German hall churches of the later fifteenth century, the acknowledged masterpieces of German *Sondergotik* – Nördlingen, Dinkelsbühl, Amberg and Annaberg. If the ultimate balance of High Gothic lay in the reconciliation of the Gothic style of 'becoming' with vestiges of the Romanesque style of 'being', the 'classic' in German Late Gothic is found in a seamless flow of vaults, pillars and spaces in perpetual equilibrium: 'the harmony of movement within itself, a living vibration from within, a current which always returns to its own beginning'. Frankl had a profound feeling for the spatial poise and controlled dynamism of the German Late Gothic, a style of 'soft contrasts' and 'poised tension' (p. 227), its best works, 'tranquil and reassuring, noble and unhurried, in spite of the agitation within them' (p. 225).

The eloquence of Frankl's response to these 'classic' works, his masterly characterization of form and feeling, is personal without being sentimental. There is a strongly empathetic quality in his writing, but an empathy disciplined by a sharp eye and a rigorous intellectual system, so that the architecture, as a 'form symbol', is convincingly translated into his own experience of harmony and well-being. Classical antiquities, he says, may produce in us a *serene* belief in ourselves, 'but it could be metaphorically said that Gothic, in its own classic phase, shows a *passionate* belief in itself . . . we can surrender to being lifted far above ourselves by it and translated into a sphere in which we can taste the highest, all-embracing harmony of existence' (pp. 122–3, my italics). In Master Gerhard's choir in Cologne, 'the spirit of God embraces what is cold and what is warm, what is German and what is French, what is dead and what is living. But the cathedral is not dead; it is solemn, festive and sublime, *fascinans* and *tremendum* at the same time, as clear as mathematics and as irrational as life itself' (p. 164). Few writers on Gothic architecture have evoked the transcendent power of a great cathedral with such directness and conviction.

Frankl's sensitivity to German *Sondergotik* is bound up with his eccentric belief that Late Gothic represents the culminating point of the Gothic style as a whole, and that only

after 1300 did Gothic attain 'its ultimate perfection' (p. 33). By the second half of the fifteenth century, he argues, Gothic architects had 'drawn every possible conclusion from the premises which had been laid down when the first rib-vault was built at Durham' (p. 258). Spatially, especially in hall churches, the Late Gothic interior became increasingly unified, indeterminate and penetrable – a 'whole' which could be freely divided and subdivided. Optically, its diagonality was so insistent that the increased continuity between forms – the fluent interpenetrations of flowing tracery, spiral piers, or double-curved ribs – led Frankl to coin the term 'continuous recession' as the hall-mark of the style (p. 242). Above all, it was the transformation of Early and High Gothic 'structure' into Late Gothic 'texture', from a sense of counter-pressure to a sense of continuous flow, which signalled the culmination of the principles of Gothic. The aim of the Late Gothic architect was, Frankl asserts, 'to correct the High Gothic style with the unbelievably complicated forms of his own geometrical fantasy, to turn his work into pure texture, and thus to make it completely Gothic' (p. 244).

Few would agree with Frankl that Late Gothic is more 'Gothic' than earlier stages of the style, and even fewer would subscribe to his notion that Late Gothic was a 'correction' of High Gothic, implying as this does that there was something missing or wrong with twelfth- or thirteenth-century architecture.[56] But his eoncentration on Late Gothic happily denies the prejudice (still evident in the cursory attention given to Late Gothic in modern surveys and text books) that the late phase of the style was in some way 'decadent' and therefore undeserving of serious study. And many of Frankl's most original insights come in the long Late Gothic chapter. He had the advantage over most other scholars in combining a life-long familiarity with German Late Gothic with a lively interest in English architecture. He was one of the first scholars to see the importance of St Stephen's Chapel in Westminster as the fountainhead for both the Perpendicular and the Decorated styles (pp. 193–4). He properly isolates curvilinearity and decorative vaulting as the key elements of the Decorated style (pp. 187ff). And the similarities he notes between English decorative vaulting and the vaults of Peter Parler in Prague Cathedral (pp. 202–4) prepared the way for investigations into English influence in the genesis of the German *Sondergotik*. His sections on German Late Gothic still remain the best account in English of this complex and inventive style, and his appreciation of the mixture of genres in the fifteenth century, particularly the stylistic importance of the small-scale decorative architecture of fonts, screens and sacrament houses (pp. 243–7) prefigures the explosion of interest in 'micro-architecture' in the last twenty years. Frankl's refined perceptions of architectural space must have attuned him to the spatial intricacies of Late Gothic, but so did his modernist sensitivity to the pervasiveness of style. Like the *Jugendstil* which surrounded his early life in Prague and Munich, Late Gothic forms, from vaults to thuribles, have a universality and a formal coherence which is almost obtrusive. Frankl's theoretical principles – 'the premises of the first rib vault' – were as evident in the 'geometrical fantasies' of the north spire of Chartres as they were in the choir screen of St Pantaleon in Cologne, or the sanctuary vaults of Pirna (pp. 246, 248).

THE PROBLEMS OF FRANKL'S SYSTEM

The wealth of insights which Frankl's system throws up is a tribute to the resilience of historicism after a century of art-historical application. In the hands of a master like Frankl it can still offer a profound understanding of architectural style. But if theory underwrites the strengths of *Gothic Architecture* it also generates its weaknesses. Frankl's polarities as descriptive categories, his mechanisms for stylistic change, and his model for the relations between architecture and culture leave us with a one-sided history of Gothic – impersonal, abstract and 'spiritual'.

The descriptive categories

By raising mere descriptive tools to the status of 'stylistic laws' Frankl exposes his 'polarities' as what they are – not forces but labels: generalizations which stand or fall by the insights they throw on particular cases. When submitted to the sheer diversity of Gothic architecture, his Gothic 'principles' simply do not apply to certain buildings or classes of building. The transformation of structure into texture only occurs in the later Gothic period. The notion that Gothic tends towards spatial 'division' fails to explain the continued popularity of the basilica (with its more 'additive' and 'separate' spaces) over and against the relative rarity of the Gothic hall church (a far more unified and 'divisive' space). The concept of division may underlie the interpenetrating spaces of French cathedral chevets, but how does it explain the equally 'Gothic' character of contemporary English cathedrals, with their separate, box-like compartments of space? Are we to believe that English Gothic is 'Gothic' only because of its 'horizontal fusions' (pp. 123–4), while its ground plans and massing are still 'Romanesque'? Frankl's concept of spatial continuity should be at its strongest in the later Middle Ages, yet how does it explain the Late Gothic tendency to festoon the core of the church with semi-independent burial and chantry chapels? The privatizing and individualistic tendencies of later medieval piety run counter to his 'law' of 'partiality' and 'division', at a time when those 'laws' are, he argues, at their most forceful and explicit.

The most problematic of Frankl's 'laws' is the optical category of 'diagonality', since it is a law which fails to cover a number of critically important cases. It cannot, for example, account for the speeial qualities of Parisian architecture from the Early Gothic to the Rayonnant, since the thin murality of this architecture, and its speetacular development of bar tracery, are best appreeiated frontally, not diagonally. As an indicator of medieval perceptions of architecture, Frankl's 'diagonality' proposes an argument which is both circular and anachronistic. Medieval spectators were expected 'to stand diagonally, and visually to experience the space in recession, not in the flat' (p. 49), but the only verification for this diagonal act of perception are the

diagonal forms of Gothic. No evidence of medieval standing or seating arrangements in churches, or of processional directions, is brought to bear from outside this circle. Not only does 'diagonality' fail to include important categories of Gothic, it rests on a dubious conception of optical form which grew out of late nineteenth-century theories of perception, theories long since discredited. Frankl's belief that memory sifted out the characteristic features of objects and presented them to the spectator in their most distinctive shape (the diagonal) may owe something to Gestalt psychology; it was certainly indebted to the work of Adolf von Hildebrand, Wölfflin's mentor in matters of perceptual psychology. Hildebrand postulated the existence of dominant or typical shapes in the mind as the residue of many sense impressions deposited in the memory, shapes which then determined the artist's schematic representation of the world.[57] But it is now clear, after a century of psychological investigation, that Hildebrand's schematic systems, and even Gestalt's desire to integrate discrete perceptions into an intelligible whole, simply fail to take into account the immense complexities involved in the reading of forms and images, particularly images as intricate as the cathedral's. Is 'diagonality' or any other concept – 'verticality' or 'spatial enclosure' – the 'dominant' visual impression left by the Gothic great church? In fact, is there a dominant impression at all? The elusive welter of competing sensations transmitted by the Gothic cathedral makes the prospect of reconstructing the real perceptions of medieval viewers a daunting task. A first step might be to move away from theories of perception altogether and examine the more mundane evidence of medieval seating plans, processional routes and the placement of altars.

Frankl's 'diagonality' is, of course, particularly evident in the Gothic rib vault, and it is in his discussion of early rib vaults that the concept of 'diagonality' is most obviously elevated from a descriptive term to a stylistic force, with misleading consequences. As we have seen, the rib vault, as the quintessentially 'diagonal' element in the Early Gothic system, must, for Frankl, be the motor of the style; all aspects of Gothic, he argues, grow out of the aesthetic character of the rib. To demonstrate this he has to prove, of course, that no Gothic element was present in a building before the rib. Yet this is patently not the case. As early as 1925 Ernst Gall (and later Jean Bony) had clearly demonstrated that the skeletal qualities of the Gothic elevation – qualities of partiality and spatial openness which Frankl derived from the rib – first appeared as a structural system in Anglo-Norman Romanesque architecture, usually in the context of wooden-roofed buildings, and therefore quite independently of the rib vault. It was the conjunction of the two systems – Anglo-Norman elevation and north French rib – not the priority of the rib, which forged the Gothic structure.[58] Frankl went to great pains to reject Gall's position, on the grounds that this Anglo-Norman wall relief was 'frontal' and typically Romanesque, and not 'diagonal', and therefore not strictly 'Gothic';[59] but there can be little doubt that Gothic architects were profoundly influenced by Anglo-Norman elevations. The niceties of 'optical form' and late nineteenth-century theories of perception had, at least in this case, nothing to do with the stylistic intentions of medieval masons. Indeed, the 'partiality' of Frankl's Gothic rib is a prime example of confusing descriptive tools with historical forces: the Gothic rib is certainly 'diagonal' and 'partial', but it is not the single engine which drives the creation of Early Gothic in France. Frankl's confusion meant that Anglo-Norman Romanesque, a critical source of inspiration for much Early Gothic architecture in the Ile-de-France, was left out of the account.

Frankl's reluctance to acknowledge Anglo-Norman architecture points to a wider issue in the text – its limited appreciation of artistic tradition. For Frankl, the real agents of stylistic evolution are the 'basic principles' of the style, and the history of Gothic is the increasingly refined conformity of each building to them. 'Style' he reminds us, 'is a unity of *forms* governed by a few basic principles. In this book these principles will be clarified by examples' (p. 33). It follows that tracing changes in the stylistic physiognomy of Gothic over its long history is not, for Frankl, an account of architects and patrons drawing on previous works, it is only tracing changes in the look, to us, of the finished products, and how those products show more and more accurate pointer readings to the 'principles' of Gothic. Frankl is, of course, aware of the sources of particular buildings (Canterbury looked to Sens Cathedral, Bourges to Notre-Dame in Paris), but these borrowings are not the real factors in stylistic change. What propels the style is its attentiveness to Gothic 'principles'. Thus, St George in Limburg an der Lahn is not discussed in terms of its transformation of the advanced Gothic vocabulary of Laon Cathedral into the language of the Rhenish Romanesque, but how 'Gothic' it is, and how diagonal its shafts are (p. 150). High Gothic Soissons is not assessed in terms of its relationship to Chartres Cathedral, or of its borrowings from its own, earlier south transept, but in terms of its diagonality, its merging of spaces, its 'complexity versus serenity' (p. 112). Frankl's buildings are fundamentally progressive – they all look towards the laws of Gothic, laws which unfold step by step, and with ever greater clarity, towards their ultimate fulfilment in the Late Gothic. There is less sense of where the architecture comes from than of where it leads to. For Frankl, Gothic proceeded like the demonstration of a mathematical theorem. 'There are few periods in the history of art in which the logical sequence of successive steps is so patent and so convincing. In this sense, therefore, the historian can adopt a forward-looking position' (p. 33). The 'essence' of each building is revealed only when its position is clarified 'on the ladder of development' (p. 90).

In this abstract and forward-pointing account of Gothic, there is little sense of the real diversity of forces inherent in tradition: varieties of inspiration, conflicting choices and possibilities, local and regional 'schools' of Gothic, and their interaction with more mainstream centres. Curiously, in his Romanesque survey Frankl had shown real sensitivity to regional 'schools', but in *Gothic Architecture* they hardly figure. 'Akyrism', for all its stress on the eccentric, is too narrow a concept to register such diversity. The choir of Coutances may transform its staircases into oriel-like projections (p. 165), but it is the debts to Bourges and Le Mans, and their transformation into Norman ways of thinking, that define the creativity of the building and its place in a

Norman Gothic style. Similarly the 'akyristic' vaults of Airvault and Saint-Serge at Angers are not considered in the wider context of Angevin Gothic *c.*1200, and its other defining characteristics (domed rib vaults, hall churches, etc.). Nor does Frankl convey any sense of the variety of styles – Parisian, Laonnois, Sénonais – that enliven early Gothic in the Ile-de-France. The choir of Saint-Remi in Reims belongs to the Laonnois version of Gothic; it is not 'in its arcades, its shafts, its gallery, a faithful reproduction of Notre-Dame [in Paris]' (p. 48, first edtn). Not surprisingly, High Gothic in France (*c.*1190–*c.*1240), a period of remarkable stylistic diversity, emerges as a one-dimensional episode. Frankl's progressive theory of evolution, where each building is placed 'on the ladder of development', restricts his interest to the mainstream cathedrals of Chartres, Reims and Amiens, while the thriving regional 'schools' of Normandy and Burgundy, or the 'para-Chartrain' movements of High Gothic identified by Bony in the north-east and east of France, get little attention.[60] The reception of Gothic into England is treated, not as a series of creative compromises between new French impulses and older Anglo-Norman traditions, but as a process of 'horizontal fusion' – a concept which ignores all the vertically-divided elevations of the Early English style (Worcester west bays, Glastonbury, Rochester and Southwark). Such diversities can find no place in a system where conformity to the general 'laws' of Gothic constitutes the 'essence' of each building, and its position on a developmental ladder. A horticultural metaphor might not be too far-fetched: Frankl's 'Gothic garden' is not teeming with different species; it is populated only with sunflowers, all in different stages of development, but all turning, as one, to the 'sun' of Gothic partiality. Formal variety, individual intention and agency, as well as material and technical imperatives, are all casualties of this teleological model of stylistic history.

Stylistic change: intentionality and material history

Because the *Kunstwollen* of partiality is the real motor of stylistic change, architects rarely figure in this book as agents with choices and intentions. Even Frankl's notion of 'correction', the modifications and amendments which successive High Gothic architects made to their designs in the light of 'mistakes' in immediately preceding buildings, implies a quasi-deterministic drive towards a perfect 'end cause'. The reader of *Gothic Architecture* will find nothing on the changing social status of the architect, or on the uses of drawing and its implications for work practices. A short discussion on craft training in the lodge only serves to emphasize the limitations of the architect's creativity (pp. 223–5). Frankl, of course, was deeply familiar with these aspects of the mason's profession, and had devoted many illuminating pages to them in *The Gothic*,[61] but they had no place in the evolution of style. He was even more dismissive of economic, functional and structural factors as agents of stylistic change. How were the Gothic cathedrals funded? How did changing liturgical practices influence the dispositions of interior space? What technological principles, if any, determined the use of the flying buttress? These issues are hardly touched on – economic questions are not even raised – and when they do make a brief appearance they are seen, not as forces that interact with individual choice, but as phenomena which restrict and even oppose creativity. They are the utilitarian or 'materialist' pressures which help, negatively, to define the architect's creative 'margin of freedom' (which, of course, is not a 'freedom' at all). When Frankl does (rarely) deal with questions of liturgical function, his unfamiliarity with the subject is apparent. There is no evidence that the galleries at Laon are for pilgrims (p. 76) or that the cathedral of Poitiers 'is a church for nuptial Masses' (p. 61, first edtn).

Questions touching on the mason's lodge and on purpose and function are relegated largely to Part Two, as if they were theoretical or 'general' problems having little bearing on the 'immanent' development of style described in Part One. Frankl's confidence in drawing such a clear division between the visual tradition and its surrounding culture stems directly from Wölfflin's 'double root of style' – the idea, advanced most clearly in his *Classic Art*, that changes in the visual tradition and changes in other manifestations of a culture proceed autonomously ('immanently') within each of their spheres, but also interact in such a way that the social and religious ethos becomes the background condition, in some cases the determinant, of stylistic evolution. Wölfflin constantly revised his position on the influence of social and religious factors on visual style, and that ambiguity is reflected in Frankl's separation of the visual and the cultural history of Gothic in the two halves of his book.[62] While he looks for 'profounder' meanings for stylistic change in the 'metaphysical idea of the men who commissioned [the buildings]' (p. 298), he feels it unnecessary to examine how that interaction of mind and style took place within the history of particular buildings. In fact, Frankl's post-Hegelian model of cultural history is ill-equipped to uncover the connexions between motif and milieu.

The Limitations of Cultural History

Frankl's holistic picture of medieval culture proceeds on two typically Hegelian assumptions. Firstly, it suggests that the various 'spokes' on the cultural wheel – religion, art, architecture, politics, economics, social history – derive their vitality radially, that is, not through direct contact with each other, but through their common root at the hub; and secondly, it assumes that cultures tend towards order and unity, that each 'spoke' proclaims, in its separate language, the meaning of the centre: 'the ring that forces the diverging lines towards each other until they converge . . . is Man, or Society, which strives after unity, after a harmonious civilization, after a style common to every cultural sphere' (p. 297). Both models erase and distort historical connexions between architecture and its surrounding culture.

One obvious casualty of this Hegelian model is medieval secular architecture. On the face of it, secular and religious architecture seem to fit neatly into the Hegelian mould, since they give the impression of clearly distinct 'spokes'. Castles show no inclination to look like churches, or to obey Gothic stylistic principles, and they convey values diametri-

cally opposed to the Christian humility and 'partiality' which Frankl isolates as the central driving force of medieval culture. 'Secular architecture shows man as he was: church architecture shows him as he would have liked to be' (p. 299). But the Hegelian system demands the existence of some common factor between these two architectures at the hub of the wheel, and so Frankl is forced to read them both as aspects of the fragmentary nature of 'partiality', sacred buildings symbolizing Man 'as a fragment of the kingdom of God', secular 'as a fragment of Society' (p. 290). But *how* precisely the 'form symbols' of Gothic secular architecture express this notion of 'secular partiality' is never discussed, and the whole device comes close to tautology: secular architecture embodies secular society. In fact, the relationship between secular and ecclesiastical architecture runs directly counter to the Hegelian paradigm; it consists, not of mysterious connexions at the centre, but of contacts across the 'spokes' – between each field. For in the later Middle Ages, particularly from the late fourteenth century, important exchanges – ideological and stylistic – between castle-palaces and churches radically altered the development of late Gothic in France, England and Germany. Frankl glances against this problem (pp. 245ff), but his Hegelian theory of culture artificially separates the two genres – to such an extent that secular architecture is banished from Part One and leads a separate existence in Part Two under 'The General Problems of the Gothic Style'.

Another victim of the Hegelian model is the patron, who finds himself – like secular architecture – artificially separated from a history of actual Gothic buildings by being sidelined into Part Two. (Patrons rarely trespass as named individuals into Part One.) Under the section 'Symbols of Meaning' Frankl shows how little he is prepared to concede to the patron and benefactor in the shaping of the medieval church. Their financial contributions to building do not interest him. Their liturgical concerns have no bearing on style, and are therefore irrelevant to the shaping of Gothic. Patrons have no more control over the character of the church than an overseer (p. 228). Their scholastic, theological and literary interests – what he calls 'symbols of meaning' – belong to a cultural 'spoke' that has, he contends, little or no direct connexion to architecture. For Frankl, 'symbols of meaning' are not only logically separate from the visual history of forms, but their 'intellectual' properties tell us far less about the 'spiritual' meanings of Gothic architecture than the empathetic and intuitive revelations of the building as a 'form symbol' (p. 236). All this amounts to a narrow and misleading view of the relations between Gothic architecture and patronage. As we shall see, it privileges empathetic deduction (and all its subjective pitfalls) over an historical understanding of the patron's interests. It also ignores classes of architecture with a strong ideological content, and it distorts our understanding of buildings where we know that the patron's concerns were formative. We cannot explain the skeletal quality of the new Gothic choir at Saint-Denis without its windows, yet these depended for their inclusion on Abbot Suger's famous fascination with neo-platonic theologies of light. The retrospective oddities of the Wenceslas Chapel in Prague Cathedral can only be ascribed to the exotic tastes of the Emperor Charles IV; they have little to do with Peter Parler's avant-garde treatment of German Rayonnant. And what of patrons who took such a keen interest in their buildings that they helped to decide on their spatial organization, on their decoration and even on the specific stylistic precedents which they required their architect to copy? Richard Krautheimer's notion of the medieval architectural 'copy', demanded by the patron as a way of associating his building, liturgically or formally, with a venerable archetype, seems to have passed Frankl by.[63] Yet it would have explained why Archbishop Albrecht of Magdeburg (one of the few patrons mentioned by Frankl) inserted the marble columns of the old Ottonian church into his new Gothic choir. Frankl the modernist is not interested in this clear example of the client intervening in the cause of tradition; for him, Albrecht is an importer of a new style he scarcely understands.

Behind Frankl's denigration of the patron lies his suspicion that patronal interests, in so far as they embody concepts, ideas and literary and theological systems, are too 'intellectual' to be of any relevance to the style of Gothic. 'Symbols of meaning' are logically separate from the visual history of forms. 'Form symbols' on the other hand – the way Gothic forms express the 'spirit of Gothic partiality' – are central to Frankl's notion of cultural history. The principle of partiality is somehow infused by the architect and (more mysteriously) by his society, into the building and then re-lived, intuitively and empathetically, by the modern spectator. But when we examine more closely this 'spirit of partiality' in later medieval society we encounter little more than a vague collective psychology, usually expressed in the form of two polar constructs: 'Romanesque Man' and 'Gothic Man'. 'Romanesque Man' and 'Romanesque Society', for example, are as 'additive', 'independent' and 'total' as Romanesque architecture. They are worldly, war-like and autonomous; they posit a clear separation between this world and the next; and their behaviour, even at its most pious, is impervious to a genuine sense of the spiritual ('not a really permanent religious feeling') (p. 241). This Romanesque *Weltanschauung* is clearly a travesty of the real social and religious history of the Romanesque period. It ignores, for example, the deep spirituality of the monasteries of the eleventh and twelfth centuries, monasteries which were largely responsible for much of Romanesque art and architecture. But the construct, unhistorical as it is, is obviously invented as a pseudo-historical equivalent to the visual characteristics of Romanesque. It is also set up as the simple polar opposite to 'Gothic Man' and 'Gothic Society', concepts equally detached from the complexities of real history. In contrast to the 'divisiveness' and duality of the Romanesque world view the Gothic psyche embraces partiality and unity in all aspects of its culture. Its supreme moment was represented by the all-embracing unity of the Church at the time of the Fourth Lateran council, and by the humble self-abnegation and world-embracing spirituality of St Francis and St Dominic (p. 241). As a characterization of later medieval history this notion of 'cultural partiality' is as inadequate as Frankl's caricature of Romanesque society. If the Gothic cathedral finds its closest equivalent in the absolute 'partiality' of the friars, why did mendicant architecture radically reject the partiality of High

Gothic and Rayonnant in favour of a mural simplicity closer to Cistercian Romanesque, and even Early Christian models?[64] And if the idea of the superior unity of the Christian Church in the early thirteenth century lay at the centre of Gothic partiality, why did the Late Gothic style, which supposedly carried that partiality to its perfect fulfillment, coincide with the fragmentation of Christian Europe into rival nationalities and the decline in the authority of the universal Church? The connexions between the hub and the spokes do not work, because history does not proceed from an 'essential' centre and cannot be reduced to unitary psychological constructs. Even where centre and periphery seem historically to coincide Frankl's cultural connexions are too vague to define the real character of the building. Florence Cathedral and Dante's *Divine Comedy* belong to the same period and the same milieu, but in what sense is the cathedral (like the poem) a 'symbol of the progress of the human spirit towards the absolute' (p. 214)? Is it *more* of a symbol than any other Gothic great church of its day?

Perhaps the most problematic aspect of Frankl's cultural history is his reluctance to use 'symbols of meaning' – ideas, concepts, programmes – as the links between motif and milieu, and instead to rely on 'form symbols' – the 'eloquence' of architectural form experienced empathetically by the viewer – as the signifiers of Gothic culture. The weakness of this position comes out clearly in his discussion of the links between Cistercian architecture and its monastic milieu. Instead of assessing the 'symbols of meaning' – the contemporary literary evidence for the Cistercian aesthetic of art (St Bernard's letters, the order's building statutes etc.) – he relies solely on the architecture as a 'form symbol', as a language of expressive forms. 'A visitor', he claims, 'who understands the language of stone will be aware of this background [Cistercian culture] without literary proof' (p. 96). But will he? What Frankl thinks Cistercian churches reveal, in their murality and simplicity, and in their 'aristocratic' and 'proud' demeanour, is a typically 'Romanesque' spirituality, and in this (he argues) they reflect the 'aristocratic' and 'princely' character of St Bernard himself. It was here, he suggests, that Cistercian architecture differed from the openness and humility of the 'Gothic friars' (p. 68). But many would argue that the humility of the friars' architecture is not dissimilar to that of the Cistercians – indeed is directly indebted to it – and that the mural and 'proud' qualities of Cistercian churches are shared by other classes of Romanesque architecture. What makes Cistercian architecture distinct is its espousal of poverty and asceticism, an economic and spiritual ideal which belongs, as much, if not more, to the conceptual world of 'symbols of meaning' as to the empathetic domain of 'form symbols'. Bernard's famous *Apologia*, Stephen Harding's *Carta Caritatis*, Ailred of Rievaulx's description of the ideal Cistercian monastic life, the *Statuta* of the General Chapters, the ideological clashes with Cluny – all these 'symbols of meaning' fail to reach Frankl's text. By ignoring the more 'intellectual' aspects of the Cistercian programme Frankl misses the essential links between architectural form and spiritual policy. In fact, 'form symbols', as Frankl's favoured link between the centre and the 'spoke', turn out to be vague and subjective guides to historical reality. They also rest on a huge tautology: Gothic architecture is the symbol of Gothic Man, and Gothic Man, or Gothic Society, infuses his architecture with Gothic principles. In effect, Gothic is Gothic. Frankl himself says so: 'Gothic Man reflects God in a Gothic way, and Gothic church architecture is art because Gothic forms symbolize the conception of God that was valid in a Gothic age' (p. 277).

High Gothic and Rayonnant

For all Frankl's sensitivity to the visual qualities of Rayonnant, it is the architecture of thirteenth-century France which reflects most clearly the weaknesses of his idealist method. High Gothic embodies the virtues that Frankl's theoretical armature has little room for. It was a period of rapid technical and productive change. Architectural drawing emerged as a new tool for design and an indispensable medium for communicating ideas and fixing them as models for the future. More refined methods for the production of standardized carved masonry were introduced to the lodges. The mastery of practical geometry, a traditional skill of the master mason, took on – at least to those outside the lodges – a more intellectual character. These productive changes led to a new appreciation of the architect as designer and creator, and an inevitable rise in his social status. Nothing of this reaches Frankl's text. High Gothic is also an architecture of spatial splendour, but this is hardly registered in *Gothic Architecture*. The complexities of its tiered elevations at Bourges, Le Mans and Beauvais, the expansiveness of the transepts at Reims and Amiens, the fascination with the five-aisled church as a re-incarnation of Romanesque and Early Christian antecedents – all this diversity of spatial experiment escapes Frankl's generalized spatial concepts of 'partiality' and 'verticalism'. Such adventures in the handling of interior space depended, of course, on phenomenal progress in techniques of abutment and the coordination of structural forces. High Gothic architecture in northern France is, as Bony reminds us, 'the architecture of the flying buttress'.[65] The ingenuity with which Gothic engineers refined their structures, their failures and their experiments, constitutes one of the most heroic chapters in the history of architectural engineering, but it passes Frankl by. Instead, the sections on this most structural and spatial style are organized around small-scale decorative elements such as 'finials and balustrades' and 'the High Gothic pier, tracery and gargoyles'. These forms may, indeed, demonstrate Frankl's stylistic principles as well, if not better, than space and abutment; but here the principles simply do not marry with the realities of the style.

Frankl's treatment of thirteenth-century France was not helped by his failure to distinguish between High Gothic and Rayonnant styles, and his merging of all buildings of the thirteenth- and early fourteenth-century under the blanket title of 'High Gothic'. It would be unfair to blame Frankl for this confusion, even though an earlier generation of French commentators had already made the distinction.[66] It was not until Robert Branner published his study on the 'court style' of Saint Louis in 1965 that the implications of what Rayonnant meant became fully clear.[67] But the modern stu-

dent may still find Frankl's undifferentiated 'High Gothic' confusing, since it distorts the history of European Gothic. The Rayonnant style (*c.*1230–*c.*1360?), as Branner and Jean Bony underlined, represented a radical change in the appearance and structure of the Gothic church as well as its sources of patronage.[68] Originating in Paris in the middle of the thirteenth century, the style quickly spread to the 'provinces' of the expanding kingdom of France as well as to Spain, England and the Rhineland. Royal as well as ecclesiastical patrons became the propagators of the style, and their secular concerns gave new inflections of meaning to an architecture hitherto associated with the higher clergy. Paris, and not the scattered sees of the French bishops, emerged as the dominant centre of stylistic invention. A concentration on window tracery and increasingly refined moulded surfaces replaced the grand experiments with space and structure which characterized High Gothic. At every level – stylistic, structural, patronal and ideological – Rayonnant represented a real break with the values of High Gothic.

For all his sensitivity to the visual qualities of Rayonnant, Frankl was unaware of these deep stylistic changes, and of the new interests which they presupposed. He had no historical or ideological structure within which to place his 'High Gothic' buildings. His sections on the second half of the thirteenth century may therefore be confusing for the student (pp. 126–71). Under detailed headings such as 'glazed triforia', 'the spheric triangle', 'cusps in tracery', 'elimination of capitals' and 'piers with grooves', his churches float in and out of our view like untethered vessels. Buildings that really belong to High Gothic (Bayeux, Naumburg and Coutances) appear in no meaningful context. Westminster Abbey is discussed without reference to one of its key sources, the Sainte-Chapelle, and without acknowledging Henry III's admiration of the French monarchy (p. 136). And while minute details are examined for their obedience to the laws of 'diagonality' or 'penetration', Frankl loses sight of the larger picture, particularly the dominant influence of the new Saint-Denis on the elevation design of most front-rank great churches in Europe for the next half century. To submerge his analyses of Clermont-Ferrand, Strasbourg, Leon and particularly Cologne Cathedrals in disconnected details is to miss the creative twists which each of these designs gave to the Dionysian archetype. It may be significant that Frankl's insights into the formal qualities of Rayonnant were completely at variance with his ignorance of its historical structures. Only with the Late Gothic, when stylistic diffusion depended less on centralized institutions and more on local conventions and the architect's own ingenuity, did Frankl's system of formal analysis based on stylistic 'principles' come more into its own.

FRANKL'S LEGACY: OPEN QUESTIONS AND NEW DEVELOPMENTS

To submit Frankl's text to such detailed criticism is itself a back-handed tribute to the greatness of *Gothic Architecture*. Frankl's Hegelianism may by-pass the contradictions of real history, but it is still, with all its insights, the only concerted attempt at a cultural history of Gothic. Frankl's 'principles' may turn out to be little more than descriptive devices, but no scholar has come closer to isolating the essential visual characteristics of Gothic architecture. All great works attract, with time, criticism and revision; but when the blemishes to Frankl's edifice have been scraped away a colossal achievement still remains. It is therefore ironic that we have had to wait until this new edition of *Gothic Architecture* for a proper appreciation of Frankl's extraordinary contribution to the historiography of Gothic. The neglect may be attributed to the vagaries of intellectual fashion and the misfortunes of timing. When *Gothic Architecture* appeared in 1962 it could hardly have encountered a less sympathetic audience. In the mid-1960s its Anglo-American readership, traditionally sceptical of theory and grand explanatory systems, was in the grip of a new post-war positivism, and found Frankl's intellectual structures opaque and old-fashioned. One American reviewer was amazed that 'it contained so much more theory than most of the volumes in the Pelican History of Art series'.[69] Robert Branner thought that the book should 'bear the imprint date not of 1962 but 1920', a shot which provoked a sharp response from Nikolaus Pevsner.[70] Despite (perhaps *because of*) its intellectual demands and its outstanding command of evidence, *Gothic Architecture* did not, therefore, initiate a new approach to the study of medieval architecture. The distinguished exception was Jean Bony, who in 1976 adopted Frankl's concept of diagonality as the starting point for his analysis of Early Gothic rib vaults.[71] Frankl's scholarship had, of course, made its mark in Germany long before the publication of *Gothic Architecture*. His emphasis on interior space as a category of analysis was reflected in the work of Pevsner and Giedion;[72] and the first book of his most distinguished pupil, Richard Krautheimer, on the architecture of the friars in Germany, explicitly acknowledged the influence of Frankl's theoretical principles.[73] But Krautheimer's interests soon turned from Frankl's historicism to a more empirical history which emphasized precisely those approaches which Frankl sidelined. Krautheimer's 'architectural iconography' centred on liturgy and function, on the concerns of the patron, on the specific associations of meaning surrounding specific – archetypal – buildings.[74] Here Frankl's 'symbols of meaning' bore much richer fruit than his 'form symbols'.

The direction of Krautheimer's research is symptomatic of Frankl's impact on the historiography of Gothic architecture since the last war. Paradoxically, the territory Frankl staked out as his own has been the *terra incognita* of most recent scholarship. In the last thirty years the starting point for research has been precisely in those areas ignored by Frankl.

The Monograph

Frankl never wrote a major monograph on a Gothic building, yet the architectural monograph, 'the biography' of a church, remains one of the most flourishing categories of medieval architectural history. Based ultimately on the

forensic techniques pioneered by Robert Willis in his classic accounts of the English cathedrals, and on the deductive methods of analysis laid out by the French *archéologists* of the Ecole de Chartes, modern masters of archeological analysis, among them Arnold Wolff and Richard Hamman-Mac Lean, as well as John James and Jan van der Meulen, have found the monograph a congenial vehicle for exercises in the most precise and detailed examination of a great church's fabric. From moulding profiles, stonecoursing, building breaks and the smallest Morellian details, the single Gothic church can be dismembered into complex phases and 'campaigns' of construction.[75] The dangers of fragmentation posed by this method are obvious, but the monograph has proved to be a versatile instrument for exploring broader questions of style and meaning. Robert Branner's study of Bourges Cathedral, Stephen Murray's monographs on Troyes, Beauvais and Amiens, and, most recently, Christoph Brachmann's study of Metz and its churches, have used the conventional monograph as a platform for addressing a range of issues – on meaning, imagery, urbanism, function and broad stylistic contexts.[76] Indeed, there is no sign that the analysis of Gothic around a single major monument is on the decline. Quite the contrary, multi-author publications, in England led by the British Archaeological Association's *Conference Transactions*, have allowed single buildings to be scrutinized from a variety of critical angles. The explosion of interest in archaeology in the last twenty years has served even further to focus attention on the material analysis of architecture, and to encourage autopsies on the fabric of single, complex structures.[77] Combined with new investigative techniques, such as dendrochronology and photogrammetry, the modern monograph offers the most empirical and 'scientific' insights into the making of individual buildings and their often complicated histories.[78]

The Gothic church as a Gesamtkunstwerk *and the notion of 'artistic integration' in Gothic architecture*

Paradoxically, the monograph's concentration on a single building opened it up to new synthetic approaches which have broken out of the traditional limits of the monograph and extended the perspectives of specialized research. These developments have come from an unlikely quarter. In the years immediately after the Second World War, when the brutalities of recent history had made the notion of the spiritual cathedral especially attractive, Hans Sedlmayr and Otto von Simson put forward the idea of the Gothic cathedral as a mystical *Gesamtkunstwerk*, as a totality of all artistic media, whose meanings resided in the experience of the building as a *whole*.[79] This theological presentation of the cathedral as an integrated statement of figural art and architecture found little favour with contemporary scholarship, partly because the specialized disciplines ('architectural history', 'sculptural history') were still happily exploring their own territories, and partly because the 'integrated' approach of Sedlmayr and von Simson was too generalized to stand up to specific historical criticism. Sedlmayr's enterprise, in particular, foundered on its heroic, but flawed, attempt to draw every aspect of medieval culture – from furnishing to liturgy, from literature to stained glass – into the mystical embrace of the cathedral. Nor has von Simson's understanding of French Gothic as the manifestation of a neo-platonic cosmology stood the test of time. But to the present generation of art historians, intent on rescuing the cathedral from its archeological and stylistic isolation, the idea of the Gothic church as 'artistic integration' seems to offer a way back to the original cathedral in all its multiplicity.[80] It is equally plain that the monograph, and not the synoptic format of Sedlmayr and von Simson, offers a more manageable framework for this kind of 'synthetic' history. And when this inclusive method is refined by developments in recent critical theory, coming largely from the neighbouring fields of literature and history, then the combination of 'integrated' method and monographic focus seems to represent a real breakthrough in the historical analysis of architecture. In Madeline Caviness's history of Saint-Remi at Reims and Saint-Yved at Braine, and in Paul Binski's monograph on Westminster Abbey, the modern scholarly boundaries between various media – architecture, sculpture, painting and stained glass – boundaries which reflect nothing more than the artificial requirements of academic specialization, have been dissolved, and with illuminating results. The building is now seen as a totality of art forms and activities, all connected to a web of institutional motives and pressures, and all developing – sometimes together, sometimes as an unplanned accumulation – in response to the cultural habits and political intentions of their users.[81] This history, diachronic in its response to changes in artistic fashion, synchronic in its interconnexions between many forms of cultural expression, is usually concentrated within the narrow compass of a single building. But it can also shed light on a much wider range of issues: on the relations of style to local traditions, on the uses of architecture for liturgical performance and varieties of devotion, and on the social and ideological context which shaped the great church. Andreas Köstler's recent monograph on the church of St Elizabeth at Marburg addresses a similar set of integrated problems but with the more specific aim of highlighting a widespread phenomenon in later medieval liturgy and 'cult management': the tendency to 'aestheticize' the church interior.[82] According to Köstler, High and later medieval churches show opposing but related tendencies – on the one hand denying the laity close access to liturgical and para-liturgical performances, and to relics and reliquaries, but, on the other hand, and by way of compensation, giving these devotional focuses an increasingly visual emphasis through decorative splendour and theatrical forms of exhibition. The 'real' withdraws behind an aesthetic carapace which conceals the increasing remoteness and privacy of later medieval habits of devotion.

There are, of course, dangers in this new 'holism', not least in reconstructing a coherence that did not exist, or in reading a set of conscious intentions and 'programmes' into what were, in reality, the chance accumulations of history.[83] But the merits of an 'integrated' conception hardly need underlining. Besides rescuing scholarship from the fragmentation of media-based specialization, it reminds us that churches were settings for diversified rituals with social, political and religious dimensions, and that the art forms

which the church brought together celebrate the variety and complexity of medieval creativity, not its obedience to some uniform principle. One recent study applies this holistic technique beyond a single building to a whole class of architecture: Johannes Tripps's examination of the 'theatrical imagery' (*handelnde Bildwerk*) of Gothic churches – those moveable Palm Sunday Christs, or sculptures of angels or the Virgin of the Assumption, that were wheeled through the late Gothic church, or dropped from its vaults, in a liturgical re-enactment of biblical narrative that transformed the whole church into a living theatre.[84]

Regional and National Studies

Frankl's pan-European vision depended on the mastery of a body of regional and national studies of Gothic architecture, but his internationalist approach quite properly pointed to the persistent dangers of post- nineteenth-century nationalism, with its search for ethnic identity and its tendency to identify artistic 'schools' around modern political boundaries. Gothic architecture raises special problems for the sub-discipline of 'artistic geography'. A pan-European phenomenon, its identity was defined as much by ideals of family, estate, class, city and religion as by ethnic or national boundaries. It often served a multi-ethnic population, and benefited from a patronage that was international, or at least para-regional, in its outlook. The dissonances between modern political boundaries and real *Kunstlandschaften* are especially sharp in the territories of 'Central Europe'. A recent study of towns in 'medieval Hungary' ignores the thriving settlements of Transylvania, presumably because that Hungarian province is now part of Romania.[85] The latest general survey of Gothic architecture in Austria confines its consideration of Hapsburg patronage to the modern boundaries of the Austrian Republic, yet many of the most important Gothic buildings begun in the fourteenth century under Hapsburg initiative are to be found in modern-day Switzerland and south-west Germany, buildings whose connexions with their 'Austrian' counterparts would repay close examination.[85A] The problem is particularly acute for the 'artistic geography' of medieval Poland. The recent magisterial survey of Gothic architecture in Poland, *Architektura Gotycka w Polsce*, has to accept the modern Oder–Neisse line as the western boundary of the nation state, at the same time admitting that it has nothing to do with the real cultural situation along the Oder in the later Middle Ages, where Germans and Poles shared their churches and freely moved across modern boundaries.[86] This is not to insist that modern regions, especially when loosely defined, can not correspond to distinct cultural entities in the Middle Ages. Thus Recht's important book on the Gothic of the Upper Rhine neatly unfolds around the dominating influence of the cathedral of Strasbourg, while Branner's pioneering study of Burgundian Gothic architecture examines a constellation of art-historical influences – from the counts of Nevers and the abbots of Cluny to the counts of Burgundy and Champagne – which happen to coincide in and around the modern territory of Burgundy.[87] Even those regional inventories which have no pretensions to relate to medieval political entities, such as the ongoing series of *Les Monuments de la France gothique* (under the direction of Anne Prache), or the long-standing *Congrès Archéologiques*, provide an invaluable record of the monuments, and reveal distinctly 'local' styles of architecture. Particularly informative are those studies which trace the transformations of style from one region to another, and the creation of a new *Kunstlandschaft*, in a context foreign to the ambience of the parent style. In this respect, Christian Freigang's monumental study of the fortunes of Parisian Rayonnant in the south of France in the second half of the thirteenth century is a model for any student wishing to understand, not only the migration of forms, but the multiple factors – financial, ideological, personal – which shaped their reception.[88] At a time when the idea of the marginal is enjoying exceptional critical attention, Freigang's study, and Binski's examination of Parisian influence at Westminster Abbey,[89] have been important in questioning an older, Parisian-centred conception of thirteenth-century Gothic, advanced in the post-war years by Branner and Bony.[90] Instead of a centralized Parisian patronage, often called a 'court style', imposing its architectural and political value system on the 'courts' of western Europe, Freigang and Binski paint a more fragmented picture, where local imperatives guarentee a rich, sometimes ambiguous, diversity of forms and meanings.

As far as national surveys are concerned, there is no question that the rise of Gothic in the thirteenth and fourteenth centuries – especially in England and France – did coincide with the emergence of nation states and their centralized apparatuses of government. Indeed, centralized and permanent architectural institutions – 'offices of works' – grew directly out of centralized organs of government, and both worked hand in hand. Jean Bony's analysis of the English Decorated style, and John Harvey's studies of the English Perpendicular, both in terms of 'court' styles developed first in metropolitan circles and then imposed on the country at large, point, therefore, to real parallels between national institutions and stylistic diffusion, despite the problems implicit in the unitary notion of a 'court' and the tendency to oversimplify the exchanges with the 'provinces'.[91] It is obvious that the correspondences between 'court style' and 'national style' cannot be pressed too far, especially when – as Bony showed – the English Decorated, with its roots in a London court milieu, emerged later in the fourteenth century as a major inspiration for continental Late Gothic. By elevating the Decorated to the status of fountainhead for the Late Gothic of France and Germany, Bony transferred the paradigm of French thirteenth-century cultural hegemony to fourteenth-century England, and re-arranged the conceptual boundaries of national and Late Gothic styles. 'German' Gothic, corresponding as it does to no single political entity, presents a more delicate problem of definition, but Nussbaum's exemplary study of Gothic architecture in the Empire sensibly sets his subject in the context, not of a fictitious medieval 'Germany', nor even of the Holy Roman Empire, but of the integrating forces of Christian culture.[92] Medieval 'France' is also an anachronism needing careful definition. Bony's magisterial vision of French Gothic in the twelfth and thirteenth centuries by-passed the problem of historical geography by ignoring the political,

the institutional and even the theological; it centred around the 'accidents' of the masons' choice and invention, and the exhilarating demands of modernity. French Gothic, for Bony (as it was for Frankl), was a progressive style, a style of the avant-garde, but it was also a laboratory of diverse ideas, all of which Bony lucidly organized into trends and movements. Here precisely was that sense of experiment, of the unexpected mutation of the eccentric into the orthodox, and *vice versa*, which Frankl's unitary system had levelled away. In its eloquent analysis of architectural style as a set of aesthetically expressive forms, Bony's book has never been surpassed.[93]

The 'Material Picture': Techniques, Production and Structure

The material hinterland of the Gothic cathedral, the substrather than the superstrueture of the Gothic style, has been the object of intense research for over a quarter of a century. The growth of neo-Marxism in Germany in the 1970s found the material culture of the lodge and the social conflicts of the building site a welcome antidote to the idealist *Kunstwissenschaft* of the pre-war period and the positivist monographs of the 1950s and 1960s. Martin Warnke reconstructed a 'sociology' of medieval architecture from the primary sources – in which the great church and its liturgies were seen not, as Frankl envisaged them, as the realization of an inner unity, but as the result of a hard-won consensus between conflicting social groups, joining forces to create a building which aesthetically transcended the interests of any one faction.[94] The mechanics of this cooperation, as revealed in the organization of the building site, the financing of the structure, the responsibilities of clerical patron and lay architect, and the logisties of thc workforce, is the subject of Wolfgang Schöller's formidable study on the legal organization of cathedral building, with special reference to Germany and France.[95] Schöller's argument had no ideological thrust, but Barbara Abou-el-Haj applied Warnke's dialectical sociology to the building history of Reims cathedral and concluded that the process of cathedral building may have created a temporary consensus, but it also broke it. The higher clergy of some of the High Gothic cathedrals of northern France provoked revolt from their citizens by their exorbitant taxation for building funds and their ruthless suppression of urban liberties.[96] In the particular case of Chartres, Jane Welch Williams argued that the cathedral, contrary to all appearances and assumptions, was not the product of social harmony between burgher and bishop; it took shape against a background of anti-clericalism and intense urban strife. Its famous 'trade windows', supposedly donated by the guilds of Chartres, most probably owe their existence to the cathedral chapter, who manipulated their subject matter in order to stress the duty of thc new commercial classes to make offerings in money and kind to the cathedral. In portraying an ideal Christian soeiety uniting cleric and citizen, and at the same time concealing real social antagonisms, the windows of Chartres are, in the literally Marxist sense, 'ideological' (promoting false consciousness).[97] The financial infrastructure of Gothic architecture was also the subject of Henry Kraus's vivid study of European cathedrals, though here he laboured under the old illusion that the bourgeoisie were principal contributors to cathedral construction. In fact, the vast agricultural wealth of northern France, which he rightly saw as the motor for the upsurge of cathedral building, was controlled largely by an ecclesiastical aristocracy of bishops and their chapters. The cathedrals were, in most senses, the children of the clergy.[98]

These Marxist re-evaluations of the 'spiritual cathedral' went hand in hand with a Marxist examination of the methods of cathedral production. Dieter Kimpel, in a series of important articles on the building of Amiens cathedral, saw a radical change taking place in the cathedral workshops of the early thirteenth century in techniques of stone-cutting and assemblage – productive changes which altered the actual appearance of the finished building. New methods of mass-producing cut stone in the quarry and lodge, and of storing it in the lodge over the winter months, not only made construction cheaper and quicker, but changed the appearance of the interior. By separating the production and the installation of the cut stone (that is the stone 'skeleton' of the cathedral – its shafts, responds, ribs and arches) from the cutting and assembling of the 'filler' walls, the 'skeletal' quality of Gothic, particularly in the early Rayonnant style, became a factor that was built into its making. The increasingly delicate armatures of thirteenth-century French Gothic proceeded, therefore, not just from the aesthetic preferences of the architect and patron, but from new techniques of production.[99] Kimpel also pointed to Amiens as the earliest instance of the extensive use of stones of standardized size and shape. Bony, however, demonstrated that such proeedures have (an admittedly rare) precedent in the late eleventh century, in the standardized stonc blocks making up the incised cylindrical piers at Durham.[100]

The role of the architect in Gothic design is a field less prone to ideological argument. The patient archival researches of such scholars (for the British Isles) as John Harvey and Howard Colvin have revealed a wealth of information about the careers of architects and the high value put on their skill and expertise.[101] In the light of that massive evidence, few would now follow John James's eccentric claim that Chartres, and other High Gothic cathedrals, were not designed by architects, – i.e., a single controlling intelligence – but by bands of wandering 'contractors'. Nor would they subscribe to his view that the church was an *ad hoc* amalgam of 'campaigns', in which the 'contractors' periodically returned to the same site and added their contributions, without regard to an overall design.[102] In his demotion of the architect, James may have (unintentionally) added colour to the notion of the 'death of the artist' fashionable in post-structuralist circles in the 1970s and 80s, but no serious scholar of the masons' lodge doubted the importance of the master mason as the guiding intelligence of the work. What interested them was *how* the architect conceived and executed the building: his tools, his training, his uses of geometry. At the High Gothic end of the picture the creative talents of Villard de Honnecourt and his famous portfolio were examined in minute detail and found wanting. Villard, it is now recognised, was not an architect but a mysterious amateur (perhaps a metalworker?), an admirer of the

mechanics of architecture and its sister arts.[103] At the other end of our period, the various 'treatises' by German Late Gothic architects, such as Lorenz Lechler and Matthäus Roritzer, provide rich insights into the mason's craft, explored first by Paul Booz, and then, more fully, by Ulrich Coenen and Lon Shelby.[104] Shelby's familiarity with the German manuals allowed him to draw a crucial distinction between the Euclidean geometry of the schoolroom and the 'constructive' and purely practical geometry of the mason's lodge, and thus to undermine ambitious attempts to promote the architect to the status of intellectual.[105] In the absence of the forthcoming publication of Peter Kidson's monumental study of medieval masonic geometry, the most ambitious account of geometry and numbers in medieval architecture still remains the extensive articles by Hecht.[106] Primary evidence for the master masons' geometrical skill comes from drawings, some deriving from the Reims workshop in the thirteenth century, published by Branner and Murray,[107] but most connected to the German lodges of Strasbourg, Ulm and Vienna. The two latter collections have been published by Koepf,[108] and much of the Strasbourg material by Recht.[109] Meanwhile, Pause has devoted a long study to architectural drawing in Germany[110] and Bucher published drawings by Hans Böblinger, though his projected volumes on all the German manuals have not so far materialized.[111] In Italy, the architectural drawing showed more 'painterly' characteristics, and Middeldorf-Kosegarten has assessed the possible uses of such drawings as those at Siena and Orvieto in the peculiarly Italian mode of architectural competition, as well as pointing to their status as visual documents having a semi-legal force.[112] If the architect stamped his personal qualities on the drawing he may also have revealed himself in the templates for moulded stonework that he gave to his masons. To this Morellian world of obscure but significant detail Richard Morris has devoted a lifetime of study, assembling at Warwick University an archive of continental and English profiles, and building up a database of evidence vital for the identification, if not of individual architects, then of groups or 'schools' of masons.[113]

The architect's skill depended on the reliability of his tools and the quality of his materials. Shelby contributed an important paper on masons' instruments,[114] and Chapelet and Benoit's collection of studies on the use of stone and metal in medieval building indicates the recent strength of interest in a subject that attracts a variety of disciplines, from ethnography to metallurgy.[115] The vital importance of quarries, not just for good building stone, but as training grounds for masons and masonic factions, is the subject of much of Evelyn Welch's recent analysis of Milan cathedral.[116] Many of these issues, from building organization to planning and construction, are discussed in detail in Binding's authoritative compendium on the building trade in the Middle Ages.[117] None of these works, however, discuss the structural behaviour of medieval buildings and its impact on design. The statics of the great cathedrals has been a bone of contention between 'rationalists' and 'anti-rationalists' for over a century, and the subject of a long-standing scholarly cooperation between art historians, architects and structural engineers. Fitchen's classic study of vault construction, which appeared in 1961, remains unsuperseded,[118] but there was still much work to be done on the actual statics of the Gothic structure. Most of the running in this field has been made by two scholars, both of whom are structural engineers: Jacques Heyman, who developed a theory of 'hinging' in relation to Gothic structures, and who plotted their stress patterns mathematically, and Robert Mark, who used photo-elastic model analysis to reveal strain patterns in models of cross-sections of cathedrals under simulated loading.[119] Intriguing though their conclusions are, especially in their vindication of nineteenth-century intuitions about the structural behaviour of the cathedrals, their precise analysis of force patterns in no way corresponds to the rough-and-ready knowledge of statics possessed even by the best Gothic engineers; and their mistaken diagnoses of the causes of structural collapse in certain medieval buildings, such as Beauvais, shows that a close examination of cracks and repairs in the building itself is sometimes more revealing than a 'scientific' reconstruction of stress patterns.[120]

The sheer diversity of these 'technical' and 'material' problems, and their interdisciplinary overlaps, pose serious challenges to any attempt at synthesis. One solution is a multi-author volume, such as the stimulating and well-illustrated collection of essays assembled by Roland Recht.[121] Another, less likely, option is to find a scholar with an equal familiarity with art history, mathematics, physics and chemistry. In Werner Müller's formidable study of Gothic building technology, many of the issues raised in this section – the uses of geometry and of drawing, the manufacture of the building parts and the technical problems of structure – are discussed with the insight of a scientist (a chemist) and the knowledge of an architectural historian.[122]

Meaning and Milieu

The *Gesamtkunstwerk* of the cathedral has made it particularly susceptible to symbolic reading, especially of a theological kind. Erwin Panofsky's correlation between the guiding principles of High Gothic and the 'mental habits' of the scholastic theologian, represents, with Frankl's *Gothic Architecture*, one of the last attempts of Hegelian cultural history to translate 'style' into 'mind' and to trace the theological implications of the cathedral back to a single unifying force at the centre of medieval culture.[123] Hans Sedlmayr's sensational book on the Gothic cathedral, published in 1950, came from the same intellectual milieu – the *Geistesgeschichte* of Max Dvořák and the *Strukturforschung* school in Vienna, with its belief in the power of 'form symbols', of style and composition, to convey the essence of a culture.[124] One of Sedlmayr's more influential insights was his suggestion that the Gothic cathedral was a literal copy of the image of the Heavenly Jerusalem as described in the Book of Revelations, largely because of the dominant luminosity of its stained glass. This focused his attention on Suger's choir at Saint-Denis, where Panofsky had advanced his persuasive theory that the final form of the choir was indebted to Abbot Suger's infatuation with the 'light metaphysics' of Dionysius the Pseudo-Areopagite.[124A] Here,

instead of the vague parallels of Hegelian *Geistesgeschichte*, was a convincing literary and theological source for what was seen as the essence of the Gothic style – its luminosity and (springing from it) its lightness of structure. At a stroke, neo-platonism replaced the rib vault in the genesis of Gothic architecture; the driving force of Gothic could now be found, not in triumphs of structural engineering, but in the direct translation of theology into architecture. Not surprisingly, much of the iconography of Gothic architecture in the aftermath of Sedlmayr's and Panofsky's work concentrated on Saint-Denis. Otto von Simson's erudite study used Suger's choir as the foundation for his conception of Gothic as a marriage of 'Pseudo-Dionysian light metaphysics' and the harmonic ratios of musical cosmology.[125] And Saint-Denis continues to be a magnet for explanations of Gothic as the embodiment of neo-platonic mysteries, in both American[126] and German[127] research. Recent contributions by a number of German seholars have pointed to Suger's liturgy of the consecration as critical evidence for the abbot's overriding concerns for neo-platonic resonance and biblical symbolism in his new choir.[128] But this equation of Gothic light with Dionysian light has not gone unchallenged. Martin Gosebruch questioned it in his review of Sedlmayr's book in 1950,[129] and in the 1980s it came under sustained attack. Martin Büchsel proposed a more comprehensive reading of the Gothic church as *Ecclesia universalis* rather than as the Heavenly Jerusalem and pointed to the traditional, non-Dionysian, sources for Suger's symbolism.[130] Peter Kidson denied the influence of the Pseudo-Dionysius in any specific sense on Suger or on his choir, and stressed the pragmatic and propagandist nature of the abbot's patronage,[131] as well as the craftsmanlike contribution of the architect to the design. His 'despiritualized' and anti-intellectual picture of Suger is vividly accentuated in Grant's recent biography.[132]

The concentration on Saint-Denis and neo-platonic light symbolism, begun by Panofsky and reinforced by Sedlmayr and von Simson, set a narrow agenda for the 'iconography' of Gothie in the post-war years. An escape from its theological straightjacket was provided by Marxist and Marxist-influenced historians in Germany in the 1970s and 80s, who revived Richard Krautheimer's and Günter Bandmann's suggestive notion of the architectural 'copy'. In his classic article of 1942, Krautheimer offered iconographers of architecture the idea of the 'copy' as a vital method for unlocking meaning within form.[133] By copying certain venerable archetypal structures, patrons could surround their own buildings with the associations and prestige of the original. The 'copy' need not be exact; just enough of the original – its general shape or its liturgical disposition – would trigger the appropriate response. By linking symbolism with the perceptions of the medieval onlooker, Krautheimer found a way of understanding the loose associations between form and meaning in the Middle Ages, and relating meaning to tradition and patronal intention. Though Krautheimer confined himself to early medieval architecture, his notion was rich in possible applications to later periods. It struck at the whole idea of Gothic as an avant-garde achievement shaped largely by architects, and presented instead a potential view of Gothic as a patron's style, dependent on tradition, locality and history. Hans-Joachim Kunst adapted it to Marxist social history via his theory of 'architectural quotation'. Kunst posited a dialectical relationship between a building's use of novel (modern) forms and its reliance on meaningful 'quoted' forms, and he interpreted those quoted forms in terms of political rivalries and institutional power struggles, particularly in the High Gothic cathedral of Reims.[134] In his stimulating study of friars' architecture, Wolfgang Schenkluhn used this method to correlate the rivalries between Dominicans and Franciscans, with their self-consciously different modes of architectural design.[135] In Kimpel and Suckale's magisterial history of French Gothic architecture the idea of architeeture as a socio-political language becomes a vital tool in embedding Gothic in its historical milieu – thus rescuing the whole subject from Jean Bony's beguiling formalism. The contrast in method between the two books, appearing within two years of each other, is instructive. Where Bony sees his buildings as autonomous forms, freed from the trivial constraints of politics, economics, and function, subject only to the creative and progressive genius of their architects, Kimpel and Suckale present a more traditional Gothic, responding to the needs of its patrons and anchored in its specific political, economic and social conditions.[136] This historical reading is largely dependent on the authors' 'iconographic' conception of Gothic as a language. By copying the idioms of a significant model, patrons, through their buildings, can signal an affiliation with a church province, or a religious order, or symbolically 'appropriate' and supersede the earlier forms of churches belonging to rival institutions. There was nothing intrinsically new in this method, though it tallied with the popularity of semiotics in the 1970s and 1980s and the belief that written and spoken language offered an explanatory model for all systems of communication, including the non-mimetic arts of music and architecture.[137] What gave it such resonance was its intelligent application to a style at once familiar and historieally complex.

Particularly susceptible to these semiotie approaches are the strongly 'ideological' architeetures of the reforming orders: the Cistercians and the friars. Here the classical notion of architectural 'decorum', the suitability of forms to the aims and ideals of the institution, is critical. Peter Draper has applied it to good effect, not primarily to monastic architecture, but to the diversity of styles employed by the English cathedrals of the early thirteenth century. The diversity, he argues, does not derive solely from the free invention of the architect and the variety of his models; it is the result of the patron's conscious choice of a style or 'manner' for ideological reasons.[138] Peter Kurmann and Dethard von Winterfeld argued for similar restrictions on the architect's range of choice in their analysis of the thirteenth-century master mason, Gautier de Varinfroy. His ability to alter his style to fit the occasion of the commission suggests that medieval architects were able to marry 'modes of design' to the demands of the building type or the patron.[139] I argue for a similar use of decorum in Charles IV's interventions in Prague Cathedral.[140] But it is in the controlling architectural policies of the reforming orders that programmatic meanings are most obviously allied to architectural form. Peter Fergusson has used Krautheimer's model of 'the copy' to

illuminate the Italian, specifically Roman, connexions in early Cistercian architecture in England.[141] Schenkluhn's iconographical analysis of the friars' architecture in Europe uncovers the programmatic debt to the Cistercians, but also, and more surprisingly, reveals a conscious alliance with Parisian Rayonnant, an alliance which underlines the character of the new orders as theological as well as demotic.[142] The interest in womens' studies in the last twenty years – an interest which has transformed our conception of late medieval devotional art – has rarely penetrated into the largely 'masculine' world of the masons' yard and the schoolroom. But Caroline Bruzelius's investigations of womens' monastic architecture, particularly of the Clarissan order in Naples, raise intriguing questions about the relationship between architecture and specifically female religious practice. What were the economic circumstances of the convents, and how did these effect the environments in which the nuns lived? How did their devotional practices differ from their male counterparts, and are these differences reflected in architectural form? Most importantly, how did the strict demands for female enclosure effect the decoration of their churches, and their spatial divisions?[143] Many of these questions have been answered in Hamburger's perceptive study of art, architecture and devotional life in nunneries in the Empire.[144]

The functional and ideological imperatives of the reformed orders underline how easily an 'iconographical' analysis of medieval architecture moves between 'principles' and 'programmes' on the one hand, and liturgy and function on the other. Banished for over a century to the remoter fringes of ecclesiology, liturgy – meaning, in the broadest sense, the ritual of the church's services and any other form of corporate or public worship – is now coming into its own as a critical link between precept and performance, ideology and form. Recent developments in the analysis of medieval imagery and its relationship to changes in the nature of the Mass, especially around the doctrine of transubstantiation, have focused attention on the architectural setting of the Mass and its audiences;[145] and architectural historians are beginning to locate that public-orientated imagery in the whole liturgical topography of the church. In England, Draper's liturgical analyses of Durham, Ely, Wells and Salisbury have thrown new light on spatial enclosure and applied decoration, as well as bringing the empty shell of the architecture alive as the liturgical theatre for Masses, processions and relic cults.[146] In Germany, Renate Kroos has reconstructed the liturgies of Bamberg, Cologne and Magdeburg Cathedrals, while Tripps's analysis of theatrical imagery in a different class of church, the Late Gothic German parish and collegiate church, connects popular liturgies and late medieval lay devotion with a wealth of surviving architectural imagery.[147] Sturgis's unpublished work on the liturgy of the Early and High Gothic cathedrals in France serves, however, as a warning to the liturgical enthusiasts not to claim too much for function in the shaping of the great church. There is little evidence, he argues, that liturgical rites influenced the forms of architecture, and where ordinals survive it is clear that the liturgy adapted itself to the demands of the architecture and not vice versa.[148] Sturgis's reservations are timely, but to deny that liturgy played a role in the shaping of architectural space, or in architectural decoration, or, finally, in the authentic experience of the medieval building as a symbolic and aesthetic whole, would be to take a very narrow view of architecture. The real impediments to liturgical research are not these methodological reservations, but an ignorance brought on by a lack of sources. We cannot always reconstruct liturgical rites, nor situate them in the surviving buildings. Medieval churches, now denuded of their original altars, screens and fittings, give few clues as to their real day-to-day functions.

The Problem of Secular Architecture

Frankl was not alone in dismissing secular architecture from a developmental history of Gothic. The Middle Ages itself quite clearly placed church architecture at a higher level than all other kinds of building, and as if in obedience to that ruling, the historiography of Gothic has kept the genres separate ever since. Most surveys on Gothic architecture include a perfunctory section at the end of the text on secular buildings; while scholars who specialize in the history of castles or palaces hardly mention churches at all. Indeed, each field has its own academic journals and its own conference structures. But there is a growing disquiet at the artificiality of this division. On all sides, from historians of vernacular architecture to specialists in the history of urbanism and chivalry, it is becoming clear that secular and sacred overlapped at almost every level of medieval art and architecture.[149] How else can we explain a building as bizarre as Karlstein Castle in Bohemia, except in terms of sacro-political meanings?[150] How can we assess the 'spiritual' importance of Florence, Orvieto or Siena Cathedrals without recognizing their centrality in the celebration of republican virtue and civic independence? It is, significantly, in the city-states of Trecento Italy that some of the most important advances have been made in the dissolution of the sacred–secular barrier. Building on Braunfels's classic exposition of the Florentine city as a *Gesamtkunstwerk*,[151] a number of recent studies have examined the overlaps of personal piety, group identity and communal patronage in Florence,[152] Siena[153] and Milan.[154] Chiara Frugoni's classic work on images of urban experience, though not touching directly on architectural history, has given art historians an invaluable insight into the changing concepts of the city in Italy from Antiquity to the Renaissance, concepts which might help to re-define the cultural history of its architecture.[155] And in a series of distinguished publications, Marvin Trachtenberg has examined the urban planning of Florence as if it were a theatre of memory. Florence emerges as a totality – a theatrical ensemble, a kind of urban *mise-en-scène* – in which civic virtues and local pieties reinforce each other in a controlled kinetic experience.[156]

While the history of towns and 'urbanism' flourishes in France and Germany, no such ambitious attempts at interdisciplinary analysis have so far materialized for cities north of the Alps. But in a pioneering article, André Mussat examined the financial and physical relations between the French cathedrals and their growing cities,[157] and many of the approaches sketched there were fleshed out in

Erlande-Brandenburg's book on the social 'dynamics' of the cathedral.[158] Erlande-Brandenburg collects a wealth of miscellaneous material on the secular and sacred topography of the (largely French) city from the early to the late Middle Ages, with special insights into the relations between the city as a whole and what he calls the 'sacred city' – the semi-independent enclave of the cathedral.

The castle and its late medieval transformation into the 'castle-palace' has fared no better than the city in terms of inclusive art history. The military aspects of castles seem always to have kept them separate from churches in the minds of the historian. Some bizarre hybrids, such as Charles IV's Karlstein Castle[159] or the great headquarters of the Teutonic Knights at Marienburg,[160] have attracted the kind of 'symbolic' and aesthetic reading usually given to cathedrals. But even the papal palace at Avignon, ostensibly the most 'ecclesiastical' of these giant fourteenth-century enterprises, has resisted any systematic discussion of its sacred character. In this reluctance to cross the boundaries of architectural genres, Uwe Albrecht's work is a welcome exception. His broad syntheses of French palace architecture in the later Middle Ages, and his more recent examination of the whole history of the castle-as-residence in northern Europe, promise much, since they examine palace architecture as an economic, legal and social phenomenon, and they submit the elaborate late fourteenth-century palaces of the French royal family to the same kind of symbolic analysis as we would a great church. There is every justification for this trespass of method, for not only did the architects of Charles V and his brothers apply ecclesiastical Rayonnant to secular architecture with a skill and latitude never seen before; their patrons gave to palace building a numinous authority hitherto associated only with churches. In these fourteenth-century palaces, Albrecht reminds us, the 'religion of kingship' found its finest secular expression.[161]

CONCLUSION

Each age builds its own Gothic cathedral. Frankl's was appropriately 'architectural' – it structured its material around a carefully contrived theoretical armature, refined over many years, and offering – at least to him and other systematizers – an exhilarating glimpse of total history. Krautheimer remembers Frankl as a visionary, telling his pupils, only half in jest, that he wanted to find out 'how the Good Lord made all this'.[162] As a true Hegelian, Frankl needed to survey the apparently God-given aspects of a culture from one privileged centre. Such dreams of omniscience now seem almost touchingly over confident in a 'post-modern' world of relative values and uncertain identities. They convey something of the panoptic sensibility of the nineteenth-century museum or the library. In his espousal of theory Frankl has found no successor, at least in the field of medieval architecture. Architectural historians of the 1950s and 60s, schooled in the positivist optimism of the post-war years, were suspicious of the generalities of theory; they even shied away from the demands of the great synoptic survey. 'One good monograph' a Berlin professor assured me in the 1970s, 'is worth a dozen general stylistic histories'. More recently, postmodernist relativism and the notion of intellectual pluralism have called into question the whole idea of an 'objective' and 'scientific' truth as the aim of historical inquiry. In this uncertain climate, where any theoretical system clamours to be considered just as valid as any other, it is hardly surprising that historians have retreated into the rich, pluralistic particularities of the cathedral. Where art history in the last twenty years has been particularly fertile in advancing broader explanations of 'meaning and mind' – post-structuralist critical theory, feminism, visual semiotics, notions of audience and reception, the central and the marginal – the beneficiary has been medieval imagery, with all its semiotic implications, not the non-mimetic language of architecture.

But art history is more than a science of singularities, particularly when it confronts a phenomenon as culturally resonant as Gothic architecture. Gothic, like any other style, may be understood as a number of specific conjunctures and processes; but it also presents us with large scale problems of historical interpretation. Only two kinds of broad explanatory system have come anywhere near posing a theoretical alternative to Frankl's idea of Gothic. The first was the Frankfurt- and Marburg-based Marxist social history of the 1970s, with its critique of the 'spiritual' cathedral and its stress on social conflict and political authority. The failure of this approach to come to terms with the *primary* concerns of medieval religion, and its reluctance to acknowledge the proper relations between religious practice and social regulation, has left this Marxist position looking one-sided and doctrinaire.

The second, more pragmatic standpoint – one passionately advocated by Popper and Gombrich – entails shifting our gaze from holistic 'laws' and general processes to questions of individual artistic choice. Behind this strategy lies the belief in the artist or architect as a stable individual self, consciously acting as an independent agent. This assumption of the validity of artistic intention was seriously questioned in literary circles in the 1970s and 80s, and met with a sympathetic response from art historians eager to demolish the myth of the artist/architect-as-hero.[163] But to deny some irreducible core of individual purposeful rationality in artistic creation, to disregard areas of choice for which the artist/architect is solely responsible, now seems like pretentious artifice. Historical and common sense recognize a functional relation between makers and their making.[164] What was needed was a more searching definition of artistic intention, one which avoided the pitfalls of romantic individualism and speculative psychology. For Michael Baxandall, the process of rationality and reflection which we call artistic intention can be inferred by re-enacting, not so much the narrative of how the architect came to his design (that will remain opaque) but the circumstances out of which the design grew and the factors which were causally involved in its final shape.[165] How well this more refined idea of artistic intention can work for a general understanding of Gothic is demonstrated by Christopher Wilson's recent study of the Gothic cathedral. Wilson's masterly narrative unfolds according to at least one general rule: to retrieve 'some of the creative processes [of cathe-

dral architects] through reconstructing the situations of constraint and choice in which they worked'. Each major design is seen as 'an exercise in aesthetic and practical problem-solving'.[166] This form of explanation understands a finished piece of work by reconstructing a purposiveness or intention in it, and as such it deals – often illuminatingly – with its *causal* registers; it reconstructs 'reflective consciousness' – processes of thought. But Baxandall and Wilson would be the first to insist that such a way of thinking about objects is not *the* single proper way to look at works of art; there are many proper ways which in normal perception we combine.[167] The manifest diversities of the Gothic appeal to a whole range of perceptive concepts which go beyond reflective consciousness: to a comparative register of objects that may have no causal connexion with the work in hand (parallel or contrasting solutions); to an audience who were not involved in its making; to a set of functions or purposes which were irrelevant to the aesthetic solution, and to a string of consequences unseen in the original act of creativity.

It is here, in this extended list of approaches to the phenomenon of Gothic, that the sheer comprehensiveness and subtlety of Frankl's system comes into its own. Pevsner, in his forward to the first edition, praised him as 'one of the giants of German *Kunstwissenschaft* (literally, the 'science of art'), and the emphasis here on 'science' unlocks much of Frankl's achievement. In his long section in *The Gothic* on 'The Study of Art as a Scientific Discipline', he identifies his intellectual mentors – Burckhardt, Riegl and especially Wölfflin – as the first to take the critical step towards an 'objective', 'scientific' and value-free art history. It was the stated direction of Frankl's own rigorous *Kunstwissenschaft*. He recognized, of course, that there is no such thing as a totally disinterested enquirer, and that no enquiry can be wholly bias-free. But he held firmly to the scientific assumption that some things are verifiably true and others are not, and that the aim of the scientific historian is to arrive at conclusions that are verifiable and justified. In the concluding pages of *The Gothic* he recognized Gothic architecture as just such an objective fact which would, with proper scientific investigation, gradually yield up its secrets. It is 'an objective phenomenon' which 'remains what it was and is, while our attempts to reach its core from one side after another gradually leads us closer and closer to the truth'.[168] Much of Frankl's life was devoted to the patient search for the 'core' of Gothic. It was a quest disciplined by scientific method: the accumulation over many years of empirical data, the classification of that information, and the wealth of inference drawn from it to establish unrestricted general statements of a law-like character, statements which throw light on Gothic as a whole. With the benefit of hindsight, it is easy to see the holes in Frankl's edifice; to test, against the facts of the architecture itself, and against more recent developments in art theory, the 'verifiability' of Frankl's laws. What we cannot do is to deny the rigour of Frankl's 'science', the transparency and single-mindedness of his method, and the colossal achievement that it represents. When *Gothic Architecture* appeared in 1962 no one knew more than Frankl about the characteristics and idiosyncracies of actual Gothic buildings, taken across the whole of Europe (and this may still be true). His grasp of the raw material of the style was prodigious. Despite his deep emotional commitment to the aesthetic and spiritual qualities of Gothic, he could describe the most complex, and the most overwhelming buildings with the precision and clarity of a scientific report. Like a good scientist, Frankl also left himself open to scrutiny. There is nothing coy or obscure in the clarity with which, in the Introduction to *Gothic Architecture*, he lays out his theoretical categories, or, in Part Two of the book, the purposeful way in which he pursues those insights into the cultural history of the Gothic. Theory, for Frankl, was not private conjecture or loose prescriptive generalization, still less was it a 'metadiscipline' dedicated to philosophical abstraction. Theory offered him, in the strictly scientific and practical sense, a set of hypotheses at the service of a system of verification, a system which presumes a reciprocity between theory and fact.

The subtlety of Frankl's system lies precisely in that 'empirical reality' and its relations to our general inferences about style. When Frankl began his systematic study of the Gothic in the early 1940s he started, not with the buildings but with opinions about the buildings, and the result, twenty years later, was *The Gothic*, a monumental assemblage of comments and commentaries on Gothic from Suger to the middle of the last century. As we have seen, the project was part of his strategic quest for the general principles of Gothic, a search for the secret 'essence' of the style, embedded in its historiography. But in another sense Frankl's strategy implies a deep insight: that understanding architecture, and conveying what we think about architecture, are part of a single operation. Gothic does not come to us directly, as a 'pure' object of scrutiny, but through the filter of description, interpretation and emotional response. We do not explain architecture, we explain remarks about architecture – and every explanation of a thing includes or implies an elaborate description of it.[169] And it is the relationship between that description and the object itself, and of both to our inferences about its making, that constitutes a 'scientific' and 'verifiable' art history. Much of the value of *Gothic Architecture*, written while Frankl was finishing *The Gothic*, lies in its genesis in this rich and lively territory between architecture and concepts. For Frankl is constantly testing the reciprocal relationship between description, generalization and meaning on the one hand, and the actual buildings on the other. Description and concept can only work if they sharpen our insight in the presence of the building. Frankl handles all these areas of investigation, and their interrelations, with an authority and knowledge unmatched by any scholar of Gothic architecture before or since. The result is a heightened sense of the visual cogency of Gothic architecture and a profound understanding of its cultural context. No other synoptic survey of Gothic can match the wisdom of this indefatigable 'soldier of science'.

Editor's note to the first edition

PAUL FRANKL died in his 84th year on 30 January 1962. On 29 January he had closed the envelope which contained detailed comments on the sheets of plate proofs of this book. It is sad that a book in the progress of which he took so fanatic an interest should now have to come out as a memorial to him. He was – this can be said without hesitation – one of the giants of German *Kunstwissenschaft*. Never did he write a book or a paper without wanting to get at something more than facts. The essence of a style was what fascinated him from the beginning to the end. Five books stand out in his *œuvre* and they show the variety and yet the consisteney of his work. He had been a pupil of Wölfflin at the time when Wölfflin published his *Die klassische Kunst* and worked on his *Grundbegriffe*, i.e. when he was engaged on definitions of the High Renaissance and then of Baroque in contrast to Renaissance. This is where Paul Frankl started from. In 1914, nearly fifty years ago and before the publication of Wölfflin's *Grundbegriffe*, he brought out his *Entwicklungsphasen der neueren Baukunst*, taking up, modifying, and further elucidating the contrasts between the Renaissanee and the periods that followed and confining the investigation to architecture. Then in the years from the end of the First World War to 1926 he worked on the volume of Burger and Brinckmann's *Handbuch* dealing with the Romanesque style under comparable categories. The book is still the boldest synopsis of the style in existence. After this he felt ready to put on paper his categories, not only those so far demonstrated in his two masterly volumes. The result is the *System der Kunstwissenschaft*, published inauspiciously at Brno (outside Nazi Germany) in 1938 and little read. When he had left Germany and settled down at Princeton he went on working on a fourth *magnum opus: The Gothic; Literary Sources and Interpretations through Eight Centuries*. This nine-hundred-page history of what the Gothic style has meant to many writers in many countries came out very belatedly in 1960. Meanwhile I knew that he had intended to continue his Romanesque volume by a Gothic one and so, in 1947, I asked him to write the present book. It will, I hope, speak for itself as the work of a man of great scholarship, energy, and courage. That he was a perfectionist I can assure readers, and I want to place on record my gratitude to Mrs Jane B. Greene and Dr Weitzmann-Fiedler, who helped him (and me) through the perilous stages of interpretation and production. That he was also a most lovable man, the last chapters of this book at least will convey an inkling of.

Foreword to the first edition

THE subject of this volume is the meaning and the development of the Gothic style in medieval church architecture. Secular architecture will be touched on only in so far as it is dependent upon religious architecture. An account of the ways in which secular architecture created its own independent style would require a separate volume.

By style is meant a unity of *form* that is governed by a few basic principles. In this book these principles will be clarified by examples. The term style is applicable also where in a civilization meaning follows the same principles as architectural form. When we speak of art, we mean the particular interrelationship of form and meaning in which form becomes the symbol of meaning. So, in our particular case, the form of Gothic church architecture symbolizes the meaning of the civilization of the time.[1] In the second part of the book, something will be said about this, but the main subject of the first part is the history of the Gothic style, its birth, its development, and its ultimate perfection in the Late Gothic.

The consequence of this limitation in subject matter is that the choice of buildings to be discussed is largely restricted to those which represent the first appearance of each of the decisive forms and changes in form. No history of the Gothic style could analyse, or even enumerate, the many thousand buildings which exist or could be reconstructed. The selection that has been made here is designed as a guide. The literature that is quoted will lead the reader to buildings which are not mentioned, and to the controversies that surround them.

This book contains no discussion of the different interpretations of the Gothic style which have in the past supplanted each other, nor of those which, today, stand side by side, each with its own claim to indisputable truth. These are considered in another book, where the theories which are the basis of the present work are also more fully expounded.[2]

In planning this book I have tried to break away from the principles which characterize earlier books on the Gothic style. I have avoided setting up a standard for the style as a whole, such as Amiens Cathedral, so as not to give the idea that the value of every Gothic building is to be measured against this standard and that it is regrettable that this cathedral was not created simultaneously with the Gothic style, to be followed only by copies.

I have also tried not to overdo classifications. Since Thomas Rickman (1776–1841) analysed the structure of churches according to their significant members, and discussed each separately, this has been regarded as the only really scholarly method, because it is analytical and systematic. Indeed it is irreproachable. If, in historical research, we want a swift overall view of the development of porches alone, or buttresses, or plinths, or pinnacles alone – in short of any single member – then books based on clarification are very useful. However they do not give the history of the whole. They remain preliminary studies of the parts. An analysis of totalities leads to a grouping based on principles other than that of the classification of porches, windows, towers, etc. These members will appear in the chapter headings, but in their chronological sequence.

Thirdly, this book has avoided a division into chapters or groups of chapters, each dealing with a single country. This is another way of destroying the conception of a whole. When the reader has followed the history of the Gothic style in France right through to the last stages of the Flamboyant, he is expected, in a second group of chapters, to make a mental jump back to the earliest period, this time in England, and so on with each succeeding country. The Gothic style is a European phenomenon, and must be understood in its full breadth. An attempt to make a simultaneous survey of all the buildings erected at the same time leads to an advance by short steps in time over the entire field. This does not mean that national differences need be levelled out; on the contrary, in this way they may perhaps be more clearly visible.

In such an attempt it is natural that the emphasis should fall on those countries which proved themselves creative within the development of the Gothic style. There will be complaints of neglect from champions of various regions, but there are already enough monographs dealing with these. The present book cannot cover the entire field. I hope that, though it cannot offer *multa*, it may offer *multum*. The reason why the Gothic style in England is so briefly treated is that a separate volume is devoted to it within the Pelican History of Art.[3]

Fourthly, I have avoided threading together a series of monographs. In their own right, these make useful preliminary studies for a comprehensive history. In shortened form, in guide books, they are welcome to the traveller who requires a survey of the entire history of a building on the spot. But they are out of place in a history of style. The historian does not move in space: his aim is to move along the passage of time.

One of the tasks which particularly preoccupy the historian of art is to demonstrate the dependence of works of art on those that went before, and the influence of different regions or schools on one another. This approach to the problem is important and is a specifically historical one. What it must avoid, however, is giving the negative impression that there is nothing new under the sun. It has been rightly stressed that there is no such thing as passive influence; for those who are influenced always accept only what is in harmony with their nature, and out of it create something new. In this book the emphasis is laid on the ability to draw from the old a creative stimulus for the new. There are few periods in the history of art in which the logical sequence of the successive steps is so patent and so convincing. In this case, therefore, the historian can legitimately adopt a forward-looking position.

The central thread of this book is the logical process by which the changes from the Romanesque to the Gothic

style, and those within the Gothic style until its fulfilment in the Late Gothic phase, developed from one basic principle. But this central thread acquires substance and value only when it is the core round which a rope is wound. By this I mean that it must be shown in conjunction with the creative wealth of the spirit of the Middle Ages.

The nature of the reader's response to the wonders of the Gothic style will depend entirely on his own aesthetic susceptibility. Whether he happens to love the Gothic style as a whole, to hate it, or to be indifferent to it; whether he happens to prefer one building, one national variation in style, or one phase, to another; all this is his own personal affair, as it is also in the case of the author. Historians often believe that they must educate their readers, and so they leaven their work with their own highly personal judgements. It betrays a lack of understanding on the part of an eminent historian when he cannot refrain from making disparaging remarks about flying buttresses, or from expressing a preference for churches designed on the basilican principle (i.e. with aisles and a clerestory) over hall-churches (i.e. with aisles of approximately the same height as the nave); or when he expresses the opinion that a certain aisle should have been wider or narrower. It betrays a lack of understanding of the development of the style also when he persists in regarding the Late Gothic as decadent, or when, even if he does not set up a single building as the absolute standard, he clings to the belief that a single school or a single nation is unsurpassable. Every nation has always striven for, and often reached, perfection in the purely *aesthetic* sense. But perfection in the all-round *artistic* sense – that is, the perfect symbolization of the spirit of an age in its style – is different. To the artist or architect these things are indispensable: from the historian they require the ability to judge, not according to his own tastes, but through the spirit of the generation for which a building or a part of a building was created.

Gothic buildings were created through the combined work of many men. In addition to the architects, stonecarvers with their sculpture and painters, especially glass-painters, contributed to them. Villard de Honnecourt's illustrated sketch book for the use of the members of his lodge gives the impression that he was capable of directing and possibly of executing both sculpture and painting. We know of other masters who designed buildings and themselves carved figures for them. On the other hand the glass-painters seem to have specialized exclusively in their own field. Without their sculpture and painting, the great cathedrals, especially Chartres and Reims, are inconceivable. It is not the task of this book to discuss them: they will be dealt with in other volumes of the Pelican History of Art. Nor can decorative sculpture within the building, such as capitals and cornices, be fully treated here, though specialists like to use it in elucidating and demonstrating the history of any one building. Its development is closely linked with that of architecture. How far this is true of figure sculpture and stained glass as well will be touched on in the second part.

A period as long as that between Durham and Halle an der Saale, that is 1093–1530, requires division, not only into many small sections, but also into a few larger ones. I have followed the traditional divisions: Transitional, Early Gothic, High Gothic, and Late Gothic. Many positivists preach that a classification should be judged by the value of what it realizes in actual usefulness. It would be more proper to demand, not only that it be useful, but also that it correspond to the nature of the matter in question.

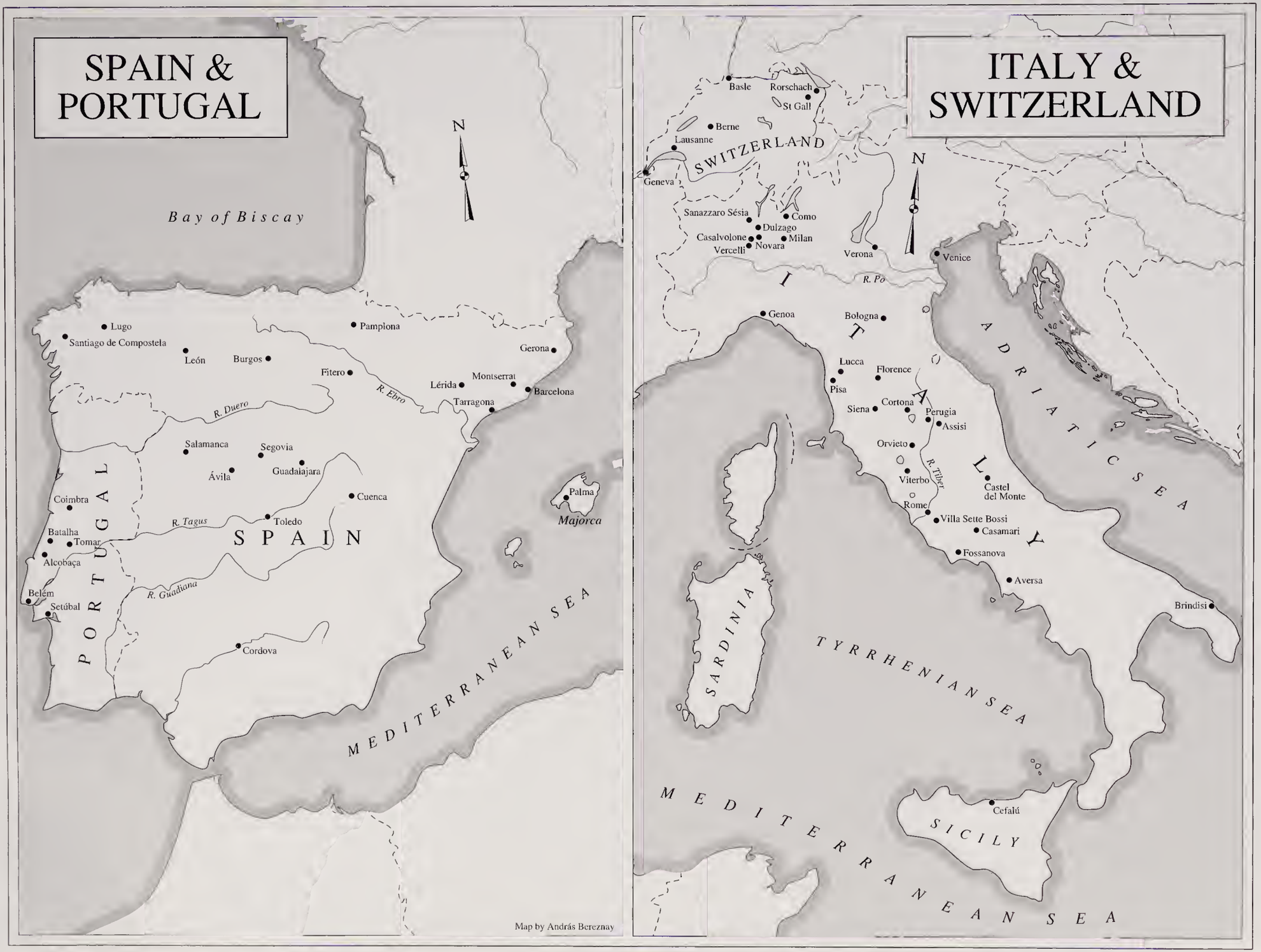
Many readers may demand a justification of the choice of the illustrations. One would of course like to show, in the illustrations, everything that is discussed in the text, but this is ruled out by restrictions of cost. One would like to take advantage of the opportunity to print as much as possible that has never yet been illustrated, but the reader will also expect to find things that have been published countless times elsewhere. So the selection remains a compromise, and the reader will ultimately have to turn to other illustrated books, because the fullest description cannot achieve what an illustration can convey at a glance, although of course everybody realizes that the finest illustration is no substitute for the impression produced by the original.

Finally, I should like to record my gratitude to the late Dr Aydelotte, who in admitted me to membership of the Institute for Advanced Study at Princeton, and to Dr Robert Oppenheimer, who has continued that membership; without them, after leaving Germany, I should not have had the opportunity to write this book. I also want to thank the editor, Professor Nikolaus Pevsner, for much assistance, particularly concerning English architecture, and Mr Dieter Pevsner for his translation of the German manuscript, a task which presented many difficulties.

To state once again the aim of this book: it is not a substitute for travel and the wealth of personal experience. It is a history – a view of things created, and more than that, an analysis of the essence of the Gothic style and of the ideas which inspired its development.


FRANCE & THE LOW COUNTRIES
NORTH SEA
THE NETHERLANDS
BELGIUM
FRANCE
Bay of Biscay
MEDITERRANEAN SEA
N
Inset
Bellefontaine
Beauvais
Soissons
St Germer
Cambronne-les-Clermont
Bury
Pierrefonds
Rhuis
Morienval
St Leu-d'Esserent
Longpont
Berzy-le-Sec
Royaumont
Senlis
Chars
Pontoise
Chaalis
Mantes
St Denis
Meaux
Poissy
Paris
Vaux-de-Cernay
Voulton
Provins
Chartres
Étampes
Utrecht
s'Hertogenbosch
Antwerp
Brussels
Louvain
Ypres
Tienen
Tournai
Villers-la-Ville
Liège
Aulne
Lucheux
Abbeville
Solesmes
Airaines
Cambrai
Amiens
Fécamp
Montivilliers
Caudebec
Rouen
Bernières-sur-Mer
Noyon
Coucy
Laon
Orval
Avioth
Beauvais
Braisne
Bayeux
Pont-Audemer
St Martin-de-Boscherville
Ouistreham
Jumièges
Reims
Lessay
Creully
Caen
Louviers
Senlis
Verdun
Metz
Coutances
Lisieux
Chaalis
Pontoise
Evreux
L' Epine
Châlons-sur-Marne
Pont-à-Mousson
Orbais
Meaux
Paris
Voulton
Provins
Toul
Strasbourg
St Nicolas-de-Port
Sées
Alençon
Chartres
Étampes
Troyes
Clairvaux
Sens
Brou
Laval
Le Mans
Cléry
Pontigny
R. Seine
Longuay
Murbach
Auxerre
Fontenay
Morimond
Vendôme
Vézelay
Mouliherne
Angers
St Thibaut
Dijon
Tours
Amboise
Nantes
Cormery
Loches
Bourges
Cîteaux
Nevers
St Jouin-de-Marne
Meursault
Airvault
La Ferté
Noirlac
Poitiers
Cluny
Celles-sur-Belle
Ambierle
Aigueperse
Riom
Lyons
R. Rhône
Limoges
Clermont-Ferrand
Angoulême
Brantôme
La Chaise-Dieu
Périgueux
Bordeaux
Rodez
Moissac
Mézin
R. Garonne
Villeneuve-lès-Avignon
Avignon
Albi
St-Gilles
Tarascon
Arles
Silvacone
Aigues-Mortes
Le Thoronet
Lérins Is.
Toulouse
Bayonne
Marseilles
Carcassone
Narbonne
Fontfroide
Perpignan
Map by András Bereznay


CENTRAL EUROPE
BALTIC SEA
N
Gdańsk
Malbork
Lidzbark Warmiński
Stralsund
Lübeck
Wismar
Schwerin
Neubrandenburg
Prenzlau
Stargard Szczeciński
R. Elbe
R. Vistula
Verden
Gransee
Chojna
Tangermünde
Berlin
Brandenburg
Osnabrück
Minden
Brunswick
Herford
Hildensheim
Magdeburg
R. Oder
R. Rhine
Münster
Xanten
Amelungsborn
R. Elbe
POLAND
Essen
Soest
Paderborn
GERMANY
Mönchen-gladbach
Halle
Leipzig
Fritzlar
Naumburg
Meissen
Görlitz
Wrocław
Cologne
Altenberg
Aachen
Marburg
Erfurt
Freiberg
Pirna
Heisterbach
Zwickau
Limburg
Annaberg
Friedberg
Kraków
Frankfurt
R. Elbe
Mainz
Prague
Kolín
Sedlec
Trier
Oppenheim
Bamberg
Karlštejn
Kutná Hora
Ebrach
Eberbach
Nürnberg
Amberg
CZECH REPUBLIC
St Johann
Speyer
Wimpfen
R. Vltava
Tišnov
Landau
Walderbach
Dinkelsbühl
Maulbronn
Regensburg
Schwäbisch Gmünd
Eichstädt
Prüll
Zlatá Koruna
Znojmo
SLOVAKIA
Košice
Hirsau
Calw
Esslingen
Nördlingen
Straubing
Ingolstadt
Herrenberg
Bebenhausen
Dingolfing
Passau
Zwettl
Tübingen
Reutlingen
Ulm
Landshut
Königswiesen
Imbach
Augsburg
Neuötting
Breisach
Blutenberg
Braunau
Enns
Vienna
Freiburg
R. Danub
Puchheim
Munich
St Valentin
Wasserburg
Weigersdorf
Lilienfield
R. Danube
Salem
Salzburg
Lébény
Pilis
R. Rhine
Ettal
AUSTRIA
HUNGARY
Pöllauberg
Ják
Heiligenkreuz
St Lambrecht
Map by András Bereznay


SPAIN & PORTUGAL
Bay of Biscay
N
Lugo
Santiago de Compostela
León
Burgos
Pamplona
Gerona
Fitero
Lérida
Montserrat
Barcelona
Tarragona
R. Duero
R. Ebro
Salamanca
Segovia
Ávila
Guadalajara
Cuenca
Coimbra
Toledo
R. Tagus
Batalha
Tomar
Alcobaça
Belém
Setúbal
R. Guadiana
Cordova
Palma
Majorca
PORTUGAL
SPAIN
MEDITERRANEAN SEA
Map by András Bereznay
ITALY & SWITZERLAND
Basle
Rorschach
St Gall
Berne
Lausanne
SWITZERLAND
Geneva
Sanazzaro Sésia
Como
Dulzago
Casalvolone
Milan
Vercelli
Novara
Verona
Venice
R. Po
Genoa
Bologna
Lucca
Florence
Pisa
Siena
Cortona
Perugia
Assisi
Orvieto
R. Tiber
Viterbo
Castel del Monte
Rome
Villa Sette Bossi
Casamari
Fossanova
Aversa
Brindisi
ADRIATIC SEA
ITALY
SARDINIA
TYRRHENIAN SEA
MEDITERRANEAN SEA
Cefalú
SICILY


BRITAIN
N
NORTH SEA
Melrose
Durham
UNITED KINGDOM
IRISH SEA
York
Beverley
Beaumaris
Conway
Caernarvon
Lincoln
Southwell
Harlech
Lichfield
Peterborough
Ely
Cambridge
Hereford
Tewkesbury
Gloucester
Oxford
R. Thames
Westminster
London
Bristol
Canterbury
Wells
Salisbury
Winchester
Exeter
English Channel
Map by András Bereznay


SCANDINAVIA
N
NORWEGIAN SEA
Trondheim
NORWAY
SWEDEN
Upsala
Linköping
Vadstena
Skagerrak
Lärbro
Vall
NORTH SEA
BALTIC SEA

PART ONE

The History of Gothic Architecture

Introduction

1. THE AESTHETIC FUNCTION OF THE RIB

THE Gothic style evolved from within Romanesque church architecture when diagonal ribs were added to the groin-vault.

In common usage, any kind of arch which lies within the surfaces of a vault is called a rib. So, also, is the ridge-rib, which appears later, and is not in fact an arch at all. In our consideration of the beginnings of the Gothic style, we need for the moment concern ourselves only with those ribs which are arches.

Suger, abbot of St Denis, who in about 1144 was the first man to write about the Gothic style, called the rib *arcus*, the same term which was used for any other arch.[1] Gervase of Canterbury, about 1188, used the expression *fornices arcuatae*, or arched vaults.[1A] About 1230 Villard de Honnecourt was the first to use the word *ogive*, which, after being incorrectly used for several decades during the nineteenth century to mean the pointed arch as well, has remained the French term for a Gothic rib to our own day.[1B] The word *ogive* is generally derived from the Latin verb *augere* (to strengthen), and this derivation corresponds to the belief that the purpose of these arches was to reinforce the vault. Some philologists say that the word originates from *algibe*, the Arabic word for cistern, and that it did not, therefore, apply to buildings with rib-vaults, but to those with groin-vaults, and more particularly to Spanish cisterns.[2] It is unlikely that Villard borrowed the word from Spanish. In English, arches within the surfaces of a vault are called ribs, in German *Rippen*, in Italian *costoloni*: all these words suggest a similarity to the human and the animal skeleton, which also has a function in terms of statics. In English literature on the Gothic style, the words rib and groin were sometimes used synonymously, which makes for unnecessary confusion. The word groin in this book means only the *one*-dimensional or linear edge where the curved surfaces of a vault penetrate one another, while rib means only the *three*-dimensional arch within the surfaces of a vault.

After 1835, when Johannes Wetter declared the rib to be one of the integrating members of the Gothic style, it became more and more the centre of discussion. The question of the date of the earliest ribs appeared so significant because it seemed that the correct answer to it must surely lead to the discovery of the birth date of the Gothic style. Instead it was found that ribs had already been used in Roman buildings. These ribs have never been fully studied. Two or three examples will here be sufficient. A cellar in the Villa *Sette Bassi* near Rome, built in *c.* 140–160 A.D., has projecting ribs. It was probably a tepidarium.[3] A careful examination of these segmental arches shows that they project only because the facing-stone and the plaster, of which there are some remains, have fallen away. These arches can be described as crypto-ribs, a term which can be extended to include all known Roman ribs. A second example occurs in the arches in the substructure of the forum at *Arles*, which were added to the Augustan building about 310, in the time of Constantine.[4] Here too the plaster has been partially preserved, but the greater part of it has fallen. The 'ribs' in the so-called Trouille, the palace of Constantine at Arles, were also originally invisible. They lie within the surfaces of the vault of a large niche.[4A]

It is wrong in this context to mention the series of arches in the Early Christian churches and houses of *Syria* (Haûran), as they are not connected with vaults. They are transverse arches carrying a flat ceiling, and each one of them is so wide that it can be called a short tunnel-vault.[5] The forty ribs in the dome of St Sophia in *Constantinople* are projecting three-dimensional forms, but quite understandably they are never given as the source of the Gothic style. It would be more tempting to point to the Islamic ribvaults in *Toledo* and *Cordova*, and in *Egypt* and *Persia*, but all these are different in character from Gothic vaults.

In the search for examples, buildings were found much nearer home, such as the tower of *Saint-Hilaire* at *Poitiers*, of the mid or late eleventh century,[5A] or the porches in the towers of *Bayeux* in Normandy, which may have been finished by 1077. The architects who designed churches in England must have been in contact with Bishop Odo of Bayeux, who was a brother of William the Conqueror. The first architect of *Durham*, begun in 1093, was clearly English, but trained in Normandy. He may have known the ribs at Bayeux; and the Norman conquest of Sicily and the recent capture of Toledo may have made Islamic architecture more accessible to him and his patrons.[5B] It is more likely that the master of Bayeux was familiar with Roman vaults, but the strange thing is that the two vaults at Bayeux have no analogy with the crypto-ribs of Roman vaults. The vault in the south tower is a tunnel-vault with a transverse arch in the middle, which should not be called a rib. The vault in the north tower has two intersecting transverse arches which spring from the centre of the four sides, and lie within a domical vault [2].[5C] The master of Durham was the first to connect the arches with a groin-vault and lead them diagonally out of the corners.[5D] If the master of Bayeux was acquainted with classical crypto-ribs that had become visible through dilapidation, one may ask whether he had not been in *Lombardy* and found other examples there. Circumstantial evidence suggests that north Italian rib vaults did have a decisive influence on the earliest ribs north of the Alps, but the question is fraught with problems, not least because the dates of the earliest Lombard ribs are not at all clear.[6]

So we return to the first of our premises: the Gothic style begins with the combination of diagonal ribs with a groin-vault. It is useless to trace the ancestry of these two members

1. Lincoln Cathedral. Nave vault, *c.* 1220–35

2. Bayeux Cathedral. North tower vault, *c.* 1070

3. Durham Cathedral. Choir aisle vault, begun 1093

4. Lärbro. Tower, original centering, *c.* 1330

separately. It is only their combination that produced Gothic ribs and Gothic vaults: in other words, it is only within the groin-vault that the rib becomes Gothic. Johannes Wetter already had some inkling of this, for he spoke specifically not merely of ribs, but of their union with the groin-vault. In his time research had not reached the stage where it could name the earliest vaults with diagonal ribs, and, as Wetter's point of departure was later buildings, he also stipulated pointed arches and buttresses as essential factors of what he called the Gothic style. The date of the combination of rib and groin-vault has since been established. It is the date of the vaults in the choir aisles at *Durham*, begun in 1093 and finished about 1095 [3]. The high vault of the choir was executed in the same way, and finished in 1104, but had to be replaced from 1242 when there was a danger of its collapse.[7] The third element of Wetter's formula for the Gothic style, the buttress, appears already in these first Gothic vaults: it was inherited without essential change from the Romanesque. The fourth element of the formula, the pointed arch, was combined with the rib at a much later date.

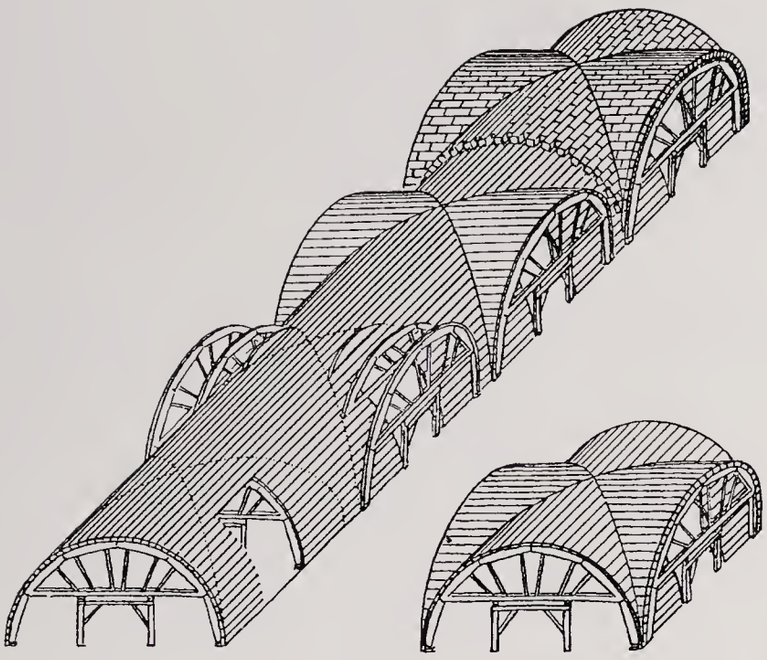
The purpose of crypto-ribs in Roman vaults was a purely technical one. The word technique is here used to mean only what contributes to the execution of a building. The erection of a brick skeleton of arches made the technical process easier. It is difficult to say whether the first Roman ribs were also an improvement in terms of statics. After drying, the mortar keeps the individual stones together so firmly that, in terms of statics, these vaults behave as though they were made of a single block of stone.[8] As the crypto-ribs were invisible, they had no aesthetic function.

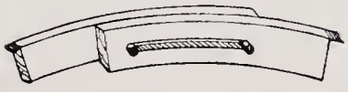
The Byzantine and Islamic ribs which were left uncovered, and the Romanesque transverse arches, had, in addition to their technical function, an aesthetic one, but this was not the same in every instance. In some cases one can say that they have been exploited for a decorative purpose. The meaning of decoration is that one art serves some of the others: as sculpture, painting, and ornament may serve architecture, or small-scale architecture (altar canopies, tombs in the form of small buildings, etc.) may serve large-scale architecture. To call ribs decoration leads to the question as to which other members of a building, within architecture on both its smaller and its larger scales, can be called decoration. It is often debatable whether a part of a building is exclusively decorative or belongs exclusively to architecture proper. If architecture is reduced to include only what is functional, it ceases to be 'architecture'. The

5. System of Groin vault centering (after Fitchen)

6. A cerce

7. Ely Cathedral. Groin-vault in south aisle of nave, *c.* 1120



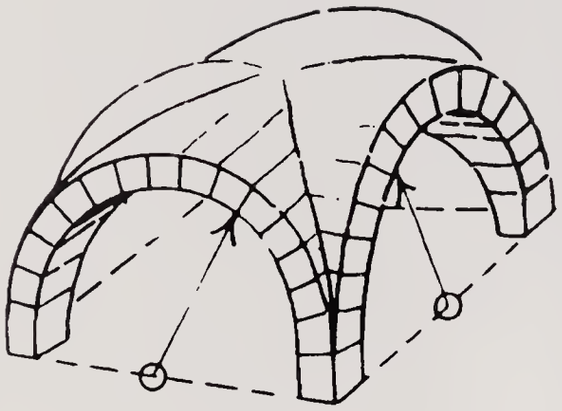


symbolic forms in architecture, such as bases, shafts, capitals, arches, mouldings, which aesthetically reveal beginnings and ends, movement upward and downward, supports and loads, are all adornment of the basic functional form of a building. The Islamic rib-vaults are decorative because they form a pattern of intrinsic aesthetic value. The question is whether the first Gothic ribs were similarly intended as a decorative addition.

To give an objective answer one must go back to the construction and building technique of the Romanesque groin-vault. By construction I mean the geometrical construction of a particular form of vault. The master mason must understand this clearly before he can approach the question of technique, especially the erection of centering. The way in which experiments were actually made can only be surmised, partly because in many cases a vault cannot be accurately dated. It is quite certain that the experiments were not aesthetically satisfying, that gradual corrections were also disappointing, and that the solution at Durham was only a provisional one.

To judge what was the function of the first Gothic ribs, a knowledge of this hypothetical series of experiments must be presumed. The problem reduces itself to the geometrical construction of the arches and the technique of building the centering; for the problems of statics were the same in every case, and financial questions played no appreciable part. Considerations of economy in the use of wood are insignificant beside the technical problem of cutting the wood for centering. In the Romanesque period, there were practically no saws available. Planks and posts had to be cut with an adze, and each trunk provided a single board. The only medieval centering which has been preserved – in the tower at *Lärbro* in Gotland[9] [4] – consists of small, short planks, supported by thin curved rods, to the shape of the cells, with other thin posts bracing the wooden arches from the

ground. Although this centering dates only from the fourteenth century, one can assume that the technique was not different in the eleventh century, where the successive centering frames supported continuous planking on which the stone vault webs were laid [5]. It is reminiscent of the method still used today for building boats and, as the Normans were sea-going people, shipbuilders were presumably entrusted with the work of constructing centering. Changes in the construction of vaults continually demanded new forms of centering, but the aim was not so much economy as an aesthetically satisfying vault.[10] The purpose behind the later use of the cerce [6], which is an extending



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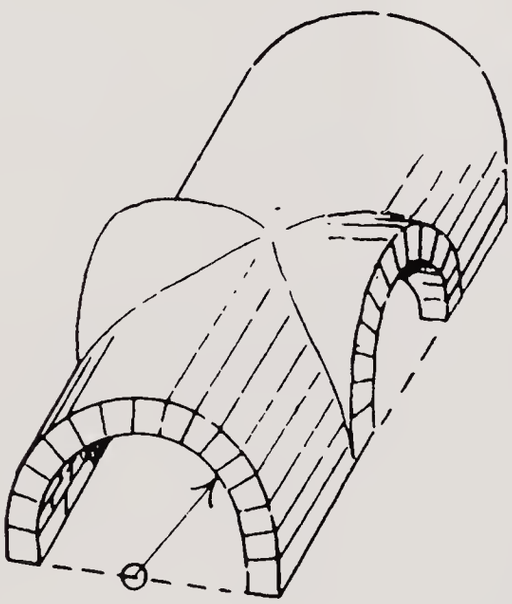
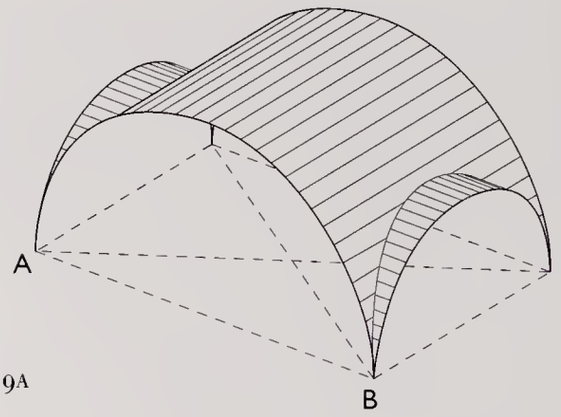


8B

8C

8. A: Roman groin-vaults over a square bay with elliptical groins
B: Roman groin-vaults over a rectangular bay with tunnel vault continuing either side of it
C: Rome. Baths of Diocletian, vault, *c.* 305–6



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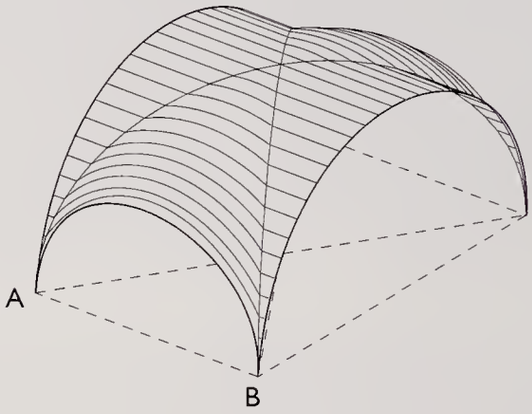

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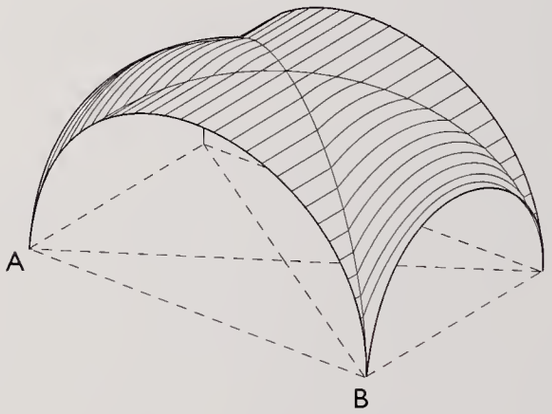

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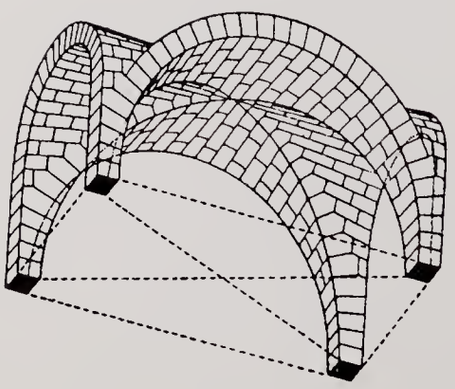
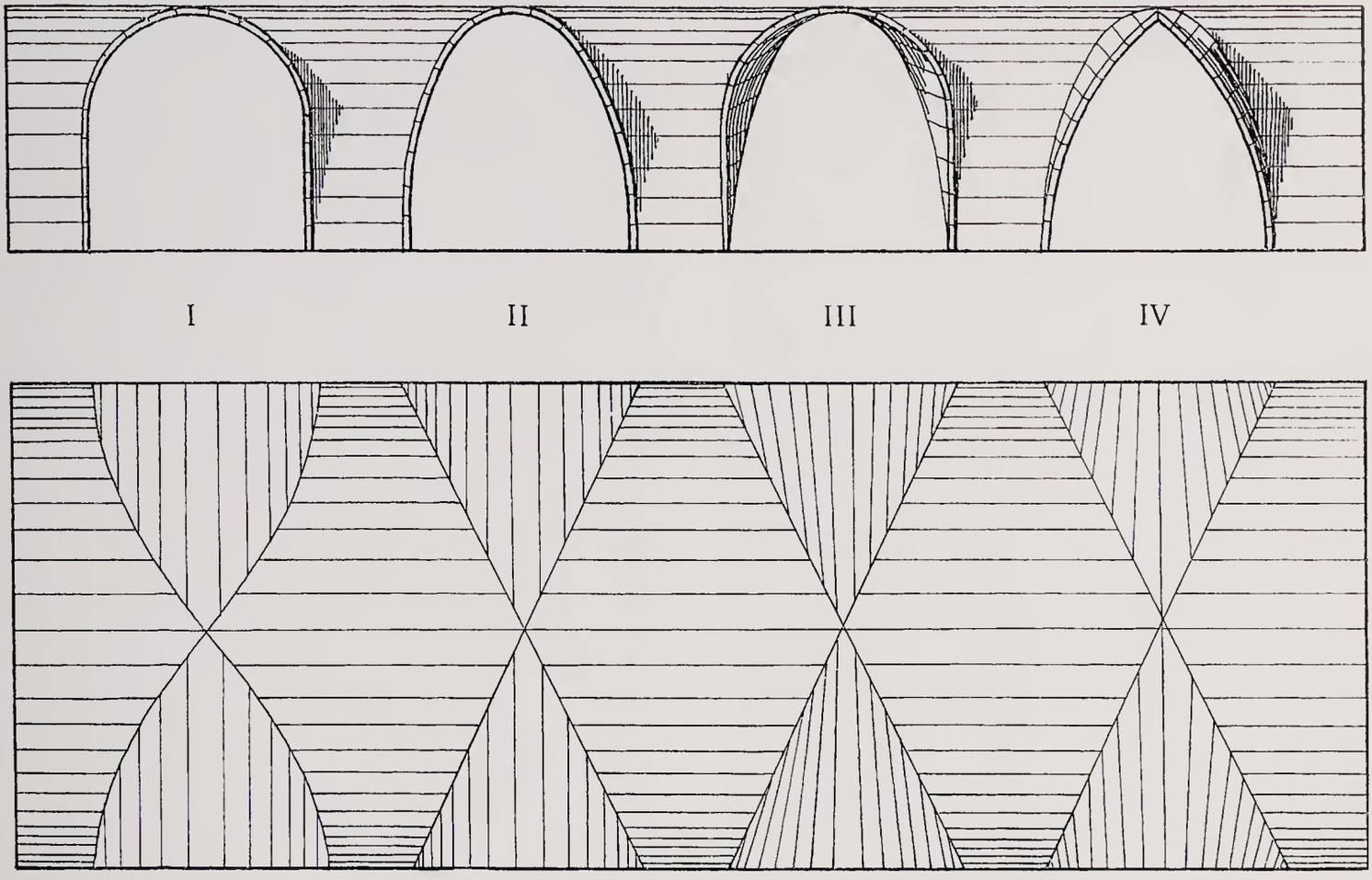


9D

9. A: Type 1. A tunnel vault with lower lateral penetrations
B: Type 2. A tunnel vault with the shorter sides as its diameter (A–B) This system is sometimes built over side aisles, but never over main aisles, where tunnel vaults always use the longer side as the diameter
C: Type 2. The same system as 9B, but with the main tunnel on the longer side (A–B)
D: Type 3. Rectangular groin vault with raised lateral tunnels Note the stilting of the smaller, lateral, arches



10. Construction of varieties of groin-vault centering, according to Ungewitter-Mohrmann

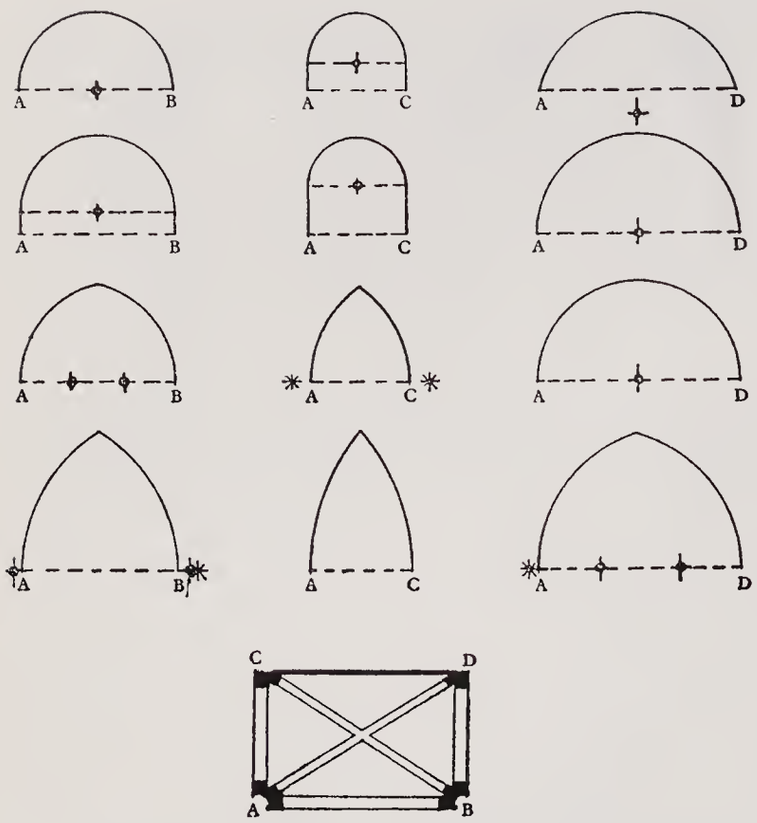
strip of curved centering wide enough to carry one course of stones for a cell, was to make the work easier rather than to make it more economical. In saying this, the fact that the shaping of the stones further increased costs is an additional consideration.[10A]

Roman groin-vaults were generally built on a perfectly square plan; the four supporting arches were semicircular; the surfaces of the vault were semi-cylindrical. The groins were therefore elliptical [8A]. In the case of a rectangular plan, the Romans used the expedient of building a semi-cylindrical surface over the shorter sides of the bay, and a semi-cylindrical centering and vault of the same shape and size over the longer sides. The groin vault does not, therefore, occupy the whole length of the longer sides: the longitudinal tunnel continues symmetrically on either side of it. The groins, consequently, do not spring from the four corners of the bay, but from intermediate points along the longer sides [8B]. In Roman building this technique was developed to the stage where separate centering frames were built over the longer sides, the shorter sides, and the diagonals of a bay, and the cells were then filled in with domed surfaces. No continuous wooden planking between the frames was deemed necessary. The Romans thus had already mastered this highly developed structural system, which the medieval masons only gradually rediscovered. An example of this technique exists in the Baths of Diocletian in *Rome* [8C].[11]

In older medieval buildings, the technique for constructing the centering of the vaults consisted of building a wooden tunnel in one direction and two partial tunnels in the other [8]. The drawings of centering in Choisy's otherwise excellent book are questionable in their treatment of the boarding. His centering is drawn as it is built today, a method which can certainly not be considered to date from before the Renaissance. It is possible that the Roman technique was inherited by the Byzantines, but the masters of the Romanesque style had to rediscover it.

In cases where medieval buildings with flat ceilings were later vaulted, the builders must nearly always have been faced with the problem of building a groin-vault over a rectangular bay, however near it might be to a perfect square. In cases where a vault was planned from the outset, square bays could be arranged; yet rectangular bays were often chosen, because the builders apparently wanted one direction to predominate for aesthetic reasons. In addition, new conditions were produced in ambulatories.

The construction of centering in the form of a wooden tunnel with the longer side as its diameter, and of two semi-



11. Construction of the rib-vault, with all apexes at the same level. Top three lines after Bilson; the fourth line shows the High Gothic solution, with pointed arches in all three pairs of arches

circular tunnels on the shorter sides, produced a tunnel-vault with lateral penetrations, not a true groin-vault. That is to say that if the lateral tunnels had a horizontal ridge, they did not reach the height of the main tunnel (Type 1) [9A]. The opposite procedure, that of constructing a tunnel with the shorter side of the bay as its diameter, produced downward-sloping ridges, from the higher lateral cells (Type 2) [9B]. The fact that in both cases the lines where the cells penetrated one another produced curves which were really beyond the scope of the geometrical knowledge of the time has little significance, since these curves simply appeared as the centering was erected, so that the boarding could then be cut to shape by eye [8, 10].

Were one to go back to the choice of building a continuous tunnel over the longer side of the rectangle, and to make the lateral cells rise, as in Type 2, then the level of the ridge of the main tunnel would still not be reached by the lateral arches [9C]. The solution to this problem was to begin these smaller lateral tunnels at a higher level, and to join their bases to the springing of the arches with vertical pieces of masonry (Type 3) [9D].[12] This stilting was used as an expedient until well into the High Gothic, for example on the closely spaced piers of apses [11]. In using this method (Type 3) the groins were neither semi-circular nor elliptical, as in the Roman examples: they were not entirely on the same vertical plane. In fact, they were sinuous lines, curved in plan as well as in elevation and moreover distorted, because the weight of the rubble distorted the centering.

These double-curved groins, of which there are countless examples in Romanesque vaults,[13] do not disturb most visitors to a church [7]. Sometimes one needs to stand in one corner of a bay and look straight across at the corner diagonally opposite to notice the deviation from the vertical diagonal plane at all. All architects, however, must have noticed it, and, as they always tried to produce precise lines, these unintended curves may have been offensive to them.

Mohrmann therefore presumed that, to regularize geometrical construction, the architects tried to construct the centering by starting out from the arc of the diagonal groin, rather than from the two intersecting tunnels. They decided to make the groin straight and single-curved [10.II].[14] This, he says, was easy, as it was only necessary to build a horizontal wooden semi-cylinder over the longer sides of a bay and then to stretch two ropes over it diagonally from the corners and project the line of those ropes on to the top of the tunnel at intervals, joining the points with painted lines. But there is no evidence that this ingenious method was ever actually used.[14A] If, however, it was, then it would have been possible to lay boards back from the painted straight lines to the lateral, clerestory, walls. If constructed in this way, the cross-section of the groin-vault, particularly on its short, lateral, sides, is semi-elliptical, since the groins are not the result of the horizontal projection of points around the curves of the transverse or lateral arches of the bay. There is indeed evidence of such elliptical contours along the clerestory walls of churches; but they are very unsatisfactory, as they most certainly resulted in irregular lines [10.II].[15]

According to Morhmann's hypothetical reconstruction, the next step was to straighten out the potentially irregular and semi-elliptical curvature of the lateral vaults at the points where they met the clerestory walls. The solution was to reinstate a clerestory of stilted semi-circular openings, which had then to be connected by boards to the straight diagonals of the groin arcs. The result, however, was conical webs in the form of 'ploughshares' between the wall arches and the groins [10.III]. In their own way, 'ploughshares' were as unsatisfactory as curvilinear groins (and more difficult to construct), so the practice of making a longitudinal wooden centering tunnel was at last given up. Instead three pairs of wooden arches, one pair diagonally and two pairs at the four sides, were built with apexes of equal height, and these were joined by boards. The choice of the curves of the arches was now free, and the surfaces produced themselves. If it was found that the apexes of the arches were higher than those of the diagonals, a segmental arch could be used instead of a semicircular one.[15A]

Exactitude in the curves had been reached, and the problem appeared to have been solved; but actually what had been reached was only exactitude in the centering. The laying of stones on the centering was also a part of the building technique. Small rubble was used and embedded in mortar, and so a kind of concrete was produced which, on hardening, took on the character of a homogeneous mass. This method was known in Roman times, as well as that of laying regular surfaces of bricks. The latter method may also have been generally used in Byzantine vaults.

The Roman groin-vaults with crypto-ribs brought regularity to the surfaces of the cells, because the ribs prevented any warping. Such weak wooden centering as that at Lärbro cannot always have fulfilled the builders' expectations that the vault would be as exact as was the centering. This is the moment at which, in our reconstruction of events, we can presume the idea to have arisen that flexible wooden centering must be replaced by firm centering, made of stone ribs – a '*cintre permanent*' as Viollet-le-Duc called it. Once again economy in wood or wages played no part in causing this development, because a wooden scaffolding still had to be erected to build the stone centering.[15B]

A clear idea of this technique leads to the realization that the boarding that was laid on the wooden arches for a groin-vault filled a gap between the surface of the vault and the wooden arches. It was therefore essential to cut the boards at the point of contact in such a way as to make a sharp and regular curve, and this was not easy. If, however, a stone arch was built for the boards to lie on, they could then be pulled out when the surface of the vault had dried, and the irregular edge where the cells met would be concealed.[15C] Later, when the spur, a narrow projection on the upper side of the rib, actually penetrated the cells, the stone surface could be laid smoothly against the spur, but in early rib-vaults the cells often do not rest on the ribs, and one can slip one's hand into the gap in which the boarding had lain to support the stones. After the last two wars there were cases where one could see overhanging fragments in a vault whose ribs had collapsed, and in these cases one saw not one, but two parallel groins, corresponding to the width of the rib. These double groins also appeared in Roman vaults as a consequence of the building of crypto-ribs, and Choisy has drawn examples from the Palatine illustrating this phenomenon. No Romanesque vaults with parallel double groins have yet been discovered. This can be explained by assuming either that these particular vaults happen to have disappeared, or that they were never built, because the builders, foreseeing their appearance while making their plans, immediately took the mental leap to the conception of the rib.

Ribless vaults had produced groins which were double-curved and also distorted because of the displacement of the stone masses. The rib eliminated both these faults. The original purpose of the rib was, therefore, not a financial one; nor was it to improve the statics of a vault, nor had it a specifically technical purpose, since it did not make the actual erection appreciably easier. The purpose was *aesthetic*.[15D] In the presence of a completed vault, few people ask themselves how much it cost, or whether it could have been built more economically. Similarly, few people ask themselves what the centering looked like. They take it for granted that the vault will not collapse, and they can see for themselves that the geometrical layout was physically realizable. Their questions refer almost exclusively to the aesthetic result. The architect must overcome all the technical and financial problems in order to achieve a satisfactory aesthetic result.

Although the theory that has just been formulated may be correct, one must also consider the possibility that, in introducing the rib in 1093, the architect of Durham was influenced by the belief that it was an improvement in terms of statics. The statical and the aesthetic factors do not exclude one another. As early as about 1800, the decisive characteristic of the Gothic style was said to be the tendency to make the actual distribution of forces among the parts of the building the keynote of the aesthetic effect. The theory of functionalism developed more and more clearly, and was long the generally accepted one – until doubts grew as to whether the rib really bears any weight at all. Research into the actual distribution of forces in Gothic vaults, especially among the ruins left by the two world wars, has given us no universally valid answer. Some ribs bear weight; others do not. The testimonials of the experts assembled at Chartres in 1316 show that they were convinced that the rib does bear weight.[16] In other cases, such as the choir aisles at Durham, the vaults seem to have sufficient intrinsic equilibrium not to have to rely on the ribs; and yet, in the same cathedral, in 1235, the high vault of the chancel either collapsed or almost did so, and nobody knows whether this was because the ribs did not bear any weight, or in spite of the fact that they did.

Since it must be admitted that ribs do at least sometimes serve a statical function, there seems to be some truth in the old belief that they carry the weight of the vault on to the four corners, and so on to the piers, and that they therefore invite the architect to eliminate the walls. That they carry the weight on to the corners there can be no doubt; but it has rightly been said that this principle applies equally to Romanesque groin-vaults. The partisans of the old school of thought must therefore fall back on the argument that, in a Romanesque vault, the weight of the cells is concentrated on the groins, that these are the weakest points, and that it is precisely these points which were re-inforced by ribs. According to this reasoning, the real aim of the rib, therefore, was this reinforcement.

Saunders seems, in 1810, to have been the first to claim that the groins are the weakest points.[17] His theory has never been disputed, although it is untenable. If groins are taken to be one-dimensional lines, it is correct, because a line cannot bear any weight. What can and does bear weight is the three-dimensional mass behind this line. At this point, where there is oblique penetration between two cells, these cells are in fact thicker than at the ridge or anywhere else. Groin-vaults never develop cracks along the groins, but always approximately at right angles to them. Saunders's theory should be corrected by saying that the rib strengthens the strongest areas in a vault. Consequently vaults could be thinner: which, in turn, allowed the building of slenderer piers. But the aim of the earliest ribs was not to allow the building of thinner cells and piers, because at first these remained as heavy as those in other Romanesque churches. This theory was deduced from later stages of the Gothic style and was erroneously applied to its earliest stages.[17A]

Nevertheless the statement remains valid that the statical and aesthetic factors do not exclude one another. One must only add that statics do not in this case mean physical reality, but aesthetic appearance. Even though ribs do not actually bear any weight, they appear to do so. Even though the cells are heavy, they appear to be light. The same is true of the statement that, although the forces seem to tend exclusively upwards, they actually correspond to a downward

pressure. Even in Romanesque buildings in Normandy, shafts reaching to the ceiling appear to be bearing weight, when it is really the core of the pier or the wall behind them that actually bears the weight. From about 1040, the date of the abbey church at Jumièges, Norman building shows a differentiation among its members into those that bear weight and those that are borne. The architects were trying to achieve an impression of pure structure, and because the rib gives the effect of being a structural member, the theory arose that the rib was the logical continuation of the articulation of the wall. Both shafts and ribs, the arguments goes, are structural factors; the articulation of the wall is older; 'therefore' the rib is a logical continuation of the articulated wall on to the groin-vault. This theory would be valid if both these structural members were stylistically the same at the inception of the Gothic style. Certainly both are structural, but the articulated wall is Romanesque structure, while the rib is Gothic structure. In the later stages of the development of the Gothic style they are both Gothic. The problem is therefore to distinguish the two *styles*.

We can now return to the term decoration and say that in discussing this problem it is not essential to agree on the meaning of decoration. What is essential is to understand that there is Romanesque as well as Gothic decoration. The theory of functionalism claimed that structural and decorative elements excluded one another. It aimed to differentiate between the shaft and the rib, which it held to be structural members in that they really carried weight, on the one hand, and, on the other, everything that is superfluous in terms of statics, and therefore 'pure decoration'. If we understand the terms structural and decorative clearly we realize that they are not opposites on the same conceptual level. It is not these two terms that are here under discussion, but the concepts Romanesque and Gothic. Why, when they appear within the surface of a dome, or in the diagonals of a domical vault, are ribs not Gothic; and why are they Gothic when they appear in a groin-vault?

2. THE STYLISTIC SIGNIFICANCE OF THE RIB-VAULT

Any single arch, for example a Roman triumphal arch, has a front and a rear surface. Each of these two sides is a one-dimensional arch which lies on a (two-dimensional) plane. In a construction such as a triumphal arch this plane is clearly visible. The whole arch, with the rectangle underneath it, is cut out of the vertical plane. If we walk through the arch we see and experience three clear spatial units: the space in front of the arch, the space beyond it, and the space inside, that is in the passage between the two.

In a Romanesque building with transverse arches the same is true, except that what, in the case of the triumphal arch, was the space in front of the arch and the space beyond it is now the first and second bays of the building, while the passage between them, corresponding to the transverse arch, is very narrow. If the building has aisles, then the arches of the arcade represent the passage and the nave and the aisles the spaces in front and beyond. We count bays, because the separation between one and the next is marked by the passage between them, which is formed by the transverse arch on its piers. In a Romanesque building the sharply marked interval between the bays produces the impression that the bays are separate units of space which form a whole only by their *addition*. The whole does not seem to exist before the parts. This aesthetic impression of genesis by addition has nothing to do with actual genesis. We are in this instance describing the finished building, and we find that the decisive geometrical factor is the frontal projection of the transverse arch and its supports, i.e. shafts or flat responds.

In the Romanesque period the vaults were set between the transverse arches. In the case of groin-vaults with a horizontal crown, the four cells, set opposite one another in pairs, appear as two continuous surfaces. They give the effect of horizontally placed half-tunnels, and in spite of their penetration of one another they appear to form a whole, resting horizontally on the structures beneath them. Thus the space within the vault is separated from the space underneath it, and the two form a whole by addition, exactly as in the case of the bays. If these two spatial sections were separated only by the mathematically thin plane of the springing of the vault, they would merge into one another; but in the Romanesque style the zone of the capitals and abaci is inserted, and this creates a separate horizontal layer of space between the two. Mentally we continue these horizontal planes as we did the vertical ones. The principle of addition of spatial sections is the basis of the composition of the Romanesque style. The geometrical characteristic of this principle is re-entrant angles on responds, plinths, arches, window jambs, doors, etc. Since, however, the Romanesque style demanded, apart from this principle of addition, also that of strict regularity (e.g. in the distances between piers, windows, etc.), it was not angles of 30 degrees, 60 degrees, or 125 degrees that were chosen, but angles of 90 degrees. These decisions made by the mason on his piece of parchment resulted, after execution, in the impression of *frontality*. Just as the members of the building are placed frontally in relation to its main axes, so we place ourselves frontally to these members. Even if we take a diagonal position we still recognize that the building consists of frontal images. The spatial form of a building is an abstraction corresponding to the abstraction on which the science of geometry depends. Similarly the *optical* form of a building is an abstraction corresponding to that on which the science of optics depends. But in order fully to understand architecture the building must also be considered from the point of view of the science of mechanics, that is of the form of the *mechanical forces*. The Romanesque style stresses the solidity of stone and its capacity to preserve its spatial form under pressure. The term structure is used to denote any system of building where members keep each other in balance under pressure and counter-pressure. In structures every member is a whole and within the wholeness of the building it is (to borrow a term from Gestalt theory) a sub-whole.

This analysis according to the three factors – of spatial form, optical form, and mechanical form – gives us the three principles of addition, frontality, and structure. All three in their interplay make the individual naves, bays, apses, etc., and also the individual visual impressions and the individual

parts of a pier, an arch, etc., appear as wholes within a whole. It can therefore be said that the Romanesque style is a *style of totality*, and for this reason it was disturbed by the introduction of the rib.

Wherever we see an arch, our psychological reaction is the same as in the case of the triumphal arch. We have a mental image of a vertical continuation of the planes of the front and rear elevations over the opening – that is why we speak of an opening. The same is true wherever we meet arches, even in the case of the diagonal arches which we call ribs. Ribs are not one-dimensional lines but broad solid arches, and they form two intersecting archways within the vault. They are not merely fixed to the vault surface, but divide the whole space contained in the vault, from the springing of the arches up to the crown. The four parts that are produced, even though they can be precisely separated from one another, are incomplete in themselves. They are parts in a different sense from that of addition. They are not independent entities, but the result of a *division* within a pre-existent whole. They are fragments – *partes*, not *tota*. Here the case is not one of addition of single spaces, but of a subdivision of one space.

The diagonal direction of the rib brings new life into the composition. The main axes, from west to east, and from north to south, are still the determining lines; they are the permanent co-ordinates. The Romanesque style set out to build every angle and the axis of every member parallel to these co-ordinating lines. Ribs disturbed this principle of frontality, and led to the new principle of *diagonality*. This is an objective spatial factor and at the same time, from the point of view of the visitor, a subjective visual one. The images that he saw before were designed to be viewed frontally. Now he is expected to stand diagonally, and visually to experience space in recession, not in the flat.

The cathedral of *Durham* is a Romanesque building because it represents the principles of addition, frontality, and structure. But the introduction of ribs was in contradiction to the first two of these principles; for the ribs created the effect of division in the spatial form of the vaults and of diagonality in the optical form. The principle of structure on the other hand was not disturbed. As long as the ribs were arches keeping in balance by means of pressure and counter-pressure, the Gothic style had not reached its ultimate conclusion. This analysis reveals the paradox that the rib in terms of spatial form and optical form converts Romanesque totality into Gothic partiality, but as a structural member still opposes partiality. The masons of the Gothic style were for a long time satisfied with this contradiction, and only much later made the decision to convert structure into its contrary: into *texture*.

In the science of mechanics the distinction is made between pressure and pull. Nature offers us materials which (within limits) keep their spatial form under pressure. The most familiar example is the rope. However, if one wants to suspend on object from a rope, the rope must be fixed to a structure which can stand up on its own. Textiles made of threads, whether they be carpets or curtains or blankets or clothes, fall down without a supporting structure. The term *texture* (from Latin *tegere*, to cover) can be used and will here be used in opposition to structure, as a cumulative noun for all such things which cover some structure. In addition the term also applies to all things which hang held by a structure, or which are stuck to a structure (e.g. plaster, tarsia, mosaic, wallpaper, etc.).

For an understanding of the Gothic style in its consecutive phases it is necessary to use the term texture in this sense as a contrast to structure. Late Gothic masons used systems of rib-vaulting with detached or flying ribs or suspended pendants or even with 'net' patterns. They also omitted capitals between shafts and arches or ribs in order to replace the impression of counter-pressure by that of continuous flow, and in order to create the effect of growth as in plants.

The problem which posed itself in the earliest phase of rib-vaulting was as follows. The introduction of the rib had disturbed the unity of the Romanesque style by creating division of space and establishing diagonality. It opened the way towards a style of full *partiality* in which parts would no longer be sub-wholes but *fragments*. This being so, one of two decisions could be taken: one could renounce the rib to save the purity of the Romanesque style; or one could keep the rib because of the precision of its curvature and, in obedience to its divisional character, transform all Romanesque members until they conformed to the character of the rib. Which of the two decisions was taken is shown by the subsequent development. The rib was not rejected; for it seemed to be the only means of smoothing out the ugly irregular curves of the groin. However the deeper reason why the rib and its tendency to division brought about such radical changes was that men no longer regarded themselves as totalities, but realized that they were parts of a higher, or even an infinite, whole. This factor is more significant than regularity of curves, or unity of style in its formal sense. It bears on the artistic unity of form and meaning, or style and culture. However, our primary consideration must be the history of form.[17A]

There remains the question of why ribs are Gothic when they appear in a groin-vault, whereas in a tunnel-vault, a dome, or a domical vault they are not. In the case of transverse arches in a tunnel-vault, it is obvious that, because of their frontal position, they give the impression of the addition of smaller independent sub-units. Therefore the transverse arch in the south tower at *Bayeux* is Romanesque and cannot even be called a rib. In the north tower there are two intersecting frontal transverse arches which spring from the centre of the four sides of a domical vault [5]. They divide the domical vault into four parts. So this is an example of division of space. The four quarters cannot be said to exist independently of one another. The arrangement of transverse arches in the diagonals of domical vaults, such as that in the tower of *Saint-Hilaire* at *Poitiers*, at *Mouliherne*, at *Cormery*, etc.,[18] and in apsidal vaults, such as at *Saint-Martin-de-Boscherville* (*c.* 1120) and in S. Abbondio at *Como*, come under the same heading. In all these cases, however, the embracing shape of the whole vault outweighs its division into quarters or fifths, etc. The individual spatial unit, i.e. the area under the tower or within the apse, remains isolated from adjoining spatial units or from space outside the building. Though mentally we continue the vertical surfaces of each of the intersecting arches, we also con-

tinue this flat curved surface, so that the strongest impression is that the arch lies within the surface of the dome or domical vault and belongs to it. The arches do not appear to subdivide three-dimensional space, but to subdivide only the two-dimensional surface of the vault.

To speak of Romanesque ribs in these cases is not entirely wrong, but is better avoided. They are transverse arches, mostly in a rectangular section of the Romanesque type, transplanted from their normal position between the bays to the diagonals, and are incapable of destroying the inward concentration of a Romanesque vault.

The combination of diagonal arches with a groin-vault, however, does destroy this inward concentration, and opens each bay on all four sides – to the adjacent bays, or to the space outside the building. The ribbed dome in the church of St Sophia has the same character, because cells have been set between the ribs. This is the reason for the opening statement of the introduction, which is that the Gothic style evolved from within the Romanesque. The Gothic style is a historical phenomenon. Even when all traces of the Romanesque had disappeared, the Gothic style was still a descendant of the Romanesque. It is the transformation of the historical style of totality into a style of partiality.

Each of these two terms comprises the interaction of spatial, optical, and mechanical forms. In the Romanesque we find spatial addition, opposition of forces, and a predominance of frontal views. In the Gothic style we are faced with spatial division, the smooth flow of forces, and a predominance of diagonal views.

The terms addition and division are not here used in their arithmetical sense. The area of the plan and the volume of the enclosed space are unimportant. The fact that a spatial division makes one part two-thirds, or any other calculable fraction, of the whole is equally unimportant. Both terms must be taken in a geometrical sense. That is why the opposite of addition is not, in this case, subtraction. Nothing is subtracted: the whole remains, even after it has been subdivided. The terms are only distantly related to mathematics. They are really terms which have meaning only within the 'geometry of aesthetics'.

CHAPTER I

The Transition

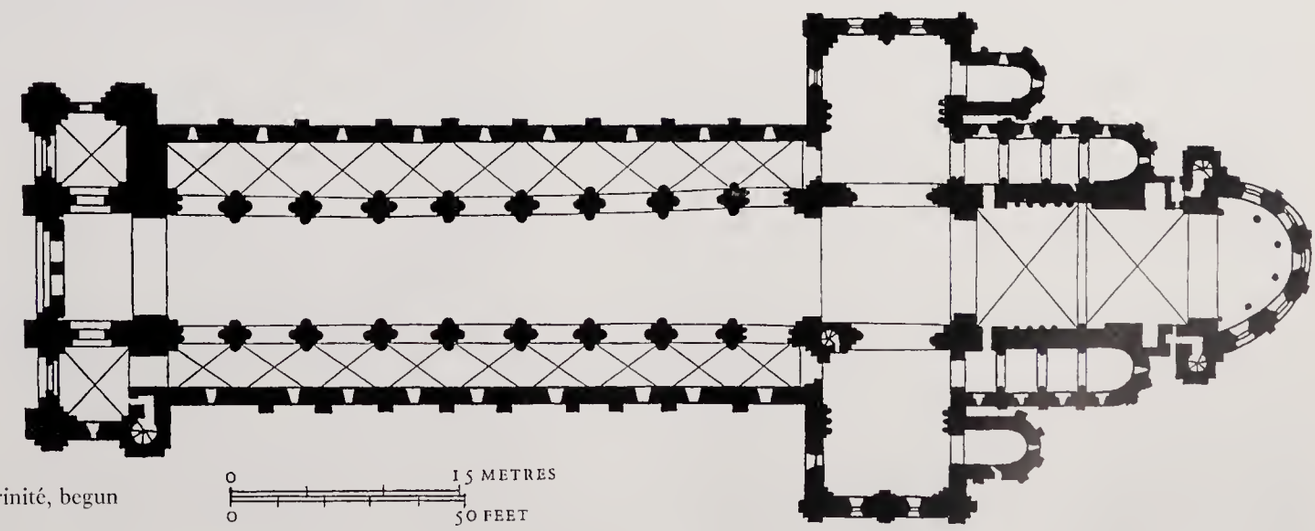
1. THE GOTHIC RIB-VAULTS OF THE FIRST GENERATION (1093–1120)

No existing groin-vault with ribs can, according to Bilson, be dated before the choir aisles of *Durham* Cathedral, which were begun in 1093.[1] This statement by Bilson is partially supported by the buildings in *Caen*. Had there been rib-vaults in the Anglo-Norman world before 1093, the architects of the churches in Caen would probably have used them, as Caen was the political capital of Normandy. It was from Caen that William set out to conquer England. Here, the later 1060s to 1081, William built the nave of *Saint-Etienne*, at that time with a flat ceiling. The choir, which has not survived, can hardly have looked different from the choir of *Saint-Nicholas*, which is in the same town, close to Saint-Etienne, and was built only a few years later, the last years of the eleventh century.[1A] In Saint-Nicholas the choir has a groin-vault and an apse with a half-dome. From this we can conclude that before 1093 there were no rib-vaults in Caen, and probably none anywhere else.[1B]

In *c.* 1059–60, William's wife Matilda had founded a nunnery in Caen called L'Abbaye aux Dames, with the church of *La Trinité* attached to it. The original form of this building can be partly reconstructed. The nave had a flat ceiling, and the aisles had groin-vaults with no transverse arches. The original appearance of the east end is not so clear, but the vault of the choir certainly had no ribs, since even the present building has none, though it was built after the death of Matilda [12]. She was buried in the existing choir in 1083, and left legacies of great value to the nunnery.

La Trinité [13] is a veritable museum of vaults. The groin-vault in the choir was planned in the 1090s and executed in the 1120s.[1C] It has a horizontal ridge, which can be seen better from the loft above the vault than from below. The shape of the centering that was used can be deduced from the curve where the surface of the vault meets the wall, and from the curves of the groins. It was built at the stage when centering was constructed with a continuous wooden tunnel and elliptical groins, from which the boarding was laid horizontally to the wall. Both these vaults, then, date from before the time when it was decided that the point of departure should be the centering of the groins, and not of the wooden tunnel.

While the alterations to the choir of the Trinité were in progress, the abbey church at *Lessay* was begun *c.* 1090 [14].[2] The ribs here are not forerunners of those at Durham, because at the east end, where the building was begun, there is no member corresponding to them on the springing-line. The ribs were not, therefore, planned until the building had reached the height of the springing of the vault. The shafts are set frontally on the walls, and contradict the diagonal direction of the ribs springing from them. The thought which occupied the mind of the architect can be seen in the crossing. The master of Durham had overcome the failures of groins. The criticism of the master of Lessay was that they had been overcome by the introduction of a segmental arch, lacking uniformity with the shape of the longitudinal and transverse arches. However, since semicircular diagonals would have led to a very high ridge, he began his diagonals below the level of the springing of the arches in the crossing. The piers of the crossing were already finished, so the ribs begin in a re-entrant angle between two responds on the piers. We can see that, initially, every improvement brought in its wake a concomitant disadvantage. One of these was the crescent-shaped piece of wall left over the transverse and longitudinal arches of the crossing. The discrepancy between the two curves was due to the fact that the crossing arches were semicircular, while the construction of a wooden tunnel by laying boarding horizontally from the diagonals produced an elliptical curve where the surface of the vault met the wall. This was nothing new, and can be seen in many Romanesque vaults, especially in crypts. The



12. Caen, La Trinité, begun *c.* 1060. Plan

13. Caen, La Trinité, begun *c.* 1059. Nave vault *c.* 1130, renewed in the mid nineteenth century

14. Lessay Abbey Church, begun *c.* 1090. Interior of nave

ribs at Lessay have no spurs, and can only have carried weight while the building was actually in progress. This was clearly shown after the serious damage that was caused to the church in 1945. Although the ribs were not intended in the original design of the choir or transept, they were integral to the construction of the upper part, and date a few years before 1098, when a burial is recorded in the choir.

One would like to be able to put exact dates to all the early rib-vaults; but this is impossible. It is sufficient that the dates which we have, should support one another. The rib-vaults at *Winchester* give us additional information. They were built immediately after the collapse of the crossing tower, in 1107.[3] The Norman transepts had east and west aisles, with galleries above. As these aisles extend right round the transept ends as well, they were vaulted in sixteen bays. Two of these collapsed. They were replaced with rib-vaults, and four other bays had ribs added to them. In the two new bays, the ribs are segmental arches, as they are at Durham. They are segmental arches also in the other four bays, without any consideration being given to the shape of the surviving vaults. The space between the surface and the ribs was filled with masonry. The purpose of these diagonal arches was not to carry the weight of the vault, but to transfer the lateral thrust of the new crossing tower on to the outer buttresses, and to provide a strengthening link between the piers. The Romanesque shafts had been set frontally on the piers, and were preserved throughout the church, except that one corbel was added in the south-east corner of the south transept to correspond to the diagonal direction of the rib which it supports. This detail, and the detail in the springing of the ribs in the crossing at Lessay, strengthens the argument in favour of a conception of the rib as having been introduced independently of the articulation of wall and piers. The Gothic style originated in vaults and developed downwards, but at Winchester this principle appears only in the addition of one corbel set diagonally in place of a shaft.

A decade or so after the Winchester vaults, ribs were used in the chapter house at *Jumièges*, a small, now ruinous, rectangular building with a semicircular apse [15]. The wall-arches are not stilted, and the lateral cells therefore rise sharply to the ridge. If Lanfry's reconstruction is accurate, this is the first time that a Romanesque vault, which closes inwards towards its centre, was replaced by a Gothic vault, that is, a vault which opens outwards through its funnel-shaped cells. The principle of division was thus applied to the apse; for in this apse, too, the cells rest on ribs. The chapter house was in all probability constructed *c.* 1100–20.[4]

Perhaps the church of *Saint-Lucien*, near Beauvais, begun between 1089 and 1095, completed *c.* 1130, damaged by English troops in 1346, restored later, and finally pulled down in the French Revolution, had the same kind of rib-vault in the choir and transepts. Gall has reconstructed the building after old drawings and shows groin-vaults in the aisles and galleries, but ribs in the high vaults.[5]

At this stage English architecture did not develop beyond the segmental rib. Examples are in the aisles at *Peterborough*, begun soon after 1107, and at *Southwell*, built from *c.* 1120.[5A]

In the cathedral at *Evreux* the former existence of ribs throughout has been deduced from the shape of piers that have been excavated, and from those dating from 1119 that have been preserved. This theory has, however, not been definitely proved; what we know is that all the shafts at Evreux were still set frontally.[6]

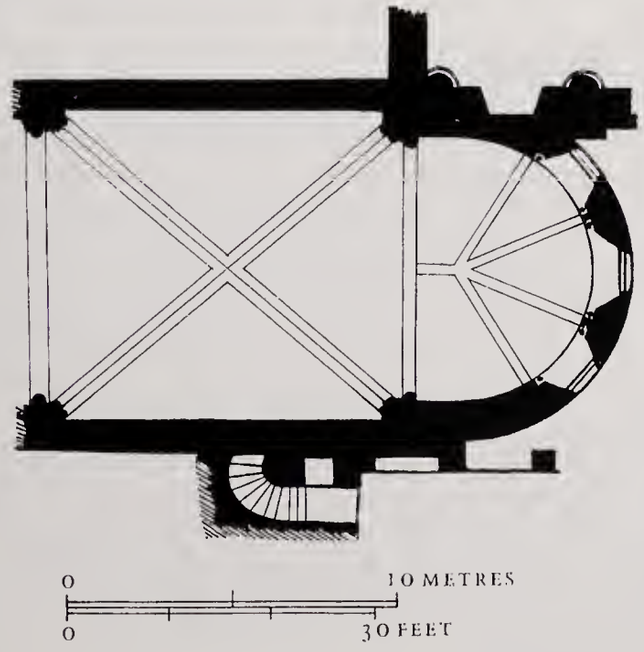
In the second and third decades of the twelfth century the flat ceilings of the churches of La Trinité and Saint-Etienne at *Caen* were replaced by vaults, and these vaults embody definite innovations.

2. DIAGONALITY OF SHAFTS, MULTIPARTITE VAULTS, POINTED ARCHES, KEYSTONES

In the transepts of *La Trinité* at *Caen*, the original vaults have been preserved. The ribs are elliptical arches,[7] and the shafts were designed and built to correspond with them. The capitals and shafts supporting the transverse arches are frontal; those supporting the ribs are diagonal. The plinths and bases are all frontal and probably date from the time when the church had a flat ceiling. The outermost bay of each transept has a quinquepartite vault, with one rib rising from the centre of the end wall up to the ridge. The chronology of the vaults in the two churches is uncertain. The crossing vault of La Trinité is original. It must have been designed at the same time as the vaults of the transepts and the choir, because the shafts in the corners of the crossing also have diagonally set capitals; but is seems to be later than the easternmost bay of the nave which adjoins it.[7A]

16. Caen, Saint-Etienne. Nave, early 1070s–81. Vault rebuilt in 1616, presumably like the original of *c.* 1120

15. Jumièges, Notre Dame, chapter house, main structure *c.* 1100, vault 1120s. Plan



The vault of the nave collapsed in the eighteenth century, and was replaced with a light plaster replica. Pugin's drawing is evidence that this replica had a horizontal ridge.[8] It presumably repeated the original form, with quadripartite rib-vaults cut by transverse arches in the centres of the bays. These transverse arches were surmounted by a thin stone wall reaching up to the surface of the vault. This form was preserved by Ruprich-Robert in his nineteenth-century restoration, except that he gave the ridges of the cells an ascending shape [13]. Such vaults are called pseudo-sexpartite. The intermediate transverse arches seem to show that, at the time when the building had a flat ceiling, there were diaphragms at these points, as there were in many Romanesque churches. But since the whole superstructure of the walls of the nave was rebuilt *c.* 1125–30, and is partly supported by the vaults of the aisles, these transverse arches cannot have been part of the original building of the 1060s and 1070s, or date from the stage before the imitations of the eighteenth and nineteenth centuries.[9] It is questionable

whether the shafts originally continued above the level of the springing of the arcade, as at this point the fact that the mouldings have been hacked off suggests that there were originally abaci on the ends of the lower part of the shafts, presumably resting on capitals like those that support the arches of the arcade.[9A] The lengthened shafts rise to the transverse arches or diaphragms. Only when they reach the foot of the blind triforium are two diagonally-set shafts joined to them to support the diagonal ribs. The capitals of these shafts, too, are set diagonally.

In *Saint-Etienne* at *Caen* [16] the vault of the nave was rebuilt in 1616.[10] It is sexpartite, not pseudo-sexpartite. The sexpartite vault proper can theoretically be called a development of the pseudo-sexpartite. Instead of having one cell continuing on either side of the intermediate transverse arch, it has two cells on either side which meet on the transverse arch. It is not known whether this theoretical development corresponds to the actual chronology.[10A] Both buildings appear to have been vaulted at about the same time, possibly by two different architects. In Saint-Etienne, as in the Trinité, the short shafts which are set on the older frontal responds to support the ribs are turned diagonally. The central transverse arches rise steeply and then bend in on a different curvature. Judging by other sexpartite vaults preserved in their original form, the construction was fairly correctly copied in 1616.

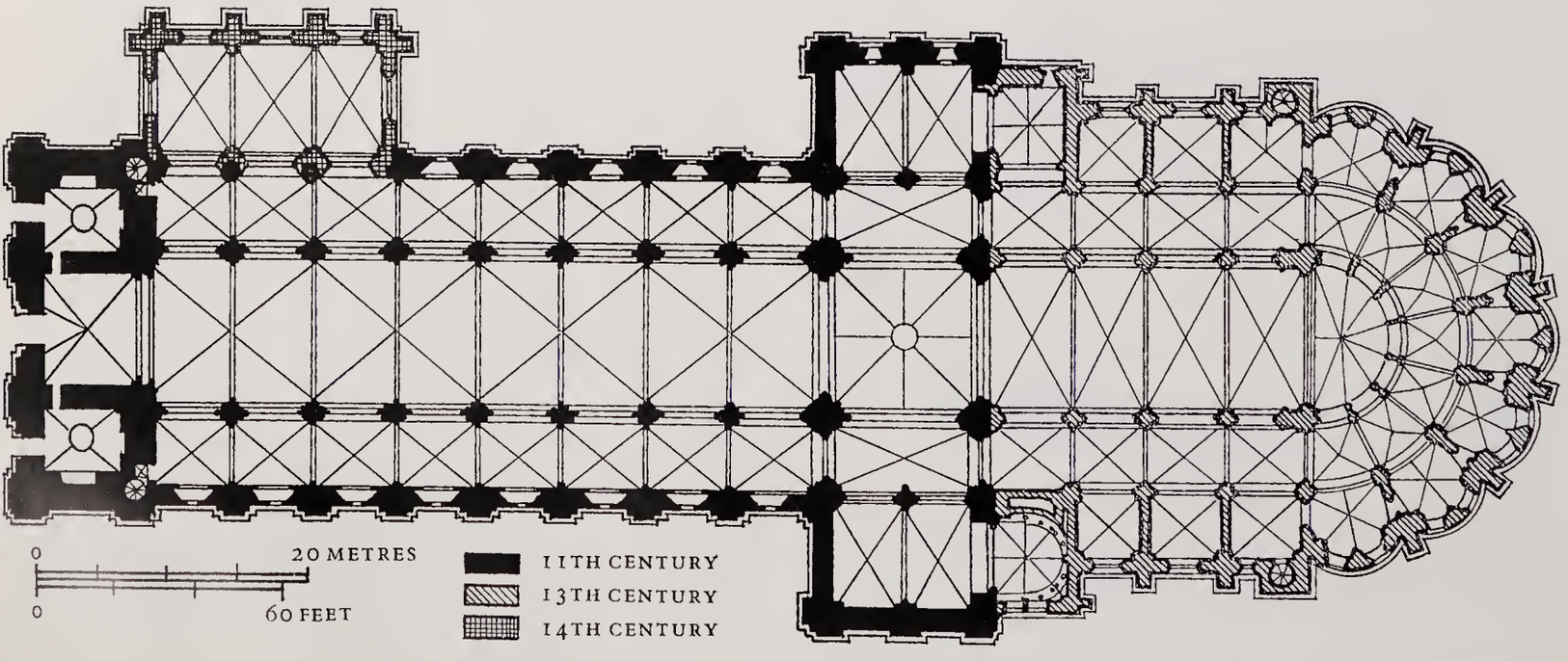
In Saint-Etienne the original alternation in the eleventh-century supports explains why the twelfth-century vault is sexpartite [17]. It has been asked whether the pseudo-sexpartite vaults of the Trinité are later than the sexpartite vaults of Saint-Etienne and are an adaptation of pre-existing diaphragm arches. The Trinité never had alternating supports. The pseudo-sexpartite vaults of the Trinité can therefore be interpreted as a translation of the quadripartite vaults of Durham into a nave with diaphragm arches. Thus both vaults at Caen could be contemporaneous essays, adapted to different situations.[10B]

The sexpartite vault at Saint-Etienne was designed to correspond to alternating supports. In that sense the process of its creation moved upward from the arcade, not downward. But since the Romanesque supports had no diagonal shafts, as they were needed for ribs, they were added a little below the springing of the vault. The diagonal shafts, therefore, were suggested by the ribs above and not by the frontal Romanesque responds. Both are undeniably structural members, but the point to be emphasized is that the frontal responds are Romanesque structure, the short diagonal shafts and the ribs Gothic structure. The ugliness of the curves in the intermediate transverse arches (as rebuilt in the Baroque) is no argument against the theory that the rib was created to correct three-dimensionally double-curved groins; for the first ribs at Durham are earlier than the original ribs at Caen. The western bay of the sacristy vault at Saint-Etienne is an example of particularly misshapen groins. In view of such a failure as this, the rib must indeed have been a welcome innovation.

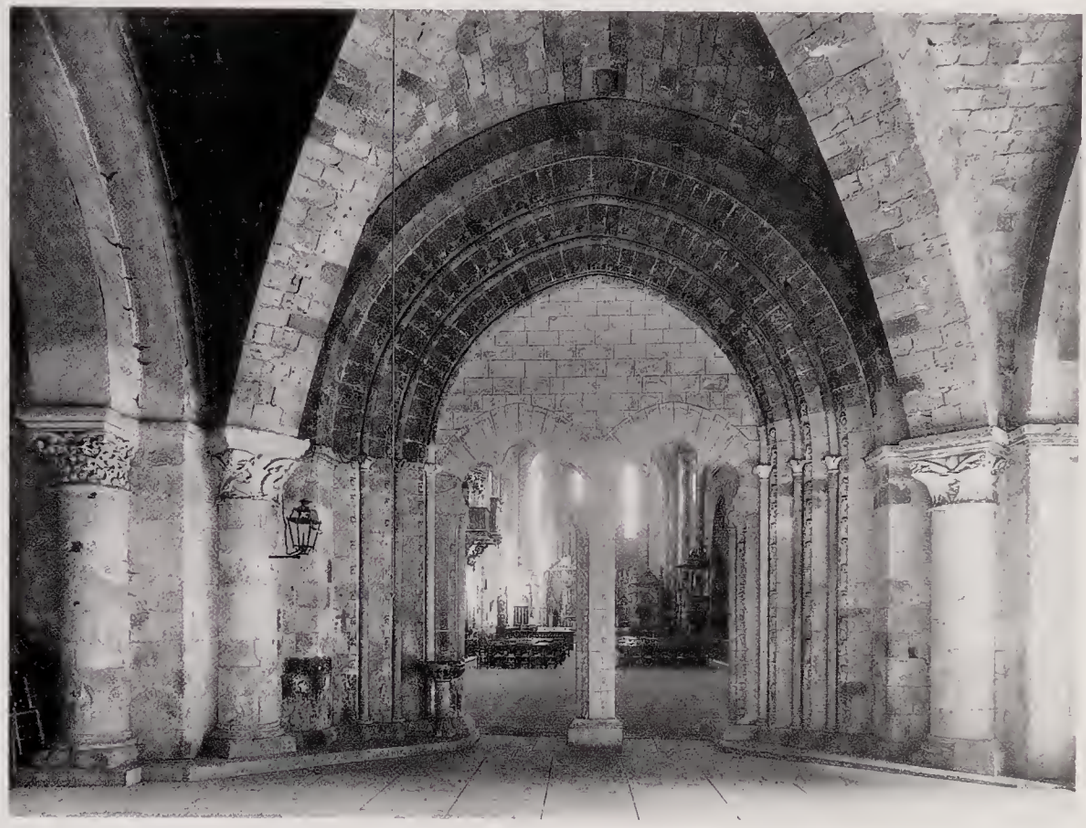
According to Gall the crossing vault of *La Trinité* was built last of all, when the adjacent parts of the building were capable of taking the thrust.[11] Where the nave meets the crossing the beginnings of a round arch have been preserved, standing at the same level as the three original semicircular arches of the crossing. The central part of this round arch was pulled down, flat responds were added to the piers, and then a pointed arch was built – possibly the first ever to have been built in connexion with a rib-vault; yet the apex of this pointed arch is considerably lower than the ridge of the vault.[11A]

In the south chapel of the ambulatory in the cathedral at *Gloucester*, the line where the vault meets the wall is elliptical. Below this line there is a wall-arch, and this is pointed. One notices the pointed shape only on the lower edge of the arch, but one hardly notices at all that the point of the upper edge is cut into by the elliptical surface of the vault. It is as obvious here as in the case of early ribs that the aim is purely aesthetic. Bilson, basing his judgement on the history of the

17. Caen, Saint-Etienne, begun in the 1060s. Plan



18. Moissac. Interior of porch, *c.* 1110–15

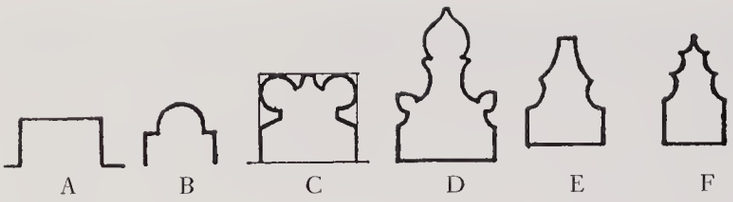


whole cathedral, dated this detail 'about 1100'.[12] If this is correct, then the pointed arch here is earlier than the one in the Trinité, but it is not connected with the vault itself. The crypt at Gloucester, which was reinforced with rib-vaults in the early twelfth century, has ribs in the form of segmental arches surmounted by masonry, as at Winchester, designed to stabilize the piers. As this crypt is very low, the builders were forced to use segmental arches, and there was no reason to beautify the structure by adding wall-arches.

Pointed arches as such were not new. Even in prehistoric ornament they appear automatically as the product of intersecting circles. The Treasury of Atreus has a dome whose section is a pointed arch. Greek mathematicians and Roman architects must have known the form. The important factor, however, was not the knowledge of the form, but the decision to use it in architecture. The Egyptians made use of it in the section of canals, but they, and after them the Romans and the Byzantines, would not have thought of using it in an exposed position. Islamic architects were the first to recognize its aesthetic and stylistic value.

The architects and theoreticians of the Renaissance hated the pointed arch, claiming that it was capable of carrying less weight than the round arch, and that it was ugly.[13] They created the legend that the wicked Teutons, who lived in forests and could not even cut down trees, used to tie the branches of two trees together as a shelter, and so discovered the pointed arch. Later they had destroyed the good architecture of the Romans, and developed their bad 'Gothic' manner instead.[14] Christopher Wren, on the contrary, knew that Islamic architects used the pointed arch as a decisive form, and he evolved the theory of the Saracenic origin of the Gothic style. It remained the rival of the theory of the origin of Gothic in the trees of the forest until Schopenhauer, and after him Spengler, declared that the Gothic style had its roots both in the German forests and in the Arabian desert. After the Renaissance, the tendency was to identify the whole Gothic style with the pointed arch. It was therefore generally thought that if the first pointed arch were discovered, the sources and the beginning of the Gothic style would be discovered with it. As early as about 1760 the English architect Essex seems to have known that the pointed arch took on a constructional role in the Gothic style, and in 1810 Saunders published an article in which he explained that the significance of the pointed arch in the Gothic vault was to permit all three pairs of arches in a bay to reach the level of the ridge.[15] If the two main pairs of arches were pointed, then they needed no stilting, and the diagonals could be semicircular. In Johannes Wetter's formula of 1835 the pointed arch was not meant to be taken as an incidental factor in the Gothic style, but as one of the integrating elements. Neither in the crossing arch in the Trinité nor in the south chapel at Gloucester had this integration really been reached. One of the first rib-vaults built entirely on pointed arches is at *Moissac* [18]. The west porch there, including a part of its famous sculpture, was carried out in the time of Abbot Roger, after 1115, the year when he succeeded to office, and probably between 1120 and 1125.[16]

At Moissac all three pairs of arches are pointed, and all three are segmental arches; the points are not very distinct. The vault is a strange mixture of progressiveness and conservatism. Its position in the south of France tempts one to draw the conclusion that the architect knew classical crypto-ribs, exposed by dilapidation (such as those at Arles, not far away); one is reminded also of Lombard examples. Moreover, the mouldings of the ribs and the wall arches in the porch at Moissac are not Gothic. Ever since Durham, architects had tried to replace the rectangular mouldings of the ribs by less isolating forms [19]. The rib is meant to sep-



19. Profiles of ribs in the Early, High, and Late Gothic periods

arate the cells, but this separation should not be too strong. By placing a roll-moulding on a rib of rectangular section with the corners of the rectangle gouged out to form hollows, the architect of Durham had already progressed towards making the triangle the enveloping form of the rib-profile. This enveloping form is exactly what the mason carves as a preparation for the chiselling out of the final form. The emphasis on the centre line of the rib acts as a division of the vertical layer of space created by the rib. Each of the two halves of the vertical layer belongs to its neighbouring cell. We therefore feel the existence of the whole of the single compartment as strongly as its division into fragmentary parts.

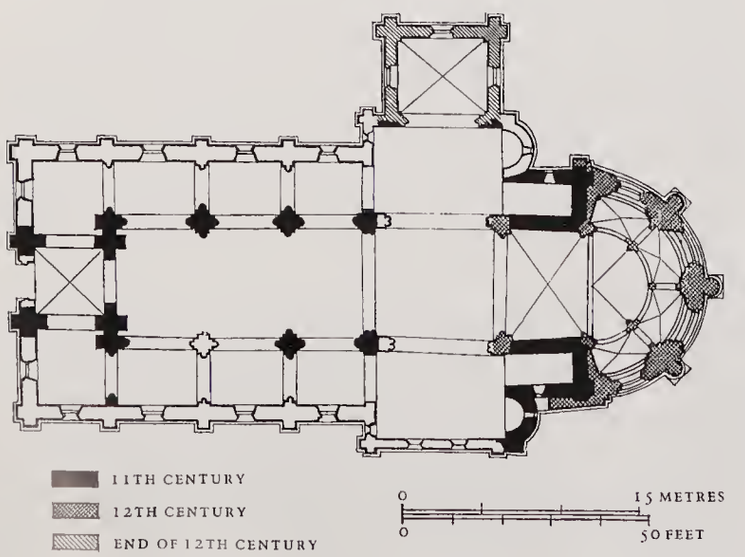
The entire nave of *Gloucester* was rib-vaulted in the early twelfth century. Only the north aisle preserves its original vaults. The ribs have two rolls with a member between which is triangular in section and thus accentuates the centre.[16A]

In the porch at *Moissac* the ribs had no weight-bearing function, even during the actual construction, for there is a crescent-shaped gap between them and the cells, which are differently curved. This gap was then filled with blocks of stone, placed radially. At the intersection of the two diagonals there is no genuine keystone. One arch carries through with no break, and the other consists of two separate parts lying up against the first, and widening slightly at the joint. There are also examples of this continuation of one arch through another among Roman crypto-ribs. At Moissac evidence exists of the mental process which led to the development of the keystone as an independent architectural member.

The upper storey over the porch, which forms a unity with the porch, and was certainly built by the same architect, also has a rib-vault, but one of a different type. The square chamber has diagonally set shafts in the corners and two frontal shafts between them on each wall. These twelve shafts support twelve ribs with a rectangular section, which touch one another on the circumference of a ring, but without intersecting. This apex ring is probably the oldest keystone within the Gothic style, although it still has a Romanesque profile.[16B]

The abbey church at *Morienval* plays a different historical role [20]. It was entirely roofed with a flat ceiling, except for the choir, which had a tunnel-vault, and the apse, roofed with a half-dome.[17] To the east of the apse there is a sharp drop in the ground, and this fact probably caused a subsidence of the foundations, as a result of which the east end had to be restored. About 1125 the tunnel-vault in the choir was replaced with a rib-vault with pointed transverse arches.[18] This date is supported by the section of the ribs, which is similar in type to that of the aisles at Gloucester (*c.* 1120). The pointed transverse arches in the 'ambulatory' have the same section. One hesitates to use the word ambulatory, because the passage between the piers and the wall is only 26 inches wide; not an ideal passage, it would seem, round which to lead crowds of pilgrims. The whole ambulatory seems to have been designed primarily as a series of inner buttresses for the apse, the upper part of which was restored later.[18A] The vault of the ambulatory is primitive: it has four bays around the semicircular apse, and thus one pier stands on the central axis of the apse (as it does in some Late Gothic buildings). To have had five bays would have involved even greater difficulties. The semicircular transverse arches are excessively stilted. In each bay one of the ribs is semicircular in one vertical plane, while the other is three-dimensionally double-curved. The lines where the cells meet the transverse arches are asymmetrical, the ridges are horizontal, and the lines where the vault meets the walls are three-centred arches.[19] It is not necessary to consider what the centering must have been like, because this vault, with its small span, seems to have been largely constructed freehand. The ribs have a common keystone which is not emphasized. The result of this arrangement is that they form a very acute angle at their intersection. With only three bays this angle would have been even more acute. Everything points to the supposition that this is one of the first rib-vaults in an ambulatory.[20] Another innovation is the cutting back of the section of the rib at its rear so as to form a vertical spur against which the cells are laid. This helped to make centering almost dispensable.

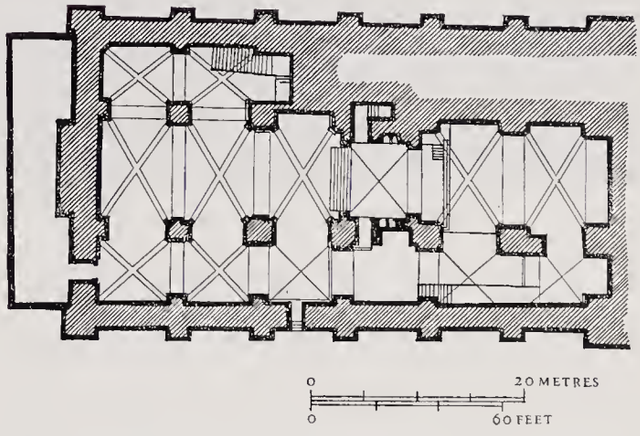
The crypt of *Saint-Gilles* [22] also has rib-vaults [21]. These vaults are important in connexion with the study of the sculpture on the west front. Within the history of the Gothic style they are less significant, being no more than variants of the vaults in the crypt at Gloucester and in the porch at Moissac, in so far as the curve of their ribs does not coincide with that of the cells. This again made it necessary to fill in the entire space between the ribs and the surface of the vault with masonry. Inscriptions show some at Saint-Gilles began in 1116, but this date cannot be definitely assigned to the ribs, as building may have been delayed by



20. Morienval Abbey Church, east end *c.* 1125. Plan

21. Saint-Gilles. Interior of crypt, after 1116

22. Saint-Gilles, crypt. Plan begun soon after 1096, vaults after 1116.



political unrest from 1117 to 1125.[21] The ribs are segmental arches and their ornamentation clearly connects them with the Norman school. It seems that most controversies over Saint-Gilles have not taken into account the groin-vaults in the bays lying further east. They are built of ashlar and have such miraculously sharp and exact groins that one would be inclined to regard them as contemporary with the masterpieces of French stereotomy of the seventeenth or eighteenth centuries. Hamann, however, after long study, concludes that the groin-vaults and the rib-vaults of the crypt were built by the same master and belong to the same period, having been begun in 1116. If it is true that the original aesthetic function of the rib was to avoid the ugly curves of the groins, it must have been introduced here for other reasons. Hamann has given a few;[22] he has also stated that the two western rib-vaults of the south aisle were rebuilt possibly in the thirteenth century. Originally a tunnel-vault may have been planned for the nave of the crypt. Groin-vaults would hardly have been feasible in view of the oblong shape of the bays and also of the fact that the nave is so low. Ribs therefore facilitated the construction in this case, quite apart from their original aesthetic function. If, as Hamann suggests, the rib-vaults were begun soon after 1116, they cannot be regarded as early essays, for they are later than the rib-vaults of Durham, Lessay, Winchester, Speyer and perhaps the early north Italian examples.[22A] Vaulting was difficult, and every compartment posed different problems. But, while the achievement is worthy of recognition, the rib-vaults of Saint-Gilles do not represent an advance in the development of construction.

The choir of the church is in ruins. The ambulatory had groin-vaults. In the rectangular north chapel the springing of a rib is preserved. It carries decoration of Norman design similar to that of the third bay of the 'nave' of the crypt. Chronologically it probably follows the latter immediately.[22B] In this case too the diagonal position of the corbel above the frontal corner of the pier proves that the decision to introduce ribs was made only when the springing-line of the vault had been reached.[22C] If the choir was started while work was still in progress in the western part of the crypt, the transition from groin-vaults to rib-vaults took place in both choir and crypt in the midst of building operations.

Recent research has convincingly shown that the rib-vaults over the transepts at *Speyer* cathedral, usually dated after a fire in 1159, are in fact part of Henry IV's rebuilding of the cathedral ('Speyer II') undertaken between *c.* 1082 and 1106.[22D] They thus belong, with Durham, to the earliest rib-vaults in western medieval architecture. But, unlike Durham, their origins seem to point to northern Italy, since the ribs at Speyer are 'band ribs', with simple rectangular profiles, and were built in two stages (like those at Bayeux): the first diagonal was constructed as a single continuous arch, and the second was built as two separate arches rising to meet the first near its centre.[22E] The Speyer ribs were soon followed by those in the eastern choir of *Worms* cathedral, also recently re-dated much earlier than hitherto supposed:

23. Durham Cathedral. Nave *c.* 1115–33

the choir was begun *c.* 1125–30 with the intention to rib-vault, and was finished in *c.* 1140.[22F]

In the third decade of the twelfth century rib-vaults spread to Lower Saxony, Alsace, and Swabia. The earliest of these may have been the band ribs built in the western porch of SS Peter and Paul in *Hirsau* (1120–30). It may be significant that Hirsau belonged to the diocese of Speyer. Some time between its beginning in 1122 and its consecration in 1134 the choir of the abbey of *Murbach* received band ribs. Band ribs also appeared in the west porch of the Hirsau-controlled monastery of SS Peter and Paul on the *Petersberg* at *Erfurt*, built some time between 1127 and 1147. The band ribs in the western porch of the *Frauenkirche* in *Magdeburg* were constructed soon after 1129, and the ribs used throughout the high vaults of *St Johann bei Zabern* in Alsace date from *c.* 1140–50.[23]

The most important question is where and when the pointed arch was connected more systematically with the rib-vault. Once again *Durham* Cathedral took the lead [23]. The vault of the nave has segmental pointed transverse arches. The porch at *Moissac* is an exactly contemporary example of this form, and there the ribs are also pointed, with their centre below the line of the springing. When the nave of Durham was begun there was no intention to cover it with a high vault, so when the present vaults were actually incorporated into the structure between 1128 and 1133 the ribs had to be supported on corbels inserted into the gallery wall. The system of alternating supports had led to the building of frontal responds on the piers and shafts rising to the line of the springing. Instead of a sexpartite vault, as at Caen, two quadripartite vaults were built across each bay of the arcade, with their ribs supported on corbels. These pairs of bays are not separated by a transverse arch. This was a new attempt at uniting the rib-vault and the alternating supports, and, at the same time, at superimposing the form similar to that at Moissac on to a completely Romanesque nave at Durham. The Gothic vault does not make the substructure Gothic, and the vault itself shows that here, as in Saint-Etienne at Caen, the ribs did not develop upwards from the structure below. The vault is a compromise, forced upon the architect by the situation which faced him when he began. A logical solution could only be reached in a completely new building.[23A]

It was this opportunity that the architect of *Saint-Etienne* at *Beauvais* found when he began work in *c.* 1120. Building started at the east end with the now-destroyed choir, the earliest surviving parts of the twelfth-century church being the transepts and the first, eastern bay of the nave [24]. The vaults are more primitive than those at Durham: the transverse arches are semicircular and highly stilted in order to

reach the level of the apexes of the semicircular ribs. All that remains of the period when the building was planned has the heaviness of the Romanesque style, together with its isolating qualities, produced by the broad transverse and arcade arches. Excavations have shown that the choir was probably vaulted with quadripartite ribs. Vaults may not have been originally intended in the transepts, but inserted *c.* 1150 with the construction of the north rose. The choir, transepts and the first bay of the nave were part of the same building campaign. A subsequent campaign was responsible for the following three bays of the nave aisles (where the ribs change from chamfered profiles to torus mouldings), and a final campaign completed the two westernmost bays of the nave, the west façade, and the high vaults of the nave by *c.* 1220–35.[23B]

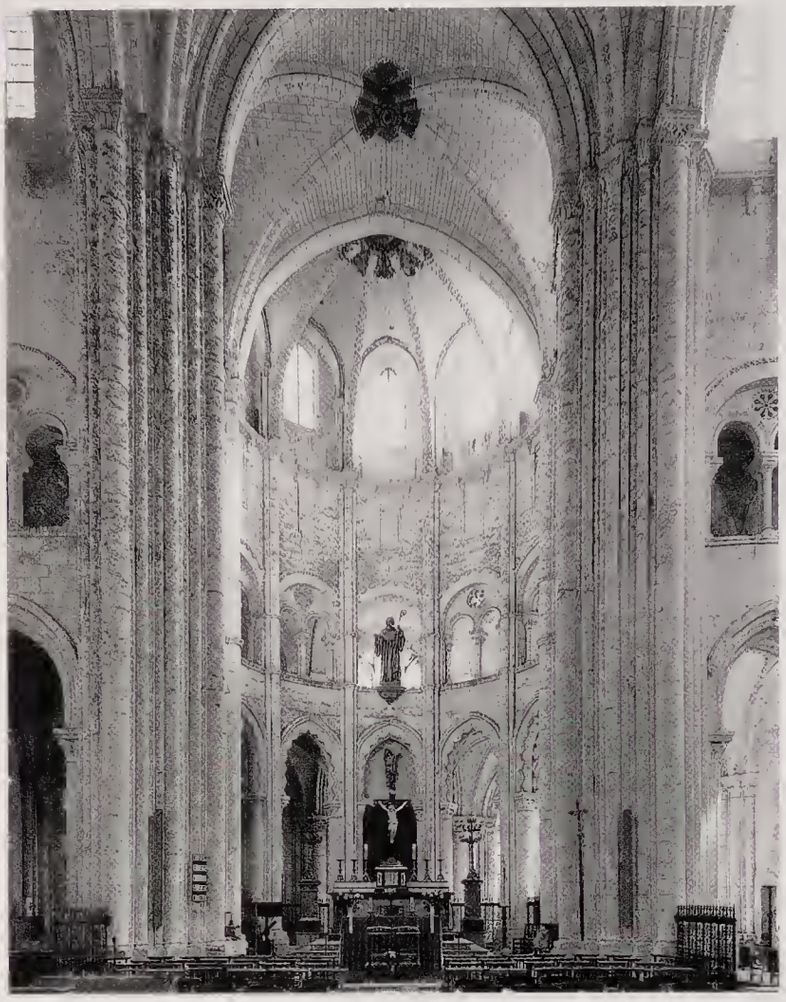
The aisles, which have been preserved, are among the earliest attempts to attain a unity between the new architectural members. The supports for the ribs with their *bases* and *capitals* are set *diagonally*; they stand in the re-entrants of the cruciform piers, and so, in spite of the feeling of isolation of nave and aisles, they bind the structure of the wall and the vault in the aisles together. This solution, too, seems to be heralded at Moissac, but at Beauvais the effect is more fluid, because the round arches continue the movement without interruption, while at Moissac the pointed arches beginning as segmental arches have a hampering effect. In addition, the ribs are slenderer at Beauvais. At the east end this is achieved by bevelling their corners; in the west bay by adding a roll-moulding as at Morienval. The shape of the *capitals* also emphasizes the upward tendency. The capitals at Durham [23] are, in principle, still like Romanesque block-capitals – convex in their lower part, so as to produce re-entrant angles of less than 180 degrees; whereas in Saint-Etienne at Beauvais the surfaces are concave, continuing the line of the shaft, and making an angle of 180 degrees, and in this we can see a decisive criterion for distinguishing between the Romanesque principle of addition and the Gothic principle of division in relation to the form of the corporeal members of the building as well as the form of the empty spaces between them.

The shafts that support the arches of the arcade are keeled, that is, pointed in section. It is surprising to find this form appearing here; for all the arches themselves are round, and the use of a sharp edge to emphasize the centre-line of a member is a characteristic of a far later stage of development.[23C]

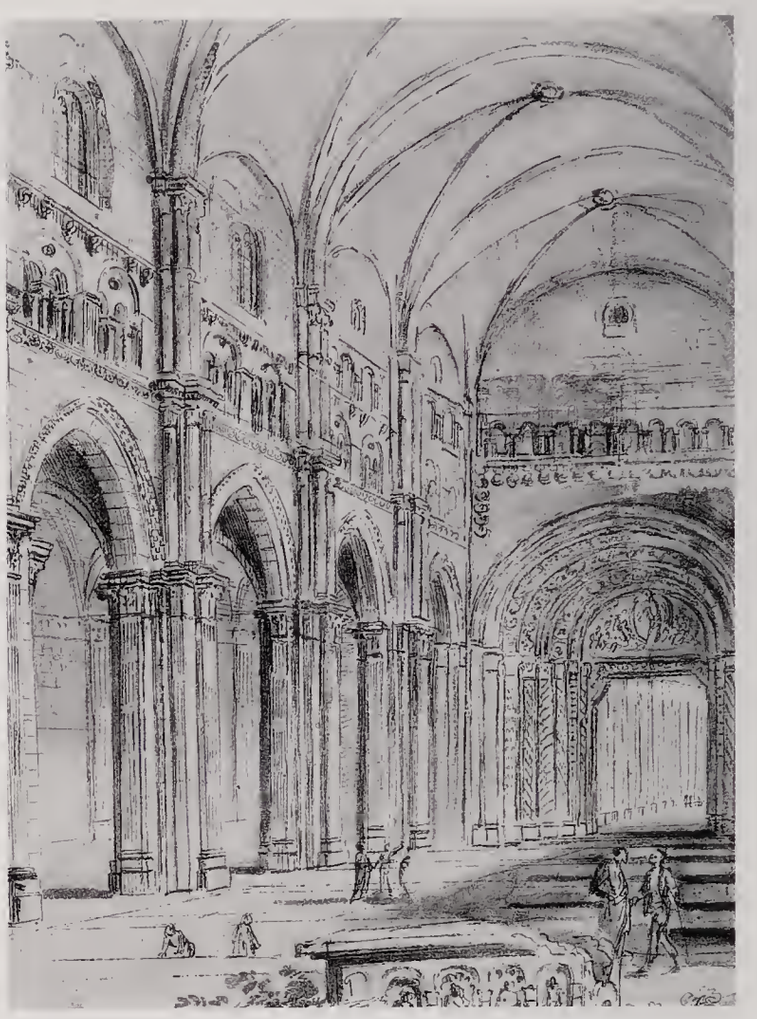
The choir of Saint-Etienne was completely rebuilt from *c.* 1500 to *c.* 1545, at the end of the Late Gothic period.[24] The original twelfth-century choir had a straight-ended plan with a rectangular ambulatory similar to English precedents, in particular the choir of Romsey Abbey. In this it differed from the choir at *Saint-Germer* [25]. This church near Beauvais was begun sometime after the acquisition of relics of Saint-Germer in 1132, probably in *c.* 1135. The six western bays of the nave, which belonged to a second phase of construction, were in building 1172–80, but the west façade was probably not finished until just before *c.* 1206 (the date of a consecration). The single choir bay is rectangular; its aisles have square bays; the semicircular apse has five chapels, set close together. Most Romanesque churches with

24. Beauvais, Saint-Etienne, begun *c.* 1120. Interior of the nave looking west. In the south aisle the nearest (earliest) vault has bevelled ribs, those further west have roll mouldings

an ambulatory have the chapels standing apart from each other, so that there is room for a window to light the ambulatory between one chapel and the next. When the chapels stand immediately adjacent to one another, the ambulatory is invisible from outside the church.[25] In Saint-Germer a gallery rises above the ambulatory and preserves the stepped-up elevation which demonstrates so clearly the idea of building by the addition of one spatial unit to another. This gallery has groin-vaults. All the other parts of the church have, or once had, rib-vaults. In their geometrical construction the rib-vaults are similar to those in the nave at Durham. The ribs are semicircular, and the transverse arches are pointed. But here the trans-verse arches do not begin as segmental arches, as they do at Durham, but are a smooth continuation of the vertical shafts. Another sign of progress is that the wall arches have the form of ribs, thereby defining precisely the joint of the vault with the wall; they also have their own shafts, beginning at the level of the springing of the vault. Pointed arches are used in the arcade, too, as they had been in Romanesque churches in Burgundy; but the arches of the gallery and the clerestory windows are semicircular. Between the gallery and the clerestory, rectangular openings are let into the roof-space of the gallery. The stunted wall passage below the windows of the apse harks back to Norman works, as does most of the



25. Saint-Germer, begun *c.* 1135. Interior of choir



26. Cluny Abbey Church. Lallemand's drawing of the narthex, begun *c.* 1130, two eastern bays vaulted *c.* 1130–40

ornamentation.[25A] But the keystone in the choir, with its rich decoration, is one of the earliest to be emphasized by sculpture.

The piers of the crossing, with their thickly clustered shafts rising uninterruptedly, form a powerful frame of simple grandeur, beyond which the choir gives an effect of rich complexity. The wealth of invention gives the building great freshness, but also unevenness. Some parts, such as the three-dimensionally double-curved ribs in the ambulatory, seem as primitive as those of the church of Morienval.

The nave of Saint-Germer continues the system of the chancel. The shafts rise uniformly, without alternation in the supports. The aisles are very similar to those in Saint-Etienne at Beauvais, but the stilted semicircular transverse arches are replaced by pointed arches. On the outside horizontal lines predominate, and the exterior of the whole building is still purely Romanesque, with buttresses ending below the eaves of the roof. The Gothic windows in the south transept and the single flying buttress against the old stair-turret are later additions.

Pointed arches in the arcade like those in Saint-Germer can be found earlier in Burgundy.[25B] Before Saint-Germer was begun, the Benedictine church at *Cluny* had been completed. Cluny was the most magnificent church of the Romanesque age in France, and all the architects of the time must have known it. The foundation stone was laid in 1088; three altars in the choir were consecrated in 1095; the eastern part of the church, including the western transepts, was almost certainly complete by 1109; the nave was substantially finished by 1120; and the whole church dedicated in 1130.[25C] The narthex was probably begun in the early 1130s, and completed some time before 1200. If Lallemand's drawing of the narthex [26] can be trusted, the transverse arches and ribs of its vault were segmental or semicircular and the wall arches were pointed. The two bays at the east end of the narthex had four storeys: arcade, triforium, clerestory and second clerestory. The triforium forms a continuation of the blind gallery in the main body of the church. The next three bays of the narthex towards the west had a three-storey elevation of arcade, triforium and single large clerestory.[26] When the narthex received its eastern rib-vaults, in about 1130–40, Germany already knew the use of the rib. The German rib-vault cannot, therefore, be an off-shoot of the vaults in Burgundy. Its ancestry must be traced to Speyer and Worms and the early examples in Saxony and the Upper Rhine of the 1130s and 1140s.[26A] The development of the Gothic style did not proceed along a single line. It would be more correct to speak of a field of forces.

The Parisian region also lay within this field of forces. *Bury*, between Paris and Beauvais, and the choirs at *Poissy* and *Pontoise*, built in the fourth decade of the twelfth cen-

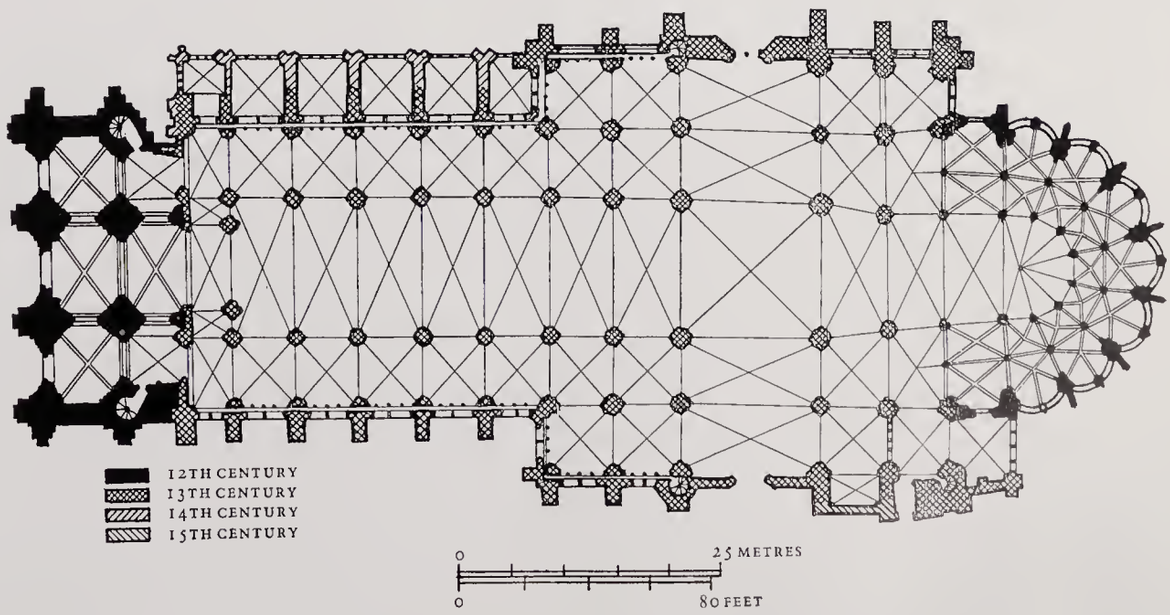
27. Saint-Denis Abbey Church. Interior of narthex, *c.* 1135–40

tury, all have some importance as designs executed before Saint-Denis, or at the same time.[27]

The significance of *Saint-Denis* as the first building of the Early Gothic style was first recognized in 1806 by Dallaway and in 1809 by Whittington, then again in 1843 by Franz Mertens, and independently, at the same time, by Kugler and Schnaase.[28] However, one must differentiate between the choir and the two western bays, which must have been designed by different architects.[28a] It is in the chancel that the beginning of the Early Gothic style is to be found [28]. The west porch cannot claim this distinction. This must be stressed in justice to the second master. It is not merely a question of setting up a more or less useful dividing-line of the conventional kind. On the contrary, to draw this line firmly leads to the recognition of what it is that raises the Early Gothic style above the level of the style of the experimental period. This need not diminish our respect for the master of the west porch. Within the limits imposed by the Transitional style, he created an important work [27].

As a young monk, Suger had seen the congestion that resulted on feast days when the faithful came to admire and worship the precious relics. The entrance to the Carolingian building, still standing at the time, was far too narrow. So his first aim was to build a façade with three wide doorways. It was to have two towers, and between them and over the central doorway was to be a chamber, the *camera*, serving as a chapel, with two further chapels to the left and right of it, at a slightly lower level. The central chapel was dedicated to the Virgin Mary, St Michael the Archangel and St Romanus, and contained the relics of the latter. The inaccessibility of the chapel suggests that it may also have served as a strongroom for the safe keeping of treasures, though Suger never mentions this function.[29]

The architect pulled down the west part of the Carolingian basilica, and replaced it with two bays. The westernmost bay contains the approaches to the three doorways. The central portal is higher than the portals on either side, because the floor of the *camera* lies on a higher level. A spiral staircase goes up inside each tower to the level above the vaults of the aisles. From this level a flight of steps leads up to the *camera*. The *camera* extends over both bays, and has two rib-vaults. The circular west window gives the chamber a bright and magnificent appearance. In the side aisles, in the lower storey, the second bay is as high as the



28. Saint-Denis Abbey Church, begun *c.* 1135. Plan

first. So the second bay of the *camera* rises above the level of the aisles, giving this part behind the towers the cross-section of a basilica. The ribs on the upper and lower levels are slightly pointed. The introduction of the pointed arch in the diagonals must be recognized as the completion of the first phase in the development of the rib-vault. The earliest example is, once again, to be found in the porch at Moissac, built about 1120. However, in the west bays of Saint-Denis some of the ribs have Gothic mouldings, the same as those in the aisles at Gloucester – two rolls, and a member between which is triangular in section.[30] At Saint-Denis there is no gap between the ribs and the cells. To give ribs the form of the pointed arch was an innovation significant in several ways. It made the construction of a vault completely independent of the shape of the bay in plan. It also brought complete conformity to the arches of a building. Previously it had to be accepted that a building might contain segmental, semicircular, stilted, and pointed arches, according to the chosen construction. Thirdly it united the vault and the lower structure vertically. As long as the rib was segmental (and Moissac, in spite of its pointed arches, is therefore included), a clear horizontal division remained between the vault and the structure below it. It has been recognized since Schnaase that the round arch and the pointed arch are aesthetic opposites. One's glance moves in a semicircle from the lowest point on the left of the arch, over the apex, and down again to the lowest point on the right, or vice versa. The round arch is always a whole, rising over the horizontal lines of its diameter. In a pointed arch the movement starts from both sides of the base at once, and proceeds upwards to the apex. The two halves of the arch unite, as they are seen in relation to the vertical axis. In a building with round arches standing on any type of supports, whether they be piers or the jambs of a doorway or a window, an effect of addition is always produced between the upper and the lower parts of the structure. Where there are pointed arches, although capitals are still kept as a legacy of the principle of addition, the vertical unity of each arm of the arch with its support predominates, especially where the capitals are concave and not convex in outline. The pointed arch enhances the verticality of the thin layers of space produced by the ribs.

However, the master of the west bays of Saint-Denis was not altogether aware of the constructional advantages of building ribs in the form of pointed arches; for the various compartments are differently constructed. In some bays the springers are on more than one level; in others the springing of the ribs lies below the level of the springing of the transverse arches (as it did in the crossing at Lessay). It is impossible to say whether or not ribs in the form of pointed arches existed in earlier buildings, because many small churches cannot be accurately dated, and even the date when Saint-Denis was begun, usually given as 1137, is not certain. It may have been some years earlier.[30A]

It is the façade of Saint-Denis that marks the beginning of a new epoch [29]. The west façade of Saint-Lucien at Beauvais (*c.* 1130), reconstructable from lithographs and drawings, consisted of a large single west portal flanked by two stair-towers. It had a considerable following in the Oise valley *c.* 1130–50, but it represented a very different type of design form the two-towered 'harmonic façade' of Saint-Denis.[30B] In the façade of Saint-Denis the three doorways are fused into a unity by the slight predominance of the central one, and by the uniform use of all-round figures in the jambs.[31] There are forerunners of this in Lombardy, and Languedoc. In Saint-Denis, however, the three doorways are incorporated into the vertical system of the façade with its towers; we see the horizontal unity of the lower part simultaneously with the unity of the whole façade. The different levels within the *camera* led to different levels for the windows. The small windows above the two flanking doorways light the lower storeys of the bases of the towers, while the long windows above them light their upper storey. Some parts of the façade are not original, especially the little blind arcade with its figures which lies above the longer windows. The battlements were restored in the fourteenth century and had round projections added over the rectangular buttresses. The upper storeys of the south tower have been preserved: those of the north tower have not.[31A]

The oculus was taken over by the façades that followed. About 1150 an oculus was built in the north transept of Saint-Etienne at Beauvais. In the case of Saint-Etienne the character of the exterior is pure Romanesque. The circular window in Saint-Denis was probably in the same style, with a hub in the form of a ring, and the spokes connected by trefoil arches.[31B] In Saint-Denis the style is no longer Romanesque. This is not just a matter of the appearance of a few pointed arches – in the two flanking doorways, and in the blind arcades and glazed windows[32] – nor of the force of the projecting buttresses and their predominantly vertical emphasis. In Saint-Denis a change has taken place, affecting the relief of the building as a whole. The west façade of Saint-Lucien at Beauvais and the 'harmonic' façades of Saint-Etienne and La Trinité at Caen seem flat compared with Saint-Denis.

The iconography of the sculpture of Saint-Denis can also be called Gothic. In Romanesque buildings the subjects of sculpture are loosely strung together, and chosen quite haphazardly. In Saint-Denis they are based on a coherent theological plan, and each piece of sculpture is part of that plan. The figures around the doorways, of which only drawings and several heads remain,[33] portrayed the ancestry of Christ. They could also be taken to be the ancestry of the kings of France, who were held to continue, in spirit, the royal line of the Old Testament. This ambiguity would be in place at Saint-Denis, where the French kings were buried.[33A] The church is truly regal in character, combining an impressive aloofness with a gracious condescension.

Suger was preoccupied with speculations on the metaphysics of light. Everything that shone stimulated him. He immersed himself in this atmosphere of mysticism. As he had seen mosaics in Italy, at least in Rome, he ordered a mosaic to be set in the tympanum of one of the smaller doorways. The architect and the sculptors must have been surprised, because mosaics could not fit in with the high relief of the architectural detail and the sculpture; they contradicted its emphasis on the third dimension. The combina-

29. Saint-Denis Abbey Church. West front, *c.* 1135–40, restored 1833–44

30. Airaines, Notre-Dame, *c.* 1140. Vault of westernmost bay of nave

31. Montivilliers. Vault of north transept, *c.* 1140–50

tion was never repeated in France, and appeared only rarely in other countries. In Saint-Denis the mosaic is not preserved.[33B]

3. THE RIDGE-RIB

The first innovation to enrich the rib-vault was the ridge-rib. Tripartite, quadripartite, quinquepartite, sexpartite vaults on rectangular bays, and tripartite and multipartite vaults on semicircular apses all had arched ribs. With the introduction of the ridge-rib into the crown of a vault, and by calling it a rib, the concept of the rib was extended to include a straight horizontal member. It had the three-dimensional projection from the surface of the vault in common with the arched rib, and it seems always to have been considered closely akin to the genuine rib. The ridge-rib divides only a surface, not three-dimensional space. The theory that its purpose was to cover the joints along a line where the stones lie parallel to the ridge may be correct in certain cases, but ridge-ribs were also used in cases where the stones do not lie parallel to the ridge, and they can therefore not have been intended as a 'couvre joint'.

One of the earliest existing ridge-ribs are generally taken to be those in the westernmost bay at *Airaines*[34] [30]. Here they run along both the longitudinal and the transverse ridges. They have a cylindrical section like the diagonal ribs, but they are considerably thinner, and this suggests that we may indeed have here the earliest experiment in a form which was to have such a rich future. The point where the diagonal ribs cross is decorated with a very small rosette. From his study of the building history Aubert suggested that this relatively small abbey church dates from about 1140.

The date is corroborated by the equally hypothetical date – between 1140 and 1150 – that has been applied to *Montivilliers*, near Le Havre.[35] Here the ridge-rib looks later than that at Airaines, because its section, similar again to that of the diagonal ribs, is richer. In the north transept a ridge-rib connects the keystones of the two bays. Quadrant arches rise to these keystones from the north wall as well as the wall of the crossing. Both carry vertical walling just like the diaphragm arches at the Trinité at Caen [31].[36] In the south transept, which also has two rib-vaults, a ridge-rib runs only from the keystone of the south bay to the apex of the south wall, and there merges with a moulded member which starts only at the height of the springing of the ribs in the middle of the end wall of the transept. These experiments, which are based on Norman tradition, may date from even before 1140. The southern aisle of the chancel still has groin-vaults with double-curved groins, and these are only slightly older than the rib-vaults in the transepts. It is impossible to determine whether the half-diaphragms in the north transept were designed first and led to the joining of the north transept bay by a ridge-rib or vice versa. In any case, one can see that, as they were given a section similar to that of the rib, both the diaphragm-arch and the ridge-rib were regarded as members of the same kind as the diagonal rib. In the Romanesque period the stylistic purpose of the diaphragm-arch had been to separate the bays by addition into compartments each of which made up a totality – a purpose achieved by the use of a rectangular profile. As soon as the diaphragm-arch was given the same section as the rib

and was set in the middle of a quadripartite vault, its character changed. It now divided space in the particular sense of division which has been defined earlier (p. 54). In contrast to this, the ridge-rib remains an inseparable part of the surface of the vault. The simultaneous use of both forms at Montivilliers produces a combination of two spatial divisions with a rib running along the ridge. Whether one chooses to interpret the two forms aesthetically, either singly or in conjunction with one another, or, in a more restricted sense, stylistically, these 'ribs' look like genuine ribs, but they no longer have the function of concealing ugly groins. Their meaning is entirely new, and is far from being merely decorative. When it is used as it is in the north transept at Montivilliers, the ridge-rib serves to melt one bay into another. At Airaines, where its use is restricted to a single bay, it divides the surface of the severies, and could almost be described as an elongated keystone.

The transference or transplantation of an architectural member from the position for which it was originally intended to another, where it takes on a new meaning, is a phenomenon that recurs often in the history of style. It was first recognized by Jakob Burckhardt: in 1843 he described it as an element of 'Rococo' which appears at the end of the development of any style. Later this use of forms in a sense other than their original and inherent one was called Mannerism. Nowadays it would be as confusing to call the vaults at Airaines and Montivilliers Rococo as it would be to describe them as works of Mannerism, a word which would be reserved for the style of the sixteenth century. In ancient Greek there were two words that expressed this shift in meaning – 'akyros', and the word that has come into English as 'metaphor'. The latter cannot be used in this context because it has acquired a different shade of meaning. The word 'akyros', however, has not been invested with any special meaning by traditional usage, and may therefore be used to describe stylistic formations such as the ridge-rib.

At first the ridge-rib remained rare. At *Lucheux* there is one which joins the second bay of the choir to the vault of the apse; and the other five cells of the apse here also have ridge-ribs. Their torus moulding is similar to the vaults at nearby Airaines, and to those of the western bays of Saint-Etienne at Beauvais, and they should be dated *c.* 1130–50, probably before 1152.[37]

4. VAULTS WITH ARCHED RIDGES

The Norman rib-vault inherited from the groin-vault the tendency to bring all three pairs of arches on to the same level. This still left the choice of making the ridge of the cells a straight line or a curve [32]. Where the latter occurs, the resulting vault is called domical. Domical vaults appear very early. Their purpose was to reinforce the statics of the ridge in the cells. Curved ridges resulted in cells whose surfaces were neither cylindrical nor absolutely spherical in the process of building as soon as cut stone and a cerce were used. According to whether the curve replaces a horizontal or a sloping ridge, the surfaces differ mathematically – and, of course, visually too. Where the ridge rises sharply, the impression is almost one of a dome with ribs.

The domical vault, in its tendency to focus upon the centre, is similar to the dome. There are domical vaults, reinforced with intersecting transverse arches, in France, most of them in towers. The north tower of *Bayeux* [2] is not the only one: there are others at *Cormery*, *Loches*, and *Tours*.[38] The members in these vaults are definitely transverse arches, and not ribs in the Gothic sense of the word. This is true also of genuine spherical vaults supported by arches with a section like that of a rib. The number of variations is surprisingly large in terms of mathematics, and attempts at stylistic analysis and evaluation are faced with ever new difficulties. It is easy to sense that a domical vault closes inwards on to its centre, while a groin-vault opens outward. However, if the cells of a groin-vault rise beyond a certain degree, a geometrical form is reached which begins as a cross-vault, and becomes in its upper part a domical vault. A horizontal cross-section across the bottom shows re-entrant angles. As cross-sections are taken higher, the angles widen until a point is reached at which they are 180 degrees, after which they steadily decrease. In the basic form of the ribless cross-vault, the groin becomes a channel, and in practice the upper part of the vault is often spherical, or approximately in the form of a sphere. This form of vault was often chosen in regions where a dome over each bay was the norm, for instance in Anjou. The series of domes in the cathedral of *Angoulême*, begun in about 1105, and the cruciform arrangement of the five domes over *Saint-Front* at *Périgueux*, built some time after 1120, are extreme examples of the application of the principle of addition within the Romanesque style.[38A] The earliest continuation of ribs with a dome is considered to be the first storey of the tower of *Saint-Aubin* at *Angers*, begun in 1130.[38B] When cross-vaults began to be built in the school of Anjou, the architects preserved their native steeply-rising cells, and reached a mixture of groin-vault and domical vault terminating in a spherical surface at the top of the bay. The choice of the pointed form for the transverse arch and the wall-arches made the geometrical form even more complicated. This form can be seen in the cathedral of *Le Mans* [33], where following the fires of 1134 and 1137 the nave was rebuilt with the use of older parts. The reconstruction began some time after 1145 under Bishop Guillaume de Passavant, and the vault was completed before the consecration of 1158.[38C] The aesthetic function of the ribs in such cases is to clarify the lines which begin as groins, turn into channels, become indistinct near the ridge of the vault, or finally disappear. The result of the sharp rise in the ridge is that, seen from the west entrance, the nearer bays overlap the further ones. This is the converse of the effect achieved by vaults with a horizontal ridge and a ridge-rib, where the aim was to produce a smooth flow from one bay to the next. At Le Mans the

32. Vaults with rising and with arched ridges

33. Le Mans Cathedral. Interior of nave, *c.* 1145–58

transverse arches are broad in the Romanesque way, as are the profiles of the wall-arches. The outer member of these profiles is supported on piers that begin in the recess in the wall at the level of the triforium. These upper piers are the continuation of the arcade piers. The frontal shafts, the adaptation of the lower part of the church by the reinforcement of every other pier, the eccentric insertion of pointed arches below the old round ones, the row of round arches in the triforium, and the form of the coupled windows – all these factors are Romanesque, and even the pointed arches of the arcade have the broad Romanesque profile which makes the thickness of the walls so intensely felt. The final result of this combination of a Romanesque elevation with a rib-vault which by the rising and falling line of its ridges isolates each bay from the next, is closely related to that of other Transitional buildings. It is hard to say whether this church is a case of 'active transition', that is, whether it is a conscious perseverance in the stylistic effort to achieve a unity between the rib-vault and the wall, or whether it is a case of 'passive transition', that is merely the admission of the rib-vault into the formal heritage of the Romanesque school. The eclectic process is all the more striking as this is one of the first buildings after the porch of Moissac in which ribs are deliberately built in the form of pointed arches.

This uncertainty as to whether one ought in some cases to speak of active or passive transition does not affect the validity of the term Transitional. The opposition of some scholars to the use of the term has never been justified. There was never a sudden break with tradition: there was never a moment when a totally Romanesque building was followed by a totally Gothic one. No better term than Transitional has yet been applied to the gradual wane of the Romanesque and the gradual appearance of the Gothic style.[38D]

Saint-Martin near *Etampes* (Seine-et-Oise) is a building which belongs to the transition.[39] The three chapels of the ambulatory stand far apart, leaving space for two windows with round arches between one chapel and the next. The transverse arches are pointed, while the ribs are distorted. The shafts and all the other forms are heavy. Except for the flying buttresses, the exterior is completely Romanesque in style. The choir was begun partly in 1142, just after the choir of Saint-Denis. Even in terms of statics, Etampes was far from perfect; many parts of the church are out of true. None the less, this church, standing back from the busy streets, is exceptionally attractive – and not merely because of its willingness to advance with the times.

CHAPTER 2

The Early Gothic Period

1. THE BEGINNINGS OF THE GOTHIC STRUCTURAL SYSTEM

According to Suger, the Carolingian church at Saint-Denis had two faults: the entrance was too narrow for the crowds of pilgrims, and the space round the main altar was not large enough on feast days when the relics were being shown. The first of these faults was eliminated in 1140, when the new west part was finished. When the building at the west had reached the level of the horizontal above the *camera* and the original battlements were finished, Suger turned to the reconstruction of the east end.[1] Suger describes how the old crypt and the chapel to the east of it were used to put the new choir on a higher level so that the relics might be more easily viewed. He praises his architect for making the measurements of the new choir so exact that, after the removal of the old choir, the new axis continued that of the nave. Considered in the light of the primitive means of measuring available in the Middle Ages, this skill certainly merits recognition.[1A] Nowadays we are less interested in the achievement in terms of geodesy than of style. Though he speaks indirectly of this, Suger does not make any direct remarks about it.[2] Presumably the abbot and his architect decided together not to have only one ambulatory with seven chapels round the main apse, but to dispense with the walls separating the chapels, and in this way create a second ambulatory round the first [34]. This was the solution to the problem of how to facilitate the circulation of the pilgrims. On feast days one could climb the flight of steps on one side, obtain an excellent view of the relics, and walk round the choir and down the steps on the other side. If people wanted to take part in a service held in one of the chapels, they could interrupt their walk round the choir and step into the chapel. We do not know whether the chapels, too, were used to display relics.[2A]

The double ambulatory gives the effect of a 'hall-church'. The main choir rises above them as it would in a church of basilican type. This central section was replaced from 1231 by a High Gothic structure.[3] Suger's choir presumably had a three-storey elevation supported on slender columns with a small clerestory of paired windows and a middle storey consisting of a series of subdivided arches opening into the spaces over the ambulatory vaults beneath a lean-to roof very like the elevation of the choir of Vézelay [50] or at Sens [35].[4] Suger mentions the rib-vault in the choir.[5] It must have been similar in its geometrical construction to the vault in the ambulatories.[5A]

The most obvious difference between the two western bays and what is preserved of the east end is that the latter is extremely light, whereas the former is much heavier. The massive piers of the west narthex were built because high towers were to rise above them. There was no such necessity at the east end. It has been debated whether both plans were drawn by the same architect, who merely suited his design to the exigencies of the case in point. However, the details contradict this theory, and so, even more strongly, does the complete mastery of the construction of the rib-vaults that is displayed in the choir.[5B] Perhaps the second architect carried his tendency to lightness too far, making the piers of the chancel too slender. The superstructure was perhaps not stable enough, for it was pulled down in the years following 1231.[5C] Since the publication of Crosby's research we know that Suger left the Carolingian nave standing, so that, after finishing the new Rayonnant choir and transepts, an unknown architect, from *c.* 1237[5D] replaced the Carolingian nave. In this one building, then, the Transitional, Early Gothic, and High Gothic stand side by side.

After the diversity of the heavy vaults of the two west bays, those in the double ambulatory seem endowed with great unity and grace. In the choir aisles the ribs are semicircular, and all the other arches are pointed. In the trapeze-shaped bays of the ambulatories the keystone does not lie at the intersection of the diagonals, as this would create an asymmetrical crossing of two vertical semicircular arches. The point chosen for the keystone is the intersection of the radial axis with the centre-line of the ambulatory, and it is to this apex that the ribs rise in four separate arms. Because of this abrupt change in direction, they look like pointed arches. In the outer ambulatory there is a similar construction which sets the apexes in the centres of the chapels. The chapels themselves stand one beside another and form a wall in the shape of a series of segmental niches, each chapel lit by two windows. On each axis of each chapel, therefore, one pier stands between the pair of windows, from which a fifth rib rises to the ridge of the vault. The two sets of nine vaults are supported between the two ambulatories on ten slender columns, which realize the desired impression of lightness in the vaults without interrupting the views. The result is a complexity of overlapping forms which, however, in no way diminishes the clarity and simplicity of the whole. The concave, chalice capitals are decorated with acanthus leaves which cling closely to the core of the capitals themselves. The relief is delicate throughout, and hardly differs from that of the west part. The difference lies in the greater elegance of the details at the east end.

It is the combination of all these qualities that is important in the stylistic evaluation of the interior of Saint-Denis as the first work of the Early Gothic style. In addition, the windows are furnished with stained glass. By insisting on having a mosaic in the façade, Suger put his mystical leanings before unity of form. Stained glass, however, achieved both purposes. It produces the unreal and mystical Gothic light which softens the alternation of dark and light in the mouldings and also unites the space of a church by its atmosphere of mystery. Suger says of it that 'it transfuses the interior with wonderful and uninterrupted light.' From Saint-Denis on, stained glass became one of the integrating elements of the Gothic style, influencing even the form of

34. Saint-Denis Abbey Church. Ambulatory, 1140–3

the windows – their shape and their size. At first the design of the glass was still purely Romanesque, an example of how two arts can develop at a different tempo. But, by collaborating with Gothic architects, the painters were gradually stimulated into making their figures and compositions Gothic. In Saint-Denis, the rows of windows were one of the means of creating continuity of space, and their subdued, coloured light contributed to this impression.[5E]

To understand the development of style it is essential to rid oneself not only of the preconceived idea that progress in style takes place at the same rate in every one of the arts, but equally of the conception that, within architecture itself, the interior and the exterior always develop simultaneously. Naturally the architect tried to find a form for his exterior that would correspond to that of the interior. This stylistic intention is evident in Saint-Denis, but it was not sufficient. The task itself proved very difficult. During the period of transition, exteriors remained completely Romanesque. This is true of Saint-Etienne at *Beauvais*, *Saint-Germer*, and Saint-Martin near *Etampes*. In churches in which the new type of vault was an afterthought, the exterior naturally remained the same – for example, in the two main churches at *Caen*. At *Saint-Denis* the exterior of the chapels is divided by the horizontal line at the base of the windows [96]. Below this the round Romanesque-looking windows of the crypt have no imposts and are set on an axis different from that of the relieving wall-arches. On the main storey the pointed arches of the windows correspond to the relieving arches, but the latter are at a higher level, their springing lying at about the same level as the inner apex of the window arches. This shift, which reminds one of the adjustable tubes of a telescope, was the result of the fact that the cells of the vaults in the chapels rise. The only other examples of this loose relationship between two arches are to be found in the inte-

35. Sens Cathedral, begun *c.* 1140. Interior

riors of the collegiate church at *Mantes*, and the parish church at *Chars*. Considered separately, the exterior of the bottom storey can only be called Romanesque, or even Roman. However, the pointed arches and the slender shafts continuing on the outer frame make the main storey Gothic. The buttresses with a section in the form of half an octagon could be called Gothic too, but would be more accurately described as Transitional. The slender columns at the sides of the windows repeat the form of the interior; they are a rhythmic echo of the columns that carry the vaults of the ambulatories. The translation of the appearance of the exterior into the idiom of the Gothic style lagged far behind the development of the interior. The Gothic style developed downwards from the vault, and this explains the slower development of the exterior.[5F]

If we are right in dating it its beginning to about 1140, then the choir of *Sens* was built at the same times as that of Saint-Denis. It is possible that preparations for the building were made before 1140, perhaps before 1137.[6] For reasons of statics the choir aisles and ambulatories were always built first, and these were designed as part of the first campaign, begun a little before the choir of Saint-Denis.[6A] The rib-vaults here rise from corbels which have been squeezed in over the capitals of round transverse arches, confirming that groin and not rib-vaults were originally planned.[6B] The ambulatory windows with their round arches, and the dado of round arches below them, look pure Romanesque. However, the internal elevation of the choir itself is comparatively Gothic [35]. The alternation of supports, so rich in contrast, resulted in a sexpartite vault. The intermediate supports consist of two round piers which stand, not one beside the other, but one behind the other, as they do in the church of Saint-Martin near Etampes, going up from about 1142, just after the beginning of Sens, and under its influ-

ence.[6C] From the strongly-projecting abacus a very slender shaft rises, between the pointed arches, to the level of the window-sill, which is also the level of the springing of the vault. Between the arcade and the windows lie the false gallery openings, each consisting of two pointed arches which in turn are divided into two sub-arches. The original clerestory was also divided into two sections, with two windows in each, but it was replaced after 1268 in the Rayonnant style.[7] The wall-arches are supported by shafts which stand on a horizontal moulding at the springing of the vault. Each group of two bays lies within a frame composed of groups of uninterrupted vertical shafts. The extensive wall-surfaces in the region of the triforium are a remnant of the Romanesque, but the pointed arches with their openings, together with the arcade and the former windows, form a convincing unity. We can recognize only by going to later works of the Gothic style that at Sens there is already a beginning of the Gothic type of relief. The main triforium arches are given the same profile as is given to the archivolts of the arcade below. They still form a receding layer of space (which is a Romanesque feature), but the narrow shaft of the intermediate transverse arch projects, and the elevation seems to be conceived as a system pri-marily concerned with the whole and only secondarily with the parts, and in this, to some extent, it goes beyond the Romanesque. Whether to call this Transitional or Early Gothic must remain the decision of each individual observer. There is a soothing tranquillity in the building, which is largely due to the proportions of its cross-section. The measurements are $49\frac{1}{2}$ by $78\frac{1}{2}$ ft (15.25 by 24.40 m.), which is almost exactly the *sectio aurea*, so beloved of the High Renaissance. The rectangle between the main piers, extending upwards to the line of the springing of the arches, has almost the same proportions. However, it must not be overlooked that the secondary proportions of the individual members also play their part. Though at Sens the *sectio aurea* governs two important sets of dimensions, it cannot be claimed that these proportions are characteristic of the Gothic style.[7A]

The choir at *Noyon* [36] is far more characteristically Gothic. While the choir of Sens can give us clues to the appearance of the lost choir of Saint-Denis, the choir of Noyon represents a more advanced stage of development. In the ambulatory at Saint-Denis the creations of a 'hall' of two aisles was specifically Gothic. At Noyon the chancel rises – as at Saint-Denis and Sens – above the gallery, but the elevation at Sens leads to the conclusion that at Saint-Denis also Gothic features did not appear very clearly. At Noyon we see the earliest extant building in which all parts of the system – the rib-vault, the pointed longitudinal and transverse arches, the piers and shafts – form a single skeleton which, in order to establish itself as the dominating factor, both allows and demands the dissolution of the wall. Structure prevails, and the loads therefore appear light.

The choir at Noyon was begun about 1148. Work started on the two choir towers and the western bays of the choir and worked eastwards, with the exterior walls at aisle and gallery levels preceding, respectively, the choir arcades and gallery openings. The whole choir was finished probably by *c.* 1165, though it probably remained faithful to the general plan laid down in about 1148.[7B] This date, then, is a decisive one in the history of the style, although no influence was visible in other buildings until the work at Noyon had made at least some progress.[7C]

Ever since 1835, when Johannes Wetter explained that the dissolution of the wall was the product of four main factors – the cross-vault, the rib, the pointed arch, and the buttress – this principle has always been emphasized as one of the main characteristics of the Gothic style. However, the piercing of the wall is a phenomenon that also exists in other styles. Within the Gothic style it is not the size or the quantity of the openings in the wall which is decisive; it is what can only be called the specific Gothic relief.

In the fine arts – sculpture and painting – the word relief is applied to the degree of curvature and projection in the finished work, by comparison with that in the actual model. When depth is reproduced in the same proportions as height and breadth, we speak of high relief. If we diminish depth without diminishing the other dimensions, we have bas-relief in its various degrees. Finally the dimension of depth can reach zero, when it is either omitted entirely, as in a line drawing or a silhouette, or suggested through light and shade or different tones of colour. However, the word relief can also be used in architecture, e.g. in relation to a Romanesque wall with pilasters and a frieze of small round arches on corbels, a motif which for no very good reasons is known in England as a Lombard frieze. Here one sees more than one layer, as the surfaces of the pilasters and the round arches lie in one plane, while the wall itself lies in a second plane further back. Even where there are more than two planes, for instance in a portal with a series of receding arches on a corresponding series of receding columns, or in a window, the Romanesque principle always produces an effect of recession by steps. Aesthetically, this type of relief keeps the visitor at a distance from the final plane of the wall-surface itself. He feels that there is a boundary holding him at a respectful distance. It can be said of Romanesque relief that one reads through it from the nearest plane to the most distant.[8]

The relief at Noyon is quite different. Mathematically speaking, it makes no difference whether the planes of the relief stand one in front of the other or one behind the other. Aesthetically speaking, however, the only valid statement in considering Gothic buildings is to say that the planes stand one in front of the other. This can be most clearly seen in the gallery at Noyon. Halfway through the thickness of the wall stands a column which supports the inner arch. In front of it stands another, supporting the archivolt. Close to it, and allowing none of the wall and only a small section of the pier to show, are the shafts supporting the diagonal ribs. They stand on either side of the still further projecting shaft which carries the transverse arch.

A comparison with the choir at Saint-Germer shows that the main planes there still stand behind one another, but that already the new inversion can be felt. This inversion increases in intensity as the Gothic style, so to speak, discovers its own true nature.

36. Noyon Cathedral, begun *c.* 1148. Interior

The cathedral of Noyon is rich in forms. The architect obviously took pleasure in modifying the elevation of the choir in the north and south ends of the transept, although they have no ambulatory and no gallery [37, 41]. So he put the triforium directly above the arcade, and above this built a series of windows to correspond to the gallery in the choir. Then, above, a clerestory lies within the vault. There is a wall-passage along the triforium, a second one along the inside of the lower windows, and a third at the outside of the upper ones. Convincing proof exists that the models for these wall-passages are to be found in Normandy, for example in the apse of La Trinité at Caen.[9] In such structures in Normandy, the wall, as seen from the interior, appears to consist of two layers; as seen from the exterior, this was already the case in Romanesque buildings in the Rhineland and in Italy because of the dwarf galleries.[9A] The sources of the Gothic style lie in the Romanesque, and especially in that of Normandy. The Gothic style is a transformation of this Norman style, and because this is so, it is legitimate to look for the adoption of Norman forms in the Gothic style itself.[9B] But this is not enough. The question is: why can the division of the wall into two layers at Noyon no longer be called Romanesque? The answer is that, in La Trinité at Caen, the surface of the wall, in spite of the increased size of perforations, remains a unit. The piers look as if they were joining hands. They are a row of frontal members. Every part of the building faces us. We feel that we could run our hand over these surfaces as we could over that of the semi-dome above. At Noyon, however, the columns in the gallery seem to face one another, with their flanks towards us. If we were to stretch out our hand now, we would find no surface, but we could insert it into the gap between each column and the next. This impression is produced by the relief treatment. The forms come towards us from the core of the wall. No longer do they stand aloof, holding us at a distance. Now they draw us into this spatial unity, which is ours as well as theirs. The Gothic choir embraces us; it unites us with the building, and by opening both inwards and outwards it also unites the interior with the exterior.

The projection of the planes of the wall into the interior finds its necessary complement in the equal projection of the members towards the outside, which produces the characteristically Gothic exterior. This is hardly noticeable at Noyon, but, since the windows of the apse lie close to the buttresses, and these in turn (in as far as they are original) are changed into flat projecting members which could not be called a plane in the sense of Romanesque pilasters, one can say that the glass in the windows is a visible part of the central layer of the wall, from which the other layers of the relief project towards us. Because the principle of the internal and the external relief is the same, it makes the whole wall appear a unity.

At Noyon the small flying buttresses supporting the chevet gallery may reflect the original twelfth-century system. The clerestory flyers are eighteenth-century, and those in the nave belong to the original construction of *c.* 1185.[9C] The transepts have the original buttresses with steeply pitched tops, in contrast to the capitals at the top of the buttresses of the choir at Saint-Denis. Buttresses with this sort of slope were known in the Romanesque period. In the Gothic period they become the general rule. At Noyon the buttresses already form a deeper projection at the bottom, or conversely project less at the top, which, in mathematical terms, is the same thing. The rational explanation for this is that the line of forces set up by the vault permits economy of materials at the upper levels. However, this possibility was exploited because the resultant form fitted in, stylistically, with the Gothic form of relief. It made it more difficult to see the exterior as a surface determined by the points that project to the very outside layer, and, conversely, made it easier to consider the wall as determined by the innermost layer, that is, the glass in the windows. Aesthetically, the buttresses project towards us, and, at the bottom, where they are nearest to us, they project furthest. In terms of mathematics this difference is unimportant; in terms of aesthetics, however, it has a decisive significance.

The analysis of the increasing tendency to partiality is only one of the stylistic factors of this building. The design of Noyon is characterized as much by its wealth of forms as by its lack of preoccupation with economy of materials or labour. The form of the semicircular ends of the transepts area case in point. They are built in five storeys, if one counts the lower, rather Romanesque blind gallery. Another example of richness of form is the multitude of shaft-rings. Here again there exists a rational explanation. These stones bond into the wall itself, and serve as a support for the monolithic sections of the shafts. Thus they facilitate the actual building, and to some extent increase the stability of the shaft. All this must be conceded. However, to our eyes, these stones do not penetrate the wall; they look like rings that have been added, and where they appear at the same levels as a horizontal ledge, they look like continuations of the ledge, bent and moulded round the shafts. Their ring-like character is emphasized by their section, which has identical, symmetrically receding curves above and below the horizontal centreline. Corbels, which penetrate the wall and reach deep into it, have a very different profile. These rings add life to groups of shafts; they form an aesthetic bond between them, and indicate a horizontal layer when they appear on the same level on each group of shafts. At Sens shaft-rings are still used in moderation. At Noyon, they are the product of a deep-felt need for wealth and vivacity. In the nave they appear only in the two easternmost double bays (and only at arcade level in the western of those two bays). As is to be expected from the alternation of its supports, the eastern double bay of the nave was projected with sexpartite vaults. It was laid out *c.* 1165–80, as part of the campaign on the transepts. But the sexpartite system was abandoned in favour of quadripartite vaults when work reached the upper parts in *c.* 1180.[10]

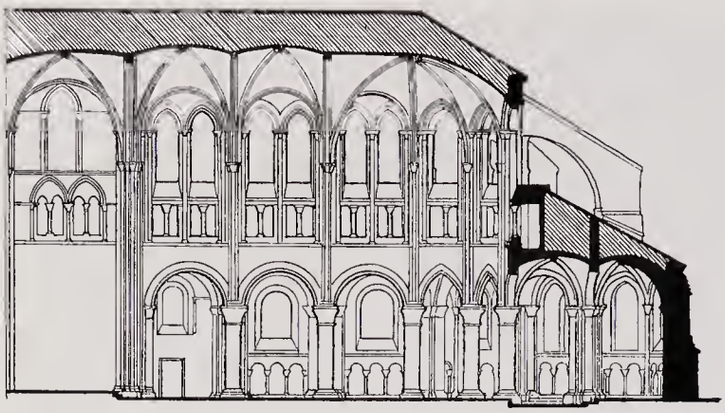
The cathedral of *Senlis*, begun in 1151/2, vaulted throughout by about 1185 and consecrated in 1191, also had sexpartite vaults. After a fire in 1504, the transepts were lengthened in the latest Late Gothic style. The plan and details of the chevet owe something to Saint-Denis, Saint-Germer and Noyon, while the lack of a transept in the original church, together with the strong alternating system, show the inspiration of Sens.[11] The interior elevation combined the three-storey scheme of Sens and Saint-Denis with the large vaulted tribunes of Noyon, and, with its expanses

37. Noyon Cathedral. Interior of transept, designed *c.* 1165/70

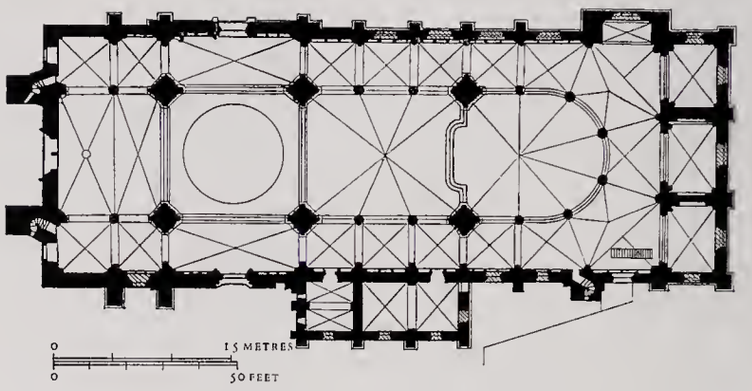
of flat wall, anticipated that of Notre-Dame in Paris. But it was simpler than these in every way, and its charm was of a more intimate kind. The Late Gothic clerestorey has robbed the interior of all its harmony. The exterior of the choir clearly shows the contrast between the 'Romanesque' style, in the emphasis on the closed wall in the chapels, and the Gothic dissolution of the wall, in the flying buttresses and the windows of the upper storey. In the Middle Ages the modern principle that restoration should follow the style of what could be preserved was seldom recognized. Each generation held that its own style was the only permissible one.

If we deplore the particularly sharp and disturbing discrepancies in style at Senlis, we must not base our judgement on the purist ideals which did so much damage in the nineteenth century. In many cases architects succeeded in producing a unity out of the work of various periods. Some did not succeed, and others did not even attempt to do so, thinking that such a unity was impossible to achieve.

Saint-Germain-des-Prés in *Paris* is an example of a successful blend. The west tower was built by Abbot Morard (990–1014), the nave and crossing later, in the course of the eleventh century. The segregated crossing is therefore several decades later than that of St Michael at Hildesheim (from *c.* 1100). Saint-Germain-des-Prés is thus Early French Romanesque, not, as Franz Mertens believed in 1845, the start of the Gothic style. The Romanesque choir was altered at the same time as the choir of Saint-Denis was being erected, or when it had just been completed [38]. In



38. Paris, Saint-Germain-des-Prés, choir, consecrated 1163. Longitudinal section



39. Provins, Saint-Quiriace, begun *c.* 1157. Plan

plan and elevation the two are closely related, but in Saint-Germain there is only a single ambulatory. The choir was built with a false gallery which in the straight bays opened into the choir with four coupled openings per bay, or at Sens and probably Saint-Denis. The original elevation is preserved in the two towers that flank the entrance to the choir. In the seventeenth century the windows were extended downwards to the level of the springing of the arches of the original gallery, and this gallery then became a triforium. The Early Gothic choir, consecrated in 1163, must have made a fine combination with the Romanesque nave and transepts, whose rib-vaults are seventeenth-century work – an early example of the care of ancient monuments according to modern principles. We also see some not very pleasing wall-paintings of 1810, some even less pleasing modern stained glass in the windows, and some restored capitals. Yet, in spite of all this, the church is homely and attractive, and extends a powerful invitation to quiet meditation.

The date at which this Early Gothic choir was consecrated makes it probable that it was begun after Noyon and at the same time as Senlis.[11A] Compared with the almost frighteningly slender columns in the apse at Senlis, those in Saint-Germain look robust, probably a conscious effort to make them match the Romanesque piers in the nave.[12] The heavy capitals, too, hardly differ in style from the Romanesque ones in the nave (or rather from the originals of these at the Cluny Museum in Paris).

The church of Saint-Quiriace at *Provins* [39], begun soon after 1157, also has these short, stocky columns.[12A] The broad archivolts of the arcade rest on the abaci leaving between them only just room for a very slender shaft with rings round it, reminiscent of the shafts at Sens. This shaft rises past the great double openings of the triforium to support a multipartite vault with a highly developed keystone. The architect does not seem to have seen any contradiction between the round arches of the triforium and the windows, and the pointed arches of the arcade. The bay adjoining the apse has an octopartite vault. Two intersecting ribs form normal diagonals, and between them two more ribs spring from the side walls, which they divide into three parts, and also intersect at the apex of the vault. These ribs, which look rather like a spider, were repeated, probably by the same architect, at *Voulton*,[13] and there is a later, similar vault in the east chapel of the cathedral at *Auxerre*. The capriciousness of the designer of Provins is further shown in the form of the ambulatory. The straight eastern wall of the ambulatory opens into three rectangular chapels. The rectangular form, unusual for an ambulatory, resulted in unusual forms of vaults, which, however, could be easily constructed by using the pointed arch. However, the originality of this architect did not prove fertile. The Gothic style developed from Noyon, and not from Saint-Quiriace. It is in the cathedral at Laon that the forms of Noyon are taken up and developed.

In trying to date *Laon*,[14] we know that the cathedral was begun by Bishop Gautier de Mortagne, who held office from 1155 to 1174 [40, 42] The Carolingian church was renovated 997–1030 and damaged by fire in 1112 in a rising of the populace against the bishop. It was repaired, but by 1155 it was either considered unsuitable or unsafe. Gautier also built the little two-storeyed *private chapel* in the bishop's palace. This is designed on a central plan. Both storeys are built round a square central space; the lower floor has piers with shafts, the upper one round piers. The plan thus forms a Greek cross with four supplementary square spaces in the corners. The transverse arches are pointed, while the windows have round arches. The lower storey has groin-vaults throughout: the upper floor has tunnel-vaults in the four arms, groin-vaults in the corner squares, and a rib-vault, supported on corbels, over the central square. This plan is reminiscent of Byzantine churches built round a main central space, and the polygonal apse also reminds one of churches of this kind. However, the east choir of the cathedral at Verdun, consecrated in 1147, may be a nearer model for the polygonal apse.[14A]

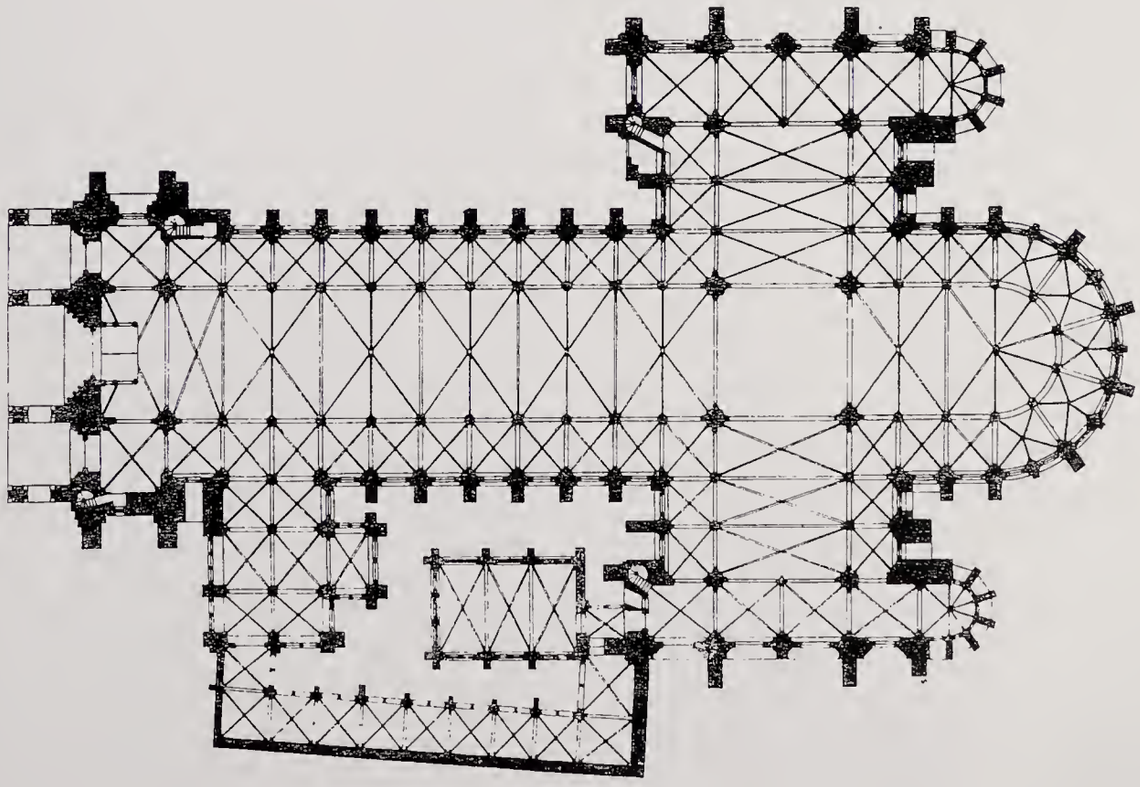
There are two reasons why this private chapel was considered important to the study of the *cathedral* at *Laon*. First, it seemed older in style, and was therefore considered to have been built before the cathedral. If the chapel had been begun in 1155, immediately after Bishop Gautier's taking office, then the cathedral must have been begun some years *after* 1155. Second, the polygonal apse of the chapel was thought to be the precursor of the original choir of the cathedral, which was reconstructed by some scholars as having a polygonal apse. On both counts, the chapel cannot now be considered significant for the cathedral. First, it may have been begun at any time during the construction of the cathedral.[14B] Secondly, the cathedral's original choir termination, which was pulled down some time after 1205 and replaced

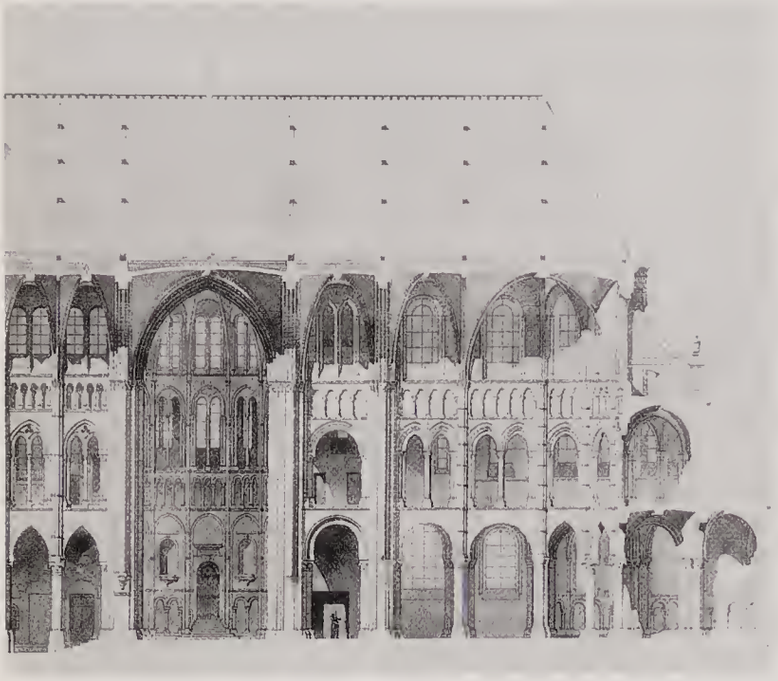
by the present square-ended choir, was almost certainly semicircular and not polygonal.[14C] However, the two apses on the east side of the transepts have been preserved in their original state, and are polygonal from the level of the lowest lancet windows.

Polygonal apses existed in Byzantine, Roman, and Early Christian times, but those at Laon are the earliest in a completely Gothic building. The advantage of departing from the circular plan at the level of the sill of the windows or yet lower down was to alleviate the discrepancy between the curved window surrounds and the flat surface of the glass. This contrast can be seen very distinctly in the windows of the choir at Saint-Denis. The demand that all windows should be filled with stained glass became increasingly strong. The new principle of the dissolution of the wall increased actual window-space, and so made the contradiction between the curve of the wall and the flat surface of the stained glass even more obvious. At the same time a similar aesthetic conflict had sprung up between the rib-vault in the apse and its semicylindrical form. The polygonal plan would have resolved all these problems, and, moreover, it fitted in admirably with the new emphasis on the diagonals which the rib had brought to bear on the two main axes which had earlier marked the only decisive directions of every church. Even seen at an angle, a semicylindrical apse will always appear frontal, whereas in a polygonal apse, though one may stand frontally to one side, one will always see slanting sides at the same time. Several images are seen simultaneously, and all are included in the optical impression of the whole. The polygonal plan is a manifestation of the Gothic desire for the 'multiple image',[14D] and, at the same time, it is the result of the extension of the use of stained glass.

This multiplicity of images is one of the main factors in the charm of the interior and the exterior of Laon. On the exterior it is achieved, above all, by the towers. These have rightly been connected with the towers of the cathedral at *Tournai*, where the heavy crossing tower, together with the two slenderer towers over the ends of the transepts, form a group of monumental prodigality [57]. Its silhouette changes with the angle from which it is seen. So the result here is a multiple image also. The tendency towards what, since the writings of Gilpin in the eighteenth century, has been called 'picturesque' is a feature of the later stages of many styles, and it is also one of the integrating factors of the Late Romanesque, to which the transepts of Tournai, built *c.* 1130–60, certainly belong.[15] The Gothic style, considered as an offshoot of the Romanesque which developed at the same time as the Late Romanesque style, also shows this tendency towards the picturesque, but used totally new architectural members to achieve its effect. Moreover, on the exterior it used the new Gothic concept of relief. One must assume that the decision to build a crossing tower, four towers over the transepts, and two at the west façade of Laon was made about 1170–75, but the west towers were not complete until *c.* 1200, and the two transept towers were built later in the thirteenth century.[15A] A comparison with Tournai shows that a complete change in style had taken place. The relief of the church at Tournai is still Romanesque throughout.

40. Laon Cathedral, begun after 1155. The choir is shown in its original form





41. Noyon Cathedral, longditudinal section

It appears that the first architect at Laon began with the east bays of the transepts, starting on the south side, and then moved into the choir. The elevation is four-storeyed, is similar to the choir at Noyon, although it still has some round arches. The triforium is a genuine passage, as it was in the later parts of Noyon.[15B] The relationship between Laon and Noyon can be traced chronologically, almost bay for bay. One has the impression that the two architects visited one another and discussed each successive step. In the transepts at Laon each bay received a quadripartite vault, and in the choir and the nave each double bay a sexpartite one. Conversely, at Noyon, the choir has quadripartite vaults, built sometime between about 1170 and about 1185, while the easternmost bay of the nave was planned to be covered with a sexpartite vault, like those at Laon, but when in about 1180–85 the masons reached the level of the vault springers on the south side of that bay it was decided to adopt the present quadripartite vaults.[16] At that time the double bay in the choir at Laon, with its sexpartite vault, was already finished [40]. This double bay at Laon is preserved in its original state. The systematic arrangement of the shafts to correspond to their respective ribs is common to both churches. At the corners of each sexpartite bay, where a transverse arch, two diagonals, and two wall-arches had to be considered, there are five shafts, standing side by side, while in the middle of the bays there are only three [42]. This is usually called logical. However, the premise for this logic is that every arch should have its own support; so it is surprising that this logic is nullified by the arrangement of the arcade piers, which are round in every case. At Noyon in the easternmost bay of the nave the groups of shafts at the corners of what was intended originally to be a sexpartite bay rise uninterrupted. This produces a powerful alternation and distribution of accents. The same had been done at Sens [35]. At Laon, the regular row of round piers partly does away with the Romanesque emphasis on square superordinate bays. This regular row of identical piers later became a specifically Gothic motif. At Laon, the combination of the identical piers with the alternating groups of shafts above them, while it possessed richness and charm, certainly made architects wonder about its illogicality. This problem remained, and, in about 1180, the third architect tried to solve it in the nave by setting four shafts round each of the piers at the corner of the two double bays next to the crossing. These four shafts stand on the same plinth as the round pier and help to carry the abacus, but are joined to the pier only by rings. These piers are similar to some piers in the presbytery of Canterbury cathedral, dated precisely to 1177 and 1178, which show various combinations of thin shafts grouped around the core of the pillar.[16A] This arrangement was, however, not continued at Laon.[16B] The transepts at Laon have aisles, and, above them, the gallery continues round the two ends, as it does in some older Norman churches.[16C] The reason for this preoccupation with continuous circulation at Laon was that many pilgrims visited the church. The effect of a multiplicity of images is created by the aisles of the transept, together with their chapels below and above. The interior is Gothic also by reason of the relief and the close connexion of the vaulting-shafts with the columns of the gallery and those of the triforium. As at Noyon, the members project, beginning from the innermost layer of the walls. As at Noyon also, the openings of the gallery create by the mouldings of their members the effect of division. The whole always strikes one as existing aesthetically (not genetically) before the parts. Groups of openings were prefigured in Romanesque times. However, in the Gothic style they were transformed by the new kind of relief.

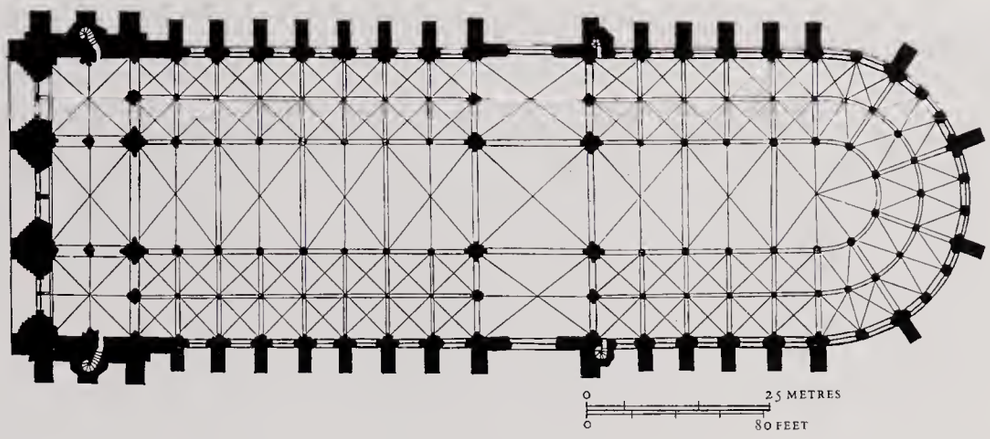
In common with Noyon, Laon has a multitude of shaft-rings, and also the tendency to a wealth of different architectural members. This characterizes both the interior and the exterior.[17] The monumental character of Noyon is reproduced and enhanced. Each of the great Gothic cathedrals has its own special atmosphere, which can hardly be expressed in words. Laon, with its light yellow stone and its abundance of unbroken light, is as joyful and festive in feeling as Noyon, but even more powerful. The cathedral of Notre-Dame in Paris can be clearly distinguished from both of them by its gloom.

The cathedrals of *Paris* and Laon were under construction at the same time, though they seemed to have exercised no architectural influence on each other.[17A] The foundation of the choir of Notre-Dame in Paris is supposed to have been laid in 1163 by Pope Alexander III, but it is likely that the building was begun a few years earlier in *c.* 1160. Laon may have been started *c.* 1155–60.[17B] In Paris there are sexpartite vaults [44], and the way in which the shafts rise above the abaci of the round piers is also the same as at Laon [43].[17C] There is one simplification. In the choir, at the main bay divisions, and in the nave throughout, the shafts supporting the wall arches only begin at the springing of the vault. The main impression, therefore, is of a series of

42. Laon Cathedral, begun after 1155. Interior looking east

43. Paris, Notre-Dame. Interior of choir and north transept, begun *c.* 1160

44. Paris, Notre-Dame, ground plan. *c.* 1160–*c.* 1220



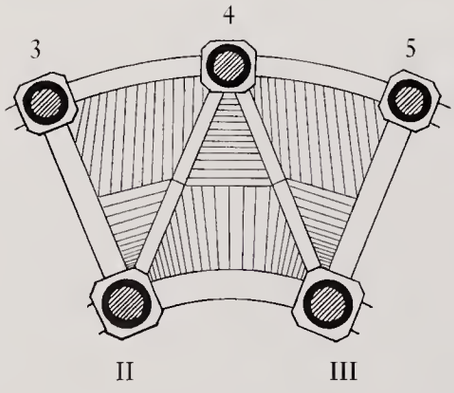
groups of three shafts, as in the apses of Noyon and Laon, where there is no alternation of ribs with transverse arches. This has led to the hypothesis that the simplified form in Paris is later, as does the fact that in Paris there are exclusively pointed arches, and that the shaft-rings have been omitted. The original semicylindrical form of the apse, before its remodelling into the present radiating chapels in the early fourteenth century, had much smaller windows, which probably minimized the discrepancy between the curved wall and the flat surface of the glass. In any case the original apse in Paris may not have been smooth but – like the later Bourges – had niche-like radiating chapels.[17D] It is extremely noticeable today, however, as the large windows of about 1300, with their tracery, made it necessary for the two sides of each of the stained-glass windows (which are modern) to meet at an obtuse angle on the centre mullion. The glass in the rose-window above them lies on a plane that cuts across the angle below. In this discrepancy the connexion between the polygonal apse and the stained glass can be seen more clearly than anywhere else. Bar tracery was not easily combined with rounded choirs, and bar tracery originated at Reims cathedral, which was only begun in 1211, long after the polygonal plan had appeared in the 1170s in the Soissonais and at Laon. (The original stained glass at Laon has not been preserved, except that in the east wall dating from *c.* 1210, and some original medallions from the north transept rose.[17E])

The cathedral in Paris is double-aisled, with a gallery over the inner aisles. This means that it has the basilican system of elevation twice repeated. This is true also of the choir, where building began. It has a double ambulatory, like Saint-Denis. This type of interior creates special lighting problems. The sloping roof of the outer aisles makes it necessary to put the gallery windows relatively high. The light they give is sufficient for the gallery, but too little to affect the nave or the chancel. The sloping roof of the gallery, in turn, forces the clerestory windows up above the springing of the vault. The space inside this sloping roof corresponds to what is normally an unlit triforium, but here the architect pierced it with an oculus in every bay. Their tracery is different from that of the wheel-windows of Saint-Etienne at Beauvais and Saint-Denis. Before their restoration by Viollet-le-Duc, they consisted of vertically arranged crosses, with straight or curved sides and decorated with chevron or bead ornament. Originally the small gallery windows were such oculi.[18] The smaller dimensions of the windows are a consequence of the double aisles. The thrust of the gallery vault [54] could only be carried by a buttress which could not project far, because it stood over the transverse arch of the vault of the outer aisle. Similarly, the buttresses bearing the thrust of the main vault stood over the transverse arches of the gallery vault. The architect apparently believed that the vault also exercised a thrust on the wall between the transverse arches, and therefore did not dare to build wider windows. The improvements in the lighting which followed the introduction of new flying buttresses in the 1220s were partly offset by the addition of chapels along the outer aisles and round the outer ambulatory, begun in *c.* 1225–30.[18A] Notre-Dame remains one of the dark churches of a 'dark age'. To us it is the darkness of this cathedral which gives it its mystery and solemnity. Every time the windows were enlarged, the possible increase in light was eliminated by the obscurity of the stained glass. Most of this glass dates from the nineteenth century, but even in the twelfth and thirteenth centuries all the glass in the windows was coloured.

The choir and transepts were completed in about twenty-five years. The transepts did not project further than the outer wall of the outer aisles. We do not know whether the windows in the north and south walls of the transepts were large or small.[18B] Certainly the degree of dissolution of the wall was much less than that achieved in the lengthened transepts that were added by Jean de Chelles from about 1245 (north transept) and by Pierre de Montreil from about 1258 (south transept).[18C]

The cathedral in Paris made relatively rapid progress. In following this chronological development, we need, for the moment, consider only the choir of Notre-Dame and conceive it in its original state – without its surrounding chapels [44]. The plan for the whole church, perhaps with a shorter nave and without transepts, must have been made *c.* 1160. In contrast to Laon, and to the choir of Notre-Dame itself, the transepts have no aisles. Each of the double choir aisles, cut off from the choir by the high screens, now gives the impression of a hall-church of two naves, and this must have been the impression even before the screen was erected.

The vaults in the double ambulatory in Notre-Dame are unusual. The apse has five sides, while the inner ambulatory has ten. Thus one of the piers stands on the central axis. The effect of the larger number of piers in the ambulatory is to make all the arches look almost the same width [44]. The best way to describe the vaults is to number off the piers of



45. (*above, left*) Reims, Saint-Remi, *c.* 1170–80. Interior of ambulatory

46. (*left*) Paris, Notre-Dame, begun *c.* 1160. Vault of ambulatory (after Viollet-le-Duc) with Frankl's numbering

47. (*above*) Mantes, Collegiate church of Notre-Dame, begun *c.* 1160. Interior looking east

the apse from the beginning of the semicircle on each side with Roman numbers – I left, II left, III left, I right, II right, III right – and the free-standing piers between the two ambulatories with Arabic numbers – 1 left, 2 left, 3 left, 4 left, 5 left, 1 right, 2 right, 3 right, 4 right, 5 right, 6, being the pier standing on the central axis. I and 1 , II and 3, and III and 5 are connected on each side by pointed transverse arches; and two pointed ribs (with a slenderer profile than that of the transverse arches) run from each of the piers in the ambulatory to the piers in the apse – that is two from 2 to I and II, two from 4 to II and III, and two from 6 (the central pier) to III left and III right. This gives a total of fifteen bays. The vault of each triangular bay consists of two cells which meet on the horizontal groin joining the apexes of the ribs. Thus in plan half of each triangular bay forms another triangle, the other half a trapezium. In the triangular bays the stone courses lie parallel to the horizontal ridge of the penetration; the others have purely empirical surfaces in which the stone courses rise more or less vertically to the horizontal ridge (or groin) that connects the apexes of the ribs. The outer ambulatory has similar vaults, but with the difference that the first two bays are triangular and have cells like those in the inner ambulatory. Viollet-le-Duc described the vaults, and a simplified version of his sketch can be seen in Plate 46.[19]

While the choir of Notre-Dame was being built, in about

48. Reims, Saint-Remi, *c.* 1170–80. Interior of choir

1170, the abbot Pierre de Celle began to build a new choir in the church of *Saint-Remi* at *Reims* [48]. This was to be a simplified version of the spatial plan of Notre-Dame. In the three bays towards the apse the choir has double aisles, but there is only a single ambulatory, and in vaulting it the architect found a new solution to the problem. He set two free-standing columns in the opening of each chapel, so that the ambulatory vault consists of a series of almost square bays, each flanked by two triangular ones [45].[20] The result is uncommonly rich in effect, as the columns standing in front of the shafts of the chapels and the entrances to them create a free rhythm and a great wealth of changing views.[20A]

In its arcade, and its gallery, the choir follows the general disposition of Notre-Dame, and the small windows must give an approximate notion of what the Paris church originally looked like. Otherwise the upper part of the choir is very different. The windows are arranged in groups of three, and the shafts that frame them rise from the level of the triforium – an early attempt to achieve some kind of unity between these two storeys.[20B]

While the circular windows which were used in Paris were rejected by the architect of Saint-Remi at Reims, they were repeated at *Mantes* [47]. However, here they are used in the gallery over the ambulatory. At Mantes the triforium is omitted. Instead the architect set the arches in the apse high above the openings of the gallery, similarly to the

method that was adopted on the exterior of the choir of Saint-Denis. The church at Mantes was begun probably around 1160,[21] and, in spite of its smaller proportions and its simpler plan, it is, in many ways, closely related to Notre-Dame; it is, however, far more intimate. As there are no transepts, the impression is of a hall with aisles and a gallery. The three sexpartite vaults, connected by the alternating supports, allow a comprehensive view of the whole church. The main piers have shafts rising from the ground, as at Sens; the secondary piers between them are round, with groups of shafts rising from the capitals, as at Noyon, Laon, and Paris. This combination is especially striking as the shafts on the round apse rise from the abaci of the circular piers. The openings of the gallery in the apse are not divided. In the nave, however, they are divided into three arches on two columns, as in the nave of Notre-Dame, which was not begun until *c.* 1170.

The gallery has a series of pointed transverse tunnel-vaults, which shows how undecided architects could still be at this time. These vaults are supported on transverse architraves standing on columns. A cross-section through the choir[22] shows that these vaults explain the raised pointed arches and the large round windows in the gallery. The tunnel-vaults were probably intended to strengthen the main vault.[22A] In the fourteenth century, many of these vaults were replaced by quadripartite rib-vaults. The original bays in the gallery, particularly those at the round end of the choir, form a series of separate spatial unities which make up a whole by addition, and are rich in picturesque views between the columns. The exterior of the choir as we know it today has been altered by the addition of thirteenth-century chapels.[23]

The choir of the priory church at *Saint-Leu-d'Esserent* was built at the same time as that of Mantes. It still has a round apse, and, as at Mantes, the absence of transepts gives the whole building the appearance of a hall. The shafts supporting the wall-arches rise together with the shafts for the main ribs, beginning on the abaci of the round piers. Five chapels which, in plan, form a series of segmental arches stand round the ambulatory, as at Saint-Denis, but here the vaults in these niches are separated from those of the main ambulatory. Its proportions and profiles give the building a restrained elegance. The specifically Gothic profile is strong enough to decrease the aesthetic value of the large remaining expanses of wall. Only the upper windows have no framework and leave large, bare surfaces around them. The relatively small span of the vaults allowed the use of thin walls and slender supports.[24]

The choirs of Notre-Dame in Paris and of Laon Cathedral (in its original form) were complete by *c.* 1190 and *c.* 1170 respectively. They were no doubt known to William of Sens, the master who was called to *Canterbury* in 1174 after the fire which had destroyed the choir there. At Canterbury, soon after the conquest of England in 1066, Archbishop Lanfranc had erected a new building. Having been Prior of Saint-Etienne in Caen, he followed the Norman scheme of that time.[24A] Prior Ernulf replaced Lanfranc's choir and Prior Conrad, who succeeded him, finished it. The choir received a second transept, a new chancel with an ambulatory, and three isolated chapels, the first of them on the left and right placed in an oblique direction adapted to the curve of the apse.[24B] This choir was burned down in 1174. William used the old foundations but lengthened the choir beyond the Norman ambulatory. William's activity ceased after his fall from the scaffolding in 1178 and he was replaced by a second William, called William the Englishman, who extended William of Sens' sanctuary eastwards by building the Trinity Chapel and, opening eastwards from it, a circular chapel called the *Corona*. Canterbury choir brought English architecture into line with the most progressive achievements of French early Gothic. Durham and the rib-vaults following Durham were Norman. Even if one regards as Englishmen the Normans of the first generations after the Conquest, they were more Norman than English. Between the time of the nave vaults of Durham (1128) and the appearance of William the Englishman half a century had passed. But for the development of style this interval had not been eventful in England, however one may appreciate the individual buildings.[24C] The plan with two sets of transepts comes from Cluny and is neither particularly Gothic nor particularly English in this first copy. However the English took Canterbury as their model, accepted the uncommon length of the twice-lengthened cathedral, and found it more magnificent than the harmonious relation of length to width in French architecture.

At Sens (as at Mantes) space is grouped into twin bays by alternating supports and sexpartite vaults. In the liturgical choir at Canterbury this conception is contained in the vaults, but the alternation of supports is reduced to alternation of circular with octagonal piers. In the sanctuary William of Sens used twin columns, taking Sens as his model, and William the Englishman continued this solution for all the main supports of the Trinity Chapel.[24D]

When William of Sens designed his new choir, the nave at Laon had just been begun. So the circular piers with detached shafts in the eastern bays of the nave at Laon (*c.* 1170–75) are contemporary with Canterbury. England knew such grouped piers at an earlier date (in the crypt of York Minster soon after 1154)[25] and specially liked to use them, often in conjunction with the use of dark stone for the detached shafts and light stone for the central round pier. At Canterbury much is made of this motif. French buildings of this period are on the whole monochrome, and colour appears only in the stained glass of the windows and perhaps in some capitals.[26] From the physical standpoint the colour of the Purbeck shafts belongs to the same range of optical means as stained glass, but the function is diametrically opposed. Stained glass spreads out, where the innermost layer of a wall becomes visible, the plane which in the Gothic style is meant to appear as the real spatial boundary. Coloured shafts however are structural parts in front of this plane. Their free projection in space strengthens the Gothic tendency to dissolve the wall. The shafts stand free in space, however much they may be part of the load-bearing framework.

The exterior is little affected by the new principle. The north and south walls of the main transept are essentially still Romanesque. Gervase, who compares the new with the old choir, points out the differences clearly – the earliest known analysis of style and an invaluable document for checking the rightness of our aesthetic interpretation.[27]

What he described and stylistically understood is the essentially French system of interior elevation.

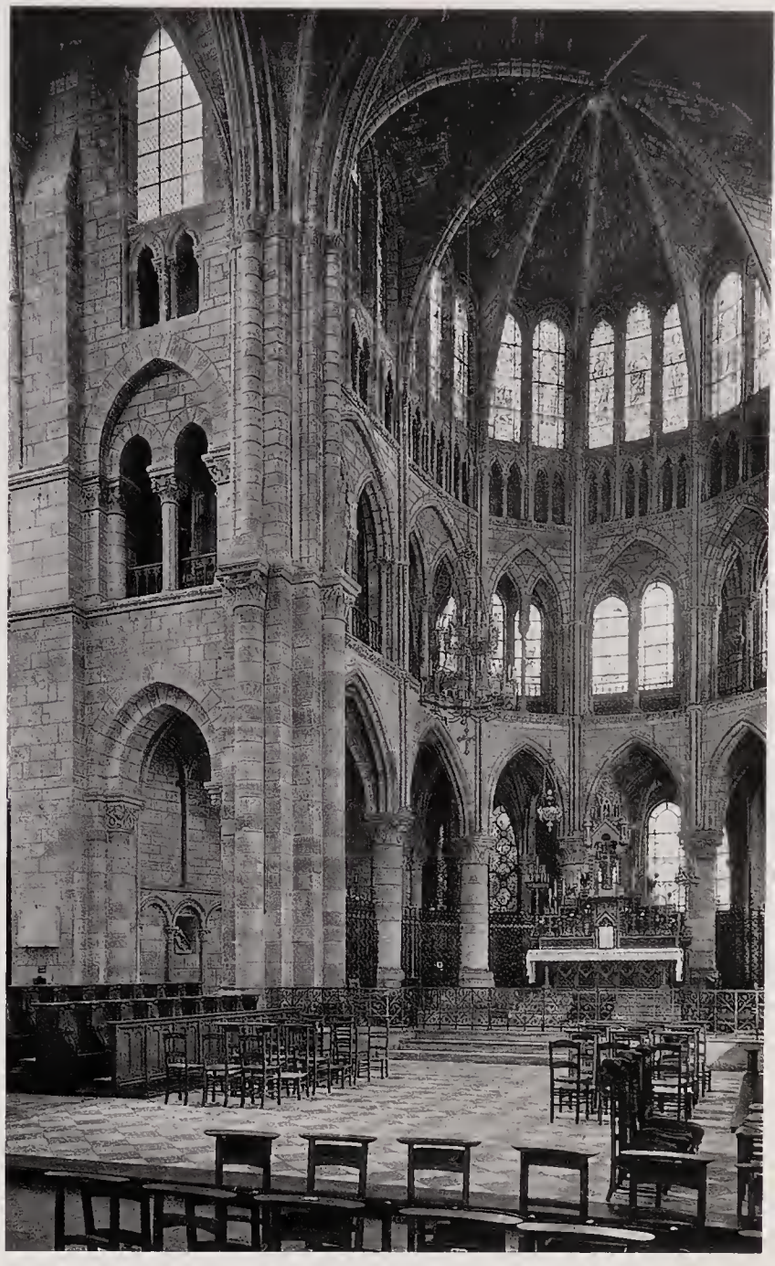
At the same time as Canterbury the much more English cathedral of *Wells* was built. It was begun probably sometime between 1175 and 1180.[26A] Chancel, transepts, and the nave were complete early in the thirteenth century. The piers have twenty-four shafts, set so closely that the cross-shaped core is completely hidden. The rolls of the pointed arches correspond to the shafts. The hollows between the rolls create a rich general form. The Gothic diagonal flow has to a very marked degree replaced even the slightest memory of the sharp rectangular moulding of the Romanesque. Above the arcade is a false gallery with narrow openings and above that the clerestory with a Norman wall-passage.

The decisive non-French feature is the manner in which three horizontal zones stand almost unconnected above each other. Whereas in France shafts rise from the abaci and the general tendency is to link bays vertically, the shafts in the spandrels of the arcade are missing at Wells. In the nave they only appear in the zone of the false gallery, and not even at its sill, but between the arches, which do not have capitals. The effect is a horizontal fusion of space instead of the French vertical fusion. A French counter-example is the abbey of *Fécamp*, begun before Wells, after the fire of 1168. From that period date parts of the choir and the whole of the transept. Transverse and wall-arches are pointed, the ribs still semicircular.[28]

A somewhat later counterpart in Normandy is the nave of the cathedral of *Lisieux*, designed probably around 1165.[29] All three pairs of arches in the quadripartite rib-vaults are pointed, as at Wells. The upward movement that the pointed arches of the ribs so unmistakably impart to the vault is conducted along shafts that stand on the abaci of the round piers.

This principle of vertical movement, therefore, develops from the rib, and, although the aesthetic effect is of upward movement, historically it grew downwards from the apex.[29A] The development from the rib is so obvious that partisans of the principle of vertical movement claim that the English architects had misunderstood it, and that their application of a principle of horizontal movement was not truly Gothic. However, the English deduction of horizontalism from the rib-vault is as legitimate as French verticalism. A series of bays where the transverse arch has the same profile as the ribs produces a smooth continuity from bay to bay in the cells that meet at the transverse arch, and this continuous flow draws the whole nave into a horizontal unity. The later development of the Gothic style shows that this was the intention of these architects. After many attempts they achieved in Late Gothic a unifying fusion of space, both horizontally and vertically. The full consequences of the introduction of the rib-vault were only attained by this spatial fusion in both directions – and in the diagonals as well. The two main directions were first developed separately, one in England and the other in France.

The choir of *Notre-Dame-en-Vaux* at *Châlons-sur-Marne* [49] is so similar to that of Saint-Remi at Reims that it could be omitted from this book. However, the juxtaposition of the choir and the transepts is exceptionally instructive



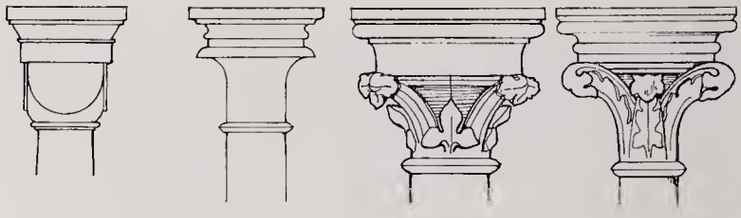
49. Châlons-sur-Marne, Notre-Dame-en-Vaux. Interior. Transept begun *c.* 1140; choir rebuilt 1187–1217

in differentiating between the new Gothic style and the old Romanesque. In the transepts, built *c.* 1140–1157, the profile of the piers recedes step by step in right angles, and the same is true of the openings of the gallery above. Both storeys of the choir are similar to those of the transept, in their basic form as well as in their proportions. The impression they make, however, is quite different, owing to the softness of the profiles, which, in the arcade, seem to project into the church from the innermost core of the round piers. The openings of the gallery have the same character. Above this level also the choir is very different from the transepts, with their solid wall surfaces and their broad, massive piers. However it is not the quantitative degree in which the wall has been dissolved that makes the piers, the arches, and the other members Gothic; for the same degree has been achieved in the lower structure of the transepts. The difference lies in the way in which this dissolution has been achieved. The rebuilding of the choir was begun *c.* 1187.[30]

50. Vézelay, La Madeleine. Interior of choir, begun after 1165, under construction in 1170s

The choir of *Vézelay* [50], which, in elevation, was perhaps inspired by the original design of Saint-Denis, was set out sometime after a fire of 1165, and was under construction in the 1170s. Here the upper part of the walls between the chapels is left open, and the closely set shafts show an unusually advanced form of Gothic relief.[31]

The cathedral of *Meaux* was begun around 1175, and the choir completed by *c.* 1215. Villard de Honnecourt, the architectural commentator of the High Gothic period, was interested in this Early Gothic church, and, in the 1220s or 1230s, drew its plan in his 'sketchbook'. The three chapels of the ambulatory stood separately, as in Romanesque plans, leaving space between them for direct lighting of the ambulatory. The choir and ambulatory are built on a semicircular plan, while the chapels are polygonal (7/10). This polygonal plan was probably a copy of the chapels at Laon or other early polygonal terminations in north eastern France, e.g. the transepts of Valenciennes. At the beginning of the fourteenth century, two more chapels were built in the spaces between the three original ones, making a continuous series, as at Saint-Denis. The building history of the rest of the cathedral at Meaux is extremely complicated: its present state is the result of gradual construction and extension in which each successive architect built in the most advanced style of his own generation. The styles which are represented range from Early Gothic to Late Gothic.[32]



51. Development of capitals: Romanesque cushion capital and Gothic chalice capitals. The two capitals on the right are crocket capitals

2. CHANGES IN CAPITALS AND BASES

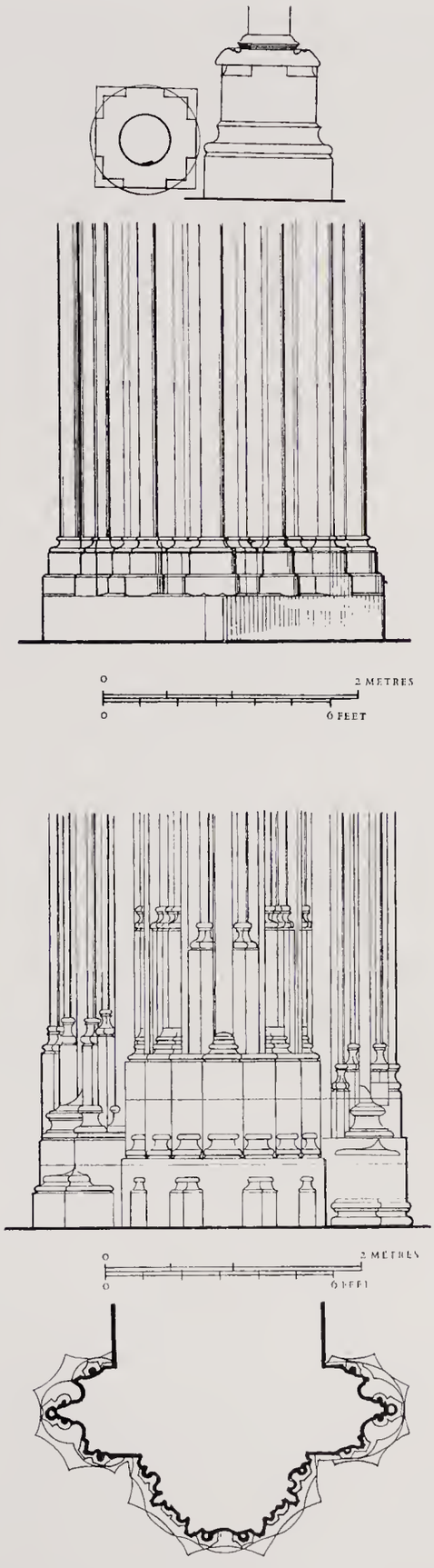
The early phase of the Romanesque style found in the cushion capital the small-scale representation of the principle of addition that it needed [23]. The cushion capital was superseded by a mixture of the cubic and the chalice forms, beginning at the bottom in the shape of a chalice, and broadening into a square section. The Gothic style preferred the pure chalice shape [51].

Around this core, sculptors carved ornament, foliage, branches, animals, human figures, figures drawn from their own fantasy, scenes from religious history, symbolic forms, and combinations of all these subjects. Thousands of variations have been preserved, standing mid-way between sculpture and ornament. In the history of architectural style, their most important feature is the way in which the diagonals are emphasized, and the specific kinds of relief which they embody.

The cushion capitals of the Early Romanesque presented the sculptor with frontal surfaces which he decorated according to the principle of recession in parallel planes. The main ornamental forms are flat patterned bands, palmettes, and acanthus leaves which spread out symmetrically and look as if they had been compressed between the front and the back plane of the thickness of the relief. Even where figure sculpture is combined with ornament or foliage, and the depth is increased, the principle that the planes are parallel to one another is upheld. This is gradually broken down, and in chalice-shaped capitals, like some of those at Vézelay,[33] the surface surrounding the figures no longer follows the same curve as that behind the figures, the actual surface of the chalice, which can hardly be traced in its entirety. The sculptor is trying to make the background an indeterminate shadow.

Figure sculpture does not disappear entirely in the Gothic period, but it occurs only rarely. Sculptured foliage clings to the surface of the cube or chalice, as it does at Saint-Denis, and gives an illusion of actual growth [52]. The outside corners become as important as the central axis, and, even before the time when the whole capital is set diagonally, the diagonals begin to predominate. As the capitals were usually put in position in the form of rough-hewn blocks, and only carved *après la pose*, their chronology within a building is not always the same as that of the surrounding members. The individuality of each architect and sculptor increases the infinite degree of variation in these works. The dating of capitals to determine the chronology of the surrounding building must often confine itself to naming the nearest decade, and, in actual fact, one is usually forced into

52. Saint-Denis Abbey Church. Capitals, *c.* 1137–40



53. Development of bases: High Gothic (*above*) and late Gothic (*below*)

dating the capitals according to the architecture around them. The sculptor was always either behind his time or drastically in advance of it. The effect of different schools must also be taken into consideration. Capitals carved in the same year, but in different places, may belong to different stages of five or even ten years in the progress of style.[34] By and large, however, the development is directed towards an emphasis on the interaction of front and back plane of the relief. The purest form of this interaction was achieved in the crocket capital.

When it became increasingly usual for the leaves in the corners to bend forward and end at the top in a scroll turned inwards, the shorter leaves in the middle of the capital also began to bend forward. Whether the capital was carved in a workshop *avant la pose*, or after it had been put in position, its original stage was always in the shape of a block with convex sides which embraced the outermost points of the finished capital. In crocket capitals this outer surface has strong projections, and, from their highest point, the chisel is driven into the stone. The crockets at the corners emphasize the diagonals. Whereas the block capital of the Romanesque, with its even relief, blends with the direction of the wall, the Gothic crocketed capital launches out diagonally into the space of the interior. The whole support seems to penetrate into the interior space, and at the same time, *vice versa* the interior space seems to penetrate the surface of the capital [51].

Abaci were almost always added to capitals. In principle, their profile is a heritage of the form and the symbolic value of the Romanesque ledge, which, in turn, can be traced back to Roman architecture. The abacus sometimes widens step by step, and usually finishes with a projecting ledge at the top. As long as the abacus is square, it lends frontality to the chalice capital. In England, circular abaci were used. In fact they here became almost the norm, though they remained an exception in France and Germany (Marburg). Square abaci form re-entrant angles, and thus preserve something of the demarcation lines and the sense of addition between bays, or, in triforia and porches, between layers, whereas round abaci spring from intermediate points on the wall and the interior space continues in its smooth flow round them [42, 89].

Bases and plinths remained much the same in the Early Gothic period as they had been in the time of the Romanesque [53], though there were slight changes in height, in slope, and in the degree of projection of the mouldings. Here again, the English began to avoid right angles at a very early date. The east crypt at Canterbury, built from 1180, where the bases and the abaci are round, is

perhaps the earliest case. Here the thick, short, round piers have no real capitals and the whole crowning member can be regarded as an abacus. The slenderer piers in the middle of the crypt also have round abaci, and there is more justification for speaking of capitals. In the choir at Canterbury there are also round bases to the shafts which rise from the rectangular abaci of the circular piers.[35]

It would appear that the first capitals with genuine crockets date to around the same period (*c.* 1180) as the round bases and abaci in England. There are early attempts at crockets in the galleries at Laon and Paris, but it is impossible to say exactly when they were carved; for even if they were carved *après la pose*, it would have been necessary to make provision for their shape *avant la pose*. Even so, the mature form may have been created before 1180.[35A]

3. THE EXPOSED FLYING BUTTRESS

In its leading buildings, in Noyon, Laon, Paris, and Canterbury, the Gothic style had succeeded to such an extent in adapting itself to the demands of the rib-vault that by 1180 architects and their patrons must have regarded the Romanesque style as completely superseded. This was true of interiors, but not to the same degree of exteriors. Here the innovations which had been introduced were pointed arches on windows and doors, buttresses rising in steps, and the disappearance of the round-arched friezes and other similar details which established the recession by layers in Romanesque relief. The emergence of the nave and choir above the aisles and the separation of the attics remained operative, because the line of the eaves was not cut by any vertical member.

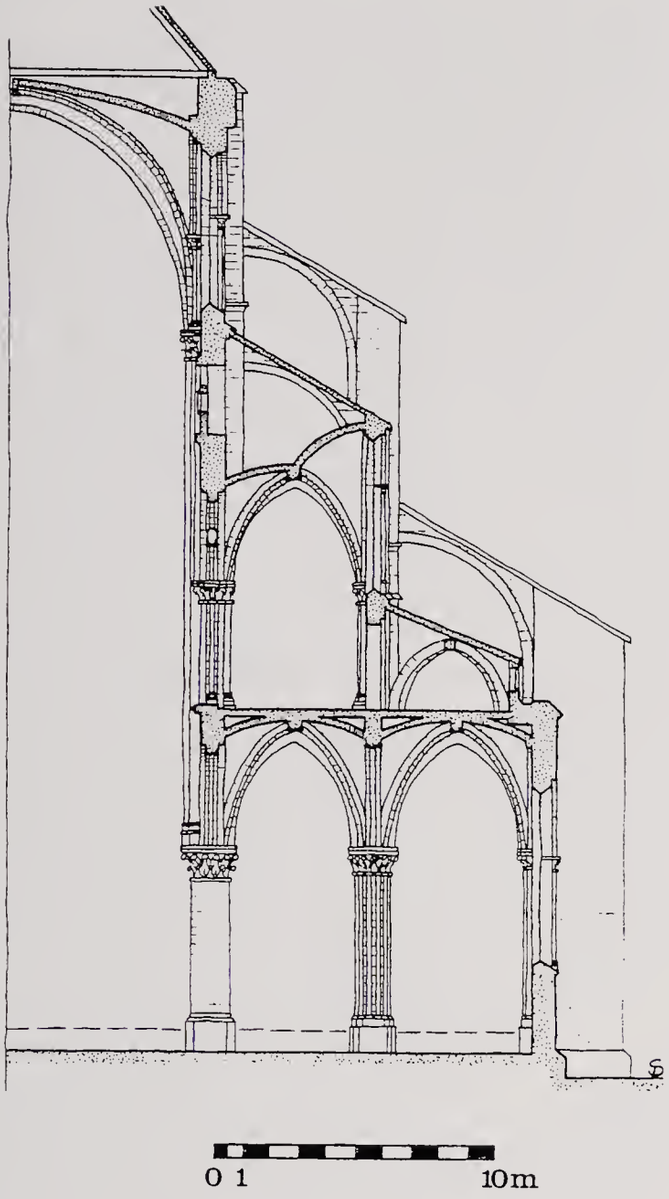
Another change, not so obvious, but still noticeable, was a general reduction in weight and mass. This was partly the result of enlarging the area of the windows, and partly of introducing the new relief into the jambs, which made the surface of the glass actually seem to be the real wall. Such stained glass of this period as has been preserved has a silver-grey patina on it which makes it look like stone. But the walls themselves became thinner too. This was the logical consequence of the use of the rib, which, since the building of the choir of Saint-Denis, had led to the construction of thinner vaulting-cells. In the building of these cells out of blocks of stone small enough to be laid by hand, the ribs were certainly used as a support, at least during the period of building. Thinner cells permitted thinner supports and thinner walls.[36] Nevertheless, the piers still had to be sufficiently thick to bear the thrust of one vaulted bay or two neighbouring vaulted bays. In churches of basilican type with aisles, and especially in those with two aisles on each side, the maximum thickness of the piers was limited by the fact that they could not be allowed to reduce the width of the aisles. A way out of these difficulties, which had their root in the statics of the vault, was found by leading the lateral thrust over the aisles to the outside wall from the corners of the bays, that is, from the springing of the transverse arches. This was done by adding galleries, and in some cases by building thin walls over the transverse arches of these galleries. Many different methods existed which had already been developed in the Romanesque period. They were employed until almost the end of the Early Gothic period, and always in such a way as to conceal the fact that they contributed to the stability of the building.[37]

These methods solved the problems in churches with only one aisle on each side. However, where there were double aisles both of these had to be bridged, for if only the inner aisles had galleries added, the supports between the two aisles would have to have been considerably stronger.

In the nave of *Notre-Dame* in *Paris*, the piers between the two aisles corresponding to the corners of the sexpartite bays of the nave were actually reinforced with shafts [54]. So the change in the supports, which had been avoided in the central vessel of the nave, was permitted here. However, this expedient did not remove the basic evil, the darkness of the interior; for the architect did not dare to pierce the walls with large windows because of the lateral thrust of the vault. One could claim that the gloom created a mysterious atmosphere and could be brightened by candlelight on festive occasions, but it is obvious that this atmosphere was not really created from choice. It is not known precisely when and where an architect first dared to build exposed flying buttresses, but Lefèvre-Pontalis, Aubert and the many authorities who have followed them, have argued that the first examples supported the nave of Notre-Dame in Paris, in building in the 1180s.[37A] In recent years this axiom has been persuasively challenged. Evidence has been found for the use of exposed flying buttresses in a number of first-generation Gothic buildings: the choirs of Sens cathedral (*c.* 1150), Saint-Germain-des-Prés in Paris (1150s), Saint-Martin at Etampes (*c.* 1150), Laon cathedral (*c.* 1160) Notre-Dame in Paris, and even Suger's Choir at Saint-Denis.[38]

The exposed flying buttresses were immediately adaptable to churches with one aisle on each side. Their static qualities might be improved, but the main question was whether or not they were admissible on aesthetic and stylistic grounds. Their general use in succeeding churches, both large and small, shows that they were hailed not only as an improvement in the statics and the lighting of the churches, but also as a welcome addition to the store of specifically Gothic forms.

The stylistic significance of the exposed flying buttress has not always been understood. Dehio called it 'artistic crudity'. He should have called it boldness. What is more, it is the basic premise underlying the whole form of the cathedral at Chartres, and the entire High Gothic style. Even in Notre-Dame in Paris, where the four-storeyed elevation of the interior could no longer be altered, it served the stylistic purpose of so altering the exterior elevation that it no longer looked Romanesque. Just as the Romanesque triforium and capitals in the interior seem to invite one to pass one's hand over their flat surfaces, so on the exterior, and, in spite of their depth, the dwarf arched galleries too form large, flat surfaces. But, just as the Gothic constructional system of the interior with its reduction of solid bodies to a skeleton invites one to thrust one's hand between the members, so the flying buttresses transform the character of the exterior into that of a series of arches, rising diagonally, and substituting for the continuity of the clerestory wall a direction



54. Paris, Notre-Dame, nave section with conjectural reconstruction of original buttress system, *c.* 1180 (reconstruction by Clark, drawn by Donald Sanders)

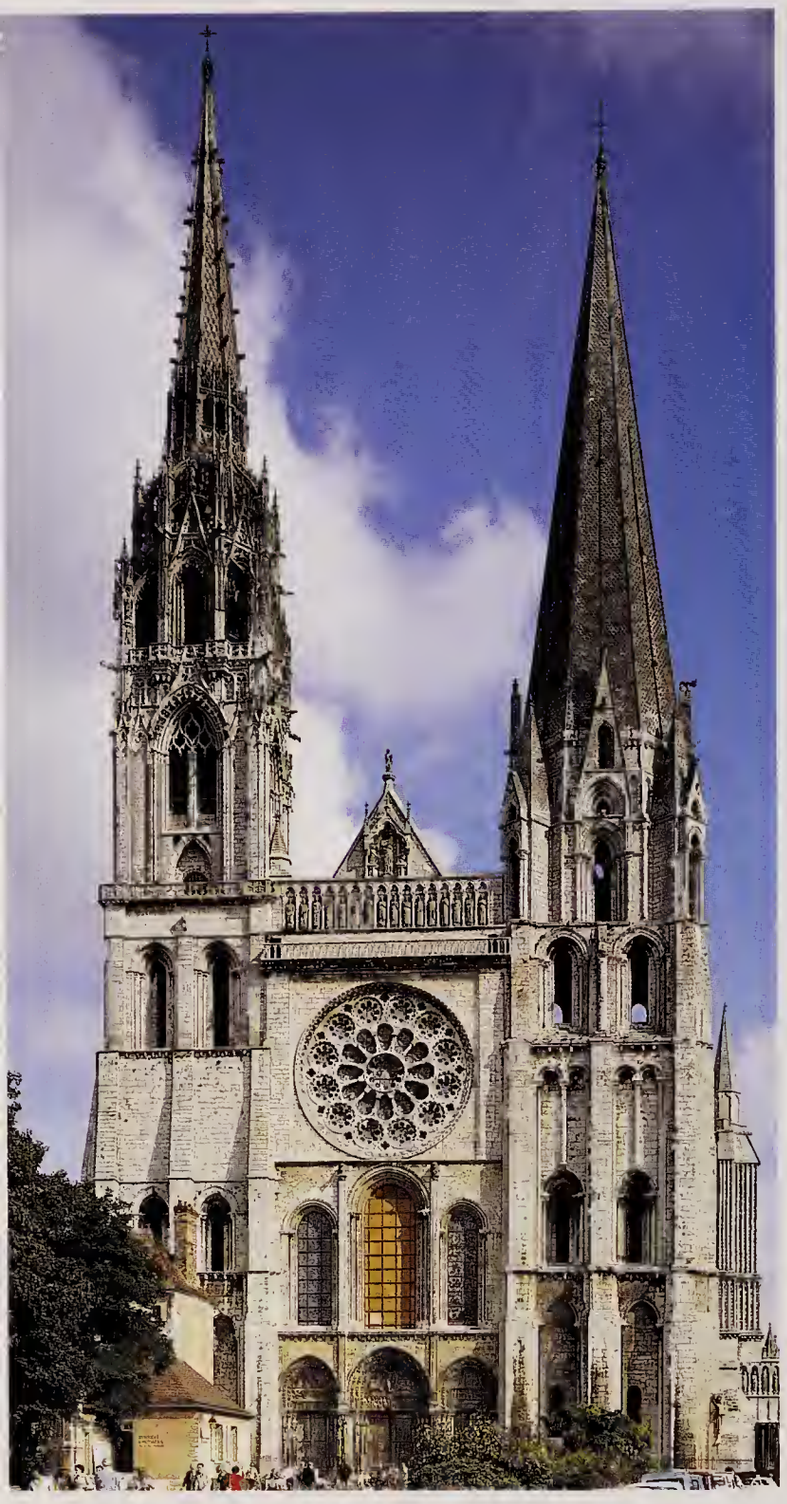
into depth. The flying buttresses turn their flanks towards us and create an intermediate zone of uncertain boundaries which is not exclusively a part of the exterior, but rather a continuation of the interior. Whether the sun or the moon shines, and casts the shadows of the buttresses on to the roofs and the walls; or whether there is snow or mist moving between them and the walls; or whether the weather is gloomy or the light fails, the exact outline of the building can never be traced. The side views of Romanesque churches are wonderfully closed: those of Gothic churches are wonderfully open. This is what the two styles demanded. The twentieth-century historian may personally favour one or the other of these principles, but, as an historian, he has no business to favour either, but only to understand both and to interpret both as symbols of human attitudes.

This understanding of the Gothic style must be applied not only to the stylistic function of the flying buttress, its character of extreme partiality, but also to its function in terms of statics.[38A] Viewed aesthetically, forces here rise from the ground, bend over in a continuous flow, and finally press themselves against the clerestory wall. The physical truth of the matter, however, is the exact opposite. The thrust of the vault is led down obliquely by the flying buttress, which acts as a bridge or a channel of forces, on to the outer buttress, which must project sufficiently at its base not to fall outwards. The aesthetic impression is powerful enough to make one imagine that, if the vault were to collapse, the flying buttresses would force the clerestory walls inwards. However, Francis Bond has demonstrated from ruins such as those at Melrose that, where vaults did collapse, the flying buttresses remained standing.[39] Any man of wide interests will wonder about the actual distribution of forces in a Gothic building; but if he has any aesthetic sense, an understanding of the actual mechanics of vaulting will not make him underrate the stylistic value of the flying buttress. The Gothic style has been decried surprisingly often because it is impossible to see, if one stands outside, 'what can be the purpose of such a gigantic expenditure of force', and if one stands inside, 'how such fragile supports can carry the vaults'.[40] It is true that flying buttresses allow much slenderer supports in the interior, but concealed supporting walls in the roofs of galleries had allowed the same much earlier. On the other hand it is also true that to understand the expenditure of force on the exterior, one must know the interior. No one should regard the flying buttress as a piece of superfluous decoration. Every man in the Middle Ages was a churchgoer, and knew the churches not only from the outside. The criticism that the interior, as one stands outside, is a world beyond conceiving, as is also the exterior from within, may be justified for a child or someone seeing a Gothic church for the first time. This, however, was not the intention of the creators of these structures. The conclusion which the master of Chartres drew from the flying buttresses of early Gothic was that they made it possible to unite the interior and the exterior into an organic whole. For this reason it is wrong to claim that Gothic cathedrals have a mystic interior and a scholastic exterior.

4. FAÇADES, TOWERS, GABLES, TABERNACLES

Flying buttresses had made lateral elevations Gothic; very soon they brought about the same change in east ends. However, they were quite unsuited to adapt to the new style the façades of naves and transepts. Here, too, the immediately available means were pointed arches for windows and doorways, Gothic relief, the elimination of Romanesque friezes of round arches, and the building of buttresses in set-offs. The continuation of a buttress over the entire height of a wall, as at Saint-Denis and Senlis, draws the storeys into a unity and overcomes the Romanesque principle of considering each storey as a separate entity. This is especially true in the case of towers, whether they are seen separately or as integral members of a façade.

In this sense, the north tower of the cathedral at *Chartres*, begun as a free-standing structure between 1134 and 1138, counts among the first Gothic towers, built at exactly the same time as the west façade of Saint-Denis [55]. Its



55. Chartres Cathedral. West front; north tower soon after 1134 (spire 1507), south tower before 1145, portals *c.* 1145, rose window designed after 1194

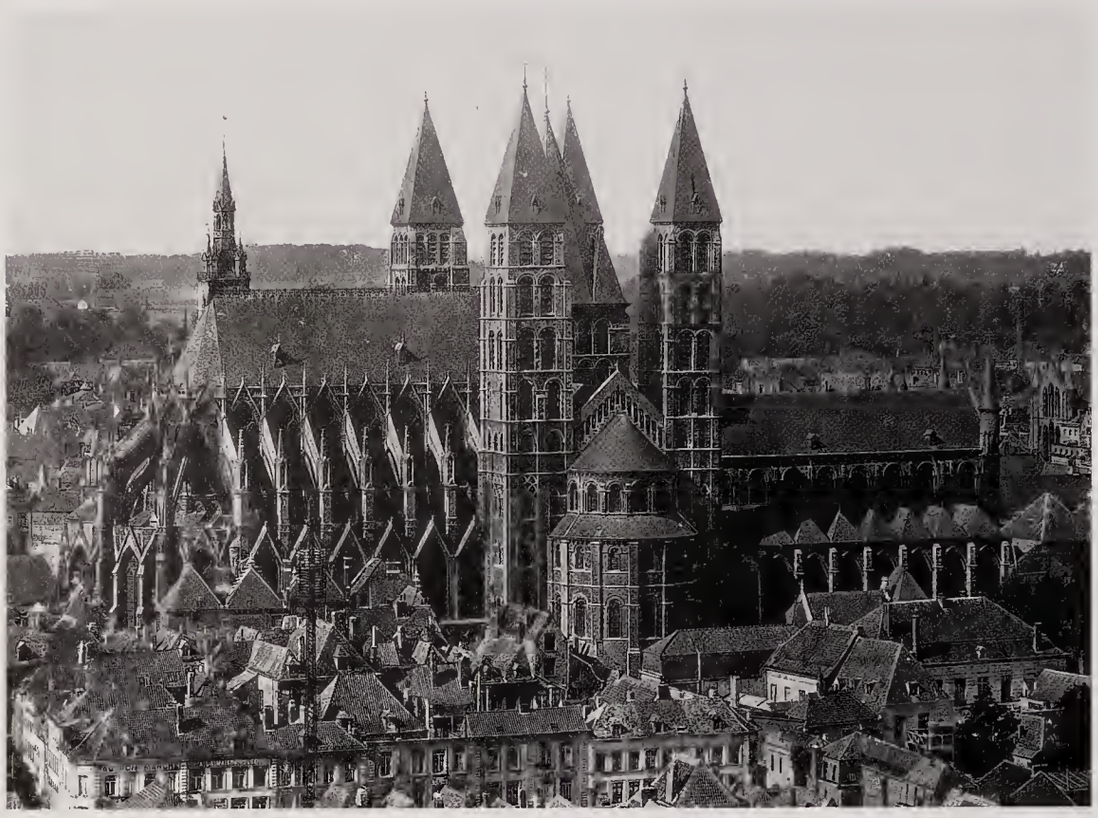
interior is Gothic in its rib-vault. The diagonal shafts at the corners are flanked on either side by a shaft for the wall-arches. The next storey has a domical vault, and the one above that had a flat ceiling. The wooden spire probably had the shape of a simple pyramid. The vault in the lower storey necessitated the building of buttresses at the corners of the exterior. The buttresses in the middle of the sides serve to strengthen the aesthetic unity of the storeys.

Sometime before 1145 a second tower was begun, on the south side, together with a triple portal which was planned to lie between the two towers.[41] The supports at the corners of the rib-vault on the ground floor are different from those in the north tower. In each corner one shaft supports the rib and the wall-arches. The exterior treatment is also different, but there are, as on the north tower, buttresses at the centres of the sides. Above the octagonal top storey there rises a very slender stone pyramid. The base-line of this pyramid is not clearly defined; for its lower section is steeper than its upper parts, and the gables of the windows on the main sides, as well as those of the smaller dormer-windows in the diagonals, overlap the horizontal (decorated with a round-arched corbel-frieze), which marks the start of the pyramid proper. The gables on the main sides cover three openings, set one above the other, and the whole group forms a single opening resting on the central buttress. The gables on the diagonal sides cover two openings, one above the other, and stand astride the two frontal buttresses at the corners. They face the solid diagonally-placed tabernacles of the octagon with their pyramidal stone roofs.[42] This arrangement is a successful attempt to produce a smooth transition from a square to an octagon. It is surprising that this first solution should stand so well beside the addition that was made to the north tower in 1507, at the end of the Late Gothic period, and equally surprising that the north tower should preserve such harmony with this early work of the Early Gothic style. However, the south tower does suffer from the proximity of the new rose-window, added after 1194. The balustrade and the Gallery of the Kings cut into the tower.

The gables round the base of the pyramid, which look like the points of a crown, are Gothic because the points of the arches below them penetrate their base-line. Here this penetration is still tentative. Similar compositions existed even in some Romanesque buildings.[43] The tower at *Brantôme* (Périgord), built sometime in the first half of the twelfth century, seems to be a little earlier than the south tower at Chartres, while that at *Berzy-le-Sec* (near Soissons), built about 1150, seems to be a little later. Both have arches piercing the baseline of the gables.[43A]

The towers at *Chartres*, the Portail Royal which was begun about 1145 and was inserted between the towers, and the façade of Saint-Denis, substantially finished in 1140, still belong to the Transitional style. The same is true of the west façade at *Senlis*, in so far as it dates back to sometime after 1153,[44] and of the parts of the façade at *Sens* which belong to the original building.[44A] Certainly these works were not as predominantly Gothic as, for instance, the interior of the choir of Noyon. Even the architect of *Noyon* was not so progressive in the exterior of his choir as in the interior. If names given to styles are to have any significance, and not be a mere empty convention, a classification into Transitional and Early Gothic must base itself on a consideration of the essence of the average design of the period in question. The fact that the date of the choir of Saint-Denis is 1140 does not prove that anything built by any architect after that date must be Early Gothic. The Transitional style continued in every case where the unity of the choir of Saint-Denis was not achieved. Even the architect of Saint-Denis, like the

56. Laon Cathedral. West front, begun *c.* 1180



57. Tournai Cathedral. Exterior from north. Choir 1243–55; transept and transept towers begun *c.* 1130; nave *c.* 1110–*c.*1130

architect of Noyon, did not reach such an advanced stage of development in the exterior as in the interior. The reason for this time-lag is that, while the diagonal rib produced immediate changes in the interior, its effects on the exterior were only secondary. To regard stylistic classifications as conventional leads to superficiality. We are not trying to find comfortable divisions, but to find the essence of each individual work, and its position on the ladder of development. This applies to the study of all styles, and therefore equally to the differentiation between Early Gothic and High Gothic. The façade of Laon stands on the border-line between these two styles.

Beginning about 1180–85, the fourth campaign at Laon saw the completion of the four western bays of the nave and the west façade [56]. If the first master, who was building a generation earlier, left a plan for this part of the church, the younger man must have altered it radically; for this is the first façade that breaks absolutely with the Romanesque principle of the flat surface. Here all remnants of the Romanesque are outweighed by the new emphasis on depth.[44B]

The façade has three layers. In front of the two towers rises the main wall of the façade with its windows, and the dwarf gallery, which is also part of this second layer. In front of this lies the third layer, with the three porches, pierced in depth by the three doorways. It is hard to tell whether the doorways lie on the same level as the little windows that appear above the gables which break slightly into their base. These gables are the first monumental example of the penetration of arch and gable. The higher apex of the central gable, and its close connexion with the two flanking it, led to the asymmetrical form of the side gables. In a Romanesque porch the basic idea of the architect was that a gable is only the frontal aspect of a saddleback roof and, as such, stands on a horizontal beam which is the level of the floor over the vault or the arch below. So the triangle of the gable, in accordance with the stylistic principle of addition, stands as a unity of its own, and is separated from the arch by a horizontal member. The Gothic gable, however, is pressed so close to the arch that its sides actually touch the arch. Here the vault penetrates the space enclosed by the roof, which has now lost its floor and is reduced to a fragmentary existence. The architect of Laon provided an early model for this development in the pinnacles which he built between the three gables of his façade and at its corners. (These pinnacles are miniature turrets and can equally well be called tabernacles, since they actually enclose a space.)[44C] He did not yet dare to draw the conclusion and connect their spirelets with the narrow openings below them. They are separated by a horizontal ledge, as they were in Romanesque gables. In the pinnacles at the corners, however, the openings penetrate into the spirelet in the truly Gothic way.[44D]

In the next storey the Romanesque principles have not been fully overcome either. This is shown most clearly in the continuity of a flat surface without separating the three main axes by buttresses. Romanesque also is the large round window – a heritage preserved by the High Gothic generation – but the inner divisions of its opening are Gothic. The term tracery is generally used to refer to the divisions in the upper parts of long windows, which appear for the first time in a pure form after 1210 at Reims, but radiating spokes in round windows are one of the preliminary forms of tracery. Here there is a large inner ring in the middle, and a circular frieze of twelve round arches rising from the circumference and turned inwards. The two rings are joined by short radial spokes, which meet the apexes of the round arches. There is

a clear relationship with the present oculi in the nave of Notre-Dame in Paris. However, it is not known whether Viollet-le-Duc's restoration of these oculi reproduced the original tracery.[44E]

Because the top of the round window is higher than that of the windows on either side, the dwarf gallery rises by one step. Buttresses within the gallery separate the central section and mark the ends of the outer sections. Over the buttresses there are tabernacles, the two central ones raised because of the stepping-up of the gallery. The roofs of the tabernacles again remain independent entities above a horizontal course.

The two upper storeys of the towers are octagonal. Early Romanesque towers were square, and their roofs were pyramids on a square plan. The increasing tendency to the diagonal, which began in the Late Romanesque period, produced octagonal pyramids, and added pinnacles at the corners, or it led also to the building of an octagonal top storey, and in this case the pinnacles were relegated to the storey below. Both the Transitional and the Early Gothic style took over these forms.[45] From the point of view of the architect, this led to designing downwards from the top. The north tower of *Saint-Denis* (designed at the same time as the façade, built some time after 1145, pulled down in the nineteenth century, but preserved in an engraving)[46] was square up to the octagonal roof and had a pinnacle at each corner and in the middle of each side. In the stylistic development of towers in general, the south tower at Chartres marks the beginning of the Early Gothic style, in spite of its little frieze of round arches. The towers at *Laon* surpass it considerably. The transformation of the buttresses to form rectangular, diagonally placed tabernacles is logically prepared on the storey below in the tapering of the tower. On top of these rectangular tabernacles stand octagonal ones, out of which peer figures of oxen, a weird and unique monument of gratitude to the beasts who had dragged the building-materials up the long hill. Besides this emphasis on the diagonal, the continuation of the long bell-openings through two storeys is a bold effort to draw all the storeys into a unity.[46A]

Each transept was also intended to be flanked by two towers, but for a variety of reasons only one was built on each transept. The rose-window in the north façade is slightly different from that in the west façade. Instead of spokes, eight small circles fill the space between the inner ring and the circumference. Including the crossing tower, the cathedral at Laon was designed to have seven towers. Standing on the top of a hill in the middle of a plain, and visible from a great distance, it was intended to look like a crown. So it does – even in its incomplete form.

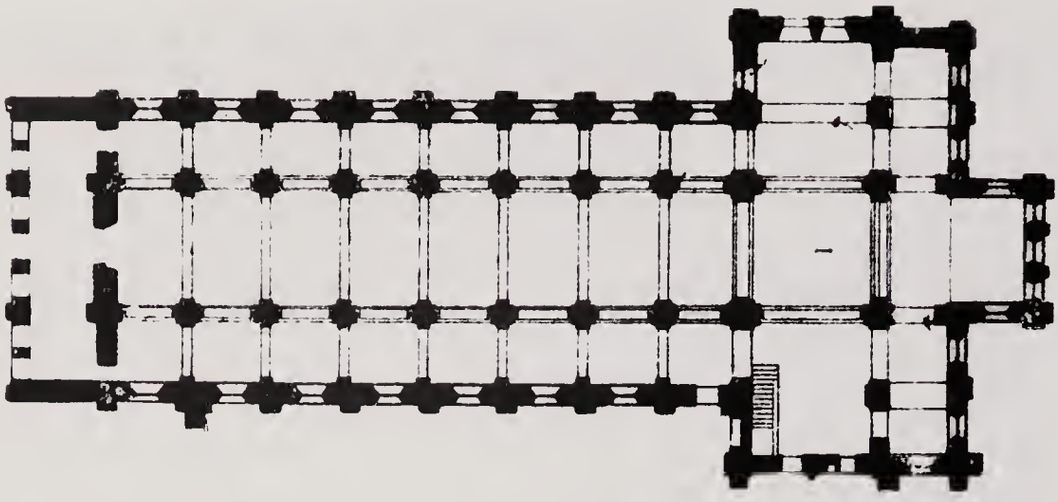
Tournai Cathedral is the most likely pattern from which Laon was developed [57].[46B] But a comparison between the two shows, besides what is common, the extremely Romanesque characteristics of the towers at Tournai on the one hand, and the Gothic characteristics of those at Laon on the other. An analysis of the relief of the two churches helps one to understand why Tournai looks so warlike, so proud, and so unapproachable, and why Laon looks so much more friendly. The synthesis that was achieved at Laon gives a happy impression of monumental massiveness enduring to eternity, combined with noble vigour.

58. Poitiers Cathedral. Interior, choir *c.* 1150–1215, nave finished in the second half of the thirteenth century

5. HALL-CHURCHES

The first monumental example of a Gothic hall-church is the cathedral of Saint-Pierre at *Poitiers* [58]. Henry II of England and his queen, Eleanor, founded a new ring of town walls here in and around the year 1162. Building on the cathedral may have begun earlier. Certainly the church is contemporary with Laon and Paris. The two eastern bays of the choir were vaulted by *c.* 1175, the transepts were finished by *c.* 1215, but the final, western, vaults of the nave and the west façade (excluding the portal gables and the upper storeys of the towers) were not built until the last quarter of the thirteenth century. The hall-form of the choir decided the form of the later parts, in spite of the fact that the vaults of the six westernmost bays have ridge-ribs, whereas the two bays at the east end have only diagonal ribs.[47]

It is not difficult to find earlier examples of churches in which the aisles are the same height as the nave. Saint-Hilaire, also at Poitiers, can hardly be considered as a model, since it was altered in the first half of the twelfth century, and the resultant form is most unusual. Still at Poitiers, Notre-Dame-la-Grande may well have had some influence, although the tunnel-vault in the nave gives a very different impression from that which is created in the cathedral.



59. Fontenay Cistercian Church, 1139–47. Plan

Under the heading 'churches without galleries', Dehio has grouped a considerable number of French Romanesque churches, such as *Lérins*, Saint-Martin-d'Ainay at *Lyons*, and the nave of Saint-Nazaire at *Carcassonne* [161].[48] All these have tunnel-vaults in all three parts, or tunnel-vaults in the central vessel and half tunnel-vaults in the aisles. The master of Poitiers certainly knew churches of this type. It is unlikely that he had seen the group of hall-churches in Bavaria, which includes *Prüll*,[48A] built between from *c.* 1100, and several other churches modelled on it. The form of the hall-church could be found in many crypts with one or more aisles on each side of a central area of equal width, and in monastic dormitories and refectories with just two naves side by side. In common with these, Saint-Pierre at Poitiers gives the aisles the same width as the nave. Where the widths of a nave and its aisles are set in the ratio two to one, the aisles have the character of subsidiary space. If they are narrower, they become mere passages. Conversely, if the aisles are the same width as the nave, they no longer give the impression of subordinate spaces accompanying the central area, and the outer wall of the aisles becomes the primary boundary, within which all three parts are on a par. Thus the new partiality is achieved.

The vaults at Poitiers Cathedral have diagonal ribs, but the ridges rise sharply, as at Le Mans, so that each bay is concentrated inwards. The piers are frontal, and these two factors characterize a transitional stage, still firmly rooted in the Romanesque.

The cathedral has stained glass in most of the windows. That in the three segmental east chapels is of the highest quality. It softens the light without obscuring the interior. Visually, the lighting of the church at Poitiers is the opposite of that in Paris. In spite of its solemn atmosphere, the general effect is cheerful. 'How lovely is thy dwelling place, O Lord of Hosts!'

The wall-passage at the very high level of the sills of the windows is the horizontal complement to the vertical character of the nave and aisles. This contrast, in which each factor reinforces the other, reappears in the Late Gothic style. All the wall-passages in churches in Normandy, and later in Champagne, aim at this antagonistic contrast, though in most cases the emphasis has been heightened by the later addition of parapets.

We have become wary of applying the word beautiful, but the visitor to Saint-Pierre who accepts his impressions without allowing preconceived ideas to affect them will find the word on the tip of his tongue. There are, of course, people who are not of the same opinion. The great problem of the Gothic style was the vaulting of basilican churches. Where nave and aisles, however, are of the same height, the problem of leading the thrust of the central vault outwards does not arise, as this thrust is carried by the vaults of the aisles, whose thrust, in turn, is carried on the buttresses on the exterior, which can project as far as necessary. This is true; but the question then arises why, if the problems of statics were so much less complicated, all architects did not build hall-churches. Were they deliberately creating difficulties for themselves? If not, is the basilica a better form because its problems were a spur to the development of the Gothic style?

These questions miss the real impulse of the Gothic style. The rib divided each bay into spatial fragments and necessitated a complete change in the other forms of the whole building. It led to a reconsideration of the basilican form because this form is characterized by the emergence and thereby the self-sufficiency of one particular part. Re-entrant angles in the plan produce the isolation of parts (such as the transepts) within the contour of the exterior, and they have the same effect in the cross-section of a basilica. The essence of the hall-church lies in its flowing contour, in its lack of re-entrant angles on the exterior, and, in the interior, in the inclusion of all the individual compartments in one overall three-dimensional contour.[48B]

The history of Gothic architecture shows that this aesthetic or, more narrowly, stylistic function of the hall-church was only gradually recognized, and that the preservation of the basilican form led to the creation of certain specifically Gothic forms, especially the flying buttress. The architects of Late Gothic hall-churches were ready to deny themselves flying buttresses because by then the style had infused every architectural member with new life. The Early Gothic hall-church at Poitiers is a conservative first attempt to achieve Gothic partiality in this spatial type. But this partiality could really be reached only when the piers were altered in the way that was to be discovered by the masters of the fourteenth century. Those who look round in Poitiers Cathedral without knowing or being able to picture the subsequent developments in the forms of the piers and

all the other later advances will ask themselves what ought to be the solution to the problem. If they do not find it, they will understand the position of the great master of Poitiers who was gifted enough to take the first step, but could not leap straight to the end of the train of development which he had begun. One man cannot achieve what is properly the task of many generations.

6. THE EARLY GOTHIC STYLE IN THE CISTERCIAN ORDER

The interaction of progress and hesitation which can be seen in the cathedral at Poitiers is to be observed in the development of every style. Advancing ideas are slow to overcome the difficulties in their path. In some cases these difficulties lie in the limitations of the individual, even where he is as gifted as the master of Poitiers, in others they are of a quite different nature. In Cistercian architecture they lay in the special religious convictions of the order. Within it the Early Gothic style, which began about 1154 in the new choir at Clairvaux, and about twenty years later in the new choir at Pontigny, can only be understood through a knowledge of the earlier stages in the development of Cistercian architecture. The development began with modest Romanesque churches built at the time of the building of the choir at Durham. There followed a short transitional stage, and the end was the specifically Cistercian Early Gothic style.

Robert, abbot of Molesme, left his monastery with a small group of men who shared his beliefs to put the rules of Saint-Benedict into strict practice. In 1098, with the consent of Gautier, Bishop of Châlons, he founded a new monastery called *Cîteaux*, in a wilderness fourteen miles south of Dijon. On the instructions of the pope, Robert returned to Molesme in the following year and installed Alberic as first abbot of Cîteaux. Alberic continued to work out the rules of the new community and brought it to a modest fruition. After his death in 1109, an Englishman, Stephen Harding, who was one of Robert's companions, was chosen to be the second abbot. His exaggerated interpretation of the principle of asceticism weakened the monks and seriously reduced their number, and it seemed that the monastery was doomed to extinction, when, in 1113, Bernard of Fontaines and thirty companions, mostly noblemen, entered the order.[48C]

After this, Cîteaux made a rapid recovery. After a year the available land was insufficient and a second monastery was founded in 1113 at *La Ferté*. In 1114 this was followed by the foundation of *Pontigny*; *Clairvaux* and *Morimond* followed in 1115. The other monasteries were off-shoots of these first five, Cîteaux and its first four daughter foundations. When, in 1153, Bernard died at Clairvaux, the order had 343 communities, and by the year 1200 this number had risen to 525. By 1500 it reached 738, to which must be added about 645 nunneries which were, to a greater or lesser degree, attached to the rules of Cîteaux.[48D] The buildings of most of these monasteries, including their churches, have disappeared. As early as the fourteenth century, during the Hundred Years War (1339–1453), monasteries in lonely French valleys were plundered by English and French soldiers and bandits. Most of the rest were destroyed in the French Revolution. In England, too, only ruins remain. So, in spite of buildings that have been well preserved in Germany, Italy, Spain, and a few other countries, our knowledge of Cistercian architecture is extremely fragmentary. Nevertheless, the close relationship between the forms of so many of these monasteries gives us a fairly clear overall picture of the architecture of the order. It has often been stressed that what is common to many of these buildings is mostly of a negative nature. Decoration with sculpture, painting, and carved or painted ornament was not allowed, and its absence produced the characteristic cool emptiness of the churches, and the exclusive emphasis on the purely architectural.[48E] A very characteristic trait is the absence of stone towers, which were not allowed, and which were replaced by small wooden bell-cotes, designed to hold only two small bells.[48F]

Many of the first settlements, and also the first oratory at *Cîteaux*, must have been modest wooden structures.[48G] The oratory, however, was soon replaced by a stone building. The nave, which had no aisles, was about 15 feet wide and was vaulted, presumably, with a tunnel-vault. The choir was about 30 feet long. This building, consecrated in 1106, was still standing in 1708. If we call this chapel Cîteaux I, then the church of about 1130 was Cîteaux II, and that begun *c.* 1180 and consecrated in 1193 Cîteaux III.[49]

Little is known about Cîteaux II, for it was systematically demolished in the French Revolution. No views survive of its interior. Seventeenth- and eighteenth-century drawings show a large church with projecting four-bay transepts and a nine-bay nave with a west porch. The aisled choir, with its low ambulatory and straight-ended eastern chapels returned behind the sanctuary, was the result of an extension, begun *c.* 1180 and consecrated in 1193. The original sanctuary was probably single-aisled and straight-ended, like Fontenay and Pontigny II. If the regular crossing and nave and choir clerestories shown in the drawings belong to the original church, then the building may either have had a timber roof over the central vessel, or, more plausibly, it may have been groin-vaulted.[50]

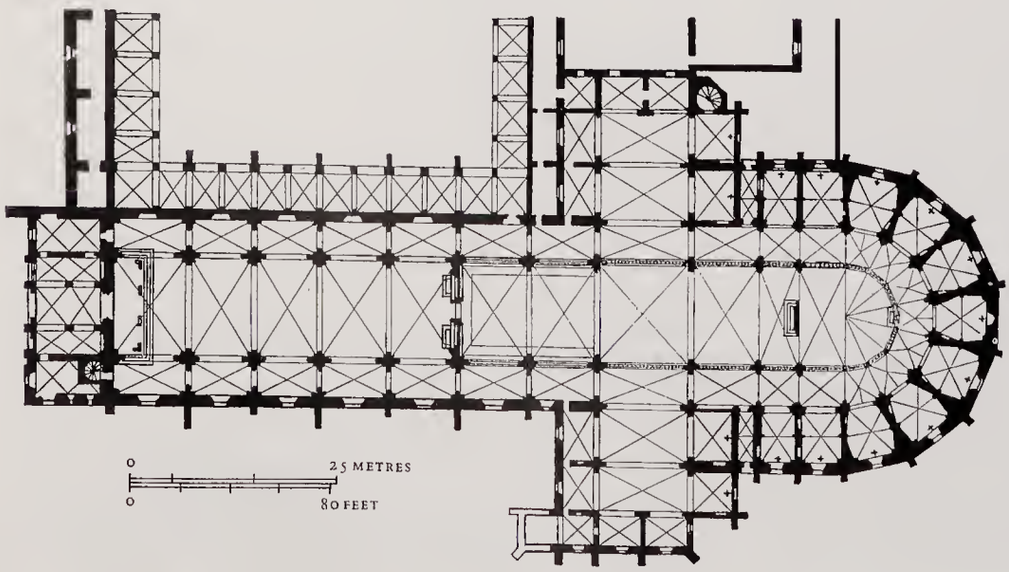
Clairvaux II, demolished in the early nineteenth century, was built at the same time as Cîteaux II. Bernard, who was born in 1090, was twenty-five when, in 1115, he arrived at Clairvaux with a group of monks to found a new monastery. Here he became abbot, and from here his religious and political ideas went out into the Catholic world, and governed it. The wooden oratory of 1116 was a square building with aisles on all four sides, and a taller central space crowned with a stepped roof.[51] It was replaced from *c.* 1135 onwards,[51A] and this new building (Clairvaux II), because of the esteem in which Bernard was held, became the model for many later Cistercian churches. In particular, it is generally believed (until recently) that the church at Fontenay, begun in 1139, is a reproduction of Clairvaux II.[51B]

Fontenay (1139–47) has a nave of eight bays with one aisle on each side [59, 60].[51C] To the east of the transepts there are two chapels on each side which are shorter and narrower than the choir. Whereas the east chapels of most Romanesque churches ended in apses, those at Fontenay have straight ends, and this elimination of semicircular forms at the east end became a feature of the characteristic

60. Fontenay Cistercian Church. Interior, 1139–1147

simplicity of many Cistercian churches. The nave is vaulted with a typical Burgundian pointed tunnel-vault; its transverse arches are supported on shafts. Each bay of the aisles is vaulted with a transverse pointed tunnel-vault, running from north to south, springing from above the apexes of the transverse arches which separate the bays of the aisles from each other. One can pass down the length of the aisles, but each bay gives the effect of a separate enclosed space. The regular use of pointed arches for the vaults, the arcades, the transverse arches, and the windows is Burgundian, and is suggestive of the Gothic style. The architect's model for the pointed arches and barrel vaults at Fontenay may have been the then recently built third church at Cluny, begun in 1088 and finished at the west about 1120. But it was also the splendour of this church and of Cluniac Romanesque art in general that stirred Bernard's opposition. Such expenditure, he felt, may have been justifiable in a cathedral, which was built for laymen, but not in a monastic building. In his famous *Apologia* to William of Saint-Thierry, written in 1124–25, in which he castigated the distractions and excesses of Cluniac sculpture and architecture, Bernard showed an exceptionally sharp eye for vivid detail and a highly developed sensitivity to visual form. But the primary intention of his critique was to show just how unsuitable Cluniac Romanesque was as a setting for monastic life. He was not directly concerned with the stylistic character of Romanesque. He did not take an interest in the form of the arches at Cluny, nor in the stylistic significance of Cluny as a whole, or if he did, he did not formulate any clear ideas on the subject.[51D] At that time Saint-Denis was in course of construction, and, if he regarded this church too as needlessly expensive, he did not share our view of the Gothic style as a formal and spiritual contrast to the Romanesque. Many historians, such as Dehio and Bilson, have rightly refused to speak of a specifically Cistercian style. The Cistercian spirit in architecture is equally effective in the Romanesque and Gothic styles. The west façade at Fontenay[52] has round arches on the doorway and the seven windows and is purely Romanesque in every aspect; the interior has pointed arches but is still Romanesque rather than Gothic. Both are Cistercian in their characteristic asceticism.

At Fontenay this tendency to asceticism led to a reduction in height. The springing of the tunnel-vault lies so low that the nave has no upper windows, and the result of this is a pseudo-basilican type. The choir is even lower than the nave, and there are windows in the east wall of the crossing, above the eastern crossing arch, which light the nave. There



61. Pontigny Abbey Church, plan of second church, begun *c.* 1140, with choir of third church, *c.* 1180–1206

was probably considerable variety within the Cistercian Romanesque, but its essentially modest character remained a common factor.

This judgement of the Cistercian churches of the second generation is confirmed by those which have been preserved in England and Germany. England is discussed in another volume of this series;[52A] in Germany it is characteristic that *Amelungsborn*, begun soon after 1135, has typically Saxon alternating supports and a flat ceiling, and is quite unaffected by problems of vaulting.[53] Vaulting among German Cistercians was clearly intended as early as *c.* 1145 in the planned (but never built) barrel vaults over the choir and transept chapels at *Eberbach*. Around 1160, under the influence of the eastern choir at Worms, band ribs were built over the north transept chapels and choir of *Maulbronn*.[53A] However, the abbey at *Heisterbach*, which is actually in the Rhineland, has no ribs, although it was begun as late as *c.* 1202.[53B] Buildings like the narthex at *Maulbronn*,[54] begun about 1210, are still Transitional, and in them we see a struggle with constructional problems going on at a time when, in France, the cathedral of Reims was already being begun.

In France the Cistercians first used the rib at Fontenay (chapter house, *c.* 1155), in the transepts and nave at Ourscamp II (after 1154), in the nave of Pontigny II (*c.* 1140) and possibly in the high vaults of Clairvaux III (before 1153).[54A]

A new church was begun at *Clairvaux* before 1153. The relaxation of the principle of modesty and simplicity in the years after Bernard's death (1153) are clearly anticipated in the new plan. The 'Bernardine' choir was replaced with a round apse surrounded by an ambulatory with nine chapels. These chapels were trapezoid, set one against the next, so that their outside walls formed a continuous polygon. The whole choir can be seen as one of the first chevets built on a polygonal plan. This form of choir – and it was always the choir which interested the Cistercians most – compared with the straight east ends of earlier buildings, was a simplified version of the choir of Cluny III, and possibly borrowed its continuous chapel wall from early Gothic choirs in northern France (Saint-Denis, Saint-Martin-des-Champs in Paris). It may even have looked to early Christian architecture in Rome. Dehio has said that the chapels opening from the transepts are almost a divided aisle and that, because of the pent-roof that covers them all, they give this effect from outside. Similarly the east chapels look like an ambulatory, in spite of their polygonal form. Another concession to the style of northern French early Gothic may have been the use of rib vaults in the church, perhaps over the central vessel of the nave and transepts, perhaps also in the aisles.[55]

Since the destruction of Clairvaux III, *Pontigny* II remains as a representative of this stage of development. The first monastery at Pontigny, which dated from 1114, had a rectangular oratory.[55A] The plan of the east end of the second has been discovered by excavation.[56] It had a 'Bernardine' arrangement, like Fontenay, with a straight-ended sanctuary but with additional chapels flanking the transepts on all three sides.[56A] This second church at Pontigny was begun in the 1130s, and finished by about

62. Pontigny, Cistercian church. Interior. Nave *c.* 1140, choir rebuilt *c.* 1180–1206

1150–60 [61, 62]. The aisles have groin-vaults and transverse arches, and although these are pointed and even the groins are pointed (that is executed on pointed centering), the general impression is Romanesque, chiefly because of the rectangularly stepped mouldings of the transverse arches. Some historians presume that the nave was also intended to have groin-vaults, giving two reasons for their supposition. First, since the building progressed from east to west, the transepts are earlier than the nave. They have groin-vaults, and so it is probable that the nave, which has bays of the same width, but slightly longer, was intended to be covered with groin-vaults too. The second reason is that the projecting supports in the nave are frontal; only the capitals are diagonal [62]. To have turned the capitals so that their centres lie on the corners of the supports is so contrary to all geometrical and architectural logic that one may well believe that they were intended to be frontal and were turned through 45 degrees only after they had been carved. This seems to be confirmed by the fact that in some places the wall has been cut away to allow room for the corner of the capital. In opposition to this opinion others have argued that the same phenomenon appears elsewhere, at *Silvacane*

(Bouches-du-Rhône), at *Fitero* in Spain, and *Alcobaça* in Portugal.[57] For this reason, both Aubert and Rose say that at Pontigny this strange combination of diagonal capitals with frontal supports was part of the original design, and that, if groin-vaults had been intended, the supports would have been round, as they are in the transepts. In addition, the square rib-vault in the crossing also has its capitals diagonally set over the edges of the frontal supports. Since this vault was being built at the same time as the groin vaults in the adjoining transepts, there can be no reason to assume that the idea of rib vaulting the central vessel was an afterthought, conceived only subsequent to the vaulting of the transepts and the laying out of the nave.[57A]

The nave and crossing at Pontigny are an extant testimony of the transition to the Gothic within the Cistercian order. The difference between the elevation of these parts and that of the east end of the choir of Saint-Denis or Sens, which date from the same time, lies in the refusal at Pontigny to dissolve the wall. This, too, is a negative characteristic inspired by motives of economy, and even more by the desire to produce an aesthetic expression of economy. Of course, a positive factor can be expressed in negative terms, and vice versa. The refusal to accept the gallery, the triforium, and the wall-passage at Pontigny is, in positive terms, a recognition of the wall. Here it seems a remnant or a heritage of the Romanesque. In principle, taken independently of individual periods and styles, the wall is as much a basic architectural form as the free-standing support. The wall is a continuous spatial boundary; the free-standing support is a discontinuous one, which gains continuity only by the formation of a regular series along straight lines or along curves to form together one layer of a relief. The main theme of the Gothic style is the interplay of wall and supports in the layers of the relief of the three directions, longitudinal, lateral, and diagonal. In the transepts at Pontigny, the round shafts which support the transverse arches, with their frontal bases and capitals, form part of the boundary between the bays. In combination with the groin-vaults they are Romanesque. However, if we consider the shafts in combination with the wall, then they form one layer along the wall, and it is the continuity of the wall which now predominates. The narrow windows are merely cut into the wall, without producing the specifically Gothic relief. The wall therefore remains a firm boundary between the interior and the exterior, without connecting the two. The window openings remain separate spatial entities within the thickness of the wall.

At Pontigny II, then, the Gothic rib-vault is combined with a Romanesque wall. The term 'style' can be limited to mean only an absolute unity of principles, and this definition is valid for theoretical considerations. Historically, however, 'style' is often found to include disparate features which can yet offer a specific aesthetic charm and give positive expression to a spiritual movement. To judge Cistercian architecture fairly, one must understand that, from its principle of asceticism, its surrender to the rib-vault could be justified by the constructional and technical advantages which accompanied it, but that a surrender to the principles of the dissolution of the wall and of strict partiality, which were the logical consequences of the acceptance of the rib-vault, could not have been justified.

There is hardly another example in which the fact that the introduction of the rib required some spiritual authorization is proved so convincingly. Only the absolute immersion of the individual in the congregation of Christ and the humble abandonment of any *hubris* could give blessing to the division of the interior into spatial fragments and allow the architect to work out its full logical consequences. St Bernard was a reformer of the monastic world, and he was a man who, with admirable earnestness, accepted the teachings of Christ and of St Benedict, demonstrating their significance in a life of great self-denial. But there was, as Dehio has pointed out, a powerful contradiction at the root of his doctrine. As a monk his aim was to shun the world, and yet he incessantly entangled himself with the world in his tireless political work, especially in his sermons of 1147–9, in which he urged the world to undertake a crusade which became the great failure of his life. The responsibility, which should rather have fallen on the shoulders of the complacent, intriguing, and credulous princes, fell on him. Our aim here is, however, not to apportion the blame, but to recognize that St Bernard in his behaviour always remained the great nobleman that he was by his birthright, an ascetic prince. Following the principles of Abbot Harding, he set out to develop even the architecture of the Cistercian order in opposition to Cluny, and yet to uphold the mastery of the client, the Romanesque nobleman. So his order could accept the Gothic rib-vault for practical reasons, but found that it could be combined with the Romanesque wall which expressed the monks' ideal of isolation from 'the world'. The Cistercians were always noblemen, who, in spite of their asceticism and their labours, had many servants, extensive estates, and great wealth. Only small parts of their churches were accessible to laymen – *odi profanum vulgus* – and none to women. To understand the Cistercians and their architecture one need only compare them with the mendicant orders and their churches. St Francis was a monk like St Bernard. But he was not a prince, he was a beggar.

This consideration illuminates the purely artistic aspects of all church architecture. If a visitor to a Cistercian church whose approach is chiefly literary is told that St Bernard always remained an aristocrat and that he considered that any monk stood on a higher level than a layman, it will assist him in his understanding of the architecture. A visitor who understands the language of stone will be aware of this background without literary proof. The personality of St Bernard belongs to the Transition – that of St Francis is Gothic. These translations of notions of style to personalities, which may seem hazardous, represent exactly what the architects of the Cistercians and of the Friars expressed. Those who understand the language of stone need no literary sources to understand either from the architecture of the cathedrals that the bishops, too, remained aristocrats, or that they gave their architects free rein. The architects used this liberty to express in their art the desire that the social superiority of the governing forces of the Church should give way to the more Christian idea of a humble unity of the Church with the laity. The history of the Gothic style is a formal process which accompanies developments of religious thought.

63. Angers, Saint-Maurice. Interior of nave, after 1149

At *Pontigny* there are still many remnants of the Romanesque. Amongst these are the cruciform piers with shafts on all four sides, those of the inside of the nave beginning only at a height of about ten feet, and also the rectangular section of the arcade arches and the transverse arches. The general effect of the exterior is extremely Romanesque, especially in the uninterrupted horizontal line of the roof, which joins the choir and the nave into a unity unbroken by the much lower transepts. However, until 1793 there was a wooden bellcote over the crossing.

The choir at Pontigny was replaced by the present choir (in building in the 1180s), so that the building as it now stands is a combination of the work of Pontigny II and III [61].[57B] The plan is modelled on that of Clairvaux III, except that the choir was lengthened to allow eleven chapels to lie around the ambulatory instead of the nine at Clairvaux. In principle the spatial forms of the Gothic cathedral have been adopted, and in the details, too, this new choir comes much nearer to the Gothic type of composition. In the apse of the choir there are monolithic piers, and above them, supported on corbels, shafts rise to the ribs. The shafts supporting the wall-arches of the vault and those supporting the round arches of the windows produce a Gothic relief above the line of the springing of the vault. However, between the capitals of the round piers and the springing of the vault, the flat surface of the wall reigns. On the exterior, the sloping roof of the ambulatory rises only slightly above the chapels. The chapels are set adjacent to one another so that, on the outside, they form a single cylindrical surface, and while this is a protest against the liveliness of east ends such as that at Noyon, it is equally a protest against the projecting volumes of a Romanesque east end such as the one at Cluny. In the Late Gothic period chapels round ambulatories were also joined to one another in this way, so that there were no projections, but the simplicity of Pontigny is not a precursor of the Late Gothic. It is rather a remnant of Romanesque flatness. The flying buttresses are an original part of the choir, but one can feel the undisturbed Romanesque grandeur of

64. Santiago de Compostela Cathedral. Crypt, *c.* 1170

the roofs as they rise step by step. All the original buttresses on the choir and the nave end below the horizontal line of the guttering.

The upper part of the west front is Gothic in its effect because of the three pointed arches on it. The central one of these surmounts the great west window; the other two are blind. The double shafts with rings round them are Gothic too. The lower part of the façade is covered by the narthex, a feature which appears in many Cistercian churches. Rose thought that it dated from about 1140, and Fontaine agreed with him.[58] It was probably built around 1150–60.

When *Cîteaux* also required a wider choir, it was not built on the system of those at Pontigny III and Clairvaux III, but was made rectangular and given a similarly rectangular ambulatory with rectangular chapels on each of its three sides. An engraving of 1674[59] shows how the composition of the east end was stepped up. The choir had simple buttresses, but the nave had flying buttresses. The choir is presumed to be contemporary with that at Pontigny. The return to the rectangular east end became the rule for most, though not all, later Cistercian churches.[59A]

7. THE SPREAD OF THE EARLY GOTHIC STYLE AND THE PASSIVE TRANSITION

In the 1150s, when the Cistercians had accepted the Early Gothic style at Clairvaux and Pontigny, the order spread the style wherever it had communities and built new monasteries or churches. Before about 1150, they had spread the Transitional style, or rather a specifically Cistercian Transitional style. In speaking of Transition as a general phenomenon, one has to differentiate between its very different forms; for wherever people came to know and accept the Gothic style, a compromise had to be reached with local traditions. The differences between the Romanesque schools of architecture resulted in more and more new combinations.

In *France* itself, there appeared in Anjou a group of buildings whose style can be called Angevin Transitional. In the same decade as the vaulting of Le Mans (1145/50–58) the nave of *Saint-Maurice at Angers* received new rib-vaults (after 1149 and well advanced by 1160) [63].[59B] The transverse arches have thin roll-mouldings added at the edges, and the profile is softened also where the cells meet it. Otherwise the vault is similar to that at Le Mans: even the frontal shafts supporting the ribs are repeated. The vault can therefore still be called Transitional. The aisleless nave of Saint-Maurice was created out of a Romanesque nave which had also been aisleless. The new vaulting entailed the insertion into the old nave of compound wall responds to support each transverse arch, and massive new exterior projecting buttresses to carry the lateral thrust of the vault: none of the mechanical problems of the church of basilican type arose. Angers presents a variant of the type of vaulted church of which *Angoulême* is the main example – the vaulting consisting of a series of domes. The introduction of steeply domed cross-vaults with ribs produced a totally new mood. In Angoulême it was serene, festive, and light; in Angers it became majestic, imposing humility on the visitor. These differences, however, lie in details which are hardly traceable. About thirty years later a replica of Angers was built at La Trinité (now cathedral) at *Laval*.[59C] But it entirely lacked grandeur.

Outside France, in Germany, Italy, and Spain, variations grew up so different from one another that it is only their common effort to imitate and exploit the rib-vault which brings them together under the heading of the Transitional style.

Knowledge of the rib had been brought to *Germany* before 1106, some years before its acceptance by the Cistercians. It had been used in High Romanesque

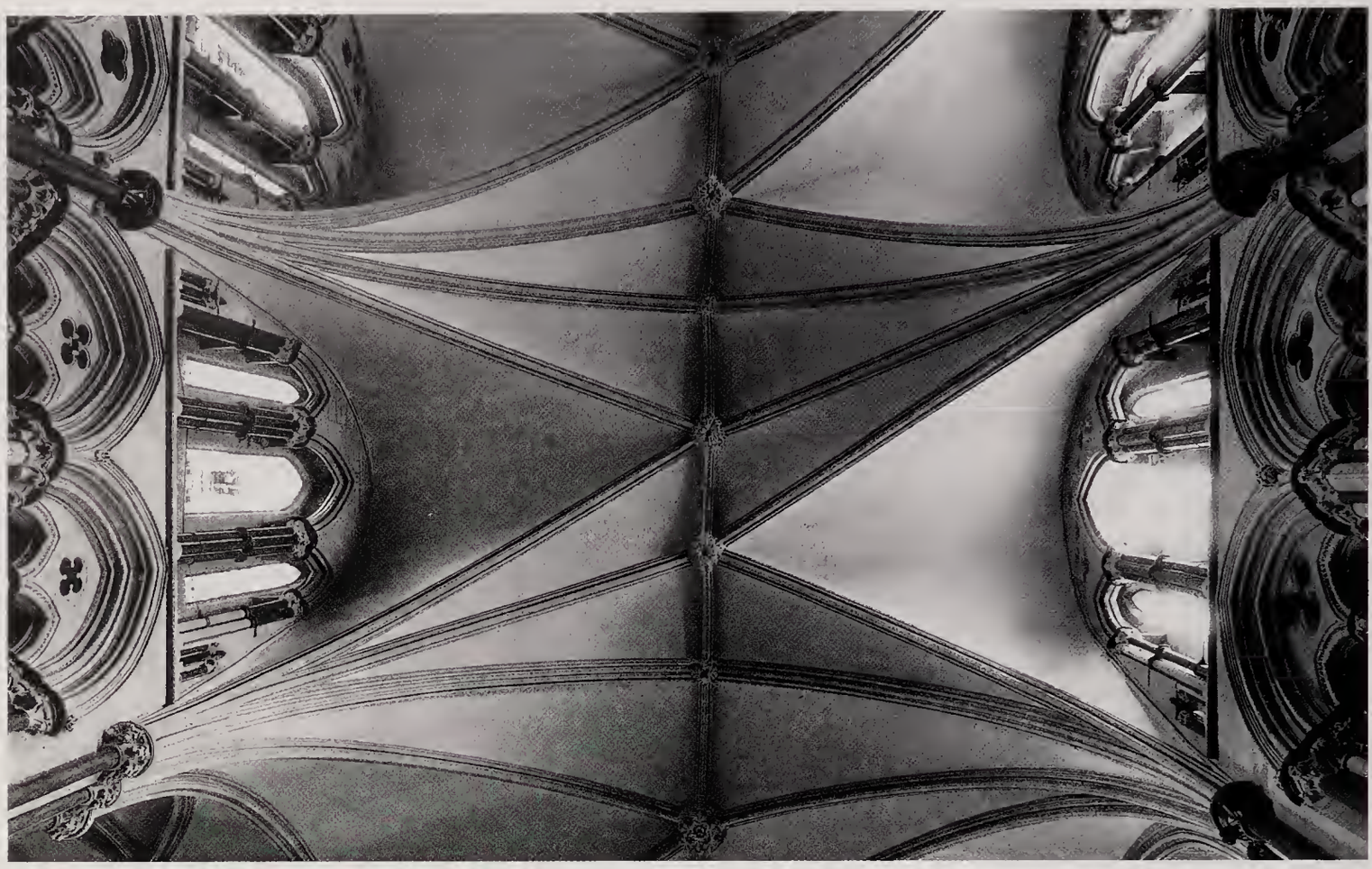
churches, such as the cathedrals at *Speyer* and *Worms*, and from the second quarter of the twelfth century, in Late Romanesque churches.[60] These preserved all the other Romanesque architectural members, but began to merge members with each other, used a higher relief with deeper shadows, and introduced diagonal views and other means of creating partiality. The result thus produced was a style parallel to the Gothic. The development of the Transitional style in Germany from about 1150 must be understood not as a union of a general Romanesque character with Gothic ribs, but as a union of a specifically Late Romanesque character with the Early Gothic style. In Normandy, and within the Norman school in England, the rib was introduced into High Romanesque forms. Dehio called this spontaneous development which reached the Gothic style without a preceding Late Romanesque phase, *Active* Transition, as against the development outside the Norman and French schools, which either proceeded from the High Romanesque forms customary in other schools, or, as in Germany, from Late Romanesque forms, which he called *Passive* Transition. A discussion of the results of these combinations, with their wealth of fantasy and imagination, belongs to the history of the Romanesque style.[61]

The active Transition in *Italy* does not require detailed discussion in a history of the Gothic style. Of course, the very early dates which have been ascribed to Italian rib-vaults by Kingsley Porter are not easily defended.[62] But the earliest rib-vaults in northern Italy appear at about the same time as the earliest English and Norman examples. The Italian series begins with a group of churches in and around Milan, under construction in the first decades of the twelfth century. Krautheimer's sagacious study of the building history of the Milanese churches suggested that no rib-vault can have existed in this city before 1120 since, if it were not so, there would not have been such uncertainty and so many changes in the form of vaults during the building of these churches.[63] But more recent research has established conclusively that the rib-vaults in the nave and transepts of *S. Nazaro in Milan* can be dated to around 1112.[64] The much-discussed rib-vaults over the nave of *S. Ambrogio in Milan* have been recently dated to *c.* 1128–30.[65] In his longitudinal section of S. Ambrogio, Dartein drew walls over the transverse arches of the nave.[66] These, he suggested, were intended to isolate the vault from the vertical thrust of the roof. There can hardly have been a flat ceiling originally, as the system of alternating supports was clearly designed for a vault. But the lower parts of these supports, built together with the lower storey of the narthex and western half of the church form *c.* 1110, suggest the intention to cover the central vessel with groin-vaults. Only in around 1128, just after the first rib-vaults at S. Ambrogio had been built in the lower storey of the narthex, was it decided to use ribs in the high vaults. Since the north tower of the church, the Torre dei Canonici, was well advanced by 1128, and since it was built together with the outer walls, aisles, piers and galleries of the church, these rib-vaults must have been under construction *c.* 1128–30. Contemporary, or perhaps even a little earlier than the S. Ambrogio vaults, are the rib-vaults over the central vessel of the church of *S. Sigismondo at Rivolta d'Adda*, begun *c.* 1120.[67]

65. Ávila Cathedral choir, finished in the 1180s. Interior of choir and transept

A slightly later series of early rib-vaults appear in churches in Novara, probably under Milanese influence.[68] The rib-vault of *S. Pietro di Casalvalone* belongs to the church dedicated in 1118 or 1119. At *S. Giulio di Dulzago*, one bay (the western) is groin-vaulted, two bays are rib-vaulted, and the rest have tunnel-vaults. It is not certain if a consecration of 1133 included the rib-vaults,[69] but they can be dated between 1118 and 1148. According to Kingsley Porter, the cathedral of *Novara*, which no longer exists, was completed in 1125 with a rib-vault. He mentions that one vault of the sacristy and half of the second vault in the adjoining passage have been preserved. In their geometrical construction and in the rectangular section of their ribs, they are similar to the vaults in *S. Ambrogio in Milan*. The rib-vaults must date to some time before the dedication of the cathedral in 1132. The vaults at *Sannazaro Sesia*, near Novara, which Porter claimed to date from 1040, can be put between 1130–40.[69A]

All the early Italian rib-vaults are domed, and have ribs with characteristic rectangular sections. Both features clearly separate them from the contemporary English and Norman rib-vaults, and suggest that the Italian and northern series developed as parallel and independent experiments, although perhaps derived from a lost common source. The closest contacts with north Italian vaulting occured in the Rhineland (e.g. Speyer II), where Romanesque architecture shows many points of similarity



66. Lincoln Cathedral. Vault of St Hugh's Choir, probably designed *c.* 1200

with Italian Romanesque, and in southern France, where the rib-vaults of *Moissac* and Saint-Victor at *Marseilles* have the rectangular profiles of the Italian examples.[69B] There were, however, connections between northern Italy and Normandy in the late eleventh and early twelfth centuries, *S. Fermo* and *S. Lorenzo* in Verona show that there were architects in Italy who knew Norman churches.[70] In turn, certain domed rib-vaults in Normandy from *c.* 1120 onwards, notably the chapter house at *Jumièges* and the remains of the choir at *Evreux* cathedral, suggest Lombard influence.[70A] The north Italian vaults are also similar to Angevin domes vaults, as in *Angers* (after 1149) or *Le Mans* (*c.* 1145/50–58) cathedrals. The difference between these two French vaults and those in S. Ambrogio is that in the latter the transverse arches are round and the ridges of the cells domed, while in the former the transverse arches are pointed and the ridges of the cells straight.[70B]

If it is accepted that there are no ribs in *Spain* earlier than those in the narthex of *Santiago de Compostela*, then the Spaniards were the last people in Western Europe to adopt the rib. This Romanesque church, an impressive replica of Saint-Sernin at Toulouse, had a narthex added by the architect Mateo. The falling ground on which it stood made it necessary to build a crypt underneath it. Both the crypt and the narthex have heavy ribs [64]. The name of the architect, Mateo, is inscribed on the Portico de la Gloria, which was built sometime before 1188. He took over the direction of the building in 1168, so the ribs in the crypt probably date from about 1170, and those in the narthex from the following decade. Their Norman profile and ornamentation shows a close relationship with the North. (The western bays of the crypt still have distorted groins).[70C]

The choir of the cathedral at *Ávila* was finished the 1180s. It was influenced by that at Vézelay [50], but the piers at Ávila are heavier and the triforium and clerestory are far more massive in form [65]. The double ambulatory is reminiscent of Saint-Denis and Notre-Dame in Paris, but again the proportions are so different that the resemblance is far from obvious.[71] Since the architect of the choir, Eruchel or Fruchel, died in 1192, and since, according to Lozoya, the choir was in use as early as 1181, this gives a *terminus ante quem* for the choir at Vézelay. The ribs at Ávila form pointed arches and are relatively light; the transverse arches in the ambulatory are also pointed and have a rectangular section. The windows, however, still have round arches. Because the church is built into the city wall, the exterior looks more like a piece of military architecture than a church. The exposed flying buttresses behind the sentries' walk at the top of the wall are probably the first to have been built in Spain. They appear to have been added after the completion of the wall.[71A]

The cathedral at *Tarragona*, begun some time after 1171, gives an impression of even greater heaviness than that at Ávila. It is a work of almost pure Romanesque. The decision to introduce rib-vaults was made only when the building was already in progress, probably during the episcopacy of

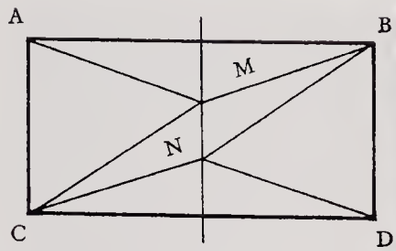
Archbishop Ramón de Rocabertí (1199–1215). Characteristically the main apse and the south apse are semicircular, while the north apse ends in five sides of an octagon. This shows the indecision of the architect. The grey stone and the very limited lighting with no stained glass create an atmosphere of almost overwhelming gravity, although the brighter light from the crossing tower shines down like a ray of hope. In this church there is evidence of a hesitant concession to the Gothic style, but, as a whole, it is a Transitional work, in which the general atmosphere is predominantly Romanesque. It is an unforgettable expression of the spirit of Good Friday.[71B] The same is true of *Fitero*, with its massive walls, piers, transverse arches, and ribs. The capitals stand on frontal responds, but are turned through an angle of 45 degrees to face diagonally, as at Pontigny.[71C] In the 'Old Cathedral' at *Salamanca*, a building easy to take in and to appreciate, there are diagonally set figures mounted on frontal responds to carry the ribs. The exact date of this clearly conceived church is not known. The design for the east end is said to date back to about 1150, and the transepts and the tower above the crossing were finished about 1180. The tower is purely Romanesque, stylistically perfect, and of outstanding quality. Lambert gives the date of the nave as the end of the twelfth century, which is probably correct. This church is more progressive than those at Ávila and Fitero. Yet, in spite of its positive qualities, historically it can only be described as conservative.[72]

The cathedral at *Lérida*, begun in 1203, reproduces the plan of Tarragona, but with a nave of only three bays. The architect followed his model closely and felt no ambition to advance in step with the architect of Chartres. Here again, a historical judgement must not be confused with an individual evaluation.[73]

8. THE TIERCERON

In the century following the building of Durham Cathedral, the rib-vault had been improved in many ways. Once the pointed arch had been incorporated into the geometrical construction of vaults, all its technical and mechanical advantages were recognized, and architects worked to exploit to the full its consequences in interiors and exteriors. The rib-vault itself was built over rectangular and trapezoid plans; it was enriched with the ridge-rib, and its keystones were emphasized. The rib was introduced into vaults with steeply rising ridges, where it made the transition from groin to groove inoffensive to the eye. With the achievement of all these improvements and expedients, the development of the rib-vault seemed to have reached its end.

However, a new vista of possibilities was opened by the rib-vaults in *Lincoln* Cathedral.[74] Bishop Hugh of Avalon and his mason began a new choir, an eastern transept, and an apse with chapels in 1192. The crossing tower collapsed in 1237 or 1239. This necessitated a renewal of the first bay east of the crossing, which was restored with a sexpartite vault. The rest of the vaults in the choir survive from the campaign beginning in 1192. They are of an uncommon form [66, 67]. A ridge-rib connects them from west to east. In each bay this rib is divided into three sections by two



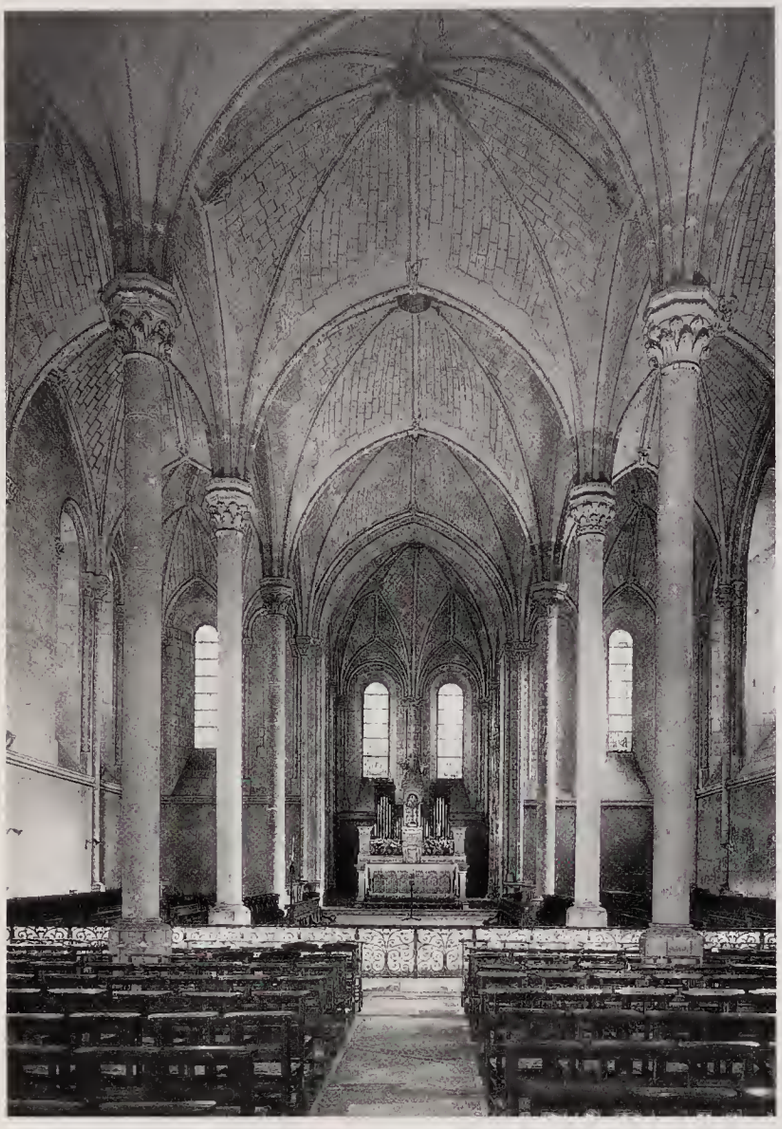
67. Lincoln Cathedral, vault of St Hugh's choir, designed *c.* 1200. Plan

68. Lincoln Cathedral. Crocket pier in St Hugh's Choir

bosses. The ribs AM and BM rise to the point M, the ribs CN and DN to the point N. The two cells ABM and CDN do not meet at the ridge-rib; they avoid each other. To M and N a third rib rises from the corners B and C. These ribs do not form the boundary of a cell; they lie on the cylindrical surfaces of the cells. Some critics have found this 'senseless', others have called the third rib 'decorative', using the word to indicate that the ribs have no static function. The name of such ribs, tierceron, means 'third rib', and it may have originated with reference to Lincoln. St Hugh was a Frenchman, but his architect was English.[74A]

The architect used below the windows of the choir aisles and also in other parts blank arcades, a traditional motif, but their form is again unusual. They are two arcades behind each other, or two tiers of colonnettes and arches, arranged in a syncopated rhythm. Each column of the front tier stands in front of the apex of a back arch. In as much as this motif also has a merely decorative and not a static meaning, it has a stylistic affinity to the vaults. That the front row was built at the same time as the rear row is proved by their common plinths.

The Lincoln architect must have known French crocket capitals in 1192. Several of the capitals in the choir executed after 1200 are more progressive. The crockets here show twisted leaves. But the strangest motif is the use of crockets up the shafts of the piers at the corner of transept and aisles [68]. In capitals it is easy to interpret crockets; they sprout out where the shaft seems to open into a blossom. At Lincoln, where they grow up a shaft, they are again 'decorative' and 'senseless' to any critic who sticks to his own



69. Angers, Saint-Serge. Interior of choir, 1215–25

norms. These transplanted or even displaced crockets belong to shafts partly hidden by free-standing Purbeck shafts. Again the architect plays with the conceit of the Gothic type of relief readable from back to front. In some of the piers he hollowed out grooves in front of which shafts rise. Some of the shafts themselves have such grooves, reminiscent of Late Gothic sections of mouldings. The purpose in the Late Gothic style is to allow space to penetrate into the pier, whereas before the aim had been to make the pier penetrate into the surrounding space.

All the motifs at Lincoln which have been commented on here have an affinity with one another: the mouldings of the ribs, the rich contrasts of light and shade, the displacement of the crockets, the increased difficulty of seeing the syncopated blank arches, the grooves of the shafts. They all express the wilful character of their inventor, a man who made a boldly personal use of the forms of the Gothic style and instilled a new sense into them. Those who call them senseless have not grasped their stylistic sense.

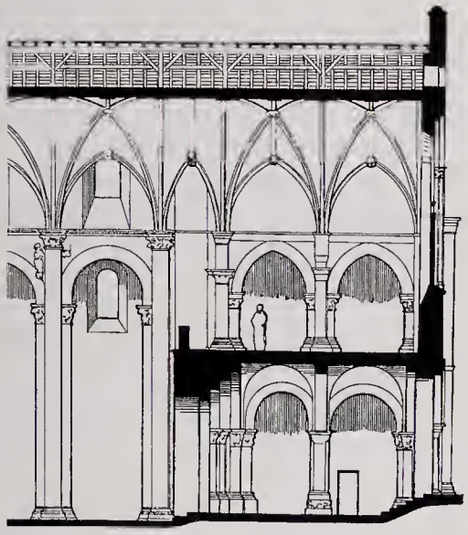
Now that the phase between High Renaissance and Early Baroque is no longer called Late Renaissance but Mannerism and that Mannerism is being understood and defined as a style *sui generis*, it has become possible to recognize related phenomena also in other periods. They have consequently been labelled 'Mannerist' too, and in that sense the architect of St Hugh's choir can be called a 'Mannerist'. If the original apse had survived at Lincoln, there would be one more 'Mannerist' motif to discuss. According to what excavations indicate it must have been different from any apse ever added to a choir.

Out of the architect's asymmetrical vaults his successor evolved the earliest regular star-vaults of Europe. His 'Mannerism' remained at first an isolated intermezzo, though it had its consequences in the further development of the High Gothic style. It is not merely a matter of utility or convention to refuse to establish the phase of the choir of Lincoln as one of 'Mannerism'. For the essence of the contrast between Romanesque and Gothic remains. Lincoln in its choir (and the western transept, probably completed by a successor) is Early Gothic or 'Early English'. Hugh's architect's Mannerism is both English Early Gothic and a subspecies of normal Early Gothic. The way in which he departed from the latter was to use a form in a new sense. Thus first and foremost there is the rib which is not placed in front of the groins of a groin-vault, either according to its original function (to replace the groins by a regular curve) or according to its later function (to facilitate construction, technique, and statics), but which runs on the surface of a cell just like the ridge-rib, only not straight but curved and with its curve following that of the cell.[75] The tierceron rib is not a rib in the original sense of the term. Much is decorative that is not 'Mannerist'.

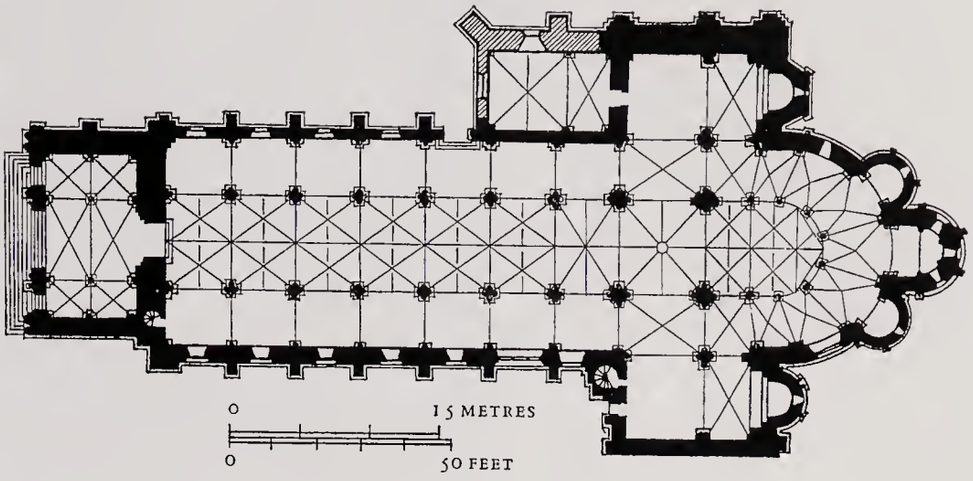
The term 'Mannerism' was introduced to describe the style of the years from about 1520 to about 1580. If its principle can be found also in the styles of other generations, then there is a need for a name to embrace all such stages in the history of style, including the particular example known as sixteenth-century Mannerism, and also for separate names for each one of these stages. The example at Lincoln, which depends almost entirely on the individual creativity of the architect, might be named after him, if we knew his name.[76] As the principles of Mannerism appear at various stages in the development of the Gothic style, it will be necessary to find a suitable term for each such appearance.

Historians have never agreed on a term to embrace all manifestations of the principles of Mannerism, or indeed of many other principles in the history of style. Some of them claim that such terms are unnecessary. However, those who are sensitive to such expressions as 'manneristic Gothic' or 'baroque Gothic', and regard them as intellectual and linguistic monsters, will always try to find terms unencumbered by preconceived ideas. Inspired by Jakob Burckhardt, I suggested earlier in this book (p. 65) the word 'akyrism', as, in this phenomenon, forms are used in a sense which is not properly their own. The Greek work 'akyros' means 'improper'. Each reader is free to translate the terms 'akyrism' and 'akyristic' back into his own terminology.

Lincoln's akyrism is not an isolated phenomenon. The transplantation of the rib on to vaults of the domical type in Anjou is related to it from the moment the profile of the rib becomes truly Gothic. As long as the surface of the vault is part of a sphere, the ribs seem to attach themselves to it, but in domical groin-vaults such as those in the nave of the



70. Airvault, Saint-Pierre, church, consecrated 1100, rib-vaulted *c.* 1220–30. Longitudinal section



71. Airvault, church. Plan

cathedral at *Angers* they form spatial divisions. When ridge-ribs are added, as they are in the choir and transepts at Angers, the result is an aesthetic effect based on both these principles. As the ridge-ribs and the diagonal ribs, and even the transverse arches and the wall-arches, have the same profile, they are generally accepted as co-ordinate forms. The most fascinating work in this style is *Saint-Serge* at *Angers*[77] [69]. The choir, a smaller and more intimate version of the cathedral at Poitiers, is that of a hall-church. The slender round piers and the octagonal bases and abaci make it more Gothic than the cathedral. In the corner bays and in the rectangular sanctuary, the number of ribs is increased. The ridge-ribs over the windows and the blind arches of the walls meet the diagonal ribs in the middle of their upward course. The lower sections of these ridge-ribs are really part of the cells. This complicated system gives an effect of vitality and wealth which stimulates both the intellect and the senses. Mussat dates the church to between 1215 and 1225. It is therefore later than the vaults of St Hugh's choir at Lincoln.

Cells with their own ridge-ribs were also used in conjunction with the traditional tunnel-vaults of Poitou. These are even more difficult to grasp at first sight. In the nave at *Airvault* [70, 71], one gradually realizes that two adjacent bays, *a* and *b*, are joined by one pair of diagonal ribs; *b* and the next bay, *c*, are similarly joined so that the two identical systems intersect, or, as the French put it, ride one on the other.[78] The actual bays are separated by pointed transverse arches with the same profile as the ribs. A ridge-rib connects with the semi-overlapping bays of the rib-vault; and the cells which end on the diagonal ribs also have ridge-ribs. The intersections are emphasized with bosses, but this emphasis confuses rather than elucidates the system, even though the main intersections, where the diagonals cross, have larger bosses than the secondary ones, which correspond to the intermediate points of the cells. The plan helps one to understand the system, but it must not be overlooked that the cross-line of each bay cannot be regarded as a simple transverse arch. It must rather be considered in terms of four separate arcs, each of which shows a different curve and a different direction. The ridge-rib of the cells rises and curves to the boss on the diagonal rib, from where it moves through an obtuse angle to follow the flat segmental curve of the tunnel-vault to the intermediate keystone on the main ridge-rib, and from here it repeats these two curves symmetrically on the other side of the vault. The spaces between the meshes of this net do not make up a continuous surface, and therefore to call this a pointed tunnel-vault is to describe its overall effect, not its actual geometry.

When one has understood the form of this vault, one wonders what induced the architect to set the visitor such a complicated problem. When the church at Airvault was consecrated in 1100, it had a simple tunnel-vault. The piers and arches that supported it have been preserved. If this vault was dilapidated, it could easily have been replaced with an identical one. However, what was desired was not this simple form of vault with its strong additive quality, but an expression of Gothic partiality, which the architect transferred to a tunnel-vault. In this way, he retained the original unity of the nave, yet also achieved a rich and complex quality of division. The means to this end was the transplantation of the rib on to a tunnel-vault. The result is a work of the same akyrism as that of St Hugh's Choir at Lincoln. The vaults at Lincoln are certainly earlier than the Angevin examples, but the net vaults at Airvault, *Saint-Jouin-de-Marnes*, and others of the same type were certainly not imitations of those at Lincoln.[78A] The only factor common to both the French churches and the English cathedral is the transplantation of the rib on to the surface of a kind of tunnel-vault.[79]

The name 'Plantagenet style' which has been given to these French churches leads to the idea that they represent a combination of French and English ideas, grafted on the forms of the Romanesque schools of Anjou and Poitou.[79A] According to Berthelée, this style ceased about 1250. It remains to be seen whether it changed completely, or survived in the High Gothic period as an akyristic variant.

CHAPTER 3

The High Gothic Style, 1194–1300[1]

1. THE ORGANIC UNIFICATION OF INTERIOR AND EXTERIOR. FINIALS AND BALUSTRADES

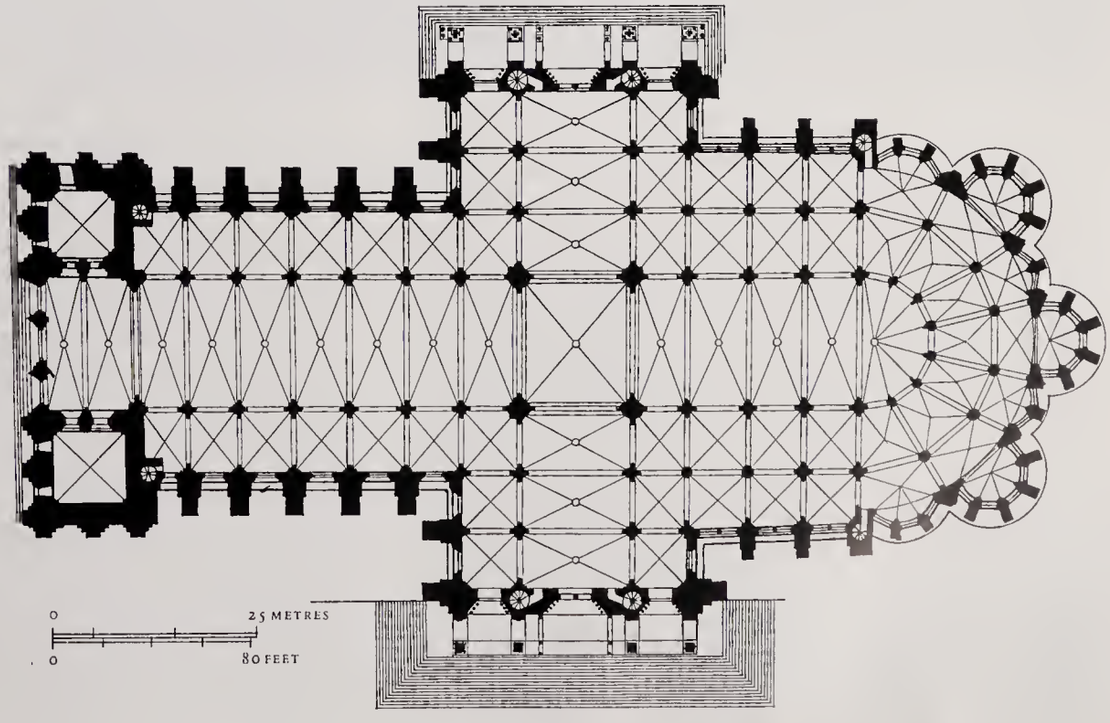
The exposed flying buttresses at Notre-Dame in Paris did not influence the structure of the interior. Galleries, with quadrant arches or buttress walls concealed below their roofs, continued to be used, and the same was done wherever this new member was added to earlier buildings in order to improve their stability.[1A]

The master who rebuilt the cathedral at *Chartres* after the fire of 10 June 1194 was the first man to draw the logical consequences from the construction of flying buttresses [72, 73].[1B] He eliminated the galleries, which were no longer required to bear the thrust of the vaults.[1C] Once this was done, the roofs over the aisles could stand immediately above the vaults of the aisles and the sills of the clerestory windows could be lowered far below the level of the springing of the main vault.[2] These windows could also be enlarged upwards and sideways, as the clerestory walls seemed to be relieved of their load.

The desire to enlarge the windows sprang not only from the wish to improve the lighting but also from the enjoyment of stained glass and its softening of the light in the interior. This diminution of light necessitated larger windows, and these again needed more stained glass: the two factors mutually stimulate one another. At the same time the surface of the stained glass, seen from inside, took on the character of actual wall – a result of the acceptance of the Gothic relief. Seen from outside this effect is even more striking, because the glass is covered with a silver-grey patina.[3]

Since the buttresses of the nave are broader at the bottom than at the top, the windows in the aisles are relatively narrow. The upper windows are so wide that each had to be divided into a pair of lights surmounted by an oculus, and these oculi were the reason for making the wall-arches for the vault round. In conjunction with the spacing of the flying buttresses, the round wall-arches led to the decision to give up sexpartite vaults and make all vaults quadripartite on an oblong plan. This so-called 'Gothic *travée*' is a departure from the traditional plan of the Romanesque style with its square bays corresponding each to two square bays in the aisles.[3A] Rows have replaced groups. However, it almost appears that the architect lacked the courage to make a clean break with tradition, since he stuck to the use of alternating supports, which had been the source of the sexpartite vault. Although all the piers are of equal mass, they are alternately octagonal with round shafts and round with octagonal shafts on the four frontal faces. It must not be supposed that this alternation arose because the architect had originally planned a sexpartite vault, since the piers nearest the crossing in the nave are round, whilst the corresponding ones in the transepts are octagonal. This alternation continues in the ambulatory, and outside even in the short shafts which support the flying buttresses, but these shafts strike the eye only if one climbs on to the roofs of the aisles.

The regularity of the rows of flying buttresses, vaulted bays, and windows justified regularity in the groups of shafts



72. Chartres Cathedral, begun 1194. Interior of nave, photographed after the removal of the stained glass during the Second World War

73. Chartres Cathedral, begun 1194. Plan

74. Chartres Cathedral, begun 1194. Exterior of south aisle of nave. The Vendôme chapel of 1417 occupies the aisle bay on the right

75. (*facing page*) Chartres Cathedral. Upper part of choir, begun *c.* 1210

above the abaci more than at Notre-Dame. At Chartres each group comprises five shafts, as those supporting the wall-arches also spring from the abaci of the piers. The shafts have their own bases on plinths and, as the shafts supporting the transverse arches are octagonal above octagonal shafts and round above round ones, the plinths also alternate in form. Beside them stands the archivolt of the arcade, its profile set back in plan to correspond to the width of its own shafts on the inner side of the arcade. The horizontal mouldings above and below the quadripartite triforium form rings round the group of shafts, shafts which rise halfway up the jambs of the paired windows. These windows, lengthened downwards, make the area of the vaulting cells seem to reach further into the space below. In working out on the drawing board the relations between all the members, such as the flying buttresses, the windows with their stained glass, the vaults, and the piers, the architect sought to achieve the same interplay as that existing between windows and vaulting cells. They have all been united into an organic whole. In the choir, the increase in the area of stained glass demanded polygonal instead of rounded apses. The exterior and the interior, governed by a few principles, form a unity. To say that exterior and interior are incompatible is to misunderstand the ideal which the architect strove for and achieved. The exterior must be understood as a function of the interior, and vice versa; the building demands that we first walk round the outside, then go inside, and finally look at the outside again, so that we can, in our minds, build up the sense of a unity out of the fragments. Because of all this, the church is specifically Gothic, specifically 'partial', and at the same time a unity in which the principles which were inherent in the first rib-vaults have been transferred to the whole.

It is the achievement of this organic blending of the

interior and exterior which gives the cathedral at Chartres its position of historical significance as the birthplace of the High Gothic style;[3B] in some details, the architects were even astonishingly progressive – for instance, in turning the abaci of the shafts in the chapels of the ambulatory diagonally, so that they deny the Romanesque frontality. This also appears in the radiating chapels at Soissons cathedral, and afterwards became a preference for High Gothic architects.[3C]

Chartres represents a first step beyond the Early Gothic style, but not the last. There remained much in the church for later architects with a constructive critical sense to correct. The architect of the nave of Chartres had for instance not fully understood the statics of the flying buttresses, so that he had to supplement them by a third slender flying buttress above the two lower ones, which stand one over the other.[4] The two lower flying buttresses of the nave are connected by radially set columns supporting small round arches, so that the flying buttresses look like parts of a spoked wheel [74]. The flying buttresses on the choir are similar, also with radial spokes [75]. Yet a few details are different: the small arches on the diagonally set spokes which have a square section and no capitals are pointed. The double ambulatory made it necessary to divide the flying buttresses into two parts. The inner series of flying buttresses carries the thrust of the vault on to piers standing over the middle row of piers of the ambulatory, and a second series leads the thrust from there on to the buttresses between the chapels. As in the nave, a third arch mounts up to the eaves of the roof, and is unadorned, like the outer one of the lower pair. The tabernacles at the bottom of the flying buttresses have the form of small square pavilions, each consisting of four columns at the corners and one central one, supporting a flat ceiling on which stands a saddleback roof. The gable is separated from the lower part of the structure by a horizontal ledge, as at Laon, and ends in a finial. In front of these tabernacles, the buttresses form a step which is part of the gallery running along the gutter-level of the roof. For safety there is a balustrade which is led round the front of the buttresses, and this balustrade is repeated at the eaves of the upper roofs of the choir, the transepts, and the nave. It is a new Gothic structural member, though it still consists of trefoils with round central arches.

The flat niches in the sides of the buttresses on the nave are surmounted by similar trefoiled arches and contain statues of bishops (those on the south side dating from 1865). The niches penetrate into the little gables, as they do on the south tower which the architect saw every day. However, the gables on the upper section of these buttresses are separated by horizontal cornices, as they are on the tabernacles on the east side.

As the west façade was spared by the fire, it was only on the transept that the architect had the opportunity fully to express his ideas. Both these façades are almost square in proportion and have flanking towers which were never completed; a door leads into each tower, so that, including the central door, each transept has three entrances, like Saint-Denis and Laon [117].[5]

Above the level of the doors there is a row of five narrow,

76. Bourges Cathedral, begun before 1195. Exterior of the choir from the east

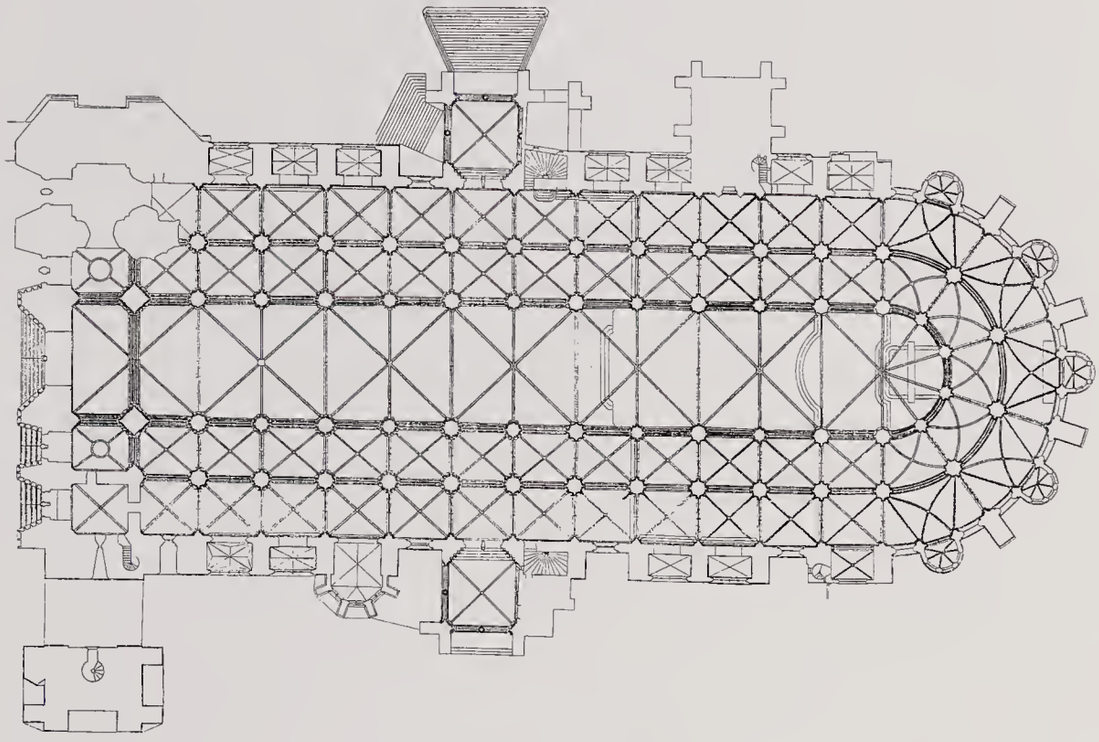
closely spaced windows between the towers, and above them an oculus with tracery which still shows hints of the interpretation of the round window as a wheel. Though both façades follow the same general scheme, they differ in their details. On the north side the two middle buttresses form octagonal turrets, while on the south side they are rectangular. On the rougher north side there are tabernacles in front of the buttresses, while on the south side the surfaces are decorated with delicate blind arcades of extremely slender proportions.

The vaults of the church, including those of the transepts, were finished by about 1217. The big rose-windows in the transepts were probably built later, the first being that at the south. Their style, as well as that of many details of both porches, betrays the hand of a new architect, whereas the wheel-window of the west façade is still the work of the main master, who here used the forms of the flying buttresses on the nave. The chronological sequence of the main parts of the cathedral is still controversial.[6]

As in so many other medieval buildings, part of the organic effect of Chartres Cathedral lies in the interplay between the forms of different medieval periods, but it also lies partly in the fact that the cathedral has remained unfinished. Besides the pairs of towers on the west, north, and south façades, a further tower was begun on each side of the choir. The church is a fragment, not in the sense that follows from the Gothic principle of partiality, but because it is only a fragment of what had been visualized by its architect and his patron. One is tempted to imagine how it was intended to complete the church, and to wonder whether the total effect would have been improved. But when one considers the whole church, from the Romanesque crypt to the Late Gothic spire on the north-west tower, one is so filled with admiration that one hesitates to answer this question. The church is undoubtedly not as mature as, for instance, Amiens, and it undoubtedly contains details which are not harmonious, but, paradoxically, because it contains so much irregularity and tension, the general effect is one of harmony; for harmony is the concordance of essentially different factors.

The cathedral at *Bourges* is only a little later than Chartres. In 1195, the archbishop Henri de Sully, brother of Eudes de Sully, archbishop of Paris, donated a large sum of money for the repair of the collapsing cathedral. Henri's charter may imply a decision to rebuild the whole cathedral, and work seems to have started at least by 1195. Building progressed from east to west. By 1214 the choir (that is the turning bays and the first two double bays immediately following it) was complete. In 1218 the body of Sully's succes-

77. Bourges cathedral, begun before 1195. Plan



sor, Bishop Guillame (1199–1210) canonized in that year, was translated into the new choir. The relationship between the first patron of Bourges and the patron of Notre-Dame in Paris explains why the cathedral in Paris, rather than that at Chartres, was the model on which Bourges was built. Like Notre-Dame, it has two aisles on each side of the nave and choir, and a double ambulatory [77].[6A]

As it was decided to build the choir of the new church farther east than that of the older building, it had to extend over the town ramparts, and it therefore became necessary to build a crypt, or rather a substructure, with a double ambulatory [76]. The outer ambulatory of this substructure is divided into triangular bays, similarly to that of Notre-Dame, while the inner ambulatory consists of trapezoid bays in which the intersection of the ribs coincides with that of the two main axes of the trapezium. In plan, the ribs form segmental arches, and are therefore curved in three dimensions, both in plan and in elevation. However, they must be regarded as something different from the much earlier three-dimensional groins of the Romanesque. It required all the experience of masons, accumulated since the time of the Romanesque, to make their construction possible, and their execution at Bourges is the performance of a past master.

Above, in the church itself, the inner ambulatory has ribs like that in the crypt, while in the outer ambulatory the large bays, broadening towards the outside, are divided. A triangular cell is cut off from each side, leaving a trapezium which tapers outwards, and here, too, the ribs form three-dimensional curves [77]. Branner thought that this complicated solution was caused by the late addition, while work was already in progress, of five 'limpet' chapels in the form of small oriels, each attached to a section of the ambulatory, and taking up the central third of the periphery of each curving bay [76]. It is now, however, considered that these chapels were intended and built from the start.[6B] The whole ambulatory and the choir within it end in a semicircle, again derived from Notre-Dame in Paris. By comparison with the polygonal choir at Chartres, it is definitely conservative.

Equally conservative is the use of the sexpartite vault, but there is at Bourges a new solution to the demand for combining uniform piers with sexpartite vaults [78]. Around each of the round piers, which are so surprisingly high because the double aisles on either side of the nave force the triforium upwards, there are eight shafts at equal intervals [76]. Above the abaci, the shafts supporting the ribs can therefore go up between those supporting the transverse arches and those supporting the wall-arches. This is certainly more intelligent than any other similar attempt to solve the problem. The shafts pierce the capitals; only the abaci go round them. The profile of the arcade is divided, as at Chartres, its central member being supported on the frontal abacus which stands on the stronger shaft in the archway between the nave and the inner aisle, while its outer member rests on the abacus of the pier itself. The form of the piers in the aisles derives from this admirably clear arrangement.

In section, Bourges is identical with Notre-Dame, except that it has no galleries.[7] The piers between the aisles have a vertical continuation outside, above the roof, as at Chartres, forming a support like the pier of a bridge between the first arch of each flying buttress, which leads the thrust down from the main vault, and the second one, which leads it down on to the outside piers.[7A]

The two steps of the cross-section suggested the introduction of a triforium in the nave and in the tall inner aisles. At the east end, each bay of the triforium has six narrow openings with pointed arches, framed by a single, larger one. The four central openings are of the same height and are slightly higher than the two outside ones – a form that can

78. (*facing page*) Bourges Cathedral, begun before 1195. Interior, looking east

79. Rouen Cathedral, begun soon after 1200. Interior of north aisle of nave

also be seen on the east towers at Chartres, with blind arches instead of openings.

The upper windows consist of three openings with pointed arches, embraced by a single, larger pointed arch, and their form is typical of plate tracery in northern France around the year 1200. In the nave, from the third bay westward, plate tracery is replaced by bar tracery in the windows of the intermediate aisles. Bourges has no transepts, and only two towers on the west façade; therefore, by comparison with Laon and Chartres, it appears closed in spite of the degree of dissolution achieved by the flying buttresses. (The strange pairs of pinnacles date only from 1835.) Not all the windows have stained glass, so that the interior is largely flooded with bright daylight. Although the work of construction was not completed until 1255, the interior has great unity and is one of the most beautiful of the entire High Gothic period – rich in overlapping vistas, a masterpiece of the combination of multiple images with perfect clarity in the whole. The freshness of the details is still very reminiscent of the Laon period.[78]

Some time after 1205, the old apse at *Laon* was pulled down and the choir lengthened to form five double bays, ending on the Cistercian model in a flat east wall [42]. The choir is designed on the Romanesque system of square bays in nave and aisles. The reason for pulling down the main apse may have been its imminent collapse, owing to the absence or inadequacy of the flying buttresses, while the unusual length of the new choir may have been the need for

80. Soissons Cathedral. Interior of choir, *c.* 1200

greater liturgical space, and the desire to balance the long nave and extensive transepts with a correspondingly long choir.[7C] As the flat east end includes elements to be found also in the west façade, it is probable that the architect of the new choir also built the westernmost bays of the nave and the west façade. Because the first three bays of the old choir were to be preserved, it was advisable to build the new bays according to the same system, in order to achieve unity. This is why the architect declined to be influenced by the tempting new models at Chartres and Bourges.[7D]

The first major response in Normandy to High Gothic architecture was the nave of the cathedral of *Rouen*. Here, in 1200, a great fire destroyed most of the Romanesque cathedral. Of the old church only the north-west tower (the Tour Saint-Romain) and the jambs and archivolts of the side doorways have been preserved. Contrary to normal practice the building of the new church was begun, soon after 1200, at the west. Jean d'Andeli, probably the first architect since he is mentioned as master of the works in 1206, began with the piers, an arcade of pointed arches, and a 'false' gallery above it – that is, he constructed large gallery openings on to the central vessel but with no gallery floors over the aisles [79]. The tendency to follow the example of Chartres and leave out the gallery led to akyrism, for in this case we are really faced with pseudo-galleries. Strangely enough, the architect did not completely eliminate the possibility of walking along the nave at the level of the intended gallery, at least for those people with a head for heights, for the sill-line of the pseudo-gallery is made to project round each pier, inside the aisle, like a kind of balcony, each projection being supported on a central column surrounded by five free-standing columns. The central columns stand on the abaci of the piers and the surrounding ones are supported on corbels. In its transparency, the whole group is specifically Gothic, and, as in most examples of akyrism, it is the expression of an uninhibited imagination working within the tendencies of the style of its time.

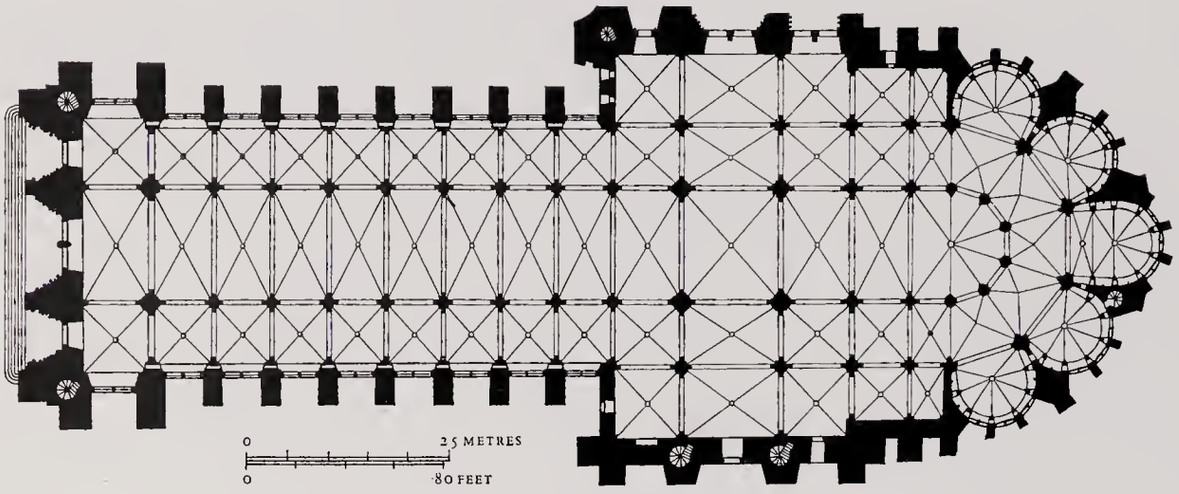
The choir was under construction by the early 1220s and probably complete by 1237; its plan followed the foundations of the previous church, with three separated chapels round a semicircular ambulatory. The main apse, however, is polygonal, forming five sides of a decagon, and in elevation it is High Gothic, with slender round piers and a triforium above, similar in principle to that at Soissons cathedral.[8]

The cathedral at *Soissons*[9] is a High Gothic unity, except for the south transept and the chapel which was added diagonally to it. A comparison between this south transept, an imaginative masterpiece of Early Gothic architecture, built about 1180, and the remainder of the cathedral is most illuminating, since it shows that the new generation of about 1200[9A] rejected the charm of complexity in favour of an emphasis on necessity and severity. The architect tried to connect the group of shafts above each pier with the pier itself by adding a single shaft below, but this was not wide enough to form a logical sequence with the three shafts above [80].

Around the ambulatory there are five chapels, set close to one another, which are round in plan at ground-level but become polygonal at the level of the window-sills.[10] The ribs inside them have a pointed, almond-shaped section; they join those of the corresponding bay of the ambulatory at a common keystone which lies in the transverse arch at the entrance to the chapel. In this way the corresponding sectors of the ambulatory become parts of the chapels, and vice versa. At Soissons the shafts are turned through 45 degrees, as had been done in the eastern chapels of Chartres, so that the corner of the abacus lies in the same vertical plane as the edge of the almond-shaped shaft. The small spatial layer marked by the ribs and shafts is thus divided down the middle, making each half appear to belong to the spatial area beneath which it lies. In this way the transverse arches seem to lose their separating force: the separation is still present, but the spaces which the transverse arch is supposed to separate from each other pour through it, merging almost completely.[10A]

The north transept was built soon after 1240. It follows closely the design of the choir and nave, even to the use of (by then outdated) plate tracery windows.[10B] The general impression of the exterior is determined by these windows, the double flying buttresses, and the limitation of the num-

81. Reims Cathedral, begun 1211. Interior of nave



82. Reims Cathedral, foundation stone laid in 1211. Plan

ber of towers to the two at the west façade. Of these, the south tower was completed in the fourteenth century, while the other remains incomplete today, showing how wise the architect had been to keep his original design within the realm of possibility.[10C]

2. THE HIGH GOTHIC PIER. TRACERY. GARGOYLES

Chartres, Bourges, Rouen, and Soissons were all being built at the same time, and in each of these cathedrals there is a personal attempt in an individual fashion to draw the logical conclusions from the introduction of exposed flying buttresses. The tendency to let the whole interior of a church merge into a single unity had been born at Saint-Denis and seemed to allow of many variations, but in this variety there are traces of a norm, and the younger architects of the time seem to have been mainly preoccupied with finding this norm. The architect of the new choir at *Reims* – whether he be Jean d'Orbais or Gaucher of Reims[10D] – was the leader of this new generation. We know the names of the four architects of Reims, but not the order in which they succeeded one another. Several different orders have been suggested, but the most convincing is Gaucher of Reims, Jean le Loup, Jean d'Orbais, and Bernard of Soissons, in that order.[11]

It was once thought that the choir of the church at Orbais was designed by Jean d'Orbais, and was a prototype for Reims cathedral. It is now widely recognized that the choir, dating from after 1165, and completed in the early years of the thirteenth century, is an eclectic derivation from Laon and Soissons cathedrals, and from the choir of S. Remi at Reims. It has little or no direct connection with Jean d'Orbais's designs at Reims. However, the bar tracery in the eastern bay of the nave clerestory at Orbais may pre-date the bar tracery in the radiating chapels at Reims, and some scholars have attributed this part of the church to Jean d'Orbais.[12]

In 1210, when the cathedral at *Reims* was designed, the building of Chartres had reached a stage where the architect of Reims could criticize its effect and make his own design accordingly. The spatial form of Reims is of the same type as that of Chartres, but the nave is three bays longer; each transept, with its two flanking aisles, is one bay shorter, and the chapels round the choir do not alternate as at Chartres, where older foundations were used. At Reims the chapels are identical, except for the central chapel, which projects further to the east [82, 83]. The criticisms of the architect of Reims were directed less at the proportions of Chartres than at the forms of the piers and the windows.

The grouping of shafts in naves always tended to force the shaft supporting the transverse arch far forward. The rule had been to make the round piers roughly the same thickness as the walls, as it probably was believed that they would otherwise look stocky. The architect of Bourges did not worry about this rule; he made his round piers much thicker than the walls, but he continued them upwards to the springing of the vault, giving the impression that each bay of the wall consists of a single stone slab, set between the piers. If, on the other hand, an architect preferred to follow the old rule and build the shaft supporting the transverse arch on a base standing on the abacus of the pier, it then projected beyond the line of the round pier and did not seem to follow logically from what stood below.

The architect of Chartres corrected this defect by making the lower shaft so large that it supported the base of the upper one, thus avoiding the impression that the upper one overhangs [72]. The architect of Reims accepted this solution, but added capitals to the lower shafts, so that the piers now had a clear connexion with the arcade and the thickness of the wall [81]. At Noyon, Laon, and Paris, no answer had yet been found to the problem of making the groups of the upper shafts flush with the piers. At Reims, on the other hand, the architect devised the pier as a whole, making it symmetrical on all four sides to carry the weight both of the walls and of the vaults of the nave and aisle in a logical way.

At the same time as the shafts, the abacus itself is also corrected. At Chartres, the important junction in the zone of the capitals is still confused. In plan, the abaci are bevelled off at an angle of 45 degrees, partly because of the form of the piers. The abaci of the shafts supporting the arcade arches are rectangular, while those facing the central aisle are alternately round and polygonal. Furthermore, the capitals of the shafts supporting the arcade are only half as high as those of the piers. Compared with this multiplicity, the solution at Reims is simple and clear. The abaci of the core of the piers are set diagonally; those of the shafts supporting the arcade arches and the transverse arches of the side aisles are polygonal, so that the plan of the whole pier at this

83. Reims Cathedral, begun 1210. Exterior of choir

height gives on the whole, the effect of a diagonally set square with slight differentiations. The capitals on the shafts are cleverly corrected to reach the same height as those of the piers, thus making a unit of the zone of the capitals. The plinths of the shafts supporting the transverse arches lie in the same plane as the shafts below, so that, at this point on the piers, the diagonal direction of the Gothic profile has achieved its perfect form.

The plinths and bases are similar to those at Chartres, the main octagonal plinth supporting the pier, while the projecting rectangular ones, which are a legacy of the Romanesque principle of addition, carry the shafts. Except for this feature, the piers have been entirely merged into the diagonal relief, and the space flows smoothly from the central to the side aisles and from one bay into the next.

In the evaluation of these piers, it is important to remember that Gaucher of Reims, like the other architects of his school, used round piers. If he knew the cathedral at Rouen at the stage it had reached by 1210, he must have realized that the solution arrived at there was an improvement on all those that had preceded it. On the frontal side of the piers at Rouen there are five shafts, rising from ground-level and only interrupted by rings at the level of the abaci on the corresponding five shafts within the arcade opening. Here, too, the line from the central shaft within the arcade to the shaft supporting the transverse arch is a diagonal, but the abaci of the five shafts within the arcade and the profile of the arches themselves are still governed by the frontal principle of the Romanesque style, and the general effect of the piers is determined by the frontality of their core. Round piers seemed to be more favourable to the principles of the Gothic style, and although in The Rayonnant period the

84. Reims Cathedral. Capital, after 1210

style reverted to the use of the type of pier found at Rouen, the architect of Reims was more convinced by the solution reached at Chartres.

The new window-forms at Reims were also developed from those at Chartres and Soissons cathedrals, but, although at Chartres each group of two lights and an oculus was intended as a unity, it nevertheless remained a juxtaposition of three separate openings, while at Reims the architect – in accordance with the development which the Gothic style had already undergone – used the whole as his starting-point, made a single opening, and then divided it into three with a central shaft, two pointed arches, and a circle on top [83]. The architect of Chartres had made the arch over each group concentric with the curve of the oculus, but at Reims the architect insisted on pointed arches even here, so that there is a spandrel between the arch and the oculus, and similar spandrels between the oculus and the lower lights. The whole group is therefore actually divided into three main parts and four small spandrels. Inside, the oculus is sexfoiled by six round arches along its periphery. The profiles of the oculus and the two pointed arches below merge into one another where their central members meet.

Tracery is structure within structure. It makes it possible to divide by safe supports large openings to be filled with stained glass, but it presupposes the use of straight walls and the building of polygonal choirs and chapels.[12A]

The architect of the cathedral at Reims also incorporated all the other features of Chartres: inside oblong bays in the high vault, and outside buttresses and flying buttresses, tabernacles and balustrades.

Another innovation is the treatment of the gargoyles. These had existed earlier, for instance on the west towers at Laon, but at Reims the architect included them among those members which appear in series at certain points within the structural system.[13] Compared with Chartres all parts are more elegant, and the lightness and the buoyancy of the flying buttresses is surprising. The design of the tabernacles is so free and sumptuous that it makes those at Chartres look comparatively modest and clumsy. Instead of central columns in the tabernacles, there are angels standing guard round the church. The main, steeply-pitched spires on the tabernacles are separated from the structure below by horizontal ledges, and each is accompanied by four smaller spires like those on the façade porches at Laon. The balustrade is increased in height and has a more important function than that of a mere parapet; its purpose is to veil the roofs over the chapels and to counteract by a broad band of vertical members the emphasis on the horizontal caused by the effect of the gutters of the main roofs [83].

The first architect's successors completed the transepts, and the three eastern bays of the nave (the liturgical choir) by 1241,[13A] but the features of the cathedral which have always been admired are the work of the first architect.

The exterior of the choir has remained essentially unaltered [83]. A photograph of 1855, however, shows the high openwork balustrade in front of the chapel roofs without the animal figures and without the lion gargoyles which Viollet-le-Duc added to the south chapels after 1860. Much of the balustrade has been restored, but it was already in existence when the photograph was taken in 1855.[14] Originally there may have been battlements intended at the gutter line of the chapel roofs, which Villard de Honnecourt mentions and shows in a drawing.[15] The upper balustrade at the gutter-line of the roof of the chancel and the apse was different in 1855 from what it is today. It owes its present form to Viollet-le-Duc; its original form seems to be unknown.[15A]

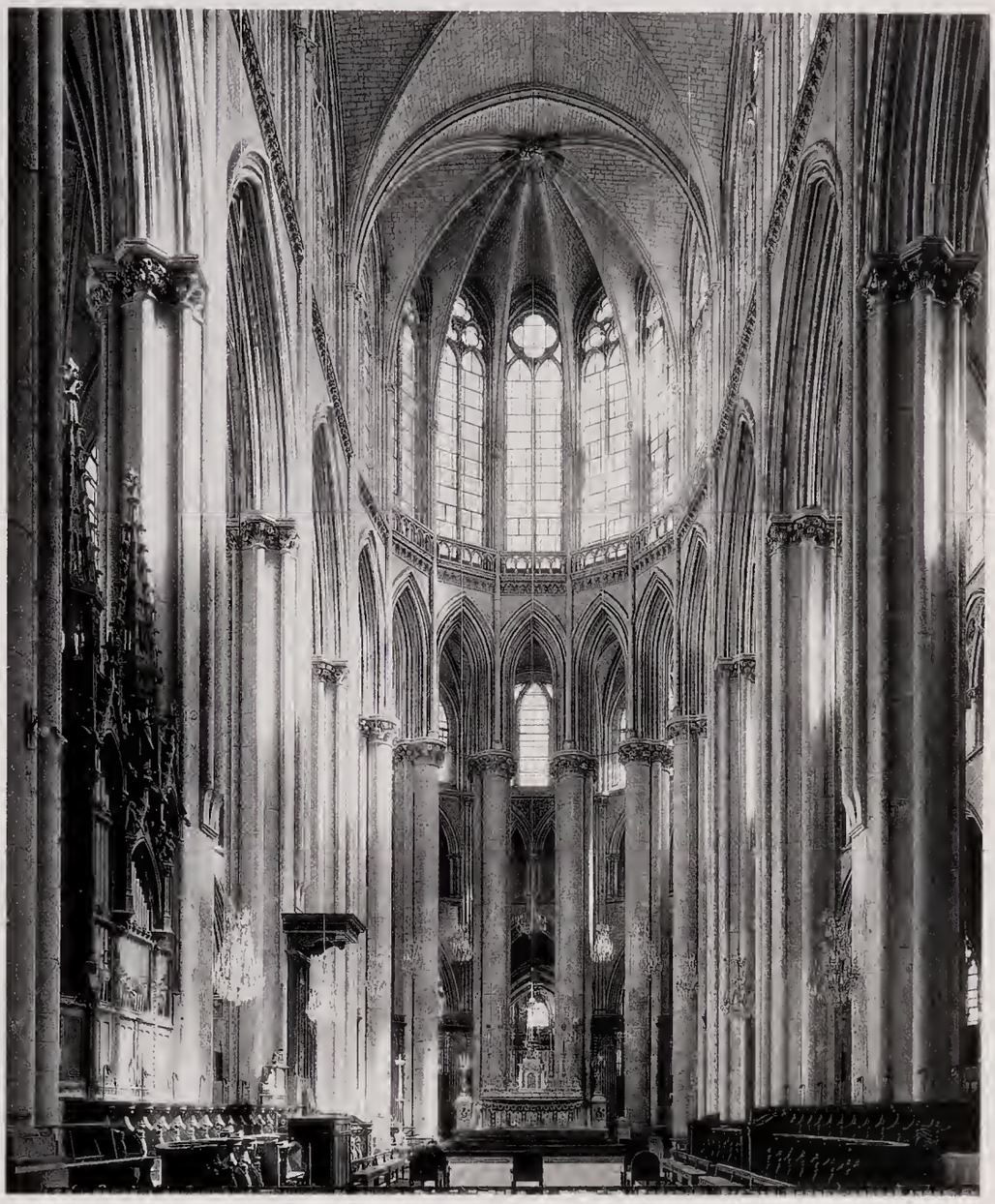
Outside the choir the sculptural decoration is a row of large angels on the tabernacles, a row of smaller ones on the buttresses of the chapels, the caryatids below the main cornice, and the gargoyles. The position and size of the figures were certainly decided in the original design, but the sculpture itself cannot be attributed to the architect. The direction of the construction would hardly have left him time for sculpture, for, as the building progressed, more and more detailed drawings were needed. The style of the figures must have depended on the degree to which the chief sculptor and his apprentices were able to conform with the style of the architect.[15B]

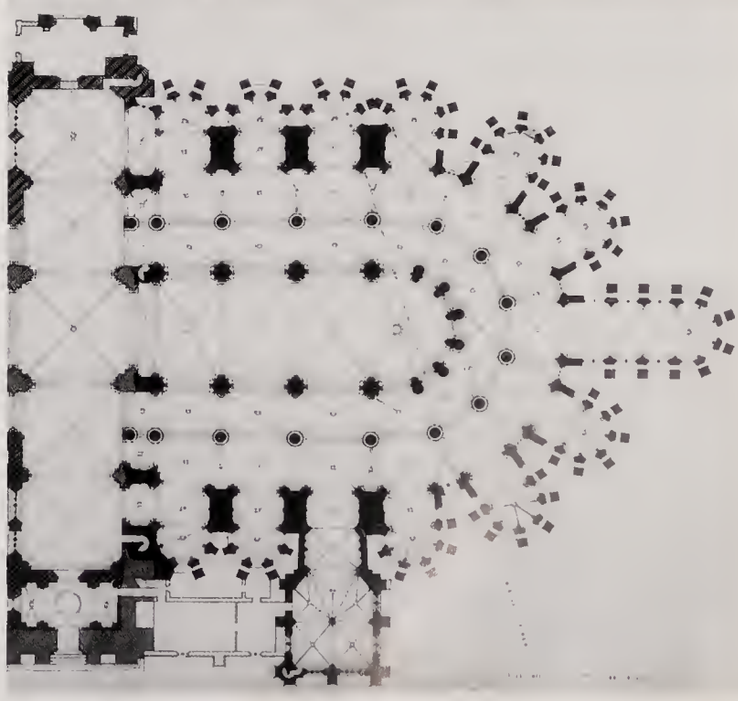
To a lesser degree this is also true of the decorative sculpture which forms an intrinsic part of some of the structural members, especially of the capitals. All the bays of the choir are built in the same architectural style, which is later repeated in the nave, but there the sculpture of the capitals is different. Crockets become rarer and are replaced by foliage which is naturalistic in detail though not in the way in which it grows [84]. On the other hand crockets appear in hundreds and even thousands outside – on the straight upper surfaces of the flying buttresses, on the edges of the spires on the tabernacles, and also on cornices. They accompany the main lines, and, in their transplantation, as at Lincoln, they take on a new sense, creating an optical effect of rows of dots which gives all sharp edges and some of the hollows a sparkling outline, reminiscent of pointillism.

Reims was a correction of Chartres: *Le Mans* is a correction of Bourges.[15C] In cross-section the gradation of a nave with lower double aisles is the same as at Bourges, but since the apse has seven sides, the piers at the east end stand closer together [85, 86]. The inner ambulatory consists of seven trapezoid bays in which the ribs rise to the central axis of each bay, and are straight in plan. Each rib, therefore, consists of two arms which, in plan, meet at an angle. The outer ambulatory has alternate rectangular and narrow triangular bays, of which the latter are directly lit by windows. The

85. Le Mans Cathedral. Interior of choir, begun 1217

86. Le Mans Cathedral. Plan of the choir





rectangular bays are joined by seven strongly-projecting chapels; each of the six lateral chapels has one bay and an apse consisting of five sides of an octagon, while the central one has three bays and a similar apse. The choir itself consists of a polygonal apse and three bays of almost identical elevation.

Building was begun in 1217, but not completed until 1254. The architect could thus make use of the progress in other places.[16] Most of the windows have no tracery, but those on the north side of the outer ambulatory, in the bays between the chapels, have simple tracery, and the triforium above the inner ambulatory, which corresponds to the space behind the roofs of the chapels, also contains tracery, similar to the triforium of the choir of Bayeux cathedral, under construction at the same time (1230s). The windows above, with their pointed lights without capitals, rising towards the centre, also derive from Normandy. There is a low-pitched saddleback roof over the inner ambulatory, sloping just sufficiently to allow for drainage. The form of this roof allows the clerestory windows of the main apse to continue down to the level of the apexes of the arcade, so that there are only

87. Le Mans Cathedral. Exterior of choir, begun 1217

two storeys – the tall piers with stilted pointed arches and, on the string course directly above them, the narrow windows with tracery. The tracery in the apse clerestory copies that in the Sainte-Chapelle in Paris, while the clerestory straight bays resemble the clerestories of the transepts and choir at Amiens in that each window is divided into two groups of three lights each. These observations and a knowledge of the dates of the Sainte-Chapelle, Amiens and Saint-Denis (1231 ff.) give a clear picture of the stages in the history of the building of Le Mans.[16A] In the differences between the forms and details one can also recognize relationships to different schools and, through them, the work of different architects. The first came from the Domaine Royale from the region around Laon and Soissons, the second from Bayeux in Normandy, and the third, from Paris. The first architect's design is, of course, the decisive factor, but the position of the clerestory windows directly above the arcade is equally important in determining the impression of the interior of the choir. There is hardly any other French Gothic choir which can compare with Le Mans in joyfulness and soaring buoyancy, and the effect is emphasized by the contrast with the Romanesque nave, whose rib-vault dates from about 1150.

The exterior, too, presents one of the most magnificent views of French Gothic [87]. The large square to the east which now allows the church to be viewed from some distance, and the terrace on which the choir now stands, are both modern creations. The town wall which originally hid part of the choir was an expression of the desire to emphasize layers one in front of the other. The men of the nineteenth century, on the other hand, liked to clear a space round cathedrals, and, in doing so, destroyed one of their charming effects. But here at Le Mans, one must admit that the result enhances the impression of monumentality.[17]

The buttresses and flying buttresses of the choir are similar to those at Bourges, but at the polygonal east end they split up in two, because the buttresses follow the radial direction of each chapel. This disposition forms intersec-

tions which confuse some people, but which must have seemed clear and splendid to the medieval beholder. It forms huge empty spaces and transparent passages like theatrical wings out of which the chapels protrude at the bottom, first standing within the solid parts, then projecting into the space outside it, and always pointing back into the centre of the choir. This choir has rightly been called half a central building. Today the slender finials on the balustrade on the roof, and elsewhere, and the gargoyles which project far into space, are strongly accentuated, but it is debatable whether or not these details formed part of the original plan.

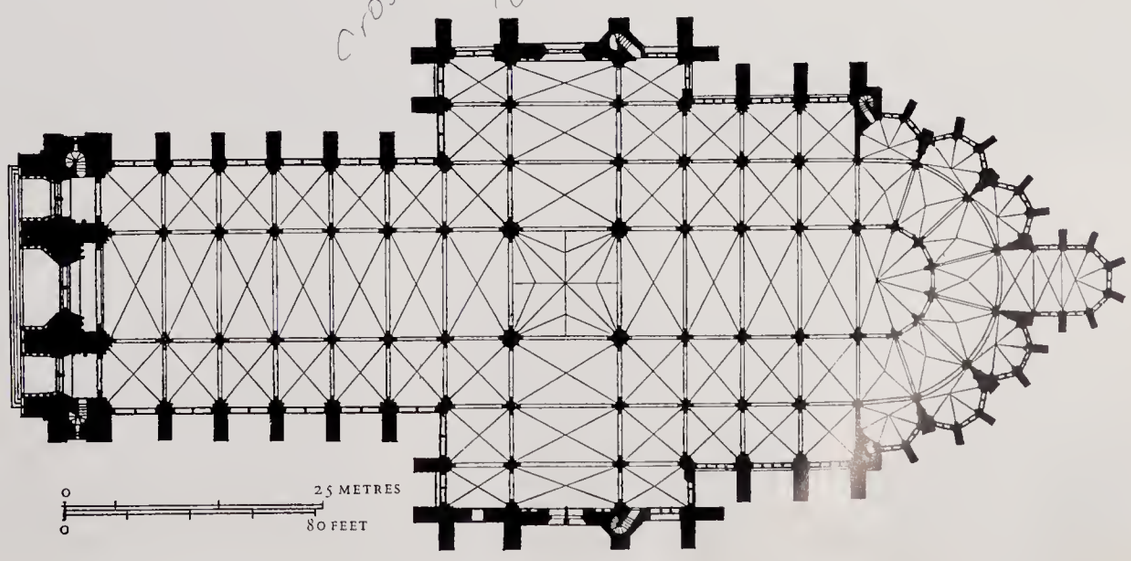
A year after the beginning of the choir at Le Mans, the old cathedral at *Amiens* was burnt down (1218). It was a Romanesque church, consecrated in 1152, possibly including Transitional elements. The church of Saint-Firmin, which stood to the east of it, was preserved, and in 1220 the new cathedral was therefore begun with the nave. The whole new church must have been designed at this time, and the two later architects, who worked on the upper parts of the choir from *c.* 1245 onwards, only altered details to conform with the style of their own generation.[17A]

For his plan, the architect of Amiens, Robert de Luzarches, took Reims as his model [88].[17B] Both churches are about the same length, but the crossing at Amiens lies further to the west. At Reims there is a nave of ten bays, then the crossing, and then a choir of two bays and an apse: at Amiens the nave has seven bays, followed by the crossing and a choir with four bays and an apse. Both churches have transepts with aisles, though, unlike Reims, Amiens never intended to add towers flanking the transept façades. At Amiens the number of chapels round the choir was increased to seven, as at Le Mans, and the general measurements are more regular than at Reims or Chartres. The thickness of the walls was reduced, partly because the wall-passages, which are such an important feature at Reims, were eliminated.

At Amiens, too, the decisive problems in the elevations were the piers and the tracery. The round piers are given a diagonal direction by their socles, as at Reims [89]. The socle of each of the four shafts in the main directions forms part of an octagon, set frontally, so that its oblique sides are parallel to those of the main socle. The abaci of the shafts within the arcade, however, are rectangular and therefore purely frontal, while at Reims they are octagonal, a form which contains both the frontal and the diagonal directions. The shafts of the piers at Amiens have no capitals; the upper ledge of the abaci merely bends round them like a ring and the shafts rise on unbroken. This problem had almost been solved at Reims, but not quite, for the continuations of the shafts still have round bases and plinths, which express the idea than an upper shaft had to be set above the lower one. At Amiens, however, these members are eliminated. The architect at Reims had already done the same thing on his crossing piers, where the ledges of the abaci run round the shafts in the form of rings, so that the progress made at Amiens consists of the transfer of the scheme devised for the crossing piers at Reims to the piers of the nave. The shafts on the crossing piers at Amiens rise without interruption to the vault in the way practised since the building of Saint-Germer. The capitals of the central shafts in the nave are turned through 45 degrees, so that one corner projects into the nave, clearly defining the division between one bay and the next, as at Soissons. On the other hand, the shafts supporting the ribs and the wall-arches are frontal; the former stand on small bases and plinths over the abaci of the piers, while the latter begin only at the level of the triforium.

The choice of a hexagonal form for the abaci of the columns in the triforium shows the preoccupation of the architects of Amiens, Robert de Luzarches and Thomas de Cormont, with the differences between frontality and diagonality. Just as the upper octagonal capitals in the nave define the limits between the bays and reduce them to thin mathematical planes, so these hexagons, with one corner on each side standing in the centre of the thickness of the wall, create the main mathematical plane of the Gothic relief, exactly as does the glass of the windows.

This triforium is treated almost as though it were tracery. Each pair of pointed arches is divided into three lights, and the surface between each large arch and the three smaller ones below it, which are all the same size, is pierced by a trefoil. Each group of two large arches is flanked by the shafts supporting the wall-arches, and a similar shaft, standing in front of the central pier, divides the group down the centre.



88. Amiens Cathedral, begun 1220. Plan

This central shaft is continued in the tracery of the window above, where it serves as the central mullion, supporting the two pointed arches below the oculus. It therefore has to have the same profile as the shafts of the wall-arch on either side. Each half of the window has a secondary mullion in the middle, supporting small pointed arches. The quadripartite window repeats in its interior the form of the whole. Since all the members have the same section, complete fusion is achieved between the arches, because they do not touch each other with their extrados, but with their central lines. The draughtsman's setting-out must therefore start from these central lines and the thickness of the mouldings must be added on both sides. The shafts on either side, and the wall-arch over them, embrace each bay of the triforium and the window above it, binding them into a unit, and the uninterrupted central shaft joins each half of the bay in the triforium with the corresponding half of the window above. The whole group is clear, rational, and simple. The first step

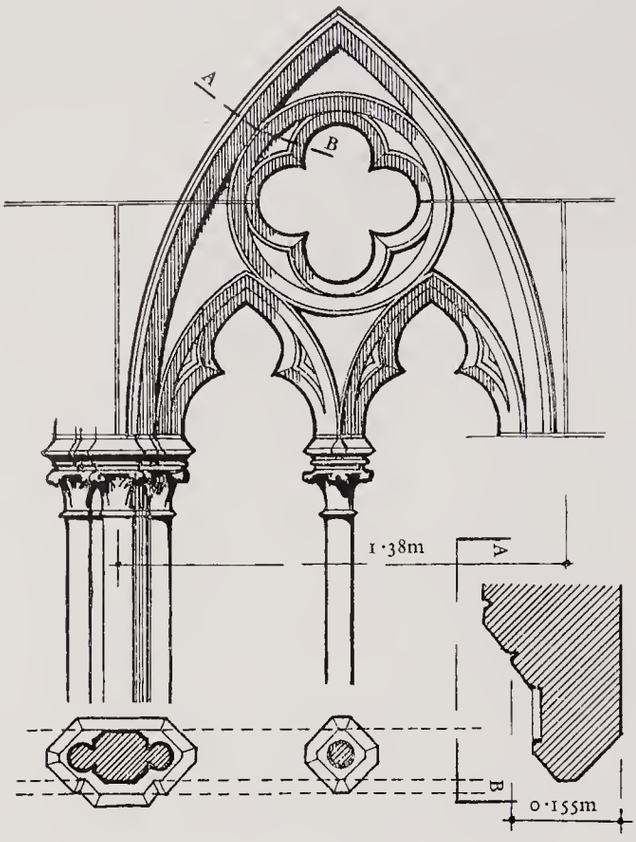
89. (*facing page*) Amiens Cathedral, begun 1220. Interior of nave

90. Amiens Cathedral. Exterior of choir, *c.* 1240–69

towards this fusion was made at Reims, where the windows have only two lights and are still quite separate from the triforium; the changes which were made in the system at Amiens led to a train of development which could not have been foreseen at that time.

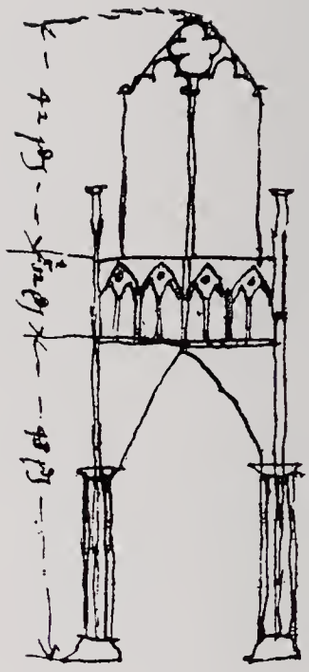
The system at Amiens is richer in detail than that at Reims, but it is equally compelling and as immediately effective. After the fire of 1218, and before building actually began, the first architect, Robert de Luzarches, must have made a design for the whole church, including the façade. By 1236 the nave and the aisles of the transepts had been completed, and it is possible that the same architect may have begun the choir aisles, the ambulatory, and the chapels [90]. Above the choir and transept arcades the style changes; these upper parts may therefore be the work of Robert's successor Thomas de Cormont, and the latter's son Regnault de Cormont.[17c] To visualize the original form of the nave aisles, one must mentally eliminate the chapels, which were added between the far-projecting buttresses after 1292 and also radically alter the appearance of the church from outside. The original windows in the aisles had simple tracery.[18] Without the chapels the aisles, seen from inside, must have conveyed a sense of complete enclosure. The central aisle must have been more dominating than it is now, especially when seen from the side aisles. On entering the nave, one's first impression is one of height and length, and of piers each half overlapping the next, like a series of theatrical wings, only hinting at the existence of the aisles.

The shafts which rise uninterruptedly from the floor to the vault and those which unite the triforium with the windows combine with the heightened emphasis on verticalism to produce fusion between arcade, triforium, windows, and the space in the vault – while the Gothic relief creates a flowing connexion between one bay and the next, and between the nave and the aisles. Standing at the entrance, one is aware of the existence of the aisles, owing to the profile of the row of piers, in the same way as one feels that the space within the cathedral continues smoothly through the triforium and the windows into the space outside. These are the *formal* themes of the Gothic style.



91. Reims, St Nicaise, begun 1231. Triforium

92. Reims, St Nicaise, nave elevation, begun 1231. Seventeenth-century drawing, Paris Archives National N III Marne 46r



To understand the *artistic* result of this form, one must recognize its meaning. St Bernard did not like churches to be too high; to his mind the decisive factor was the monk in his humility and devotion. In a cathedral he was prepared to allow a greater display of luxury, because here the purpose was to impress the simple minds of laymen, but even here he would have set a limit, and would no doubt have preached withering sermons in condemnation of the cathedrals of the thirteenth century. To the minds of Robert de Luzarches and of his bishop, Evrard de Fouilloy, however, the decisive factor was God. Their aim was to present every possible expression of the combination of sublimity, majesty, and might, with lucidity, harmonious wealth, and a sense of the infinite, and to create a formal symbol worthy of God. Their church was to look as if it did not belong to this world.[18A]

The height of the nave and choir, the slenderness of the piers, the airiness of the aisles, and the elegance and firmness of all the forms are immediately obvious; but there are also less obvious characteristics. Among these are the mouldings of the ribs, which here have an increased significance. To emphasize their central line, a narrow fillet was added to the roll, producing a pear-shaped section. In the high vaults of the nave at Amiens, the transverse arches have the same section as the ribs, the only difference being that the transverse arches are considerably stronger. In the aisles the transverse arches are broad, because of the load that they have to carry,[19] and the ribs again have a pear-shaped section [cf. 19D]. The exact chronology of the profiles is not known. The triforium arches also have a pear-shaped moulding, but with a keeled edge instead of a fillet, so that even here there are nuances. The double curve in which the roll merges into the hollows on each side is common to all these profiles; it is the curve which was later, as the ogee arch, to reign supreme as a two-dimensional figure in tracery.

Today the nave at Amiens is praised as the purest work of the classic Gothic style. It has not yet been established when this judgement was first made, but it has certainly not always been considered a valid one. Already in the next generation the stage of development reached in the nave was surpassed in the upper parts of the choir. The works of the later periods tended to depart more and more from the special classicity of Amiens. With the Renaissance, the phrase 'classic Gothic' became meaningless, as classic was considered to apply only to classical antiquities, while the Gothic style was regarded only as a barbaric opposition against all true classicity. Since then there has been a change, not only in this verdict on the Gothic, but also in the conception of the classic. If classic is used only for Greek and Roman antiquities, then no Gothic building can be classic; but if one interprets classic as referring to certain summits of achievement within classical antiquity, measured by the degree of harmony attained, then it is legitimate to note similar climaxes at which the highest degree of the particular harmony inherent in the premises of any style are reached and to call them classic. Amiens was singled out as the representative of classic Gothic because the formal conditions imposed by the rib-vault organically permeate the whole structural system, and this new 'unity in multiplicity' fulfils the paradoxical ideal of presenting a sense of the infinite within finite bounds, of flowing movement in repose and the supernatural in natural reality, and of allowing solid matter to overcome its own mass. Here opposites are resolved because they achieve a state of rest inherent in themselves. It has been said that classical antiquities produce in us a serene belief in ourselves. It could be metaphorically said that Gothic, in its own classic phase, shows a passionate belief in itself. Unlike antiquity, the Gothic style has a separate, individual existence; we can surrender to being lifted far above ourselves

by it and translated into a sphere in which we can taste the highest, all-embracing harmony of existence.

Amiens was an especially successful attempt to find the balance of the Gothic style in a majestic, aristocratic, and completely elegant form; but, in their own way, other works of this generation also came near to reaching the same summit of achievement.

In 1229 the architect Hugues Libergier was contracted to build the new church of *Saint-Nicaise* at *Reims* and, in 1231, under the patronage of Abbot Simon de Dampierre, work on construction began.[19A] The architect borrowed some features from the cathedral of the same town, but also adopted a number of forms from Robert de Luzarches' work at Amiens.[19B] Work began at the west façade, and, when Libergier died in 1263, Robert de Coucy finished the choir and the south transept by his death in 1311. He seems to have adhered to his predecessor's plan, but introduced a glazed triforium such as had meanwhile been built at Saint-Denis.[19C]

Saint-Nicaise was one of the masterpieces of the classic Gothic,[19D] but in 1798 it was sold for 45,000 fr. and pulled down; the materials were subsequently sold for 600,000 fr. Poterlet, a French architect of that time, described this transaction as 'un nouvel acte de vandalisme, qui déshonore le département de la Marne et le nom français'.[19E] Every nation produces men who work only for gain and who only understand material values. The French Revolution had its own high ideals of democracy and saw the traditions of the Church as an obstacle to achieving them. The destruction of Gothic buildings was also connected with the general discredit in which the Gothic style had stood since the concept of 'le bon goût' had been accepted as applicable only to the buildings of Greece and Rome. The self-seeking acts of vandalism of the 'bandes noires', however, called forth active protest from the Romantics, who not only prevented any further destruction of works of art, but also organized the study of the Gothic style in the way in which it is continued to this day.

In plan, Saint-Nicaise was a considerably smaller version of the cathedral at Reims. In the triforium, Libergier replaced the cathedral's groups of four arches to each bay with groups of four subdivided arches – a correction probably made under the influence of Amiens. The central mullion of the clerestory window ran down into the triforium [92].[20] The other details are known to us from fragments which were built into private houses and came to light in the bombardments of 1916. From these we know that Libergier added cusps inside the superordinate triforium arches [91]. These lobe-like forms first appeared decorating the oculi of rose windows with plate tracery (north transept Laon, or west façade Chartres), but one of the earliest applications of the form to pointed arches was made by Robert de Luzarches in the lower buttresses of the west façade at Amiens [120]. In this detail, as in others, Amiens was probably the model for Saint-Nicaise. From the fragments found in 1916 we also know that the sections of the transverse arches and ribs were pear-shaped or almond-shaped, in both cases accompanied by rolls. The transition from the roll to the hollow on either side is again a continuous undulating line, or rather an undulating surface, and this is a detail which was to become important; for it, too, helps to blend forms which were originally clearly separated.

Compared with the cathedral at Reims, the most important simplification on the exterior of Saint-Nicaise is the absence of tabernacles on the buttresses. The little gables which appear on the buttresses where they step forward at the level of the eaves are reminiscent of Chartres. Here the reconstruction may well be correct, for it corresponds to the form of the gables on the west façade, of which we have definite knowledge from an etching of 1625 [121].

Within the periods of antiquity, the term classic has been stretched to include a considerable number of works, and different stages of classicity have been noted. Within the Gothic style, too, this epithet of praise should not be limited to a single church; for, side by side with the classic Gothic in France, there stands also the totally different classic Gothic of England.

3. HORIZONTAL FUSION IN ENGLAND AND SPAIN

In the same year as Amiens, 1220, the cathedral of *Salisbury* was begun. Amiens represents Gothic verticalism, Salisbury Gothic horizontalism. At Amiens the bay is a whole in its total height, at Salisbury the nave and choir are a whole in their total length.

The length is of eighteen bays: nave ten, main crossing, choir three, east crossing, presbytery three. Except for the crossings the system is the same from east to west: arcade, triforium, clerestory. Low, unlit galleries, with flying buttresses concealed under their sloping roofs, abut the high vault in a manner borrowed from the nave at Wells. (Exposed flying buttresses were introduced in the 1320s to stabilize the crossing steeple). So the section is kept relatively low. Later the abutment has been improved by strainer-arches in the crossing. The purpose was to secure the crossing tower, but the effect is increased emphasis on length.[21]

The three storeys are kept, as at Wells, as horizontal bands [93]. There are no verticals to divide arcade bay from arcade bay or gallery bay from gallery bay. The circular piers carry the richly moulded arches, and the frontal shaft carries no more than the archivolts of these arches. The gallery bays correspond to those of the arcade, but since the proportion of the gallery arches is very different (wide pointed arches, starting segmentally) the gallery band seems independent and not tied much to the vertical of the bay. Above the gallery cornice the quadripartite vaults start. Their corners are carried by narrow clusters of shafts which rise in the spandrels of the galley, here and only here dividing the bays from each other. The galley cornice is at the same time the line of the springing of the vaults. The master thus renounced the innovations of Chartres and consequently also renounced exposed flying buttresses (which were added later). Conservative also are the groups of stepped lancet windows in the clerestory and the wall-passage. These groups of windows separated by shallow pilaster-strips dominate the side views of the cathedral. Only the aisles have more strongly projecting buttresses crowned by frontally placed gables. Here also the composition of two

slender lancets for each bay, without an oculus above, must be considered conservative. The view of the gallery from the nave with its two parts, again subdivided into two subparts, the piercing of the spandrels with quatrefoils or octofoils in circles, and in addition the Gothic relief in the diagonal placing of the colonnettes give an impression close to that of tracery. Closer still to tracery are the windows which in the main transept correspond to the triforium. But by their proportions these groups stress breadth, not height.

In accordance with the principle of horizontal fusion of the bays all bases and all abaci are circular. The absence of all re-entrant angles renders the boundaries of the bays soft and fluid. The Early English style had tried this motif already at Canterbury. It was then made a principle and used in a genuinely Gothic sense to create spatial continuity.

Building at Salisbury started from the east. The Lady Chapel (delicated to the Trinity), the rectangular ambulatory, and the aisles of the presbytery were complete by 1225. The Lady Chapel is designed as a hall-church of three bays, with narrow aisles. The westernmost bay is at the same time part of the ambulatory. The piers are as thin as shafts. Everybody is amazed that such slender stalks can carry a vault. Despite general similarities, one cannot assume any connection with Saint-Serge at Angers, and the difference is that Salisbury had level crowns to the vaults and all arches pointed. We are today spoilt by modern achievements of technique and statics. We know what can be done, but the Lady Chapel of Salisbury remains to strike one as a miracle.[21A]

The building as a whole has this tendency everywhere. The thin shafts standing free of the aisle walls are intended to look as if they were carrying the vaults. Everything is elegant yet vigorous. The exterior is favoured by being placed in isolation on a lawn. The silvery-grey stone is covered with lichens varying in colour from green to violet. So, although there is nothing but right angles, there is no impression of hardness. The building blends optically with nature around. At the time of the dedication of 1258 a low crossing tower may have existed; for it can hardly be assumed that no vertical motif was provided at all. But it remains very doubtful, in spite of the enthusiasm of all modern critics since Wren, that the original master who believed in horizontalism would have appreciated the tall spire of *c.* 1310.[21B]

Slightly earlier than Salisbury is the nave of *Wells*, *c.* 1200–30.[21C] In comparison with Salisbury certain features are even more conservative.

To the same generation belongs *Beverley* Minster, begun about 1230. Choir and transepts were complete by *c.* 1260. The system is as horizontal as at Salisbury, though the vaulting-shafts here start as low down as the spandrels of the arcade. They are detached from the piers. The piers must be considered circular; but they disappear completely behind eight shafts. The shafts differ in section: those in the diagonals (which carry ribs only towards the aisles, whereas towards the nave they support part of the arch of the arcade) are keeled, those inside the arcade round, those towards the nave have fillets. There is a good reason for every one of these three shapes.

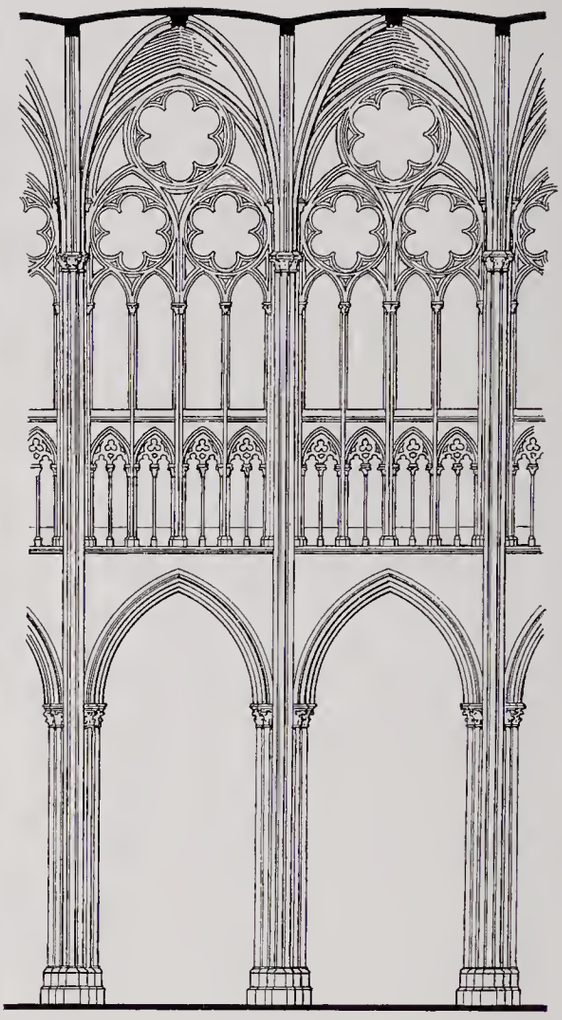
The triforium is a variation on the theme of the syncopated two-tier arcades in the choir-aisle of Lincoln. The piquancy is made yet more attractive by the placing of the pointed trefoil arches of the front tier on clustered Purbeck colonnettes. The short colonnettes at the back carrying plain pointed arches are also black.[21D]

In the wall-passage of the clerestory the arches of each group rise towards the centre, similar to the arrangement made at the same time in the choir of *Toledo*. Direct connexions are all but impossible. Such similarities simply prove a community of roots, however distant the ramifications.

The great differences between Salisbury and Amiens have tempted many critics into speculations on the relations between national characters and art. But it is not permissible to attribute to nations immutable characters or to judge conditions in 1220 from those of 1174 (Canterbury) or those of the twentieth century. Both nations changed, and the Gothic style changed. How these changes are interconnected is obscure, and obscurity only becomes deeper if one tries to name the unknown root race. The Gothic style is a spiritual problem, common to Normans, Frenchmen, and Englishmen. To reconstruct what happened physiologically in the bodies of Robert de Luzarches when he designed Amiens, of Nicolas of Ely (or Elias de Dereham?) when he designed Salisbury, is a job for materialists and positivists.[21E] Their best explanations would not help us; for we are not concerned with chemical processes but with an understanding of art through its meaning. That can only be achieved by remaining in the field of the spirit, and that means in our case of the 'school'. There is spiritual inbreeding in spite of the exchange of ideas, and so an English tradition developed in the lodges of Canterbury and after, as a French tradition had existed ever since Saint-Denis.

Every architect is the product of physiological factors, but his education and his work are the product of a spiritual tradition growing within his personality and influenced by patrons and their advisers. The permanent physiological basis is obvious, and it is as true of the French water-carrier at Amiens and the English one at Salisbury as it is of the respective architects. The fact that two such completely different buildings were created, however, is not due to the national characteristics of the two water-carriers, but to those of two architects who were also the spiritual functionaries of their two spiritual employers. Not that I wish to prevent people from drawing conclusions from the style of the two churches as to the characters of water-carriers, ploughmen, carters, or merchants; but to reverse the process is fruitless and has hitherto produced only superficial theories from over-emotional nationalists. For our purposes it is best to look only at the character of the buildings themselves, and not to try to conclude that Salisbury is the product of a nation of conquerors and Amiens that of a nation of rationalists, or to develop any other theories of national character.[21F]

93. Salisbury Cathedral, begun 1220. Interior of nave *c.* 1245–60



94. Saint-Denis Abbey Church. Interior of transept and choir, begun 1231. Ambulatory 1140–44

95. Saint-Denis Abbey Church, elevation of nave, begun after 1231

4. GLAZED TRIFORIA. WINDOWS AND THEIR GABLES. THE SPHERICAL TRIANGLE. CUSPS IN TRACERY

The fusion between the triforium and the windows of the nave at Amiens led to the idea of turning the triforium itself into windows. From 1231 the whole upper part of the choir of Suger's Saint-Denis was pulled down and rebuilt by the so-called Saint-Denis Master.[21G] He was not the first architect to open the triforium to the outside, but Saint-Denis is the earliest building where a glazed triforium was planned as an integral part of large-scale church.[21H] Until this time, triforia had been the zone which corresponded to the sloping roofs of aisles. With the increasing verticalism in the interior and in the bays of the exterior, main roofs were made higher; the pitch of the roofs over aisles was made correspondingly steeper, and triforia became correspondingly higher. The Saint-Denis Master broke with this tradition; he detached the roofs over the aisles from the wall underneath the clerestorey and placed them at the base of the triforium, giving them a slight slope downwards. He was thus free to choose any height for his triforium, which he opened to the outside with four windows in each bay.

Work began simultaneously on the north transept, the north choir aisle, and the polygonal apse, and it is here that the new kind of elevation is developed [94].[21I] Suger's semicircular apse was replaced by a polygonal one. As at Reims, the windows are divided into two lights with an oculus above, and each bay of the triforium therefore also has two lights. In each bay of the transepts and the nave there are two of these pairs of windows with a third oculus above them [95]. The three frames of these openings, which are of

96. Saint-Denis Abbey Church. Exterior of choir, 1140–3 (radiating chapels) and 1231 onwards

the same basic kind, are set one inside the other in a masterly way; the outer frame is formed by the shafts and the wall-arches. Within this outer frame stand the bays of the arcade and, above each of them, the four lights of the triforium. The shafts for the two main pairs of lights in each bay, each of which is further divided by a central shaft beginning between the secondary pairs of triforium lights, stand within the outer frame, and over the middle of each bay of the arcade. The upper oculus repeats the form of the two smaller ones below, and all three are sexfoiled. This whole group is a manifestation of structure by division, rigidly regular and very simple; the profile projects from the innermost plane, the surface of the glass. This close connexion between all the members, from the innermost one right to the final projection of the shafts supporting the transverse arches, is a full realization of the Gothic profile, its structural rationalism and its characteristic formation of a framework round the stained glass. The whole church is not a work of compilation like those built in the regions of Europe to which the Gothic style now spread, but a synthesis.[21]

Outside, the back wall of the triforium projects beyond the surface of the window above, forming an open passage [96]. On the piers in the wall of the triforium there are free-standing columns which appear to support the flying buttresses where they join the wall. The balustrade of the passage above the triforium is repeated higher up at the level of the eaves of the main roof, and again on the outside of the choir, lower down, above Suger's apses, where it helps to lessen the stress on the most sensitive joint, marking the transition from the old lower storey to the new upper one.

Of all the depredations and restorations which the church suffered, that which damaged it most was the destruction of the thirteenth-century stained glass and the substitution of the present modern glass.[22] These windows are painful in their composition and colouring; even their subjects are out of place – certainly the one which portrays Napoleon is a terrible mistake. The gaudy, obtrusive stained glass makes it difficult to appreciate the real quality of the architecture.

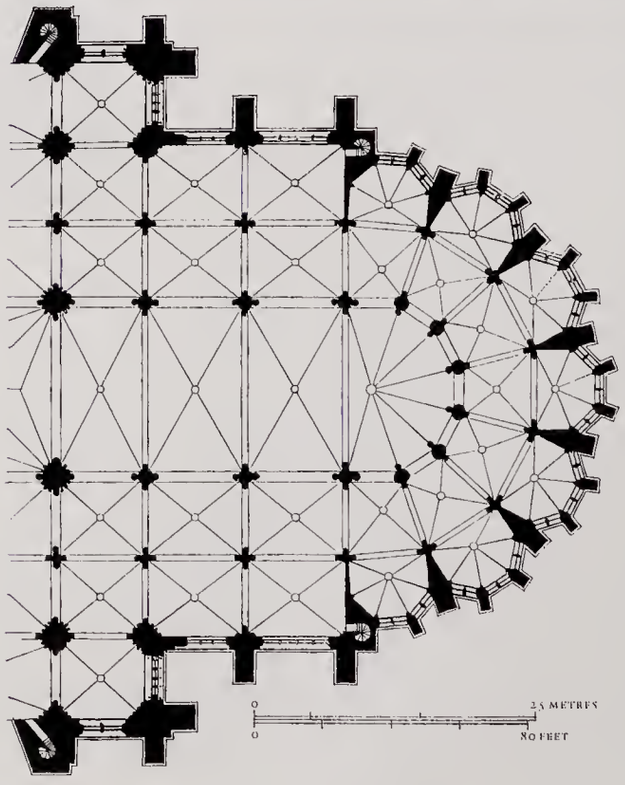
The core of the piers is cruciform, and the shafts supporting the arches of the arcade are set frontally; only the capitals of the shafts supporting the transverse arches are turned through 45 degrees. The walls are thin, and the gradations of the profile of the arcade make them seem even thinner. To those factors which have already been mentioned as contributing to the synthesis achieved in this church must be added its lightness and elegance, which combine with its austerity to give an impression of perfection. The façades of the transepts, with their great round windows with spokes of tracery, and the glazed triforium completely dissolve the upper parts of the walls. The great round window in the south transept at Reims had probably been designed, if not executed, by 1233, and the west rose of Notre-Dame in Paris was under construction in the 1220s.[22A] The Saint-Denis master copied them and improved upon them by increasing their size, and by making some of the details more delicate.

The cathedral at *Beauvais* was begun after a fire in 1225. Work started in the transepts and western parts of the choir aisles [99]. It was interrupted in 1232/33, and restarted in *c.* 1238 when the rest of the choir aisles, the pillars of the central aisle, and the chevet were begun. Soon after the accession of Bishop William of Grez in 1249 the triforium and clerestory were started according to a more delicate design, and some five metres were added to the total height of the central vessel. The whole choir was complete by 1272.[22B] The projection of the shafts to the edge of the abaci on the piers is a retrograde step. But the architect was among the first to accept the glazed triforium [97–8]. The gradation of the cross-section is the same as at Le Mans, so that the inner choir aisles and the ambulatory have windows above the

97. Beauvais Cathedral. Interior, begun *c.* 1225

98. Beauvais Cathedral choir, reconstruction of the original choir elevation before the collapse of the high vault in 1284 (after Branner)

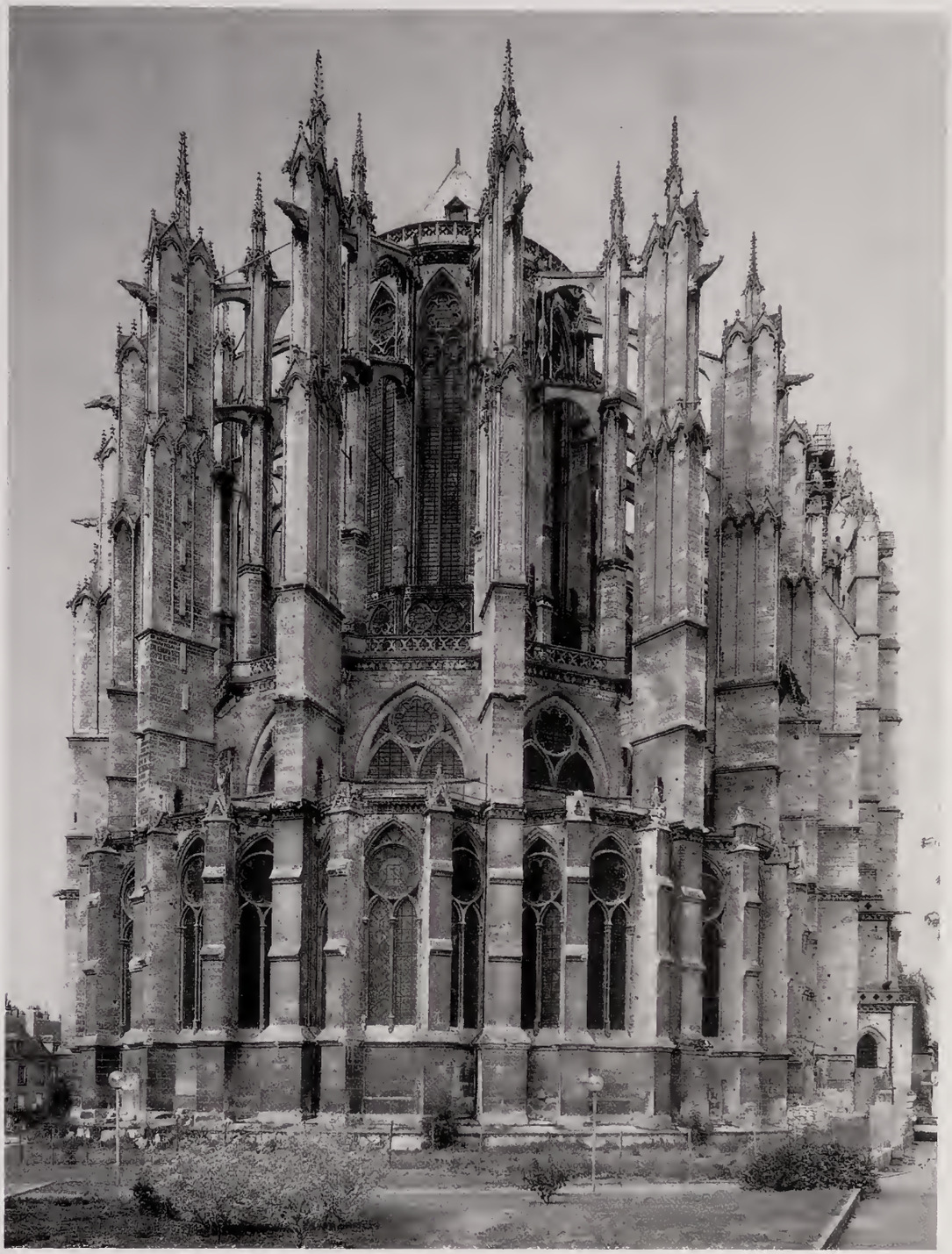
99. Beauvais Cathedral, begun in 1225. Plan of choir



roofs of the outer choir aisles and its chapels. Instead of a division into five lights, as at Le Mans, the aisle windows at Beauvais have tracery, and as they are quite short, each is framed only by a pointed arch, with no rectangular space below, similarly to those in the Liebfrauenkirche at Trier, begun probably in 1227.

The polygonal apse at Beauvais still stands in its original form, but the straight bays of the choir were rebuilt after the collapse of the vault in 1284. New piers were inserted between each pair of the old ones, and the original quadripartite vault changed to sexpartite. One should not draw from this collapse the moral conclusion that it was a punishment for *hubris*. Gervase said of the fall of the architect William from the scaffolding at Canterbury that he did not know whether it was a punishment from God or the envy of the Devil. The collapse at Beauvais was caused by the thin-

100. Beauvais Cathedral. Exterior of choir, begun *c.* 1238



ness of the choir aisle pillars and walls, by the excessive overhang of the intermediate buttress piers above their supports in the aisles, by the over-wide bays (the largest then built in Gothic architecture), and by the last-minute heightening of the superstructure to a vertiginous 158 feet.[22C] It was not the architect as an artist who was at fault, but the architect as an engineer. Nor did the fault lie in the style itself; for buildings in other styles and with less daring proportions have also been known to collapse. Nevertheless, verticalism, measured in actual figures, reached its ultimate limit at Beauvais. This preoccupation was, for a time, a characteristic of French Gothic, but it was never fundamentally bound up with the Gothic style as a whole, as can be seen from a study of the Sainte-Chapelle.

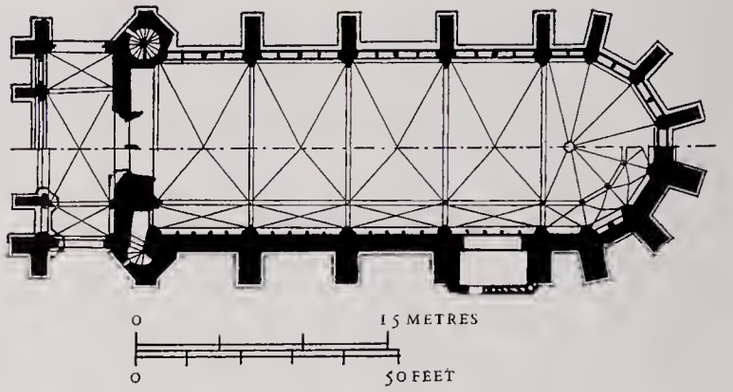
The nave at *Amiens* was completed in around the year 1236, and work was begun on the choir and transepts probably before the church of Saint-Firmin, which is supposed to have stood where we now see the north transept of the cathedral, had been pulled down.[22D] The first stage included the building of the whole lower part up to the vaults of the choir aisles, and including the chapels round the ambulatory. Durand has observed subtle differences between some of the profiles in the choir and those in the nave, which make it probable that the first architect, Robert de Luzarches, died about 1236, and not as early as 1232, as had been previously supposed. The differences must therefore spring from the work of the second architect, Thomas de Cormont. However, Kimpel and Suckale see the lower parts of the choir and chevet as a natural extension of the style of the nave, and therefore attribute these parts to Robert de Luzarches (while Murray sees the hand of Robert in the lower parts of the nave and the choir aisles, and attributes to

Thomas de Cormont, working in the 1230s, the upper parts of the nave, the radiating chapels, and the choirs and ambulatory vaults.[22E] The building of these parts went on until the 1240s, and the central chapel was presumably begun in the 1230s and finished about 1240 or a little later; for it is a prototype of the Sainte-Chapelle in Paris.

The *Sainte-Chapelle* in *Paris* was begun sometime before 1244, and as it was consecrated in 1248, the date of its beginning is probably 1241 [101–4].[22F] The reason for its construction was the acquisition of the crown of thorns, part of the cross, the iron of the lance, the sponge, and other relics of martyrdom of Christ, which were brought to France from Syria and Constantinople in 1241. Louis IX went to meet them, and himself carried them into the city bare-footed, placing them in the chapel of Saint-Nicholas in his palace in the Cité until such time as a chapel more worthy of them should be built and dedicated to the holy crown of thorns. Being the chapel of a palace, it lies on the level of the residential suite, as did the chapels of every castle and even those of some bishops' palaces at that time. It has, therefore, an undercroft, and this was dedicated to Notre-Dame and intended for the servants. At the west there is a projecting structure, housing porches for both the lower and the upper chapel. Adjoining the north side was a sacristy which looked like a separate little church and can be seen on an engraving by Boisseau;[23] this was pulled down after 1776 to allow for the enlargement of the Cour d'Honneur of the new Palais de Justice. The whole north side of the chapel is now hidden by the south wing of this building.

In other ways, too, the chapel has not been perfectly preserved. In 1630 the roof and its original turret were burnt down, and the interior was damaged during the Revolution. The restoration by Lassus, Viollet-le-Duc, and Boeswillwald established the chapel in its present condition; it was certainly done with laudable accuracy, but some arbitrary features inevitably occurred, particularly the ornamental painting of all the architectural members, the replacement of the sculpture on the doorways, and the restorations of some of the figures of the apostles on the piers.[24] The architecture itself, however, has been almost entirely preserved in its original condition, the main alteration, the new tracery of the rose-window on the west façade, dating still from the Middle Ages, from about 1490–95. The original form of the tracery in this window can be seen in the illustration of the month of June in the Book of Hours of the Duc de Berry.[25] Instead of spokes, giving the window the form of a wheel, it had eight fields of tracery joined radially. Each of these fields was rather similar to the windows in the choir at Reims, with the difference that the sides converge instead of running parallel to one another. This transplantation of tracery into an oculus was to be used in the rose windows of the north transept façade of Notre-Dame in Paris, and in the west façade of Reims cathedral, but there the tracery is divided into sixteen and twelve fields respectively.

The lower chapel is of the hall type, with two side aisles, for it is so low that there was no possibility of building a single, vaulted nave. The slenderness of the short columns makes the relatively heavy vault appear quite light. In the narrow side aisles the transverse arches are stilted, and



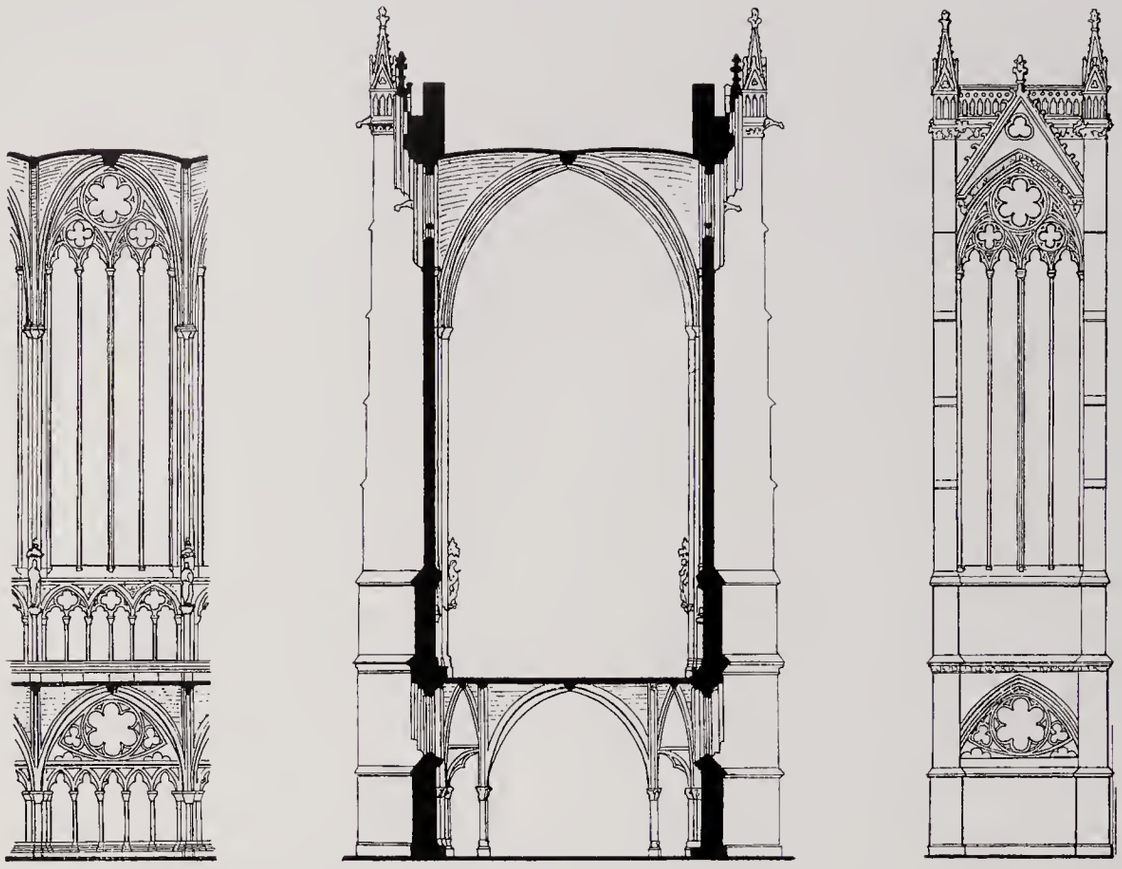
101. Paris, Sainte-Chapelle, *c.* 1241–8. Plan (*above*: upper chapel; *below*: lower chapel)

102. Paris, Sainte-Chapelle, *c.* 1241–8. Exterior; rose window *c.* 1490–95

below them flying buttresses run horizontally from the vault of the nave to the buttresses on the walls, a constructional form which was never to appear anywhere else.[26] At the polygonal east end the aisles form an ambulatory. On a small scale, this lower chapel is a prototype of the hall choirs of later churches – not, of course, that the architects of these hall choirs regarded the Sainte-Chapelle as a model, for their conditions and stylistic tendencies were quite different.

Along the walls there is a blind arcade of pointed arches framing pointed trefoil arches. The close contact between the two kinds of arches produces the form of cusps, as it had in Saint-Nicaise at Reims and in the very similar dado arcades in the radiating chapels at Amiens cathedral. This form is related to the earlier insertion of round or pointed trefoil arches into larger pointed arches, or directly into gables. Cusps are not, however, secondary arches which may be isolated; they grow out of the main arches or gables which contain them and form an integral part of their profile. Each of the inner flying buttresses in the lower chapel also has one cusp. The height of the blind arcading on the wall in the undercroft is determined by the size of the isolated columns, and there is therefore little space for the windows, which are pointed arches standing directly on the line of their springing, similarly to those at Bourges and Trier. They contradict the general emphasis on verticals, as would also have been the case with oculus windows. The architect decided to give the base-lines of the windows the form of inverted segmental arches, into which could be fitted sex-foiled oculi. These windows, together with those lighting the western walls of the side aisles of the Amiens nave, are the earliest examples of the so-called spherical triangle.[27]

In the upper chapel the articulation of the walls is governed by the vault [104]. The windows in the side walls have very similar tracery to that in the north easternmost nave chapel of Notre-Dame in Paris. The form of the tracery, with its members projecting logically in front of the surface of the glass, closely connects it with the shafts supporting the vault. The walls have been entirely replaced by the windows; the stained glass, which has been completely pre-



103. Paris, Sainte-Chapelle, *c.* 1241–8. Elevations and section

104. (*facing page*) Paris, Sainte-Chapelle, *c.* 1241–8. Interior of upper chapel

served or expertly restored, really forms the substance of the walls. All the members are structural, except for the lowest band of the walls, which is a traceried blind arcade.

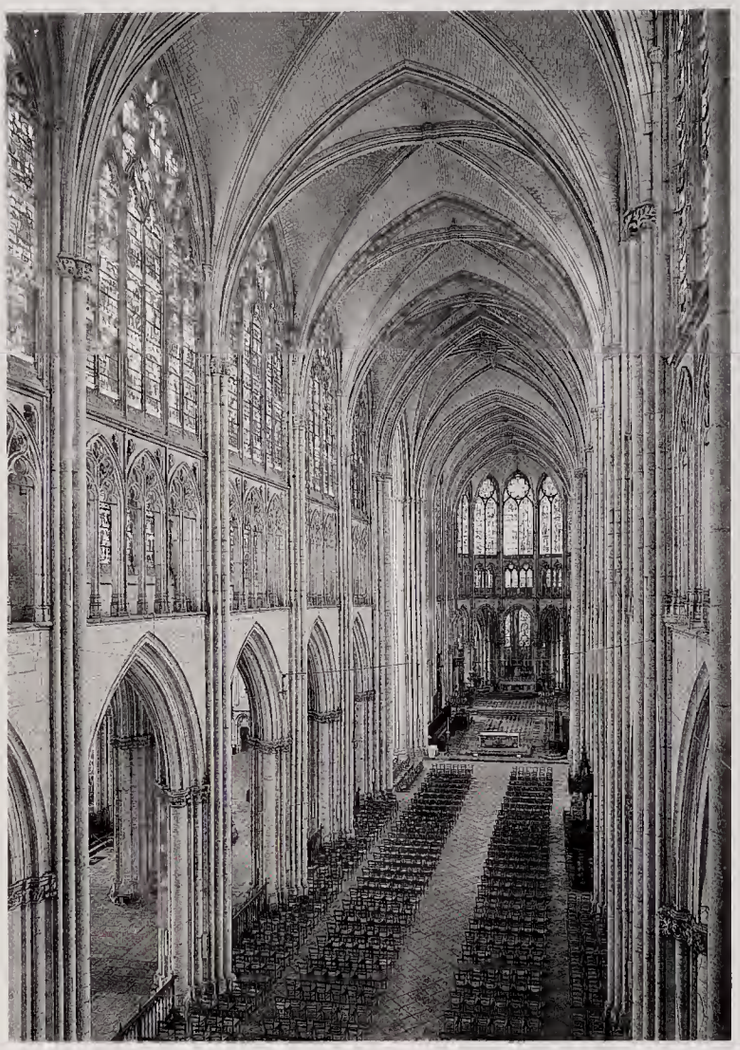
Statues of the twelve apostles (three of them still original) stand on corbels on the shafts supporting the transverse arches, and their position is such that they cut across the sill-line of the windows, thus weakening the horizontal division between the area of the lowest band of the walls and that of the windows. Their canopies are progressive in form; their pointed arches have cusps and the gables are pushed down to them.

On the side walls there are special seats for the king and his family; they are emphasized by architectural means, but without any show of splendour. Above the altar, in the apse, a platform was built for the shrine of the relics. Of the two spiral staircases leading to this platform the northern one has been preserved in its original state, and the whole of this extremely delicate ciborium has been correctly restored; only the six angels which have been stuck on to the lower pointed arch are modern additions. This piece of miniature architecture had the advantage that it could go further in the direction of lightness and imagination than could the chapel itself.[27A] The character of the whole chapel is one of intimacy and privacy, combined with splendour and the particular quality of the fantastical which, in the more highly developed Gothic style, was held to be the most suited to a place of miracles. Nevertheless, the proportions are free of any exaggeration. The ratio of its breadth to the height of the ridge of its vault is one to two – and this at the time when the choir of Beauvais was already under construction. The proportions of the windows, too, are comfortable.

The Sainte-Chapelle has always called forth unanimous admiration. Gothic forms have here been reduced to their simplest structural factors. The system devised in the lower parts of the choir at Amiens.[27B] is here adapted for a chapel without aisles. The decoration of the corbels, capitals, and other members is full of charm and variety. This wonderful building is covered in plant-forms reminiscent of actual nature, but stylized into Gothic Nature. Every detail seems to exist only to enhance the effect of the stained glass, which wraps the little interior in unreality. In these windows there are some Gothic details, and, with the illuminated manuscripts of about 1250, they can be of considerable assistance in solving the problem of when, in the realm of painting, the Gothic style began, and when it prevailed.[28] The nineteenth-century painting of the whole interior of the chapel gives a fairly reliable idea of its original, richly coloured finish, reminiscent of metalwork.[28A] The polychromy of the lower chapel took no account of the original traces of colour, but in the upper chapel (apart from the west wall, which is wholly nineteenth-century) the restorers are supposed to have followed accurately the original colour scheme.[29] It is questionable whether its colours harmonize with those of the stained glass.

Outside, the intrusion of the windows into their gables is only the transference of a combination which had already appeared frequently in other architectural positions. Here it is, however, used to penetrate the eaves-line of the roof and even the balustrade, and it combines with the buttresses and their pinnacles to create a new system. From then on this system became a formula which, although derived from the rib-vault, is a free creation of the architectural imagination.[30]

In 1245, soon after the Sainte-Chapelle, *Westminster Abbey* in London was begun. The choir and transepts were complete by 1259, and by 1272 the first five bays of the nave



105. Troyes Cathedral. Interior of nave and choir; choir triforium late 1230s

106. Tours Cathedral. Choir begun *c.* 1210. Triforium and clerestorey *c.* 1240–*c.* 1244

had been constructed.[31] Henry III's personal admiration for the French Gothic explains its French character, while the English education of its architect, Henry of Reynes, is supposed to excuse the many elements which cannot stand up to French criticism. However, it is debatable whether everything that is wrong, as seen from the viewpoint of, say, Pierre de Montereau, is therefore necessarily English. Certainly the ridge-rib and the round base mouldings and abaci are English. Instead of a triforium, there are galleries with flat ceilings and windows in the outer walls. After those of the Sainte-Chapelle, which Henry of Reynes had apparently seen, these windows are the earliest copies of its spherical triangles. Only in the apse the gallery openings are made into normal windows, and there, in accordance with English horizontalism, they are not bound into a unity with the clerestory windows.

Glazed triforia were introduced into several French churches, even into some which had already been begun, as, for example, the cathedral at *Troyes*.[32] Here the triforium had been reached in 1228 when a storm destroyed the old church, which had been preserved for the holding of services, and stopped work on the new cathedral. When work began again probably in the late 1230s, a glazed triforium was introduced [105].[32A] In combination with the west walls of the transepts, which date from the end of the thirteenth century, and the even later nave, the moderate proportions of the choir express the ideals of this generation without showing that stress which characterizes Beauvais, or the extreme verticalism of Reims and Amiens.

A second noble building with a glazed triforium is the choir of the cathedral at *Tours*, begun in *c.* 1210. The windows in the chapels round the choir received no tracery as yet; this first appears in the glazed triforium and in the windows above [106]. The tracery of these windows is similar to that in the Sainte-Chapelle, and, as the triforium and clerestory of the choir at Tours were built about *c.* 1240–44, it has been attributed to the anonymous architect of the Sainte-Chapelle.[33] The arguments for this attribution, however, are not very convincing.

The architect of the nave at *Strasbourg* must also be counted among the followers of the Saint-Denis Master and of the latest Parisian Rayonnant of the 1250s. The only certain date of the nave is that of its completion in 1275. It was begun probably *c.* 1235.[34] The emphatic diagonal position of the bases of the piers shows the influence of Amiens, where the bases corresponded to the round piers [107]. The architect began with the diagonal form at the bottom, but made the shafts frontal, as at Saint-Denis and Troyes cathedral. As the ridge of the vault in the nave is only 105 feet high – the height of Amiens is over 130 feet – only one arch was

107. Strasbourg Cathedral. Interior of nave, begun after 1235

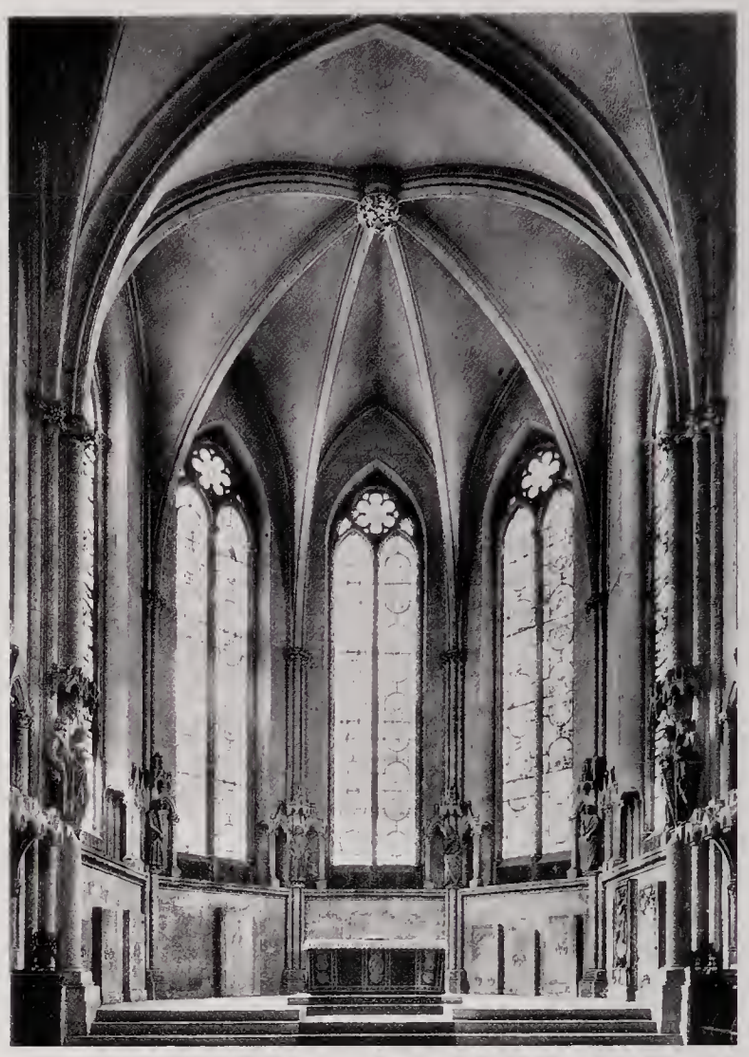
108. Strasbourg Cathedral. Flying buttresses of nave, begun after 1240

needed for each flying buttress [108]. Each of these is pierced with only a single circle containing a quatrefoil, but otherwise presents a smooth surface – very similar to the flying buttresses added to the nave and choir of Notre-Dame in Paris soon after 1220. A further argument in favour of a beginning in the late 1230s and early 1240s is the frontality of the tabernacles on the buttresses – so far as they are of the first phase of building activity – and the pinnacles above the eaves-line of the roof.

Although the system and nearly all the details of Strasbourg are French, this cathedral is always described as specifically German. This is probably a result of Goethe's famous and thrilling eulogy of it: however, he spoke only of the façade, and was not yet acquainted with the development of French Gothic architecture. The factor which is still described as specifically German is the choice of the proportions. The nave at Strasbourg is about $53\frac{1}{2}$ feet wide and 105 feet high, but these proportions were dictated by those of the transepts, which had already been completed, and by the width of the Romanesque nave which the present one replaced. It is legitimate to call this nave German as long as one does not base this judgement on proportions which were common in Early Christian building in Italy and in Romanesque churches all over Europe, but rather on the combination, at Strasbourg, of wide proportions with Gothic style. Even Saint-Denis is not as high as might be expected in a church built at this period of the Gothic age. Unquestionably the proportions of the nave at Amiens, one to three, were not those to which the architect(s) and his patrons, the bishops and chapter of Strasbourg, were accustomed, but it must not be forgotten that there are French buildings with almost equally low proportions, for instance the Sainte-Chapelle, where the ratio is one to two, and that there are also German works, such as the nave at Speyer and the aisles of the church of St Elizabeth at Marburg, the latter dating from about the late 1240s, with very steep proportions. German writers criticize these aisles but nevertheless proudly call them German.

Similarly comfortable, moderate proportions were also chosen for the western choir of the cathedral at *Naumburg*, begun under Bishop Dietrich II around 1250, and this again was the work of a German architect trained in France. In his opinion, it was right not to dissolve the wall completely, but to leave a solid wall between the shafts supporting the vault, and the windows. He decorated the wall-passage, which is similar to those in the Champagne, with canopies. The present choir stalls were not envisaged in the original plan, and the eastern bay of the choir was planned to have direct access to the tall spaces between it and the western towers. But during the construction the choir stalls were inserted

109. Naumburg Cathedral. Exterior of western choir, *c.* 1250, lower, Romanesque, parts of towers begun *c.* 1230–40. First Gothic storey of north west tower *c.* 1250–60



110. Naumburg Cathedral. Interior of western choir, *c.* 1250

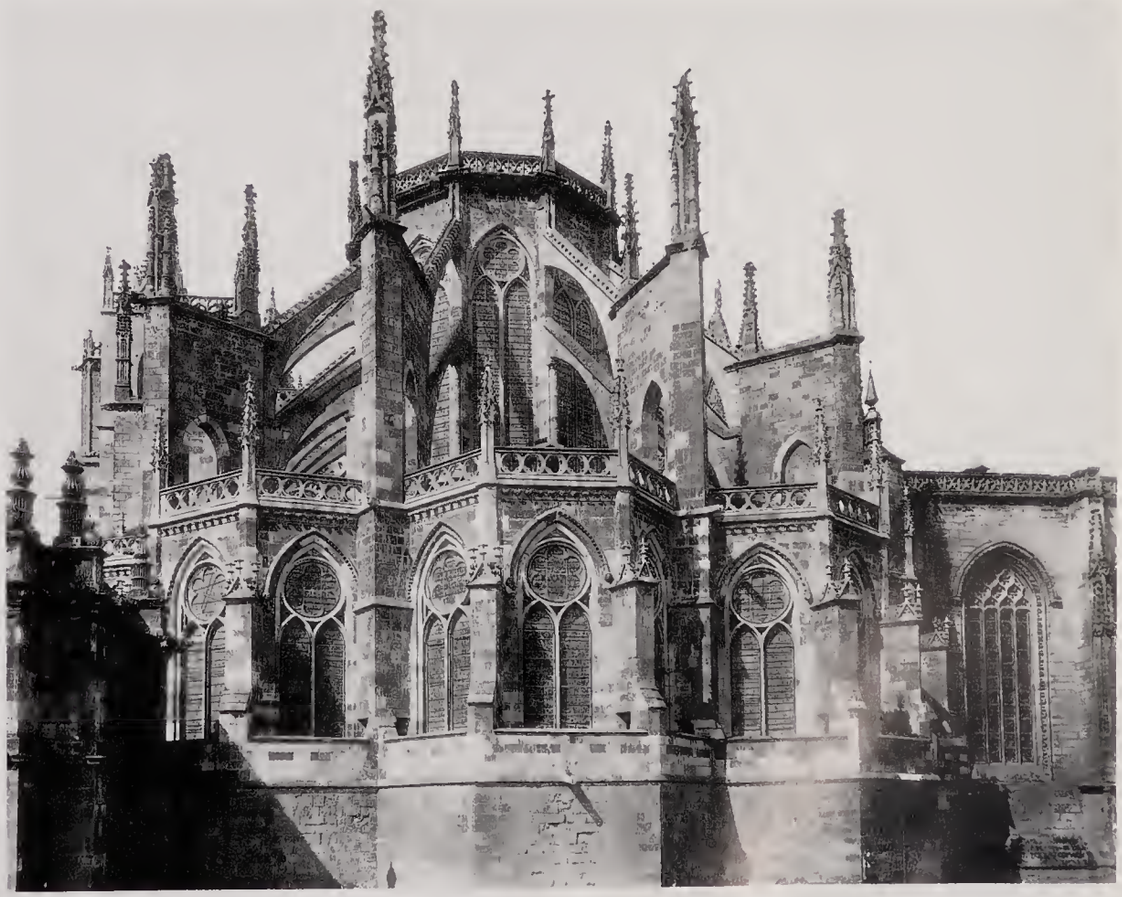
and the wall passage above them rebuilt.[35] The wall-passage is continued in the polygonal apse, but here it is interrupted by the windows, which stretch far downwards [110]. The result is a fragmentary passage similar to the earliest Norman passageways,[36] but here, in a Gothic framework, it is hardly recognizable as such. Choirs without ambulatories offer different possibilities from choirs with ambulatories; there is no triforium, and the wall-passage could be placed very low down. The composition at Naumburg is similar to that in some chapels radiating from ambulatories, for instance those at Reims.[37] It would be wrong to speak of a glazed triforium here, or even of a glazed wall-passage, although, in its intention, the system at Naumburg is related to both these forms.

There is no way of knowing whether the nameless sculptor, 'The Master of Naumburg', who carved the figures of the donors, was also the architect of the choir. It is more probable that there were two artists, for there was certainly enough work for both, especially if it is agreed that the architect of the western choir was also the man who began building the western towers [109].[37A] As the towers of the cathedral at *Bamberg* were only completed before 1237, a repetition of their form, which depended on the earlier ones at Laon, could not, at that time, be called out of date.[37B]

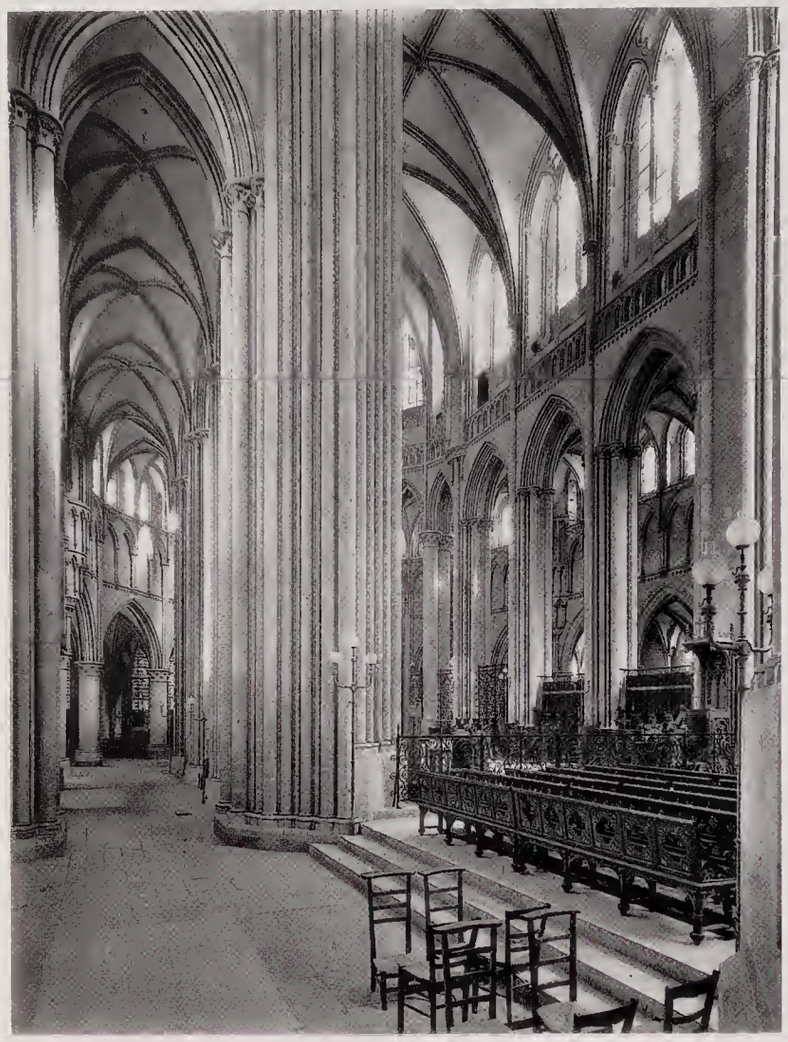
Not every architect accepted the glazed triforium. The cathedral at *Clermont-Ferrand*, begun in around 1248, at the same time as the cathedral at Cologne, follows the system of Saint-Denis and Beauvais, but keeps the dark triforium [111]. This has rightly been interpreted as an act of opposition to the tendency to dissolve the entire height and width of the walls.[38] The glazed triforium also changed the usual distribution of light, and patrons may have had preferences, either for areas of darkness, or for increased light. It can hardly be argued that the purpose of not lighting the triforium here was to rest the eyes in darkness, after the hard, brilliant light in the streets of a southern town, for Clermont-Ferrand is not really a southern town. *León*, in Spain, lies mueh further south, and yet the cathedral there, begun soon after 1254, has a glazed triforium [112, 113],[38A] while in the north the cathedral at *Bayeux* has an unlit triforium, and even lancet windows without tracery.[39] Here Norman details were preponderant and Norman traditions prevented even French innovations. Bayeux is influenced by the choir of Saint-Etienne at Caen and the cathedral at Lisieux.[39A] Also indirectly dependent on the choir of Saint-Etienne at Caen for some of its Norman Gothic vocabulary is the choir of *Coutances* cathedral, begun in the 1220s and complete by 1238 [114].[40]

111. Clermont-Ferrand Cathedral, begun *c.* 1248. Interior of choir

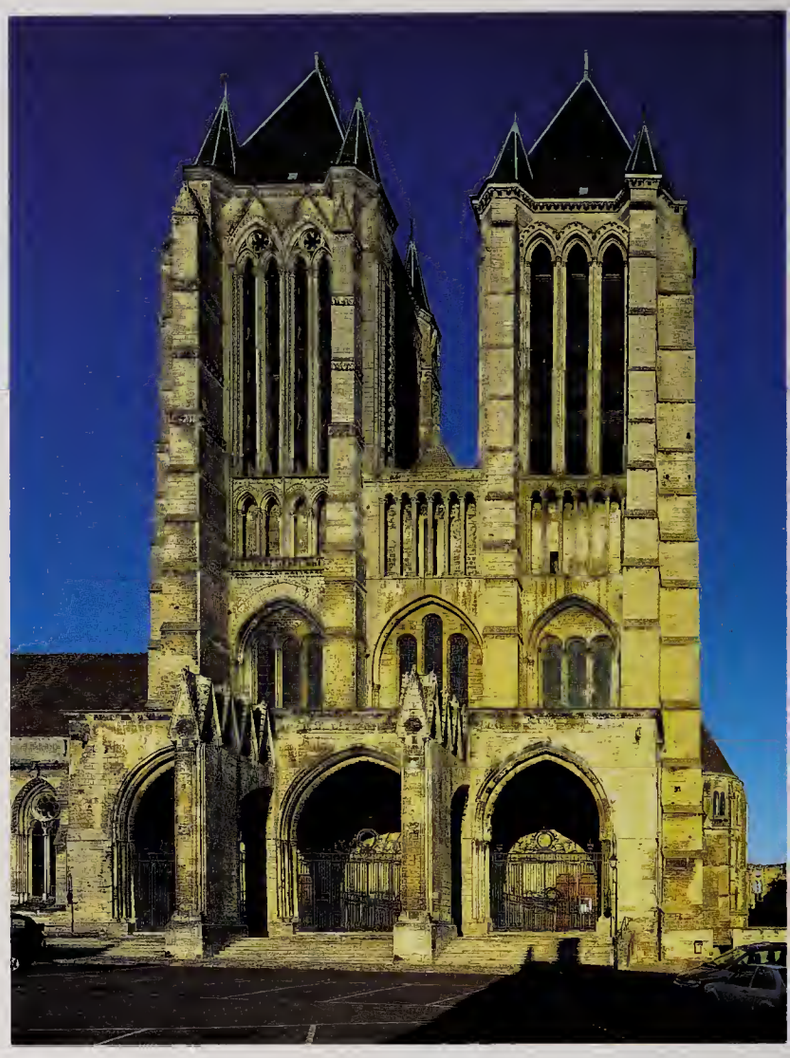
112. León Cathedral, begun soon after 1254. Interior of choir and north transept



113. León Cathedral, after 1254. Exterior of choir



114. Coutances Cathedral. Interior of choir, *c.* 1220–38



115. Noyon Cathedral. West front, begun *c.* 1205

5. FAÇADES. DOORS. BLIND ARCADES AND TRACERY. THE ELIMINATION OF CAPITALS

The west façade of the cathedral at *Noyon* was begun about 1205 [115]. It has in front of it a porch in the form of a horizontally projecting block. Behind the porch, the four buttresses rise to the roofs of the towers, but the bands of the galleries make the horizontals as strong as the verticals. There is the springing of an arch on the south tower, which proves that the two towers were meant to be connected by a gallery, as was later done in Paris. In the south tower each of the storeys has three long belfry openings. Their axes do not coincide with the six of the blind gallery below. When the north tower was rebuilt after the fire of 1293 the blind gallery was given four axes which coincide with the four axes of the belfry openings above, making the vertical unity of the whole tower much clearer.[41]

It is not clear whether the façade at Noyon was intended as a protest against the tendencies of the façade at Laon. In its own way it is an attempt to match the style of the rest of the church and to correct the irregularities of Saint-Denis and the gradations of the dwarf gallery at Laon.

In the west façade of *Notre-Dame* in *Paris*, too, one of the decisive factors is the balance between the horizontal and vertical lines [116]. A comparison with illustrations of earlier façades shows that the architect here was critical of the multiplicity of forms which they displayed and aimed at a more economical harmony by using a smaller number of accents. The double aisles helped his own sense of the majestic and allowed him to build each of the two towers as wide as its corresponding pairs of aisles. The central posts dividing the two flanking doorways and the windows above correspond to the piers between the pairs of aisles, and the façade is thus reduced to two storeys with three openings each (with a slight emphasis on the middle axes). A third storey above consists of the isolated parts of the square towers. The two lower storeys are separated, and at the same time joined, by a gallery of kings, while the much more slender and loosely placed gallery which conceals the gable and encircles the beginnings of the towers like cuffs serves the same purpose between the two towers.

There is no porch; the façade is flat, and only its details are unobtrusively governed by the principle of Gothic relief.

116. Paris, Notre-Dame. West front; lower storey *c.* 1200–20, windowed storey *c.* 1215/20, towers and gallery *c.* 1235–50

It is almost square in shape, but originally it was a little more slender, as eleven steps led up to the doors. The proportions of the doors themselves, 1:2.2, recur in other parts of the façade.[42]

The lower storey was begun on the north side, perhaps as early as *c.* 1190, but the earliest sculpture dates from about 1200. The rose storey was begun about 1215–20, and completed by *c.* 1225. The gallery above that was started in *c.* 1235, and the towers followed in 1240–45, both containing some of the new forms of their own generation. In the gallery of kings and in the storey in which the windows stand there are still trefoil arches, and inside the pointed arches in the windows the oculi in the form of wheels are similar to those which appeared inside the church (in the original triforium). In the upper gallery the tracery is progressive, and on the towers there are little gables penetrated by pointed arches. Another irregularity is a slight asymmetry which appears, not only in the roof-line of a gable over the left-hand door, but also in the greater breadth of the north tower, which therefore has room for one more figure of a king than does the south tower. Harmony is dependent on slight irregularities; it breathes an atmosphere of warmth and vitality. Complete regularity is cold as crystal.

117. Chartres Cathedral. South porch, *c.* 1210–40

118. Fritzlar. Crypt, begun 1171, capital

119. Naumburg Cathedral. Capital, thirteenth century

In these doors, and in the figures surrounding them, the stepped jambs of Romanesque doorways with columns are replaced, by diagonal jambs which open the wall to the outside in a single sweep.[42A]

Thenceforth, the diagonal fusion of the plinths of the doorways and of the jambs themselves became the general rule. This had not yet been achieved in the transept portals of Chartres cathedral, whose porches and general design are obviously dependent on the west façade of Laon.[43] Quite apart from the sculpture, the south porch, with the tabernacles between its gables and the finials at their apexes, is the richer of the two [117]. The trefoil arches and spiral fluting of columns are Late Romanesque in style, while the vertical fluting is High Romanesque. In the north porch the foremost piers stand on octagonal plinths, have guttered bases with foliage at the corners and, directly above them, capitals which form the feet of full-bellied columns decorated with little figures under trefoils with pointed arches. The upper parts of the columns are visible only above these, where they have spiral rings like Iron Age jewellery. Above all this there are crocketed capitals. Each pier offers a different variation on this theme. This overwhelming display of imagination is in direct contrast to the reserve and the emphasis on the larger features of the façade in Paris. The placing of capitals directly on bases is a striking case of akyrism.[43A]

The west façade of Laon also influenced the lower part of the façade at *Amiens*, begun in around 1225, a few years after the beginning of the nave, and was substantially complete, at the level of the rose window, by the 1240s [120].[43B] However, at Amiens the gables are steeper, their edges are decorated with crocketed foliage, and the pointed arches contain a frieze of hanging, round arches in the archivolts. The portals are like those in Paris: they increase the depth, and the diagonal line of their jambs begins only with the front plane of the wall, as the buttresses project at right angles, although they give the aesthetic impression of forming part of the framework of the doorways. As at Laon, and on the south façade at Chartres, there are pinnacles between the gables, their front surfaces decorated with blind tracery. The spirelets of the pinnacles are more complicated than at Laon and on the choir at Reims, but they still stand on a horizontal cornice, and the two flanking gables partially conceal the windows of the aisles behind them.

The form of the upper storeys is determined by that of

120. Amiens Cathedral. West front, begun *c.* 1225

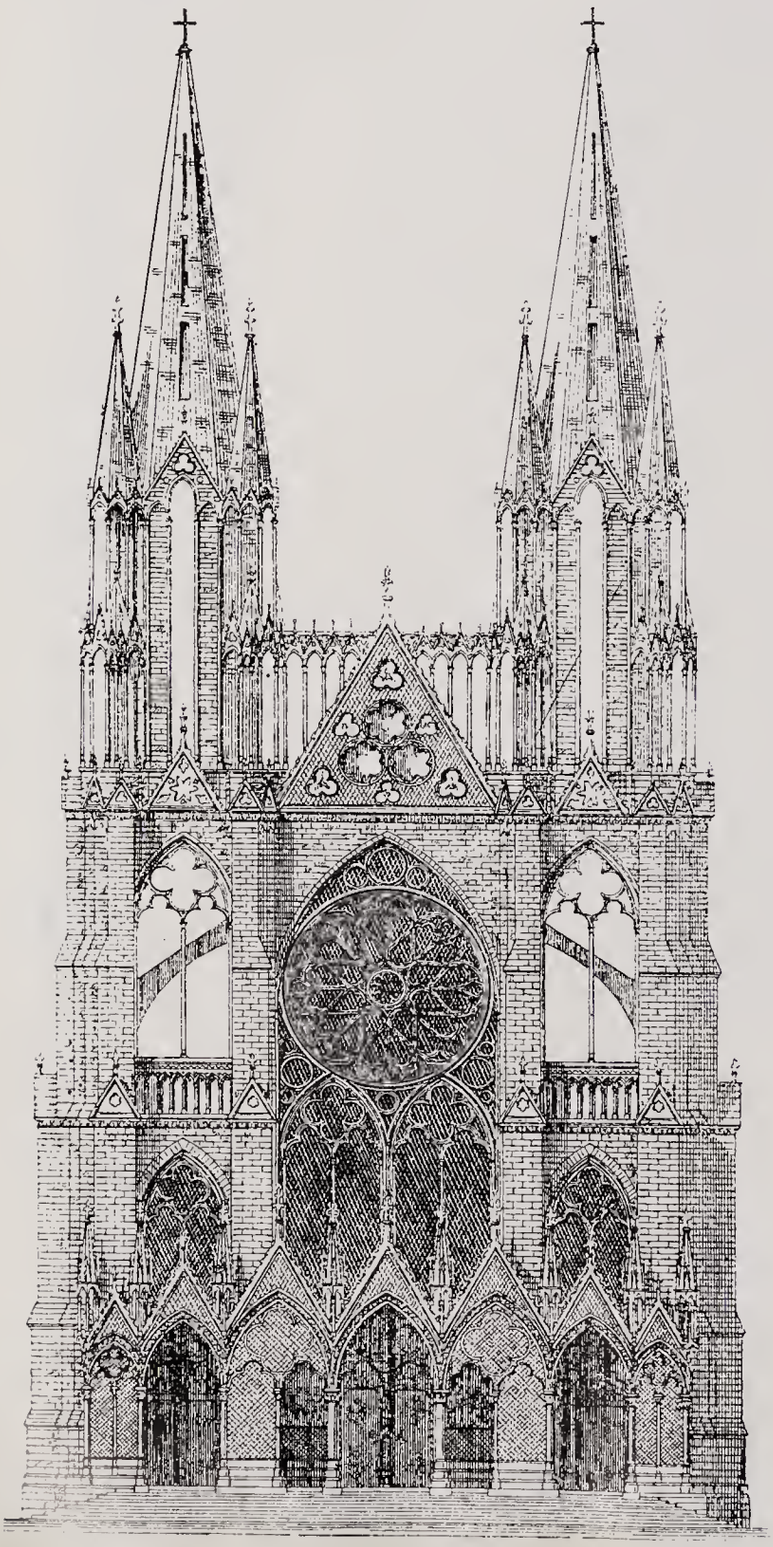
the cross-section through the interior. The rose-window, whose tracery was replaced by Flamboyant work about 1500, lies high on the façade, between the upper storeys of the two towers. The expanse between the lower storey with the doorways and the rose-window is filled with two horizontal bands. The lower of these is a gallery with open tracery like that in the triforium in the nave, while the upper is a gallery of kings, similar to the one in Paris which had been completed by about 1220. The lower gallery, with its outer layer of tracery, continues along the front of the towers. Inside, this arrangement resulted in the building of a passage behind the royal gallery and, above its flat ceiling, of yet another passage.[44] The relationship between the two surfaces is similar to that in the façade of Laon, but the individual forms at Amiens are already much more Gothic.

The inside surfaces of west walls were usually left very simple and plain, as though it was intended that the churchgoer should not be held up by any display of grandeur on his way out of church. Reims is an exception to this general rule. At Amiens there is no more than a blank arcade, corresponding to those in the aisles.

To trace the development of blind arcades would require a lengthy discussion.[45] However, although the development of architecture as a whole can be seen very clearly in these details, the separate stages are secondary and are merely the consequence of those principles in the field of architecture

in its entirety which were the preoccupation of successive generations of architects. There are changes in the forms of arches, in the forms of their supports, in overall proportions, and in the relief and the decoration of capitals [118, 119]; but all these are matters of decoration – architecture on a small scale, whose function is the service and support of architecture on the larger scale.

The impressive west façade at *Lincoln* clearly shows how decisive the principle of Gothic relief is to the Gothic style. Here the older parts have blank Romanesque arcades lying within the wall, and the newer parts have Gothic ones projecting in front of the wall, with their most forward pointed arches projecting on corbels. The exact date of the Gothic part is not known,[45A] and these arches should be judged only by the purpose which they serve in this particular case; they do not serve as models in the general chain of development of the composition of façades.



The façade of *Saint-Nicaise* at *Reims*, however, which must have been begun in or soon after 1231, since Libergier started building from the west, is of historical importance [121].[45B] Basically it follows the system of the façades on the transepts at Chartres, but the porch, with its three gables, is more closely fused with the façade itself, and, in addition to these three, has two more gables on either side, one for each of the two flanking doors, and another, with blind tracery, decorating the outer buttresses. Between the gables there are tabernacles turned diagonally through 45 degrees. In the centre, Libergier drew the rose-window and the windows below into a stronger unity than had been achieved at Chartres by giving the lower windows tracery. The rose-window is drawn into the group in the same way as had been done in the nave windows at Saint-Denis. In an etching of 1625 the church can be seen in its original state, except for the tracery in the great rose-window, which was replaced in the Flamboyant style about 1550.[46] This whole group of windows with the lower windows in the towers forms a triangle. Above the windows in the towers there is a high parapet in front of the belfry openings, which are divided into two by tracery, and above these lie the upper ends of the four main buttresses. Both the smaller and the larger gables are complete triangles based on a common horizontal line, which is an old-fashioned motif. As at Laon, the octagonal upper parts of the towers are accompanied by octagonal turrets in two storeys which correspond to the slender single openings on the four sides of the towers. At the lower level of the rose-window the outer corners of the main towers are bevelled off – a smooth preparation for the diagonal position of the secondary turrets above. The towers are connected by a free-standing gallery which is overlapped by the central gable.

This façade was the immediate forerunner of that of the cathedral of *Reims*, which, according to Demaison, was built by Jean le Loup after he had taken over the direction of the work in 1231. The façade itself, however, may not have been begun until after the choir had been completed in 1241 [122], and Ravaux's recent discovery of two documents, of 1230 and 1252, refering to the future westward extension of the cathedral, suggests that by as late as 1252 the west façade of the old twelfth-century cathedral was still standing, and that no work had yet been begun on a new façade. However, soon after 1252, probably in 1254 or 1255, the foundations of the present west façade were laid.[46A]

The appearance of the lower storey, which projects sharply, is determined by five gables, which increase progressively in height and width towards the centre. The outer, blind gables are filled with tracery, and the same form

121. Reims, Saint-Nicaise, begun soon after 1231. Façade (drawing based on De Son's etching of 1625)

122. Reims Cathedral. West front, begun 1211–18? or 1252–6

is repeated on the north and south faces of the corners, as though outer gables, like those at Saint-Nicaise, had been folded round at right angles.[46B] The basic dimensions are dictated by those of the choir, but the line at the foot of the rose-window lies lower than was at first intended, also forming the base-line of the tabernacles, which would have had to lie at the same level as that of the tabernacles along the north and south sides of the nave if the design had followed regular lines.[47] The rose-window is set so low that it was impossible to put – as at Saint-Nicaise at Reims – traceried windows below it. At both sides of the rose-window the towers have pairs of narrow openings under very steeply pitched gables with extremely slender pinnacles. For the spires on the tabernacles the architect used the same form as had been used for those on the nave – probably in order to maintain a sense of unity. The upper gallery is a gallery of kings; it stands in front of the main gable and continues round the main towers and the octagonal plinths of their smaller accompanying turrets. In the free-standing storeys above there is no division into two storeys, as there is in the smaller turrets; this division, which exists at Laon, must have seemed petty to the architect of Reims. The Gothic principle of fusion is, in this façade, a determining factor of the whole design and of every detail, but at the same time there is also fusion here in another sense of the word. The determination to exercise and to master the full range of imaginative design shown here is similar to what was much later termed the *maniera grande*, or 'seeing in the large'. At Reims the gallery of kings again runs round the towers like a pair of cuffs, and the towers themselves, for all their many parts, give the impression of being a single unity in their combination of strength and transparency, and in spite of the fact that they are composed of a number of parts. The central openings with their tracery correspond to the open twin windows in the storey in which lies the rose-window. The band formed by the gallery of kings terminates the two lower storeys, whereas the dwarf gallery at Laon had still been proportioned to form part of the storey occupied by the windows. From the diagonal jambs of the doorways right up to the towers one feels a strong tendency to recession; for in many places there exists not only the projection of one layer of the façade in front of another, but also a contrary movement towards the inner core of the wall and the interior of the church itself. There is hardly another façade as rich and, at the same time, as easily comprehensible as that at Reims. The interrelationship between the heights of the doorways, the windows, the galleries, and the towers forms a harmonious rhythm, as do the measurements of breadth, of the north tower in relation to the central section and the south tower, and of the piers in relation to the different openings. The bevelled outside corners, with their panels of blind tracery, help to make the gradual narrowing towards the top unobtrusive.

Within this organic system the rose-window forms a point of rest and stability in the upward stream of gables and spires.[48] Within the chain of development of rose-windows, which began with the Wheel of Fortune of Saint-Etienne at Beauvais, the design at Reims marks the transformation of the idea of spokes in a wheel into pure tracery. The idea of incorporating a circular window in the framework of a pointed arch was taken from Saint-Nicaise, and shows that, in the new vocabulary of the Gothic style, the circle was beginning to be viewed as a form too closely connected with the traditions of the Romanesque. The architect also let an oculus into the space within the arch over the central doorway, but here the tracery springs from the circumference instead of from the hub. The quatrefoils in the two flanking doorways are an imitation of those at Saint-Nicaise.[49]

Between the gables over the doorways there are delicate tabernacles, turned diagonally through 45 degrees; they are reminiscent of the diagonal pinnacles separating the portal gables of the west façade of Saint-Nicaise at Reims, or those of the north and south transept façades of Notre-Dame in Paris.[49A]

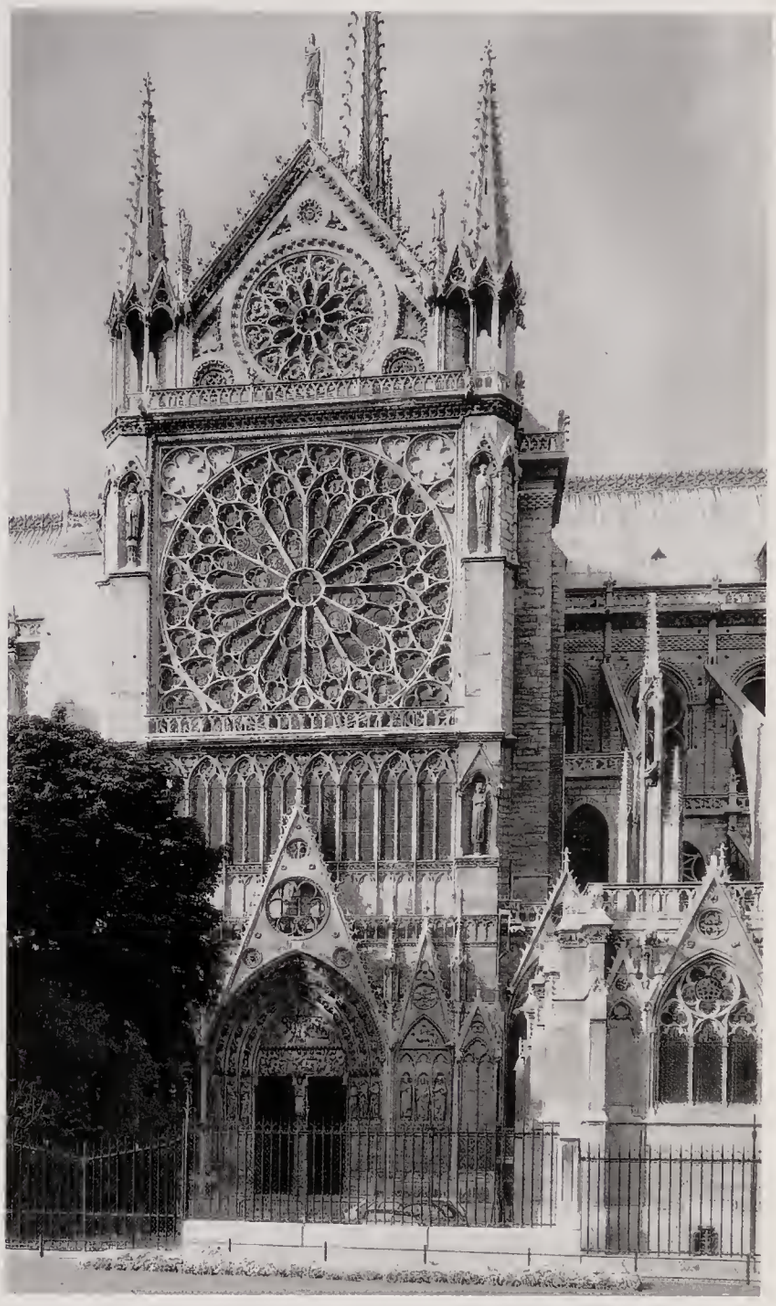
The inexhaustible wealth of the carved figures takes its place within the simple architectural composition of the façade. It abounds in ideas and symbols and is truly vibrant in form, expressive of the spirit of this cathedral where the kings of France were crowned – where secular might stood to receive its authority and the blessing of Heaven.[49B]

The chronology of the building of the façade was clarified by Ravaux and Kurmann. Work began soon after 1252 and before 1256. The six prophet figures on the right hand portal, carved about 1220 with the likely intention of decorating and modernising the old mid-twelfth century façade, suggest that at that point no new west façade was planned.[49C] However, full-scale tracings of the arches of a central and side portal found on the back wall of the south transept triforium and dated *c.* 1225 show that planning for a west façade was by then under way, a fact confirmed by a charter of 1230 which looked forward to an eventual extension of the cathedral westwards.[49D] Some of the jamb figures carved for this unrealised west façade were later incorporated into the present façade. They include the famous Visitation Group, which must have been carved well before 1237, since sculpture influenced by these and related Reims figures appears in the Prince's portal at Bamberg cathedral, dated as much as ten years before the consecration of that cathedral in 1237.[50] Other pre-cut sculptures at Reims assembled on the later west portals include a group of Amiens-influenced figures such as the Marys of the Annunciation and Adoration of the Magi, Simeon and Saint-Dionysius.[50A] The rest of the sculpture, however, belongs with the architecture of the façade. A *Magister Walterius*, identified by Ravaux as the putative third architect Gaucher of Reims, is cited in a document of 1256.[51] According to an inscription on the now-lost labyrinth, once in the nave floor of the cathedral, Gaucher of Reims 'worked on the voussoirs and the portals', so Ravaux argues that Gaucher was working on the lower storey of the façade in the later 1250s and early 1260s.[51A] Since the labyrinth showed the fourth architect, Bernard of Soissons, drawing a rose window, it is likely that he designed the rose and its storey. This was constructed probably in the early to mid 1260s because his rose is indebted to Pierre de Montreuil's rose in the south transept façade of Notre-Dame in Paris, designed at the earliest in 1258, and under construction in the early 1260s,[51B] The portals were certainly complete by 1274, when a chapter ordinal regulated the entrance of Palm Sunday processions through the west doors.[52] The rest of the façade went up gradually, largely

under the direction of Bernard of Soissons (in charge up to 1289–90), in the last quarter of the thirteenth century, and was completed in the early fourteenth century.[52A] Ravaux's and Kurmann's conclusions have, however, been radically questioned by Hamann-Mac Lean and Schüssler, who argue that the lower parts of the west front were laid down by Gaucher of Reims (whom they considered the *first* architect), between 1211 and 1218. The portals were continued by Jean le Loup (1219–34), and finished by Jean d'Orbais (1236–*c.* 1251). Bernard of Soissons (*c.* 1252–*c.* 1287) completed the façade from the triforium zone upwards. No reconciliation between these two fundamentally opposed views of the chronology of the façade, and its architecture, has been proposed. Nor is one likely.[52B]

In the case of the *Sainte-Chapelle* there was no opportunity for the architect to take part in the task of solving the problems of façades, since the two-storeyed porch conceals the façade right up to the level of the oculus. This opportunity did, however, present itself to another architect of the same generation, when, beginning in around 1225, chapels were added between the buttresses of *Notre Dame* in *Paris*,[52C] and it was decided to lengthen the transepts accordingly. It is not known what the old façades of the transepts looked like, but they cannot have been designed later than 1180, and must certainly have been earlier in style than the façade at Laon. The citizens of Paris of about 1250 must, in any case, have welcomed the opportunity to replace them with something more modern. Jean de Chelles began the north transept façade in *c.* 1245 and completed it by 1258. In that year he died, having started the foundations and the lowest courses of the south transept façade [123]. His place was taken by Pierre de Montreuil who, as a tribute to his dead colleague, had the inscription carved which has given us this exact date of 1258. The inscription itself contains no words of praise, but it is a monument to both architects. The system adopted for these façades goes back to the Saint-Denis Master's two transept façades at Saint-Denis, here enriched in many ways, especially by the incorporation of the five gables of the doorways – a device borrowed from the screen of gables in front of the west façade of Saint-Nicaise at Reims. As the transepts have no aisles, and only one doorway is therefore required, the lateral pairs of gables stand over blank bays. The two outer bays are filled with blind tracery, and each of the two inner ones divided into three parts to contain three figures each. The three pointed arches in each of these two inner bays are supported on vertical members which continue *without capitals* to form the arches, and this innovation is repeated in the framework of the main doorway. (There are forerunners at Chartres, especially in the eastern flyers.)

Here, for the first time, then, an architect achieved the unity between jambs and arches which the pointed arch seemed to have demanded ever since its introduction. The piercing of the tympana, or rather the filling of them with blind foils, was the first stage in the development which led in the end to the dissolution of these surfaces. The pinnacles turned through 45 degrees which stand between the gables are modelled on those at Saint-Nicaise at Reims. The balustrade of the gallery runs in front of the base of the triforium which is decorated with blind arches, again without



123. Paris, Notre-Dame. Façade of south transept, begun 1258

capitals. On the south transept every second vertical member of this blind storey continues upwards to form the row of eight windows, which are divided by tracery. The gallery above these windows, the square frame round the rose-window, and the piercing of its lower spandrels are all copied from the forms used at Saint-Denis, though the tracery in the rose-window at Notre-Dame is more refined. The decoration of the spaces enclosed by the gables, and the octagonal tops of the buttresses, too, follow Saint-Denis, though in Paris the tops of the buttresses are opened to form tabernacles. The niches for statues on the buttresses, like those in the nave of Chartres, are an enrichment of the system, and on the south façade there are also figures at the level of the row of windows.

On the south façade there are spherical triangles filling

124. Lincoln Cathedral. Nave looking east, *c.* 1220–35

the spandrels round the oculus, but they seem to be the natural product of the design of the rose-window rather than a reproduction of the lower windows in the Sainte-Chapelle; for here, in the rose-window of the south façade, there are twenty-four pointed arches, pointing inwards, each of which, with the section of the circumference on which it stands, forms a spherical triangle.[53]

The introduction of the spherical triangle into the realm of tracery must be interpreted as another act of opposition to the form of the circle; for this new form, which could be called a self-contained series of three pointed arches, is better suited to a style from which the semicircle had already been eliminated. However, it was not easy for architects to deprive themselves of the splendour of rose-windows, and it remained the task of future generations to achieve a logical solution to this dilemma. The moderate criticism of the circular form which appears here is related to the elimination of the capitals in the doorway, in that, in both cases, the architect has understood the demands of the pointed arch. In the former case this is true only of the demands of the point itself, whereas in the latter case the architect has understood the pointed arch in terms of the upward stream of forces which begins in its two supports.

6. THE TIERCERON STAR-VAULT

Out of the tierceron-vaults in St Hugh's Choir at *Lincoln* the successor of the master who had designed them developed for the Lincoln nave the first tierceron star-vaults. What he did was to carry through the diagonals which his predecessor had cut short, to carry through also the ridge-ribs from west to east, and to add short north-south ridge-ribs so that the severies from north and south stop about half-way between the clerestory wall and the centre of the bay [124]. Ribs connect the bosses at the end of the north–south ridge-ribs with the springers of the vaults. These ribs are genuine ribs in so far as they form the boundaries of cells, and at the same time tiercerons in so far as they rise on the severies of transverse tunnel-vaults. The term star-vault is derived from the figure which vaults such as those of the nave at Lincoln form in plan. In perspective the seven ribs issuing from the same springer form one bunch. As there is not enough space for them, the tiercerons start only at the level of the windows. This makes one wonder whether the form of the vault was determined only when in the course of building the springers had been reached. However, the English in this respect were less logical than the French, who demanded a separate shaft for each arch of a vault.[53A]

At *Ely* in *c.* 1234 a choir of six bays was begun to replace the old apse. The vault, completed by 1252, when the consecration took place, seems to be the earliest copy of the tierceron star-vault of Lincoln. (I believe that the vault of the Lincoln nave was designed a short time after 1220.)[53B] At Ely the ribs have more space on the abaci of the shafts, but in spite of that they are not separate at their start.[53C]

Star-vaults look more central in plan than in perspective. In rows and over oblong bays they close up and make the bays merge with each other in a typically English way.

In contrast to the English stars, the one tierceron star-vault over the crossing at *Amiens*, built shortly before 1269,[53D] possesses the full power of concentration. It is in keeping with French verticalism, as are the English tierceron star-vaults with English horizontalism.

7. THE SPREAD OF THE GOTHIC STYLE, 1200–50

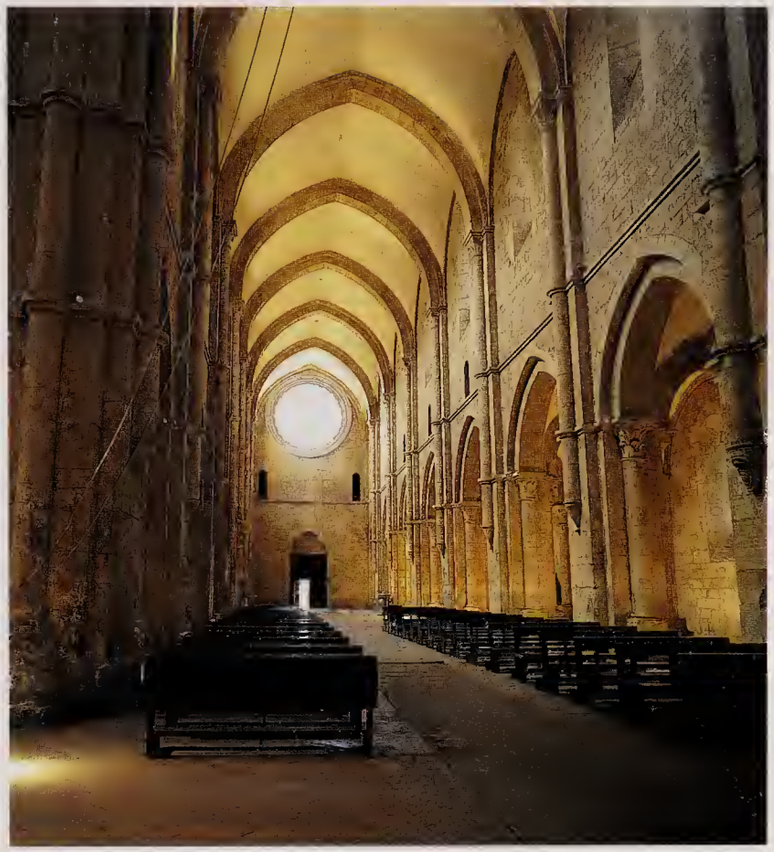
The great French cathedrals are the work of lodges in which the most gifted masons, under the guidance of masters, gradually became architects. They began their education on the site, and, through their journeys, became familiar with the work of other lodges. The buildings themselves are evidence of the interchange of ideas between a master and his apprentices, and the schools which they formed can be clearly recognized in their works.[53E]

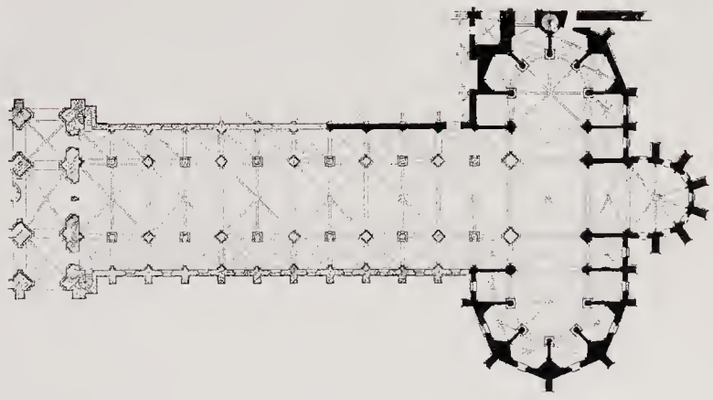
The architectural ideas of neighbouring countries came

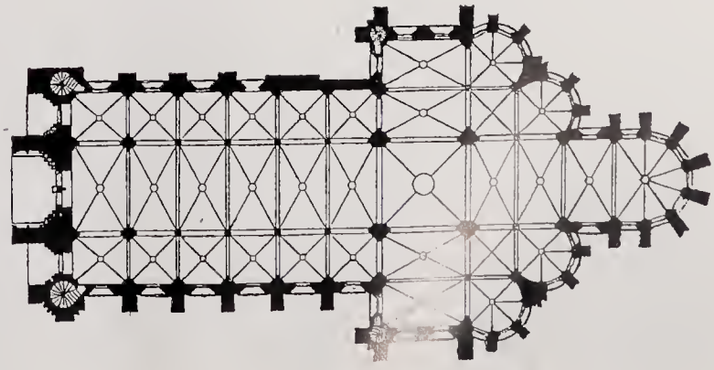
into contact with those of the French school, especially through the clergy, who travelled widely, came to know French cathedrals, and wanted to build similar churches in their own dioceses. They then had either to invite French master masons to their own country, or to send their own master masons to study in France, and such recommendations from one bishop to another gave a foreigner an introduction to any lodge.

Even within the frontiers of modern France, however, there was already, at this time, a school of architecture which was separate from the establishments of the master-masons of the cathedrals, and, indeed, had its own establishments propagating the Gothic style: this was the school of the Cistercian order. A concrete example of what this society meant by the Gothic style a few years before the building of Chartres can be seen at *Fossanova*, near Rome. Begun just before 1173, and under construction at about the same time as the new rib-vaulted choir at Pontigny.[54] This church still has groin-vaults in the nave and choir [125]. The rib-vault in the crossing was probably built shortly before the consecration of the church in 1208, and is related to that at *Casamari*, not far from Fossanova, which was built between 1203 and 1217 by masons from Fossanova. At Casamari, however, ribs were used in every compartment. These ribs do not stand on separate springers but merge with the transverse arches and the wall-arches. Both churches have that cool beauty which was achieved in all the works of the Cistercian order. At the time at which they were built these churches must have caused a sensation in Italy, and even now, visited from Rome, they give the impression of being foreign to their surroundings. Measured by French standards, Fossanova is still a work of the Cistercian Transitional style, whereas Casamari is Early Gothic.[54A]

In France itself, the style of the Cistercian church at *Longpont,* built between *c.* 1205–10 and 1227, closely follows that of Soissons, and, with this church, the Cistercian Transitional style comes to an end and changes directly into the High Gothic.[55] The Cistercians did not build towers, but they now transformed the 'oratorium', the 'prayer hall', as St Bernard wished monastery churches to be called, into a mundane and festive place. This is equally true of the Cistercian church at *Châalis*, built between about 1201 and 1219, which has sexpartite vaults [126]. Already at Pontigny, the architect had built quadripartite vaults with bays shorter than they were broad, a form native to Burgundy, and at Châalis the sexpartite vaults over the hexagonal radiating chapels are direct quotations from the radiating chapels of the choir of Pontigny. The Châalis use of sexpartite vaults in the main vessel of the nave, combined with an alternating system, probably derives from early Gothic buildings in the Yonne valley, especially Sens cathedral. Châalis's polygonal transept ends may owe something to Noyon and Cambrai cathedrals, but the source may be the slightly earlier







125. Fossanova, Cistercian church, begun 1187. Interior

126. Châalis, Cistercian church. Ground plan. *c.* 1201–19

127. Braine, Saint-Yved, ground plan. *c.* 1176–1208

128. Magdeburg Cathedral. Interior of choir, begun 1209

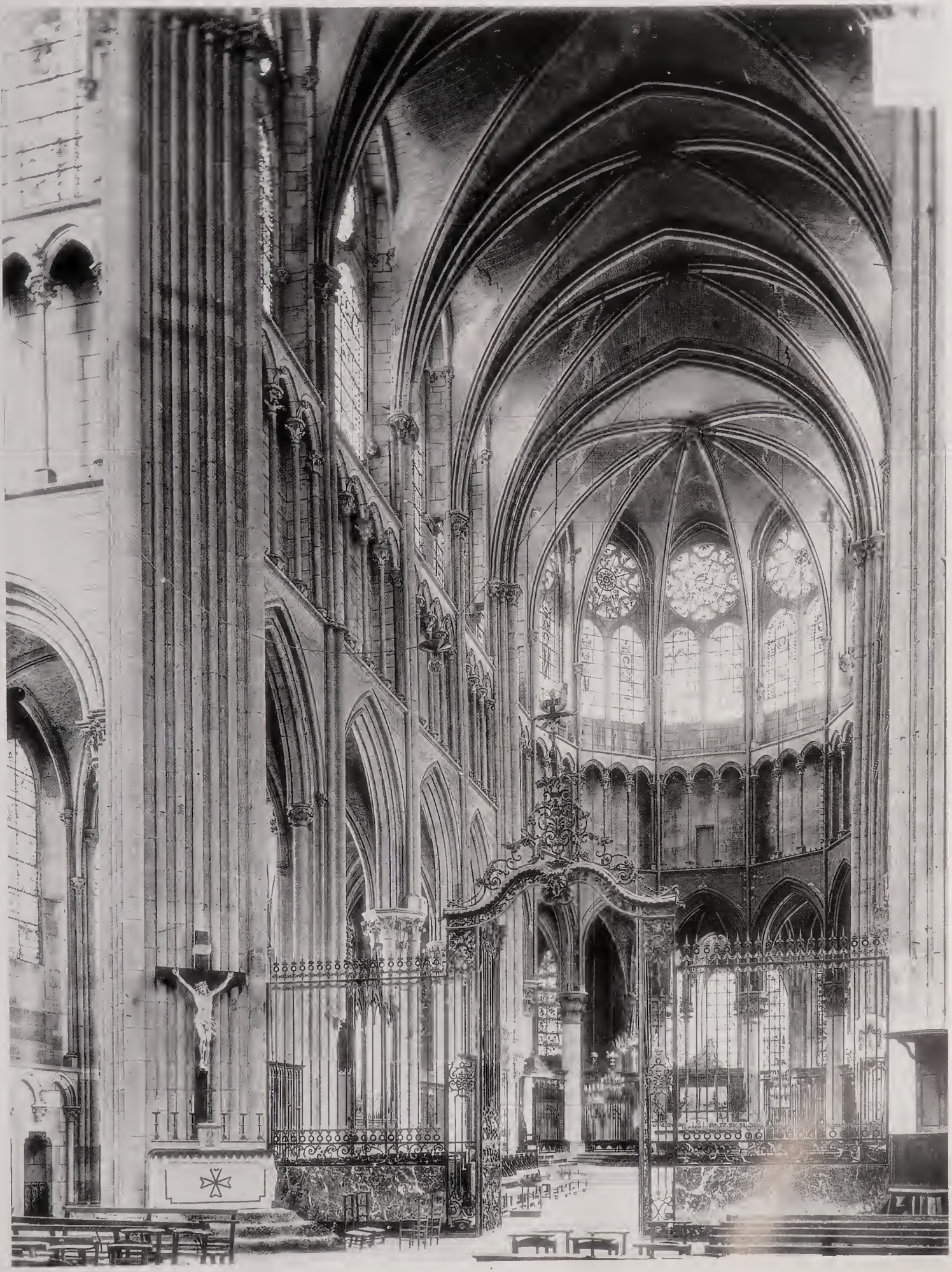
129. Limburg on the Lahn, St George. Interior of choir and transepts *c.* 1215–20

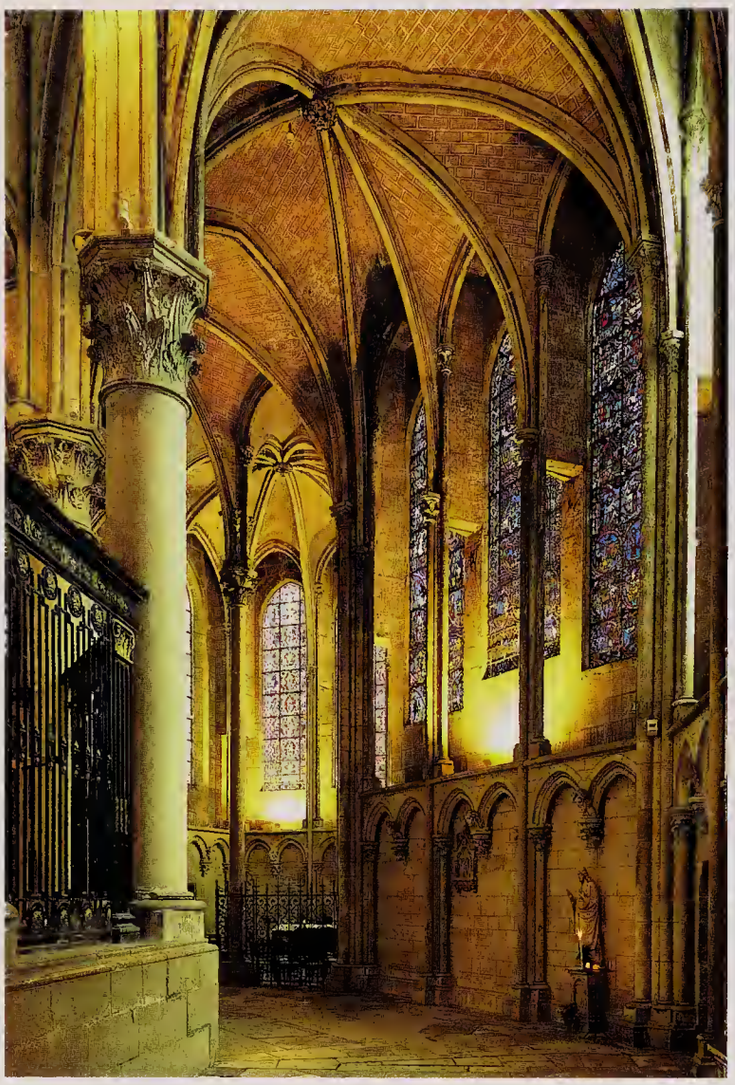
130. Auxerre Cathedral. Interior of choir, begun just before 1217

Cistercian church at Quincy, now destroyed, also in the Yonne valley.[56]

The church of Saint-Yved at *Braine*, built probably between *c.* 1176 and 1208,[56A] belonged to the order of the Premonstratensians. These canons did not show such highly developed individuality in their architecture as did the Cistercian monks. The architect at Braine was trained in the Laon school, and adopted the three-storey elevation (with triforium passage but no gallery) used earlier at Saint-Vincent at Laon (1174–1205). The round pier on each side, east of the crossing, is also reminiscent of both Saint-Vincent and the cathedral at Laon, and may have been inspired by the desire not to obstruct the chancel chapels. These pairs of chapels stand diagonally – a daring introduction of the principle of the diagonal into the realm of whole spatial unities [127]. Diagonally placed chapels like these were built in the Liebfrauenkirche at Trier perhaps begun in 1227, to the west and to the east of the transepts, and thus produced a central plan (see below, pp. 159–61). Others appeared in the church of St Victor in Xanten begun in 1263[56B] and in Kosiče in Hungary, begun in the last decade of the fourteenth century, and in a large number of smaller churches in France[57] and other countries.

The cathedral at *Magdeburg* is an example of the introduction of the Gothic style at the express wish of a patron [128]. Archbishop Albrecht had studied in Paris and therefore knew Notre-Dame and probably several other cathedrals of the time of about 1200. Shortly after he took office in Magdeburg, in 1207, a fire destroyed part of the town, including the old cathedral which dated from about 955. The architect to whose design the choir was begun in 1209 decided to build a polygonal apse and ambulatory, for which, at this time, besides those at Laon, there were already models at Chartres and Soissons.[57A] He built the arches of the apse, the transverse arches, and the openings to the chapels in the form of pointed arches, but vaulted the ambulatory with Romanesque groin-vaults in which the groins, halfway to the ridge, disappear into its spherical surface. The vaults are matched by their massive Romanesque supports with their frontal bases and capitals. The church is the work of a German architect with slight knowledge of the Gothic style. The fact that it has often been called the first really Gothic building in Germany is due to the incorrect suppo-





131. Auxerre Cathedral. Ambulatory and eastern chapel, begun just before 1217

132. Vercelli, S. Andrea. Interior of nave, *c.* 1219

sition that its later parts may date from the same time as the lower parts of the ambulatory. This cathedral, with its special history, is evidence of the gradual infiltration of the Gothic style. As such it is very interesting to the historian of local style, but it plays no leading part in the history of the Gothic style. In its earliest parts the church is, at best, a work of passive transition, and this is even true of the higher stage of development reached in the gallery round the choir, the so-called Bishop's Gallery, of 1230.[58]

The collegiate church of St George at *Limburg on the Lahn* occupies the same kind of position in the history of the Gothic style. In the interior, begun *c.* 1190, there are Gothic elements – rib-vaults supported on shafts, some of which even have crocketed capitals turned through 45 degrees [129] – but the exterior is Late Romanesque. The dominant position of the church on a rock above the river makes it unforgettable. Within the German Late Romanesque it is a masterpiece, but, seen in the larger perspective of European architecture, that is as contemporary with the choir at Le Mans, it is, even in the forms of its Gothic elements, out of date.[59]

The cathedral at *Auxerre*, too [130, 131], belongs to these buildings which demand a dual appreciation, a historical one and a timeless one. Since the parts of the cathedral were built at different times, a timeless judgement must be based on its rich harmony and on the high intrinsic quality of each part. Stylistically the choir, begun in a little before 1217, was not yet influenced by Reims; for the alternating supports suggest that it was intended to build sexpartite vaults. The triforium is derived from that at Chartres, but it is much higher and its slender columns and small capitals make it much lighter. The upper windows of the choir, which have plate tracery, also show the same stage of stylistic development as those at Chartres, though here each oculus is enriched by a circle of eight trefoils along its circumference. In the ambulatory the different levels of the capitals are a means to achieve vivaciousness, but it is achieved at the expense of classic tranquillity. However, one need only compare this ambulatory with the Bishop's Gallery at Magdeburg to see that, with the building at Auxerre, the High Gothic had attained ascendancy in Burgundy. On the other hand, a comparison with the ambulatory and the chapels at Reims leads to the opposite conclusion. At Auxerre the presence of two extremely slender columns at the entrance to the east chapel produced something of the charm and fascination of Early Gothic imaginative exploits, such as those in Saint-Remi at Reims [45] and in Notre-Dame at Châlons. The architect was not prepared to eliminate these vistas, whereas the masters of the mature High Gothic style reckoned in terms of a larger unity and regarded details of this kind as diversions leading the eye on to things of secondary importance.[60]

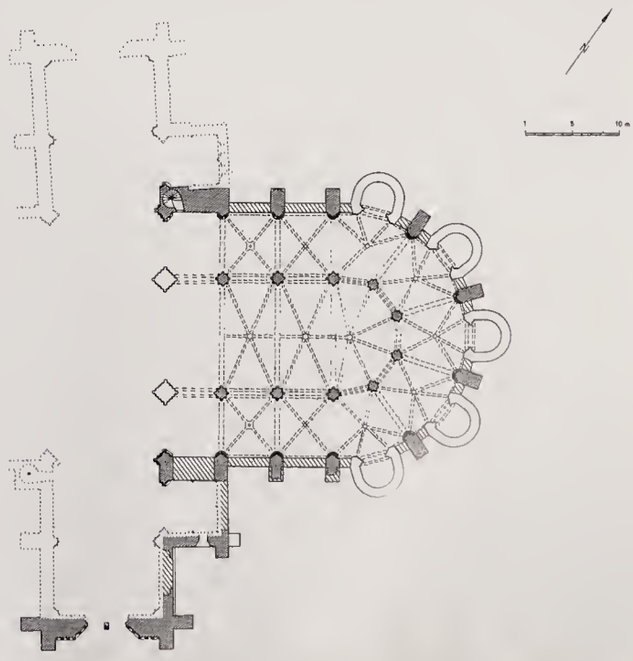
The difficulty of blending the French Gothic style with

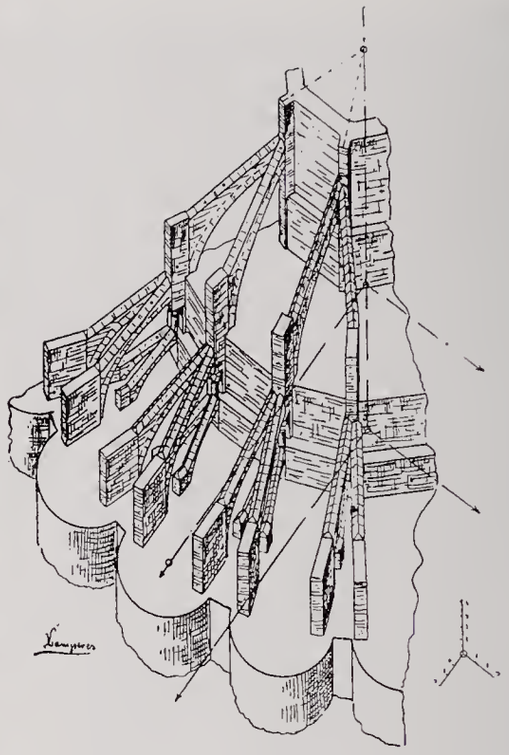
133. Sées Cathedral. Nave begun soon after 1240

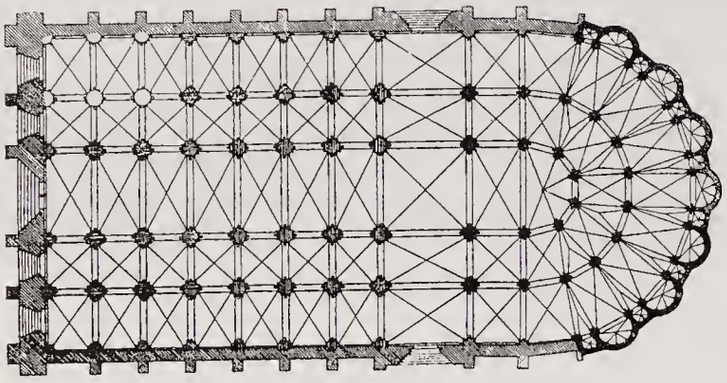
134. Burgos Cathedral. Interior of choir, begun 1221

Italian traditions can be seen in the church of S. Andrea at *Vercelli* [132]. The groups of uninterrupted shafts, the diagonal position of the shafts supporting the ribs, the pointed transverse arches, and the crocketed capitals are French; the blank surface of the wall above the arcade with its pointed arches and the small dimensions of the upper windows, which still have round arches, are Cistercian; and the details on the inside of the dome over the crossing – squinches supporting a drum with a gallery of round arches and an octopartite groin-vault – are more Romanesque than Gothic. Finally, the whole exterior is a typical work of the North Italian Romanesque. The French influence has been explained by the transference of the church, in 1219, to Victorine canons from Paris, as well as by the generous patronage of the church's founder, Cardinal Gualo, bishop of Vercelli, and sometime papal legate in England. The fact that members of the workshop of Benedetto Antelami worked on some of the details, such as the capitals, has led to the assumption that this sculptor may have designed the church.[61] In this connexion the formal similarities with the baptistery at Parma and the cathedral at Fidenza (Borgo San Donnino) are extremely illuminating. Part of the Italian character of the church lies

135. Burgos Cathedral. Reconstruction of the original chevet plan 1221–30 (after Karge)







136. Toledo Cathedral, begun , *c.* 1220. Interior of ambulatory

137. Toledo Cathedral. Ground plan. Begun *c.* 1220

138. Toledo Cathedral. Diagram of flying buttresses of chevet, begun *c.* 1220 (after V. Lampérez y Romea)

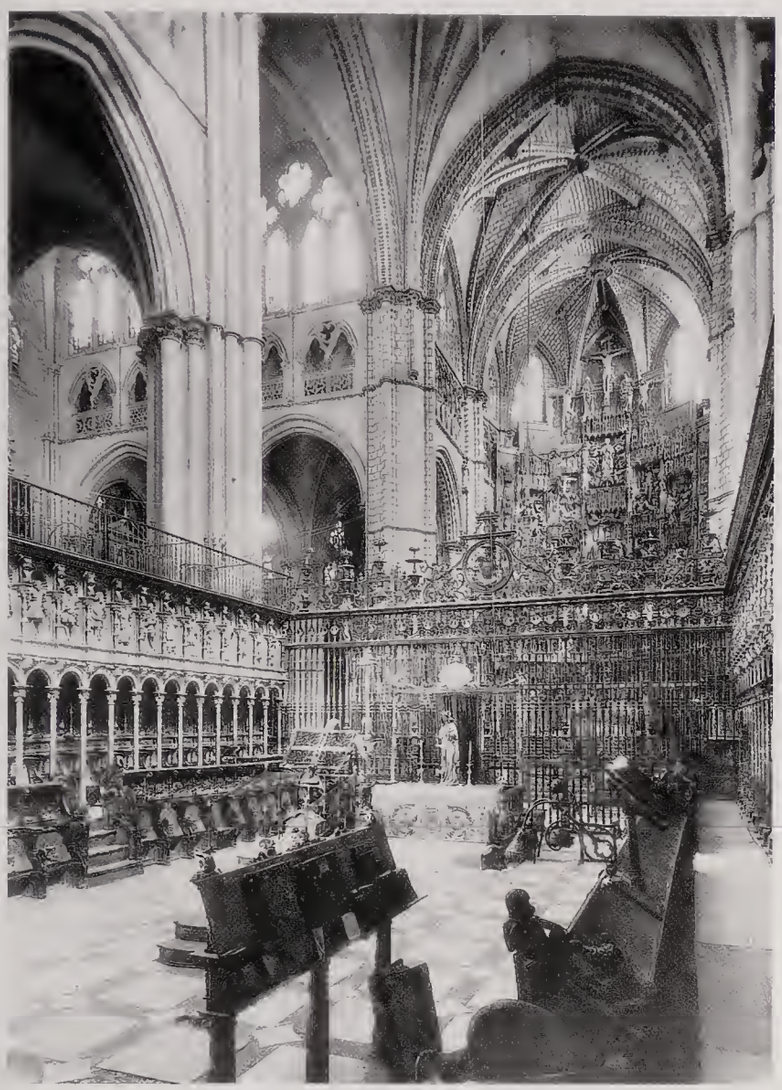
in the materials used. A brick flying buttress is a simplification which can almost make one forget that, even in this heavy form, the flying buttress remains a Gothic element. It is hardly justifiable to call Vercelli the earliest really Gothic building in Italy.

The cathedral at *Coutances*[62] contains some traditionally Norman characteristics, such as the wall-passage at the sill level of the windows, and the octagonal crossing tower which lights the interior [114]. The rebuilding of the Romanesque nave began in about 1200, and was finished by *c.* 1220. Groups of triple shafts, like those in the earlier nave at *Fécamp*, rise from the floor to the vault. There is a typically Norman interior wall passage in the clerestory and rectangular bays with four-part vaults, again like Fécamp. These features, and some characteristics that look English, combine to produce a Norman High Gothic church.[63]

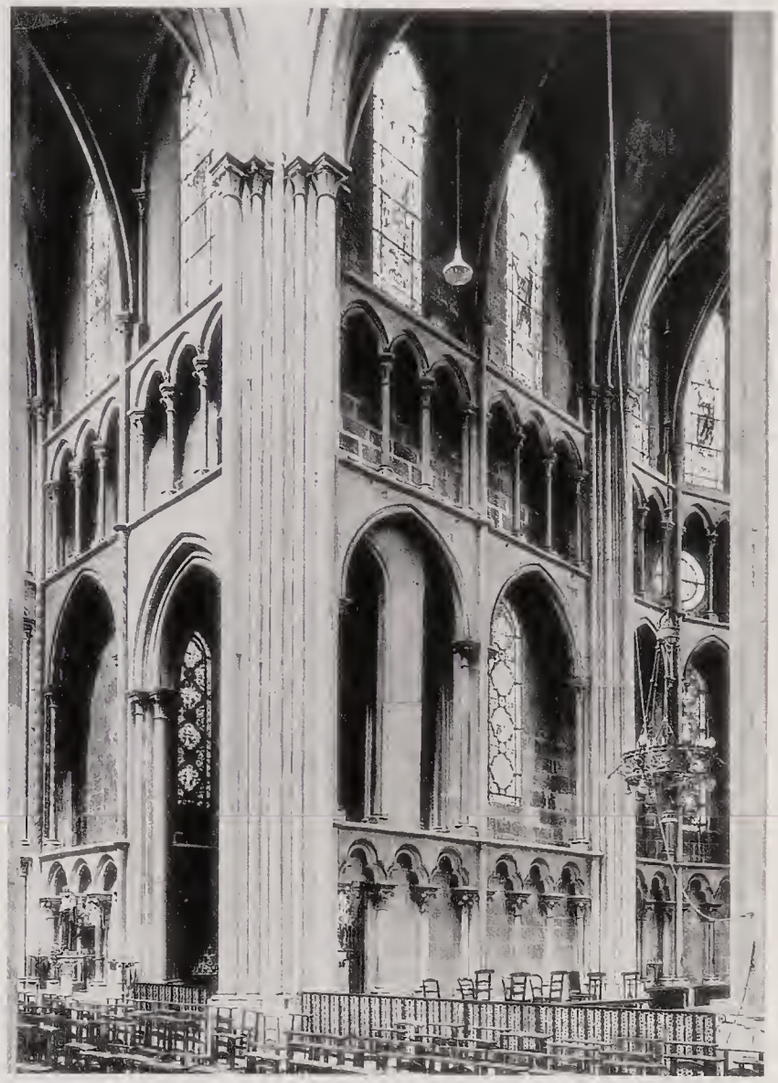
Parts of the cathedral at *Bayeux* also belong to the Norman High Gothic. Here, about *c.* 1240, the nave was continued, above a Romanesque arcade, in the Gothic style; only the transepts and the east end are Gothic throughout.[63A]

At *Sées*, where the nave was begun about probably soon after 1240, the shafts rise separately in front of the round piers, pass through capitals, and continue as complete cylinders, crossing the recessed sexfoils in the spandrels between the arches of the arcade [133]. As in England, the round abaci serve to produce a fusion between the spatial parts of the church. The division of the wall into two layers is a Norman legacy, but its relief is adapted to the Gothic style.[63B]

The choir of the new Gothic cathedral at Burgos in Spain was founded in 1221 and was already in use in 1230 [134, 135]. Before the construction of the present radiating chapels in the 1270s the original choir plan consisted of an ambulatory with six-part vaulted bays and a semicircular chevet with small apsidal chapels alternating with single buttresses in a manner clearly indebted to Bourges cathedral and its follower, the lost choir of Saint-Martin at Tours. Burgos's debts to Bourges extend to the proportions of its elevation (a low arcade and a tall triforium, prefigured in the inner aisle elevations at Bourges), to the oculi in the webs of the apse vault, and to the shape of its piers (circular cores with eight engaged shafts) and the prolongation of their inner curved surfaces as wall responds up to the vault departures. It is obvious that the Gothic style in Spain, at the



139. Toledo Cathedral, begun *c.* 1220. Interior of transept and choir



140. Dijon, Notre-Dame, begun *c.* 1220. Interior of north transept and choir

stage which it had reached in 1221, was entirely imported from France.[64] Burgos must be regarded as the beginning of the Spanish High Gothic, for it shows a higher degree of development than *Tarragona*, begun some time after 1171, and changed to receive rib-vaults in around 1200,[65] and *Cuenca*,[66] and it also adopts the tracery of Reims. Compared with German works of the same period, Burgos is less original in its ideas, but completely up-to-date. It is difficult to determine how Spanish it was in its original state, from 1221 to its consecration in 1260; for its Spanish character grew gradually stronger through the additions of later generations, among them the *coro* of 1497. The practice of shutting off part of the nave with high screens, for the use of the clergy, completely obstructing the view from west to east, and partially obstructing that from north to south, did not become general in Spain until the fifteenth century.

The cathedral of Burgos has one aisle on each side of the nave; the architect of the cathedral at *Toledo*, however, was more ambitious and built his church with two aisles on each side, and a double ambulatory [136–8]. The stepped cross section, with a taller inner ambulatory and inner choir aisles with their own clerestories and triforia, is modelled on Bourges, as are the pillar forms and many of the mouldings. The choir was begun probably in *c.* 1220, long before the official foundation in 1226. Master Martin, the first architect, mentioned in chapter documents in 1227 and 1234, had clearly worked (perhaps trained?) at Bourges, but he also knew Notre-Dame in Paris, Saint-Denis, and the newly begun choir of Le Mans, whose triradial vaults in the outer ambulatory and bifurcating system of Y-shaped flying buttresses around the chevet are repeated at Toledo.[67] Unlike his French models, however, Martin introduced low, wide proportions in all his aisles, creating a horizontal and lateral conception of space that was to dominate Spanish basilican churches to the end of the Middle Ages. Street has described Toledo as 'thoroughly French in its ground-plan and equally French in all its details' but he clearly overlooked the very Mudejar-looking multi-cusped arches in the triforia of both the inner aisles and central vessel of the choir [139].[68] What makes the exterior look different from that of French churches is the very flat pitch of the roofs, which, though it is to some extent the product of the southerly climate, is even more a proof of the preservation of a classical tradition.[69]

The Gothic style in Spain is not really a Spanish Gothic

141. Ypres, Saint-Martin. Exterior of choir, begun in 1221

style but rather the French Gothic style in Spanish territory. The Gothic style in Burgundy is, however, Burgundian, and it can be seen in the cathedral at *Nevers*, which was begun after a fire had destroyed the old cathedral in 1211, that is, soon after the beginning of the building of the cathedral at Reims. However, in evaluating this church, one must exclude the choir, begun in the 1230 or 1240s, and complete by 1331, and all that was added in the fifteenth century, especially the tracery.[70]

In the cathedral at *Toul*, begun in 1221, only the choir and the transepts are the work of this generation. The choir has no ambulatory, which was normal in small churches, but is an exception in churches of the size of Toul Cathedral. Having reached a logical solution which was to be a model for many later architects, the master of Toul built windows which rise uninterrupted from above the altar to the vault.[70A]

Notre-Dame at *Dijon*, a church described by Soufflot in the eighteenth century and Viollet-le-Duc in the nineteenth, both of whom admired it, has a polygonal choir with no ambulatory.[71] If this church was really not begun until *c.* 1220, then its architect was far behind his time, for it still has sexpartite vaults and shafts projecting to the very edge of the abaci on which they stand [140].[72] The apse does not have long, uninterrupted windows like that at Toul, but two rows of windows, one above the other, separated by a delicate triforium.

The Swiss cathedrals at *Lausanne*, begun in *c.* 1170, but fully underway from *c.* 1192, and at *Geneva*, showing the influence of Lausanne from *c.* 1215, should be considered as part of the Burgundian group. Both are older and much heavier and more massive than the church at Dijon.[73]

The interest of the Gothic style in Belgium at this time, too, is mainly a local one. At *Orval* (begun *c.* 1180), *Aulne* (1214/21–45), and *Villers* (begun a little before 1208), the Cistercians turned increasingly to Gothic forms,[74] and, of these churches, Villers also has the classic tripartite elevation and crocket capitals.[74A] Saint-Martin at *Ypres*, begun in 1221, is, however, the first really Gothic Belgian church [141].[74B] The nine sides of the polygonal choir are extremely narrow and slender; for the more sides choirs have, the more compressed and slender is their effect. The chapels in the angles between the transepts and the choir stand diagonally, as at Braine and Trier.[74C]

The choir of Ste Gudule in *Brussels*, the first French chevet (with ambulatory and radiating chapter) in Brabant, was begun under champenois influence in 1226, and completed towards the middle of the thirteenth century. Its details are extremely French in character, but here, too, there are many conservative elements compared with the nave of Amiens.[75]

The number of churches which play a part in the spread of the Gothic style is very large, and it is difficult to achieve an overall view of them, for each one really demands individual consideration. Richard Hamann presented the development of European architecture of the generation of 1210 to 1240 by explaining the appearance of similar architectural details in buildings far apart as a sign that groups of masons travelled from place to place.[76] It was mainly forms from the early Gothic of Laon and the Soissonais which were exported in this way; for they seemed extremely modern to people in the east, and, with the granting of certain concessions, could readily be assimilated with local traditions.[76A] The most impressive products of this trend are the cathedral at *Bamberg*, where the nave was built in the 1220s,[77] the Cistercian church at *Tišnov* (*Tischnowitz*) in Moravia, and in Hungary the churches at *Ják* and *Lébény*.[77A]

In all these churches the exterior is still almost purely Romanesque in character; for they have not only almost

142. Assisi, S. Francesco, 1228–53. Exterior from the south-east

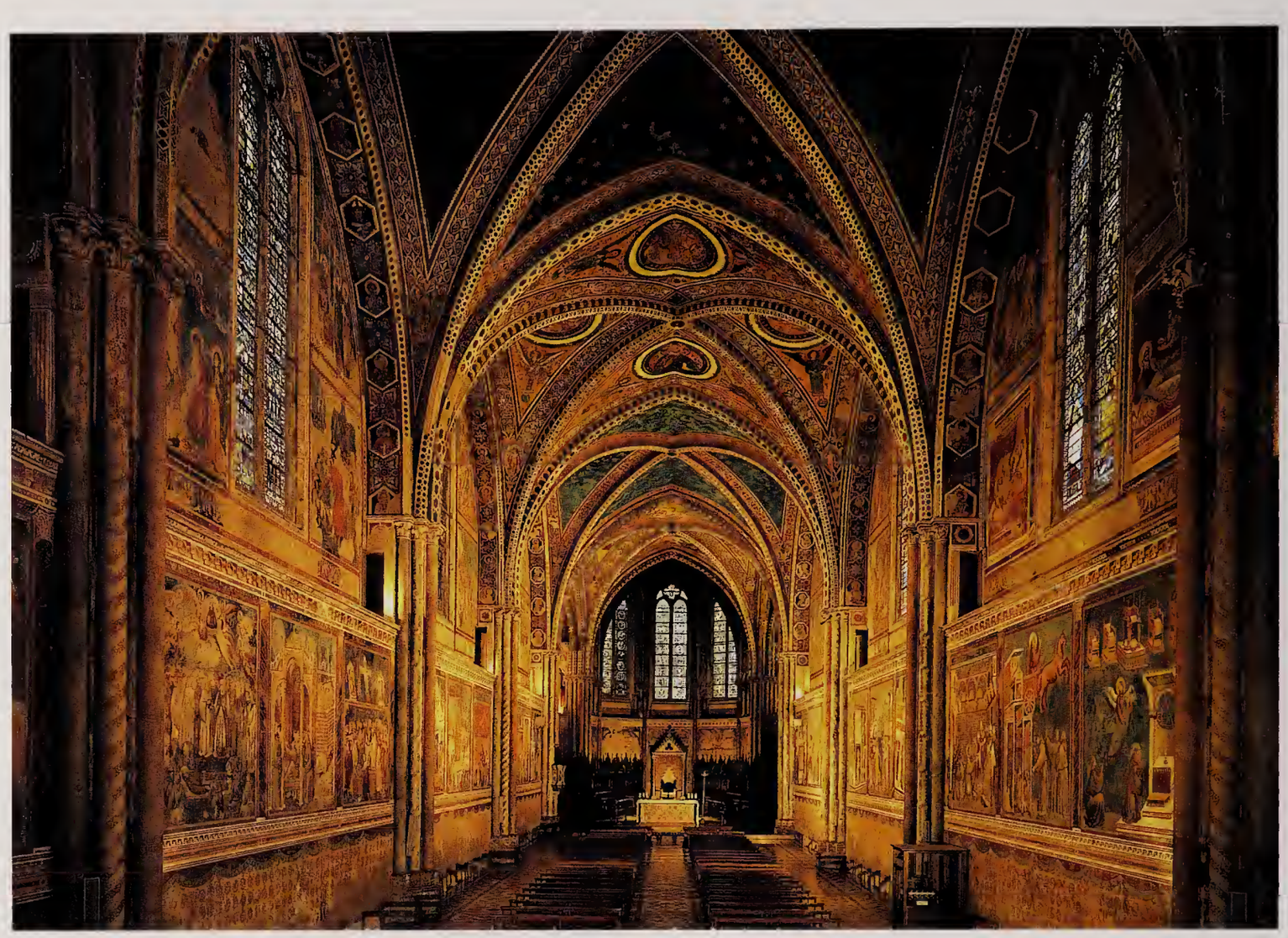
143. Assisi, S. Francesco, 1228–53. Interior of lower church

unbroken and very massive walls, but also the Romanesque relief in which the walls recede from their outside surface to their innermost core, and the predominant emphasis is on frontality. In the interior of the cathedral at *Bamberg*, the shafts supporting the ribs stand on either side of a broad lesene, which looks almost like a pilaster. The lesenes carry the broad transverse arches. The piers present the same form in all four directions, and the arches of the arcade are correspondingly flat and broad, giving a Romanesque effect of being cut into the wall. Thus the whole thickness of the wall separates the nave from the aisles, forming a deep spatial layer between the two. The treatment of the windows, too, is the same. The vaults join the almost unbroken wall similarly to those in the lower storeys of the towers at Chartres, and this is largely true of all the many churches which Richard Hamann correlated in his book.

In the exterior of Bamberg Cathedral, even in the west choir, where the interior is relatively Gothic in style, the forbidding, Romanesque character of the walls, with their friezes of round arches, predominates. Only in the upper storeys of the towers, built in the 1230s and substantially complete by 1237 under the influence of the towers at Laon, does the Gothic style assert itself. The west towers at *Naumburg*, follow Bamberg as their model, but the three very transparent storeys rise abruptly over the compact lower storey [109].[78]

The common factor among all the European schools of architecture at this stage is the fusion of their local styles with Gothic forms. The early churches of the mendicant orders exhibit a third principle, in addition to these two – the principle of simplicity as a visual representation of the asceticism demanded by St Bernard.

Dominicus Guzmán, born about 1170 in Caleruega in Old Castille, studied in Palencia and personally experienced the struggle with the Albigensians at Albi, Toulouse, and other places. This sect fulfilled the demand for asceticism to an exaggerated degree, equating the desire for salvation with suicide after the achievement of complete purification from sin, and it fought the Catholic Church, regarding it as a creation of the devil. As the sect spread from Bulgaria throughout southern Europe and as far as southern France and Spain, the struggle that followed was, for the church, a fight for survival, and it ended with the liquidation of the Albigensians about 1244. To ensure that there could be no revival of the sect, the Church founded the Inquisition. St Dominic evolved his methods for fighting heresies in Spain



144. Assisi, S. Francesco, 1228–53. Interior of upper church, looking west

and Southern France, and subsequently in 1215, in Italy, founded the order of the Dominicans.[78A]

Giovanni Bernadone, born in 1181 in Assisi, was the son of a rich cloth merchant. He was nicknamed Franciscus, the little Frenchman, because his mother, Pica, came from Provence, and from her he learnt not only French, but also a desire for an ascetic life. As a young man he became a soldier, and in 1202 was taken prisoner-of-war in Perugia. After seeing visions he decided to embrace radical poverty, and, together with a few men who shared his ideas, he founded the Franciscan order, which was recognized by the pope in 1209.[78B]

Both Dominic and Francis taught as wandering preachers, in the open air, and in barns, but both also had the privilege of preaching in parish churches and cathedrals. After the death of Francis in 1226, the jealousy and protests of parish priests forced the Franciscans to abandon the idea of absolute poverty, and so, in 1228, they built a monastery with a church at Assisi.

In the church of *S. Francesco* at *Assisi* [142], which stands on the side of a hill, on ground given to the order, the sloping site necessitated the building of a crypt, which is mysterious and dark, with massive walls and a Romanesque apse. The broad ribs form segmental arches and the transverse arches are semicircular, while the transepts have tunnel-vaults [143]. The general layout is usually considered to be 'Lombardo-Umbrian'. But the upper church shows the influence of northern French Gothic, especially the broad nave of Angers cathedral and the Remois passages derived from Champagne [144]. It was decided to build the church at Assisi as a worthy expression of the honour in which St Francis was held by the members of his order, although some of the monks regarded this as a denial of St Francis's ideal of poverty. The first design, begun in 1228, envisaged the present double-storeyed church, but with the nave of the upper church consisting of only three bays, and with no campanile or circular nave buttresses. This was rapidly followed by the present solution, including an extra nave bay, a new entrance bay and portal opening off the south flank of the lower church, circular nave buttresses, and the large campanile. All this, which was at least decided upon by 1239, and probably substantially complete by 1243 (there are mentions of bells in both years), emphasized the south-eastern (principal) approach to the church and monastery. In 1253 Innocent IV consecrated the church.[79] The exterior has more of the characteristics of the traditional Italian

145. Bologna, S. Francesco, begun 1236. Interior looking east

146. Toulouse, Church of the Jacobins. Interior

Romanesque than of the French Gothic style, and the free-standing tower is purely Romanesque in style. The façade of the upper church has a Gothic doorway, a rose-window, and an oculus in the gable, but the simplicity of the horizontal lines is not Gothic, not even in the English sense of the Gothic style, for the lesenes give the façade an essentially Romanesque relief.

At Assisi the wall-surfaces and the frescoes are the predominant factors, and it was found acceptable to combine these with stained glass in the windows [144]. The windows in the apse contain some of the oldest surviving stained glass in Italy, executed by a German atelier probably working in Assisi.[79A]

Among the Franciscan churches which show the influence of the mother church are *S. Chiara* at *Assisi* (built between *c.* 1254 and 1265), S. Francesco at *Perugia* (begun *c.* 1251), and perhaps also S. Francesco at *Viterbo.*[79B]

The Dominicans began a new shrine church for their founder in Bologna from *c.* 1228 onwards, and substantially completed it by 1233. In building at exactly the same time as the earliest work on S. Francesco at Assisi, it was intended to rival the Assisi church, and promote the cult of St Dominic. Built in brick, its plan and elevation followed the precedent of Lombard Cistercian architecture, with a "Bernardine" east end, and round columns supporting domical four-part rib-vaults.[80]

With S. Francesco at Assisi, one of the first churches of a mendicant order to be planned as a Gothic building was that of *S. Francesco* at *Bologna*, begun in 1236 [145]. In the very year in which the nave of Amiens was near completion, this church was designed with sexpartite vaults and no tracery. Admittedly it has pointed arches and flying buttresses, but it also has a predominantly Romanesque façade. All these early churches must not, however, be judged in comparison with Amiens, for, to the citizens of Bologna at this time, their church must have seemed both very modern and very Gothic.[80A]

The church of S. Francesco at *Cortona*, built between 1245 and 1253, represents one of the simplest types of the churches of the mendicant orders. It consists of a long, rectangular hall with a choir flanked by two chapels at the east end. The choir and chapels have rib-vaults, and pointed arches opening on to the nave and the nave has an open timber roof.[81] As one comes into the church through the Gothic doorway, one's eyes move immediately to the Gothic choir; what lies between is purely utilitarian.

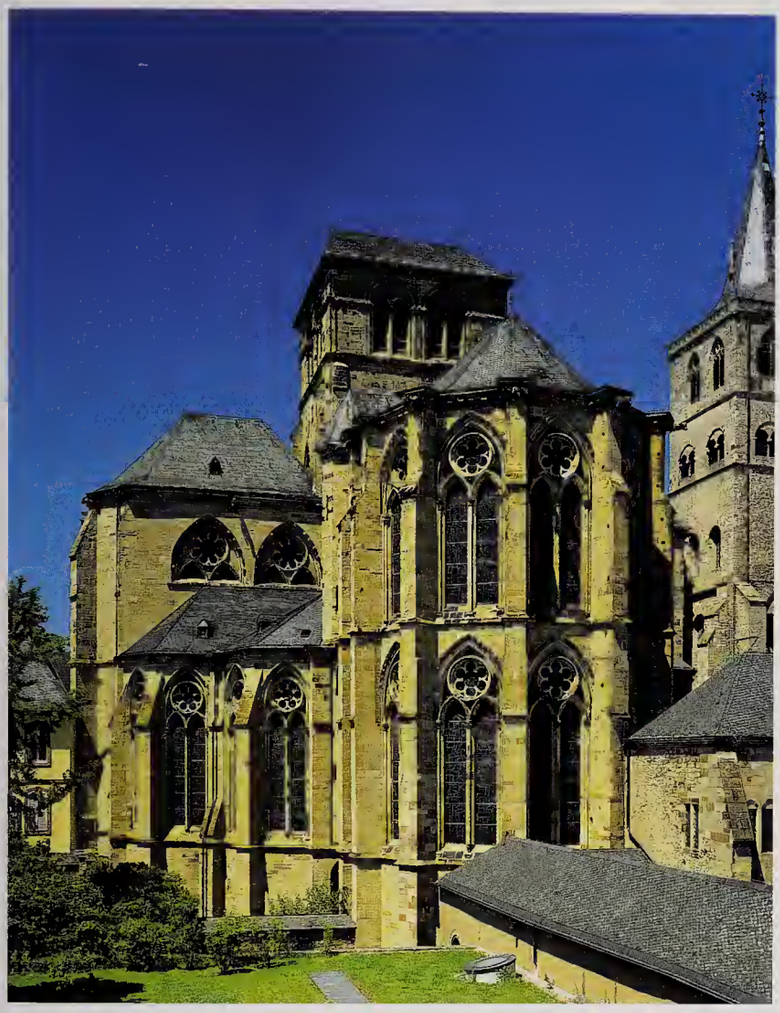
147. Florence, S. Maria Novella, begun after 1246. Interior looking east

148. Marburg, St Elizabeth, 1235–83. Exterior from the south-east

149. Marburg, St Elizabeth. Interior of choir, 1235–*c.* 1243

From the 1220s, the mendicant orders started to build churches in Germany. Of these, that at *Schwäbisch Gmünd* is generally considered to be one of the oldest surviving buildings. The Franciscan church at *Ulm* dates from about 1250.[82]

One of the earliest Dominican churches in France was the one in which Bonaventura taught in *Paris*. It followed the normal design for refectories[83] in that it had a row of piers along its middle axis, i.e. two naves, a choice which can possibly be explained by the fact that it was supposed to be a kind of lecture-hall for students. The Dominican church at *Toulouse*, the Jacobins church, is of the same type [146]. The first church, begun directly after the foundation of the university in 1229, and finished in *c.* 1235, consisted of a simple wooden-roofed rectangular building divided into two unequal aisles by five pillars. Parts of its west wall are retained in the present west façade. Between *c.* 1245 and 1252 this hall was extended eastwards in the form of a large chevet with a crown of eleven chapels separated by interior buttresses. This chevet stood at the same height as the older church, and was covered by a wooden roof, probably supported on diaphragm arches. Between *c.* 1275 and 1292 the eastern bay was given its present "palm" vault, the walls of the choir were raised, and the space divided into two aisles



150. Trier, Liebfrauenkirche, begun *c.* 1227. Exterior from the east

151. Trier, Liebfrauenkirche, begun *c.* 1227. Interior of choir and transepts

by tall centrally placed columns. Under Cardinal Guillaume de Peyre Godin, between 1323 and 1335, the old nave was demolished and replaced by the present structure, its columns matching those in the choir. The colossal building, reminiscent of an enlarged chapter house or monastic refectory, served as the mausoleum of St Thomas Aquinas, as a preaching hall, and as a choir for the friars, (positioned in the north aisle of the nave).[84]

The mendicant orders were free to choose any type of design, and they sometimes adopted that of Cistercian churches, as for instance in *S. Maria Novella* at *Florence*, begun after 1246, where the straight-ended main choir is adjoined by two almost square chapels, half as high as the main choir.[85] The use of pilasters on the piers between the chapels adds a note of classical antiquity to the effect of this otherwise Gothic church, but the pilasters on the piers in the crossing, while they are also classical in form, are Gothic in their proportions [147].

Through the consideration of all these buildings which were touched by the influence of the Gothic style, but which, at the same time, were permeated with local tradition, one can reach an historical judgement of the churches at Marburg and Trier.

The church of St Elizabeth at *Marburg* on the Lahn in Hesse is known to have been begun in 1235 [148, 149]. The east end is trefoiled in plan, as at Noyon, and the nave has the form of a hall-church with two west towers [181]. The church, except for the upper parts of the towers and of the façade, was finally finished in 1283. It is not known whether the nave was originally intended to be built in the form of a hall church, but this was done soon after the completion of the choir and transepts, by *c.* 1244.[85A] The architect drew his inspiration for certain details from Reims and Soissons[86] – not, however, from the cathedral at Soissons, but from the church of Saint-Léger there, now no longer used as a church – and the disposition of the two rows of windows, one over the other, is also taken from this same building.[87] The triforium and the lower row of niches along the walls have been omitted, and tracery like that at Reims has been added. The double row of windows has been explained as a reminiscence of the chapels round French Gothic choirs. The same motif was repeated from about 1244 in the nave. It should probably be interpreted, however, as the expression of the architect's unwillingness to build very high windows, a form that architects did not dare to put into execution until much later.[87A]

The other Gothic church of the generation in Germany,

the *Liebfrauenkirche* at *Trier*, was probably begun around 1227, much was completed by 1253, and it was finished some time before 1283.[88] It is built on a central plan, even more emphatically so than the east part of Marburg; for not only the chancel and the transepts but also the west front is polygonal. Here, too, the windows are in two tiers; in the corners of the transepts, those of the lower tier form the entrances to the pairs of chapels which stand diagonally, as at Braine [127, 150, 151]. The tracery throughout the church is again similar to that at Reims, with sexfoils in the oculi, while at Marburg tracery appears only in the central windows of the choir and of the transepts. In both churches the abaci on the piers and the bases are round, but at Trier the ledge at the sill-line of the windows runs round the shafts, and the free-standing piers have rings round them at the same level, so that the interior seems to be divided by a horizontal plane, and the same feature is repeated at the sill-line of the upper windows. The lower parts of some of these upper windows are covered by the sloping roofs over the chapels, but instead of forming a triforium, they are treated as blind forms. The architect of Trier either was not acquainted with the new parts of Saint-Denis, which had been begun in 1231, or he preferred his own solution.[88A]

Both at Trier and at Marburg, the articulation of the exterior is a clear and logical product of the form of the interior. In both churches flying buttresses were unnecessary, and the combination of the buttresses and the windows between is treated according to the principle of Gothic relief. Both churches employ French Gothic elements, but they are used in the service of completely different types of building. The decisive characteristic of both is their originality; the freshness of their details and the beauty of their whole form are evidence that their architects had been deeply imbued with the spirit of the Gothic style. The fact that when they were built they were not in line with the style reached at Amiens and in the new parts of Saint-Denis must, of course, influence one's judgement of them in terms of the history of style, but an architect can be old-fashioned and still create something of eternal value.

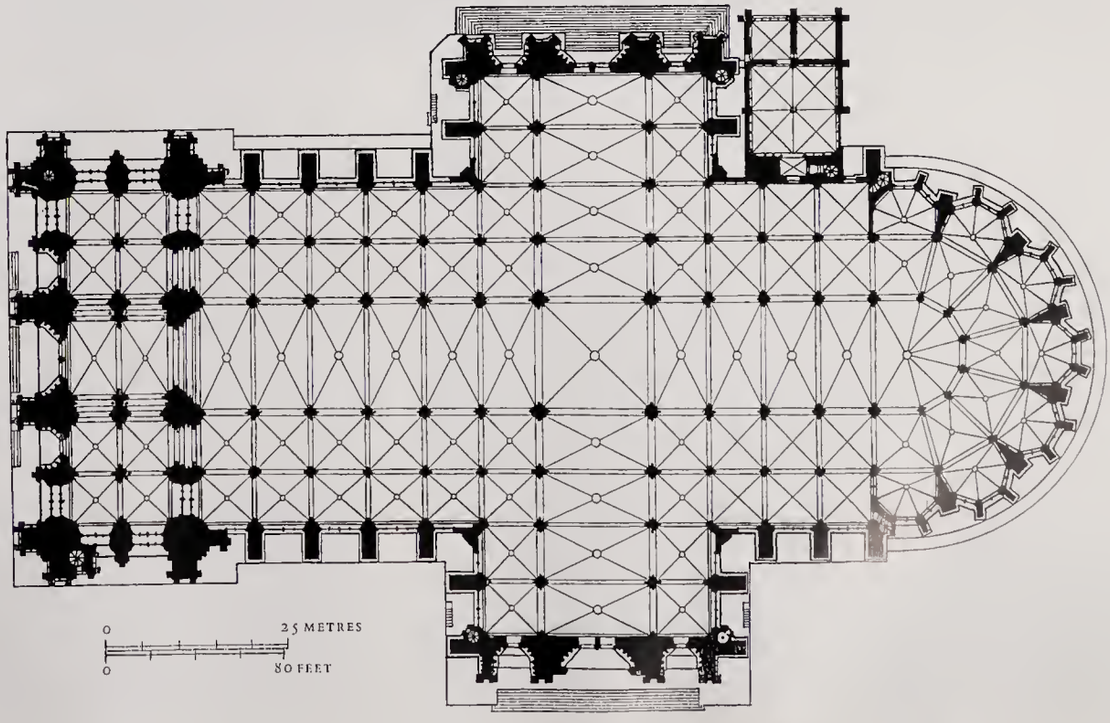
Although the Gothic style was transported beyond France by travelling French architects (e.g. William of Sens) there are few surviving records which name such architects. The 'lodge-book' of Villard de Honnecourt, dating to the 1220s or 1230s, has survived; and we know that Villard, besides visiting Reims, Laon and Lausanne, also went to Hungary.[89] But it is not certain if he was an architect or simply a gifted amateur with a keen interest in architecture.[89A]

8. REGULARITY OF STRUCTURE. PIERS WITH GROOVES. TRIRADIALS

Whereas originality distinguishes the architects of Marburg and Trier, it was to the credit of Gerhard, the architect of the cathedral at Cologne, that he continued the French trend of stylistic development with genuine understanding [152–4].

The Carolingian cathedral at *Cologne*, which was in a state of collapse, was burnt down on 26 April 1248, and, as soon as 15 August of the same year, the foundation-stone of the new cathedral was laid. The new plans can hardly have been finished in three and a half months, but Gerhard must have collected enough material in his notes made at Amiens, Notre-Dame in Paris, Beauvais, and Saint-Denis to be able to give his first instructions by the time that the foundation-stone was laid.[89B] The choir was consecrated in 1322, and, although some of the details of the original plan were altered during the construction of the later parts, it remained basically unchanged until the building of the west façade, when it was radically altered.[90]

Gerhard was familiar with the design for the choir at Amiens, where Thomas de Cormont had completed the nave clerestory, the choir aisle vaults and windows and the



152. Cologne Cathedral, begun 1248. Interior of choir

153. Cologne Cathedral, begun 1248. Plan

154. Cologne Cathedral, begun 1248. Exterior of choir

ambulatory and the radiating chapels, probably by *c.* 1240. Sometime before 1258 (probably in the mid-1240s) work had begun on the upper parts of the transepts and choir, which were completed by 1269.[90A] The earliest phases of work on the Cologne choir overlap with the Amiens construction, and are dependent for many of their details on it. At Gerhard's death in *c.* 1260 the ambulatory and radiating chapels were substantially complete; two of them were finished by 1261. Under Gerhard's successor Master Arnold (active *c.* 1261–*c.* 1299) the sacristy was built, and the whole lower storey of the choir completed by *c.* 1265. By *c.* 1300 the upper choir and buttressing was finished, and the choir clerestory glazed in 1310. Arnold's son and successor, Master Johannes, worked under his father in the lodge, and replaced him *c.* 1300, at the level of the choir clerestory. The complexity of the blind tracery over the buttresses, and particularly in the gables over the exterior of the choir clerestory, is a new departure. The gable tracery consists of triradial figures[91] in the form of an inverted letter Y with all the arms the same length. This motif in particular, and the complexity of the tracery in general, reflects a new influence from the west front of Strasbourg.[92]

Just as the introduction of this motif made exteriors more Gothic, because through it tracery conquered new fields, so in interiors the introduction of hollows between shafts is an extension of the Gothic principle of fusion to include the form of piers. At Amiens the addition of the four main shafts leaves the round piers fully visible, but at Cologne the architect has taken the step of dissimulating the form of the piers by cutting channels into them. These give a visual effect of shadowy grooves and soft transitions. Here the space within the church seems to enter the solids of the piers, whereas previously these solids had protruded into the space within the church, in accordance with the principle of the Romanesque. Now the fluidity of the upward movement seems due to the shafts only.[92A] At Amiens

155. Altenberg, Cistercian church, begun 1259. Exterior from the south-east

156. Altenberg, Cistercian church, begun 1259. Interior

Regnault de Cormont built gables over the windows of the glazed triforium; at Cologne the stream of forces rises from the floor to the vault without these interruptions, as it does also at Beauvais. The arrangement of statues on corbels in the choir at Cologne is modelled on that in the Sainte-Chapelle, but this horizontal belt of figures standing against the spatial limits of the interior does not inhibit the upward stream.[92B] At Amiens, the architect had begun to pierce even the spandrels in the triforium,[93] and at Cologne this innovation is adopted and also repeated in the interior.

The question as to how many of the forms in the upper storeys, especially those outside, were re-designed by Gerhard's successors has been dealt with in monographs. The addition of blind tracery to the buttresses serves to increase the sense of upward movement and of lightness, although the buttresses are relatively heavy.[93A] Even on the chapels, the tabernacles reduce the strength of the horizontal eaves-line and they, and the upper ends of the piers, combine to produce a rich stream of forces, reminding one of plants being drawn upwards by the sun. This impression is confusing to eyes unaccustomed to Gothic architecture, and may lead one to use the time-worn simile of the forest.

Forests, however, do not grow in the inexorably regular forms of the cathedral at Cologne. Gerhard outdid the architect of Amiens in regularity – a fact that should be verified by all who are not satisfied with mere impressions. The regularity and the normative quality of the cathedral at Cologne lie not only in the perfect mutual compatibility of the axes of all the spatial parts and of the thicknesses of the piers and their members, but even in the convincing clarity of every single one of the spatial parts. Gerhard is supposed to have designed the choir at *Mönchen-Gladbach*, built

157. Coutances Cathedral. Capital in ambulatory, *c.* 1220–38

between 1256 and 1275. It is similar in type to the chapels at the east end of the cathedral at Cologne, but two bays longer, and it has shafts and a rib-vault inside, and buttresses, frontal pinnacles, and large expanses of wall outside: in other words it uses a greatly reduced number of individual members, but those which are used are slender and noble, achieving the ultimate degree of poise.[94]

The design for the Cistercian church at *Altenberg* has also been attributed to Gerhard [155, 156]. In spite of the fact that the building of this church took from 1259 to 1379, the original plan was followed throughout. As in some places in the cathedral at Cologne, the bases are round, but here the piers, too, are round, with thin, octagonal abaci, standing diagonally, so that one corner lies on the division between the bays. If this design has been rightly attributed to Gerhard, one must conclude that he never felt himself bound to any absolute architectural types, but certainly to norms.[95]

The concept of the norm can be defined as a unique case. One can quote the square, which represents a unique phenomenon among quadrangles, to explain this definition. A square can be of various sizes, and can occupy various positions within the universe, but its shape represents the only possible absolutely regular quadrangle. In dealing with an organism as complicated as the Gothic choir with ambulatories, one can only understand the concept of the norm by analogy with an example such as the square. At Reims and at Amiens one can feel the tendency towards a norm; but, viewed theoretically, they are single cases among many possible variants, just as every rectangle or every trazpezium is a single case among the many variants of its geometrical type: *Cologne* however gives the impression of being *the* Gothic choir, *the* final solution.

Aesthetically, regularity always creates a feeling of coolness, and the cathedral at Cologne has been criticized as being monotonous, cold, and too academic. The rational Frenchmen criticized it for its excessive rationalism, while it was this very rationalism which the irrational Germans praised in it. Was Gerhard a German? The fact that his wife was called Guda perhaps proves that she was German, but tells us nothing of the nationality of her husband. It would, of course, suit the nationalists to say that his mother was French. However, the most understanding appreciation of his work is that of Jakob Burckhardt, who said of the cathedral that it is 'the peerless manifestation of a great and heavenly genius'.[95A] In his work, the spirit of God embraces what is cold and what is warm, what is German and what is French, what is dead and what is living. But this cathedral is not dead; it is solemn, festive, and sublime, *fascinans* and *tremendum* at the same time, as clear as mathematics and as irrational as life itself.[95B]

158. Utrecht Cathedral. Interior of choir, begun after 1253

Although it is impossible to deduce the biological ancestors of an architect from his work, it is quite possible to recognize his spiritual ancestors from it. The relationship of the cathedral at Cologne with French works can be seen very clearly if one compares it with the eathedral of *León* in Spain, begun soon after 1254, and with the Angel Choir at *Lincoln*, built between 1256 and 1280. The Lincoln choir is truly English in its horizontalism, in the Norman gallery and the Norman wall-passage along the windows, in the splendour of its capitals and corbels, and in its star-vaults. León, on the other hand, is not specifically Spanish; it stands about as close to the French High Gothic as Cologne. Even the Angel Choir at Lincoln contains certain French elements, for instance the tracery in the east window, but the overall English character predominates, whereas one can see little that is specifically Spanish or German in character at León and Cologne respectively, because, in these two countries, the Gothic style had not yet created any tradition of its own. One can, of course, turn back to the national characteristics of Spanish and German Romanesque churches, but this nationalist search leads into uncharted territory; for national characteristics change, and, because of the unpredictability of individual personalities, a common denominator can rarely be found.

In Normandy, from *c.* 1220 to *c.* 1238 the choir of *Coutances* was built. It is an instructive contrast to the 'normative' qualitites of Cologne.[96] Compared with Cologne, many, or perhaps even all, of the details in this choir are old-fashioned, but its unusual and imaginative features, such as the staircases which have been inserted in the upper part of the inner ambulatory like oriels and the corbels sticking to the shafts of slender columns which support the ribs, make it uncommonly attractive [157]. It can be said that, if corbels on shafts can be allowed to support figures, as in the Sainte-Chapelle and at Cologne, they can also support ribs, but there is a subtle difference. Both this form and the staircases in their oriels at Coutances are extremely imaginative examples of akyrism. One can best appreciate this choir, with its double ambulatory, if one sees it as a foil to the strict spirituality of the choir at Cologne. Both are the fulfilment of certain human desires, and both widen the range of our sympathetic emotions, for akyrism and the norm are two equally valid alternatives.

The choir of the cathedral at *Utrecht* in Holland, too, is dependent on Cologne, though both the exterior with its simpler flying buttresses[97] and the interior with its unglazed triforium are less ambitious [158]. Only the ambulatory and radiating chapels date perhaps from 1254 (the year the construction is supposed to have begun) to *c.* 1300. The lower storey of the main choir, and its aisles and chapels, was probably begun in the first decade of the fourteenth century, and was complete by *c.* 1360. It has an arcade with no capitals but otherwise remains fairly faithful to what was begun in 1254 – fairly close to the norm. Compared with the choir at Cologne, the proportions have less élan. The absence of a choir-screen, while it stresses the Gothic idea of the interrelationship between the chancel and the choir aisles, at the same time makes the choir itself more sober, which suggests that originally such a screen may have been intended.[97A]

9. THE SHARPENING OF PROFILES. PIERS WITHOUT CAPITALS. THE OGEE CURVE

Work was begun on the upper parts of the choir and east transept walls at *Amiens* in the mid- to later 1240s [90], but the new generation of architects accepted the original design only where this was necessary to maintain a unity with the nave. The most noticeable changes are the introduction of a glazed triforium with gables (which could be called akyristic) in the interior, and the form of the flying buttresses, which have rows of tracery standing between their lower arches and their straight upper slopes. The other differences demand careful study. Durand has made such a study, and adds the criticism that the principles of the Gothic style had here been carried to the point of exaggeration and that the development of technical knowledge (*'science'*) had stifled artistic sensibility. He writes: 'C'est presque le commencement de la décadence.'[98] Many critics have repeated this

159. Troyes, Saint-Urbain. Interior of choir and transept, begun 1262

judgement, and continue to do so, even to the extent of omitting his careful 'presque', but if this were true, then it would have been better had all the Gothic architects who worked from 1260 until well into the sixteenth century never lived at all.

These architects did not exaggerate the expression of the principles of the Gothic style: they merely developed it. They criticized the excessive volume of supports; they made profiles finer; they allowed concave channels to penetrate more successfully into solid masses; and they made pear-shaped members form sharp dividing lines among the soft transitions of light and shade. The dissolution of the wall had finally been achieved; the aim was now also to dissolve the solidity of piers, tracery, arches, arcades, and vaults. In this connexion it is characteristic that the mullions of the tracery in the choir at Amiens have, in their section, the double curve which had already appeared at Saint-Nicaise at Reims.[99]

This task of making the members sharper and more slender was taken up most energetically by the architect who in 1262 began building the choir of *Saint-Urbain* at *Troyes* [159, 160].[100] Although it has no ambulatory, and the windows could therefore be extended downwards, rather like those at Toul, their lower part is treated as a glazed triforium, forming a real spatial layer which, outside, projects beyond the surface of the windows. Outside, this triforium, treated like a grille, has steeply pitched gables which end at the line of the parapet of the upper gallery. From inside, the tracery of the glazed outside triforium openings can be seen through the open tracery of the inner ones. The spandrels of the tracery inside are pierced, and the surfaces beside the gables, like those beside the gables of the upper windows, are dissolved into tracery. The slenderness of all the members makes them appear to be made of metal. In the single bay of the choir which is half open to the choir aisles, the eastern half of

160. Troyes, Saint-Urbain. Exterior of choir and transept, begun 1262

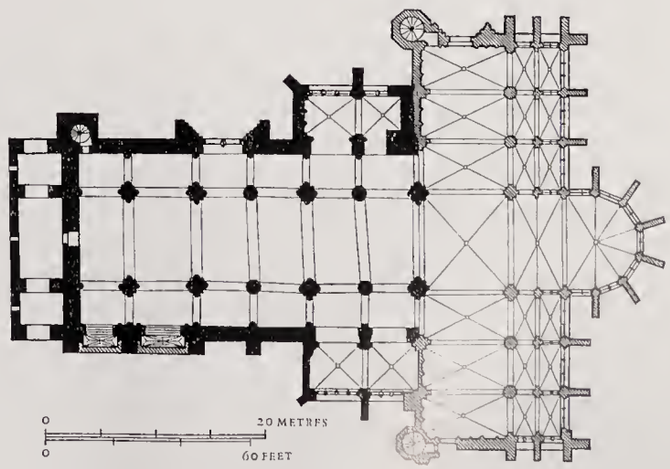
161. Carcassonne, St Nazaire. Interior; nave begun *c.* 1096, choir begun *c.* 1280

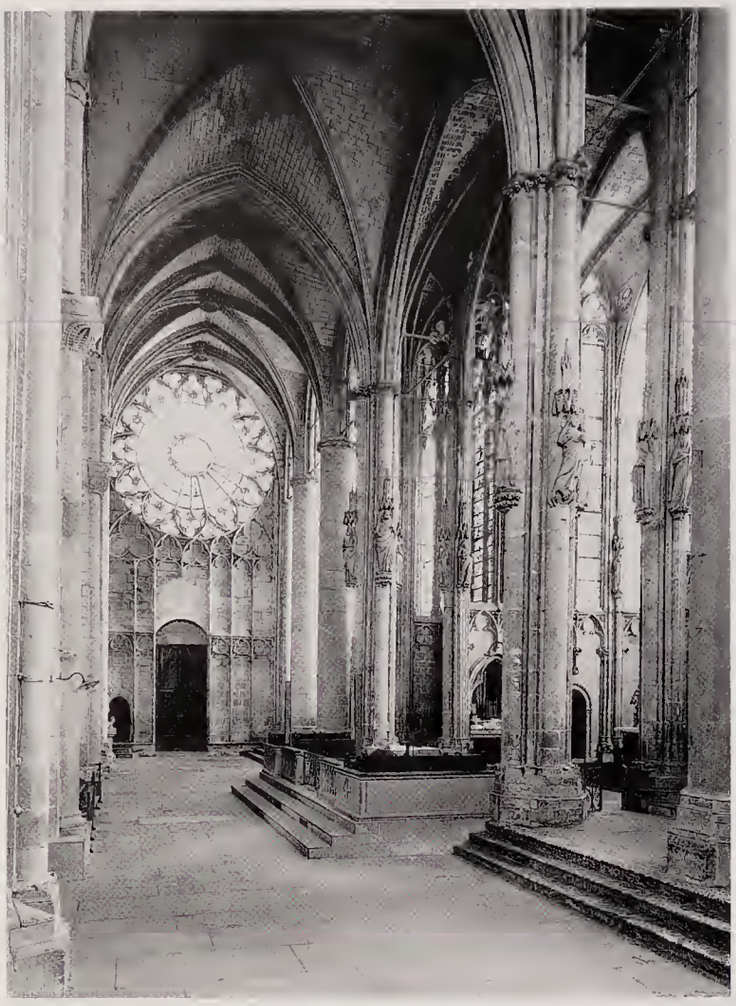
162. Carcassonne, St Nazaire, nave begun *c.* 1096, choir begun *c.* 1280. Plan

each of the two arches is lightened by blind tracery and the western half by open tracery.[101]

On the piers of the arcades between the chancel and the aisles, the shafts in the first bay beyond the crossing have capitals, while the piers have none, rising uninterrupted and penetrating the concave channel in the profile of the arcade. This is repeated in the eastern transverse arch of the crossing and in the other three arches of the crossing. Although the line of the springing of the arches, in spite of the partial deletion, remains quite clear here, its force has been devalued.

Each of the transept façades contains two windows, and a porch stands in front of them [160]. The buttresses supporting the vaults of the porches stand several yards clear of the walls – a feature reminiscent of the flying buttresses which were added to the chapter house at Lincoln. At Troyes, however, they were part of the original plan. A 'Johannes Anglicus' is referred to in 1267 as 'magister fab-





163. Carcassonne, Saint-Nazaire. North transept and choir, *c.* 1280–*c.* 1310

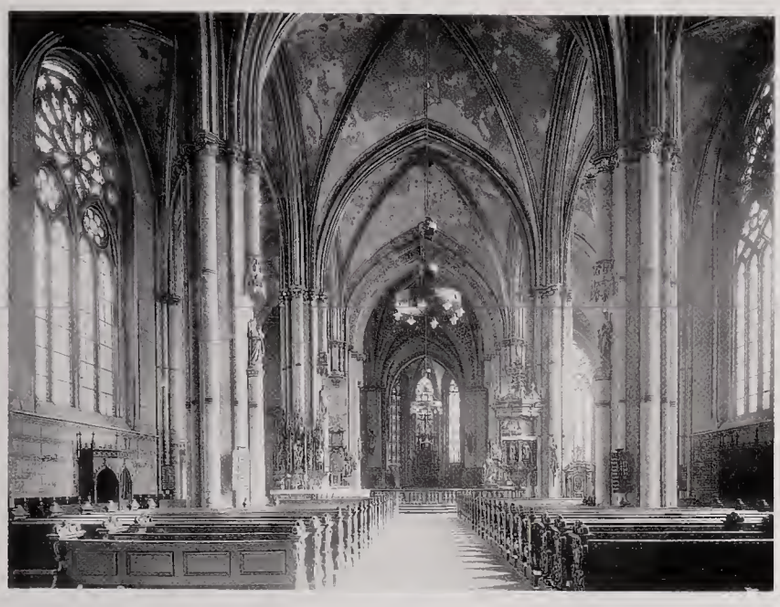
164. Sées Cathedral. Interior of choir, begun in the 1270s

rice', which could mean that he was either the architect or a professional coordinator and controller of the work – probably the latter, for the church shows no sign of English influence, though it was to make a considerable impact on English architecture in the late thirteenth century.[102] Certainly the architects of the Parisian school were among his spiritual ancestors. In any case this architect far surpassed the architect of Amiens and the German architect (supposing that he was German) of Cologne, and it would be quite wrong to call his work decadent.

The choir of Saint-Nazaire at *Carcassonne* [162, 163], begun around 1300, is in some ways similar to Saint-Urbain, but some of its details and profiles are both later and more highly developed than those at Troyes.[103] The connexion between the short choir and the adjoining chapels, and the similar openings between the other chapels, are variations of the form used at Troyes, producing an aisle to the transepts. Since the transepts are the same height as the chapels, the result is an almost transparent hall in which every spatial part is a fragment of the whole,[104] and this tendency to join all the spatial parts can be seen also in the fact that even the vertical parts of the cells are pierced. The piers continue above the abaci as at Troyes. The transepts and the choir at Saint-Nazaire form a surprising contrast to the dark nave with its tunnel-vault, begun about 1096, and the splendid tracery of the rose-windows in the transepts, too, is amazingly progressive [163]. Here the spandrels between the rose-windows and the pointed arches framing them already contain the Late Gothic form of the 'mouchette'. In several places the spherical triangle also plays an important role in the tracery. Outside, the almost flat roof seems to be a negation of the completely vertical stress of the windows and the buttresses, and there are no gables.

The desire to make the structural members more slender was also a main preoccupation of the architect of *Sées* about 1270 [164]. Here the arches of the arcade are crowned by gables. From their apexes shafts rise into the triforium and on into the windows of the clerestory, where the central mullions pass through the oculi of the tracery. This detail is similar to that of the shafts in the older nave which cross the sunken oculi, thereby assigning the two halves of each oculus to two different bays.[105] In the windows there are two strata, one in front of the other, as in the triforium of Saint-Urbain at Troyes. In the choir the inner one is glazed and the outer one open, while in the nave this is reversed.

This enthusiasm for tracery was taken up in the nave at *Minden* in Westphalia, in building in the 1250s and 1260s [165, 166]. The extreme transparency of this hall-church with round piers makes the tracery in the aisle windows the strongest focal point for the eye. The pointed arches in some of these windows are filled with fragmentary roses into which the lights below grow organically upwards. This trac-



167 Regensburg Cathedral. Exterior of the choir from the south. Begun 1273

165. Minden Cathedral. Interior of the nave, begun 1250s

166. Minden Cathedral. Exterior from the north, begun 1250s

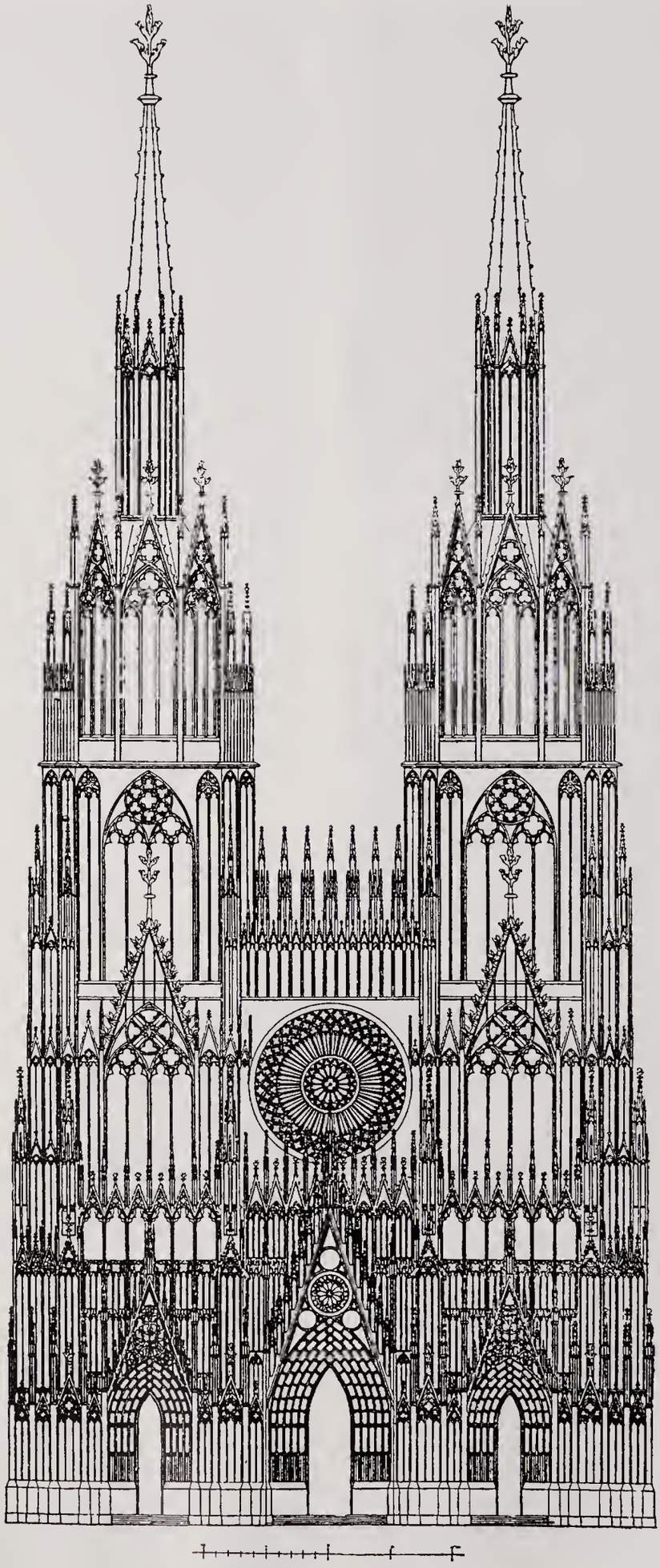
ery is also the determining factor in the appearance of the exterior.[106]

Just as the cathedral at Cologne was bound up with stylistic developments in France, so was the cathedral at *Regensburg*, begun after a fire of 1273 [167]. It is true that the plan, with its three parallel choirs, was traditionally Bavarian, but the same cannot be said of the elevation, which in the choir may rely on such 'apside vitrée' as Saint-Urbain at Troyes or Saint-Sulpice-de-Favières.'[107] In this case it is known that the personal connexion which may have caused this influence was a meeting at the Council of Lyons in 1274 between Leo of Tundorf, Bishop of Regensburg, and Cardinal Ancher, who was the patron of Saint-Urbain.

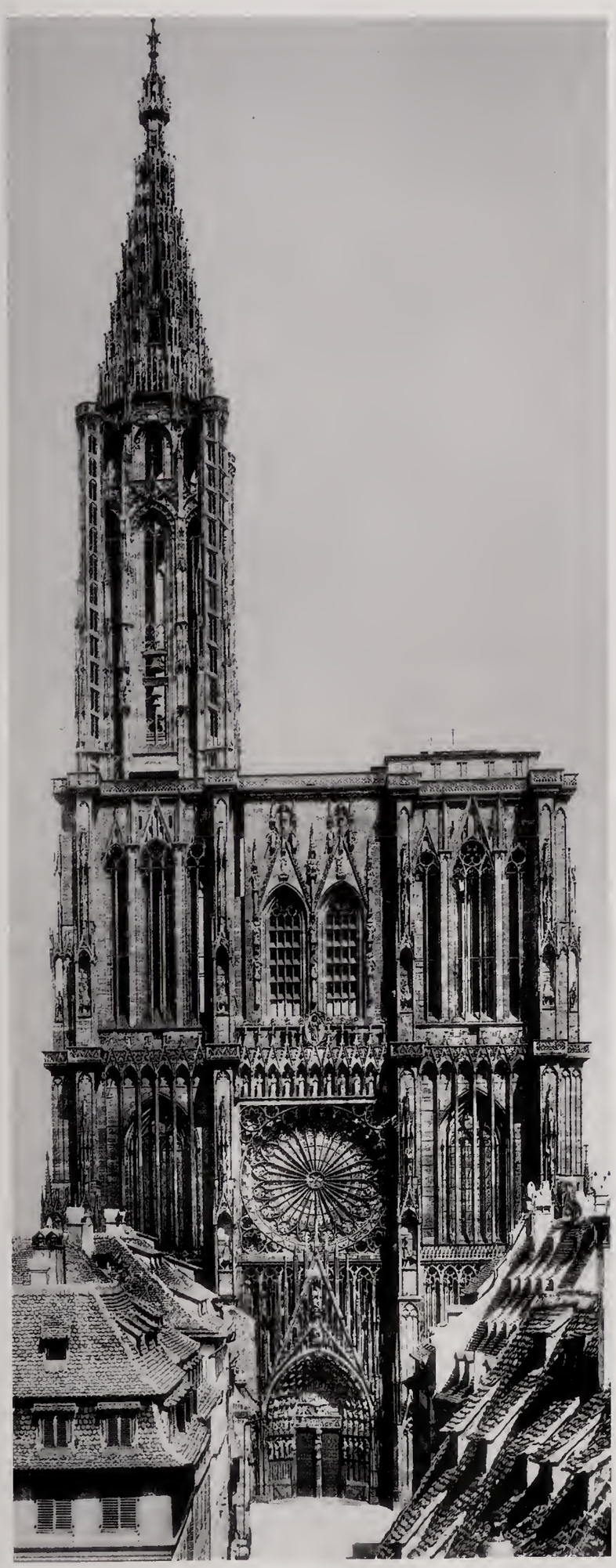
The difficulty of applying the concept of the norm to the Gothic style is shown by a comparison between Cologne and Troyes. At Cologne the norm applies to the regularity achieved within the fertile architectural type of the choir with a double ambulatory, while at Troyes it refers to the extreme slenderness of all the supporting members in a building of a spatially simplified type.

As the cathedral at Regensburg may follows the design of Troyes, so the cathedral at *Clermont-Ferrand* stands side by side with that of Cologne (see above, p. 136). Since this church was begun by Jean Deschamps in about 1248, that is in the same year as Cologne, it must be regarded as an independent piece of work based on the same premises. In 1272 the foundation stone was laid for the choir of *Narbonne* cathedral, though its design, and work on its foundations, had probably begun a year or so earlier.[107A] In 1273 the choir of *Limoges* cathedral was officially founded, though again preliminary work may have stated *c.* 1270.[107B] The new choir of *Toulouse* cathedral was begun in 1274–75 as a direct response to Narbonne,[107C] while from 1276/7 onwards Narbonne masons, aware also of the latest developments at Toulouse, began the choir of *Rodez* cathedral.[107D] The principal designs of these four cathedrals have been attributed to Jean Deschamps, though he seems to have had influence only on the planning of the choirs of Clermont-Ferrand and Limoges.[107E] All these works are very close to what we have called the Gothic norm, and the original parts of Limoges, especially, are convincing variations of the most correct Gothic style. The increasingly slender shafts, the continuation of piers above the line of the springing, as at Carcassonne, and the appearance of a ridge-rib at Narbonne all show that this generation did not have an academic approach to the concept of the norm.

For this reason it is wrong to call the phase with which we are dealing 'doctrinaire Gothic'; indeed the term itself is a



168. Strasbourg Cathedral. Plan B, 1275–7, redrawing of the original plan by Dehio-Bezold



sign of academic prejudice. A doctrine is a series of rules drawn up for instructional purposes, but the word doctrinaire suggests a narrow-minded and pedantic interdict against deviation from a set of rules. What Gerhard and his contemporaries both sought and found was not a set of petty rules imposed by pedantic schoolmasters, but an ideal – the perfect realization of a dream.[108]

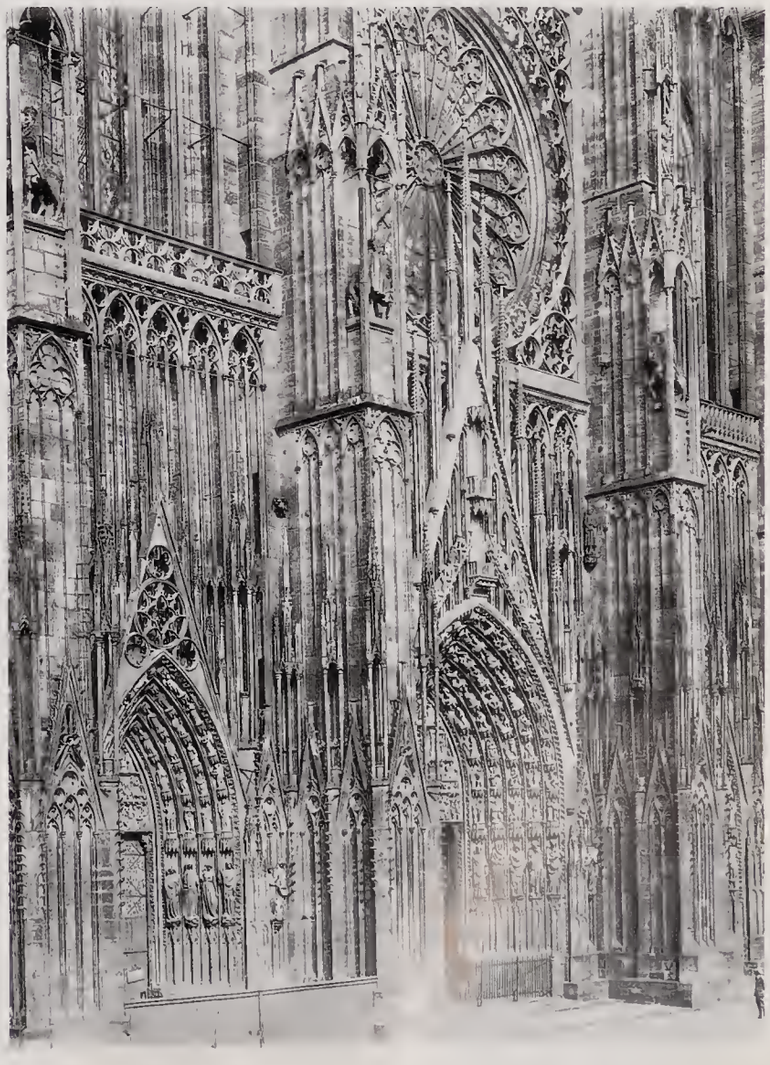
10. AUTONOMOUS TRACERY

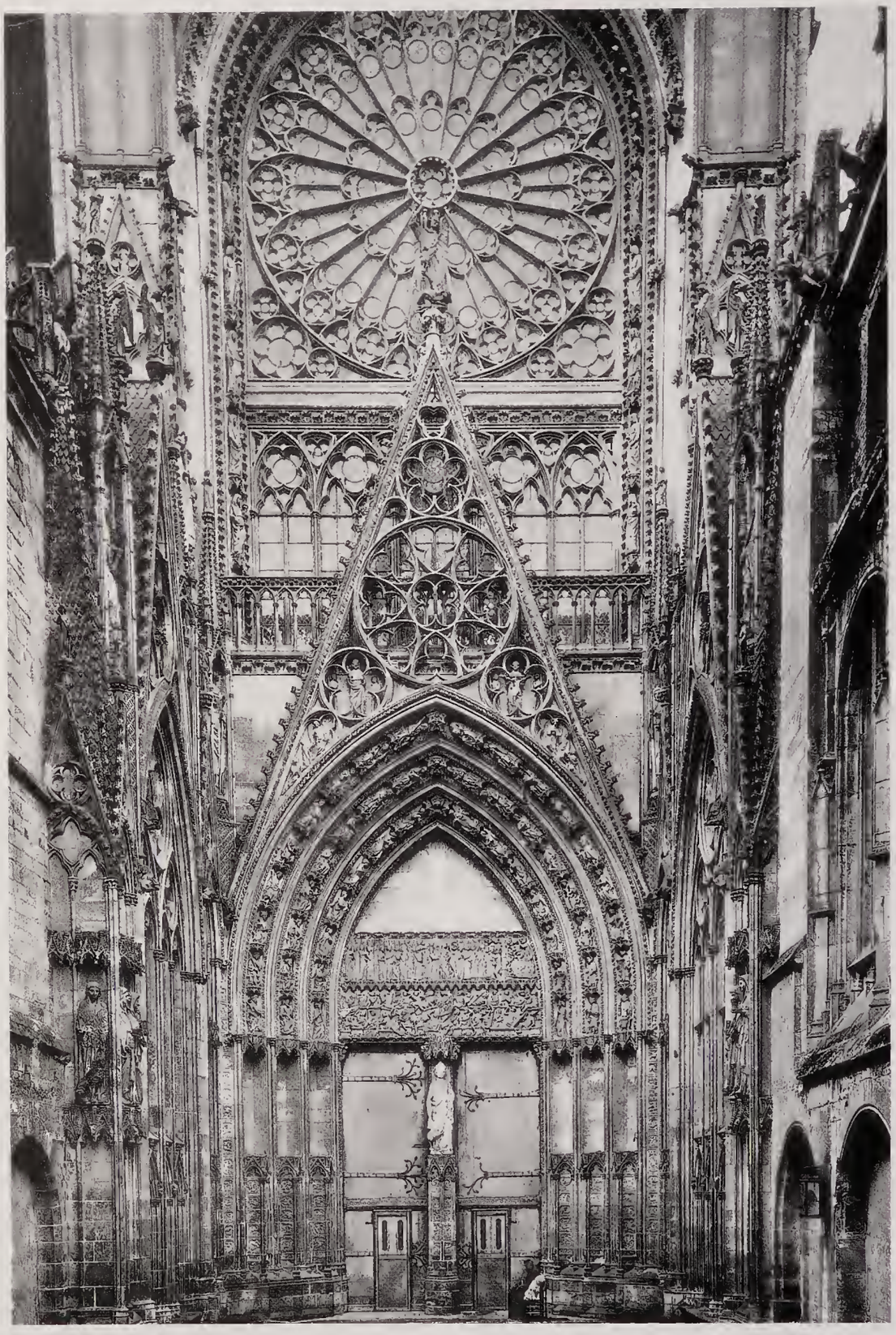
There was an inscription in the cathedral at *Strasbourg* which stated that Erwin von Steinbach began the west façade in 1277, and, while the inscription has not been preserved, there is reliable proof of its former existence. Erwin is first named in 1284, and the year of his death, 1318, is recorded on his tombstone.[109]

An early design for the façade may have been made by one of Erwin's predecessors. The so-called Plan A, now in the Musée de l'Œuvre at Strasbourg, may be a copy of this (now lost) design. It is reminiscent in some details of Saint-

169. Strasbourg Cathedral. West front, begun 1277, rose window finished *c.* 1318, second storey of towers complete by 1365, belfry between them planned *c.* 1360/5, executed 1380, octagon of steeple 1399–1419, spire 1419–39

170. Strasbourg Cathedral. Detail of the lower stories of the West front





171. Rouen Cathedral. Portail des Libraires, begun 1280

Nicaise at Reims, and more closely of the north and south transept façades of Notre-Dame in Paris. It dates to the 1250s.[109A]

According to Reinhard Liess, a later design, Plan B, was made by Erwin [168]. He built tracery about two feet in front of the façade, transferring to the façade the principle of the two layers which had been developed in wall-passages [169, 170]. If in imagination one removes the front layer and considers only the façade behind – hardly a feasible experiment, admittedly – one can see that Erwin knew Laon and both the cathedral and Saint-Nicaise at Reims, but he took the vertical fusion between the different storeys a stage further. This is especially true of the middle gallery, which does not extend horizontally to include the breadth of the towers. It is possible that this solution was suggested to Erwin by the free-standing gallery between the towers at Notre-Dame in Paris, which was built *c.* 1235–40, and by the general impression of Saint-Urbain. Throughout the façade, the zigzag lines of the rows of gables outweigh the effect of the horizontal lines. The emphasis on vertical lines combines

172. Regensburg, Dominican church, begun *c.* 1240. Interior

with the separation of the whole front surface to give the impression that this thin structural layer stands by its own strength. Its abstract geometrical pattern makes it appear autonomous, independent of physical aims and considerations, imbuing the church with its immaterial spirit [169].[111]

Plan B has been called 'the most beautiful thing that was ever devised in the Gothic style anywhere in the world' (Dehio) [168]. It is natural to mourn the fact that its boldness, verticality and spirit of extravagance and fantasy was modified by Master Erwin in the portal zones, and rejected in the upper stories. Erwin revised it in Plans C(?) and D probably for economic as well as stylistic reasons.[111A] The upward stream of forces was moderated; the vertical stone rods, which stand in a free rhythm, express a belief in the independence of imaginative creation. The changes made by succeeding generations are harder to understand,[112] but the deliberate decreasing of solid masses was already predominant in the storey occupied by the doorways, where the pinnacles which shoot up over the gables above the three doorways are thin to the point of fragility, and the slender tabernacles are far longer than the figures which stand in them [170]. It should be considered whether the so-called Perpendicular, beginning in St Stephen's Chapel in London in 1292, was derived from the façade of Strasbourg Cathedral.[112A]

The façade of the north transept of the cathedral at *Rouen*, the Portail des Libraires, was begun in 1280 [171], and was thus a few years later than the façade at Strasbourg. At the same time the lower parts of the façade of the south transept, the Portail de la Calende, were begun. Most of the charm of the north façade lies in the fact that the front walls of the canons' quarters facing the courtyard and to the north of the cathedral join the façade and have on them blind architectural members which continue the design of the doorway. Thus this façade is drawn into a unity with the world outside differently from that at Strasbourg; here the interior seems to reach out on to the exterior. The south façade, where this is not the case, shows that, even without the unique projection into the courtyard which appears in the Portail des Libraires, tracery had already become an autonomous substitute for the wall.[113]

The doorways of the north transept of the cathedral at *Bordeaux*[114] and the right-hand doorway in the west façade at *Mantes* follow the general lines of the doorways at Rouen, and the doorway of the *Liebfrauenkirche* at *Mainz*, which was pulled down in 1809, also belonged to the same group.[115] The form of the gable over the Portail de la Calende is repeated at Mantes, but here it is pierced by a spherical triangle surrounded by three quatrefoils.

The Lady Chapel which was added to the east end of the cathedral at *Rouen* from 1302 has pierced gables rising high above the eaves-line, but it is otherwise extremely conserva-

173. Florence, S. Croce, begun 1294/5. Interior

174. Freiburg im Breisgau, Franciscan church, begun *c.* 1262

tive, a copy of the *Sainte-Chapelle* at *Saint-Germer*, which was built between 1259 and 1267.[115A] The unknown architect of the Lady Chapel at Rouen was a contemporary of Erwin. Thus in every age there are both progressive spirits and those who are content with the heritage received from their fathers.

II. THE GOTHIC WALL

In spite of the many different spatial types and structural members used in them, the churches of the mendicant orders still form a single group. St Bernard's sermons were directed mainly at the monks of his own order, whereas St Francis and St Dominic preached to the people. The older orders felt that, thanks to their religious life, they were aristocrats, whereas the friars professed themselves to be of the lowest class, servants of all the people, the rich and the poor, the strong and the weak, the healthy and the infirm, the educated and the ignorant. They needed large meeting-places where the people could crowd round the preacher, not show-places, but purely utilitarian buildings. They were to be churches, but churches quite unlike the cathedrals, and even at their finest and most elegant they retain these secular, unassuming, and everyday characteristics. In the development of the metaphysical attitude, this absorption of the individual into the universe, this recognition of him as a mere part of a greater scheme of things was specifically Gothic, if one applies the architectural, stylistic term to the civilization as a whole. If, then, the spiritual attitude of the friars was more Gothic than that of the bishops and princes, one would expect their churches also to be more Gothic than the cathedrals and the churches of the older orders. Yet, on the contrary, their most obvious quality is a so-called reduction (*Reduktionsgotik*) which, though it is a specifically Franciscan and Dominican expression of the principle of asceticism, is not specifically Gothic. This principle of reduction even led to the building of churches with flat ceilings and, where rib-vaults already existed, to the preservation of large expanses of wall-surface. One need only consider the glazed triforium in the church of Saint-Urbain at Troyes to realize why the friars not only built no glazed triforia, but in fact no triforia at all. Are these walls therefore Early Christian or Romanesque in style, or are they Gothic?

Between 1248 and 1260, the *Franciscans* built the choir of their church at *Cologne* with long windows with tracery, reaching far down and dominating the whole interior. These in themselves are sufficient to make a church Gothic. Verbeek's post-war examinations of the church, which had been badly damaged by bombing, revealed traces in the northern junction between the choir and the nave of what he thought to be an intended hall nave. More recently, however, Schenkluhn has shown these traces to be evidence of the intention to build a basilican nave, but to separate it from the choir by a non-projecting transept. In the event, the transept idea was abandoned and the present basilican nave, completed probably in its essentials between 1275–97, was built directly against the western pillars of the choir.[116] The sloping roofs over the aisles force the sills of the windows in the nave up above the line of the springing of the vault, and the surfaces of the walls between the arcade and the windows are completely closed. Each of the short round piers has four frontal shafts and a plinth formed of a square standing diagonally, with chamfered corners. The shafts continue from above the abaci up to the vault; the arches of the arcade have a Gothic profile, and the windows contain tracery. There can be no doubt that all this is Gothic, as is the exterior with its buttresses, which rise far above the eaves of the sloping roofs over the aisles, and its flying buttresses. However, on the outside, the wall on to which the arches of the flying buttresses abut is smooth, just as it is in the interior. When the nave was begun, the choir of the cathedral in the same city had already been under construction for several years, so that the choice of these bare, unbroken walls cannot be put down to ignorance of French Gothic style.

Even clearer evidence of this tendency can be seen in the *Dominican* church at *Regensburg*, where the choir was begun *c.* 1240 and was in use by 1254. By 1271 the nave was under construction, and was completed towards the end of the thirteenth century [173].[117] Here again, the long windows in the choir dominate the interior. In the nave the shafts rise uninterrupted to the vault, but in the choir they stand on corbels which project at the level of the apexes of the arcade, so that here the wall can be seen even more clearly as a continuous surface. The piers in the nave are

different from those at Cologne; they are octagonal with four shafts, and since the arches of the arcade are of the same depth as the piers and the wall rising above, and since their front corners begin in the void, over the diagonal sides of the piers, corbels are inserted underneath them. The inner part of the profile of the arcade has hollows, and this profile combines with the corbels to give an even more intense impression of slenderness and lightness to the walls than was achieved at Cologne. In addition, the slender shafts and the slender ribs with their hollows give the vault, too, a sense of lightness. It is these details that make the walls Gothic. As a result of them the wall does not appear to be a three-dimensional mass, but to be stretched like a membrane, and to stand up by its own strength. Finally, the profiles in the jambs of the tracery windows intensify the impression of attenuation of the wall.

Hollows in the profile of arcades were introduced at a very early stage by the friars. They appear, for instance, in the Dominican church at *Esslingen*, begun about 1255, and in this church, again, the shafts in the choir rise from the floor, while those in the nave stand on corbels. Here, too, the profile of the arcade makes the wall appear to be stretched between the shafts.[117A]

The *Franciscan* church at *Freiburg* im Breisgau, surpasses even the Dominican church at Regensburg [174]. Here the arches of the arcade die into the piers without the interruption of capitals. It is not only the aspect of the choir with its rib-vault, in building from 1262, that makes this church Gothic; even the nave, though it has a higher flat ceiling (restored in the Baroque period) and no shafts on the walls, is made Gothic by the profile of its arcade.[117B] The penetration of the arcade arches into the piers has analogies in French churches of the same generation, for instance in the cathedral at *Narbonne*, begun *c.* 1271.

By no means all the great number of the churches of the mendicant orders belong to the group with Gothic walls. There are also cases where the same kind of walls as those in the Dominican church at Esslingen exist, but give a completely different effect. Such a case can be seen in the Dominican church at *Erfurt*, where the vault begins directly over the apexes of the arcade, so that the continuous surfaces of the wall and the structure of the vault are seen as opposites, and in this case the high position of the windows makes the lighting of the cells of the vault unusually complicated. The choir was begun in the late 1260s, and the nave was not completed until the first half of the fifteenth century.[117C]

The Franciscan church of *S. Croce* in *Florence* was begun probably by Arnolfo di Cambio some thirty years after the choir at Erfurt in 1294/95 [173].[118] The chapels at the east end, set one beside another, can be traced back to S. Maria Novella and the Cistercian type on which S. Maria Novella was modelled. The breadth of the nave allows a view into the central and the two adjoining chapels which look like 'a façade facing inwards' (Paatz). Here, too, the wall predominates and seems to be thin, and the whole church is transparent and clear. Above the abaci on the piers, flat pilasters rise to the open timber roof, and the walls are even thinner than the piers. In spite of the frontality thus displayed, there are none of the elements of classical antiquity which are so strong in S. Maria Novella and SS. Trinità, and so anti-Gothic in effect. In its dimensions, S. Croce is one of the most monumental of all friars' churches; it is noble in the delicacy of its profiles and the perfect balance of its proportions, and ascetic in the simplicity of the means employed in it. In the spirit of St Francis of Assisi, religion was united with the worldly and the personal; S. Croce is the formal symbol of this unity, expressed in the language of architecture. Even outside, there is unity between the cubical form of the whole and the flat surfaces of the parts – between spiritual grandeur and humility.

175. Vendôme, La Trinité, begun *c.* 1280. Interior looking east

12. THE CULMINATION OF THE HIGH GOTHIC STYLE[118A]

The church of Saint-Urbain at Troyes, which was begun in 1262, was followed a generation later by that at *Saint-Thibault* in the Côte d'Or, where the original choir has been preserved, and this building, in spite of its unglazed triforium, stylistically surpasses its model. Here the blind tracery on the lower band of the wall is repeated in the lower windows, in the triforium openings, and in the upper windows, and the slenderness of all its members makes the choir look as if it were of filigree. The capitals on the shafts sup-

176. Rouen, Saint-Ouen, begun 1318. Interior

porting the ribs, which rise from the floor, are so small that one hardly notices them.[119]

The shafts supporting the wall-arches in the transepts of the *cathedral* at *Troyes*, which also rise from the floor, are similar to those at Saint-Thibault. The slenderness of the members strengthens the emphasis on vertical lines and reduces their importance in favour of that of light, pierced surfaces, creating an elevation admirably adapted to the principles of the rib-vault. Here the problem set by the architects of the Transitional style had been solved, in so far as it applied to interiors.[119A]

In the nave at *Bayonne*, which was begun in the first third of the fourteen century, all five shafts in front of each pier also rise straight from the floor,[119B] and, even at *Vendôme*,[120] where the shafts supporting the wall-arches only begin at the level of the triforium, the essential idea is, once again, the combination of slender structure with pure light [175]. It can be said, paradoxically, that these architects wanted, as far as possible, to use pure light as their only building material. This is true also of the choir of the cathedral at *Nevers*, begun in the 1230s or 1240s, but for the most part built after a fire of 1308 and consecrated in 1331,[120A] and of the nave of the cathedral at *Auxerre*, begun in 1309. In the latter, the capitals in the arcade are very small and those on the subsidiary shafts have been omitted altogether, so that they continue into the mouldings of the arcade in the form of a roll. The triforium openings consist of pure tracery without capitals.[120B]

The tendency to purity, correctness, and elegant preciosity reaches its final maturity in the church of *Saint-Ouen* at *Rouen* [176]. Here building continued to the plan of 1318 even after the completion of the choir, part of the transept, and first two piers of the nave in 1339, and only a careful search will reveal the slight deviations of later architects who worked on the church until its completion in 1536. Some of the shafts are so slender that they look almost like mere lines: they are so delicate that their third dimension almost disappears, and the whole elevation amounts to almost nothing more than a surface crossed by lines of varying thickness, pointing upwards – floating dreamily in space, elegant yet ascetic.[121]

It was in this sense that the generation must have intended its work to be interpreted. When the Romanesque nave of the cathedral at Auxerre was pulled down in 1309, its destruction was justified by the belief that it was built 'rudi

177. Freiburg-im-Breisgau Minster. West tower *c.* 1280–*c.* 1340

178. Cologne Cathedral. West front, designed *c.* 1300 or slightly before. Construction began with the south tower in the late 1350s, which by 1560 had reached the top of its first storey (with the double windows). The remainder is mostly 1842–80, built according to Plan F.

scemate'.[122] Indeed, about 1300 even Reims and Amiens appeared far too robust and worldly, too full of sap and vitality. The idea that all the problems of the Gothic style had been solved and that these epigones had therefore lost 'the originality of feeling and the freshness of inspiration' is a fallacy:[123] the problems were not solved until metallic hardness and brittleness, unworldliness and spirituality had been reached. To criticize the Gothic style for becoming more Gothic is an unhistorical line of reasoning.

The critics of the allegedly 'doctrinaire' Gothic style change their tune to highest praise when they speak of the tower of the minster at *Freiburg im-Breisgau*, which was

179. Cologne Cathedral. Plan F *c.* 1300

added to the west side of the nave from about 1280. Its ground floor is open to the interior and has the form of a hall, richly decorated. Above it there is a chapel which has a narrow window with tracery standing over the gable of the doorway below. When the clock storey had been completed, the bell-cage was added and left open. Work then proceeded, almost certainly under the personal direction of an architect from Strasbourg, on the balustrade, the octagon (built around the belfry) and the spire [177].[123A] This tower has been justly admired for the skilful merging of the square base into the octagon, for the diagonal position of the smaller turrets at its corners, for the piercing of its main sides with slits filled with tracery and surmounted by gables which cut through the base-line of the spire, and finally for the dissolution of the very surfaces of the spire into a filigree of tracery. The spire is not a protection against rain and snow – that function is fulfilled by a flat stone roof at the foot of the pyramid – but a purely artistic form: it is pure Gothic style, without a trace of the Romanesque. This transference of tracery into the surface of a spire is akyristic, but the quality of the filigree work above the closed lower storeys has effectively silenced any criticism by rationalists.

The spire at Freiburg was finished some time before 1340, but it may have been designed as early as 1280. It therefore probably influenced the design for the openwork spires of the west towers at *Cologne* which appear in the great Plan F of *c.* 1300 [179].[124] When Plan F was rediscovered in the nineteenth century it was accurately used as the basis for the reconstruction of and completion of the façade. This final design was preceded by several earlier ones which have been penetratingly and convincingly analysed.[125] Plan A, now in the Akademie der Künste in Vienna, includes five doorways at the west façade, to correspond to the double aisles of the nave, and it is perhaps an expression of Gerhard's original intentions. The great Plan F for the façade, dated *c.* 1300, and attributed to Master Johannes, shows a familiarity with the Strasbourg west façade (its lower storeys) and its drawings. All the Cologne plans for the west façade, the south tower, and the adjoining nave clerestorey and its buttressing (Plan A to Plan Gu3) date from the last quarter of the thirteenth century and the first quarter of the fourteenth. Recent excavations under the south tower have shown, however, that the foundations for the south aisle of the nave were not laid until about 1325, that the south tower foundations date to around, or shortly before, 1357, and that the construction of the south tower above ground was only underway in the 1360s, with its ground floor complete in *c.* 1370/80. Almost two generations, therefore, separate the drawing-up of the plans for the western parts of the cathedral and their faithful execution.[125A] When work stopped on the west front and towers in 1560 the south aisles of the nave were built up to vault springing, the south tower had reached to just above the top of the first storey, and the north tower had barely topped the socles of the portals (though it had got to the top of the ground floor on its east side). Nevertheless, all later architects, in a spirit of reverent conformity, adhered closely to the original designs. In 1842 work began on the completion of the whole cathedral, including the west façade, once more in the strictest conformity to the original plans [178].

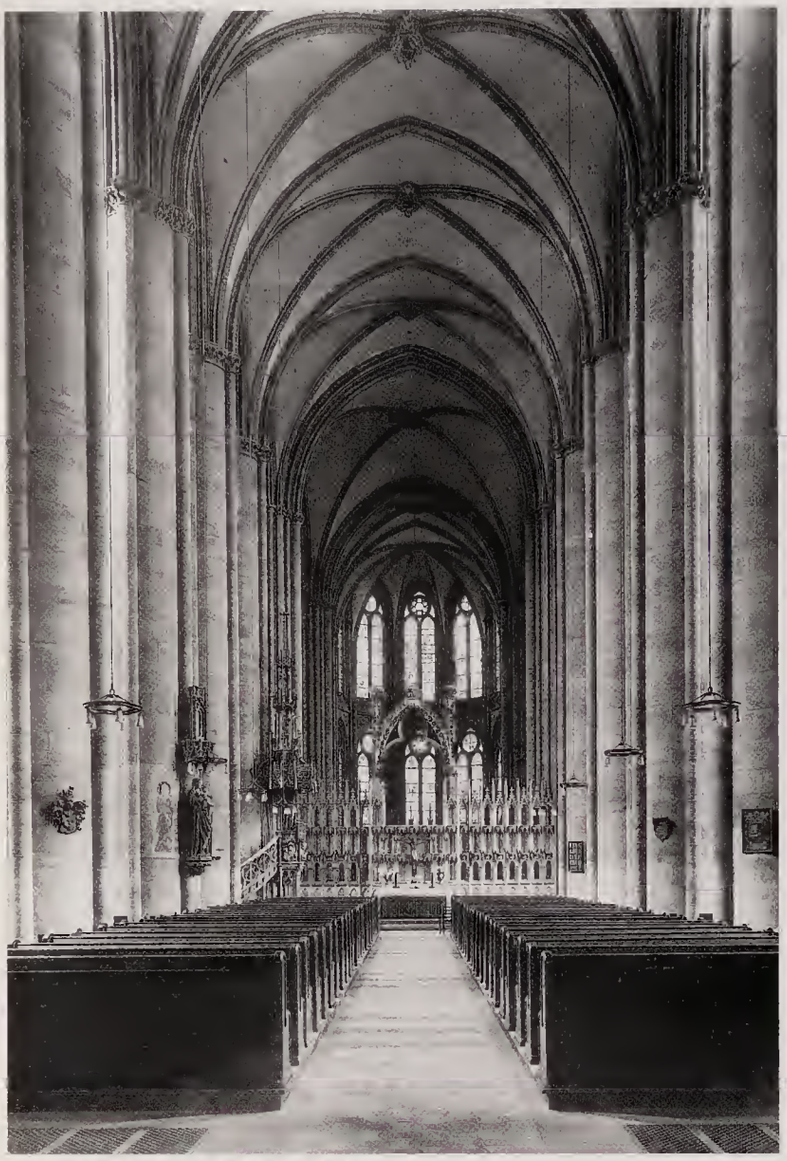
Plan E, now in the Dombauhütte at Cologne, shows a cross-section through the upper storey of the south tower, facing towards the east, and also the arch between the towers, which is not separated from the responds by capitals. The piers supporting this arch are hidden by a series of shafts which are not clearly differentiated in the drawing.

180. Oppenheim, St Catherine, nave designed 1317. Exterior from the south

The great height of the piers makes it appear that they themselves are slightly arched. However, the shafts supporting the ribs have capitals and thus give the vault its self-sufficiency.[125c]

As the various designs followed one another, the number of doorways was reduced to three and the outer pair was replaced by windows. In the storey above, each of these groups consisting of a window and a doorway is surmounted by a pair of windows, separated by a narrow buttress crowned with a pinnacle which reaches up far into the space in front of the single window in the next storey above.[126] The two towers finally end in octagons and spires. The layers of the façade project one in front of another, and the gables all cut across the line of the lower storey, but, compared with Reims, the distances by which they project have been reduced. The relief is essentially flat, with members like mere lines, and the whole is characterized by a sense of tension. In many places capitals have been omitted. This façade was designed a decade or so before the beginning of the choir of Saint-Ouen at Rouen; it is the last great work of the culmination of the High Gothic style, and at the time of the 'classic' solution to the problem of making façades into Gothic unities. Expressed in a tautology, style, in the sense of formal unity, depends on the conformity of every member. In the façade at Cologne every single detail is determined by the form which first appeared in the Sainte-Chapelle – that is, pointed openings between buttresses, surmounted by Gothic gables which pierce the horizontal line immediately above.

Schnaase was the first to recognize the façade at Cologne as a 'classic' work, although his judgement was based largely on the execution of the details and although he was already critical of the fact that the lower windows were co-ordinated with the doorways. It is now usual to object also to the pressure to which the central section seems to be subjected by the two towers. One need only compare this façade with those on other double-aisled churches, such as Paris and Bourges, to see that it is all of a piece. The replacement of a rose-window by a long, pointed window had already been introduced, some time after 1260, by the architect of the church of St Elizabeth at Marburg, who came from the Cologne lodge. In the tracery at Cologne, spherical quadrangles and triangles play a great role, but not to the exclu-



181. Marburg, St Elizabeth. Nave, *c.* 1244–65

182. Heiligenkreuz, Cistercian church. Choir, begun *c.* 1288, consecrated 1295

sion of circular forms. Schnaase wrote his criticism in 1873, while the façade was being built, and he condescendingly excused the design by saying that it aimed at emphasizing the predominance of the towers, using the words, 'Is there any Gothic church, or, more especially, any Gothic façade, which has no faults?', to which he added, 'It is advisable to concede faults, in order to avoid misunderstanding the laws of art and of historical development.' To establish laws – and what laws can one establish? – is to create faults oneself; yet historical development is an objective fact. The architect who designed the façade at Cologne studied Erwin's Plan B critically and found that the double aisles were the essential feature on which he must base his design. The creativeness of his criticism lay in his reduction of the horizontal lines, in his emphasis on flat surfaces, in the strict conformity in which he designed the parts, and, combined with this, in his radical subordination of individual details. The façade is big in size: but, more than this, it also has greatness.

The south side of the nave of St Catherine at *Oppenheim*, designed in 1317, will at once bring out the greatness of the façade at Cologne.[127] The site on which the church stands made it essential that this south side should be the façade [180]. In the two lower storeys, consisting respectively of the chapels and the aisle, the wall is totally dissolved into tracery, and in the upper storey the row of gables, and the pinnacles, which stand diagonally, form the crown, not only of the upper windows, but of the whole exterior. The row of four bays led to the inclusion of large roses in the first and fourth windows, and within these circles and in the spandrels above them spherical polygons are used. These great circles predominate; they immediately attract the eye and their position at the sides, instead of at a non-existent centre, gives the whole composition an explosive character. In its details, for instance in the triradial figures in the gables, Oppenheim stands at the same stage of development as the façade at Cologne. Although it has the same splendour and maturity and the same Gothic projection of one layer in front of another, the different problems at Oppenheim led to the rejection of the self-containment of Cologne. Oppenheim, in fact, has richness, but not greatness.[127A]

The culmination of the High Gothic style can also be taken to include the cathedrals of Lichfield and York in England. In the nave at *Lichfield*, begun around 1265, groups of three shafts each rise straight from the floor, and

of these the lateral ones and those within the arcade openings are pear-shaped. Behind the shafts, as they rise up the wall, there are cinquefoils, each belonging to two bays, as at Sées. In the nave at *York*, begun in 1291, the triforium is united with the windows above, and the vertical fusion in each bay harmonizes with the horizontal fusion of the fourteenth-century wooden lierne-vault, which was made in 1354, was burnt in 1840 and replaced by a replica soon afterwards.[127B]

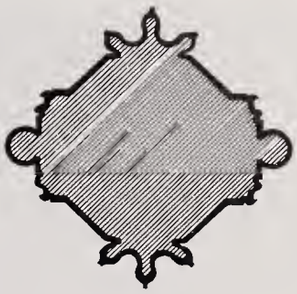
Both churches have pairs of towers at the west front. At Lichfield, the storey occupied by the doorways runs into the gallery immediately above, forming a single, uninterrupted horizontal band. Above this the great central window cuts through the horizontal lines, and only from there on do the vertical lines predominate. At York, the buttresses project far forward. From the very first the design was intended to emphasize the predominance of the verticals, and this idea was fully realized in the upper parts which were built by architects of the fourteenth and fifteenth centuries in their own idioms. If one compares these two façades with that at Cologne, one can see that the solution reached at Cologne was the purer one.[127C]

13. THE SPREAD OF THE GOTHIC STYLE, 1250–1320

The churches of the mendicant orders cannot strictly be called High Gothic, whether this term is taken to mean the style of the nave at Amiens or that of the west façade at Cologne; this is equally true of many other buildings, of which one can say that they were built during the High Gothic period, but not that they are true representatives of that style. However, this must not be taken to mean that the term 'High Gothic' is a pure convention, a mere aid to classification. Where it refers to the central geographical territory of the Gothic style, the term is certainly valid; where it refers to works created outside this central area it serves as a system of co-ordinates with which to measure against the norms what remained retardative, and more important, what was an original creation of the peripheral schools. It is always preferable to evaluate each work on its own merits – indeed it is one's duty to do so – but this need not prevent one from recognizing these works as precursors of the national ramifications of the Late Gothic style, and thus integrating them into the general scheme of the development of the Gothic style.[127D]

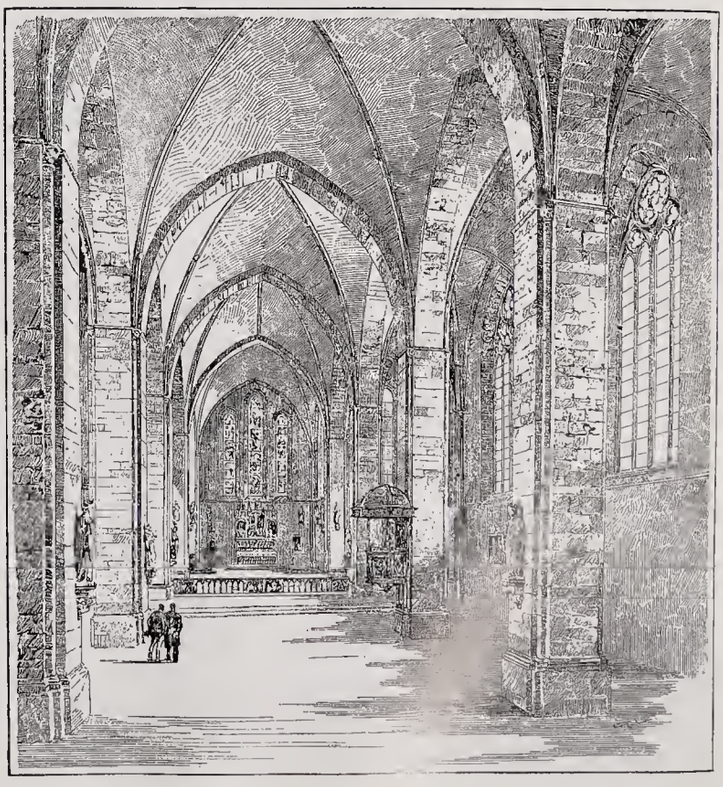
These buildings can be divided into three main groups: those in which Gothic features are combined with the characteristics of the hall-church; those French churches in which a vessel accompanied by lateral chapels instead of aisles is built in a Gothic style; and those Italian churches in which Gothic and classical elements are first combined.

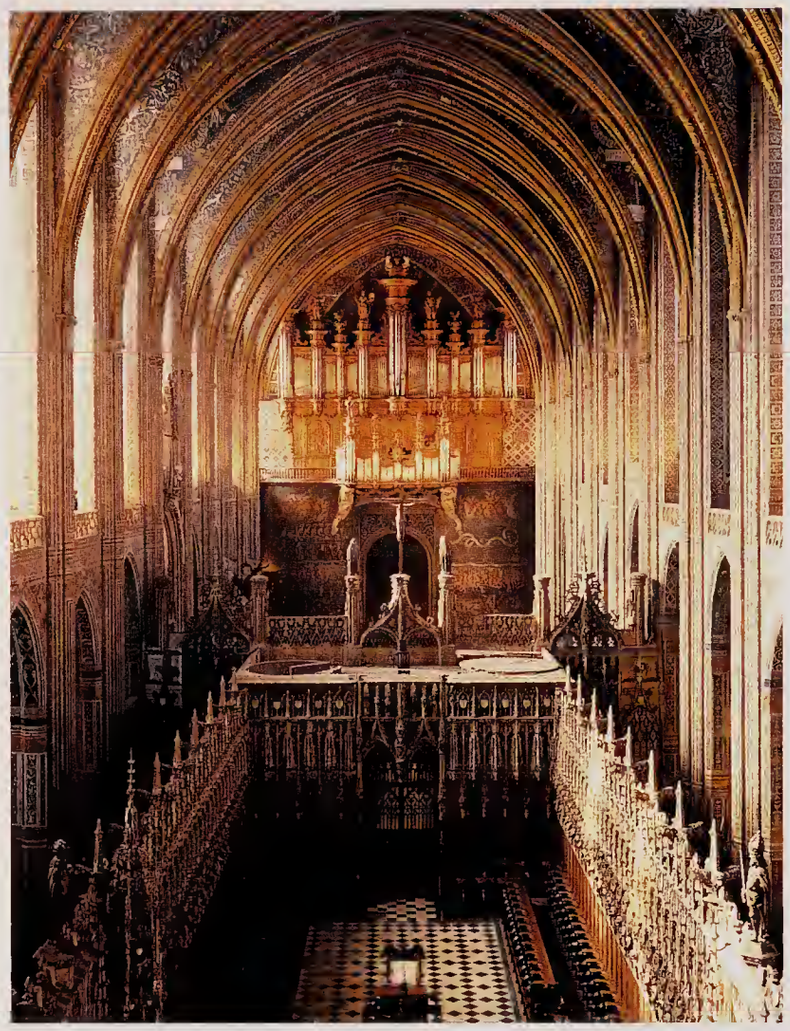
From 1017, when the chapel of St Bartholomew at Paderborn was built, the hall-church had been accepted as a German form, and in the twelfth century a number of such churches were built in Bavaria.[128] When the rib-vault was introduced, the forms that had resulted from it in France also had to be incorporated in German churches.[129] The nave of St Elizabeth at *Marburg* [181], the cathedral of *Paderborn*, and the Munsterkirche at *Herford* represent the stage of development that had been reached by about 1240–50. The choir at *Heiligenkreuz* in Austria represents a later phase in the history of the hall-church [182].[129A] The choir of the Cistercian church at *Lilienfeld*, begun between 1206 and 1209, and consecrated in 1230, is a basilica with a polygonal apse, but surrounded by choir aisles and a straight-ended ambulatory in the form of double-aisled hall spaces.[129B] At Heiligenkreuz, also a Cistercian church, the choir has the form of a hall-church with three vessels each containing three almost square bays.[130] The slender piers have an octagonal core, but only their four diagonal faces are left free. The two sides facing the nave and the aisles are further covered by three pear-shaped shafts, and the two sides on the longitudinal axis are covered by a broad projection which has an undulating profile at the corners and a round shaft in the middle [183]. The shafts have capitals, but the flat, diagonal faces of the columns are only separated from the vault by narrow bands continuing the abaci. The spatial forms of the hall and the piers combine to give an effect that is almost Late Gothic in style. In the tracery, the way in which the central one of the three lights runs smoothly into the pairs of cinquefoils introduces an ogee arch. The extensive dissolution of the wall-surfaces by the two long windows in each bay, and the (over-restored) ornamental grisaille glass, dictated by the rules of the order, fills the choir with a bright light, which seems even brighter



183. Heiligenkreuz, church, plan of a pier, *c.* 1288–95

184. Osnabrück, St John. 1256–92



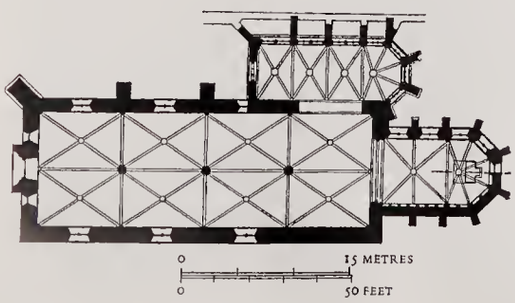


185. Albi Cathedral, 1282–1390. Interior, *coro c.* 1474–83

187. Albi Cathedral, 1282–1390. Exterior

by contrast with the nave (built between 1136 and 1160) with its square piers, its broad arcade arches, and its ribs with their rectangular section, like those in Lombardy – all factors that tend, in a basilica, to separate the aisles from the nave, and to emphasize the heaviness of the architectural members. The progressiveness of the choir has led certain historians to claim that it was built about 1360. But Dagobert Frey's work on this subject has clearly shown that the choir that we know is indeed the one that was consecrated in 1295.[131]

The church of St John at *Osnabrück* [184] was built between 1256 and 1292, a few years before Heiligenkreuz. Here the heavy square piers with slender shafts on the corners are, in spite of the slenderness of the ribs that rise from these shafts, a remnant of Romanesque frontality. Only the tracery is fully Gothic in character.[132]



186. Imbach, Dominican church, 1280s. Plan

In France there are a few examples of later thirteenth-century hall churches – at *Nogent-les-Vierges* (Oise),[132A] at *Montataire* (Oise),[132B] at *Waville* (Meurthe-et-Moselle),[132C] and the nave at *Mézin* (Lot-et-Garonne). The latter, although built about 1250, has heavy transverse arches and ribs, as if the architect had never heard of Amiens.[133] Apart for the Jacobins at Toulouse and the Dominican church in Paris, the Dominicans built a regular double-nave hall church at *Agen* in south west France.[133A]

The hall-church, in its Gothic form, was quickly accepted in Germany. The nave at *Essen* was begun in 1275,[133B] the nave at St Severus at *Erfurt* begun around 1308,[133C] the choir at *Verden on the Aller* begun soon after 1274 and complete by 1311,[133D] the nave at *Meissen* sometime between 1287 and 1291,[134] and the nave of the church of Our Lady at *Friedberg* begun in 1310.[134A] In the 1280s the Dominican nuns built a double-naved church at *Imbach* [186] in Austria,[135] in which the choir still has a sexpartite vault. The free-standing piers between the two naves are in line with the centre of the choir, a division which has analogies in Gotland.[136]

The second group of churches involved in the spread of the High Gothic style, in which the nave was given lateral

chapels instead of aisles, was the product of the traditions of the Romanesque style in southern France. The theory that this form was adopted after the ravages of the Norman and Saracen armies because it afforded greater protection against fire is unconvincing, since the same armies also ravaged other districts, where different spatial types were developed.[137] There was a classical tradition in this district; tunnel-vaults in any case produce the typically Romanesque exclusion of the outer world, the atmosphere of religious concentration, and the single, unequivocal direction towards the altar. The replacement of the tunnel-vault by the rib-vault produced a new vivacity. With the addition of lateral chapels, the relative heights of the nave and the chapels became decisive. Low chapels create an atmosphere of mystery, while high ones can almost give the effect of a hall-church.

Saint-Michel in the Basse Ville at *Carcassonne* is a church of this type, in which the lateral chapels reach to about two-thirds the height of the nave.[138] Built towards the end of the thirteenth century, it is broad and generally rather low, with oculi over the chapels (the tracery in them is modern). The long lancet windows in the apse determine the general atmosphere of the whole church. The nave vaults of this church, and its sister parish church, Saint-Vincent in the Basse Ville, are seventeenth or eighteenth-century additions. Originally, timber roofs were supported at the bay divisions by large pointed diaphragm arches, held in place by massive exterior buttresses, between which were fitted tall vaulted cellular chapels, giving on to the interior and supporting their upper walls, opened with large windows. The spacious width of these interiors recall the diaphragm-arched Cistercian dormitories at Poblet and Santes Creus; but they also anticipate and parallel the great *nef unique* vaulted structures of Catalonia and Languedoc (the cathedrals of Albi and Montpellier).[138A]

The cathedral of Sainte-Cécile at *Albi*, begun in 1282 and completed to the original design in the last years of the fourteenth century, also belongs to the type of church with a single nave with lateral chapels. In all such churches, the exterior wall of the chapels appears, aesthetically, to be the primary plane. The emptiness of the interior space must originally have created a magnificent effect. In the early sixteenth century, however, a gallery was built into the chapels, creating a lower zone of darkness. Between 1474 and *c.* 1483 the *coro* was added; it is a splendid example of pure divisional space [185, 284]. Even with these alterations the church shows great individuality: it is Gothic in style, but neither specifically High Gothic nor Late Gothic. Externally it looks fortified, with a single entrance from the south side. Its patron, Bishop Bernard de

188. Barcelona Cathedral. Interior looking east, 1298– *c.* 1430

189. Palma Cathedral, begun 1306. Interior

190. Palma Cathedral, begun 1306. Exterior from the south

Castanet, was a Dominican Inquisitor who persecuted the remnants of the Albigensians with diabolical cruelty, but who nevertheless seems to have been anxiously preoccupied with the need for defence. There is a series of rounded buttresses [187], reminiscent of Assisi, and a heavy west tower with no entrance, which has round blocks of stone at the corners and archers' slits instead of windows. The lower storeys of the tower were under construction between 1355 and 1365, though their general design may have been conceived with the original late thirteenth-century plan. This would make their design overlap chronologically with the construction of the spire of Freiburg Minster; so its Gothic character should be measured against such a design. The middle storeys have large, blind, semicircular arches, the round stair-turret reaching to their level. The three upper storeys date from 1485.[139] The shafts and ribs, the tracery in the pointed windows, and the gargoyles are Gothic features, and make even this type of building Gothic.

From outside a hall-church looks like a solid block, the division of its interior into two or three naves coming as a surprise. Whether this division is Romanesque or Gothic depends, as it does in a basilica, on the form of the piers and the mouldings of the members, and on the tendency either to isolate the spatial parts from one another, or to blend them as complementary parts of the whole that is visible from outside.[139A]

Basilicas in which the central vessel is only a little higher than the aisles and which, therefore, have only small windows, or none at all, are closely related to the hall-church. To complain that this makes the central vessel dark is to forget that the architects must have been equally aware of this gloom. If they had let large windows into the outside walls of the aisles, as at Heiligenkreuz, they could have made the central vessel much lighter; but, since they actually decreased the amount of light coming from the sides by adding chapels, this diminished light must have been their aim.

This aim was quite obviously present in the mind of the architect of the cathedral in *Barcelona* [188]. The choir, built between 1298 and 1329, provided the elevational system to which the nave was built and finished by about 1430. The dark wall-passage that runs above the arcade arches raises the level of the oculi in the nave, while the lateral chapels reduce the amount of light in the aisles. These chapels are designed as parts of the aisles, just as those at Albi are parts of the central vessel. As the eye moves from the outer walls of the church towards the centre, the light decreases rapidly. In this mysterious gloom, the complexity of the piers with

191. Rome, S. Maria sopra Minerva, begun 1280. Interior, vaulted 1450

their multitude of shafts, hardly ever separated by fillets, but merged into a single mass by the hollows between them, is a source of wonderment. It is difficult clearly to discern the thirty shafts attached to every pier, and this is complemented by the reduction of the light.[140]

In 1229, soon after the Christian re-conquest of the Balearic islands, King Jaime I of Aragon founded the cathedral of Palma on the island of Mallorca [189, 190]. Little of this original church, built on the site of a mosque, survives. In 1306 King Jaime I of Mallorca began a small royal burial chapel which now stands at the east end of the present cathedral and opens into the polygonally apsed choir. The latter, together with its flanking chapels, was largely finished by 1327. At this stage the nave was planned to rise no higher than the choir, with side aisles as high as the choir chapels, and with simple octagonal columns. After a long interruption, the present nave was begun *c.* 1360 to a much more grandiose design, perhaps by the master Jaime Mates, with much taller aisles and a central vessel higher than any Gothic cathedral apart from Beauvais, Cologne and Milan. Although the building of the nave continued into the sixtecnth century, the whole church gives an impression of unity and spatial coordination.[140A] The form of the choir is unusual: its lower storey has a flat cnd, which, in turn, has an east niche, but each corner is spanned by a pointed arch, the resulting triangular bays being separately vaulted. Above these pointed arches rise the diagonal walls of the apse, while a smaller apse with a higher floor adjoins the eastern wall. It reaches to the level of the middle of the windows on the side walls, leaving room for an oculus window above it. To this oculus a larger one corresponds in the wall that riscs from above the chancel arch to thc vault of the nave. This description is hard to grasp, but the church itsclf is easy to understand if one stands insidc it. It has no transepts, and so, because it is approached from the sumptuous nave, the relatively small and complex choir gives a strong impression of being a true Holy of Holies.

The nave is basilican with slender, octagonal piers. The arcade arches have the breadth of one side of the piers; thus three of the other sides of the piers can rise on to the vault. This arrangement, though different in the details, is reminiscent of Bourges. The space within the nave is high and very wide. The vaults of the central aisle are 144 feet high, those of the side aisles 98 feet: all three aisles make up a total width of 182 feet; the pillars are 72 feet high but a mere five feet in diameter; the whole interior has the lowest ratio of support to enclosed volume in Gothic architecture.[140B] It is one of the finest interiors to be found in any Gothic building. The simplicity of the vaults, with their pointed arches and pear-shaped ribs throughout, characterizes the whole as High Gothic, though in some respects this church also anticipates the principles of the Late Gothic. The cathedral has suffered from the insertion of modern stained glass. Its colours are poisonous and the plain glass patterns in the oculi are nothing less than vulgar. The arrangement of the artificial lighting, on the other hand, is admirable.

The most striking feature of the exterior is the presence of frontal buttresses on the corners of the polygonal chapels. These, and the slightly heavier buttresscs rising to the flying buttresses, form a close series with a gentle rhythm [190].

At *Gerona* in 1312 a new choir was begun, modelled on that at Barcelona. Aftcr a long interruption in the building, a nave without aisles was added in 1416.[140C]

Much simpler in design are those Italian churches with a nave slightly higher than the aisles – such as *S. Anastasia* at *Verona* (begun *c.* 1290, complete by 1437), a Dominican church with pilasters above the piers and blind oculi instead of a triforium. The long, square-ish bays arc a continuation

of the Romanesque tradition. They set the quiet tempo which is so different from that of the single-naved churches of southern France with their short bays.[140D]

A third group in the spread of the High Gothic style was centred on Tuscany: The oldest parts of the cathedral at *Siena*, were begun between 1226 and 1247, and the choir and domed hexagonal crossing were in building between 1247/49 and the early 1260s. The nave was under construction by 1260, and work was still going on in 1277. The flat cast end of the (originally shorter) choir was influenced by Cistercian practice, particularly by the nearby church of S. Galgano. Probably in *c.* 1250 it was decided to vault the choir and dome with ribs. The west façade (perhaps complete by 1317?) was built higher than originally intended, necessitating the heightening of the nave when its rib-vaults were inserted, (perhaps before 1317, or in the second half of the fourteenth century) [234]. The arches in the vaults of the nave and of the aisles are all semicircular. The extraordinary feature of the first cathedral, preserved in the later heightenings and remodellings, is the large hexagonal crossing, crowned by a dome, and extending across almost the whole width of the nave.[141]

Arnolfo di Cambio joined the movement to produce a balanced blend of Gothic, Romanesque and Early Christian styles when, in 1293/96, he began the new cathedral in Florence, *S. Maria del Fiore*. He may also have been the architect of *S. Croce*, begun in 1294/95. When he died, between 1301 and 1310, the building of S. Croce had progressed as far as the transepts,[141A] but it is not certain how far the building of the cathedral had advanced. There is no agreement about what Arnolfo's plan for the cathedral looked like, or even if there was a plan in anything more than outline form. Toker has argued that Arnolfo's 'project' consisted of a nave not dissimilar to that of S. Croce: basilical, unvaulted, and divided into bays by octagonal stone piers, perhaps also marked by transverse arches over the side aisles. The nave probably consisted of five long bays, each corresponding to two bays of the exterior side aisle walls, with perhaps single gable roofs over each of the double side aisle units. Excavations in the 1960s and 1970s have suggested that Arnolfo's project for the choir was, as many older authorities had suggested, a shorter version of the present east end. The discovery of foundations under and to the south of the existing eastern bay of the nave has led Toker and others to argue that Arnolfo planned the east end as a domed octagon of unequal sides, occupying the whole width of the nave, and opening out into three conches, each with five chapels. The whole east end was planned to stand about one bay further to the west than the present choir. If these inferences are correct, Arnolfo's huge, well-lit octagonal crossing, opening out of a dark and spacious wooden-roofed nave, would have outshone the domed crossings of Pisa and Siena cathedrals, and his nave would have emulated the Early Christian basilicas of Rome. The first phase of construction (1293/96–*c.* 1300) saw rapid progress, starting at the west façade and working eastwards. By 1310 work had stopped and, apart from the construction of the campanile begun in 1334, building on the cathedral stagnated until *c.* 1350. How much had been completed by Arnolfo and his immediate followers is not certain, but the lower half of the west façade, with its revetments, may have been finished up to a height of about twenty-five metres. The side aisle walls in the three double western bays were probably up to about the same height, but their revetments may only have reached socle level. The rest of the aisle walls, running eastwards, were probably lower, and at the crossing and choir only the foundations, or part foundations, may have been laid down.[141B] Outside, the veneer of marble over the brick structure was Florentine in origin. What reconstructions of Arnolfo's design have been attempted decidedly stress flatness and horizontality.[142]

Arnolfo must have known the façade of the cathedral at *Siena*, which was begun in 1284 by Giovanni Pisano [234]. It is much more Gothic in form and shows a considerable knowledge of French architecture. At Giovanni's departure from Siena in around 1300 it is not clear how much of the façade was finished. By 1300 the southern of the three portals was complete, and perhaps by 1310 or 1317 (the latter the year of the foundation of the baptistery and extended choir) the whole façade, including the rose storey, may have been finished. But since Giovanni left the city in *c.* 1300 there is still doubt as to how far the façade's superstructure reflects his intentions.[143] There are three doorways: the central one has a round arch, and is only a little higher than the others. The rich ornamentation of the shafts on the walls is full of such traces of the Late Romanesque as spiral fluting.[144]

With the spread of the Gothic style to Tuscany, architecture there entered a stage where it was no longer Romanesque, still not classical, in the sense of the Renaissance, but not pure Gothic either. It was a superficial application of Gothic elements to traditional local forms.

This is true also of the Dominican church of S. Maria sopra Minerva in *Rome*, which was begun in 1280 and modelled on S. Maria Novella in Florence [191].[144A] The side aisles were vaulted only in the fourteenth century, the central aisle, which was originally groin-vaulted, by 1474. They were groins with no transverse arches, like those in the Baths of Diocletian. This, the only Gothic church in Rome, was decorated in the Baroque style in the seventeenth century, but the plaster was pulled down again in 1848 so that the church now has nearly its original appearance. It has frontal piers and shafts, semicircular ribs, and, apart from the ribs, pointed arches throughout. The nave has the form of a basilica, and the oculi in each of its bays and those of the apse over-accentuate the rhythm of the interior. The general impression is a reminder of Transitional Cistercian churches; only the tracery in the east window is really Gothic, and it is not even certain whether this is original. The church as a whole is Gothic, but the proportions of the shafts are almost classical, and the mouldings of the broad transverse arches in the nave, and of the pointed arcade arches, are Romanesque. The veneer of marble slabs, which possibly dates from the seventeenth century, is out of place and unique in a Gothic interior. The raised floor hides the plinths of the piers; their absence emphasizes the aesthetic importance of plinths in other churches. Even discounting the damage suffered at the hands of restorers, the style of this church still remains retarded.

CHAPTER 4

The Late Gothic Style

1. NEW VARIETIES OF RIBS. LIERNES. NET-VAULTS

THE octagonal chapter house of *Wells* has a crypt-like undercroft with massive architectural members and a tall upper chamber. The undercroft is on the level of the site.[1] In the upper chamber the octagonal middle pier is surrounded by sixteen shafts behind which the pier is slightly hollowed out [192]. From the octagonal abacus eight transverse arches run to the corners of the octagon. From the middle of the eight sides eight ribs rise to the ridge-rib, which forms an octagon whose corners face the sides of the outer octagon; thus the sides of the two octagons are not parallel. Between every two of the inner ribs there is a tiercerон on the surface of the vault. This vault has the form of a concave funnel. On the outer side, between ridge-rib and wall, the middle arches are continued horizontally as radial ridge-ribs and the tiercerons are continued by other tiercerons. In addition there is a pair of tiercerons inside the severies above each window. All these ribs have the same profiles, very delicately composed of round rolls and pear-shaped rolls. The profiles merge as they rise from the middle pier, so that only the rolls with fillets remain. Visually all these arches are identical and one does not inquire into their function or their *structural* significance. Their effect is one of *texture*.

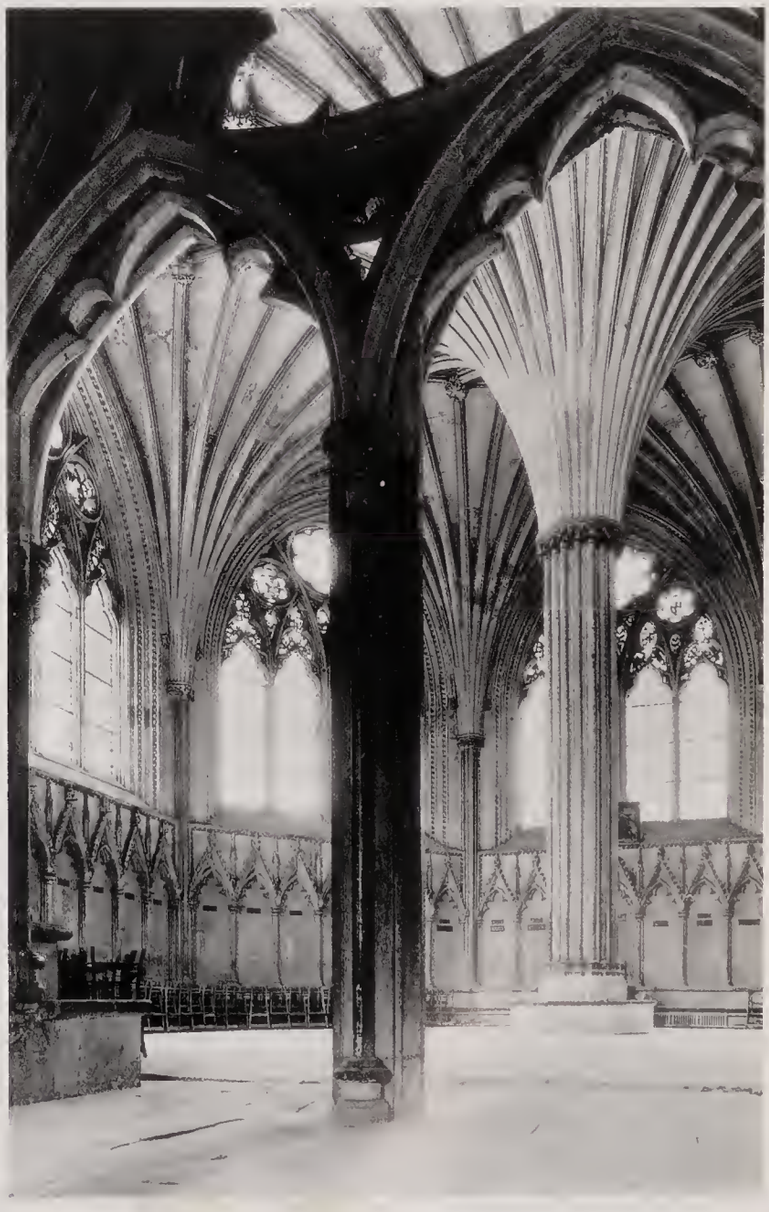
The window tracery contains ogee arches, and there are others in other parts of the upper chamber. The multiplication of tiercerons at Wells is the first definite step towards the Late Gothic style.[1A] Hence the dating of the chapter house is important. Britton[2] says that it was built during the period of Bishop de Marchia, that is between 1293 and 1302, but does not himself consider this a reliable statement. The approximate dates of the preceding chapter houses are *Lincoln c.* 1220–35, *Lichfield* 1240, *Westminster Abbey* 1250, *Salisbury c.* 1263?.[2A] Salisbury is still in a pure High Gothic style.[3] Lincoln, a decagonal chapter house, is the stylistic predecessor of Wells. It has now been established that the main, upper, chamber of the Wells chapter house was begun in *c.* 1298 and completed in its essentials by 1305.[4]

The reason why one is entitled to place the beginning of the Late Gothic style at this point is that the structural function of the rib is ignored. The rib is becoming again what it was at the outset; an architectural member having a purely aesthetic function. The earliest tiercerons in Hugh's Choir in Lincoln Cathedral, dated *c.* 1200, and the first star-vaults in the nave of Lincoln Cathedral, of *c.* 1225, were predecessors of those in the Angel Choir at Lincoln (1256) and of all that followed.[4A]

The merging of tiercerons was repeated in the choir and nave of *Exeter*. The new cathedral was begun by 1279–80 with the construction of the choir aisles, and the ambulatory and its chapels. The presbytery and choir, started by 1288–91, are covered with tierceron vaults even more elaborate than those in the nave at Lincoln or the choir at Ely. The multiplication of tiercerons in the lateral severies has caused some authors to make the mistake of calling these vaults at Exeter fan-vaults (cf. p. 209). In fact they are star-vaults; for the diagonal ribs have their own separate curvature. But the impression comes close to that of fan-vaults, and the merging of the bays with each other has already made considerable progress.[5] Structurally the whole eastern arm was complete by 1311.

Support for *c.* 1291–1311 as the date of the vaults of Exeter comes from *Ely*. Here the crossing tower collapsed in 1322. The widening of the crossing into an octagon as wide as nave and aisles together is reminiscent of Siena Cathedral

192. Wells Cathedral. Chapter House, upper chamber. Begun 1298, finished by 1305

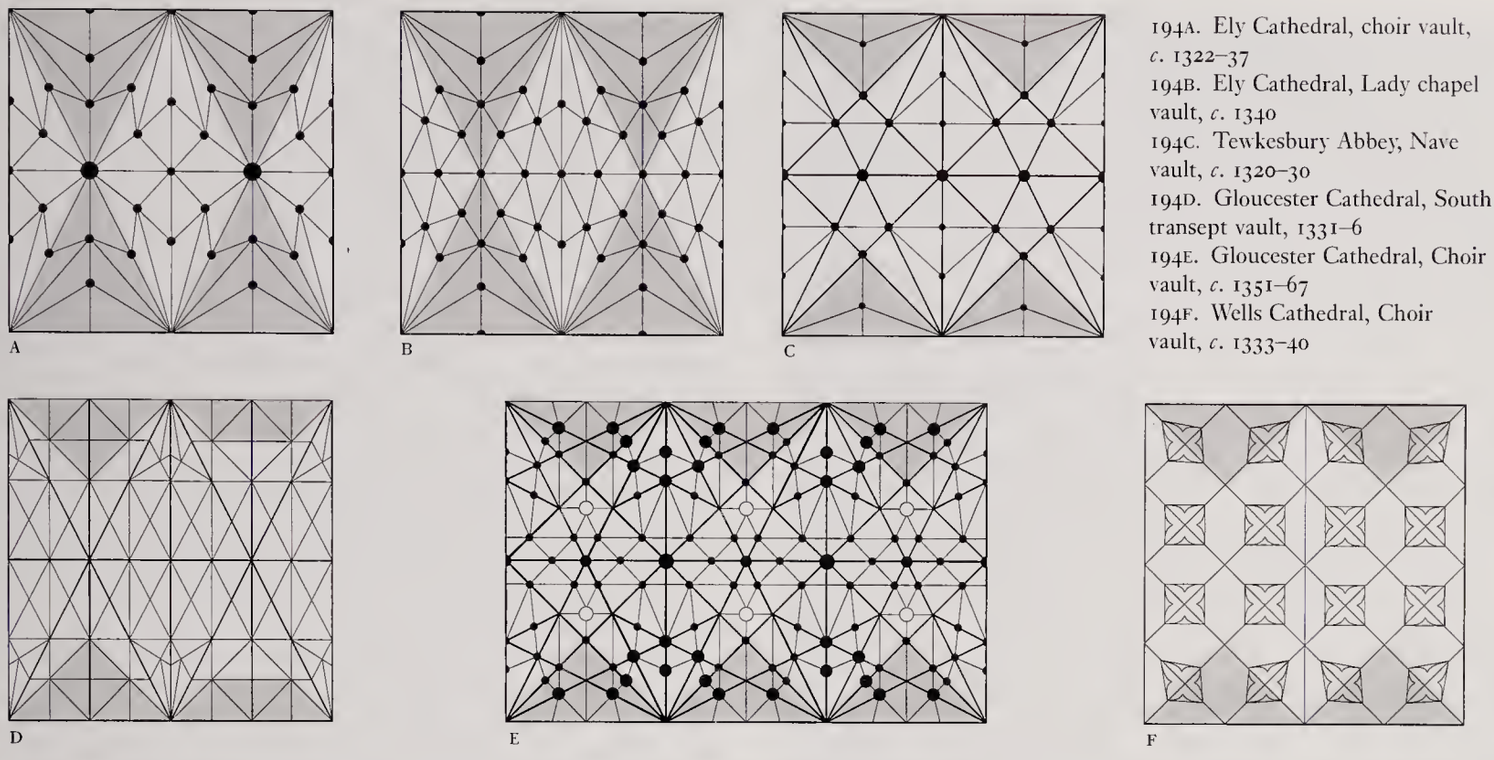


193. Ely Cathedral. Octagon. Begun 1322, substantially complete by 1340

and even more of Florence Cathedral. But there is no provable connexion between either. The vault is of wood. The construction takes from the Wells chapter-house the turning of the middle part through half the angle of the sides of the polygon. Whereas there the turning was determined by the middle pier, the determining factor here is the four severies in the principal axes, which are arranged so that their apexes meet four of the corners of the lantern. The eight resulting triangular spandrels are cylindrical surfaces, and one might either say that each is *carried* by three tiercerons, or that in each three tiercerons are *hanging*. The vault of the lantern is of timber and forms an octagonal rib-vault with ridge-ribs and three pairs of tiercerons in each of the eight cells [193].[6]

The monks of Ely attributed the conception of a large octagonal crossing to their sacrist, Alan of Walsingham,[6A] but the timber vault and lantern were designed by the king's master carpenter, William Hurley, and substantially complete in 1340. In the bays of the chancel which follow to the east and which were renewed at the same time as the crossing (from 1322), the vault has diagonal ribs, longitudinal and transverse ridge-ribs, and tiercerons in the longitudinal cells [194A]. The latter are not genuine tiercerons; for they stop after about two-thirds of their expected length and divide into two short ribs. These, as they do not start from corners nor reach the ridge-rib, but run diagonally to the diagonal rib, can neither be called tiercerons nor ridge-ribs. Their name in England is liernes.[7] By means of more liernes an octagon is produced with corners alternately projecting and re-entering. It is a star-shape. The re-entrant corners are connected by diagonal ribs which again are neither ribs in the original sense nor tiercerons. They are liernes in a centripetal direction.

As the middle liernes which lie within the longitudinal cells are continued towards the apexes of the transverse arches, there result everywhere diagonally placed lozenges which go across the transverse arches, i.e. the boundaries of the bays, and moreover in some cases merge with the eight-pointed stars. It is not necessary to confute the rationalist explanation of this extremely complicated pattern which asserts that it is technically or statically easier. Anybody can see that it is harder to produce than normal rib-vaults. Equally evident is the growing aesthetic tendency to see the



194A. Ely Cathedral, choir vault, *c.* 1322–37
194B. Ely Cathedral, Lady chapel vault, *c.* 1340
194C. Tewkesbury Abbey, Nave vault, *c.* 1320–30
194D. Gloucester Cathedral, South transept vault, 1331–6
194E. Gloucester Cathedral, Choir vault, *c.* 1351–67
194F. Wells Cathedral, Choir vault, *c.* 1333–40

vault as one fabric comprising all the bays, that is: as 'texture'. As if it were a preliminary experiment, the north aisle of these three chancel bays at Ely also has liernes, though in a simpler configuration.

The vault of the (rectangular) Lady Chapel at Ely follows the same principle [194B]. The Lady chapel was started in 1321, a year before the tower collapsed. The work on both the chapel and the octagon proceeded at the same time, although it is uncertain how quickly the chapel progressed. Work had reached the upper storey at the west end under Bishop Simon de Montacute, sometime after 1337, and the whole building was structurally complete by 1349, when John of Wisbech, the monk responsible for its finance, died. The Lady chapel vault may therefore date a little after the choir vault, which was finished by 1337.[8] Most of the fourteenth-century work at Ely, apart from the wooden vaults of the octagon and lantern, has been attributed to John Ramsey.[8A]

About 1320, or soon after, a new high vault was inserted into the Romanesque nave of *Tewkesbury* abbey [194C].[9] The ribs make different patterns here than at Ely. In addition two long straight ribs are introduced to the left and right and parallel with the longitudinal ridge-rib. These result from a longitudinal joining of points or crossing of other ribs. This new pattern is possible only because the vault is basically a tunnel-vault with transverse severies not reaching up to the crown. They even remain below the new longitudinal ribs, which are often called, not quite accurately, ridge-ribs, like the real longitudinal rib along the crown of the vault.

Gloucester is influenced by Tewkesbury. Here the south transept was vaulted in 1336, after that the chancel, and finally the north transept. In the south transept it is easy to isolate visually the diagonal ribs and the ridge-rib, as they have the same stronger profiles [194D].[10] The other ribs run parallel, some to the diagonal ribs, some to the ridge-rib, except for fragmentary tiercerons in the four corners of each bay. One perceives that the ribs nearest to the ridge-rib and parallel with it correspond to the secondary ridge-ribs of Tewkesbury. But they appear now only in the lateral cells, i.e. in a fragmentary state. Where the fragmentary tiercerons end, a pattern of liernes results which adds some variety to the uniform net of lozenges with crossed diagonals. The term net comes to one's lips here as naturally as in the case of some vaults of the French Plantagenet style.

To analyse these vaults in their historical sequence makes it easier to understand them. They grow more complicated from design to design, but the patterns of the later ones contain those of the earlier ones. In the chancel at Gloucester (1337-*c.* 1367) the basic shape of the vault is again a tunnel with transverse severies [194E].[11] The ridge-rib is accompanied by two secondary ridge-ribs. In each bay two diagonal ribs cross. In addition there are diagonal ribs crossing pairs of bays and therefore meeting at the apex of a transverse arch. Their lower parts form the boundaries of the severies. This vault, complex as it is, is made so much richer by liernes that the eye has the choice of reading together spherical triangles, quadrangles, pentagons, and hexagons. Even in the preceding vaults there had been ambivalence or polyvalence; here this principle is carried to the point of extreme complexity. The bays merge completely, because of the form of this vault.

Less closely ribbed and hence less heavy is the vault of the chancel at *Wells* [194F].[12] Here the diagonal ribs across individual bays are left out, as is also the ridge-rib. The system consists of diagonal ribs across pairs of bays, but these ribs are interrupted *en route* and a square of liernes is interpolated. Although these squares on the surface of the vault are set parallel to the longitudinal axis, in perspective they do not appear to be regularly set squares. Hexagons are formed by connecting the corners of the squares. Moreover they

195. Lübeck, St Mary. Vaults of the Briefkapelle, *c.* 1310–20

and other shapes of the vaults are given cusps. Work on the chancel was underway in 1333, and complete by *c.* 1340.

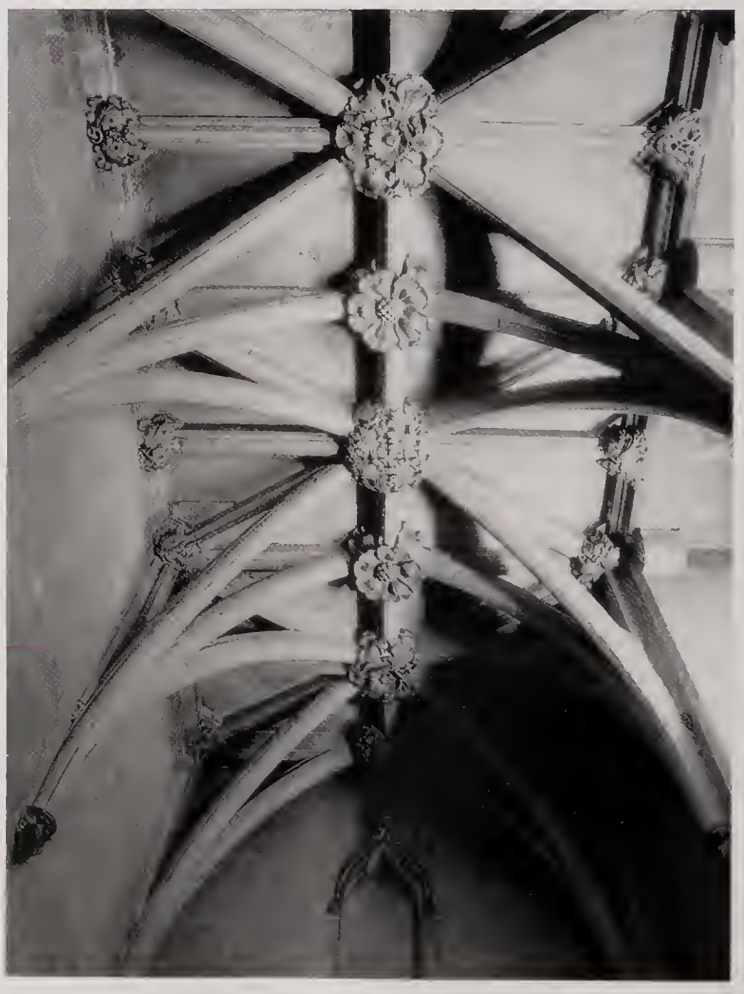
At *Gloucester* the vault of the north transept followed after that of the chancel. This again has three parallel ridge-ribs. The pattern is simple in principle, but the result is still a bewildering multivalent pattern.[13] This part was built, according to Harvey, in 1367/68–73.

This coherent sequence from the Wells chapter house to about 1340 shows the development in England as a progressive merging of the bays by means of the patterns formed by the ribs. The buildings in the 'Plantagenet style' of the first half of the thirteenth century are first continued in the chapter houses of Lichfield, Westminster Abbey, etc., and then, from the Wells chapter house onwards, with rapidly intensified partiality, in the group culminating at Gloucester and the chancel of Wells. Considering the relations between Anjou and England it can be assumed that, in spite of all differences, this whole sequence of vaults represents one continuous development. One can see that the architects were quite capable of bridging the geographical distance.[13A]

The Angevin vaults already gave a separate boss to each point where ribs crossed and decorated it with foliage or figure sculpture or both. As the points of crossing increased in number in English vaults, so also did the bosses. They intensify the impression of 'texture', appearing to be heads of nails fixing a net to the vault. The bosses are both decorated and decoration. Whether or not the whole vault is to be called decoration will depend on what is meant by the term. The decisive fact is that, if one chooses to call them decoration, they must be called Late Gothic decoration, as decoration exists in other styles as well. The vaults are Late Gothic, not because they are decorative, or, as some people say, 'merely decorative', but because they are textural instead of structural. At a time when the theory has been shaken that all ribs bear or ought to bear, there is no longer any reason to speak with scorn of 'merely decorative' ribs, or ribs which are unstructural and therefore valueless. They are deliberately textural.

Soon after 1300 star-vaults were built in Germany; the first perhaps in the Greveraden Chapel of 1304 under the north tower of St Mary at *Lübeck*. Its design then appears slightly varied in the Schinkel Chapel. The Briefkapelle which adjoins the westernmost bays of the south aisle has a vault consisting of triradials [195]. This was begun about 1310.[14] From about 1350 onwards *Heilsberg Castle*

196. Bristol Cathedral. Vaults of the Sacristy of the Berkeley Chapel, *c.* 1330



(*Lidzbark Warmiński*) was built for the bishops of Warmia in East Prussia. It has fifteenth-century star-vaults in all rooms, including the chapel.[15]

There was direct communication between the German north-east and England, but all these vaults correspond to that of the nave at Lincoln, not to Gloucester, etc.[15A] They use no liernes. Star-vaults in their simple centralizing shape belong to the High Gothic phase. A room of the charming lightness of the Briefkapelle belongs to the phase which one might call intensified High Gothic.

Not everyone considers it important to draw clear boundary lines between the phases of a style. Many on the other hand are keen on making the distinction between national characters. There is a connexion between the two in this case. The concept of the spreading of the Gothic style loses its meaning almost completely in the Late Gothic phase. The spreading to the principal Western countries had been accomplished. In England a national school existed at least since Lincoln. In the other countries the change towards the Late Gothic style took place about 1320 or about 1330 at the latest. The change followed the same tendency everywhere, but was based none the less on different premisses which one must accept as national, the term of course understood not in the sense of biological inbreeding but of spiritual connexions.

Specifically English also is the introduction of flying ribs, that is ribs without cells, rising in relatively small square or oblong rooms below a flat stone ceiling decorated with crossed 'ridge-ribs'. The flying ribs structurally support the centre of the flat ceiling. So far only three such skeleton vaults or vaulting skeletons have been recorded: inside the Easter Sepulchre at *Lincoln* in 1296,[16] in the sacristy of the Berkeley Chapel in *Bristol* Cathedral about 1330 [196][17] and in the pulpitum of *Southwell* Minster between 1320 and 1340.[18] The first and third are so small in scale that they had been over-looked until quite recently, the second is bigger. One may join to these English vaults that of the so-called Tonsura of the cloister of *Magdeburg* Cathedral[19] for which no exact date is known but which can be placed at about 1330–40.

Peter Parler, a little later, in the cathedral of *Prague*, built flying ribs in conjunction with a real vault and a pendant.

The old theory that the function of ribs is always to carry becomes untenable in the case of flying ribs. The theory on the other hand that diagonal ribs always divide a room into fragments is confirmed by these Late Gothic flying ribs. The English architects returned to the original, purely aesthetic, and in the narrower sense stylistic, function of the rib. Together with the lierne the flying rib stands at the beginning of the Late Gothic phase; for the fundamental principle of the Gothic style, the division of space, is realized in these forms without any residue whatever of Romanesque principles. The difference between tiercerons, liernes, and net patterns on the one hand, and flying ribs on the other, is that flying ribs preserve a vestige of structural character. But as they hardly create the impression of really carrying the flat ceilings, they belong to the category of akyristic forms: their supporting function is not taken seriously.

2. CURVILINEAR AND RECTILINEAR

Pear-shaped shafts are similar in cross-section to ogee arches [197.III]. It may well have been an architect who had drawn hundreds of such pear-shaped cross-sections who hit on the idea of replacing pointed arches with ogee arches. It is usually suspect to try to rationalize an idea which is the product of creative imagination, but in their case the connexion between a curve viewed from its convex side and the same curve seen from its concave side can also be proved to exist elsewhere. Romanesque architects used the concave side of the semicircle for arches, and its convex side for the profile of their shafts (I); and Transitional and Early Gothic architects made the same double use of pointed arches in arcades and almond-shaped shafts (II). In the last phase of the Late Gothic style, this development of curves produced arches with convex shanks on the one hand, and piers with hollows on the other (IV). The connexion between these different forms must not be regarded as a rigid rule, but should be considered within that series of principles which embraces the secret of conformity.

Pear-shaped profiles and ogee arches had already been introduced during the High Gothic period, and of these two forms the pear-shaped profile appears in the ribs of the nave and aisles at *Amiens*, and also in the transverse arches of the nave. It may therefore date right back to the plan of 1220. In the work of Villard de Honnecourt there is also a pear-shaped profile of early form,[20] similar to some double-curved profiles without the sharp edge of the pear-shaped profile. These Villard drew next to his pear-shape in a moulding the purpose of which is unknown.[20A] Their two middle rolls are clearly defined, while the flanking ones run smoothly into the hollows. The undulating profiles in *St Nicaise* at *Reims*[21] date from the same period. In Villard's work, undulating lines appear in the pattern of a floor paving and in a timber roof. The smooth continuation of shafts into hollows was also used by Gerhard in the choir at *Cologne*. Once the double curve had appeared several times on paper, the desire to repeat it everywhere followed naturally. Such is the principle of conformity.[21A]

Pear-shaped mouldings and ogee arches first appear together in the church of *St Urbain* at *Troyes* in 1262. Ogee arches appear implicitly in the triforium because the pointed trefoil arches reach up into the trefoils above, and in the windows of the choir, because there the pointed arches over the central lights flow directly into the circles above.[21B] Lasteyrie has enumerated several forms of tracery in which ogee arches are produced by the form of a pattern, and he claimed to have proved that the French Flamboyant was not dependent on earlier English models.[22] In the examples that he quotes, the patterns are like pictorial puzzles – one can

197. Analogies between profiles of shafts and forms of arches

198. Hardingstone, Northamptonshire, Eleanor Cross, 1291–4

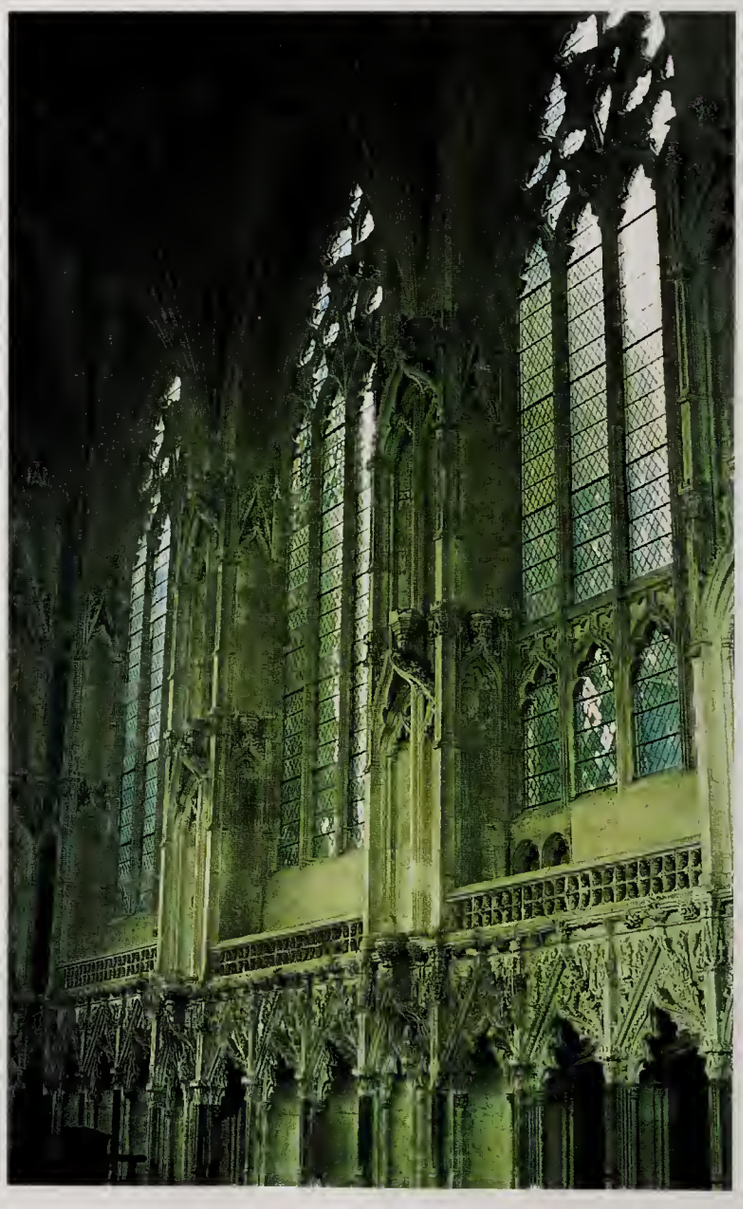
find the ogee arches only if one looks for them; but they either do not appear in their own right, or only partly appear within a conservative pattern, as at Troyes (*c.* 1262) and Heiligenkreuz (*c.* 1288–95).[22A] Early examples of ogee arches used as autonomous forms appear in the English Eleanor Crosses, built between 1291 and sometime before 1297 [198],[23] and these are followed by the tomb of Edward Crouchback in Westminster Abbey, erected in *c.* 1297.[24]

Pear-shaped profiles do not usually come to a sharp point, and it is this which differentiates them from ogee arches; in addition to this, the functions of the two forms are also different. Pear-shaped shafts, like almond-shaped shafts and bases and abaci turned through 45 degrees, make the boundary zone between bays appear thinner, and pear-shaped shafts have the additional effect of creating soft transitions between light and shade. Ogee arches, on the other hand, are intended to eliminate the structural characteristics of arches, for their upper parts seem to be suspended and therefore to become pure texture. But of course the function of both forms is to increase partiality. The spatial parts and the layers of the arcade arches flow smoothly into one another, and all this texture serves to give the impression that the whole work is dependent on a visible or invisible scaffolding.

Within tracery, the ogee arch remained a two-dimensional figure. When it was applied to a curved surface it became three-dimensional. In a modest way this happened at the starting points of the vaulting shafts immediately above the abaci of the two piers in the nave at Exeter cathedral which support the bay with the minstrels gallery, under construction after 1327. In contradiction to their structural function these clustered shafts are hollowed out at their feet to allow for the placing of statuettes. These niches have ogee arches which curve forward with the plane of the cylinder.[25] The ogee arches also curve forward with complete freedom in the Bishop's Throne at Exeter, which dates from 1313 to 1323/24.[26] They form the link to the nodding ogee arches of the tabernacles on the crossing piers at *Ely*. The whole frame is bent round the pier.[26A]

On each of the four diagonal sides of the octagon the zone below the windows has three shallow ogee arches closely connected. By their continuation downward, along the horizontals, onion-shaped frames are created. These shallow ogee arches are by the same architect who applied the bent ogee arches to the piers.

199. Ely Cathedral, Lady Chapel, begun 1321, complete *c.* 1340

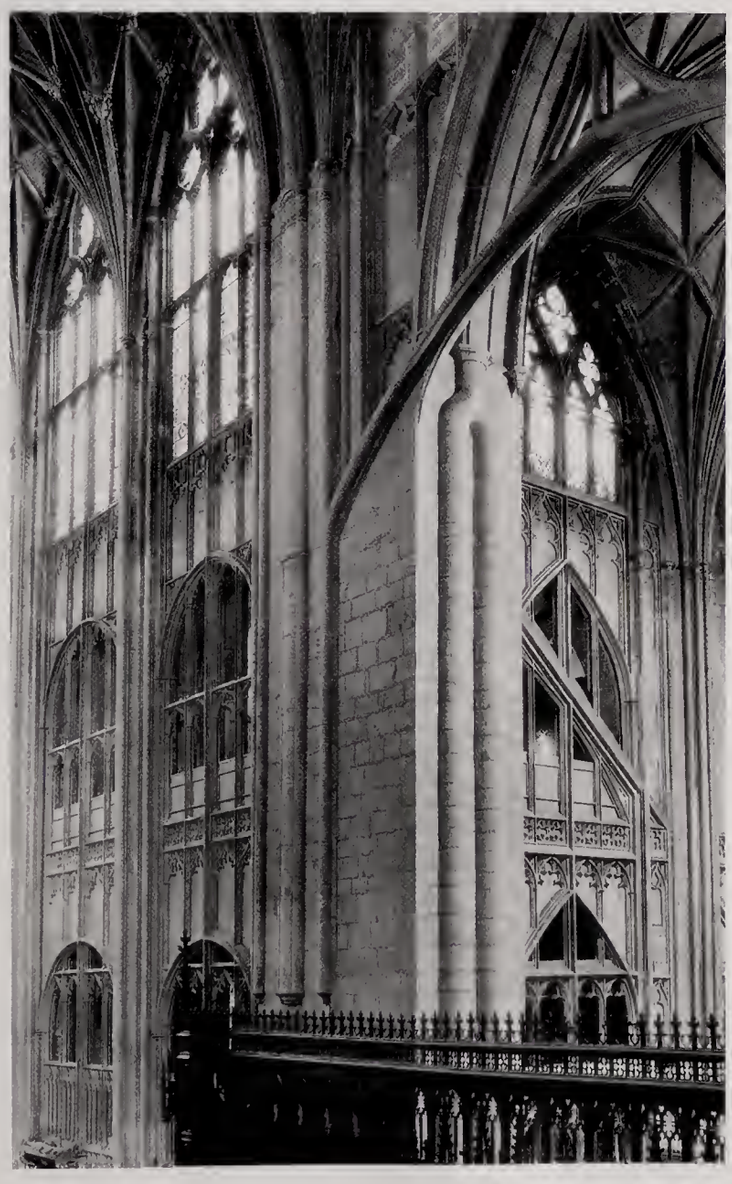


The Lady Chapel at *Ely*, which was begun in 1321, one year before the collapse of the crossing tower, is fascinating not only on account of its vault. The details of this room, splendidly rich and fantastic and inviting close analysis,[27] are far ahead of anything of Late Gothic design on the Continent [199]. The Percy Tomb at *Beverley* Minster of *c.* 1335–40 continues the style of the Lady Chapel at Ely[28] and confirms its date, which in any case is borne out by the preceding work at Exeter.

The three-dimensional ogee arch is reminiscent (theoretically) of the double-curved ribs at Bourges or even the double-curved groins in Romanesque buildings. However there are differences in each case.

The delight in undulating curves expresses itself also in the form given to the strainer arches between the west and east piers of the eastern crossing at Salisbury. They were inserted from *c.* 1320, probably by the architect William Joy. Two double-curves cross in the shape of an X. The resulting form could also be interpreted as the interpenetration of two half-ogee arches. The practical purpose of the strainer arches was to strengthen the supports for the new crossing tower.[28A] More massive and more conspicuous are the four crossed double curves of the strainer arches in the crossing of *Wells* Cathedral (sometime around 1356?). There are no capitals here, and large circles are pierced through the spandrels. The bases of the X-arches are grouped together diagonally and are an example of a 'separated crossing' that is in the Gothic style, a crossing recognized as an independent spatial unit but at the same time by means of the diagonality of the bases united to the neighbouring spatial units, according to the principle of partiality.[28B]

200. Gloucester Cathedral, south transept and choir, *c.* 1331–6, and choir, *c.* 1337–67



201. St Stephen's Chapel, Palace of Westminster, London, 1292–1348. Engraving of the south side by Frederick Mackenzie, 1844

A few years before the strainer arches were begun at Wells, the designer of the south transept at *Gloucester* (constructed *c.* 1331–36) introduced the four-centred arch[29] and adopted rectilinear tracery [200].

It has been proved that the antecedents of the Rectilinear ought to be traced back much farther and that the style is already to be found in *St Stephen's Chapel* in the Palace of *Westminster*.[30] This chapel, which lay to the south of Westminster Hall, was begun in 1292, destroyed by fire in 1834, and demolished after measured drawings had been made [201].[31] The chapel, used from 1547 to 1834 as the House of Commons, had an aisleless lower storey of five bays with lierne star-vaults and an upper storey also aisleless but with a wooden vault of low pitch. The windows of the

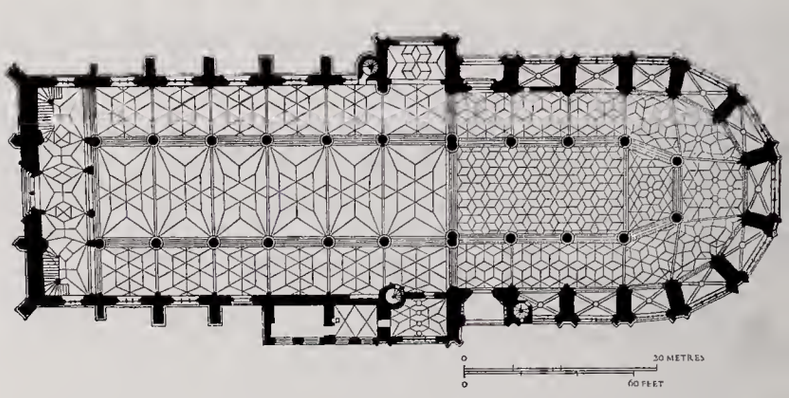
undercroft are pointed, and have four lights. On the outside, in front of the mullions, are detached posts which are continued attached to the wall above the windows and pierce the farthest projecting archivolt. This emphasis on the verticals was repeated in the upper part of the chapel, as we know from Mackenzie's drawings. There was blank panelling in the spandrels of the arcades, and their mullions reinforce the impression of verticality. Nevertheless the tracery of the windows of the lower chapel contained ogee arches – that is, the chapel combines Curvilinear and Rectilinear elements.

The term Perpendicular was given to the period from about 1350 to about 1530 by Thomas Rickman in 1817. Edmund Sharpe found it inadequate because the tracery and other details contain horizontal as well as perpendicular lines. He therefore substituted the term Rectilinear for Perpendicular. From Rickman up to the middle of the twentieth century everybody took it for granted that the Perpendicular or Rectilinear was a reaction against the Curvilinear, following and displacing it. Today we have to acknowledge that the Perpendicular was created in the same year (1292) as the Curvilinear, so far as England is concerned. The masters who designed the chapel of St Stephen at Westminster have been given the name of the Court School of London.[32] The date 1292 for the creation of the Perpendicular style has been queried, because it was forty years before, in 1331, it was taken up again in the south transept of Gloucester Cathedral. However, the long interval can be explained by the fact that the erection of St Stephen's Chapel was slow and building stopped more than once for periods of several years.

At *Gloucester* the west and east walls of the south transept are formed of rectilinear tracery, partly pierced, partly blank. Bond thought the stained-glass artists had complained about the vesica shapes of the Curvilinear, because they made the designing of pictures more difficult. But the German and French stained-glass painters were capable of filling the most complicated vesica shapes, and the Rectilinear at Gloucester covers all the walls which were not destined for stained glass. As the remodellling of the transept at Gloucester started in 1331, this has been taken as the birth date of the Rectilinear.[33]

A better explanation than Bond's of the coming of the Rectilinear is that it represented a reaction against curves altogether. Even this, however, is not wholly satisfactory. When in *c.* 1337 the remodelling of the chancel began at Gloucester, mullions were allowed to carry on through the pointed arches. This, together with the horizontals of the gallery and the window sills and the horizontals of the transoms, results in a net or grid of rectangles that might well be called an 'all-over repeat" capable of being continued endlessly. The same tendency existed in the Curvilinear, e.g. the reticulated tracery of the sacristy of the chapel of *Merton College, Oxford* (1309–11).[33A] The pattern is meant to lead on beyond the frame. In this respect the intention of the Rectilinear is the same as that of the Curvilinear and is by no means a sign of opposition. The two styles are twins. They existed at the same time in England, the Rectilinear being entirely confined to England.

The plan of Gloucester Cathedral is Romanesque. Much of the building of *c.* 1090 survives, the crypt, the nave, the



202. Schwäbisch Gmünd, Church of the Holy Cross, begun *c.* 1315. Plan

ambulatory and its gallery.[33B] There are very early ribs in the crypt, there is a mature rib-vault of *c.* 1240 over the central vessel of the nave, and there are the Late Gothic additions and alterations, in the transepts and east of them. Each part is individually interesting as a representative of its own phase of medieval architecture. In the east parts what is doubly interesting is that the styles are not separated from each other as in the nave, where the Gothic vault appears easily separable from the Romanesque substructure, but that the Romanesque building was left and the Rectilinear placed in front of it like a grille. Gothic relief stands in front of Romanesque relief. The east wall is opened above a low plinth in one enormous rectilinear window with thirteen mullions at equal distances. All lights finish in pointed arches, and they carry on their apexes further mullions. This east window was completed in the 1350s.[34] The complicated vault finally unites the whole. For net-vaults, star-vaults, and fan-vaults neither the term Perpendicular nor the term Rectilinear makes sense. If one wants to keep these terms one should talk only of perpendicular or rectilinear patterns in tracery and on walls, and not extend them to whole buildings and a whole period.

In order to vault the crossing the master mason needed points of support in the middle of the crossing arches. For this purpose he threw across the space between the abaci of the crossing piers thin four-centred arches and placed on the not very pronounced apexes of each of them a vertical mullion accompanied on both sides by counter-curves.[35] The result is an ogee arch in mid-air from which rise the seven ribs of the vault. It is a refined repetition of the strainer arches of Salisbury and Wells, or perhaps their precursor [200]. The crossing tower, though built much later, was projected in 1331; for the large flying buttresses in the transepts which penetrate the rectilinear system were erected with a view to the crossing tower. To characterize the unique miracles of geometrical fantasy at Gloucester – the word unique, so often misused, is here justified – one may choose to refer to Islamic buildings, but the details of the English cathedral are not at all Arabic: they are extremely English, and this is true of the Rectilinear as a whole. As one wanders round and through Gloucester Cathedral one is not led to conclude that there are permanent national styles. All the styles which were combined in this building are English. In addition the masters of south transept and chancel were geniuses who in their own personal way drew their conclu-

203. Schwäbisch Gmünd, Church of the Holy Cross. Interior of the nave, begun *c.* 1315, and choir, begun 1351

204. Schwäbisch Gmünd, Church of the Holy Cross. West front, begun *c.* 1315. Nave complete by 1347

sions from the preceding development of the Gothic style. They are not more English than others; they are simply more personal.

3. THE RELAXATION OF STRICT REGULARITY. HALL-CHOIRS

In Germany, the boundary between High Gothic and Late Gothic is not as clear as it is in England. Most German architects continued to build plain cross-vaults. There was an increasing preference for hall-churches and an increasing reluctance to build transepts and crossings. This clearly reflects a growing dislike of the multitude of re-entrant angles in High Gothic architecture. The basic principles of the Gothic style demanded that the interior spatial parts should be bounded externally by a continuous contour without any projections sideways or upwards. This new type was more fully developed in Germany than in other national schools of the Late Gothic style. It appeared there even in the High Gothic period, still bearing all the characteristics of the High Gothic. The nave of the cathedral at *Minden*, in building in the 1250s and 1260s, for example, is a High Gothic hall-church inasmuch as the piers have the basic shapes of the High Gothic.[35A] The variations on St Elizabeth at *Marburg* introduced by its imitators must also be included within the German High Gothic style.[36] Here again, the drawing of boundaries between periods is not a sign of conventionality but of understanding.[36A]

The nave of the church of the Holy Cross at *Schwäbisch Gmünd* has often been called the earliest German Late Gothic church because of the impression given by the net-vaults and by the choir, although these are all later additions. The new church was begun *c.* 1315 at the west end of the nave by an unknown architect, who planned a basilica, established the present length of the nave and its bay divisions, and retired from the work having completed only the western bay up to about half its height. In *c.* 1320–30 he was replaced by a second architect, Heinrich Parler from Cologne. Heinrich followed the intentions of the first master in retaining the Romanesque towers at the east end of the nave aisles, but changed the design of the west façade and the buttresses and vault shafts of the nave, altered the basilica to a hall (possibly the first hall church in Swabia), introduced tall round pillars, and completed the whole nave (except for the vaults: he covered the space with temporary wooden roofs). All this was finished by the outbreak of the Black Death in 1347/48 [202–4].[37] We know very little about Heinrich. An inscription above the bust of his son Peter Parler in the triforium of Prague cathedral refers to him as coming from Cologne, and as 'magister' of the church at Gmünd. He is also called 'magister' and 'architector' of the

205. Soest, Wiesenkirche, begun 1313. Interior

church in an early sixteenth-century Gmünd anniversary book. Since his son Peter was born in 1333, Heinrich was probably born in *c.* 1300–10. He may have worked as a foreman (hence his title 'Parlier') at Cologne cathedral during the early stages of the construction of the south aisle of the nave, and came to Gmünd in *c.* 1320–30 when the pace of work on the cathedral began to slacken.[38] Despite his Cologne origins, Heinrich's forms in the nave (and those of the first master) rely exclusively on Upper Rhenish precedents (especially Salem, Reutlingen, Strasbourg west front and Freiburg octagon and spire).[39]

The west front at Schwäbisch Gmünd [204] has no towers, since the Romanesque towers which flanked the west end of the choir were then still standing. The composition is very simple. The decisive factor is a relaxation of strict regularity. The central oculus is slightly smaller than the two flanking ones, and the gable over the porch pushes the string course above it slightly higher in the central bay than in those on either side. The portal seems to stand loosely in its bay. Because of this relaxation of the principles of regularity in the façade, the nave at Gmünd can be called the first Late Gothic building in Germany. These irregularities were not, however, the result of a purely aesthetic intention. They were a makeshift solution, in which Heinrich adapted the existing central section of the façade (already half-completed by his predecessor with a basilica in mind) to the taller side sections necessitated by the aisles of his new hall church. He also increased the size of the side rose windows to compensate for the lack of a clerestory.

The choir was begun in 1351, and completed (with a provisional flat wooden roof) as late as 1410, but according to the initial design. The stylistic character of the choir is so radically different from that of the nave that some scholars have doubted that both could be the work of the same architect. Schmitt attributes the choir to Heinrich Parler and the nave to an unknown predecessor. Kissling attributes both to Heinrich; so do Clasen and Wortmann, who suggest that the choir's novelties can be explained by the contribution of Heinrich's eighteen-year-old son Peter. There is some force in their argument, since those very novelties anticipate much of Peter Parler's work in Bohemia.[40]

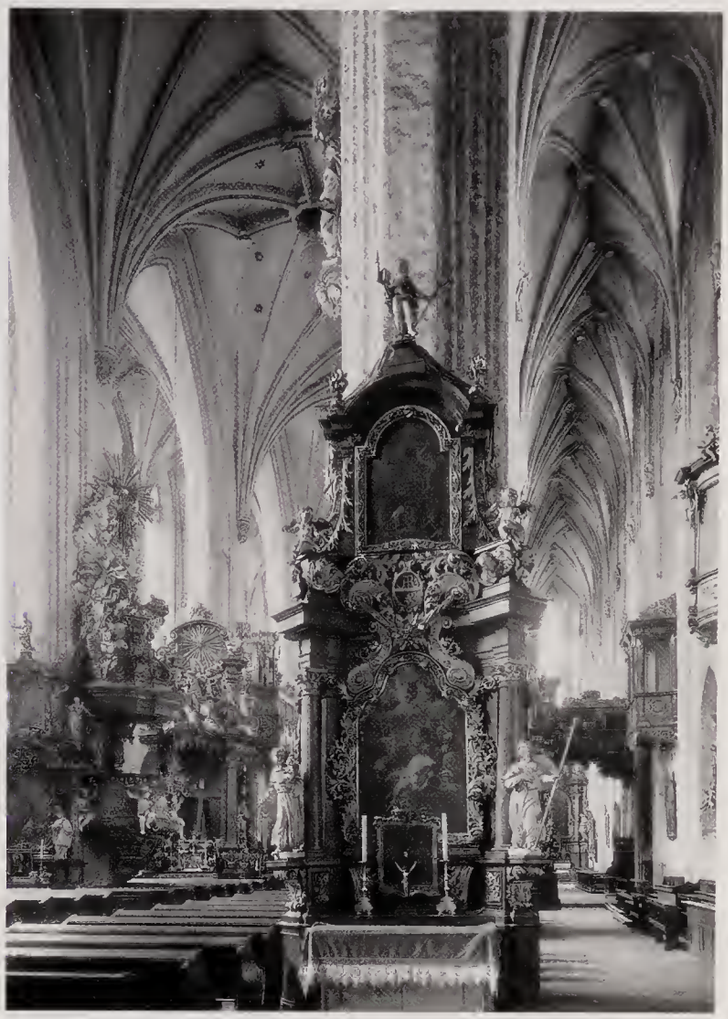
The *Franciscan* church at *Soest*, begun shortly after *c.* 1280 and complete around 1300, is still a High Gothic hall-church with High Gothic piers.[41] The *Wiesenkirche* at Soest, which was begun in 1313, however, is definitely Late Gothic[42] [205], since its piers with their sequence of pear-shaped shafts, hollows, and flat projections make it almost impossible to say where the core of the pier actually lies [206]. The shafts continue without capitals into the transverse and longitudinal arches of the vault, and the ribs grow out of the diagonal surfaces of the piers. The three bays of the central vessel and the three bays of its two aisles, which are of the same height as the nave, are joined at the east by one apse each. The middle apse consists of seven sides of a decagon. Hence its two first sides taper outward, forming one of the sides of the two flanking chapels. From outside, this device blends the three apses into one unit. All these forms are not really irregular, but they are certainly no longer governed by strict regularity.

206. Soest, Wiesenkirche, begun 1313. Plan of a pier, after Kugler

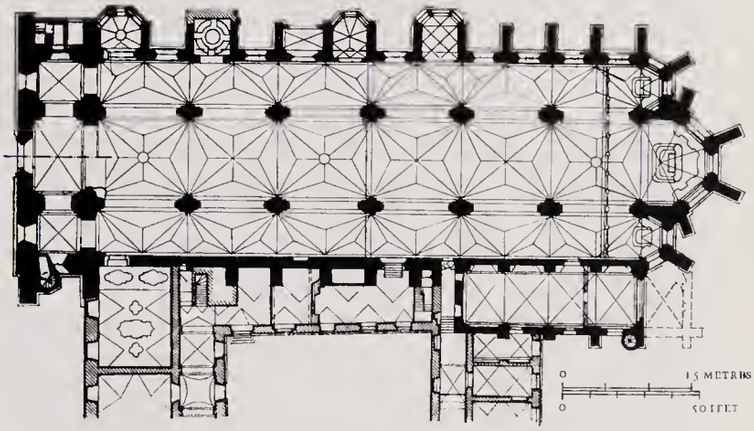
The Wiesenkirche is considered to be the most beautiful hall-church in Westphalia. The Renaissance used the word 'beautiful' only to refer to the proportions of the human figure: it made the golden mean into the norm. In the Wiesenkirche, the proportion of the two flanking aisles and the nave is that of the golden mean. Whether or not this proportion forms a sufficient basis for such a judgement, it is certainly correct to say that the interior is characterized by a happy sense of poise, however intangible this may be, and however opposed to all the principles of Renaissance and Antiquity.

The Überwasserkirche at *Münster* was built (without a break) between 1340 and 1346, and still has High Gothic piers. The Wiesenkirche did not influence it, perhaps because its construction went slowly: the middle choir may have been finished by *c.* 1350, but the south choir was not consecrated until 1376.[43] The hall-church of the *Austin Friars* in *Vienna*, begun in 1330 and consecrated in 1349, is less highly developed than that at Soest, but still gives an effect that is definitely Late Gothic.[44]

207. Prenzlau, Marienkirche, begun 1325. Choir gable *c.* 1350



208. Wrocław (Breslau), St Mary-on-the-Sands, 1334– *c.* 1387. Interior. Photo pre-1945

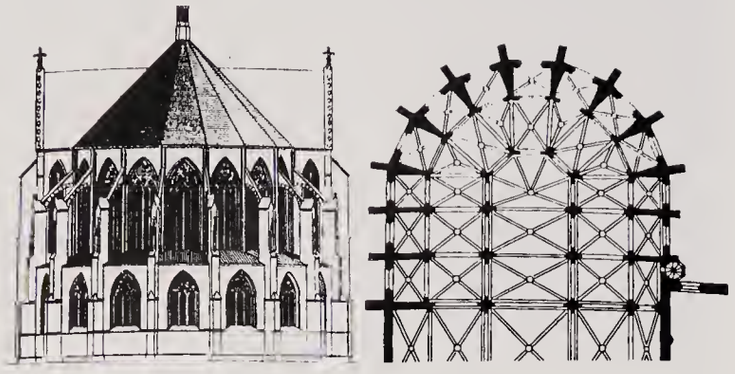


209. Wrocław (Breslau), St Mary-on-the-Sands, begun sometime after 1334– *c.* 1387. Plan

Another district in which Late Gothic forms were readily accepted was that of the North German brick churches. In the hall-church at *Prenzlau*, built begun in 1325 and completed in the late fourteenth century, the corners of the square piers were hollowed out, and round shafts added. The choir chapels are pentagonal, so that one corner lies centrally. The choir is so shallow that a single-gabled front can rise over all three apses together. The free-standing tracery of the gable adopts the principles of the façade at Strasbourg, but the use of brick results in a completely different effect [207].[45]

Not all the brick churches in northern Germany are hall-churches. The church of St Mary at *Wismar*, for instance, is a basilica. The choir, built between 1339 and 1353, has an ambulatory and five chapels. On the outside, the re-entrant angles between the chapels are bridged by arches which support a sloping roof covering the ambulatory and all the chapels – another attempt to relax strict regularity. In the interior, there is a contrast between the slender ribs and the massive piers, between the thin mullions and the extreme length of the windows, especially those in the transepts. At Wismar, old traditions are combined with Late Gothic forms. The way in which the groups of shafts spring from corbels between the arcade arches is a result of English influence.[46]

A Late Gothic hall-church, St Mary-on-the-Sands in *Wrocław (Breslau)* was begun in 1334 [208, 209]. It has a central polygonal apse flanked by two polygonal apses, and a choir and nave each with three deep bays. The vaults in the narrow aisles look like half-stars on paper, but, seen in three dimensions, the similarity disappears. The buttress between each pair of windows supports two obliquely set transverse

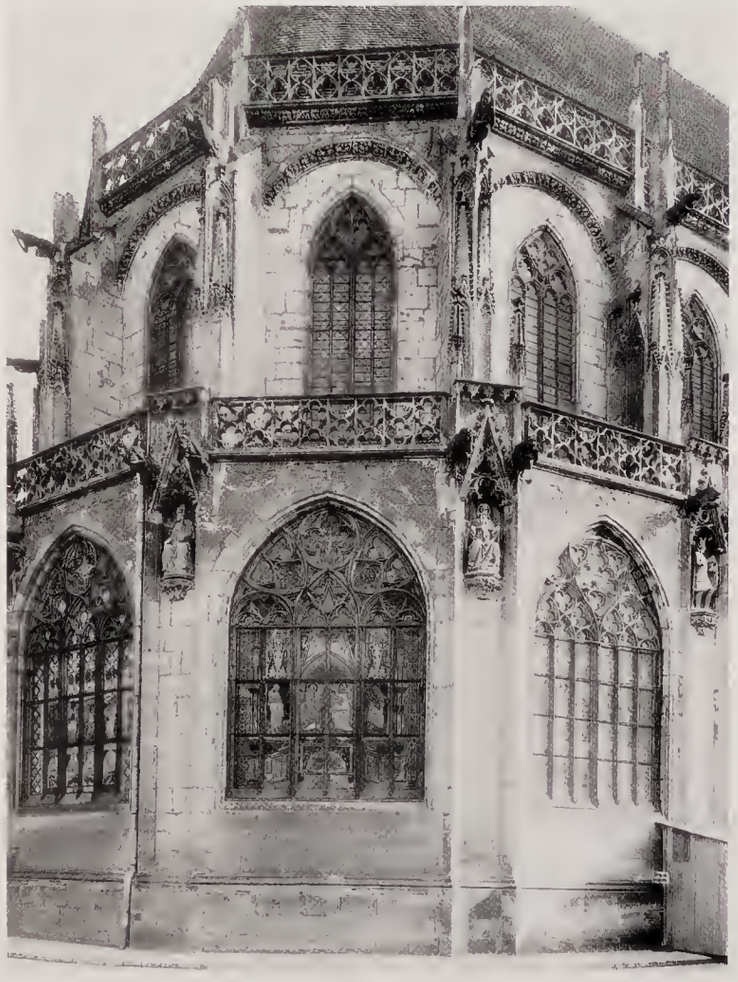


210. Zwettl, Cistercian Church choir, 1343–83. Plan and elevation

arches whose other ends stand on the piers of the nave. Each triangular cell is crossed by three ribs arranged in triradial form – the term coined for tracery being used here to describe ribs. This constructional form, called *Springgewölbe* ('jumping vaults'), is a regional speciality of the Silesians,[47] and represents another decisive break with the High Gothic principle of regularity.

The church of *St Elizabeth* in *Wrocław (Breslau)*, a basilica, is less heavy but stresses the solidity of the walls yet more. It is a parish church but is reminiscent of the churches of the mendicant orders, especially in its contrast between the long windows of the choir and the large wall surfaces in the nave. The choir, consisting of three bays and three parallel choir chapels, was in building in the 1350s and its high altar was founded in 1361. The arcade has no abaci and the hollows of the piers continue without any break into the arches. This gives a definitely Late Gothic effect.[48]

211. Schwäbisch Gmünd, Church of the Holy Cross. Exterior of choir, begun 1351

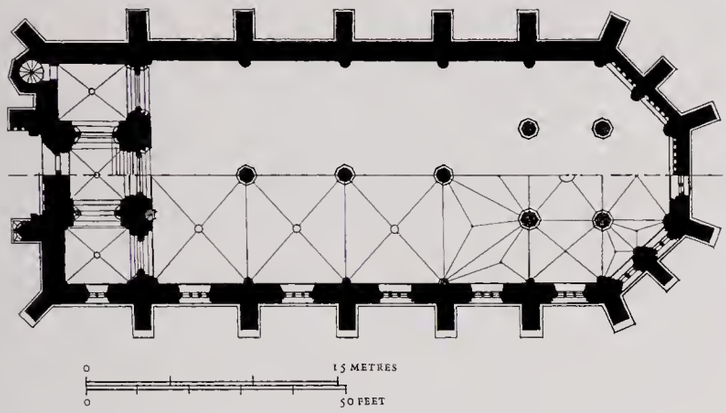


At *Heiligenkreuz* (see above, p. 181), the three bays of the choir, built about *c.* 1288–95, are identical in shape, but the position of the altar gives the eastern bay together with the eastern bays of the choir aisles the character of a rectangular ambulatory. This arrangement is derived from the rectangular ambulatory of the basilican choir at Lilienfeld, although there the sanctuary ended in a polygonal apse. *Zwettl*, built between 1343 and 1383, is a combination of both these forms [210]. The inner polygon of the Sanctuary is similar to Lilienfeld's; the ambulatory is concentric with it, but in the form of a hall. It used to be thought that the polygonal hall choir, combined with radiating chapels, made its first appearance here, but it is now clear that Zwettl was preceded, and indeed influenced by, the hall choir of *Schwäbisch Gmünd* [211].[49]

At Zwettl the piers have clusters of shafts, while at Gmünd the designer remained faithful to the round piers of the nave of about 1320 [203]. He repeated the capitals, which have the form of wreaths, but built taller piers, so that the choir is clearly separated from the remainder of the church. In both these churches, Zwettl and Gmünd, the chapels introduced a horizontal fusion, stressing the contrast with the verticals in the very long windows of the nave. At Gmünd a strongly defined cornice runs between the apexes of the chapels and the sills of the windows. Where this is crossed by the shafts it projects in the form of a triangle – thus combining diagonality with interpenetration [203].

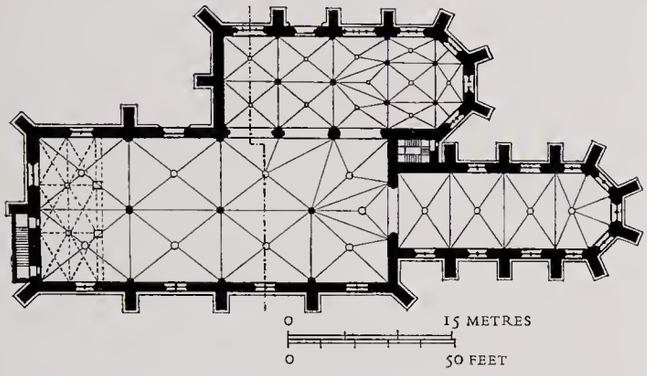
The exterior of the choir is determined by the continuous band of chapels, which are separated by flat piers. These piers have fillets with sharp profiles at their angles [211]. The details are all full of individuality and imagination. In the shallow niches in the piers there are carved figures standing on corbels, and over them gables rise into the flat-topped piers of the balustrade. The tracery of the balustrade consists of an arrangement of quatrefoils which is made up of alternating combinations of a whole quatrefoil above a half one, and *vice versa*. The upper, pointed windows are capped by ornamented, semicircular arches which are fitted so closely between the buttresses that their extrados are segmental in shape. The balustrade at the eaves of the roof repeats the form of the lower one. Each window has different tracery, which is still 'Geometrical' but is full of semicircles and segmental arches where one would expect pointed ones. The ogee arches have the early form of pointed arches with a concave-sided point on top. There are no capitals on any member of the windows nor on the jambs. The multitude of decorative detail and the gargoyles vitalize both the horizontal and the vertical lines. The close relationship between the walls is strongly emphasized. All these are elements of the style of Peter Parler's later works.[49A]

At about the same time as Zwettl, *c.* 1340, a second type of hall choir was built in the Wallseerkapelle at Enns in



212. Pöllauberg, pilgrimage church, designed *c.* 1370. Plan

213. Enns, Franciscan church. The Wallsee Chapel opens from the north side of the nave



Austria. This chapel influenced the pilgrimage church at Pöllauberg, in building around the year 1370.[50]

Pöllauberg is two-naved and has four bays [212]. The choir is formed of five sides of an octagon, and consists of three vessels spanning the same width as the two vessels of the nave put together. The length of the middle side of the octagon determines the width of the central vessel of the choir, which therefore runs through the full length of the east end. As the two flanking choir vessels are the same height as the central one, we can walk from one side to the other through the central vessel, as in an ambulatory. The vaults of the choir and the choir aisles, however, run parallel from west to east. This type may be defined as a choir of interpenetration. The choir of the Wallscerkapelle in the Franciscan church at *Enns* is of the same type [213, 214]. *St Lambrecht* shows a variation with a seven-sided choir.[51] Donin added a considerable number of other choirs formed by the interpenetration of choir, choir aisles, and ambulatory.[52] One of the most important of them is the cathedral at *Augsburg*, which is supposed to have been influenced by the choir in Prague because the Bishop of Augsburg visited Prague in 1356. However, this view has now been rejected. The chevet, begun in 1356, has a plan based on Cologne Cathedral's. Some time during construction, it was decided to alter the geometry and position of the sanctuary apse. Its originally intended polygon, of seven sides of a dodecagon (like the polygon of its chapel ring), was replaced by a large three-sided apse whose eastern end rests on the entrance pillars of the easternmost radiating chapel. As a result, the apse comes right up to the eastern chapel, cutting across the low ambulatory on either side of it. The inner central aisle thus merges with the eastern bay of the ambulatory, like St Lambrecht, but in basilican form.[53]

The solution reached at *La Chaise-Dieu*, near Clermont-Ferrand, is related to the hall-choirs and to the choirs with interpenetration of choir, choir aisles, and ambulatory.[54] Pierre Roger lived there as a monk. He was made pope and took the name Clement VI. From 1344 to his death in 1352 he rebuilt the church. The new church was a hall-church of nine bays – a type rare in France.[54A] The eastern walls of the choir forms five sides of an octagon, and there is no ambulatory. The five radiating chapels are the same height as the choir, giving the impression that here again the choir continues into the central chapel. The church contains a number of specifically Late Gothic forms: the arches die into the piers; in the aisles the bays are separated from one another only in the top parts; the gallery forms a clear spatial division, in the middle of which stands the sarcophagus of the pope. Forty steps lead up to the west doorway, and the façade is grave and reserved. The whole church is heavy, hard, and gloomy; it is very monumental, indeed papal, in effect, but above all else it is a true mausoleum.[54B]

During this generation work continued on *Saint-Ouen* at *Rouen*, at *Vendôme*, and at *Troyes*. However, the new parts continued in the style of the older ones – the regularity of the High Gothic. The architect at La Chaise-Dieu was unhampered by such considerations, and so this church

214. Enns, Franciscan church. Wallsee Chapel, *c.* 1340, interior looking east

remains the one splendid fourteenth-century work of the Late Gothic style in France.

In 1352, work was begun on the east end of the cathedral at *Antwerp*. This consists of a choir and choir aisles, each of three bays, an ambulatory forming five sides of a decagon, and five polygonal chapels. The almost flat roofs over the ambulatory and the chapels allowed the building of long windows in the apse, reaching down to the apexes of the arcade, as at Le Mans – a feature which determines the character of the exterior. Work continued on the choir until its completion towards the end of the fourteenth century, no thought being given to the advances made by Peter Parler in Prague from 1356 onwards.[54C] However, inside the choir there are already the same tracery designs, in the spandrels of the arcade, as were later to give the nave of Antwerp Cathedral its Late Gothic character. The design for this nave must already have been in existence in about 1422, when the west front was begun. The adherence to a quadripartite rib-vault in this work was conservative, but the elimination of capitals in the arcades was definitely progressive.[55]

4. PENDANT BOSSES. FLYING RIBS. NET-VAULTS WITH INTERRUPTED RIBS. CONCAVE-SIDED GABLES. CHOIRS WITH AN EVEN NUMBER OF SIDES

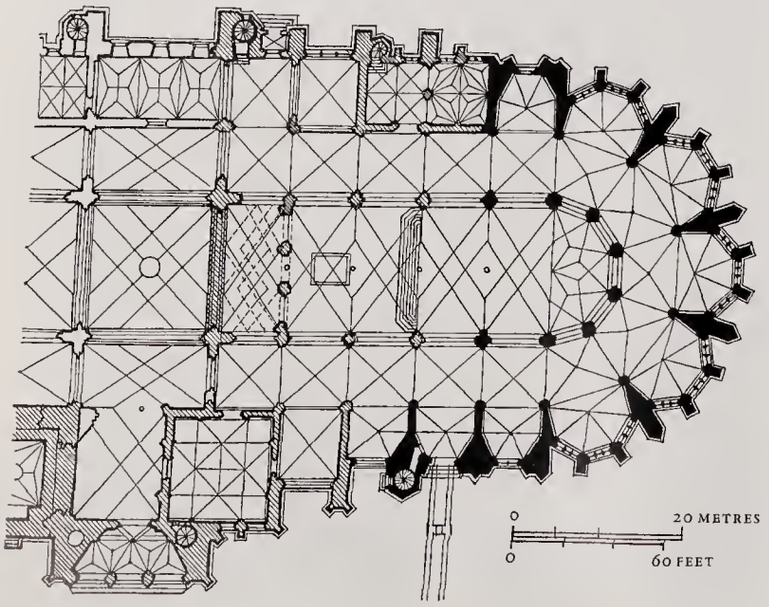
The importance of Bohemia in the Late Gothic style in Germany is due to the personality of the Emperor Charles IV (1316–78), the son of King John of Bohemia. His mother, Elizabeth, was the sister of Wenceslas III, the last of the Přemyslids. He grew up in France at the court of his uncle Charles IV, changed his name to Charles, and married his cousin Blanche, daughter of the king of France. In 1333 he chose Prague as his residence, and in 1344 persuaded Pope Clement VI to raise the see of Prague to an archbishopric. In the same year he began to build a new cathedral in *Prague* on the Hradčany, the highest part of the city, on the left bank of the Moldau [215].[55A]

As a result of his French upbringing, he called to Prague Matthias of Arras, an architect who had probably worked at the cathedral at Narbonne. Matthias began his work with the apse, consisting of five sides of a decagon, the trapezoid bays of the ambulatory, and the five chapels, each ending in five sides of an octagon. This row was to continue along the sides of the basilican choir. When Matthias died in 1352 these chapels were not finished. On the north side only one was built; on the south side two had been completed and a third begun. The only unusual feature of the choir is the decoration of the lower parts of the main buttresses with pinnacles [216]. These piers between the chapels have a pointed projection on the middle of the frontal surface, running from the floor-level through the massive pinnacle to the finials. The buttresses of the chapels themselves are frontal, but become diagonal where they recede above the level of the window sills.[56] At this level they are also decorated with tabernacles which are lighter than those on the main buttresses. The transplantation of the pinnacle (which normally marks the upper end of a member) to the exterior surface of the buttresses is akyristic. The way in which the spires penetrate the string courses is clearly Late Gothic. Matthias allowed himself all these liberties in Prague, although the work at Narbonne had carefully followed the stylistic principles of regularity.[56A]

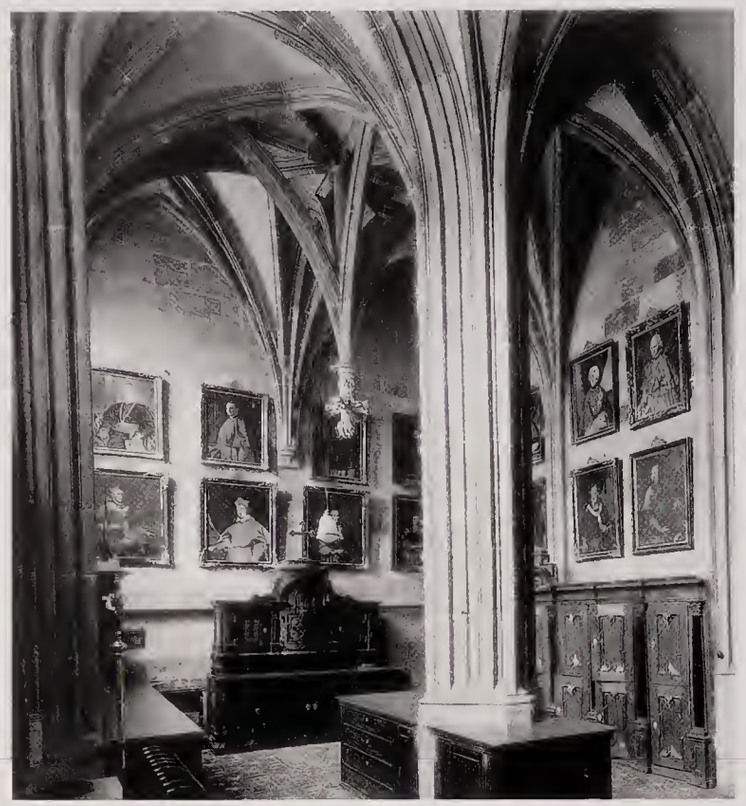
When Peter Parler took over in 1356,[56B] he did not continue the line of chapels as regularly as Matthias had planned them. He began, between 1356 and 1362, by joining two bays in the row of chapels on the north side, separating them from the choir aisle, and turning them into a sacristy [215].[56C] Each of these two bays has a different vault. In the eastern bay, the middle points of the four sides are connected by transverse arches set diagonally. Triradials are set into each of the resulting triangular cells and also into the four inner triangular cells, thus producing deltoid severies. The bewildering complexity is produced by the fact that upon these deltoids are set tiercerons which spring from the middle points of the sides and further by the fact that they are connected by horizontal ridge-ribs crossing the apex. From the apex hangs a cylindrical post which ends in a kind of pendant boss; from the circumference of this boss flying ribs rise which end where the ribs running parallel to the walls become ridge-ribs [217]. Though not everyone will have the patience to work out and visualize this geometrical pattern and to understand the geometrical principles involved, anyone can understand that Peter Parler made two innovations which he developed logically from the nature of the rib-vault: he turned the whole vault through 45 degrees, and he added to the existing types of ribs the new (English) type of the flying rib.[56D] Whereas statics demand that members should follow each other upwards, the boss here hangs downwards. This is made possible only by replacing compressive by tensile strain. Structure has here been changed into three-dimensional texture.

The vault in the western bay of the sacristy is simpler.

215. Prague Cathedral, begun 1344. Plan of choir. Dark shading = work by Matthias of Arras; hatching = work by Peter Parler



216. Prague Cathedral. Exterior of choir, 1344–85



When the sacristy was finished, Parler built the adjacent chapel of St Sigismund, which also consists of two bays, and projects a little beyond the sacristy, which, in turn, already projected beyond the original row of chapels.[56E] The chapel of St Andrew, like that of St Sigismund covered by simple cross-ribbed vaults, projects yet further beyond the other chapels on the south side. The chapel of St Wenceslas, next to it, projects further again, and, to make it square, ruthlessly takes in part of the south transept. Its western wall lies right against the south porch. This is the reason why the porch is tripartite, while the portal has only two doorways. The vault in the porch consists of groups of triradials, which are joined to the pier between the doors by flying ribs [219].

In the chapel of St Wenceslas, the vault is different again [218]. Each of the four sides is divided into three parts, whose relative widths are approximately in the proportion 1:2:1. From the one-quarter and three-quarter points on each side, transverse arches go to the corresponding points on the opposite wall, while ribs with the same profile go to the diagonally opposite points. These ribs, therefore, lie on planes parallel to the main diagonals of the square plan, where there are, however, no ribs. A cross of lierne-ribs joins the intersections on the arches following the main axial direction. This construction leaves a triangular cell in each of the four corners of the chapel, and, where this meets the walls, it looks as if it had been folded into the corner of the walls. In each corner, also, two halves of pointed arches meet on the walls.[57] The chapel of St Wenceslas was built between *c.* 1358 and 1366, and was followed by the porch to the south transept.[57A] After 1369, the missing piers in the choir were completed and the choir aisles vaulted, and in 1374 the triforium was underway [220]. If Matthias had had the intention of repeating in Prague what had been built in Narbonne the triforium would have had a solid back wall, but Peter Parler built a glazed triforium which is drawn into a unity with the windows. The sturdy little columns of the triforium, aligned with the mullions of the clerestorey windows, are set back behind the line of the arcade below. The joint between the columns of the triforium and the shafts of the vault responds is set diagonally, and above the joint there are diagonally set tabernacles. The essentially Gothic emphasis on the diagonal has perhaps never been so intensely and tangibly expressed. As in the case of the string course running round the choir of Gmünd, one is made to feel that the layers jut forward from the core of the wall.[57B] The tabernacles have primitive ogee arches. The increasing dominance of curves is evident in the tracery of the windows. The pattern of the inner balustrade is modelled on that of the exterior at Gmünd.

The interior, including the vault, was finished in 1385. It was within the German-speaking countries (in so far as the cathedral of Prague must be called the work of a German architect of the school of Cologne and Gmünd) the first net-vault in which the transverse arches are interrupted in their upper sections. It is not accurate to describe this net-vault as a series of triradials, since it does not really consist of groups of three co-ordinated ribs, but rather of fragments of a transverse arch which splits into two liernes.[57C]

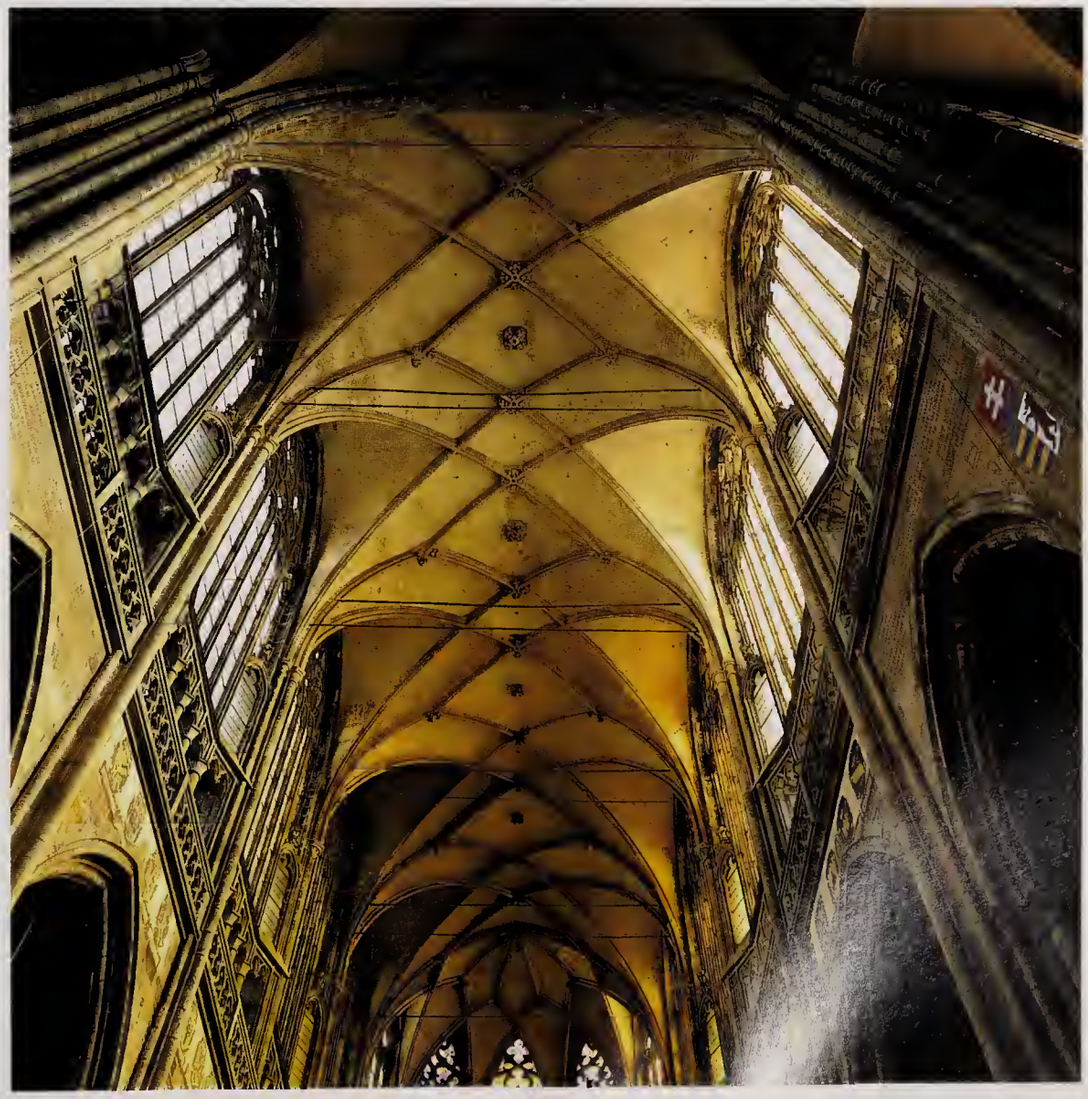
All these vaults remind one of English work. There is no written evidence that Peter Parler ever went to England, but his work shows clearly that he must have known English vaults, at least from drawings, if not from actual visits. His vaults are never copies of English models, but the tiercerons, liernes, and flying ribs in them are English elements. Parler's net-vault, however, has no ridge-rib.[57D] The balustrade at the eaves of the roof, which does not begin at the line of the guttering as at Gmünd, but at the level of the top of the windows, bears a slight resemblance to that of the cathedral at Reims, but translated into the Late Gothic style.

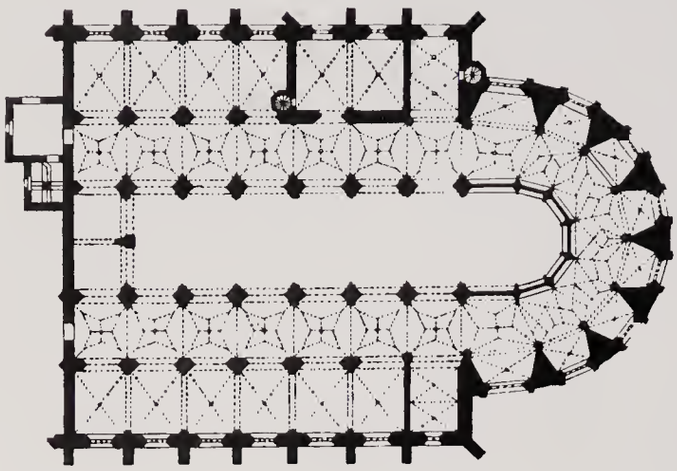
217. Prague Cathedral. Interior of sacristy, *c.* 1350–60

218. Prague Cathedral. Vault of chapel of St Wenceslas, 1358–66

219. Prague Cathedral. Vault of south porch, completed by 1367

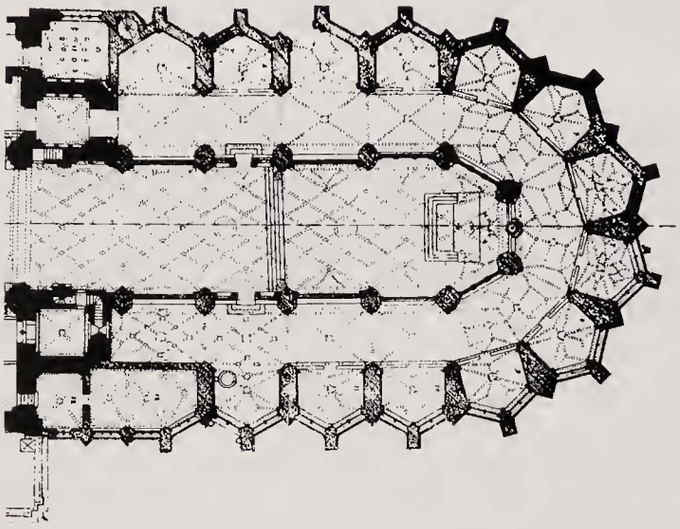
220. Prague Cathedral, begun 1344. Interior of choir, triforium under way in 1374, high vaults finished in 1385





221. Kutná Hora (Kuttenberg), St Barbara, begun 1388. Plan

222. Freiburg im Briesgau, Minster, choir, begun 1354, high vault completed in 1510. Plan



223. Nuremberg, Frauenkirche, 1350–8. Interior looking east

As at Gmünd, the semicircle holds a place of honour in the cathedral in Prague. One of them can be seen in the north portal of the chapel of St Wenceslas, supported on corbels, and decorated and enriched with a Gothic hanging semicircular frieze. The oblique part of the plinth of the jambs slopes like a lean-to roof, and from it spring the profiles of the jamb. In the interior, the plinths of the piers have the same sloping upper end, and in the choir they interpenetrate with the separate octagonal plinths of the shafts. It is here that the specific Late Gothic form of the plinth was created [316].[57E] The capitals crowning some of the shafts of the arcade are small, and the hollows between these shafts run on without capitals. There was an earlier version of this feature in the choir arcade at Saint-Urbain at Troyes.

The south tower, which stands next to the transept, was begun at the same time as the south porch (completed in 1367) probably under the direction of Peter's son, Wenzel. The lower storey is solid and massive; the next storey is lighter and more open.[58] The balustrade, with its tracery consisting of pieces of fused geometric motifs, is a continuation of that on the choir. After Peter Parler's death in 1399, when work had reached not much beyond the balustrade, the first and second storeys were continued by his sons. On the tabernacles standing to the left of the transept window, the sides of the gables are drawn inwards in a concave line. The model for this must have been the upper part of any ogee arch.[59]

Charles IV had died in 1378. He had ideas of his own: he had brought from Italy artists who executed, over the south porch, a mosaic of the Last Judgement, which is penetrated in strange places by Parler's pinnacles. He also decorated the St Wenceslas chapel with polished semi-precious stones, an undertaking to which he was probably led by descriptions of the Temple of the Grail in the so-called 'Younger Titurel'.[60] It has not been recorded what Parler thought of these two examples of royal beautification.[60A]

In those churches in which Parler was able to express his own ideas on the building of choirs – that is, at *Kolin*, begun in 1360, and at *Kutná Hora (Kuttenberg)*, begun in 1388 – he chose to build an odd number of sides, so that there would be a pier standing on the central axis [221].[61] An apse with an ambulatory consisting of a different number of sides from that round the choir had been begun as early as 1354 in the minster at *Freiburg* [222], where Johannes of Gmünd was appointed leading architect in 1359. He was probably the older brother of Peter Parler. He rebuilt the choir of the cathedral at *Basel* from 1357.[62] The chapels at Freiburg have an even number of sides, so that there is a pier standing on the centre-line, a form analogous with that of the two flanking choir chapels in the church of St Mary at *Gransee*, built in *c.* 1370–80.[63] Wherever this kind of plan may have been

224. Aachen Minster. Interior of choir, begun 1355

first put into execution, it shows a great lack of understanding to say that it was chosen merely 'to achieve hitherto unknown effects'.[64] Gothic choirs with an odd number of sides, beginning with that at Saint-Denis, present one frontal view and several diagonal ones. Those with an even number of sides present only diagonal views. It is possible that every Gothic architect of genius was endeavouring to find 'hitherto unknown effects', but the important fact for the historian is that, by building an even number of sides, architects were demonstrating yet another consequence of the diagonal emphasis first established in a rib design.[64A]

Charles IV may also have employed Peter Parler in his other foundations – for instance, in the building of the *Frauenkirche* at *Nuremberg* between 1350/52 and 1358 [223]. This is a hall-church, which shows some similarities with *St Stephen* in *Prague*.[64A] In 1355, too, work began on the choir of the cathedral at *Aachen* [224]. The apse is formed of nine sides of a fourteen-sided polygon, and, as in the Wiesenkirche at Soest, the first two sides diverge obliquely outward. The choir combines features of the Sainte-Chapelle in Paris with features of the Wiesenkirche.[65] The radiant festiveness of the interior is admirably suited to the purpose of this church, in which the German Emperors were crowned. Charles IV had been crowned here in 1349, and may well have found the Carolingian church too dark a place from which to step into the imperial limelight.

The church of Our Lady at *Karlov (Karlshof)* in *Prague* was probably modelled on the octagon at Aachen. This, too, must have been a personal idea of Charles IV, since there is hardly another example of a Gothic church built on a central plan.[66] The church was consecrated in 1377. The star-vault, which spans about eighty feet, is a sixteenth-century replacement of the original vault, which probably consisted of a chapter house-like umbrella of triradials supported on a

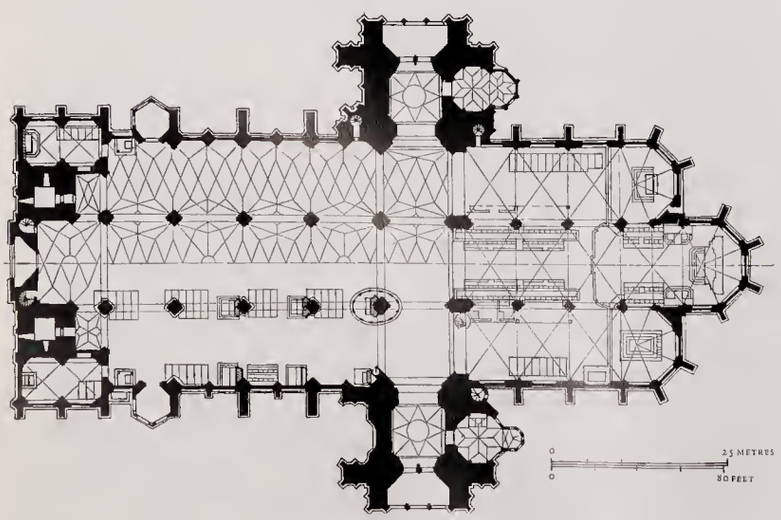
225. Vienna, St Stephen (Cathedral). Vault of chapel of St Catherine, complete by 1396

single central column. Here again, one of the polygonal piers of the apse stands on the main axis.[67]

The form of the chapel of St Catherine on the east side of the south tower of the church of *St Stephen* in *Vienna* is similar to that of the Karlshof church [225], but the vault is in the form of a pendant boss with flying ribs, and its span is only about one-third as great as that in Prague.[68]

The choir of St Stephen was begun in 1304 and consecrated in 1340.[69] It is possible that a complete plan was made for the whole church in 1304, and it may already have been decided at that time to preserve the west façade with its two towers, begun in the twelfth century [226, 227]. As this façade is not as wide as the combined width of choir and choir chapels, a two-storeyed chapel was added on each side, projecting some distance beyond the outer walls of the choir and the nave. It is not known whether the two additional towers were also planned as early as 1304, but it can be presumed that this plan included the nave and aisles continuing the choir and choir aisles westwards. The details must have been revised as the work progressed in the fourteenth and fifteenth centuries.

226. Vienna, St Stephen, Choir begun 1304; nave after 1340 or 1359; net-vault completed by 1467. Plan



It is known that Duke Rudolf IV, the son-in-law of Charles IV, laid a foundation-stone in 1359, always presumed to have been the foundation-stone of the nave. Construction of the new nave started with the outer walls, and left large parts of the Romanesque nave intact within them. By *c.* 1380 the south wall of the nave, up to the string course below the gables, was finished. Attention was by then largely concentrated on the building of the south tower, and it was only after the completion of its spire in 1433 that the nave was roofed and vaulted. In the 1420s the remains of the Romanesque nave were demolished, and from 1440 the huge roof was under construction. Hans Puchspaum, cathedral architect from 1446–54/55 designed and built the nave vaults. While the aisles in the hall choir of St Stephen's are all of equal height, the central aisle of the nave is appreciably higher than the side aisles, although there is no clerestory, so the nave can be called a hall church [228]. This heightening may reflect a desire to utilise as much as possible of the space within the roof, or to enhance the atmosphere of sanctity by the deeper darkness of the central vessel. It certainly gives a more satisfying symmetry to the west façade by elevating its central section. The Emperor Frederick III, who succeeded in raising St Stephen's to the status of a cathedral in 1469, may also have influenced the decision to create a 'pseudo-basilica', since it resembles a 'royal' basilical cathedral more than a pure hall church. Each bay of the side aisles is lit by a pair of windows, and each aisle covered with a net vault. Puchspaum may also have designed and installed the figures and canopies grouped around the nave piers, but they could equally be the work of his immediate predecessors, including, perhaps, Hans von Prachatitz (1429–35).[70] These figures appear not only on the frontal shafts, as in the Sainte-Chapelle and in the cathedral at Cologne, but also on the diagonal ones, at a lower level. Standing in a zigzag pattern in groups of three, each group with one on a higher and two on a lower level, with the lower ones set diagonally, they play a considerable part in determining the overall effect of the interior. As this staggered arrangement is repeated on the sides facing the aisles and again on the walls of the aisles themselves, one's full attention is automatically directed to a consideration of the innumerable combinations formed by these seventy-seven figures.

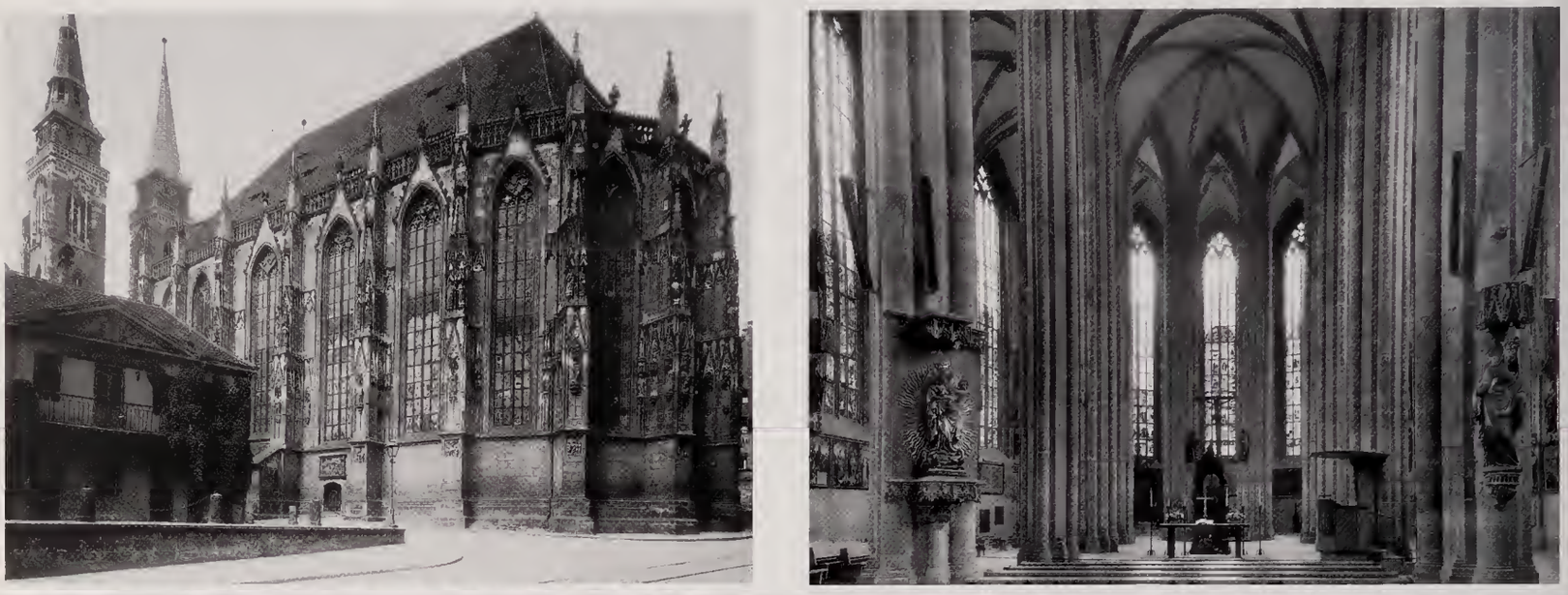
When Rudolf founded the new nave in 1359 he also envisaged two towers placed at the junction of nave and choir, forming transept-like projections on the north and south sides of the church. Only the south tower was completed. The north tower, similar in general design, was begun in the middle of the fifteenth century and was left unfinished about half-way up.[71] The south tower, together with its chapel of St Catherine and its south porch, was begun in *c.* 1370 (the south porch implies the influence of the south porch at Prague cathedral, completed in 1367). The first design for the south tower envisaged a smaller structure than the present one, similar perhaps to the steeple at Freiburg, with an octagonal belfry storey beginning at the level of the present lower gables. St Catherine's chapel was built together with the tower. Its vaults, which reflect the influence of the pendant skeletal vaults of Prague cathedral sacristy of *c.* 1356,

were completed, together with the rest of the chapel, in 1396 [225]. Some changes in the design of the tracery on the buttresses of the second storey were made by the master mason Ulrich Helbling (active 1392/94–99). But these designs were not realised until after *c.* 1400. Around the year 1400, when construction had reached just above the south portal, a master Wenczla (Wenzel Parler, oldest son of Peter Parler) took over the leadership of the lodge, and planned a taller steeple. He made the octagon begin at a much higher point, and inserted below it a tall square belfry storey, the diagonal faces of which rest on large brackets (carved with animal grotesques) inserted across the corners of the buttresses just below the first windows. This enlarged tower marks the rejection of the Rudolfian two-tower idea in favour of a gigantic single steeple. Peter von Prachatitz took over as master mason in 1404. In *c.* 1407 parts of this new tower had to be demolished but this probably involved no drastic rebuilding. The vaults of St Catherine's chapel were *not* rebuilt, but gables (intended in the original Rudolfian plan but excluded in Wenzel's or Peter von Prachatitz's changed design) had to be reinserted in front of the belfry storey, resulting in some demolition of the adjacent masonry. The surviving accounts between 1412 and 1433 give us a clear picture of the progress of the steeple: in 1415/16 the belfry stage was finished and work began on the octagon; in 1426/27 the octagon was finished and gables begun in front of the spire; in 1429 Hans von Prachatitz took over as the leading architect; on 10 October 1433 the spire was completed.[72]

All this has been discussed in detail because of the stylistic significance of the tower [227]. A comparison with the two towers at Cologne suggests itself immediately. Not only did the architect know the design for Cologne, or such part of it as had been executed at this time, but his own design can be regarded as a criticism and a correction of what he felt to be the faults of the towers at Cologne. The general conditions prevailing in the bottom storey were different. The arrangement of the porch in Vienna, whether or not it was influenced by the church in Prague, is certainly quite independent of that at Cologne. Above the bottom storey of each tower at Cologne follow three clearly delineated storeys and the pyramid of the spire. In Vienna, there is the same

227. Vienna, St Stephen (Cathedral). View from the south west. Nave begun 1359; south tower *c.* 1370–1433

228. Vienna, St Stephen (Cathedral). Interior of the nave, begun 1359



229. Nuremberg, St Sebaldus. Eastern choir, 1361–79. A: Exterior, B: Interior

sequence of one storey with two windows, two storeys with one window each, and the spire, but this analogy proves nothing. The first pair of windows in Vienna does not have separate gables, as it does at Cologne, but has one enormous gable which seems to embrace the three smaller ones standing in front of it; the window in the next storey has three lights, is narrower and longer than that at Cologne, and has an ogee arch with no gable. The gable follows separately, some distance higher, and looks as though it were part of the pair of gables above; a unique case of interpenetration. The window in the third storey has two lights; it is very long and narrow and has an ogee arch. All that appears to the left and right of the centre-line is closely-spaced rows of pinnacles and tabernacles with ogee arches and concave-sided gables. The decisive point in this tower is that the storeys are hardly separated from one another, each one thrusting itself into the next as in a telescope. From the ground to the transparent spire with its finial the tower is one enormous pyramid; it is not, as at Cologne, a series of storeys set one on top of another, but a unit divided into storeys: the whole pyramid seems to exist before the parts. Following on the line of earlier attempts, beginning at Laon and continuing at Reims and other places, this is the first achievement in the pure spirit of spatial division. It is the most Gothic tower to have been built anywhere in Europe up to that time.[73]

The south tower of the cathedral in Prague above the balustrade was begun at the latest in 1392. It served as a model for all but the lower storey of the tower in Vienna. Built by Parler's sons, Wenzel and Johannes, there is a close resemblance to the Viennese tower. In 1415 Peter Parler's son, Janco, is named as the legal heir to Peter von Prachatitz, a proof that friendly relations existed between them. It is quite certain that the members of the lodges of Prague and Vienna enjoyed a free exchange of ideas, and that jealousy and local patriotism were alien to them. Their personal plans were almost certainly the product of their talents, and not of any ambition to be original. One can see from their works that they must have recognized Peter Parler as the final authority.[74] The Parler family had a definite influence on the architectural creations of their generation in Germany, not only in Prague itself, as in the *Týn* church,[74A] and in *Freiburg* and *Basel*, but also in *Nuremberg* and *Ulm*.

The parish church of *St Sebaldus* at *Nuremberg* was a basilica with two choirs and an eastern transept.[75] It was begun in *c.* 1230/40, was in use by 1256, and was complete by 1273. Between 1361 and 1379 the original eastern choir was replaced by the one now standing [229]. The original nave was preserved. It was built by masons who had worked on the Cistercian abbey at *Ebrach*, and is really still a part of the early spread of the Gothic style. It has shafts set on brackets round the square piers, large expanses of wall, like the cathedral at *Bamberg*, built by masons from the same school, and a triforium which is still very Romanesque in character with frontal abaci, and Romanesque friezes of round arches on the outside of the polygonal choir and the west towers which rise without any batter or recessions.[76] The original eastern choir must have been equally outmoded. Its replacement by a hall-choir was apparently a reflection of a change in taste, and the architect would probably have been happy to pull down the western choir and the nave also. It is not known whether there were controversies on the subject in Nuremberg, but the building as it stands now shows that the people of the time had some appreciation of the contrast between the new choir and the old nave. It was a contrast that was to be repeated in other combinations of hall-choirs with older naves.[77]

The ridge of the vault in the hall-choir lies about six feet six inches higher than that of the nave, while the ridge of the roof of the choir rises almost forty-three feet above that of the nave [228]. The octagonal piers have no capitals, the arches of the vault penetrating the piers and the shafts, but having completely different cross-sections. The vaults are simple four-part vaults, and the triangular cells lying between the rectangular bays of the ambulatory have triradial ribs. Fragmentary friezes of round arches were once suspended from the ribs.[77A] The insertion of a semicircle into the pointed arch over the Bridal Doorway is evidence of the influence of the Parler family. The unacademic form of

the penetrations at the springing of the vault, and the radiant light in this interior in which space seems to expand and circulate, is the very opposite of the 'academic fossilization' attributed to the Late Gothic style by some scholars:[78] Eberhard Lutze rightly speaks of 'clarity transfused with spirit'.[78A]

The choir of the Minster at *Ulm* was begun in 1377 by two other members of the Parler family, Heinrich and Michael. Probably because it was built of a mixture of stone and brick, materials which do not settle equally, the vault, similar in form to that in the cathedral of Prague, was not built until 1449. The nave was first planned on the hall scheme. The elements which make the Minster at Ulm significant in the history of the Gothic style were all, however, the work of later generations.[79]

5. THE FAN-VAULT

In the chapter houses the development of vaulting led to a co-ordination of all ribs emanating from the centre. They have the same curvature and the same profiles, and one scarcely notices that there must be certain differences between them, since at Wells, for instance, the ridge-rib forms a polygon [192]. If instead of a polygon the ridge-rib is a circle, then all ribs achieve identity of curvature, and a pure rotation figure results, a concave-sided funnel: a fan-vault.

This form, which had originated in centrally-planned buildings, was transferred by the architect of the east range of the cloisters at *Gloucester* to a series of square bays [230]. He halved the form of the Wells chapter house (*c.* 1300) vertically and formed a row of halved fans in such a way that their axes coincided with the boundaries of the bays. Transverse arches and wall arches form part of the fans and are co-ordinated with the three ribs which lie between them. What was a polygonal ridge-rib at Wells is in the fan-vault a semicircular rib on the horizontal ceiling. This ceiling appears only fragmentarily between the fans as flat quadrangles with convex sides. Between the main ribs is blank tracery with many ogee arches.

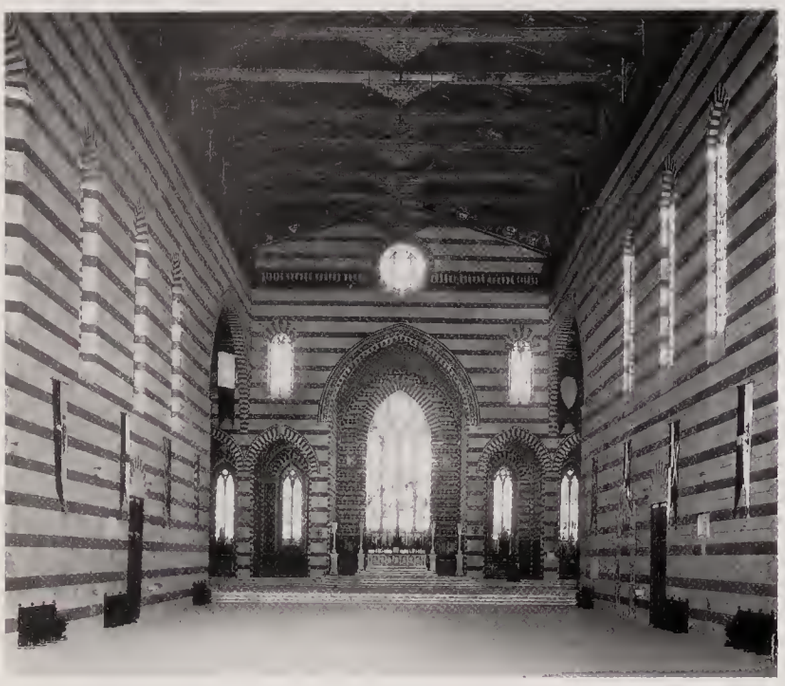
The fans as halves of concave funnel-shapes are concave in all vertical sections, but convex in all horizontal sections.[80] The visual effect is an undulating flow from bay to bay, and since both movements – from north to west and from south to north – are of equal value, the result is a kind of arrested wave.

Peter Parler in the vestry at Prague Cathedral connects his pendant with four arches which look like fan-vaults. But they do not form a proper vault; they are only the skeleton of a vault. Whether this form is connected with Gloucester, and if so in what way, we do not know, but both the Gloucester fan-vaults and Parler's vestry belong to the same period. The fan vaults in the east walk of the Gloucester cloister, from the church to the chapter house door, were built during the abbacy of Thomas Horton (1351–77) and were probably complete by 1364. All the other walks of the cloister, the south, west, and north, were constructed in that order under Abbot Walter Froucester (1381–1412). While it is not possible to establish a fixed date for each wing, it is clear that Parler's sacristy vaults, of *c.* 1356–60, are contemporary with those of the first fan vaults.[80A] Whatever the dates, the two designs are probably independent of one another. Both are the product of their period, a period whose style was valid for the whole of Europe.

6. THE SPREAD OF THE GOTHIC STYLE IN THE LATE GOTHIC PERIOD

The Italians, like the English and the Germans, had their own national Gothic style in the fourteenth century. However, compared with the work of Italian architects, the produets of the northern schools, in spite of certain obvious differences, do seem to be fairly closely related. Northern architects developed the Gothic style, tending, in their own way, to make it more Gothic. The Italians amalgamated elements of the Gothic style with elements of their own native traditions, tending all the time to make it less Gothic. It retarded without being retrogressive. It never tried to revert to the Romanesque or to pure classicism, but, with complete impartiality, borrowed elements from both these styles and from the Gothic. The judgements of architects of the

230. Gloucester Cathedral. East walk of the Cloisters, 1351–77



231. Siena, S. Francesco. Interior

232. Florence Cathedral. Interior of nave, begun 1293/6, restarted in 1357

Renaissance show how wrong it is to claim that the Italian Gothic style and the Early Renaissance are one and the same.[80B]

Just as we have not been afraid to call the early friars' churches in Italy Gothic, so we shall include those of the fourteenth century within the scope of this term.

The church of *S. Domenico* at *Siena* was begun soon after 1226. Its nave was complete by *c.* 1300, but its large transept, begun in *c.* 1306, was probably unfinished in the early fifteenth century, and the whole church was not completed until around 1480. Most of the exterior presents large, bare brick surfaces. The transepts rise above the chapels which flank the choir, and their windowless end-walls present no stylistic features at all. The pointed windows in the chapels and the buttresses are Gothic, and the whole building can be called Gothic in the same way as the early friars' churches.[80C]

On the south side of the church of *S. Francesco* at *Siena*, there are some remnants of the church in building in 1247–55. The present church, with a nave about 70 feet wide, no aisles, and an open timber roof, was begun in 1326 and was finished before 1475, when Francesco di Giorgio heightened the nave. Perhaps it was designed as a protest against the luxuries of the cathedral in the same city. The simplicity of the design, and the execution of the alternating black and white bands, in paint and not in marble, preaches the ideal of poverty. As always, however, the Franciscans came into conflict with the principle of the negation of personal possession, and the impressive scale of the church contradicts the modesty that was intended [231]. The continuation of the walls of the nave to the east wall of the transepts is Late Gothic. There is no real crossing: one arch on each side opens the nave to the transepts. The entrances to the chapels flanking the choir are treated as a kind of 'interior façade', as in S. Croce at Florence. The seven windows in each wall of the nave give limited but sufficient illumination. The ribs in the chapels and the simple tracery are Gothic; the bands of different colours are Tuscan; and the remainder is a blend of the Franciscan and the utilitarian. The *artistic* qualities of the church lie, paradoxically, in the denial of the stylistic forms of the time: they symbolize the principle of asceticism. Standing on a hill, the church dominates the surrounding area with conscious majesty, clearly betraying the paradox inherent in pride in humility.[80D]

After the death of Arnolfo sometime between 1301 and 1310, little progress was made at *Florence* with the building of the cathedral. Giotto began the campanile in 1334, but when he died in 1337 only the bottom part had been built.[81] It was continued by Andrea Pisano and Francesco Talenti. The division of each bay into two in the upper storeys was an alteration in the plan made by Talenti, but both remained faithful to Giotto's stylistic vocabulary. The narrow windows with tracery are flanked by slender colonnettes with spiral fluting. The capitals have a trace of classicism in them and are surmounted by a kind of fragmentary architrave. The inner columns, also spiral – a translation of Gothic window shafts into the language of the Cosmati – stand on a balustrade, and this again is unusual for the Gothic style. At this time in Cologne the designs for the towers of the cathedral had already been made. A parchment plan for the campanile, now in Siena, and ascribed by some authorities to

233. Florence Cathedral. Interior of choir, begun 1377

Giotto, shows the tower crowned by an octagonal belfry and crockctted spire similar to the steeples at Cologne and Freiburg. But this plan was only realised up to the height of the first socle storey. The idea of a tapering steeple, if it was ever conceived by Giotto, was given up, and his successors were content to lighten the mass gradually by enlarging the openings in the top storey of the campanile. Only the gables and the octagonal piers at the corners are Gothic. The whole is a combination containing a few Gothic elements.[81A]

Vasari began his series of biographies with Giotto, leading many people to suppose that the birth of the Renaissance can be seen in his work. Nevertheless there was a feeling that Giotto's work did not really fit into the Renaissance, and the term Proto-Renaissance was coined, meaning a renaissance which was not yet The Renaissance.[82] Today, we tend to see in Giotto the greatest painter of the Late Gothic age. In the history of architecture, however, Giotto is neither the greatest Gothic architect, nor the first architect of the Renaissance.

In 1359 Andrea Orcagna, a contemporary of Talenti, completed the tabernacle in the *Or San Michele* at *Florence*. Here he amalgamated different styles with the same freedom as the architects of the campanile. He, too, uses spiral columns, the traditional forms of the Cosmati, round arches,[83] isosceles triangles as gables on all four sides with fairly pure Gothic pinnacles next to them, and, behind the gables, a steeply rising cupola. Here, too, the columns support a fragmentary architrave and stand on pedestals; both of these features are classical in feeling. By contrast, the pinnacles have Gothic buttresses which end in a slope. Combinations such as these appear in countless smaller works of Italian Gothic architecture. Again and again one is faced with the rather illogical question: is this Gothic really Gothic?

This question is never so pressing as in the study of the *cathedral* at *Florence* [232, 233]. In 1355 Francesco Talenti was commissioned to make a wooden model for it. On 19 June 1357 Talenti began to build the pillars of the nave, starting at the west end. He proposed three virtually square bays not envisaged by the late thirteenth-century builders. This meant an inevitable discord with the earlier bay divisions established by the buttresses at at the western end of the aisle exterior walls, constructed under Arnoflo and/or his successors. At this stage, it is likely that Talenti also designed a regular octagonal cupola 62 braccia wide, on the site of what may have been Arnolfo's proposed octagon. Up to 1366 the first two nave bays were constructed and vaulted by and large according to Talenti's plan, although he was joined as capomaestro by Giovanni di Lapo Ghini in 1363. But from 1366–67 a number of important debates took place on the length of the nave and the final shape of the octagonal east end, which radically altered the cathedral's future shape. Three separate advisory commissions of sculptors, painters and goldsmiths, including Taddeo Gaddi, Andrea

Orcagna and Andrea Bonaiuti (known as Andrea da Firenze), decided to lengthen the nave eastwards by an extra fourth bay. On 9 August 1367 they also called for an increase in the width of the octagon from 62 to 72 braccia (making it extend beyond the width of the nave). And they may also have proposed the structurally adventurous addition of a drum between the octagon and the proposed dome, to heighten and lighten the east end. Talenti and Ghini accepted these proposals in August 1367, although they insisted on larger piers than planned between the crossing and the nave. In 1368 the plan was ratified, a definitive model in brick was approved, and all future capomaestri sworn to adhere to it. In the later 1370s the fourth nave bay was under construction. By 1418 most of the east end, incuding the drum, had been completed, faithfully following the committee's project. Brunelleschi's dome, designed in 1418, adheres both to the height and curvature projected in the 1367 design.[83A]

These changes in design seem to have been aimed primarily at increasing the interior space. Dehio eharacterizes this interior very aptly by comparing it with Amiens.[84] The height of the nave and of the springing of the vaults, and the overall length, are practically the same in both churches. By comparison with these similarities, however, the differences are enormous – for instance, the length of each bay at Amiens is 25 feet; at Florence it is 63 feet.

In the cathedral at Florence the rib-vaults, whose ribs form pointed arches, are Gothic. Not at all Gothic, however, are the broad profiles of the arcade arches, the shape of the piers, with their strictly frontal pilasters, the plinths which follow classical models, and the architrave and cornice which separate the capitals from the arches. Each architrave also serves as a plinth for the pilaster above. Some of these elements probably formed part of Arnolfo's plan, for they remind one immediately of S. Croce.[84A] The balcony which runs above the upper architraves, along the foot of the vault, has polygonal projections where it meets the bottom of the ribs, the most sensitive point in a vault.[85] This, too, is reminiscent of S. Croce and also of the cathedral at Siena. In the aisles, long windows with tracery float, as it were, in the expanse of the wall. The light entering the nave through the large oculi in the clerestory is softened by stained glass. The structural members of the church are of dark stone, while the walls are plastered and painted in a light colour. It is said that it was intended to decorate the church with frescoes and mosaics.[86]

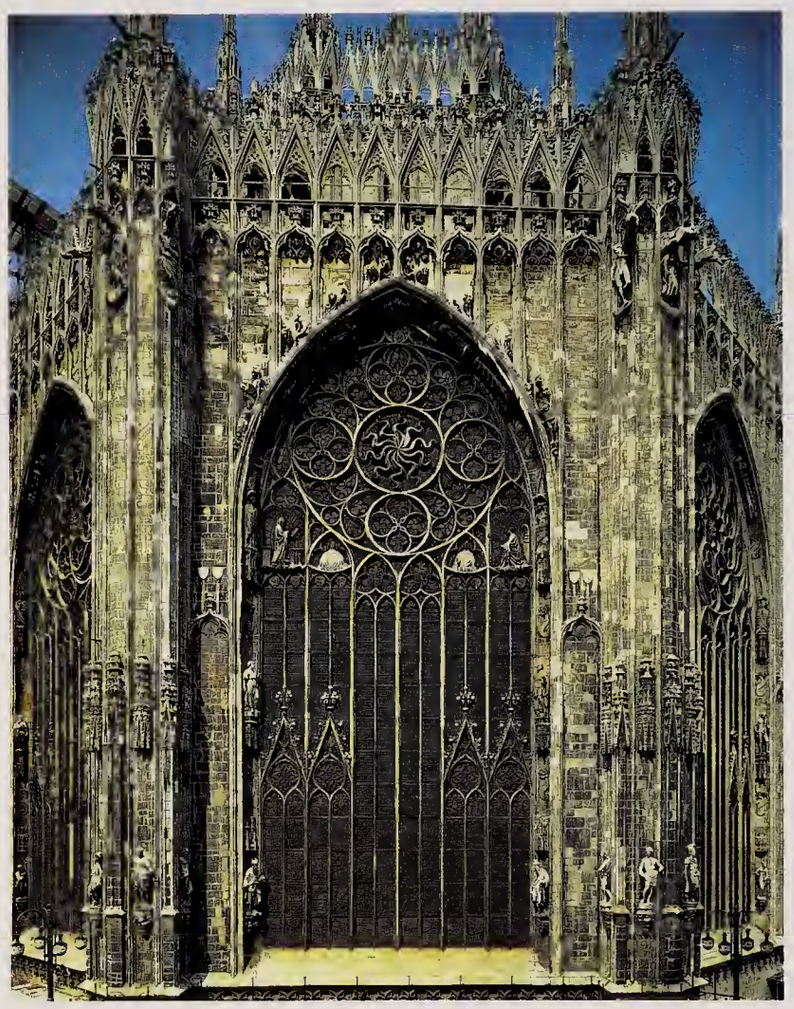
In the octagon the same piers are repeated, but without projections at the angles of the diagonal surfaces.[87] The balcony continues all the way round, turning off into the transepts and the choir, and here, too, it covers the base of the vault. Each apse has half an octagonal domical vault with no ribs. The lines of the channels between the cells have been traced in paint, but this is modern work. Choir and transepts have five radiating chapels each, and these chapels have ribs with a chamfered profile – in most cases half an octagon, the usual profile in Tuscany – which are in character with the sharpness of all the profiles in the rest of the church. The general abstract geometry is interrupted, however, by the three rows of foliage on the high capitals.

By 1413 the cathedral was complete up to the oculi in the tambour. Brunelleschi's dome, an octagonal domical vault with no ribs,[88] is the concrete expression of the ideas of Talenti, Ghini and the commissions. Just as Talenti (and the committees) may have executed Arnolfo's plan for an octagonal cast end on a slightly grander scale, so Brunelleschi adopted and adapted the scheme for a dome and drum bequeathed him by the 1367 project, again on a larger scale. The dome was intended to surpass those at Pisa and Siena. It is not itself Renaissance in style. Brunelleschi's so-called exedrae attached externally to the diagonal sides, and his lantern, might perhaps be called Renaissance; the lantern, however, still preserves the principle of the Gothic flying buttress.

There are no flying buttresses on the outside of the nave, but the vaults of the main apses are supported by triangular buttressing walls, encrusted with marble, like the rest of the exterior. The windows on the south side of the nave have gables some distance above them, and on the flattened point of each of these gables stands a tabernacle. Arnolfo may have introduced this form over the two flanking doors in the façade. This truncating of the gable, and the variations of the forms of gables, later became popular in the frames of altarpieces.[89] The west façade, and its incrustation was designed and begun by Arnolfo and finished only up to a height of about 25 metres by 1310. It was pulled down and rebuilt in the nineteenth century,[90] but we know from a drawing of 1587 the parts of it that were built.[91] The part of the two flanking doorways in the façade which lies above the springing projects forward, and in the same horizontal zone there is a row of reliefs running behind a colonnade with straight entablature.[92] The way in which this row even breaks through the buttresses by means of completely classical tabernacles with straight entablatures is against all the principles of statics. The next section of the buttresses, above the one just mentioned, is also hollow. Spiral colonnettes and pointed arches are related to the forms used in the campanile, but they stand side by side with round arches. One feels as though one had been set down once again in the earliest days of the Gothic period, and is therefore tempted to speak of passive transition. It is certainly passive in that there are concessions to models in an alien style, but the term passive transition refers to a transition to the Gothic style, and Talenti's transition led, not to purer Gothic style, but to Brunelleschi's Renaissance.

Some people will hold that it is more important to recognize the cathedral at Florence as a great work of architecture than to find out whether it fits into a scheme of historical periods, but the important question is really whether or not this scheme is broad enough in scope to include the cathedral. The concept of the spread of the Gothic style covers not only the passive transition, the architecture of the friars, and the early national variations on the High Gothic, but also those in the age of the Late Gothic. The Italian Gothic style of the fourteenth century must be included within this last category, since it is a blend of native traditions with the Gothic style.

234. Siena Cathedral. Exterior from the south west. Façade 1284–?1317.



235. Milan Cathedral. Exterior of the Choir, begun 1386

236. Milan Cathedral, begun 1386. Interior

Apart from the question of style, many different opinions have been held of Florence Cathedral: it has been called hard and cold, disappointing, 'very dark, gloomy and uninteresting',[93] and, on the other hand, stern and noble. There is a more tangible feeling of bigness in the cathedral at Florence than in the great French cathedrals: it makes one feel small, but liberated from oneself rather than oppressed. There is a distant reminder of the monumentality of classical Roman architecture. The breadth of the space beneath the dome makes it the focal point of the church and of the whole city. Churches like Pisa, Siena, Ely, and later St Peter's in Rome and other churches modelled on it, in which the central and longitudinal tendencies are combined, possess a common dynamic feeling of drama. In Florence, the nave leads, like an introduction of slow chords, to a goal of self-contained finality. Approaching from the west, we move on in continual suspense, which relaxes as the full extent of the octagon unfolds. This movement culminates in tranquillity transfused with power: it is the path from expectancy to fulfilment, from hope to redemption. One should refrain from comparing works of architecture with works of poetry; but S. Maria del Fiore and Dante's *Divina Commedia*, designed at about the same time, are truly comparable, as two artistic symbols of the progress of the human spirit towards the absolute. The basic idea of both works is a Christian one, but, in this distinctive form it is specifically Gothic. Both artists speak the language of Florence, and anyone who really appreciates Dante should be especially receptive to the qualities of the cathedral, and vice versa. In trying to fit Dante, Giotto, and Arnolfo into their correct historical places one encounters the same difficult problems in each case, but with each of them it is far more important to appreciate the intrinsic value of their work than to place them historically. Talenti and the many artists and laymen who put Arnolfo's plan into execution and developed it must be given credit for their understanding of his intentions and aims. The achievement of the city of Florence was to possess the energy necessary to complete the work.

The fact that this energy, too, deserves respect is shown in visible form in the towering walls of the unfinished addition to the cathedral at *Siena* [234]. The plan was to add a new building to the side of the old so as to turn the existing nave and choir into the transepts of the new church. The piers have round shafts; the arcade and the windows in the unfinished façade have round arches, and the transverse arches, too, are semicircular. All the new parts would have been a confirmation of the Romanesque character of the existing cathedral, rather than an advance towards the Gothic style.[94] Work began on it in 1339, after the baptistery of S. Giovanni had been completed under, and to the east of, the choir of the old cathedral. The baptistery, begun in 1316/17, was part of a wider plan: to extend the cathedral choir much fur-

ther eastwards than the old early thirteenth-century east end, and to use the baptistery as its substructure. The whole initiative was to be completed by an eastern façade, the baptistery with its three portals forming its lower part, the choir its upper. The marble cladding and Gothic decoration of this façade – with its lower, portal zone dating to before 1333, and its upper, choir part to the second half of the fourteenth century – is of a purer Gothic than any other façade in Italy. Although unfinished, its whole design is preserved in a parchment drawing in Siena dated to *c.* 1317.[95]

The upper storey of the west façade may have been under construction by *c.* 1300–10, and perhaps substantially complete by 1317, the year the S. Giovanni façade was begun. In contrast to S. Giovanni, the whole façade is probably the best example of a mixture of styles. The three doors of almost equal height, begun in the 1280s by Giovanni Pisano, still have a great deal of Romanesque detail; but they also have Gothic gables with Gothic crockets on them. The upper storey, perhaps of the first decade of the fourteenth century, makes use of the whole of the Gothic vocabulary, though the three main gables are separated from the wall below by horizontal base-lines. Harald Keller who thought the upper parts of the façade belonged to the later fourteenth century, tried to reconstruct Giovanni Pisano's project for the upper façade by making the oculus smaller and continuing the line of the buttresses. Recently, Antje Middeldorf-Kosegarten has argued that the upper façade was also constructed according to the design of Giovanni or his immediate successors, and substantially complete by 1317. As it stands, the façade seeks to relax its strict regularity by a displacement of the flanking axes in the upper storey. Keller's reconstruction is a correction in accordance with orthodox French practice, but it may not reproduce Pisano's intentions. The work of the 'epigones' is very much more Italian.[96]

In the façade at Siena, and to an even greater degree in that at *Orvieto*, splendour is achieved by means of mosaics – another factor in this mixture of totally.

In *Florence* the order of the Vallombrosani, a branch of the Benedictines, began their new church of *SS Trinità* in the late thirteenth or early fourteenth century, though the existing nave was not begun until 1360/70. The style recalls the cathedral, S. Maria Novella and S. Maria Maggiore in Florence. The classical, human proportions of the pilasters combine perfectly with the tranquillity of the spatial proportions of the interior. Comparing this church with the norms of the French High Gothic style, one is perhaps inclined to read into it a protest against the Gothic style: in the Trinità, while the frontal piers with their pilasters are still Italian Romanesque, the vaults show an attempt to adapt to the new style.[97A]

The piers in the cathedral at *Lucca* are an imitation of those in the cathedral at Florence.[98] At Lucca, the porch of an older church was preserved. In the interior, the piers and the pilasters above them are connected by round arches. The old-fashioned galleries may have been introduced in imitation of galleries existing in the preceding Romanesque church. The tracery that fills the gallery openings must have been a great source of pride to the architect.[98A]

A generation after the resumption of work on the cathedral at Florence, in 1386, the cathedral at *Milan* was begun[99] [235, 236]. It is a basilica consisting of a nave with double aisles, roofs descending in two separate steps over the aisles, transepts, and a choir with an ambulatory. It therefore belongs to the same type as Bourges and Le Mans, but the proportions are lower and wider and more in keeping with Italian traditions. The piers are octagonal with pear-shaped shafts at the corners. Between the capitals of the piers and the springing of the arcade arches are drums decorated with tabernacles filled with figures. This decoration is Gothic in detail, but not at all Gothic in its interruption of the vertical lines. The transepts have aisles, and a chapel forming three sides of an octagon in the centre of the north and south walls, which are a faint reminder of the idea of the trefoiled east parts of Florence Cathedral. The choir ends in an apse forming five sides of an octagon and an ambulatory, also with five sides. As a result, the ambulatory is extremely spacious. The impression given by the interior, as one enters the cathedral, is determined by the form of the ambulatory. Since its outer walls are so much longer in plan than those of the apse, and since the windows can stretch the full width of these walls because of the absence of chapels, one sees, on looking down the dark row of piers, the brilliant light from the large east window with its late tracery, against which are outlined the dark silhouettes of the last piers. Only the little windows in the vault of the apse and in the drum over the crossing answer this strong light from the big windows of the ambulatory. Unfortunately they have been filled with nineteenth-century stained glass which is glaring in colour and totally unsuccessful in design. However, seen at a distance, from the nave, this is not too disturbing, and one still gets approximately the impression of what was intended.

Most of the exterior dates from the nineteenth century too, but it represents a realization of the original design. In the wealth of its open and blind tracery, it is a challenge to the cathedral at Cologne. The tracery is full of Late Gothic details, such as ogee arches and mouchettes, which undoubtedly date from the Late Gothic period. In brick churches, concessions had to be made to the material that was used, both in colour and in the strict limitation of detail. Here, on the contrary, the greatest possible wealth and visual splendour has been achieved by the use of marble.

The tracery in the windows of the choir chapels inserted between the mullions about half-way up should be recognized as one of the original innovations in the development of the Gothic style. Each of the windows is divided into six lights – of which each is further divided into two – and on top of each whole window there is a large oculus. The secondary tracery, surmounted by pairs of gables with finials, is set into the outer lights only, leaving the two central pairs of lights free.[99A] This is not the only original idea: but one remains more inclined to admire this massive, heavy church as a monument to the extraordinary ambition of man, than to devote oneself to an analysis of its details.

The church of *S. Petronio* at *Bologna* was begun in 1390, only four years after the cathedral at Milan. Here, as at Siena, the architects were so ambitious that only the nave was actually built. The vehement controversies over the continuation which took place in Bologna in the sixteenth century are as interesting as those in Milan in the four-

teenth.[99B] In both cases the main problem was to determine proportions. At that time the measurements of sketches and models could only be transcribed on to the actual building to which they referred by applying them to triangles and squares, regular figures that could easily be reproduced at any size. However, the subject of discussion was not only the possible methods of reproducing proportions on a larger scale, but also the actual proportions. Because of their own traditions the Italians rejected the steep proportions favoured in northern Europe, and in Milan reduced the height partly also by using the Pythagorean triangle, whose sides are in the proportion 3:4:5. A great deal of work has been done on the study of these problems, but more research is still needed.[100]

The problem of medieval methods of measurement concerns the history of style only because artists were restricted to the use of measurements which could be transcribed from one scale to another; within these limits they were free. The methods of measurement which go back to the time of classical architecture, and even beyond, to the age of the Egyptians, were not a guarantee of beauty, as the Romantics supposed: they were quite independent of considerations of style. What they did ensure, however, was the regulation and the unification of proportions. In the nineteenth century an architect could choose any proportions he liked and transcribe them from one scale to another because the methods of measuring distances and angles had been improved. The idea that the artist must obey only his own creative imagination led to the rejection of the rediscovery of medieval methods, and on the other hand the idea that the secret of beauty lay entirely in proportions led to the interpretation of medieval buildings, often in inaccurate plans and elevations, through fantastic, complicated, and highly arbitrary linear grids, which were superimposed on the buildings, or rather on the approximately measured designs for the buildings. The beauty of original Gothic works lies in many factors – among others in a uniformity of proportion that gave rise to the principle of similarity among figures, that is to the repetition of certain proportions which were basically free but governed by the practicability of their execution.

If one is to discuss beauty, objects in which there is a mixture of styles are not the best for this purpose. The Italian Gothic style is often marked by an obvious joy in the '*cantilene*' of lines and spaces, and in its breadth and human proportions. It may be interesting to read works by nineteenth- and twentieth-century critics, in studying the spirit of their own age, but the only real criticism of the Italian Gothic style is to be found in the buildings of the Italian fifteenth century. Here and there, the Italian Gothic style survived, but, from that time on, it no longer predominated.

It becomes quite clear how Italian all these churches are when they are compared with Portuguese and Swedish works that are also part of the spread of the Gothic style in the Late Gothic period.

Alcobaça (1178–1223), perhaps the grandest of all Cistercian churches,[101] was not specifically Portuguese.

In 1388, King João founded the Dominican monastery at *Batalha*, near the battlefield of Aljubarrota, in memory of his victory over King Juan of Castile, whom he expelled from Portugal in 1385. The eastern chapels follow the Cistercian plan; the elevations follow the regular principles of the French Gothic style; the vaults, with longitudinal and lateral ridge-ribs, follow English examples;[101A] the façade is said to derive from the English Perpendicular style, and the spire on the tower is modelled on the kind of thickly crocketted profile with "crow's nest" balcony half-way up that is popular in Germany in the fifteenth century.[102] The highly developed tracery on the façade follows the patterns of the French Flamboyant. The flat roofs are Portuguese, and, at the same time, they are the common property of all the Mediterranean countries. So there was nothing yet in the fourteenth century that could be called a Portuguese Gothic style: Batalha is a product of the spread of the Gothic style in a country trying to find a national style through an eclectic approach.[103] The result is a Dominican church of regal splendour.

At the same time as Batalha, the church of St Bridget was built at *Vadstena* in Sweden.[104] It is a hall-church with strong, octagonal stone piers. Shafts only begin a little way below the springing of the vault; the thin ribs in the star-vault are of brick, and the cells are all somewhat domical. The connexions with the forms of the German Order are another expression of the spirit of a country which first followed French models (*Uppsala*, begun *c.* 1270, and taken in charge by a French architect some time in, or before, 1287[104A]), and then German ones (the hall-church at *Linköping*).[104B] The Gothic style continued to spread in Sweden, but without being affected by native tradition.

7. THE BEGINNINGS OF THE FLAMBOYANT

In France, hall-churches remained rare. After La Chaise-Dieu, St Michel des Lions at *Limoges* was built in this form.[104C] Hall-churches were traditional in Poitou; so their appearance in Limoges should not be interpreted as a concession to the Late Gothic style. In Poitou, the hall-church remained within the sphere of the regular Gothic style, with plain rib-vaults and piers with their pear-shaped shafts connected by hollows. It has been said that in France there was no alteration of the basic type of spatial form, but only of the details, especially those of the tracery. This is true, except for the one word 'only'; for the change in tracery altered the whole church.[104D] The term Flamboyant derives from the similarity of some forms of tracery to the leaping upward of flames, but it has been extended to include all figures which are bounded by double curves.

In England (as mentioned above, p. 194), this kind of tracery appeared as early as about 1310, for instance in the chapel of Merton College at *Oxford*. In fact Christopher Wilson has shown that reticulated tracery made its first known appearance in the southern half of the east walk of the cloister of Westminster abbey, constructed *c.* 1300–10.[104E] The reredos at *Beverley*, built in the 1330s, shows that by then the style had already been fully developed.[104F] In France, tracery with double curves does not appear in a developed form until about 1375, in the two nave chapels at *Amiens* built under Bishop Jean de la Grange from 1373 to 1375.[105]

However, double curves had appeared in tracery in France before this date. Lasteyrie has devoted great energy to finding early examples[106] in order to prove that French and English architects evolved these forms independently of one another. But the real question is when these forms ceased to be mere background elements and became positive, primary figures. In France this occurred for the first time at Amiens.[107]

The main forms of these figures have two points or only one point,[108] and both these forms appear in the La Grange chapels, together with spherical triangles and spherical rectangles. The French call the figures with two points and with one concave curve and one double curve 'mouchettes', and those with two double curves 'soufflets'. Bond calls the former 'falchions',[109] and the latter 'daggers'. In German, they are both called 'Blasen' (bladders) or 'Fischblasen'. At Amiens, there are already circles, divided into two identical mouchettes by a double curve. This pattern best represents the principle of division. Similar forms – four, five, or six mouchettes in a single circle – appear in the western bays of the nave clerestory at *Exeter* cathedral, dating to the 1330s and 1340s.[109A] Triangular and quadrangular figures remain independent and self-sufficient units and, as the style developed, they were more and more avoided.

The Flamboyant is a style relying on texture. It infuses a building inside and outside with a Late Gothic character, whatever its plan or type. At Amiens, the architect of these two chapels combined his own version of English Curvilinear with an English starvault, of which he could see an example (built in the 1260s)[109B] in the crossing of the cathedral. In the chapels, as in the cathedral proper, the starvault is used as a centralizing form.

The second important work in this new French style was the Sainte-Chapelle at *Riom*[110] [237]. It was built by Duke Jean de Berry (1340–1416), who had spent the seven years from 1360 to 1367 as a hostage in England. The château of Riom, which he began in the early 1370s, has completely disappeared. Only the chapel, built between 1395 and 1403, has been preserved within the modern Palais de Justice. It has four bays with no aisles, and an apse forming three sides of a hexagon. The last bay has rectangular oratory on either side. The rib-vaults have ridge-ribs. The shafts grow without capitals into the arches of the vault. The tracery in the windows, each of four lights, consists of ogee arches and, between them, in each window, a soufflet filled with rather elongated quatrefoils; on each side there are mouchettes, which look as though the frame of the window were cutting into their sides. The ridge-rib made its first appearance in northern France, at Airaines, Montiviliers, and Lucheux (p. 64), though at Riom, like the tracery, it probably came from England. In spite of this, the general atmosphere in the chapel is definitely French – not only because of the French stained glass. The French were eager to move with the times, but they were always bound by their own ideal of clarity. The proportions of the chapel are wide and commodious, ideal for the private chapel of a château, and far removed from the extreme narrowness of the High Gothic.

The west façade of *Rouen* cathedral is one of the more complicated ensembles of Gothic architecture. The two flanking doors date from between *c.* 1180 and 1200 and are framed on the left by the Tour St Romain of about 1150 and on the right by the fifteenth-century Tour de Beurre. From the late 1360s onwards the thirteenth-century west front was overlaid with a new decorative ensemble, the conception of which goes back to the architect Jean Périer (fl. 1362–88). He proposed a triple porch in front of the three portals (it was begun but probably never completed); he built a rose window (under construction in 1370) over the central (Saint-Romain) portal, and he decorated the two buttresses which immediately flank the rose with three-light blind tracery panels, each housing six statues (mentioned in 1386). His successor, Jean de Bayeux (fl. 1387–98), continued the idea of a tracery screen at rose level by installing the two blind windows with statuary above the right hand (Saint-Etienne) portal, and beginning and possibly completing the panel on the far left of the façade, between the St Romain tower (the north tower of the west façade) and the left hand (Saint-Jean) portal. This is the first to have fully flamboyant tracery. Finally, under Jenson Salvart (fl. 1398–1447), the two tracery panels (with developed curvilinear forms) above the Saint-Jean portal were installed between 1406 and 1421. Enlart thought the whole composition, with its screen-like presentation of tiered figures, was influenced by English

237. Riom, Sainte-Chapelle, *c.* 1395–1403. Interior

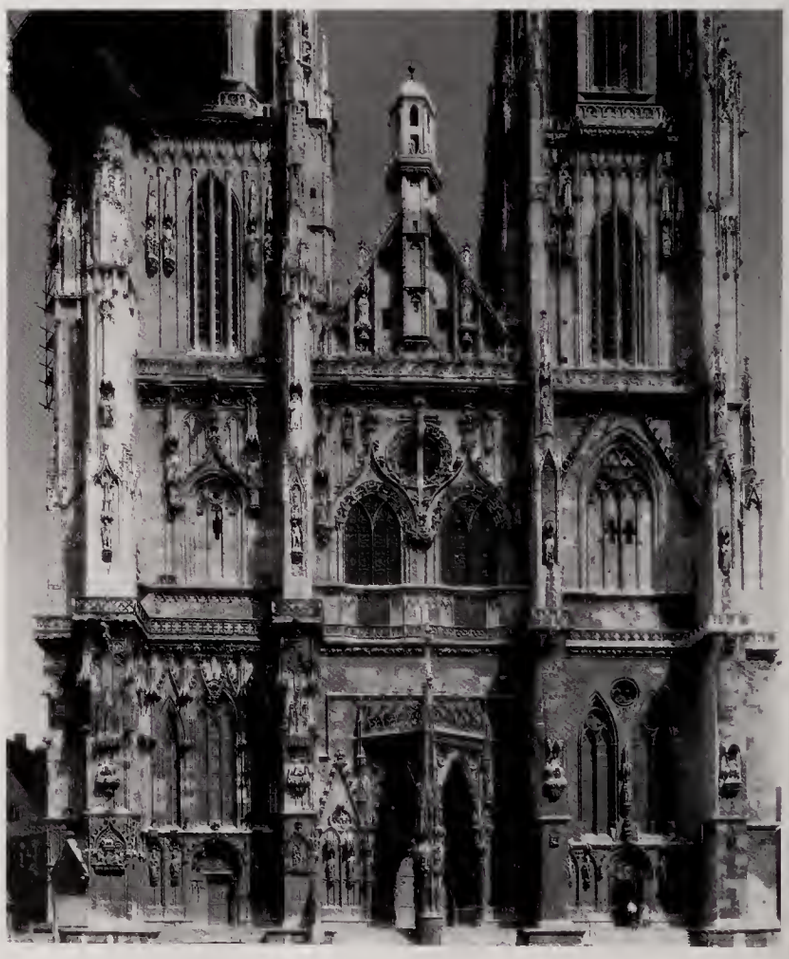
238. Ulm Minster. West front. Nave begun 1380s, steeple begun 1392

facades.[111] Certainly, the flowing tracery introduced by Jean de Bayeux (?) and Jenson Salvart must count among the earliest examples in France, though it has no specific English precedent. Guillaume Pontifs (fl. 1462–97) added the upper storeys of the Tour St Romain from 1468, and began the Tour de Beurre in 1487. At his death ten years later it was incomplete, and his successor Jacques le Roux (1497–1508) finished it with its present octagonal crown in 1507. Designs for the central portal were submitted by Jacques le Roux and his nephew Roullant le Roux in 1508, but it was probably not begun until 1509 by Roullant (fl. 1508–?27). Its gable was largely complete by 1514. The flamboyant rose behind it was constructed as part of this early sixteenth-century ensemble.

The rose window in the west façade of *Lyons* cathedral, finished in 1393 by Jacques de Beaujeu, has curving tracery that is still relatively broad and inflated.[112] Later, in the later fifteenth century, during the 'mature' phase of the Flamboyant, the tracery units become narrower, and resemble the flames from which the style derives its name. The process towards a more advanced and complex curvilinear can be seen in the transept façades of *Auxerre* cathedral. The earliest, southern, transept front, designed in the 1370s or 1380s and completed in the 1390s, adheres, rather conservatively, to a late Rayonnant vocabulary. It shows no curvilinear forms except in the ogee arches decorating the archivolt niches and the tympanum of its portal. The north transept was begun in 1415, but by 1420 work had reached no higher than the capitals of the portal and the triforium of the lateral walls. The portal also shows diminutive ogees in its micro-architecture. The flickering forms of its gable and of the large oculus which crowns the main window of the transept belong to a much later phase of construction, probably under Bishop Jean Baillet (1477–1513). They go well beyond the broader forms of Lyons, and resemble the curvilinear fluency of the roses of Martin Chambiges at Sens.[112A] The le Roux tracery in the western rose and western portal gable at Rouen carry this interest in dense and flickering repetition to dramatic extremes.

The lower door by the steps leading up to the cathedral at *Albi*, built by Bishop Dominique de Florence (1397–1410), has open Flamboyant tracery in the tympanum as background to the figues standing in front of it [187].[113] The outermost voussoir of the arch is given an ogee curve by an addition of two counter-curves. The *Recevresse* at *Avioth*, built in the early years of the fifteenth century,[114] a small building like a tabernacle beside the church, may have been intended to be an altar of the Virgin upon which pilgrims might leave their gifts; it has arches consisting of double

239. Regensburg Cathedral. West front, 1341–1496



curves, and soufflets in the balustrade of its transparent spire. In contrast with the choir, which dates mainly from the second half of the fourteenth century, the windows of the nave and transepts of the church itself are also Flamboyant.

All these early works of the Flamboyant, including the Chapelle Vendôme on the south side of the nave of the cathedral at *Chartres*, built in 1417,[114A] are small, and in most cases additions to older buildings [74]. It would be interesting, therefore, to find a completely new building of this generation and to see how the Flamboyant looks on a larger scale; and such a building exists in *Notre-Dame de l'Epine* near Châlons-sur-Marne, begun sometime before 1440. However, the early parts of this church, surprisingly, have no trace of the Flamboyant in them but are conservative, even reactionary. As far as the choir, the transepts, and the four eastern bays of the nave are concerned,[115] the plan, the piers, the triforium, and other features are all modelled on the cathedral at Reims.[116]

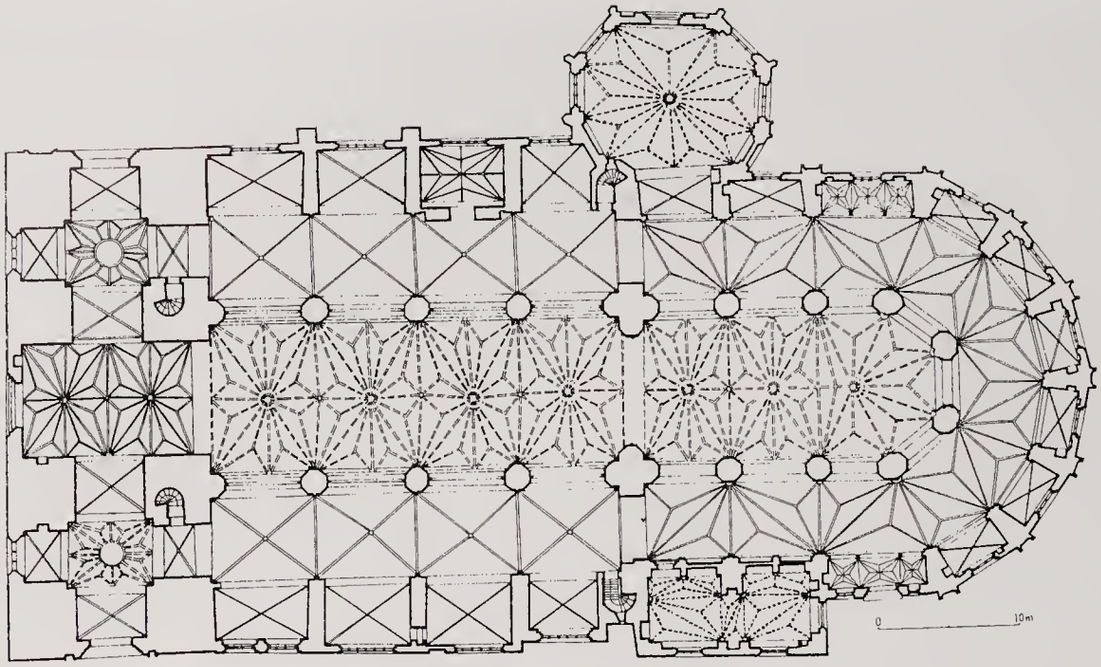
The long period between the building of the two de la Grange chapels, 1373, and the beginning of the Chapelle Vendôme at Chartres, in 1417 – the period of King Charles VI (1380–1422) – should be considered as the beginning of the Flamboyant period, but the buildings created at this time show that, mainly due to the Hundred Years War against England, which lasted from 1337 to 1444, France no longer played a leading part in the development of the Gothic style.

8. VARIATIONS BETWEEN 1390 AND 1420

In the years between 1390 and 1420 there were four great architects working in Germany. They had all been influenced by the school of the Parlers, and, though their work is connected by the style of their time, the work of each is also characterized by personal differences of style. They were Ulrich von Ensingen and Wentzel Roriczer, both of whom lived from about 1350 to 1419, and Hinrich (*sic*) von Brunsberg, *c.* 1355 to soon after 1428, and Hans von Burghausen, *c.* 1360 to 1432, both about ten years younger than the first two.

Ulrich von Ensingen took over the building of the minster at *Ulm* in 1392, when Heinrich Parler II and Michael Parler II and Heinrich Parler III had finished the aisleless choir, except for the vault [238].[117] Heinrich Parler II had begun the hall church, and Michael Parler II and Heinrich Parler III laid down the foundations of the nave, with the side aisles as wide as the central aisle. But Michael Parler II (*c.* 1384–87) altered the hall to a basilica, and Ulrich continued the basilican nave, and at the west end began a single tower, part of which was to be open to the full height of the nave.[118] Statically it was unsatisfactory; in 1494 the piers had to be strengthened and the entrance bay below almost completely sealed off from the nave. The aisles, too, had to be radically altered, each being divided longitudinally into two in 1502.[119] At Ulrich's death in 1419 the porch to the tower was substantially complete and work had reached the large window above it. The complicated triple front of this porch, standing in front of double doorways, shows that the architect knew Prague and Vienna. The diagonal corner piers, the penetrations of the plinths, the slight concavities of the gables in the blind tracery, the ogee arches, the continuous frieze of tracery behind the figures in the three front arches, the free rhythm of the alternately wide and narrower openings and of the detail in general – all these things are already highly developed Late Gothic elements.[119A] The tabernacles on the buttresses of the choir, standing on the sloping surfaces at the top, are triangular in plan. Ulrich's design of 1392, the so-called Plan A (Ulm Stadtarchiv) is contemporary with the beginning of the tower in Prague, but is far more developed than that of Prague, and also than the design for the lower storey of the tower in Vienna, which dates back to about 1370.[119B] Around 1407, Peter von Prachatitz re-designed the upper part of the tower in Vienna, surpassing the style of that at Ulm, which was continued after 1417 by Hans Kun, and after 1446 by Ulrich's son Matthäus Ensinger, both of whom remained faithful to Ulrich's design in the use of open tracery influenced by Strasbourg.[120]

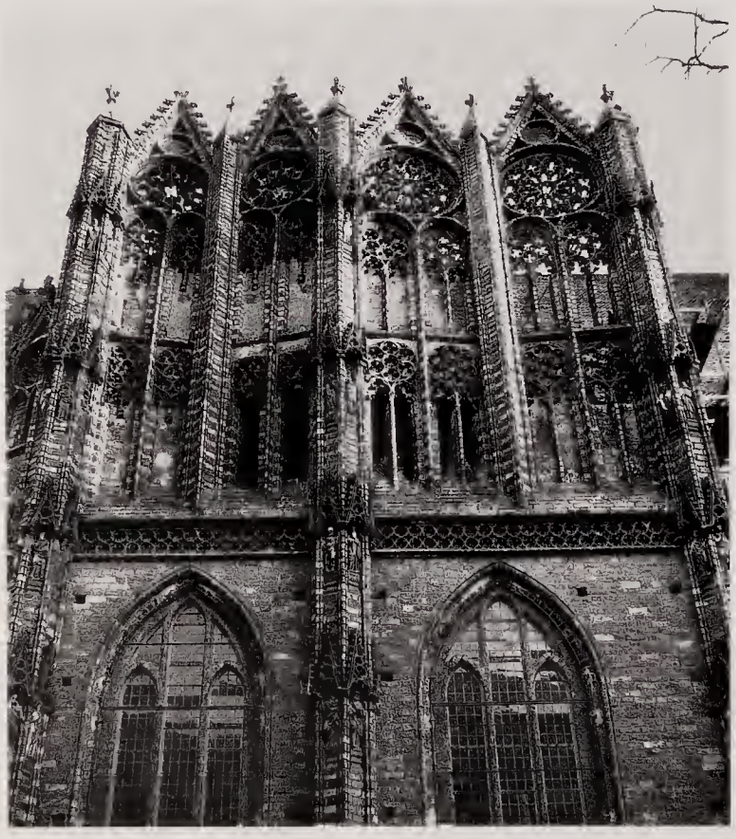
From 1399, when Peter Parler died, Ulrich continued the work on the façade of Strasbourg Minster. Under Master Gerlachus (1341–71) the second storeys of both towers had been completed by 1365 [169]. Sometime before the completion of the north tower, between about *c.* 1360 and 1365 it was decided to introduce a connecting belfry between them, as shown in a design of the central section of the façade (Strasbourg, Musée de l'Oeuvre Notre Dame, Inv. nr 5). The gallery, depicting the Ascension, was placed just above the rose. The actual construction of the belfry began only later, perhaps in the 1380s and to the slightly altered designs of Michael of Freiburg, or his successor Klaus von Lohre, both of whom may have intended a single tower rising above the belfry.[121] Ulrich abandoned the idea of a central tower and placed his new steeple over the north tower. His design consisted of a two-storeyed octagon, flanked by four staircase turrets and crowned by a concave-sided steeple. Work began in 1399. At his death in 1419 construction had reached roughly half-way up the second storey of the octagon and the four octagonal turrets had been taken up to the top of the first octagon, where they would probably have been terminated in pinnacles. These pinnacles were never built, and the second storey of the octagon was adapted by Ulrich's successor, Johannes Hültz, to take his new design for the spire. The staircase turrets were extended right up to the height of the top balustrade. The scissor-shaped ogee arches of the octagon seem a logical development of the intersecting gables on the tower at Vienna, or the intersecting ogees above the south transept window in Prague cathedral. Preserved in Berne is a drawing of the whole west façade, probably made by Ulrich's son, Matthäus Ensinger, and showing the spire as it may have been envisaged by Ulrich, with concave sides very similar to Plan A of Ulm [247].[122] Ulrich has been criticized for building his octagon without any consideration for what stood below it; but the whole façade is composed of designs equally lacking in consideration for each other, and it has none the less been enthusiastically praised over the years, from the time of Pope Pius II to Goethe's, and to the present day. After Ulrich's death the tower was completed, in



240. Stargard, St Mary. Plan, begun before 1388

241. Brandenburg, St Catherine. Gables of the Lady Chapel, finished by 1434

242. Landshut, St Martin. Interior; choir *c.* 1385–1400, nave *c.* 1400–80



1439, by Hültz, to yet another new design, and the spire is therefore in the style of the next generation.[122A]

Wentzel Roriczer, the second of the four great masters of this phase, was given the task of continuing the west front of the cathedral at *Regensburg* [239]. Here again there is no unity in the work. The south tower is supposed to have been begun in 1341, and its low doorway is reminiscent of English façades.[123] Roriczer is first mentioned as *Dombaumeister* in 1415. He died in 1419. When he took over the work the upper storey of the south tower was complete, the central west portal and its triangular porch had just been finished, and the foundations and ground courses of the north tower had been laid out. Wenzel raised the tower to just above portal height. His successors (Andreas Engl, Konrad Roriczer, Matthäus Roriczer and Wolfgang Roriczer) completed the façade and north tower by 1496, using a Parler-based vocabulary that had been valid since the early fifteenth century – for example, large ogee arches decorated with curtains of trefoils. The bellcote in the middle of the gable is a reminder of the façade of the Frauenkirche at Nuremberg, while the porch, which projects on a triangular plan, is similar to the so-called Triangle at Erfurt, built about 1330, two generations earlier. The clear horizontal and vertical lines act as a steadying influence on the multiplicity of the detail. The cohesion of the wall is decisive, since the storeys do not project or recede. The porch appears therefore all the more emphatically diagonal.[123A]

The third of the four great architects, Hinrich von Brunsberg, worked in north-east Germany, the region of brick architecture.[124] The church of St Mary at *Stargard* [240] is a basilica, and was begun a few years before 1388.[124A] The discrepancy between the number of sides of the choir and of the ambulatory, and the placing of a pier between choir and ambulatory in the central axis, are evidence of the influence of the Parlers. Peter Parler's church of St Bartholomew at Kolín was begun in 1360, the church of St Barbara at Kutná Hora (Kuttenberg) was begun in 1388 [221], while most of the choir of Stargard belongs to the last two decades of the fourteenth century. The octagonal piers in the choir have niches below the springing, in which it was intended to put figures, as in the cathedral at Milan (*c.* 1390) [236:]; the triforium over the arcade is old-fashioned, but the gallery over the chapels is progressive.[125]

Hinrich repeated this gallery over chapels at *Chojna* (Königsberg in the Neumark)[125A] and in the church of St Catherine at *Brandenburg* [241], built from about 1395 to the middle of the fifteenth century,[125B] but in both these churches it is combined with a hall-choir. At Brandenburg, as at Stargard, a Lady Chapel, richly decorated on the outside with tiles with coloured glazing, was added to the north choir aisle and finished in 1434. The axes of the two win-

243. Landshut, Spitalkirche, begun 1407. Interior

dows do not coincide with those of the two doors underneath (of which the one on the left is bricked up); nor do the axes of the decorative architecture above the windows coincide with the axes below. This upper section, which is as high as the two lower storeys together, is in turn divided into four vertical panels two storeys high. At the top of these are four canopies over rose-windows with blind tracery. The two left-hand panels are narrower than the two on the right. There is here a combination of irregularity and the piercing of three of the rose-windows so that one can see the sky through them. Furthermore, there are slight angles between the four panels, so that they do not lie in an unbroken vertical plane but, in plan, form a gentle zigzag line. The basic design is asymmetrical, making the chapel tend towards its eastern end, whereas a symmetrical design would have given it the character of a transept. The circles and semicircles in the tracery are influenced by the work of Peter Parler.[125C]

The Corpus Christi chapel on the south side, begun in *c.* 1395, at the same time as the nave, has a simpler and more regular façade. It has a large four-light window without any real tracery and, above it, instead of a single gable, three panels containing some open tracery and three gables, all of brick. Brunsberg's followers used similar decorative forms in the town halls at *Chojna* and *Tangermünde*, both in the mid-fifteenth century.[125D]

The fourth great German architect of this generation is Hans von Burghausen, wrongly called Stethaimer.[126] His most important church is that of *St Martin at Landshut*, where he built the choir between about 1385 and 1400, and the nave shortly thereafter [242].[126A] The piers are extremely slender, only just over 3 feet wide and nearly 70 feet high; they continue above the springing of the arcade and intersect with the arcade arches. On each pier the three slender shafts facing the nave are pear-shaped, while those facing the aisles are round, separated by five hollows. The soufflets in the tracery combine with spherical polygons, as they do in France. The net-vault is similar in plan to that in Prague, having fragmentary transverse arches, and it is the first vault of this type to have been designed for a hall-church.[126B] The two aisles have plain star-vaults. The audacious statics serve the spacious interior. Nave and aisles together form a single, primary, given spatial whole of a rare intensity.[126C]

244. Salzburg, Franciscan church, choir begun 1408. Interior looking east from the nave

The outside of this brick church is flat, and a high frieze above the row of slender windows echoes the tone set by the low chapels. The very tall tower was not finished until the beginning of the sixteenth century, and its slenderness contrasts with the high-pitched roof of the nave and the lower roof of the choir.

The west door was probably begun just before 1460, about thirty years after Hans's death (in 1432), but to his designs.[126D] It introduced a new form of arch, beginning as quarter of a convex circle, to which is added a concave arch, a variant of the ogee arch that is superimposed, on a large scale, on one of the pointed arches in the porch.[126E]

The *Spitalkirche* at *Landshut*, begun in 1407, is a hall-church with a hall-choir [243], in which the central pier of the apse is silhouetted against the east window of the ambulatory. The net-vault consists of tiercerons, liernes, and transverse ridge-ribs, but has neither diagonal ribs nor transverse arches. In the side aisles, however, each bay has a plain star-vault between transverse arches.[126F]

The choir of the parish (later Franciscan) church at *Salzburg* [244, 245] was begun sometime after 1408.[127] In it, the last two piers of the chancel are omitted, and the central pier stands between its neighbours to left and right in such a position that, in plan, they form the points of a triangle. However, the sexpartite star-vault of this bay and the quadripartite star-vaults of the ambulatory all spring from this pier, and the effect is similar to that of some English vaults. Hans von Burghausen at first intended to replace the Romanesque nave with a four-bay hall that, like the Spitalkirche at Landshut, continued into the choir without interruption. But, having later decided to keep the nave, it is improbable that both he and the churchgoers of Salzburg could have been blind to the contrast between the darkness of the nave and the radiant light of the choir. The progress from hope to redemption is here represented by a different means from that used in the cathedral at Florence, and almost entirely visually. To this visual contrast is added the spiritual one between earth-bound weight and floating, mystical lightness. The distribution of the ribs makes the whole choir seem to revolve around its central pier.[127A]

The church at *Neuötting* was begun in 1409 and the choir was finished in 1429. The foundations of the nave and its chapels were laid out soon after, but its pillars were begun as late as 1484, and construction continued to 1510. The church is a smaller version of St Martin at Landshut.[127B] A year later, in 1410, Hans began the church at *Wasserburg*, where, unlike Neuötting, building began with the nave. The choir was added by the architect Stephan Krumenauer in 1445–53. The church of *St Jakob* at *Straubing* may also be work of Hans von Burghausen, and it was probably begun in around the year 1400. The vault, completed in 1492, was destroyed by fire, and the tunnel-vault with severies, dating from 1780, and the capitals on the round piers have almost destroyed the original character of the interior. The position of the easternmost piers suggests that the vault of the nave and choir may originally have appeared to continue into the ambulatory, penetrating it as it does in the cathedral at Augsburg. Hans von Burghausen probably knew of this arrangement at Augsburg, which at that time represented the most advanced Late Gothic solution.[127C]

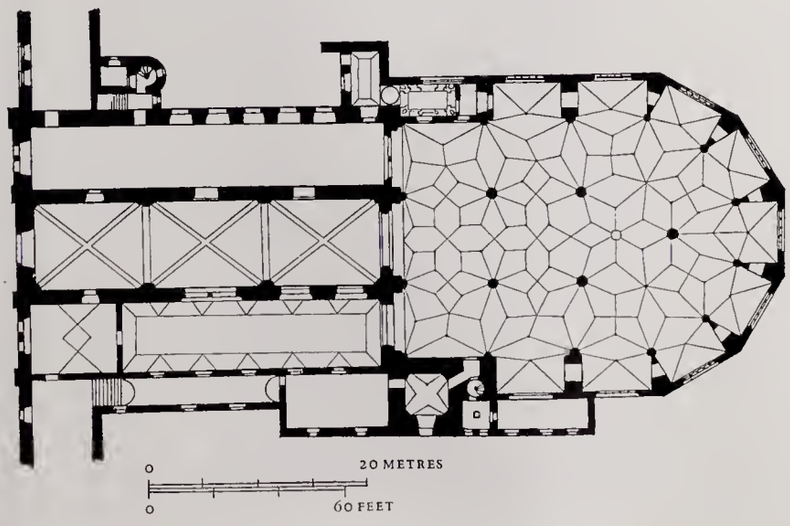
The classification of the years from 1390 to 1420 as the period of variations is justified by the unusual fact that one man built these six churches, which, while they show a clear relationship to one another, are all different in almost every respect. The thirst for variety can be seen in the varied piers; in the church of St Jacob at Straubing they are round, at Wasserburg octagonal, and so on.

Some scholars have also attributed a few other works to Master Hans.[128]

Matthäus Ensinger, Ulrich's son, can be considered together with these four architects. He was called to *Berne* in 1420, and before his move to Ulm in 1446, and his final resignation in 1449/53, had designed and completed the choir (except for its vaults), and the nave chapels. He probably envisaged the present single western tower, but its construction was left to his successors. As in Ulm the weak foundations of the tower caused difficulties. The central aisle of the nave, which closely follows the forms of Matthäus's choir, was under construction from about 1450 to around 1474, the piers have bold chamfered sides, and the arcade arches spring from them at angles of less than 90 degrees. Above the apexes of the arcade the windows begin in a kind of blind triforium. Although Matthäus belonged to a youthful generation, he remained stylistically dependent on the older one, and never found his way into the ultimate phase of the Late Gothic style.[129]

The church of St Jan at *'s Hertogenbosch*, was begun at the east end *c.* 1370. The choir, complete by 1415, was influenced by the choirs of Cologne, Amiens and Utrecht [246], conservative in its spatial type but extremely Late Gothic in much of its detail, especially in its richly decorated exterior. The figures of devils, musicians, and other subjects (some dating from the sixteenth century and others from the restoration of 1860)[130] which bestride the roofs of the flying buttresses are extremely original. The church, too, can be grouped under the heading of variations. It remains eclectic, though much of the detail is good. The prodigality of ideas,

245. Salzburg, Franciscan church, begun 1408. Plan



246. 's Hertogenbosch, St Jan. Interior looking east, choir *c.* 1370–1415. Nave mostly second half of the fifteenth century

247. Strasbourg Minster, Drawing of the projected steeple, by ? Matthäus Ensinger 1419 (Berne Historisches Museum, inv. n. 1962)

however, prevents the eye from coming to rest on any one spot – a contradiction of the primary aim of the new generation of 1420.

9. THE MATURE LATE GOTHIC STYLE IN GERMANY

Ulrich von Ensingen probably designed a spire for the tower at *Strasbourg*, beginning in a concave recession, with four ascending groups of eight pinnacles on the ribs above it, which would have looked 'like stuck-on candles' [247].[130A] The words are Dehio's, and he goes on to say that 'its outline would have looked delightfully blurred from a distance'. When Johannes Hültz continued the work in 1419, he developed from this plan the seven wreaths of short turrets in which one can climb to the top to enjoy the view [169]. The outline is jagged and the contour shifts continually from foreground to background. The little turrets consist of intersecting ogee arches on slender supports. The originality and the technical mastery of the whole greatly impressed later generations. It is chiefly this spire that has earned for the tower the reputation of being the eighth wonder of the world. Stylistically the spire at Strasbourg is an advance on that in Vienna, which was designed in around 1407; the architect at Strasbourg may

248. Amberg, St Martin, begun 1421. Interior

have known the Viennese design. The tower in Vienna was finished in 1433, and that at Strasbourg in 1439. A comparison between the designs of Ulrich and the execution by Hültz – not between the whole towers – shows that Hültz was not only more daring and blessed with a more fertile imagination than Ulrich, but that he was striving for a harmony which, while it was to some extent the aim of all artists, was to be the main preoccupation of only a very few generations. The roofs of Romanesque towers were closed and could only be reached from inside, but, beginning with the tower at Freiburg, Gothic spires allowed the interior and the exterior to merge. At Strasbourg, while climbing up the outside of the spire one is, paradoxically, inside it at the same time, which makes it the most Gothic of all spires. Further to justify this superlative, all the forms give the impression of effortlessness.[130B] The work of the four great architects of about 1400, including that of Hans von Burghausen, has often something forced about it, a tendency to exaggeration. In the generation after 1419 the best works are tranquil and reassuring, noble and unhurried, in spite of the agitation within them.

The first building in this 'classic' series is the church of St Martin at *Amberg*, begun in 1421 [248].[131] The exterior has no re-entrant angles, that is the principle of 'addition' has no part in it. The only re-entrant angles are in the few places on the western bays where the buttresses project; and even here, as the buttresses have a triangular section, the effect is one of division rather than of addition.[132] Inside, it is a hall-church with a hall-choir and galleries over the chapels, built with all the stylistic means to partiality which had been developed up to this time. Exquisite beauty is the keynote of the interior. The architect was not hindered by existing older parts and could carry out his plan in a single, uniform style.

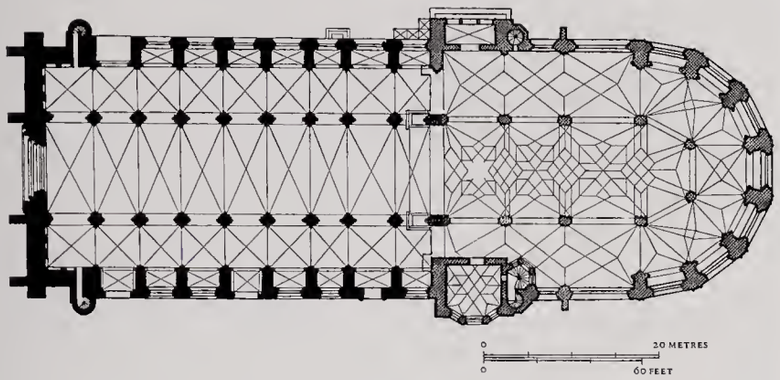
His name is not known,[132A] but we do know the names of a number of architects of this generation besides Hültz, although we cannot always be certain which are the works designed by each individual. They are Konrad

249. Nördlingen, St George, 1427–1505. Interior looking east

Heinzelmann (*c.* 1390–1455), Hans Felber (*c.* 1390–1439), Nielaus Eseler the Elder (*c.* 1410 – sometime after 1482), Konrad Roriezer (before 1419–77/78), Hans Kun (*c.* 1390–after 1435), who was Ulrieh von Ensingen's son-in-law, and a few others.[133] The practice of employing first one arehiteet, then another, and thcn calling several to a general eonsultation has so far made it impossible to determine exaetly the part that any one arehiteet playcd in the building of a partieular chureh.

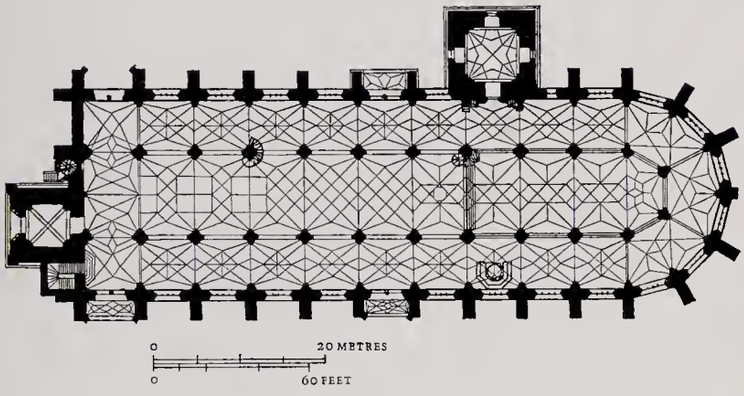
The chureh of St George at Nördlingen [249] was begun in 1427. It may have been designed by Hans Kun or by Hans Felber, master masons at Ulm. Construetion eontinued, after 1429, under Konrad Heinzelmann. The vaults, designed by Burkhard Engelberg and Stephan Weyrer the Elder, were built between 1495 and 1505.[134] The choir is narrower than the nave, and therefore its roof is lower too. The eentral aisle is eontinued from the choir into the ambulatory, as at Augsburg and Pöllauberg. In spite of the differentiation between the nave and the ehoir, the interior gives the impression of running smoothly throughout its entire length; the round piers radiate strength, as they do at Schwäbiseh Gmünd, and the vault above them flows smoothly from one bay to the next.

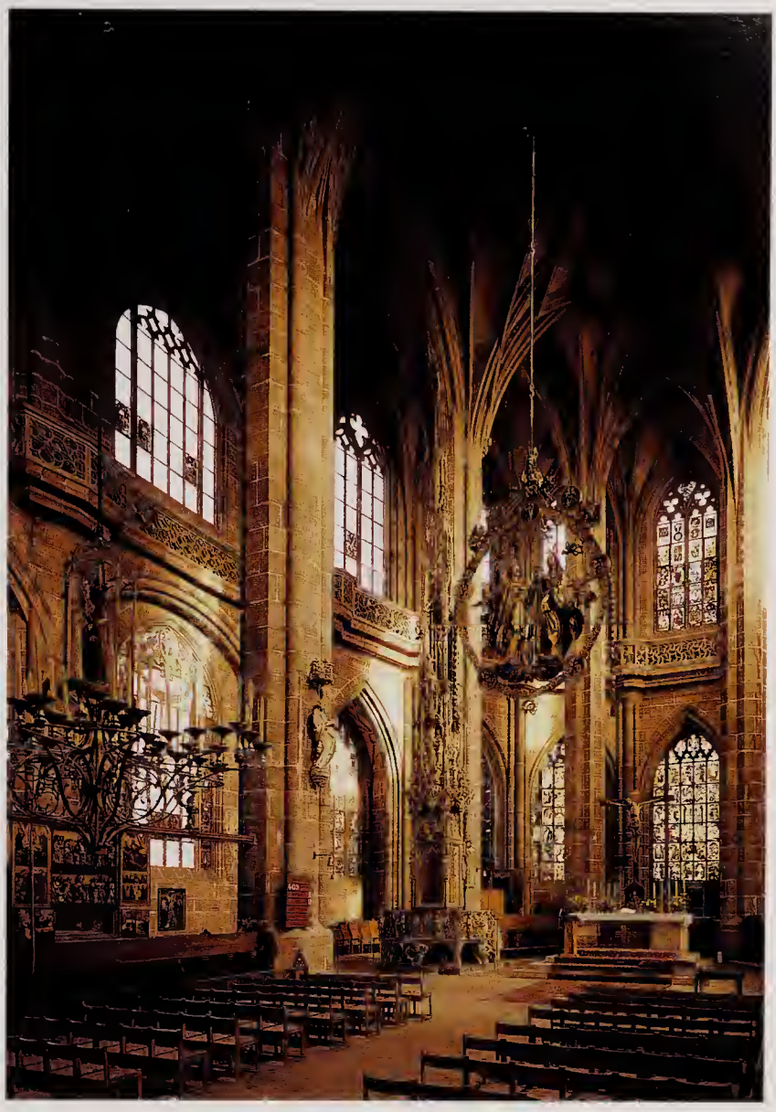
In 1439 Heinzelmann went to *Nuremberg* and began a new choir to the east of the older nave of the ehurch of *St Lorenz* [250, 252]. The form of this choir, with an ambulatory of the samc height and with shallow radiating chapels, was not in any way new at this time. There are, however, details which enrieh the final impression, sueh as the irregular oetagonal eores of the piers. All these details are intended to make the whole more diffieult to comprehend. Compared with the style of the time of Amiens everything is less simple, but without being less elear; it requires far more mental effort to understand, but the whole ensemble offers at the same time



250. Nuremberg, St Lorenz. Choir, 1439–77. Plan

251. Dinkelsbühl, St George, begun after 1448, completed 1499. Plan





252. Nuremberg, St Lorenz. Choir, 1439–77

far more of that freedom of rhythm which is an element of the so-called picturesque. The contrast in brightness between the choir and the nave is much less marked here than in the Franciscan church at Salzburg, and the whole interior is more relaxed and unpretentious. After Heinzelmann's death, the work was continued by Konrad Roriczer. The complicated vault of the central vessel, by Jacob Grimm, is not developed from the piers. Konrad Roriczer may not have followed the original plans in every detail, but his work is, nevertheless, inspired by the same desire to make comprehension more difficult through irregularities.[134A]

In the church of St George at *Dinkelsbühl* [251, 253], Niclaus Eseler the Elder and his son Nielaus Eseler the Younger built a hall-church that was a stylistic unity, like Amberg. However, they articulated the piers by adding finely differentiated shafts so that, looking eastwards, they close into a series of dark vertical lines with light grey intervals. The choir is built to the typical Parler plan, with a central pier in the periphery of the ambulatory. Amberg and Nördlingen seem rather bare compared with Dinkelsbühl. The decision to do without chapels and galleries is almost like a step back to the period of the Wiesenkirche at Soest. At Nuremberg and Schwäbisch Gmünd it was the chapels and galleries which created a horizontal counterbalance to the verticals: at Dinkelsbühl the very wide-meshed net-vault is sufficient to achieve this effect. Eseler the Elder died sometime after 1482, and the church was completed by his son in 1499.[135]

These buildings – the spire at Strasbourg, the hall-churches at Amberg, Nördlingen, and Dinkelsbühl, and the choir of St Lorenz – represent the state of supreme harmony available to the mature Late Gothic style. In the 'classic' works of the High Gothic, such as Reims and Amiens, there were remnants of the pure 'style of being' of the Romanesque – the basilican form, the transepts, the projecting chapels and detached-looking shafts, and the separation of nave from aisles and of one bay from another. The inner aesthetic tension which is regarded as the essential factor of any 'classic' form sprang from the devaluation of the elements of the 'style of being' and the achievement of a 'style of becoming'. This 'style of becoming', of growing and flowing, did not, however, destroy the tranquility and the relative independence of the spatial sections and the architectural members. The Late Gothic style made a clean break with any memory of the Romanesque 'style of being' and its version of 'classicity' is based on harmony – not the harmony between 'becoming' and the immutability of 'being', but the harmony of movement within itself, a living vibration from within, a current which always returns to its own beginning. This harmony is an expres-

254. Dingolfing, parish church, begun 1467. Interior

255. Munich, Frauenkirche, 1468–94. Interior

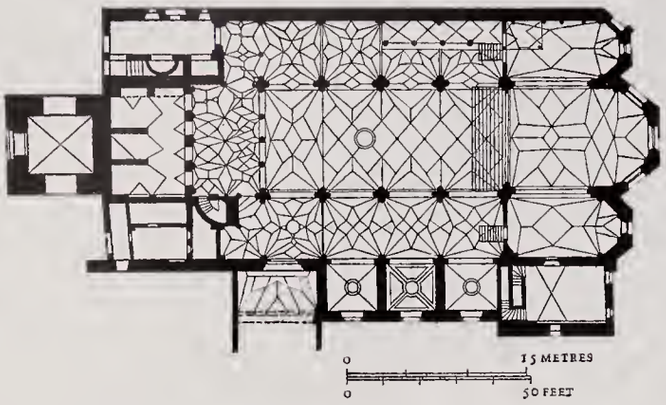
sion of a religious emotion which sinks deep into the human soul.

The Late Gothic style produced innumerable larger and smaller works which share to the same degree this 'classicity'. An example can be seen in the Frauenkirche at *Ingolstadt*, begun in 1425, where the towers were built in a diagonal position, like the western towers laid out in *c.* 1500, but never completed, for St Ouen at Rouen.[135A] It is impossible to give rational reasons for finding harmony in some churches and not in others. To some people any differentiation seems subjective, but it has an objective basis; to feel this requires practice and the gradual maturing of an understanding of the works of the select few. People try to show, instead, the faults which spoil some of the second-rate works. For example, it could be said of the nave of the *cathedral* at *Erfurt*,[136] built between 1455 and 1465, that the piers are too heavy, the shafts not differentiated, the transverse arches too broad, and that the capitals interrupt the flow of the whole.[137] Niclaus Eseler might have made the same criticism, but he would have said that these features were not modern enough. Any criticism which is based on the style of the generation in question, and not on personal tastes, contains a factor which cannot be precisely determined. Harmony lies not only in the concordance of width, length, and height, but also in the combined effect of rhythms and proportions. Although the central nave and the aisles of the cathedral at Erfurt are not of exactly the same width, they seem to be so: the rhythm of the shafts, on the other hand, is in fact regular. In 'classic' works, all measurements are balanced against each other to achieve soft contrasts and a poised tension, not to achieve regularity.

This classicity reached into the second half of the century. The parish church at *Dingolfing* in Lower Bavaria [254], begun in 1467, follows the style of Hans von Burghausen, with the difference that in it the passionate exaggerations of the generation of about 1400 are rejected. The ribs grow out of round piers which are neither too strong nor too slender, and the vault seems to hover above them. The east end follows the typical Parler plan, the apse having two sides towards the east and the ambulatory five; its effect is calm and effortless.[138]

Brick churches, like that at Dingolfing, must satisfy simply by their proportions and their rhythms, and, in the *Frauenkirche* at *Munich*, built between 1468 and 1494 [255], Jörg von Halspach achieved this to a high degree. It is unlikely that he could have known the churches of southern France, but, nevertheless, the tall chapels standing round the church are strongly reminiscent of Albi. At Albi, before they were divided by a gallery, the chapels were joined to a nave, while at Munich they are attached to aisles.[138A] From the entrance, the octagonal piers form a solid row which

253. Dinkelsbühl, St George, 1448–99. Interior



256. Salzburg, St Erentrud, crypt beneath the choir begun 1463, nave after 1485. Completed 1506/7. Plan

hides the windows in the chapels. The legend that the Devil ran out of the church because he was frightened by this phenomenon shows that the people of the time were well aware of how surprising and exciting are the views that unfold as one proceeds along the nave, and the discovery of the ambulatory when one has already followed the line of the choir vault to the last chapel is equally surprising. The parish council sent the architect, Jörg Ganghofer to Augsburg to study the cathedral there, and this motif of the penetration of the choir with the ambulatory was the solution with which he returned.[138B]

The net-vault rises on corbels of which some can be attributed to the young Erasmus Grasser,[139] who, in the field of sculpture, was an exponent of the rotating movement which also appears in architecture, but which was not accepted by the architect of the Frauenkirche at Munich. The spiritual grandeur of this church lies in its quiet self-possession: it was commissioned on behalf of all the citizens of Munich. The rulers of Bavaria were allowed to contribute money towards its construction; for, in the eyes of God and the Virgin, they were on the same level as the burghers of Munich.[139A]

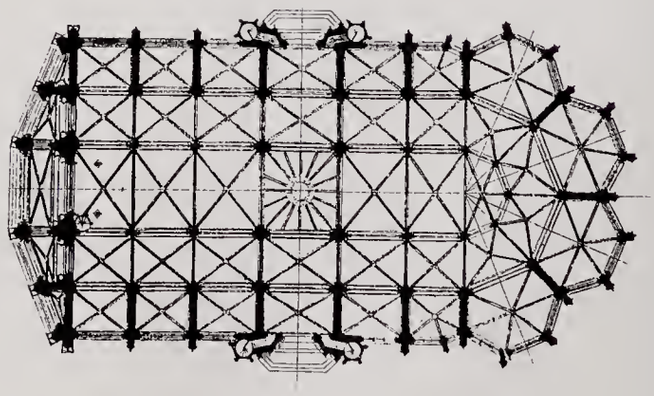
The description of all these churches as classic or nearly classic is based on the ambivalence of this term, which not only denotes pure harmony but also the maturity of any style, even where it does not really aim at harmony. The Late Gothic style produced many buildings which are not entirely harmonious and yet not discordant, but are still classic in this second sense of the word, in that they fulfil the principles of this stage of the Gothic style. A particularly attractive example of this classicity is the nunnery church of *St Erentrud* on the Nonnberg at *Salzburg* [256]. The crypt under the choir was begun in 1463; the stained glass by Peter Hemmel was inserted in 1480, showing that the walls of the choir were already standing by that year. The nave was begun in 1485, and the whole church completed by 1507. The western nuns' gallery is shut off from the nave by a wall with windows, which stops short of the vault, giving an impression of strong spatial division. From the traceried parapet of this gallery a balcony projects into the nave, its corners overlapping the piers of the arcade a little below the springing of the arches. Above the arches, inside the sloping roofs of the aisles, there are two more nuns' galleries, touching the western gallery and the nave at the level of the tops of the ogee arches above its windows. The relation of these galleries to each other and to the basilican section of the church is extremely free in its rhythm. The profile of the piers, too, has great freedom, and the short fragmentary arches standing on the capitals of the shafts could not be less organic, supporting the actual arches of the arcade and intersecting with them.

All the vaults are extremely complicated. The net-vault in the nave is modelled on that in the choir of the cathedral in Prague in so far as the transverse arches are broken off halfway up, and the ribs of the severies are continued as liernes and touch the transverse arches at the points where these stop. The vault of the choir at Salzburg is extremely imaginative; the flanking choir chapels are joined to the choir as though the whole were a transept, but without projecting laterally beyond the outside line of the nave and aisles, making it seem that the choir is at the same time a transept.

The central pier in the south porch is a paradigm of Late Gothic work.[140] Above the abacus with its projecting corners stand little gables with concave sides, of which the central one is bent round a pier set diagonally on the wall. The carved foliage consists of little leaves, curling restlessly. The church has a perfect unity of style, and the architect of the nave and south porch, Wolfgang Wiesinger, mastered the principles of the Late Gothic with his stream of new ideas and his untiring imagination. The proportions are moderate. All these factors make this probably the most cheerful and friendly of all nunnery churches. In its own way it too can be called classic.

If this term seems disturbing in our present context, one could equally well use the word 'mature' in its spiritual, not its biological sense. Any reader who insists that the churches from Amberg to Nonnberg cannot be considered under the same heading as Amiens because they look so different from Amiens should remember that Amiens looks very different from the Parthenon, but that each of them can yet be called classic in its own way. The concepts of classicity and maturity of style are quite independent of the forms of architectural members and of totality and partiality; they stand in a category of their own.

257. Rouen, Saint-Maclou. Begun soon after 1432. Plan



258. Rouen, Saint-Maclou, begun soon after 1432. Interior of nave and north transept

10. THE MATURE FLAMBOYANT

The name *Sondergotik* has been introduced to describe the German Late Gothic style. The purpose in coining this term was to emphasize the fact that the German architects of the fourteenth and fifteenth centuries, especially those of the fifteenth, were able to match the achievements of the French Gothic masters of the thirteenth century with a new and specifically German style. This is quite true, but it should not be overlooked that the French architects of the fifteenth century also matched the style of the thirteenth with something new which was no less French and also no less 'late' than the works of the Germans. This new French style had several forms in common with the German Late Gothic; for all advances at this time were basically European, differing only in the language in which they were expressed. If one is to speak of German *Sondergotik*, one should also recognize French, English, Dutch, Spanish, and Portuguese *Sondergotik*. Thus German *Sondergotik* becomes a tautology, German and 'Sonder' being obviously the same as soon as one ceases to refer to it as being 'late'. The existence of French *Sondergotik* proves that national characteristics and the stylistic characteristics of a certain period cannot be equated. Neither the Germans nor the French always preferred 'movement, fusion, and the picturesque'; both nations went through a classic phase of tranquillity, isolation, and linearity around 1800. The comprehension of this fact should ensure that, while we recognize that each of the great schools preserved and extended its own national characteristics, we do not overlook the European features of the Late Gothic style.[141]

In France, it was the Flamboyant that was developed. At *Caudebec*, begun in 1426, the pattern of the soufflet was also employed in the tracery of the triforium. The choir ends in two diagonal sides, and the central pier is silhouetted against the east window of the five-sided ambulatory, as in German churches. The central chapel is a regular hexagon; the two western ones are flattened pentagons, and the two intermediate ones have two-sided apses, with single buttresses on the central axis, as in the choir at Freiburg im Breisgau. All these features are European; but the short, round piers and the plain rib-vaults are characteristically French.[142]

The church of *Saint-Maclou* at *Rouen*, begun soon after 1432, also has a central pier in the choir, probably the first in Flamboyant Gothic; the ambulatory is concentric, consisting of half a regular octagon, and the four chapels are all compressed hexagons [257].[143] The retention of the basilican form is French, and in Saint-Maclou there are even proper transepts and a separated crossing [258].

In 1434 the reconstruction of the cathedral at *Nantes* [259] was begun with the west façade and the aisles of the nave and its lateral chapels. Work continued, intermittently, through the first half of the seventeenth century, when the nave was vaulted. The choir was built in the nineteenth cen-

259. Nantes Cathedral. Nave begun in 1434. Interior; choir 1834

260. Rodez Cathedral. Choir aisle; three easternmost piers part of the chevet begun in 1277; pillars to their west, 1447; crossing piers 1462

tury. The strict regularity of the plan and the elevation is French, but many of the details are Late Gothic in character – for example, the plinths with concave sides and separate bases for the shafts, the absence of capitals, the complete masking of the piers by shafts, the ogee arches over depressed rounded arches in the triforium, and the Flamboyant tracery.[144]

In *Paris* itself, the style of the second quarter of the fifteenth century is represented by the church of *Saint-Germain l'Auxerrois*.[145]

At *Ambierle*, south of Paray-le-Monial, the church, begun about 1440, is conservative in its spatial form, being basilican with transepts, and having an apse forming half a hexagon, no ambulatory, and with ridge-ribs. However, the profiles of the members are Late Gothic; the central shaft is a flat projection between hollows; the profiles of the secondary shafts are segmental; those of the piers themselves, within the arcades, form a gentle double curve, contrasting with the double hollows of the profiles of the arches; and the ribs have a squashed pear-shape on a retracted main projection, behind which is another double curve. All these profiles produce shadows.[146]

From 1447, at *Rodez*, piers similar to those at Ambierle were built between the easternmost piers of the choir, which date from 1277, and those in the crossing, dating from 1462; in plan, they form a continuous series of four double curves in which the pier and the shafts form an uninterrupted unity [260].[146A]

The absence of a triforium at *Cléry*, near Orléans, begun after 1429 and finished after 1483, is reminiscent of German churches. This is a conservative work, but contains many Late Gothic details.[147]

The choir of the church on the *Mont Saint-Michel*[148] was built after 1448, and is basilican with transepts, a choir with ambulatory and chapels, and flying buttresses based on High Gothic models. The hardness of the granite used, which was cut from the rock itself, did not prevent the architect from producing a display of great splendour. The concave curves of the gables of the pinnacles, and the double curves of the windows and balustrades translate the forms of the High Gothic into the language of the Late Gothic and change structure into texture. Inside, the piers and their plinths are related to those at Nantes. Within the framework of the French Late Gothic style this choir too can be called classic.

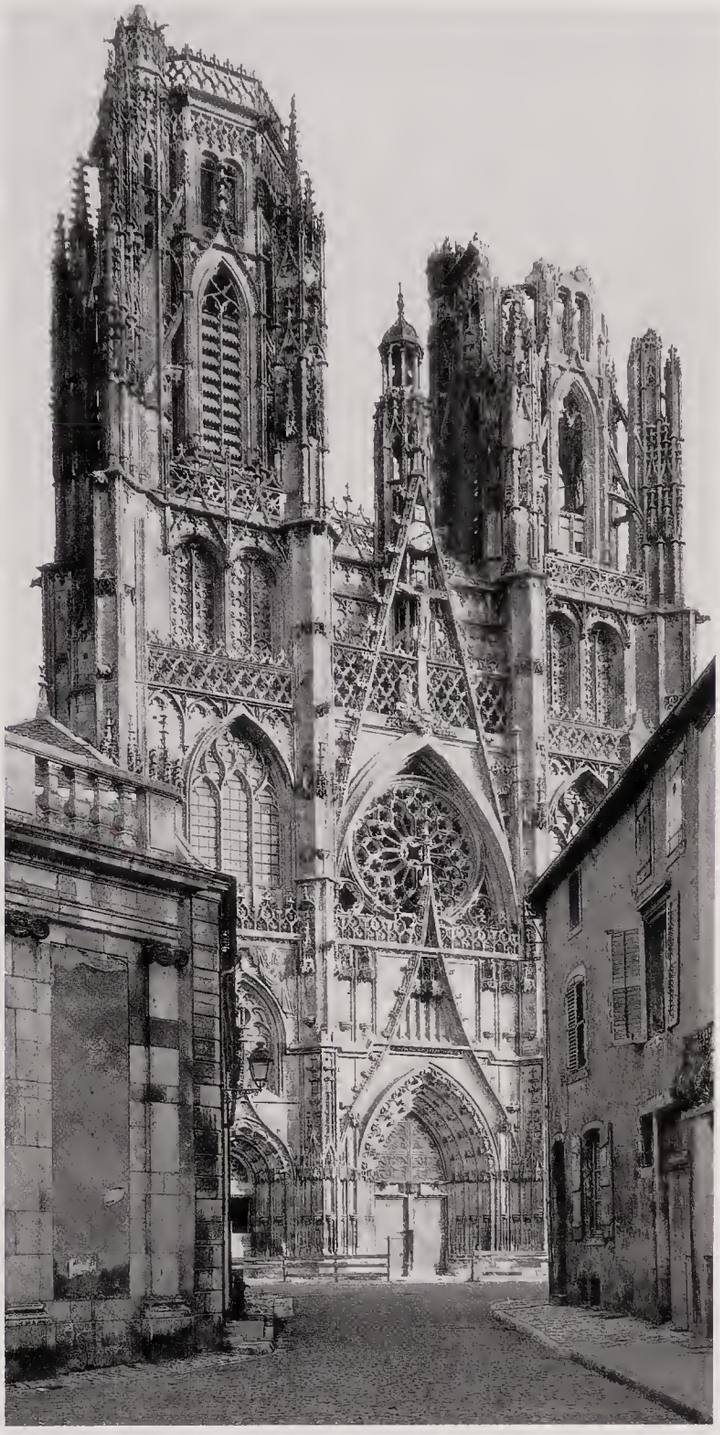
From about 1475 the west façade of *Notre-Dame-de-l'Epine* near Châlons-sur-Marne was begun (see above, p. 219). The two westernmost bays of the nave were completed in a conservative style reminiscent of the rest of the slightly earlier nave, though with Flamboyant details in the tracery. The façade, completed by around 1500, was designed with the area round the portals projecting slightly, so that the concave-sided gables rise above the balustrade, clear of the wall, the central one cutting through the full height of the rose-window and reaching up to the area of the gables, which consist of three triangles standing side by side with no baselines. The overall effect is completed by the large windows with ogee arches set over the doorways, and the Flamboyant tracery and the pinnacles on the buttresses.[148A] Above the bell-stage of the towers stand octagons with spires, consisting of flying ribs surrounded by buttresses and flying buttresses with tall pinnacles decorated with crowns. These have been taken to refer both to the kings of France and to the Virgin. Crowns or wreaths were an old legacy;[149] early examples appear in the designs of Ulrich von Ensingen, and these may have been the architect's models, if it is accepted as possible that he had relations with southern Germany. At this time Strasbourg was a free city, and the French must have been aware of the existence of a tower there which was greatly admired.[150] The north tower of Notre-Dame-de-l'Epine was not completed to match the south tower until 1867, but, although a lithograph of 1845 shows that it differed originally from the south tower in having a shorter square storey, this asymmetry cannot be attributed to the influence of Strasbourg.

The most important French façade of this generation is that of the cathedral at *Toul*, begun in 1460 and finished by 1500 [261]. There is a marked relationship with the west façade of Notre-Dame-de-l'Epine, especially in the area of the rose window, the tracery balustrade above it, and the large ogee gable of the central portal.[151] However, the ogee arch over the central doorway is shorter than that at Notre-Dame-de-l'Epine, reaching only as far as the rose-window. Over the pointed arch on top of the rose-window an enormous gable rises up to the concealed apex of the pitched roof, in front of the light, transparent bellcote, which has a

roof shaped like a cupola and is reminiscent of the bellcote on the Frauenkirche at Nuremberg. A tracery balustrade strongly separates the octagons from the lower storeys. The composition of the whole shows an extremely interesting interplay between verticals and horizontals. The upper balustrade rises a step to pass over the rose-window, like the dwarf gallery at Laon. Not, of course, that there is any connexion here; but it is illuminating to compare these two façades and to measure the quality of that at Toul against the quality of that at Laon. There are few façades which can match Toul in majesty; this it owes to the fact that the ogee arch over the door and the straight-sided gable over the rose-window are seen as a unity which is subordinated only to the strictly symmetrical towers. Footings for the stone spires are visible inside the second storeys of the octagon, but they were never built.[152]

Toul was designed by Tristan d'Hattonchâtel and built by Jacquemin de Lenoncourt, and the second of these two also built the much simpler façade at *Pont-à-Mousson*. Here, the octagon on the north tower is set frontally, while that on the south tower is set diagonally, with one corner standing over the centre-line – an arrangement which has a relationship with the central piers built by architects of the Parler school. The rose-window is replaced by a broad window, and the gable above is separated from it by a horizontal line; the principle of addition also appears in the treatment of the three undecorated storeys of the towers, but these may have been taken over from an earlier stage of this church.[153]

The hall church became the general rule in Germany; the English by and large rejected it (after having used it at Bristol about 1320)[154] and the French accepted it on isolated occasions during the fifteenth century. Amongst those that were built are *Celles-sur-Belle*, dating from 1460,[155] which is reminiscent of the Wiesenkirche at Soest (1313), a group of about thirty fifteenth-century hall churches in southern Champagne,[156] and a group of late fifteenth-century hall churches in Lorraine, for example Saint-Laurent at *Pont-à-Mousson*, and Saint-Etienne at *Saint-Mihiel*.[157]



261. Toul Cathedral. West front, 1460–1500

11. SPIRAL SHAFTS. DOUBLE-CURVED RIBS. CONCAVE PROFILES. CONCAVE-SIDED ARCHES. ARCHES LIKE BRANCHES OF TREES. DIAMOND-VAULTS

The High Gothic style strongly emphasized the verticals of piers and shafts. A slender shaft appears to consist of a bundle of vertical lines, all of which we identify with their central, vertical core. A spiral line on a cylindrical surface also rises upwards, but the movement is slower. Any pier or shaft is three-dimensional, but, if it is spiral in form, its breadth and depth are as clearly emphasized as its height, and the tempo of its upward movement is determined by the angle of the spiral.

The *Lonja* at *Palma* in Majorca, dating from 1426, is a hall with spiral piers [262]. The outer plane of these piers consists of eight hollows within an imaginary circle, which meet on sharp groins. The piers determine the general impression of the whole interior, which has a simple quadripartite rib-vault, Late Gothic tracery in the windows, and Late Gothic doorways. The spiral piers have an elective affinity with the other forms. They are not specifically Late Gothic, but rather 'late' within the more general terms applicable to any style; they recur in architecture, on the smaller as well as the larger scale, in furnishings, and in the ornaments of every age from prehistoric times and antiquity to the Late Romanesque, and again subsequently.[158]

The Lonja at Palma is an exchange, a secular building. In religious architecture, spiral piers appear in the Late Gothic style in 1469, when the north aisle of the cathedral at *Braunschweig* was replaced by two aisles of equal height [263]. Four shafts wind round each of the slender piers at an

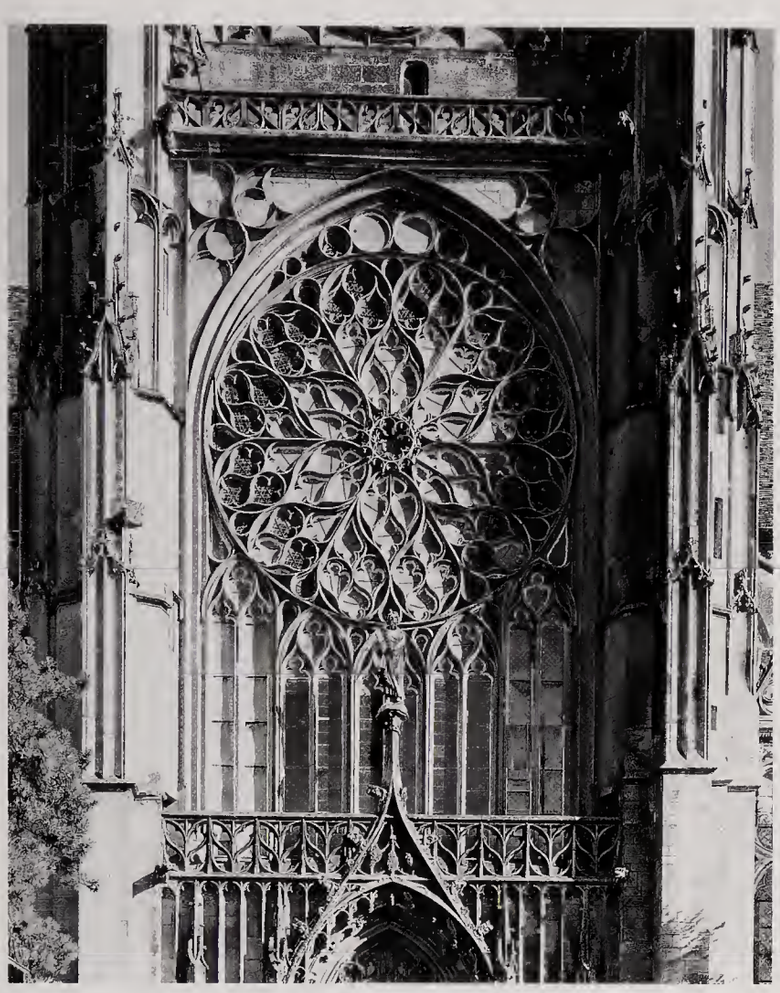
262. Palma, Lonja. Interior, begun 1426

263. Braunschweig Cathedral. North choir aisle, 1469–74

angle so steep that they do not complete their full circle, and the capitals do not, therefore, stand above their corresponding bases. The abaci, which serve as capitals, are set diagonally, with one corner projecting frontally, and are repeated in the spaces between one shaft and the next, so that they form a polygon of pointed projections. At the bottom of each shaft are hollows, immediately taking up the diagonal torsion and coalescing with the sloping top of the plinth. The westernmost pier is slightly different; its profile consists of hollows between flat projections with attached rolls. The direction of the torsion alters from pier to pier; all available means are used to blend depth, variations in light and shade, contours undulating back and forth with the spiral shafts,[159] the growth of one member into another, and the emphasis on texture, into a unity. The vaults have no diagonal ribs and no tiercerons, but only transverse arches and liernes. The architect's aim to reach the highest possible degree of partiality, spatially, corporeally, and optically, is emphasized by the contrast with the Romanesque nave with its complete adherence to the principle of totality.

Spirals can also be combined with cones. When a whole pinnacle is twisted, as a wet cloth is wrung out, the result is a kind of conical spiral – again a change from structure to texture. Pinnacles of this kind appears in the 1450s(?) in the north-east porch of St Martin at Landshut,[160] and then frequently in the last decades of the fifteenth century, especially in 'micro-architecture' (e.g. the Market Fountain, or so-called *Fischkasten* at Ulm, of 1482).[161]

At this time Peter Hemmel, the Strasbourg glass-painter, began to enclose his panels in frames in the form of the branches of trees, and one of the engravings of the master E.S. also has a frame of branches.[162] The idea of substituting tree-trunks with lopped boughs for columns had already been used about 1250 by the architect of the porch of the cathedral at Genoa.[163] These trunks were even built with the soft spiral form which can be produced geometrically by moving a circle with its centre upwards along a spiral line. However, in Hemmel's work the arches, too (sometimes ogee arches), are made of branches, with leaves and blossoms. The development of this style can be followed through his work from Tübingen (1476) to the Scharfzandt window at Munich (1486).[164] Architects seem only to have taken over this idea at a fairly late date.[164A] The south façade at *Sens* was begun *c.* 1300, but restarted in 1489 just above the blind tracery flanking the unfinished portal[164B] [264]; here, on the buttresses and at the level of the great oculus, there are ogee arches which appear to be made of dry branches with thorns; they are reminiscent of coral. Between 1490 and 1493 King Vladislav II (1471–1516) had a gallery built in one bay of the cathedral in *Prague* [265]. The dry branches here, which grow out of strong boughs, are very similar to those at Sens. The branches themselves are ribs set against a big hollow and rise from the corners and from a central pendant bracket. They begin as two-dimensional curves but continue beyond their intersection, still against the hollow, in the form of three-dimensional curves. The balustrade has tracery in the form of branches, and, on each corner, two intertwined tree-trunks. The middle of the balustrade projects in the form of four sides of a flat hexagon, with a point at the centre. In this little work several of



264. Sens Cathedral. South transept façade, begun *c.* 1300, restarted 1489

265. Prague Cathedral. Gallery in south aisle of choir, 1490–93

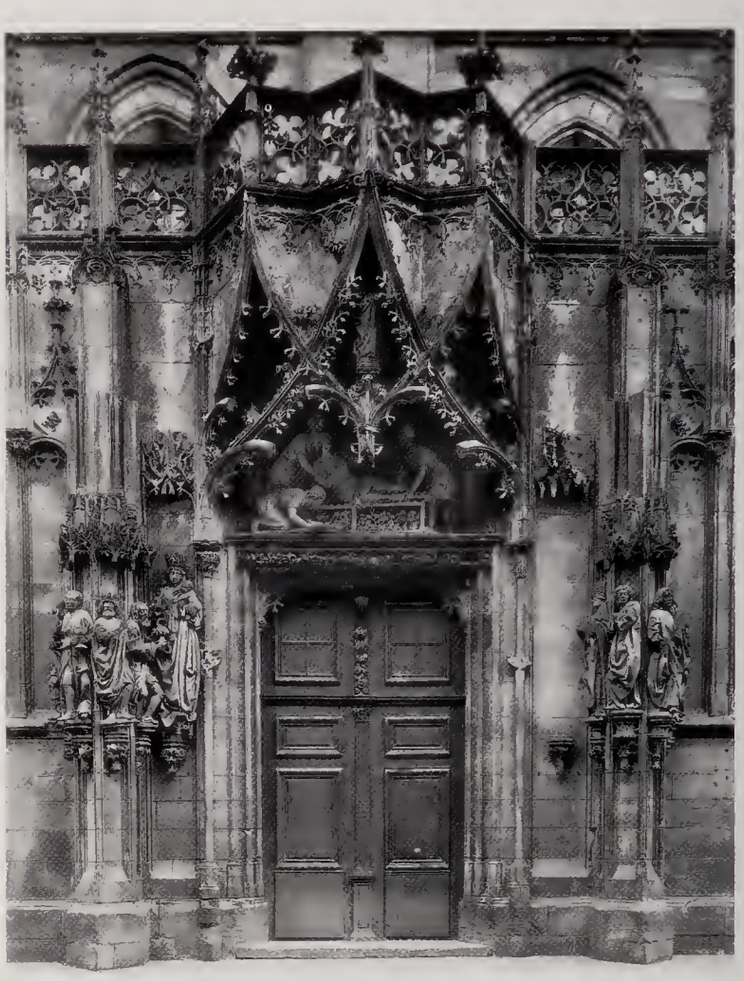
the principles of the Late Gothic style are combined. Single-minded admirers of the High Gothic complain that it was built with a lack of understanding of High Gothic principles,[165] but the architect Benedikt Ried would, in turn, have queried whether these critics had any understanding for the Late Gothic style.[165A]

A patient analysis of the central west doorway of *Berne* Minster reveals a combination of three-dimensional ogee arches, concave bases, and, on these bases, alternating forms which grow out of the same stalk. These stalks penetrate the profile of the arches and then turn sharply upwards, stressing their texture. The doorway was begun *c.* 1483 by Erhard Küng, who also built the first storey of the west tower. The nave high vault was inserted under Daniel Heintz in 1571–75. The vault of the west porch combines a net pattern with double-curved ribs.[165B] Diagonal ribs in simple cross-vaults forming three-dimensional curves had already been built about 1200 in the crypt at Bourges.

Small-scale double-curved ribs first appeared on the continent in the work of Madern Gerthener and Hans von Burghausen. It has not been established who was the first architect to build a vault using double-curved ribs throughout, but the first examples appear in Germany in the 1480s: in the south gallery of St Salvator in *Passau* (begun 1479), and in two *Nuremberg* vaults (Augustinerkirche, 1479–85, and Ebracherhofkapelle, 1483): The earliest surviving example may, however, be the vaults of the northern bay of the west wing of the Great Cloister at *Basel*, completed *c.* 1465, perhaps by Jodok Dotzinger.[165C] Benedikt Ried began the *Vladislav Hall* in *Prague* in 1493 and completed it in 1502. Its vault is composed entirely of double-curved ribs which form large petal patterns.[165D] The *Landrecht Chamber* in Prague is considerably later. It was completed in 1563.

The Simpertus Arch in the church of *SS. Ulrich and Afra* at *Augsburg* [266], a work of complete stylistic maturity in which all the ribs are three-dimensional, can be dated to *c.* 1493–6. The Romanesque church of the eleventh and twelfth centuries was demolished in 1467, and the new church, re-begun in 1475 after storm damage by Valentin Kindlin, a basilica with an aisleless choir and tall windows similar to friars' churches, would certainly have been old-fashioned if Burkhard Engelberg had not taken charge of the work in 1477.[166] The penetration of the arcade arches by the octagonal piers, the hollows beside the shafts, the blind niches above the arcade, forming a triforium, the soufflets in the tracery, and, above all, the net-vaults, outweigh the remnants of older traditions. The complicated, asymmetrical net-vaults in the north aisle were completed in 1489, and were followed by the vault of the nave – almost identical in form with that of the nave at *Schwäbisch Gmünd*, which was built between 1497 and 1521, and perhaps designed by Engelberg [202, 203].[167] Both are pointed tunnel-vaults with severies; the bays are separated by transverse arches; the tiercerons rise to the liernes from the capitals of the piers, or,

266. Augsburg, SS. Ulrich and Afra. Simpertus Arch, *c.* 1493–6



267. Strasbourg Cathedral. Portal of St Lawrence, *c.* 1494–1505

at Augsburg, from those of the shafts, and the apexes of opposite pairs of severies are connected by arched transverse ridge-ribs. The only difference between the two vaults is that at Augsburg the ribs framing the severies rise as tiercerons from the capitals, whereas at Gmünd they branch off from the tiercerons a little way above the capitals. Because of this difference, the tiercerons at Augsburg intersect. Engelberg had sufficient space for this construction, while at Schwäbisch Gmünd the pattern had to conform to the existing wall-arches and piers. This leads one to conclude that the vault at Augsburg is the older of the two. It is dated to 1499, while the nave vault at Schwäbisch Gmünd has been put to *c.* 1507 and has been ascribed to Engelberg, whose biography shows how much architects of his generation travelled.[168] In about 1493, in the *Simpertus Arch*, Engelberg showed what he regarded as progressive in the Gothic style. It is a gallery over the chapel on the fifth bay of the south aisle, and it cantilevers into the aisle [266].[169] To describe it exactly would be extremely complicated, and a brief account must suffice here. The vault has ribs, which form three-dimensional curves, with domed cells and severies. The surfaces of the sides of the gallery are cylindrical, that of the middle part is flat. A single arch rises from the piers of the chapel and presses forward into the aisle as it rises. Three-dimensional ogee arches intersect each other and also the balustrade, which has tracery consisting of fragmentary curves, ending a little beyond their intersections. The keynote of the whole is that everything is fragmentary. Nineteenth-century critics were offended by it: Engelberg certainly knew the meaning of the High Gothic style, with its emphasis on everything structural, but his aim was the Late Gothic style, which lays its emphasis on texture.

Double-curved ribs in rows, of a date slightly later than that at Augsburg, can be seen in the portal of St Lawrence added to the north transept of *Strasbourg* Cathedral between *c.* 1494 and 1505 [267]. Here too the vaults in the interior form a stylistic unity with the doorway and the canopy over it. The architect, Jakob of Landshut, followed models from his native town, and enriched the forms used there with double re-entrants; i.e. the cornice has six sides in the form of a half-star, and the three projecting points of the star carry the apexes of three ogee arches. The central ogee arch, which is the widest – a double-curved arch – springs from the corners of the doorway and penetrates the two flanking ogee arches, each of which has a pendant in the middle, like that in King Vladislav's gallery in Prague. It would seem that, on his way from Landshut to Strasbourg, Jakob must have seen the Simpertus Arch at Augsburg.[169A]

Double-curved ribs in vaults and three-dimensional ogee arches are both fragments of spirals. They both express the stylistic principle of three-dimensional texture. Between 1481 and *c.* 1515, the transept of *Saint-Nicolas-du-Port* was built in the form of a double-naved hall as a continuation of the basilican chancel with aisles and three parallel apses. The lower half of the transept piers is round; the upper half has shafts which, in the south transept arm, rise in a spiral,

268. Gdańsk (Danzig), St Mary, *c.* 1379–1502. South aisle of nave, looking east

269. Freiberg Cathedral. Nave from the north aisle, looking south west, begun 1484. The left-hand pulpit is the Tulip Pulpit of *c.* 1510

similar to those at Braunschweig.[170] The lower part of the piers is decorated with rows of gables and pinnacles; there are no arches under the gables, perhaps because it was intended to fill the spaces below them with painting. The general effect of these decorations is dictated by principles similar to those of the piers at Stargard and Milan.[170A]

In Germany, Braunschweig was followed, *c.* 1480–89, by the two spiral columns in the mortuary chapel at *Eichstätt*, and in France, at the same time, by the axial column in the ambulatory of the church of *Saint-Séverin* in *Paris*. In the church in Paris, the slender spiral shafts are connected, below the beginning of the ribs, by small round arches enclosing ogee arches. This looks like the springing of the vault; however it carries nothing, and the shafts continue to rise above it into the ribs. The spiral includes the plinth and disappears into the vault – a form symbolizing movement with no beginning and no end.[171] The church itself was begun as a basilica, since the French did not favour hall-choirs, but the double ambulatory is a curved hall, like those at Saint-Denis and Notre-Dame, translated into the Late Gothic style.[172]

The hall-choirs in Austria and Germany realized the principle of partiality by spatial division, and most of the hall-churches with such choirs have no transepts. When a transept was desired, as in Saint-Nicolas-du-Port, it was given the form of a two-aisled space.[172A] In the church of *St Mary* at *Gdańsk (Danzig)*,[173] built from *c.* 1379 to 1502, however, the architect went further, combining a hall-nave with hall-transepts [268]. The extreme complexity of the net-vaults and star-vaults gives a variety and a wealth of views[173A] which contrasts with the clumsy simplicity of the exterior, but shares its solemnity. Part of the vault has no ribs at all, but sharp groins instead between the domical cells; its main lines, however, are not those of Romanesque quadripartite groin-vaults, but form complicated patterns, completely replacing the traditional Gothic structural members by purely visual factors. These so-called diamond-vaults (*Zellengewölbe*) are repeated, about 1500, in the aisles and the lower storey of the tower in the church of *St Catherine* at *Gdańsk (Danzig)*.[173B]

The cathedral at *Freiberg*[174] in Saxony was begun in 1484 [269]. The octagonal piers in this hall-church have concave sides. Above the chapels, a gallery runs round the nave, between the buttresses, projecting as a balcony round each of the piers. It gives, as balconies always do, an impression of partiality through division. The vault of the nave is not separated from those of the side aisles by arches, but runs right through to include the chapels; however, the architect lacked the courage to eliminate the transverse arches as well. In spite of this, Freiberg is one of the most powerful realizations of the principles underlying the Late Gothic treatment of space. The Tulip Pulpit, designed 1510,[174A] is a perfect companion to the nave; it is miniature architecture, in vegetal forms which combine natural growth with a soft and elastic articulation of its texture.

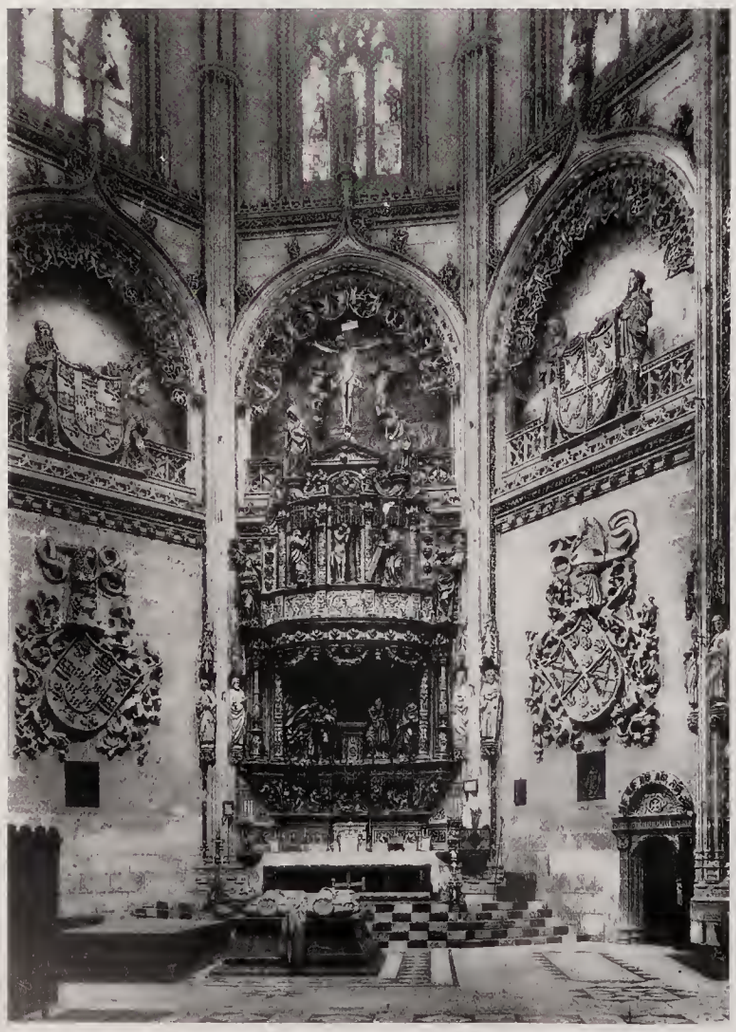
Concavity and the emphasis on texture are as much the

consequences of radical partiality as is Flamboyant tracery. The 'classic High Gothic' *Sainte-Chapelle* in *Paris* had, in the 1480s, to undergo the rebuilding of its west oculus, in a 'classic Late Gothic' style. The pattern used is very similar to that of the rose-windows at *Beauvais* and *Sens*, built shortly afterwards by Martin Chambiges [264]. The rose-window in the west façade of the cathedral at *Rouen*, for which no exact date is recorded, must also be roughly contemporary with that in Paris, but it does not appear to have been built by the same architect who began the Tour de Beurre on the southern corner of the façade in 1487.[175] In 1496, its architect, Guillaume Pontifs, was succeeded by Jacques Le Roux, and in 1507, when the bottom of the spire had been reached, work came to a standstill. The slender storeys are built, as was the tradition, in two axes each. The tracery and the pinnacles and tabernacles on the buttresses continue the style of the centre of the façade, contrasting with the Tour St Romain, which though Early Gothic in date, still has such flat surfaces that it looks like the work of a Romanesque architect. The flatness of the surfaces of the older tower contrasts so completely with the stress on depth in the new one that the details of the latter resemble a porous sponge. It is this impression which, in another context, has been called *Tiefendunkel*.

In the west façade of the church of St Wulfran at *Abbeville*,[176] begun in 1488, almost all the details are in an advanced Flamboyant style. They are, however, subordinated to the simple and strict divisions by the buttresses and the horizontal mouldings.

271. Burgos Cathedral. Capilla del Condestable, 1482–94. Vault

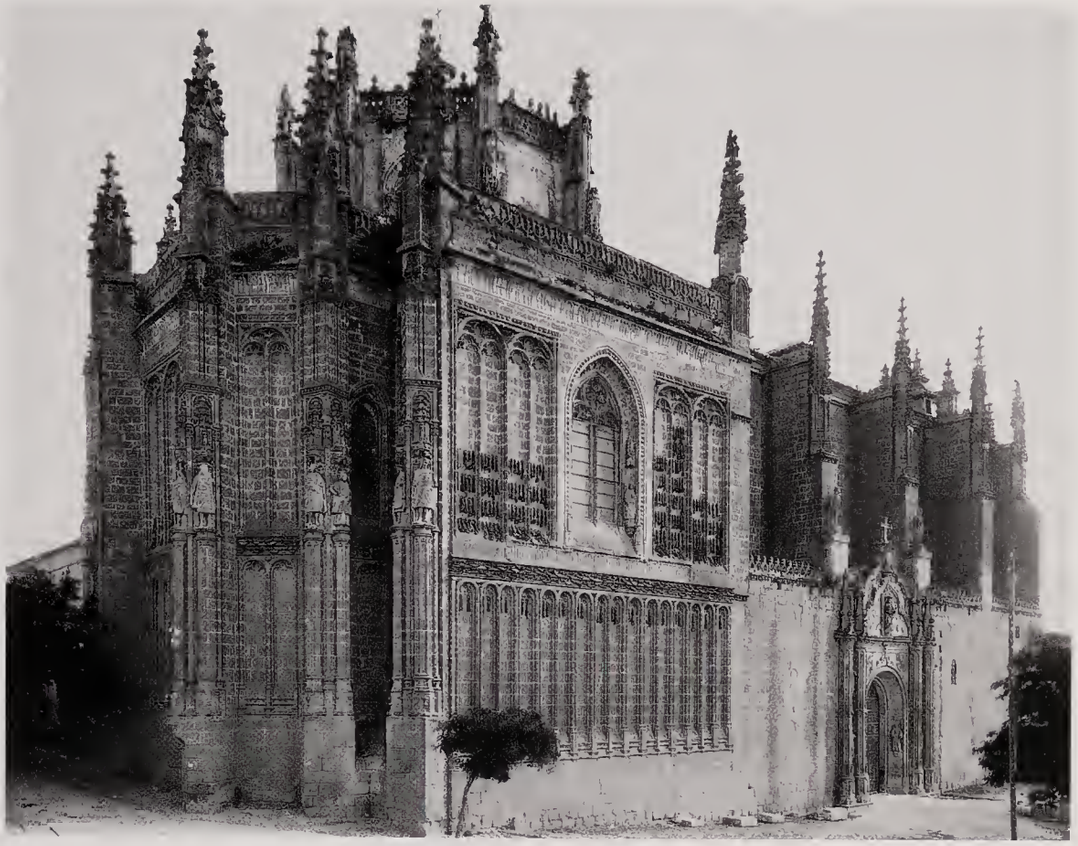
270. Burgos Cathedral. Capilla del Condestable, 1482–94. Interior



In Spain, Simon of Cologne began soon after 1482 the Capilla del Condestable at the east end of the cathedral at *Burgos* [270]. It is a regular octagon with clusters of very slender shafts standing on Late Gothic bases, and has a star-vault in which the central octagonal star is pierced by open-work tracery[177] [271]. The main structure was complete by 1494. The piers at the corners are joined by broad, plain pointed arches, surmounted by ogee points which extend upwards into the zone of the windows, which have Flamboyant tracery. The part of the wall below the wall-arches is divided into two storeys by a recession of the wall, which produces a very narrow wall-passage. Pairs of carved figures holding large coats of arms stand in front of the parapet, and there are even larger coats of arms suspended diagonally corresponding to them on the lower part of the wall. An integral part of the whole is the cusping of the wall-arches, which looks like embroidery. There are ornaments within every wall-arch, and within each there are pairs of figures in lively poses. If there could be any doubt that the emphasis in this chapel was intended to lie not on structural factors, that is on what stands, but rather on what hangs from the framework, the proof lies in the fact that in the wall arch over the Baroque altar the figures actually stand head downward. One might be tempted to say that the Late Gothic style turned the principles of the High Gothic upside down, but it is incorrect to regard them as opposites; for the two together constitute the opposite of the Romanesque. But, while the High Gothic style maintained the Romanesque principles of the importance of structural

272. Toledo, San Juan de los Reyes, designed 1477, modified in 1495. Exterior

273. Toledo, San Juan de los Reyes, designed 1477, modified in 1495. Interior



members and of the convex profile, the Late Gothic represents the systematic elimination of all the remaining legacies of the Romanesque and, in so far as this is possible, the achievement of the complete supremacy of the principle of partiality.

In Spain, the Gothic style did not become specifically Spanish until the last years of the Late Gothic period. The emphasis on flat surfaces and the delight in complicated geometrical patterns has been traced back to the Arabic tradition of the Mudejar, yet Simon of Cologne was only half Spanish – his father was German and his mother Spanish – and Juan Guas, the architect of the church of *San Juan de los Reyes* at *Toledo* [272], was a Frenchman, possibly the son of a Breton. In Spain, too, the national characteristics are made up of spiritual components rather than of physical ones. The plan of the church at Toledo, begun in 1477 and completed in 1496, is of the same type as that of those southern French churches consisting of a single unit of space with rows of lateral chapels, like the cathedral at *Perpignan*, begun in 1324; apart from this similarity in plan, however, these two churches are completely different.[178] Perpignan is solemn, grave, almost too sober, while Toledo is cheerful, and rich in vitality and imagination. At Toledo, the westernmost bay is crossed by a gallery, and, partly because of this, the entrance is on the south side. Because of their flat roofs and few windows, the short transepts are heavy and massive; above them rises the short, octagonal crossing-tower, which also has a flat roof [272]. The nave has heavy buttresses ending in pinnacles and at the east end there are also heavy pinnacles standing up over the horizontal line of the flat roofs. The whole row of lateral chapels is closed to the outside by a plain, unarticulated wall, and, at the bottom of the façade of the north transept, there is a row of sixteen tall, narrow

274. Ávila, Santo Tomás, begun *c.* 1483. Interior of raised choir, looking east to the high altar on the gallery

blind niches without capitals and with round arches. In these niches hang chains, from which Christian prisoners were freed by the royal couple Ferdinand the Catholic (1479–1516) and Isabella of Castile. More of these chains hang in the blank, round-arched panels higher up, and adorn the intermediate string course. No other cases are known in the history of architecture of the use of chains, both as a symbol of liberation and thanksgiving, and as ornamentation. These chains also have a place in the sphere of texture, and the dark iron of which they are made is an excellent complement to the grey granite of the church.

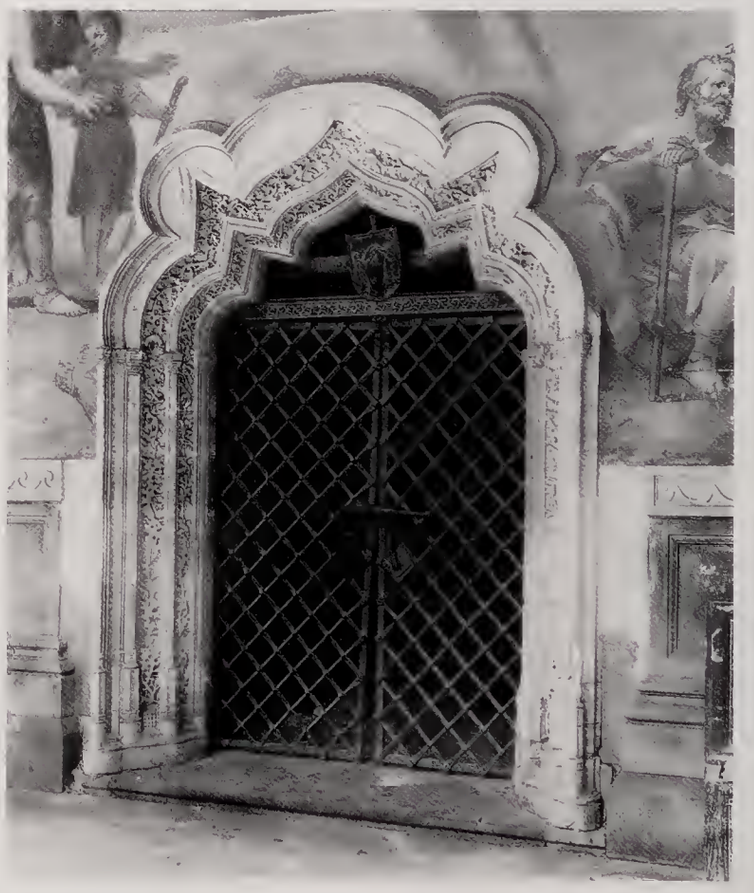
The whole interior has been thought out imaginatively and with a rare intensity of love [273]. The star-vaults of the four bays are supported on piers inserted into the wall with round bases and springers. The cores of the piers are also round, but the surface of each consists of a row of slender alternating staves (which are not shafts) and grooves, leaving it uncertain where the core begins: the form is ambivalent. At the top of each staff an ogee arch rises which connects it, not with the staff immediately next to it, but with the next but one, so that the intermediate one divides the ogee arch. These ogee arches bend forwards – a form reminiscent of, though different from, the nodding arches at Ely. Both those used at Toledo and those at Ely, however, certainly spring from the same desire to emphasize depth. The feet of the transverse arches and of the ribs interpenetrate each other, and the wall-arches similarly disappear into the nearest tiercerons. The easternmost piers do not serve simultaneously as crossing piers; the latter are separate and stronger, standing immediately next to the piers of the nave, and they also have round pseudo-capitals and staves and grooves. The line of the springing is decorated with a ring of carved heads which project strongly, and beneath them hang Arabic stalactites, which are repeated on the piers in the choir. These Islamic forms hang above the complicated balconies,[179] which were intended for the kings, and may have been designed as symbols either of triumph or of the reconciliation of mankind commanded in the New Testament. On the other hand, it is equally possible that the architect merely felt how perfectly these Islamic forms fitted his own Late Gothic ones.

The choir, which consists of five sides of a compressed octagon, is lit only by the south window of the south transept and by the windows in the drum of the crossing. In the star-vault of this crossing Guas built ribs with double curves, which form ogee arches in plan.

This description of the interior is necessarily incomplete. The eye is constantly occupied with innumerable details. Among these are the almost excessive ornamentation of the transepts, the piers at the entrances to the chapels, the figures on the piers, which, like those in Berne, stand on corbels supported by stalks, the pinnacles above them, the blind tracery in the segmental squinches and the carved busts of angels below them, the angels in the drum, and many other details. Even the plinths have blind tracery on them, and the bases of the staves on the piers are slender, isolated, graceful, and without strength – a gesture rather than the expression of the ability to carry weight.

The church of *Santo Tomás* outside the Gates at *Ávila* is related to this masterpiece at Toledo; it, too, has no aisles, but rows of lateral chapels. Above the two westernmost bays there is a gallery for the monks, and, in the rectangular choir, which is broader than it is long, there is another gallery on the same level as that of the high altar [274]. The arrangement was probably designed to allow the monks to

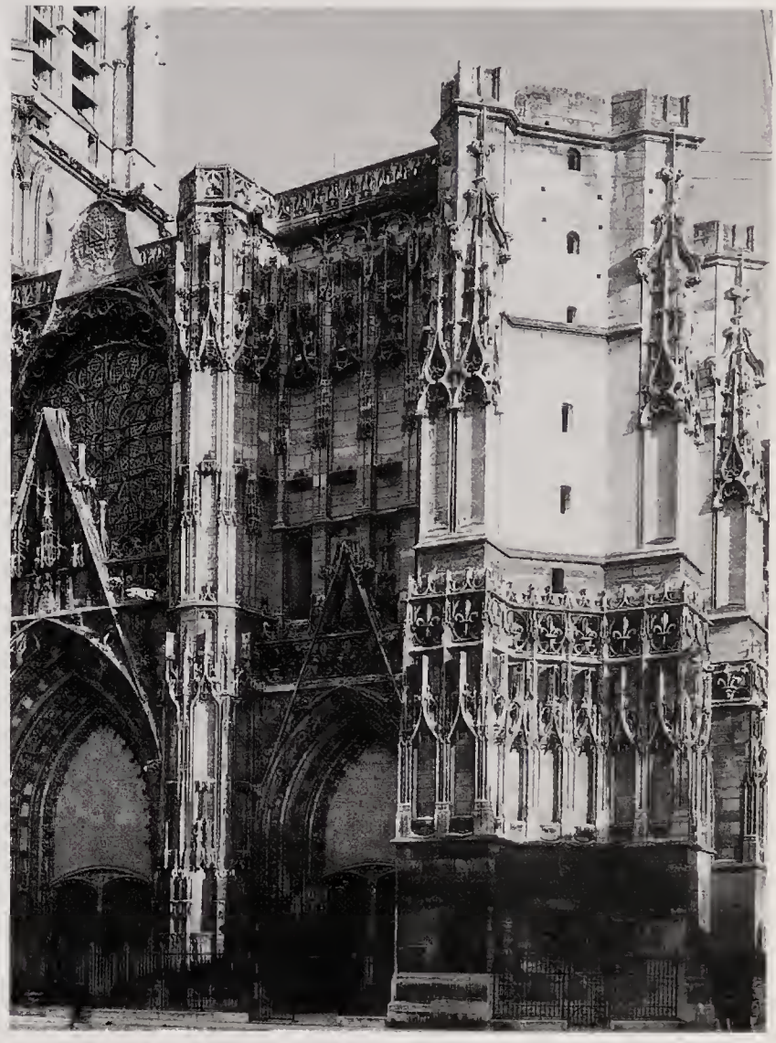
275. Toledo cathedral. Portal to the staircase of Cardinal Tenorio, 1495.



see the altar at the level of their seats.[180] This form of transverse bridge is a new application of the principle of spatial division. The bases, which are formed of four concave sides of an octagon (and therefore have a point at the centre of the frontal side), stand on semicireular plinths, and show the architect's preoccupation with Late Gothic principles. The shafts are pearshaped, and have three atavistic shaft-rings. The west portal has richly decorated jambs, which continue into ogee arches without capitals. The tympanum, however, is supported on a very flat rounded arch, which is repeated in the porch in front of the portal.

The combinations of forms in the arches of the Late Gothic period, not only of different arches one beside another or one inside another, as in Santo Tomás, but even of different forms within a single arch, are so many that they are hard to enumerate. Beginning with the trefoil arches of Romanesque and Early Gothic times, which in the latter period were pointed, the architects grew more courageous, developing more and more new combinations. Theoretically, all possible combinations can be traced back to a twenty-sided figure with straight, eoncave, convex, or undulating sides meeting alternately in projecting and reentrant angles.[181] In practice, every Late Gothic example consists of some part of this twenty-sided figure, though with considerable variety in the length of the sides, the size of the angles, and the radii of the curves. The stylistie significance of these eomplicated figures becomes very clear when compared with the semicireular arch of the Romanesque. Even the pointed arch broke a totality into two parts: the combinations in Late Gothie arches consist of nothing but fragmentary parts. The frame of the doorway to the church of San Juan de los Reyes has two arches, one over the other; the lower one is a trefoil with an ogee arch in the middle, while the upper one is a trefoil in whieh the top section consists of two convex arches supported on short verticals.[182] Countless earlier examples of sueh combinations can be found in fourteenth-eentury Italian pictureframes. A Spanish example can be seen in the portal to the staircase of Cardinal Tenorio in the cathedral at *Toledo*, built by Juan Guas in 1495 [275]. The arch begins on each side as if to develop into a horseshoe arch; but the next section on each side consists of a right angle between two straight sides set obliquely, and the whole arch is completed by an ogee arch at the top. This whole arch is contained within an outer arch, also consisting of five parts: the first section on each side is concentrie with the bottom section of the inner arch; the second is a small semicircle; and the top section is a broad three-centred arch. An architect could go on in this way, designing different combinations, for as long as he liked. A description of this style as arbitrary cannot be contradicted, as long as the word is used in a positive sense, as an appreciation of the fact that, in this final stage of the Gothic style, the imagination had been liberated and all its responsibilities to regularity and struetural forms thrown aside, so that the essence of the Gothic style could at last be shown.

Among the many combinations that exist, the undulating arch, which has two main forms, occupies a special place. On the south façade at *Sens*, restarted in 1489, Martin Chambiges built an arch to form gables for the pinnacles which flank the gable and crown the two staircase turrets. At its foot this arch begins in concave curves, and then, in a continuous sweep, becomes convex and slightly eoneave again, to end in a point as an ogee arch. The same form can be seen in a secondary position in the tracery of the great rose-window and again below it, and, in a more striking context, in the main pinnacles on the buttresses. About 1500, Chambiges again used these undulating pointed arehes, together with other related forms, on the north façade at Sens. A less striking form can be seen on the façades of the transepts at *Beauvais*, but a much bolder one appears on the west façade at *Troyes*, begun in 1506 and finished in the 1550s, where the arches on the buttresses of the uncompleted south tower begin with concave curves and undulate to form a second pair of concave curves, ending in the sharpest possible point. As the sides of these arches are steep, the upper section has the shape of an onion [276].[182A]



276. Troyes Cathedral. West front, begun 1506, work finished in 1550s

The second main form of undulating arch is used in rows to form a blind arcade in the chapel of the château of *Amboise*. Charles VIII had spent his childhood years there, and, when he succeeded to the throne in 1483, he began to enlarge the château. The Chapelle du Roi is an isolated building, apparently traditional in its basic form. It consists

277. Vendôme, La Trinité. Façade, *c.* 1500

278. Rouen, St Maclou. Façade, *c.* 1470–90

of a crossing and short arms; the west arm is square, and the choir forms five sides of an octagon. The interior is entirely vaulted with star-vaults. The arcade of undulating arches runs below the windows and is overshadowed by a frieze of three-quarter circles. The type of arch that results could be called a bell-arch. The line of the springing is marked by an extremely complicated curtain-like frieze of segmental arches surmounted by ogee arches; it is divided into sections by the windows and covers the beginnings of the ribs. It is treated as a porous surface, with a continual interplay of light and shade.[183]

The nave of the church of St Ouen at *Pont-Audemer* was begun in 1486. In one of the windows there are two semicircular arches gathered together within a single segmental arch and topped with a gable in the form of a bell-arch.[184]

By comparison with the forms of arches which we have just discussed, the church of *La Trinité* at *Vendôme* looks conservative [277]. The three westernmost bays and the façade were built between 1485 and 1506. Inside, the absence of capitals and the forms of the plinths, which are strikingly Late Gothic compared with those in the older bays, are all quite progressive for the time at which they were designed. The façade contains Flamboyant forms which in this case can truly be compared to flickering flames. The façade has no towers, since the great campanile of about 1120 was preserved. There is a great contrast between the styles of the tower and the façade, but the aesthetic relationship between them is a happy one.[185]

12. CONTINUOUS RECESSION

The first two decades of the sixteenth century were the last two of the Late Gothic style, at least in so far as they produced new ideas. In various regions there was a great spate of architectural activity, and a large number of masterpieces were created throughout Europe. If one is already familiar with all the features which are a legacy from the fifteenth century, the most important new factor upon which to concentrate is the increased continuity between forms.

A plan for the whole church of *St Maclou* at *Rouen* was drawn up in 1436/37 by the architect Pierre Robin. The west porch was built, perhaps to Robin's general design, under the mason Amroise Harel (active at St Maclou 1467–80). In 1487 the western rose was inserted, and by 1490 the whole façade must have been complete [278].[186] The decisive stylistic features of the façade are on the one hand the unity formed by the central part and the sloping lines of the flying buttresses above, and on the other the diagonal projection of the porch in front of the corners of

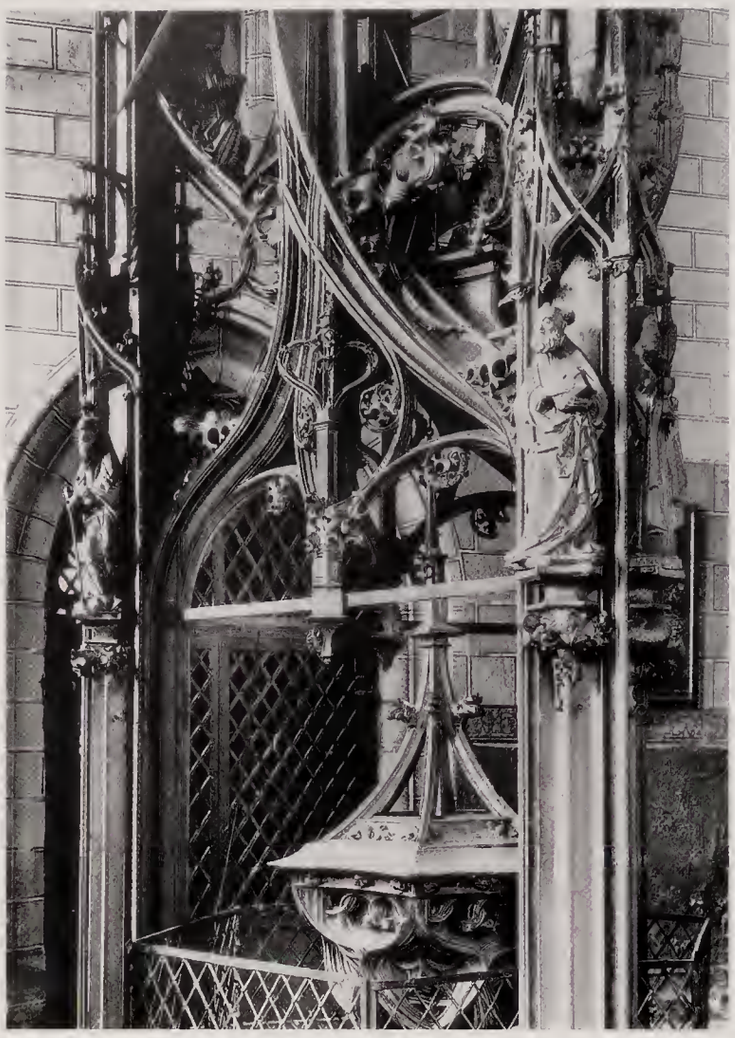
279. Alençon, Notre-Dame. West front, *c.* 1506–16

280. Alençon, Notre-Dame. Interior of nave, begun *c.* 1477

the façade. Theoretically the porch can be considered separate from the actual west wall, but not visually. The five gables of the façade are reminiscent of Reims, but their piercing and their penetration surpasses anything that had gone before; here the whole façade is dissolved, and seems to be set in the middle of infinite space. Compared with this, the façade at Vendôme seems flat. One can compare St Maclou with the so-called Triangle at Erfurt (built 1332–37) and the west porch of Regensburg cathedral (*c.* 1390) [239], but they are only small parts of the façades, while at Rouen the emphatic diagonals and the dissolution of the wall are the guiding principles of the whole façade.

A similar combination of movement and penetration can be seen in the façade at *Alençon* [279], by Jehan Lemoyne, and dated 1506–*c.* 1516, in which the number of gables has been reduced to three. In some details this façade is even more progressive than that at Rouen; for instance, there is a bell-shape inside the mouchettes in the two flanking gables, and along the north and south sides of the church the tops of the flying buttresses are concave – a conscious negation of their structural character. Inside the church, the profile of the arcade arches, which consists almost entirely of hollows, contrasts sharply with the massive round piers [280]. Two features are innovations: tiercerons standing on corbels which seem to hover in space, above the line of the springing of the vault; and, half-way along the ribs, completely akyristic tabernacles. The windows, of six lights each, have Flamboyant tracery, while the wall-passage below them, which is also divided into six openings to each bay, is regular, and is related to the forms of the Perpendicular style. Below this, however, and above the arcade arches each bay is pierced by four, not six, pointed quatrefoils, framed within squares; the vertical axes of the quatrefoils therefore do not correspond to those of the six openings above. Here, with relatively sparing means, the whole vocabulary of the High Gothic style has been given an entirely new meaning.[186A]

It still remains to consider fully to what extent small-scale architecture was the stylistic precursor of architecture on a larger scale. This is certainly the case in the fifteenth century. In the font in the church of *St Severus* at *Erfurt*, which has the date 1467 inscribed on it, all the principles of the style of 1500 are already completely active[187] [281]. It has a basin with intertwining mouchettes containing tracery, or rather branches, which intersect and then suddenly end. Its foot consists of small spiral supports – this before the aisles of Braunschweig – and its plinth is formed of a sequence of eight hexagonal stars one on top of the other, diminishing in size from bottom to top and turned in a syncopated rhythm so that the third faces in the same direction as the first, while the second penetrates the first and third – a favourite form



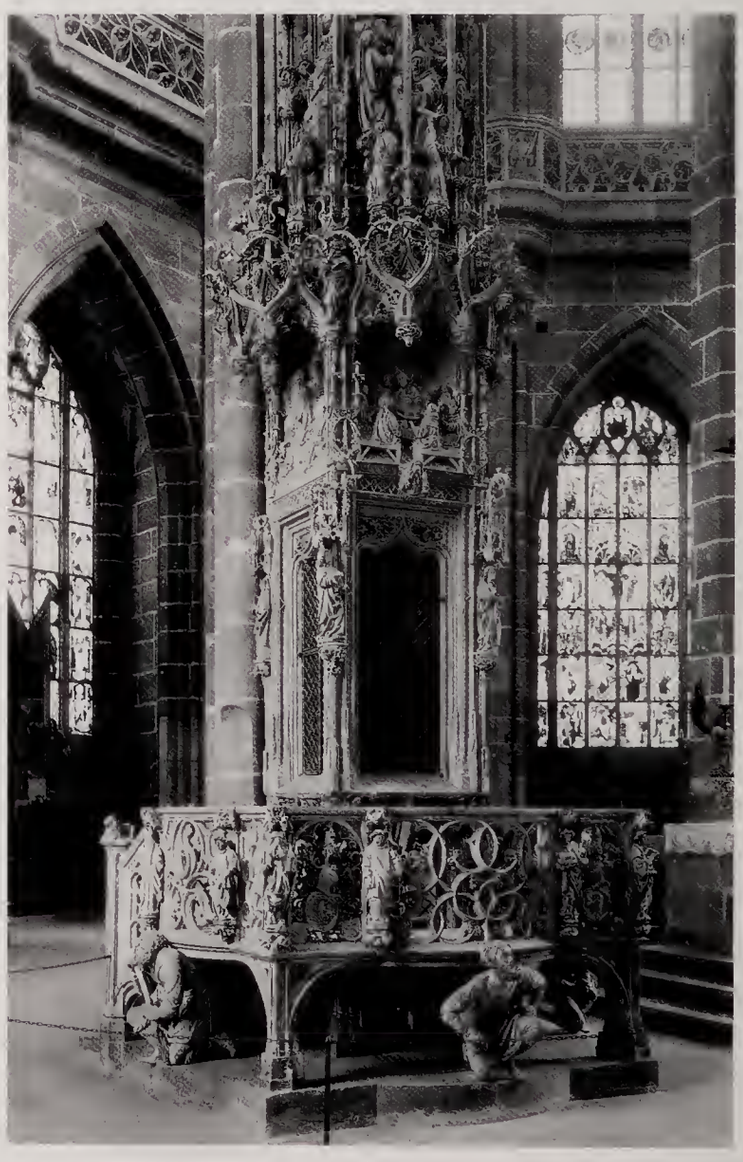
281. Erfurt, St Severus. Font, 1467

of the German Late Gothic style. The cover is supported on three posts with three-dimensional ogee arches, which, in turn, support an inner triangle of posts, whose corners stand over the centres of the sides of the lower one. Finally, concave flying buttresses spring from behind the spires on the miniature pinnacles. There has been plenty of schoolmasterly criticism of crimes against the High Gothic style, but the aim of the architect was to correct the High Gothic style with the unbelievably complicated forms of his own geometrical fantasy, to turn his work into pure texture, and thus to make it completely Gothic. In the *Sakramentshaus* of the church of *St Lorenz* at *Nuremberg*, the canopied receptacle of the Holy Sacrament, made by Adam Kraft in 1493–6, the principle of penetration had already been taken to its extreme, and structural forms had largely been transformed into textural ones. Here, the bent pinnacles, the undulating form of the flying buttresses, and the vegetal scrolls at the top of them are a complete negation of any structural principle [253, 282].[187A]

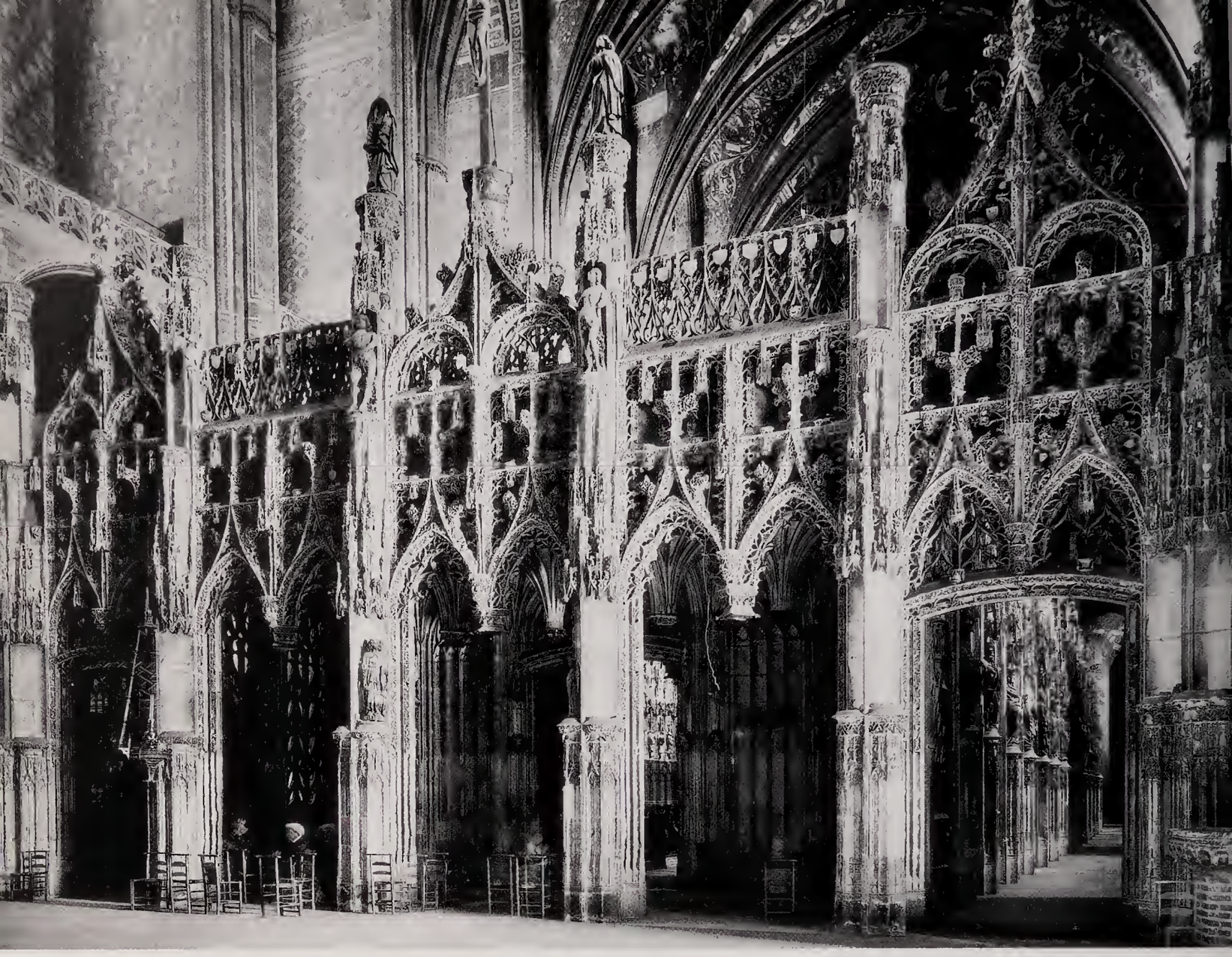
Rood-screens and choir stalls occupy a position half-way between small-scale and large-scale architecture. One of the most convincing of such works, which cannot but kill any prejudice against the Late Gothic style, is the whole *coro* in the cathedral at *Albi* [284]. Here is the principle of division in all its force: space within space [185], and every detail penetrated by space. Prosper Mérimée (1803–70) wrote of it: '. . . on a honte d'être raisonnable en présence de cette magnifique folie'.[188] But is it really folly? Historically, it is only the final consequence of what has been called the classic Gothic style – one of the late and most magnificent blossoms produced in a spiritual hothouse. Its analysis must be left to the individual. However, the twelve small star-vaults which cover the inside of the rood-screen in two rows of six should be specially noted. They are supported on the surrounding sides of the rectangle, but where they meet along the centre-line, between the two rows, they hang freely, giving an effect similar to that of a fan-vault [285].[188A]

The international validity of the style is proved by the screen in the church of *St Pantaleon* at *Cologne*, built between 1502 and 1514, which projects in three sides of a polygon, like the façade of the church of St Maclou at Rouen [286]. The points of the ogee arches lie on the edges where the oblique projections meet, and they have no visible supports. This textural principle of suspension in space is here combined with the form of arches on a broken plan. The screen at St Stephen at *Breisach* was complete by 1499.[188B] It has twisted plinths, and all its arches are gentle

282. Nuremberg, St Lorenz. Sakramentshaus, 1493–6. Detail



283. Troyes, church of the Magdalene. Screen, 1508–17



284. Albi Cathedral. *Coro*, *c.* 1474–83

285. Albi Cathedral. Vaulting inside the rood screen, 1474–83

286. Cologne, St Pantaleon. Screen, 1502–14

ogee arches containing tracery in which the arches intersect and then end abruptly. The pinnacles have three-dimensional ogee arches, like those later to be built on the flying buttresses of the Frauenkirche at Esslingen. The screen in the church of the *Magdalene* at *Troyes*, built in 1508–17, represents the same stage in stylistic development as the German works of this period [283], a still richer and a scarcely surpassable masterpiece of French *Sondergotik*.[188c]

The complete dissolution of the surfaces of spires into tracery, which was under construction in *c.* 1300 at Freiburg, reached the acme of beauty and perfection in the spire of the north tower at *Chartres*, begun in 1507 [55]. It is rich and possesses great verve, forming a sharp contrast with the lower storeys of 1134; and yet it is still clearly a descendant of the same family. If it is true that the architect of this spire at Chartres, Jehan Texier de Beauce, was also the man who designed the façade at Vendôme, then the spire at Chartres shows how he would have liked to rebuild the campanile at Vendôme. The spire at Chartres surpasses even such progressive works as *Caudebec*, and its tendency to conceal and to replace the surfaces of the spire with bunches of pinnacles influenced, and indeed determined, the form of the top of the north tower of the cathedral at *Antwerp*.[189]

It may be mentioned that, during the Late Gothic period, countless wooden spires were built covered with slate or tiles, and that these also, by virtue of a dissolution of their surfaces, or of their concave outlines, stand at the same stage of stylistic development as stone spires. It is not known whether the two west towers of the *Týn* church (*Teynkirche*) in *Prague* [287], which were built in 1463–66 (north) and 1506–11 (south), had any decisive influence in this connexion; many variations of this type were built in Austria.[189a]

The most important French interior, stylistically, of this time is the choir of *St Etienne* at *Beauvais*, begun in *c.* 1502 [288]. The section of the piers undulates, like that of the piers in the choir at Rodez. The bays of the ambulatory behind the trapezoidal apse end in a straight east wall, pierced by windows, so that this part of the church seems wide and light, in spite of the fact that it has a basilican and not a hall section.[190]

Among the latest German Gothic interiors is that of the nave of *Ulm* Minster.[191] Sometime before 1502 (north aisle) and 1507 (south aisle), Engelberg divided each of the aisles, which had been built too wide by Heinrich II Parler and Michael II Parler, into two – a solution dictated by the conditions [289]. The two resultant double-naved, Late Gothic halls accompany the high nave proper without attempting to achieve any relationship with it, as did also those at

287. Prague, Týn church. Towers, 1463–66 (north) and 1506–11 (south)

288. Beauvais, Saint-Etienne. Choir, begun *c.* 1502

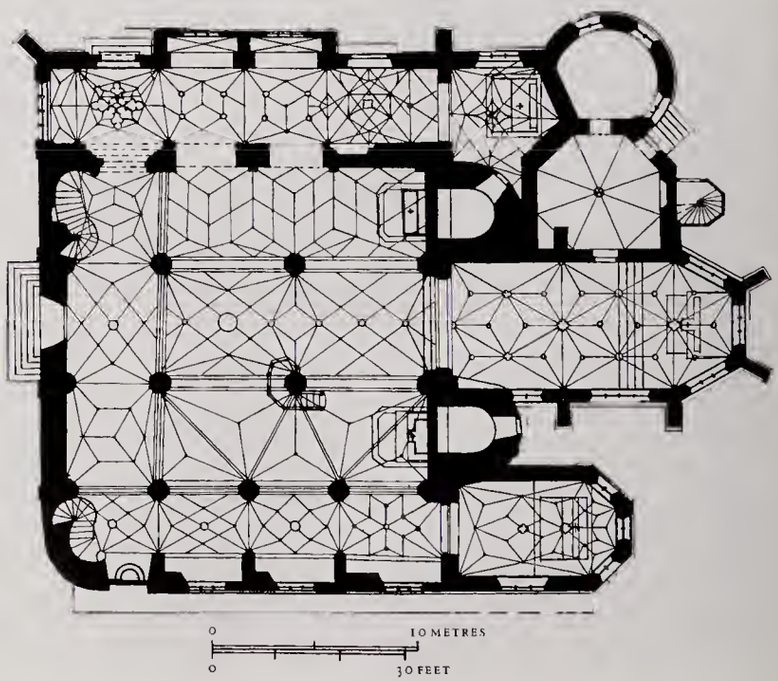
289. Ulm Minster. Interior of south nave aisle, before 1507

290. Pirna, St Mary, 1502–46. Interior

Braunschweig. The round piers and the round abaci are a reminder that Engelberg was familiar with Gmünd, and the tiercerons intersect each other at the foot of the vault, again as at Gmünd. In the outer aisles there are diagonal ribs, whereas in the inner ones there are only tiercerons and liernes.

In the parish church at *Pirna* [290], built between 1502 and 1546, the architect formed an aisled hall with piers with eight concave sides, and a close net-vault, thus achieving the very results which could not be achieved at Ulm.[192] This net-vault creates a continuous stream of movement from west to east, while each bay in the aisles is centred by the form of the star-vault, thus producing a series of lateral currents crossing the main, longitudinal one. The nave and aisles form a visual unity in which the arches of the arcade seem to have become ribs; the liernes in the nave and those in the aisles meet on these arches, and emphasize the continuity of the crossing streams of movement. The choir has double-curved ribs. Throughout the church, the section of the ribs forms two shallow hollows on each side, and the concave forms of the piers and of the ribs are stylistically analogous with the mouchettes in the tracery and with the double-curved ribs of the choir vault. In addition to these features, there are flying ribs rising from the corners of the choir and running into the meshes of the vault, and these ribs are formed like tree-trunks from which all the branches

291. Frankfurt am Main, St Leonard, begun 1219, choir *c.* 1430–4, three-aisled nave and outer aisles begun *c.* 1500. Plan



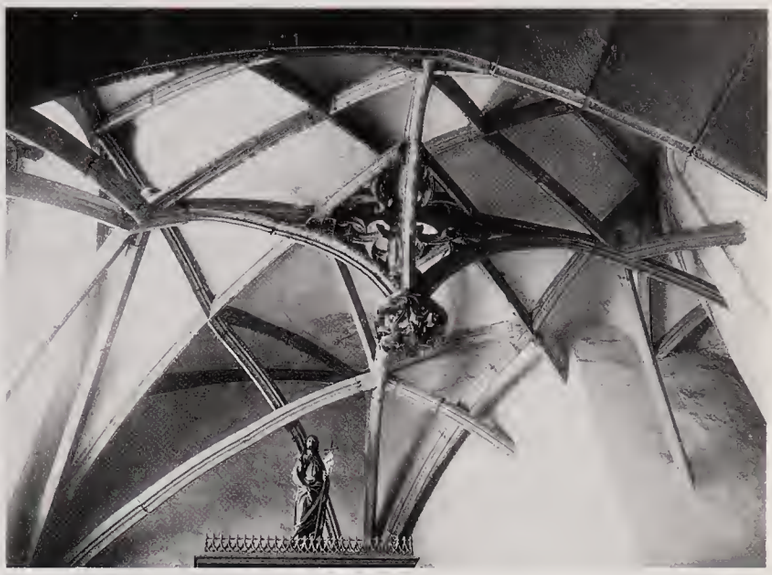
have been cut off except one, which winds spirally up the stem.[193] In this church one can truly say that all the stops are out.

The nave of the church of St Mary at *Zwickau*, which was almost completely rebuilt from 1506, belongs to the same school as that at Pirna.[194] Here, the horizontal line of the gallery, which projects round the piers, contrasts with the vertical lines of the piers themselves, as at Freiberg in Saxony, in the choir of St Lorenz at Nuremberg, and at Gmünd. All these late hall-churches in Upper Saxony are variations of the same basic type, but each of them has its own highly individual traits.

The same could really be said of the entire creative work of the last years of the Late Gothic period. In some cases the individualism was the product of conditions imposed by the existence of older parts of a church – for instance at *St Leonard* at *Frankfurt* [291], which was begun in the Romanesque style in 1219, at a time when the Gothic style was already highly developed in France, and of which some original parts have been preserved in the church as it stands today.[195] After several reconstructions, the church was given the form of an aisled hall of three bays, and an aisleless choir, similar in type to the Frauenkirche at Nuremberg. Around 1500 work was begun on the addition of a pair of outer aisles with galleries, which finally produced a double-aisled interior with diagonal views up into the galleries [292]. As the new aisles had four bays, whereas the older, inner ones had only three, the result was triangular cells in the vaults of the new south aisle, and a complicated net-vault in the north aisle. Every bay of the vaults has a different pattern, and it is quite clear that the architect saw this complexity as a means to the end of an increased continuity between the parts of his interior. In the easternmost bay of the outer north aisle, an irregular pentagon, the vault consists mainly of flying ribs – a form which, in one sense, can be considered the last word in the Gothic style[196] [293].

The principle of vaults with double-curved ribs led to the idea of building ribs standing free in space, in the way in which they could be seen during the construction of a vault before the cells were filled in. As the spatial boundary of the cells could not be omitted, a second rib-vault was built above the flying network in these cases, so that one sees two different patterns simultaneously. The development of these vaults began with those at Lincoln, Bristol, and in other English churches, and continued with those at Magdeburg, Prague, and in the church of St Stephen in Vienna. The flying ribs in the choir at Pirna were built about thirty years after those at Frankfurt, where the architect is known to

292. Frankfurt am Main, St Leonard. Interior of nave, looking north



293. Frankfurt am Main, St Leonard. Outer north aisle, vault, *c.* 1510

294. Calw, chapel of St Nicholas. Vaulting, *c.* 1360 (?)

295. Ingolstadt, Frauenkirche. Vaulting of chapel, *c.* 1510–20

have been Hans von Bingen. He had differences with the clergy at Frankfurt, but although these were not in fact on the subject of the vaults, one feels that, in any case, he was a man who knew his own mind.[196A]

A few years later, in the chapels of the Frauenkirche at *Ingolstadt*, which were built between 1510 and 1520 [295], Erhard and Ulrich Heydenreich created a series of variants of the form used at Frankfurt. Here, the proper vaults form the primary surface, with the secondary, flying network hanging below them, and they show once again that one must learn to read Gothic architecture from its furthest surface to its nearest one, or, in this case, from the uppermost surface downwards. These ribs can only be considered as 'useless', that is serving no practical purpose, but they do emphatically fulfil an aesthetic or a stylistic function. The question as to whether or not ribs actually carry weight has no meaning here, for the rib has become an autonomous form, present purely for its own sake. Some of the ribs at Ingolstadt even have the form of tree-trunks with their branches cut off.[196B]

The flying ribs at Frankfurt and Ingolstadt can be compared with those in the cloister of the cathedral at *Magdeburg* (mentioned above, p. 191), which were built *c.* 1330, but which exhibit the same tendencies within the stylistic framework of the High Gothic style. Here, in half a sixteen-sided polygon, seven ribs rise to the transverse arch which separates this chapel, the so-called Tonsura, from the cloister, and these ribs are flying ribs. The vertical walls which rise above them are pierced with tracery, and on top of these there is a flat ceiling. In the history of the development of the Gothic style, this pseudo-vault at Magdeburg stands on the dividing-line between the High Gothic and the Late Gothic styles, and, if one can understand it and recognize it as such, one should also be able to recognize the final Late Gothic form as a natural and valid development of this transitional stage.[197] In this connexion, too, Dehio, the most notable historian of the Gothic style, expressed his bias in favour of the High Gothic when he said of the vaults at Frankfurt that they were 'a mere spectacle for marvelling laymen'. An unprejudiced historian must pronounce a very different verdict.

The chapel of St Nicholas on the bridge at *Calw* in the Black Forest is very similar in the basic form of its vault to the cloister at Magdeburg, but here tracery has been inserted between the eight flying ribs and the flat ceiling [294]. The official inventory[198] dates it as 'about 1400', as does Dehio in his *Handbuch*, but, while this date is almost certainly correct for the flèche, the ribs and the boss appear rather to date from about 1360. The form of the shafts, on the other hand, seems to confirm the later date. But whatever the date, this combination of flying ribs with a flat ceiling is a step in the direction of the construction of

296. Belém, Hieronymite monastery church. Nave interior, begun 1501

completely free flying ribs in proper vaults. It also has some relationship to the flat ceilings on transverse arches which were built in Syria, but, historically, it should be understood as a result of the immanent process of the development of the Gothic style.[198A]

All this applies to the net-vault in the choir of *Freiburg* Minster, which was completed in 1510 [222].[199] It is ultimately derived from the net-vault of Prague Cathedral but enriched by the arches which are called 'principal arches'. They comprise two bays each and dictate the radius of curvature of all the ribs [215].

The first decade of the sixteenth century also saw the ultimate developments of the Gothic style in England, where, between 1503 and 1509, King Henry VII's Chapel was added to the east end of *Westminster Abbey* in *London*.[200] Here, the transverse arches which appear in the nave and the choir disappear in the concave cones of the fan-vault, which divides the chapel indeterminably, splits it, and bores into it. A pendant fan vault had been built as early as about 1480 in the *Divinity School* at *Oxford*,[201] but in Henry VII's Chapel the character of the vaults extends to embrace the form of the entire structure, and, here again, one can speak of pure decoration, as long as the word is not used in a derogatory sense.

In Portugal, the overseas wealth brought back from Prince Henry the Navigator's voyages to Africa, and Vasco de Gama's opening of the trade routes to India, resulted in a fresh burst of architectural activity. At the site of Prince Henry's small Mariners' chapel of S. Maria de Belém where Vasco de Gama's fleet embarked in 1497, King Manuel founded, in 1501, the monastery of *Belém*,[202] the design for which was made by Diogo Boitac (or Boytac) [296, 297]. The church is an aisled hall of three bays, with piers almost as slender as those in the church of St Martin at Landshut. Above their bases these piers are formed of separate pieces, and are covered with partly Renaissance ornamentation, which was not executed until after 1516/17, when the workshop came under the control of João de Castilho. There is only one transept, and this projects laterally only very slightly; it is as wide as the length of two and a half bays of the nave, and carries a single vault consisting of several stars. This transept cannot be compared with that in any other church; it looks more like a gigantic crossing for the whole church than like an actual transept. The original apse was disproportionately small, and even the present one containing monuments of 1571 is built only on the scale of a chapel. The west bays, before one enters the actual nave, are also most unusual in disposition. The architect obviously felt himself quite free from the dictates of any tradition.

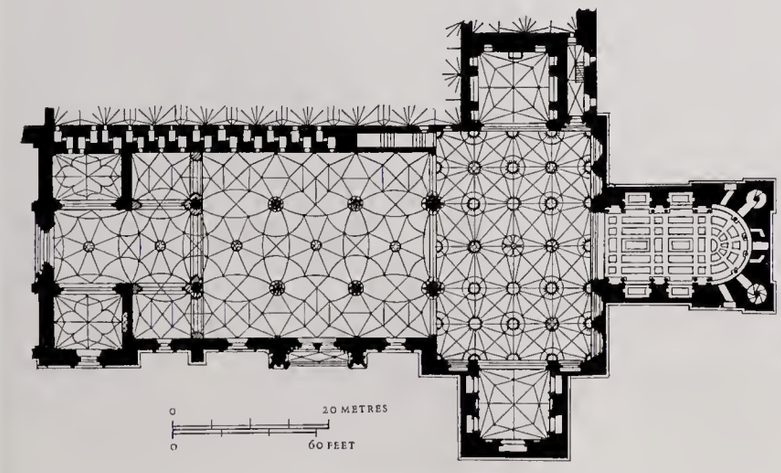
The Franciscan church of Igreja de Jesus at *Setúbal* was also designed by Boitac, and it has piers each consisting of three three-quarter shafts, which rise spirally showing none of the solid core[203] [298].

From 1507 to 1513 King Manuel had the church of *Santa Cruz* at *Coimbra* rebuilt by Boitac. From 1517 to 1521 the Claustro do Silêncio was added to it by the architect Marcos Pires.[204] In the choir, the star-vault without transverse arches and the windows, which have curtain arches, were parts of the reconstruction, and the Marcos Pires gave the tracery of the cloister openings the form of twisted ropes (completed in *c.* 1518).

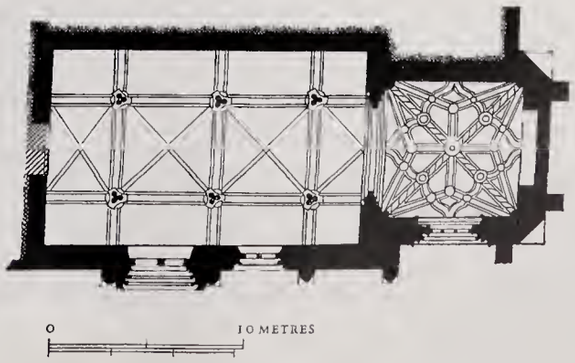
After the liquidation of the Knights Templar in France and the dissolution of their order in 1312, the possessions of the knights at *Tomar* were given by King Dinis in 1319 to his new Supreme Order of Christ, and in 1339 Tomar became its headquarters. The old Templars' church here, dating from about 1160, had an octagonal central portion like a tower, and, originally, a sixteen-sided ambulatory.[205] From 1510 to 1514 a nave was added by the architect Diogo de Arruda whose lower western part is closed towards the church. It contains the chapter house, which is accessible from outside, and above it the knights' gallery. The portal to the nave lies on the south side [299]. It was inserted in 1515 by João de Castilho. In it Late Gothic torsion and combinations of rows of arches are united with Renaissance ornamentation.

The Capelas Imperfeitas behind the choir at *Batalha* was begun under King Duarte (1433–38) by Master Huguet (Ouguete or Huguete), probably in 1435. The octagonal chapel is the most significant Gothic building on a central

297. Belém, Hieronymite monastery church, begun 1501, choir *c.* 1572. Plan



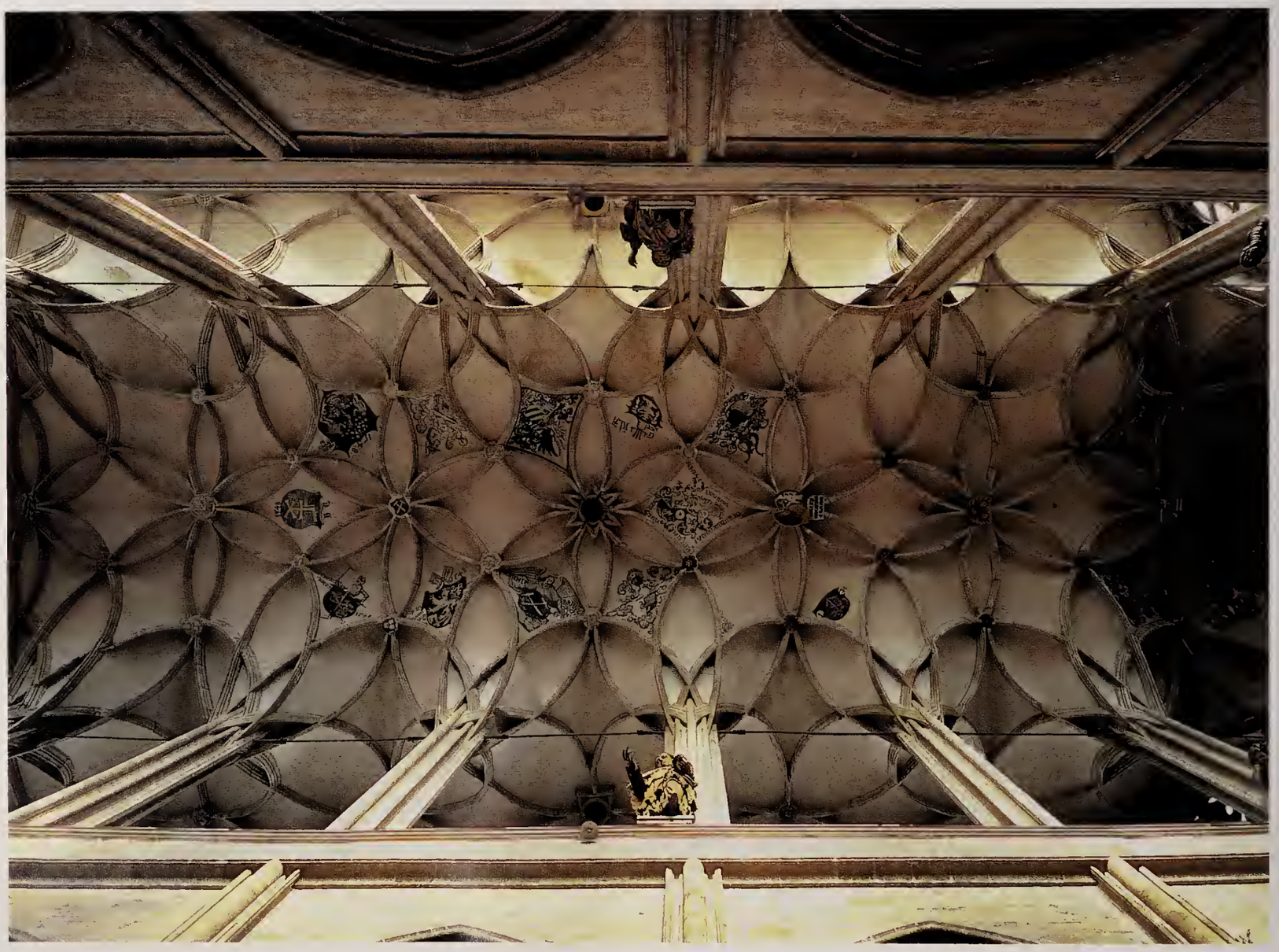
298. Setúbal, Franciscan church, begun *c.* 1494–98. Plan



299. Tomar, Convento de Cristo. South portal, 1515

300. Kutná Hora (Kuttenberg), St Barbara. Ribspringers in the nave galleries, from 1512

301. Kutná Hora (Kuttenberg), St Barbara. Nave vault, designed 1512, constructed 1540–48



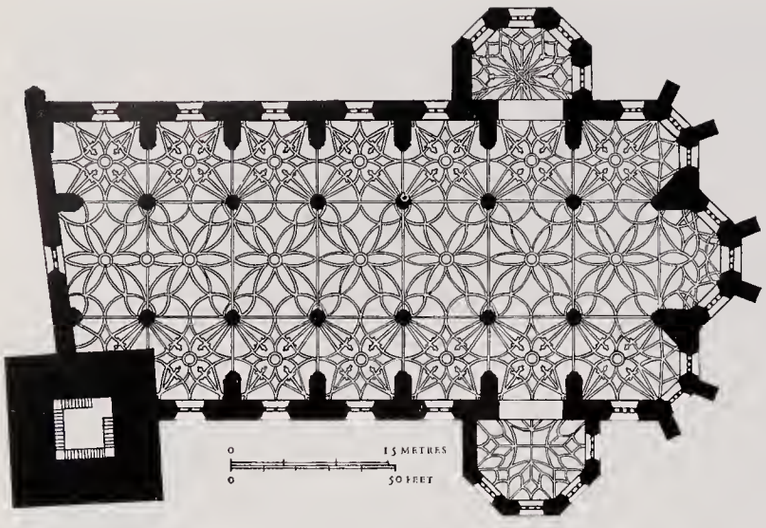
302. Annaberg, St Anne, begun 1499. Interior. Vault designed in 1515 and completed 1521–2

plan in Europe, apart from the Karlov church in Prague. It has seven isolated chapels opening off each of its sides, with six smaller chapels inserted between them and an entrance portal to the west. Progress was slow. Under King Manuel (1495–1521) the architect Mateus Fernandes the Elder (active at Batalha 1480–1515) had by 1509 constructed the chapel's western portal in the Manueline style [299]. He was also responsible for the cornice of the lower storey, perhaps some of the chapel vaults, and for the elaborate piers and vault springers of the unfinished upper storey. Mateus's son, also called Mateus, succeeded his father as master of the works in 1516, though the extent of his contribution is not known. Under King John III (1521–57) João de Castilho inserted a tribune above the portal in 1533, but work stopped soon afterwards, leaving the chapel without a roof or vault.[206] The main arch of the magnificent portal by Mateus Fernandes is formed by a trefoil arch, entwined with a curtain arch which begins at each side with a normal, concave quarter-circle, continues with a wave on each side, and reaches its apex with a convex arch from which a cusp hangs downwards. This description sounds complicated, yet these are the simplest forms in the portal, and all the complexity serves the end of creating continuity in depth.

This principle is valid in all European countries at this time. Architects dared to build flying networks of ribs only in small interiors, such as those at Frankfurt and Ingolstadt, but from them one can learn to understand the larger masterpieces with nets of double-curved ribs. Between *c.* 1500 and 1521 double-curved ribs were used in the chapel of St Wenceslas at *Znojmo (Znaim)* in Moravia,[207] and it was followed from 1512 by the upper parts of the nave at *Kutná Hora (Kuttenberg)* in Bohemia, built by Benedikt Ried.[208] Here there are no transverse arches and no arches in the arcade, so that a continuous stream of rotating movements with no preponderant direction seems to run through the interior. At the level of the springing of the vault in the galleries, the tiercerons, which are bent both in plan and in elevation, intersect and then continue downwards for a short distance, or, more properly, they begin hovering in space and continue upwards. They represent an extreme case of an architect giving his vault the impression of floating in space [300, 301].

In Austria double-curved ribs were used a great deal, not only in small-scale architecture, as in the organ bracket which Anton Pilgram of Brünn built in 1511/13 in *St Stephen* in *Vienna*,[209] but also in many country churches whose stylistic charm lies in their combination of spatial division, penetrations, textural lightness, and the greatest possible multiplicity of images (*Vielbildigkeit*).[210]

The most significant of these churches with a net of double-curved ribs is that at *Annaberg* [302, 303][211] in Saxony; it is an aisled hall ending in three shallow apses, and it has piers with eight concave sides, which grow into the vault. The double-curved ribs flow from the aisles right into the space between the buttresses that are incorporated into the interior. Fairly low down, a division cuts these spaces into lower chapels and a balcony, which projects round each of the piers, and into the aisles. The diagonal ribs begin below the arcade arches on the east and west sides of the piers, intersect, and then rise in a large sweep to the centre of the vault, or rather to the central figure in each bay of the vault, a figure which consists of six petal-shaped cells and curves



303. Annaberg, St Anne, begun 1499. Plan

downwards like a flower hanging in the vault. Each of the petals of this flower consists of two arches bent in all three dimensions and meeting at both ends, and a rib forks off each of the two lateral petals, curves down to the apex of the arcade arch, and flows into the pattern of the vault in the aisle on each side. The vaults in these aisles are also extremely complex, and clearly show their derivation from star-vaults.

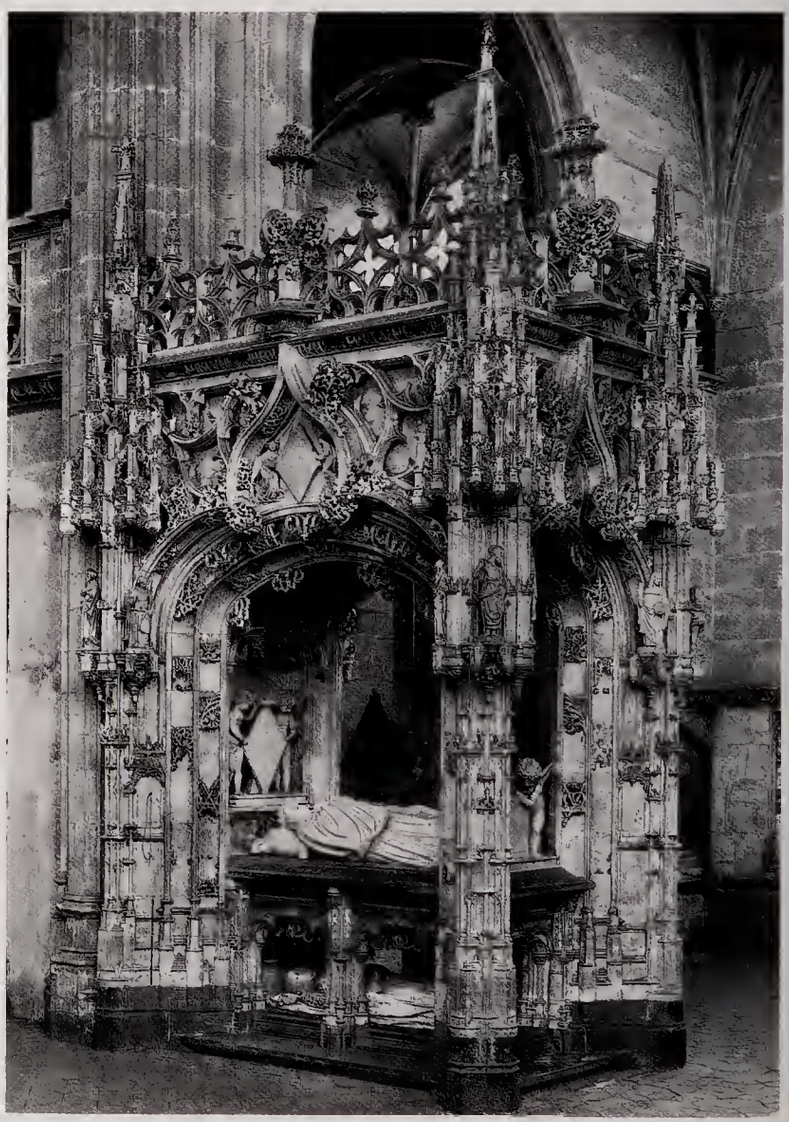
These vaults make great demands on a comprehension of geometrical forms, but not on aesthetic feeling. All the complicated curves and intersections serve to produce an impression of rich and undulating movement. The long windows in the choir and choir chapels are reminiscent of those in the Wiesenkirche at Soest, and, as at Soest, so at Annaberg also, the predominant feeling is one of harmony and of ease in grasping the whole, though at Annaberg these qualities are combined with a degree of continuity among all the spatial parts which far surpasses that achieved at Soest.

The outside walls of the church at Annaberg were built from 1499 to *c.* 1512. The roof was up in 1513, the piers between nave and aisles, which have concave sides, were constructed from 1514 to 1517. In 1515 work began on the design of the vaults. The ribs were under construction by 1517, and the whole vault complete by 1521–22. The galleries were inserted in 1519–22 and the whole church, with furnishings, was finished in 1525. Three architects, Conrad Pflüger (1499–1508(?)), Peter Ulrich of Pirna (1508–13/14) and Jacob Haylmann (1515–25) were responsible for the work, but the whole church is cast in a single mould. The concave sides of its free-standing and gallery piers may well have been an expression of the architect's desire to give the feeling that the space within the church actually penetrates into the piers.

Since it can be assumed that the design for the vaults at Annaberg dates from 1515, it is contemporary with that for the vault of *King's College Chapel* at *Cambridge*. The chapel was begun in 1448 as an aisleless choir, with an ante-chapel with internal side chapels. This initial design was modified into the present plan, consisting of a single aisleless choir and ante-chapel flanked along almost its whole length by low chapels, opening into the ante-chapel through tracery screens. The long, rectangular central portion of twelve bays then gave the effect of a single space, until, still later, it was divided by the organ-screen. The profile of the wall piers is such that it requires close scrutiny to see where the surface of the walls actually lies. It is intended that one should remain unenlightened on this score, and most visitors leave with the uncertain impression that the chapel has no walls in the normal sense of the word.[212] This interior, which was a masterpiece from the very first, was enriched in 1512 by a fan-vault which floats smoothly over the divisions between the bays. It is known that the architect was John Wastell. Originally the chapel was intended to have a lierne vault, but it is the fan-vault which gives it its stylistic perfection.[213]

In France, the last years of the Late Gothic period are represented by the church at *Brou* near Bourg-en-Bresse, which was built from 1513 to 1532 to the design of a Belgian, Louis van Boghem, and by order of Margaret of Austria.[214] The interior has a conservative spatial plan, and star-vaults throughout. The piers and their bases are complicated, and the rood-screen, which has curtain arches over wide, segmented arches, gives an effect of pure texture. The most magnificent features in the choir are the monuments and the altar of the Seven Joys of Mary. The tomb of Margaret of

304. Brou, church. Tomb of Margaret of Austria, 1525–32



Austria was built in the form of a Late Gothic house. In it are concentrated all the many forms which the style of this generation had to offer [304].

In their own country, the Belgians from 1513 to 1538 built the nave of the church of St Jacques at *Liège*. This church, like that at Brou, was still designed as a basilica, but it intensifies the qualities of the Late Gothic style in the closeness of the meshes in its net-vault, and in the forms of the tracery in the balustrade of the triforium.[215]

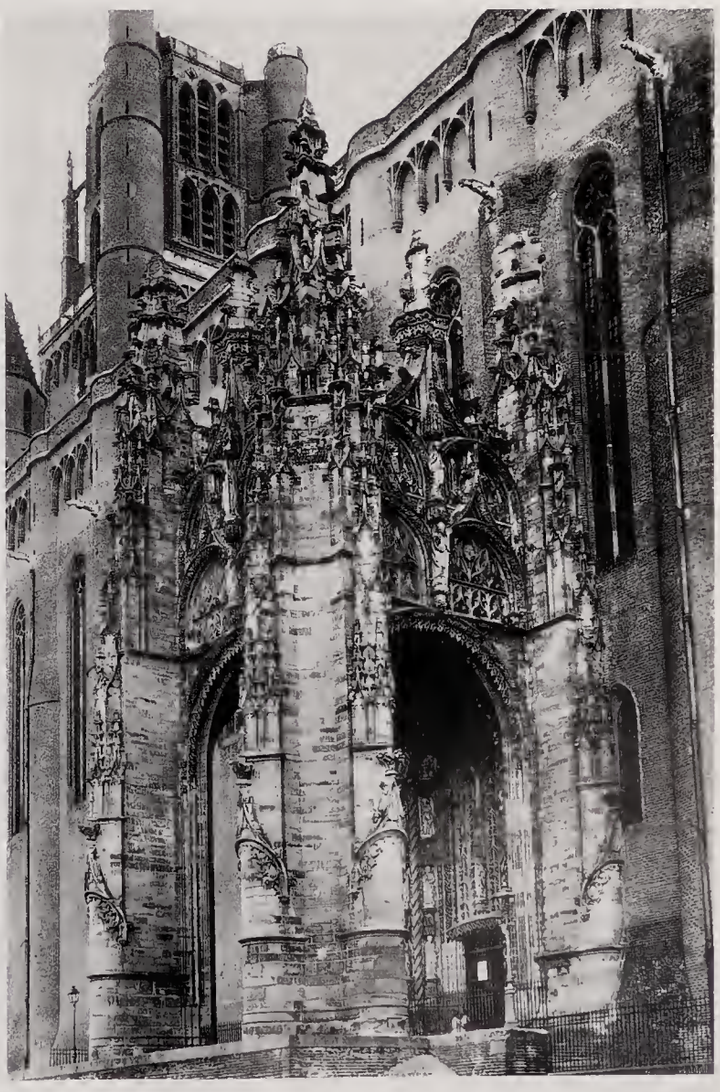
It is not yet certain whether or not the architects of the Netherlands played a leading part in the work of this generation. One might suppose that a work as lavish as the porch at *Louviers* near Rouen, which was probably begun in 1506, must have been influenced by models in the Netherlands, but the Late Gothic style is so international that it would not be difficult to find French analogies for every one of its details [305].[215A]

In spite of its extreme richness, the canopy over the south doorway at *Albi*, built from *c.* 1521, is more modest than the porch at Louviers, but it is nevertheless a product of the same tendencies. Here the round arch occupies an important place, for the vault of the canopy rests on semicircular arches [306]. The vault itself is covered with a textural pattern of ribs which combines all the different forms of curves and has pendant bosses. The main entrance to the church is framed by twisted rolls without capitals, while the outer, free-standing piers are decorated round their cylindrical surface with round arches surmounted by concave points. One feels that the architect was determined that every form used by his generation should have its say here.[215B]

Louviers and Albi achieve magnificence by the amassing of details. The *cathedral* at *Salamanca*, on the other hand, achieves its splendour through its generous management of space. It was begun in 1512, and to execute his design the architect did not hesitate to cut off lengthways part of the north aisle of the old cathedral. The section is graduated, like that of the cathedral at Toledo, with one aisle and a row of chapels on each side, so that the ultimate effect is of a nave and choir with double aisles. The choir is rectangular and has rectangular chapels. This conservative plan receives its Late Gothic character from the star-vaults, whose ribs form ogee arches in plan, and which were built to the design of Juan Gil de Hontañón. However, the piers, too, have a Late Gothic profile [307]. Their bases, which are angular in their forms but have round bases for the shafts, are very striking, and it is clear that they are formed by the penetration of

305. Louviers, Notre-Dame. South porch, begun in 1506

306. Albi Cathedral. South porch, *c.* 1521



307. Salamanca Cathedral, begun 1512. Socle of pier

concave sections with convex ones, leaving only the corners visible. This motif, too, appears all over Europe. The upper parts of the cathedral have some Renaissance forms, for example the balustrade; and the dome and the drum over the crossing were added only in 1705–33.[216]

The church of *San Estéban* at *Salamanca*, begun in 1524, was still built in the Gothic style. It has a nave with lateral chapels; the transepts project only slightly, and the choir of two bays has a straight end. The basic southern French type is transformed into a characteristic work of the last years of the Late Gothic style by the complicated forms of the shafts, and by the star-vaults, which are similar to those in the Catedrale Nueva. The three westernmost bays are divided horizontally by a monks' gallery, and here, as in other similar cases, one is not only aware of the diagonal line between the gallery and the altar, but one also feels that the monks, as they chant their psalms, looked out across a world above that of the laity below.[217]

In his design of 1522, Juan Gil de Hontañón repeated the system of the new cathedral at Salamanca at *Segovia*, but here his son Rodrigo returned to the older type of plan with an apse with an ambulatory and seven chapels. Once again the result, outside, is a magnificent series of steps – first the chapels, then the ambulatory, and finally the main apse of the choir, which has pinnacles, leading the eye still further upwards, and even flying buttresses. However, the cathedral does not have the steep roofs characteristic of French High Gothic churches [308]. The determining feature of the interior is, again, the star-vault[218] [309].

Within this generation of 1500 to 1530 one can see side by side the work of architects both modest and insatiably bold in their imagination. Among the works of the latter is the surround of the portal to the sacristy – the latter is no longer standing – at *Alcobaça* in Portugal: an example of 'arboreal architecture'. The tree-forms have little hanging roots at the bottom, like those in some of the stained glass by Hemmel, and their branches have been cut off. The door lintel is a curtain arch in which each convex section is separated from the next by a concave funnel. The Renaissance ornamentation is supposed to be the work of João de Castilho, to whom many more works have been attributed than he could possibly have carried out. It would therefore be advisable to reconsider their dates.[219]

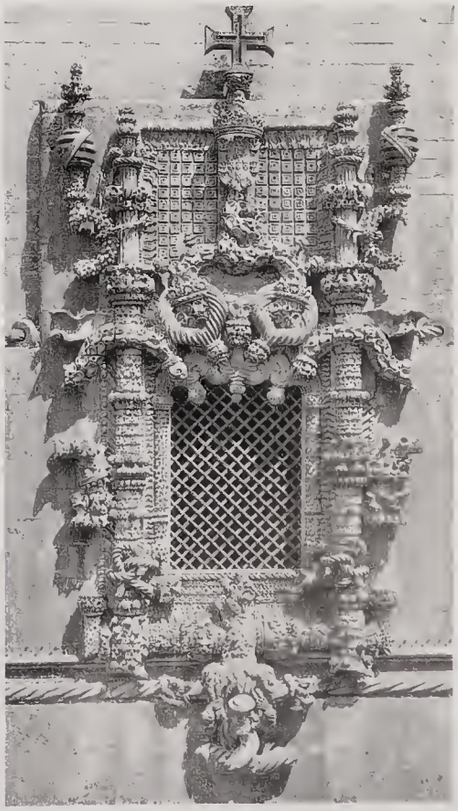
308. Segovia Cathedral, begun 1522. Exterior of choir, constructed 1563–91

309. Segovia Cathedral, begun 1522. Interior of choir, constructed 1563–91

By far the most fantastic work of this generation is the exterior of the western arm of the church at *Tomar*. The architect is now known to have been Diogo de Arruda, and we have also learned something about the significance of the forms which appear. The lower west window [310], which lights the chapter house, was – it has been argued – originally intended to be a monument to Vasco da Gama, and his bust, which stands below the window, seems to be joined to the roots of an oak-tree. The extraordinary explanation of this absurdity is that these roots were originally the legs of the Golden Fleece which da Gama was supposed to carry over his shoulder, as the Good Shepherd carries his lamb. The fact that the design was changed as a result of the quarrel between the king and the explorer is illuminating, but the exact date of this quarrel is not known.[220] The looseness of the composition of the upper, circular window (which contains forms like billowing sails) and the lower, rectangular window, the round piers at the corners, and the emphasis on horizontal lines are not unusual in the history of the Late Gothic style. The many instruments of navigation used as symbols must be understood in the light of the programme of this church, but the way in which these non-architectural forms are combined shows a masterly imaginative power which can hardly be equalled. To arrange ropes, sea-shells, chains, artichokes, oak-trees, astrolabes, and other such objects into a single framework was no easy task, and were it not for the cross of the Order of Christ, one might well forget that this is a church and think it a harbour fortification (in spite of the fact that it stands far from the sea). It would be wrong to criticize this design, but it is permissible to question whether its forms are Late Gothic. In part they are, but this work as a whole stands outside our stylistic concepts, and it has even less to do with the Renaissance. It is a mixture of architecture and sculpture, for not only the bust of the explorer but the astrolabes as well are sculpture; but a discussion of this mixture would lead to the problem of the frontiers of the arts, and would be of only academic interest.

The nave of the church dates from *c.* 1510–14, so that the whole work must be considered among the earliest of those which introduce the last Gothic generation. However, it seems rather to be a timeless work, standing outside the general stylistic development of its age, an isolated fruit of unusual circumstances, as it were a break from the strict traditions of the Gothic style, a sideline with no continuation.

In Germany, the church of St Mary at *Halle* on the Saale, the market church, stands at the very end of the Late Gothic style. Here there were originally two churches standing one in front of the other, with just enough room between them to allow processions to pass. Cardinal Albrecht of Brandenburg had both churches pulled down, but left the towers standing. Between them an aisled hall was built, with a straight east end and the pairs of towers at its east and west fronts. The site made it necessary to incorporate the choir within the hall, separating it only by raising it by two steps,[221] but the rightness of this solution has never been denied. The piers have concave sides and pierce the narrow meshes of the net-vault. They give this church its place among the Upper Saxon buildings. It may have been part of the intention of the first architect to build the galleries which stand on low piers in the aisles, occupying less than



310. Tomar, Convento de Cristo. Window of chapter house, 1510–14

311. Caen, Saint-Pierre, 1528–45. Choir vault

half the width of the aisle. They, too, are a case of the insertion of one spatial part into another. The second architect, Nickel Hofman, who built them, however, used Renaissance forms.

The Gothic style did not cease to exist: it did, however, cease to be all-powerful, and it almost ceased to create new forms. Gothic architects had by this time drawn every possible conclusion from the premises which had been laid down when the first rib-vault was built at Durham.

13. THE GOTHIC STYLE AND THE STYLE OF THE RENAISSANCE

Some historians of art still say that the Late Gothic style is not Gothic. What is it then? Their answer is that the Late Gothic style is Early Renaissance. Paradoxes can sometimes improve one's understanding of a subject, but this paradox, in polite terms, is a fallacy.

The term Renaissance, used to describe, not the countless 'Proto-Renaissances' which made their appearance, but Italian architecture from the time of Brunelleschi and Alberti to the time of Bramante and Raphael, refers to the resurrection of the forms of imperial Roman architecture, that is of columns, pilasters, entablatures, semicircular arches, groin-vaults, and domes. These members are different from those used by Gothic architects – shafts (with no entablatures), pointed arches, rib-vaults, buttresses, and flying buttresses. The Late Gothic style is radically different from the style of the Early Renaissance and the High Renaissance.[221A]

However, the two styles are not merely different in the forms of their members: they are polar opposites. Let us summarize this once more. In the Gothic style all spatial parts and solid members are connected by 'division'; the Renaissance style returns to the principle of 'addition'. Furthermore, in the Renaissance style the solid members and their parts are instinct with forces acting against each other by pressure and counter-pressure, while the Gothic style in its Early and High periods alters the forms of the members so that they seem to be channels conducting a stream of upward pressure; nevertheless the impression remains one of structure. In the Late Gothic period structure is transformed into texture. Finally, the Gothic style develops to offer more and more diagonal views and an increasing multiplicity of images, while the Renaissance style returns to frontality and as far as possible presents single images. Expressed in abstract terms, the Renaissance is a style of totality, while the Gothic style was one of partiality. In the Renaissance style every single part is treated as an independent entity, while in the Gothic style every part is treated as a fragment of the whole, so that, finally, whole Gothic buildings were intended to be interpreted as mere fragments of some larger, outside entity – as fragments of the infinite. Renaissance architecture aimed to express immutable 'being'; 'One wants to stay eternally within its precincts' (Wölfflin). The Gothic style, on the other hand, aimed to express mutability, growth, and 'becoming': its character is passionate. The Renaissance style represents the self-sufficiency of mortal man, whereas the Gothic style portrays man as a religious being, dependent on a higher, metaphysical and spiritual realm, yearning for deliverance. Gothic man is not a complete being, but only a part of a larger universe.

The Renaissance began in Italy about 1420, at the same time as the church of St Martin was being built at Amberg and Ensinger was building Berne Minster. It reached its highest maturity in Bramante's designs for St Peter's in Rome (1505), which were made at the same time as Annaberg, Pirna, King Henry VII's Chapel, and the choir of St Etienne at Beauvais. The period of the High Renaissance was almost over when Early Renaissance ornaments were first incorporated in the Late Gothic doorways and piers at Belém. From this moment on, there was a passive transition to the Renaissance, of which experiments can be seen in the choir of *Saint-Pierre* at *Caen* [311], built by Hector Sohier between 1518 and 1545, and in *Saint-Eustache* in *Paris*, begun in 1532 and not completed until the seventeenth century.

At Caen the choir, with its ambulatory and chapels, is Gothic in type, but has Renaissance members instead of Gothic ones: for instance, on the outside, Renaissance candelabra instead of pinnacles [312].[222] At Saint-Eustache [313] there is the same kind of substitution, although the church has proportions in no way derived from antiquity. Here there are pilasters, but they have the proportions of shafts, so that the human character of the proportions of antiquity is avoided.[223]

In Spain, the most impressive work of this period of passive transition is the Cimborio in the cathedral at *Burgos*. The original, which Hans of Cologne had begun in *c.* 1466, collapsed in 1539. The new work which replaced it incorporates some Renaissance forms, especially in the balustrades. Inside, the starvault is pierced, similarly to that in the Capilla del Condestable, and in its own way it is as characteristically Late Gothic as the flying rib-vaults at Frankfurt and Ingolstadt. In the huge, double-aisled hall-church at

Saragossa, which was begun in 1318, the architect of about 1520 used a Renaissance form with putti for the capitals on the westernmost piers.[223a]

In Germany, the Reformation changed the conditions and the demands of church architecture. An example of the use of Renaissance ornaments can be seen at *Halle* on the Saale.

Those historians of art who still believe that the Late Gothic style is identical with the Early Renaissance claim that coffered ceilings and net-vaults are fundamentally the same; but anyone who believes this has misunderstood both forms. In a coffered ceiling the coffers recede behind the foremost layer of the whole surface, whereas in a net-vault the ribs project in front of the main surface of the vault. The relief of the Renaissance is the direct opposite of the Gothic relief.

In theory, one can regard these cases of direct opposites as pure cases, and, by using them as theoretical co-ordinates, one can compare them with mixed cases which, to a greater or lesser degree, approach or differ from the pure cases. The generation of between 1500 and 1520 was able to create extremely pure solutions of the Late Gothic style, because previous generations, dating back to the time of the first rib-vault at Durham, had organically developed the principles that seemed to be inherent in the original introduction of the rib.

There remains one last question. Why did architects adhere to the idea of the partiality of rib-vaults? The answer to this question will be the subject of the second part of this book.

312. Caen, Saint-Pierre, 1528–45. Exterior from the south-east

313. Paris, Saint-Eustache, begun 1532. Interior

14. THE SURVIVAL OF THE GOTHIC STYLE

In Italy, where the Gothic style was felt to be something alien, it was relatively easy to eliminate Gothic forms and to replace them by the forms of classical antiquity. However, the men of the fifteenth century were no longer the same as the classical Athenians and Romans, so that it was impossible simply to copy classical temples. The style that was created was something completely new, in spite of the fact that it was proudly considered to be a re-birth of the art of classical antiquity.

The few pointed arches which can be found in Italian architecture between 1419 and 1550 are not essential. When it was decided to try and finish the façade of the church of *S. Petronio* at *Bologna*, it became apparent that any compromise between the forms of the Gothic style and the Renaissance had become impossible. The first design, which was made by Ariguzzi in 1514, was still Gothic, in the sense of the Italian Gothic style, and it was followed by designs made by Peruzzi in 1521, which are a mixture of the Gothic style and Renaissance. Giulio Romano then proposed a mixture of Corinthian orders and various Gothic details, such as a rose-window, pinnacles, and tabernacles, and the long series of succeeding designs and reports shows that the aristocracy was in favour of pure Renaissance, while the bourgeoisie and the artisans defended the Gothic style. In 1578 the aristocracy summoned Palladio, who submitted several designs, of which one is possibly his finest work, but the opposition rejected them. In 1587, when Terribilia began

the work of replacing the temporary flat ceiling by a Gothic rib-vault, Carlo Carrazzi, a tailor from Cremona, interfered and demanded from the men directing the work that they should use Gothic triangulation. This controversy, which dragged on for a whole century and left the façade unfinished, shows that, at this time, the Gothic style had become the style of the uneducated.[224] The leaders of the clergy and the Jesuits belonged to the social stratum of the humanists, and in Italy they built their churches in the styles first of the Renaissance, and then of Mannerism and of the Baroque.

In other countries, however, the situation was different. Except in France there were no impressive classical ruins to be seen, but plenty of impressive Gothic works. When the wave of humanism reached France and Germany, and later England, Spain, and other countries, it led to stylistic mixtures such as those that have already been quoted at Caen and in Paris. The absolutely standardized Five Orders of columns might produce an international and a timeless effect, but free variations on the classical theme seemed better to express national taste, and here too, especially in secular architecture, reminiscences of the Gothic style were a better expression of the spirit of the bourgeoisie.

The Gothic style no longer had any problems to set; the Renaissance now set problems of a quite different kind. Those who still built in the Gothic style no longer aimed at creating more intensified forms. The Jesuits in Germany, Belgium, and other countries probably turned to the Gothic style because they felt that it was more Christian than a style derived from the works of a pagan civilization, and they probably also presumed that simple people were more receptive to medieval architecture than to buildings like the church of the Gesù in *Rome* or that of St Michael in *Munich*. Their works often remained eclectic and lifeless, but occasionally they succeeded in creating something outstanding, such as the church of the *Ascension* at *Cologne*, which was begun in 1618, at the time of the outbreak of the Thirty Years' War, but was almost completely destroyed in 1945.[244A]

The motives for the continued use of Gothic forms remain to be investigated in detail. Gothic churches required preservation, and therefore perpetual observation and repair, and they thus provided training for many architects who were also connoisseurs of classical architecture. In the church of *Saint-Etienne* at *Caen*, the vault was restored in 1616 [16]. The new vault was probably a faithful reproduction of the original, but the strikingly squashed curves give the impression that the architects had regressed to the level of technical skill reached about 1120. In other cases, the motive may have been to match existing work. An example of this can be seen in the church of *Saint-Germain-des-Prés* in *Paris*, where the flat ceiling in the nave was replaced in 1644 by a rib-vault, built to the pattern of that in the choir; and here, the replacement is really satisfying. The large windows with tracery in the transepts, however, are less convincing, and yet the whole church still gives the effect of being an original Gothic work.

Sir Christopher Wren, a convinced adherent of classicism, was also interested in the restoration of Gothic works, as can be seen from the evidence of his reports on Old St Paul's in London in 1662, on Salisbury Cathedral in 1669, and on Westminster Abbey in 1713. The English cherished the Gothic style, and this love was not confined to any one social class. Indeed, in the eighteenth century it was the members of the upper class, such as Horace Walpole, who wanted a return to the Gothic style. It is from this state of mind that the Gothic style could develop, first as an expression of romanticism, and then of historicism.[224B]

There is no comprehensive history of the Gothic survival in existence.[225] The Gothic Revival in England has been the subject of excellent studies, and Romantic Gothic in Germany too is well known. The building of Gothic churches has an analogy in America, in the Gothic colleges there, which feel themselves bound to the traditions of Oxford and Cambridge. Nearly all neo-Gothic buildings stand in a setting into which they do not fit, because the believers in historicism simply held that any style was worthy of imitation.

Originally Gothic churches stood in Gothic towns, but the rise in population, the change of, and increase in, traffic, and the disappearance of town walls because of the development of weapons of war produced modern towns, better suited to modern life. Originally these churches reigned supreme over the silhouettes of the towns in which they stood, but now they began to lose this focal quality among the mass of tall houses.

Some medieval towns have been partly preserved, some even surrounded by walls with towers and gates [328], and with narrow streets and irregularly shaped squares [330]. They have a warm and dreamy quality about them, and, with their shadowy arcades and picturesque oriels, they are rich in intimate spaces, seeming interiors although they are part of exterior space. They embrace us protectively; they have a tranquil atmosphere, and they seem to be as holy as their churches: they are, as it were, a lost home for romantic souls.[225A]

Modern men, however, do not have the desire to be romantic, nor should they have – and yet sometimes they are. Certainly they must cherish a spark of Romanticism to understand Gothicism with their hearts and to love it.

The Gothic survival has always been romantic, and ultimately it shows how romantic the Gothic style itself was – how it expressed a yearning for a better and a purer world lying beyond the bounds of reality, how it was an imaginative adventure. To steep oneself in the Gothic style is to look into a magic mirror which reflects, not the humanity of today, but people from a far distant past who are strangers and yet are familiar to us, as though the spirit of their age could once again grow within our souls. It enriches us and lifts us far above ourselves, and, though we no longer wish to build in the Gothic way, we have now reached a sufficient historical distance from the Gothic style to honour it and admire it as a monument to the generations of a suffering, striving, and blessed age.