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NOTES

Gaudí and the Catalan Gothic

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WHEN ONE HEARS the name Antoni Gaudí, images of the freely undulating façade of the Casa Milá, the abstract tile-work of the Park Güell, or the soaring paraboloid towers of the Sagrada Família are likely to be the first thoughts which come to mind. Gaudí's striking originality is one of the most immediately and universally recognized aspects of his work, but this common initial impression can lead one to see his ideas in exaggerated isolation. While it is true that his architecture is characterized by an extraordinary range of invented forms, a close examination of his buildings suggests that Gaudí was influenced by a variety of historical styles, among them the distinctly regional tradition of Catalan Gothic.

It is logical to presume that Catalan Gothic would have affected Gaudí's thinking because, along with the Romanesque, it forms the bulk of historical architecture in Cataluña, where Gaudí spent almost his entire life. Although he was apparently familiar with architectural history in general from books, his only major forays from the Catalan region of Spain and Southern France were a trip through Andalucía and Morocco in 1887, and several visits to León around 1890. Catalan Gothic is therefore one of the few architectural styles which Gaudí would have known during his youth, and is also one of the few which he would ever have experienced directly.

Gaudí's thorough knowledge of Catalan architecture is, moreover, well documented. When he was only seventeen, he and two of his friends drew up a detailed plan for the restoration of the Monastery of Poblet, an activity which certainly indicates frequent visits to the site and a careful

I would like to express my appreciation to Professor George R. Collins for his encouragement, for valuable comments on the manuscript, and for help in arranging for the reproduction of several of the illustrations. I would also like to thank Mr. William Boyhan for introducing me to the study of the history of art.

study of the ruins. This is taken by many of his biographers as the first sign of Gaudí's future architectural interests.¹ Tarragona and the Monastery of Santes Creus are also near Reus, where Gaudí spent his childhood, and it can be assumed that he knew them as well. While studying at the Architectural School in Barcelona, he accompanied the architect Elías Rogent on visits to important mediaeval monuments in the city and the surrounding area. Gaudí later joined the "Associació Catalanista d'Excursions Científiques," with which it is understood that he at least visited Montserrat, Elna, Mallorca, Toulouse, and Carcassonne. While at Carcassonne, he evidently studied the walls so carefully that he was mistaken for Viollet-le-Duc, who had recently restored the city.²

Sweeney and Sert have pointed to the existence of some Catalan Gothic influence on Gaudí's architecture,³ and several authors have mentioned parallels between a few mediaeval Catalan buildings and Gaudí's work.⁴ On the whole, however, little attention seems to have been paid to this matter. A close analysis of structural and decorative principles and also of specific forms suggests the possibility of many more links between Gaudí and the Catalan Gothic than have generally been recognized.

Catalan Gothic architecture is found in a relatively small section of Northeastern Spain and Southwestern France;

1. George R. Collins, *Antonio Gaudí* (New York, 1960), p. 8; César Martinell, *Gaudí: su vida, su teoría, su obra* (Barcelona, 1967), pp. 20-23, 214; Juan Perucho, *Gaudí: una arquitectura de anticipación* (Barcelona, 1967), p. 202; James J. Sweeney and Josep Lluís Sert, *Antoni Gaudí* (New York, 1970), p. 41.

2. Martinell, pp. 46-48; Lara V. Masini, *Gaudí* (London, 1970), p. 16; Sweeney and Sert, pp. 41, 183. Martinelli adds Alella; Masini omits Elna.

3. Sweeney and Sert, pp. 22-23, 35-36, 46-47.

4. Enric Casanellas, *Antonio Gaudí: A Reappraisal* (Barcelona, 1965), p. 44, notes that traces of Poblet can be detected in Gaudí's Episcopal Palace at Astorga. Fernando Chueca Goitia, *Historia de la arquitectura española* (Madrid, 1965), p. 313, compares the dormitory of aged monks at Poblet with Gaudí in general. Martinell, p. 17, compares the open newel stairway in the church tower at Reus with similar stairways in Gaudí's Sagrada Família. Roberto Pane, *Antoni Gaudí* (Milan, 1964), p. 68 (cited by Masini, p. 16), compares the diaphragm arch structure of the dormitory of the novices at Santes Creus and the Atarazanas at Barcelona with that of Gaudí's machine hall at Mataró. Sweeney and Sert, p. 46, compare the dormitory of the novices at Santes Creus with the machine hall at Mataró.

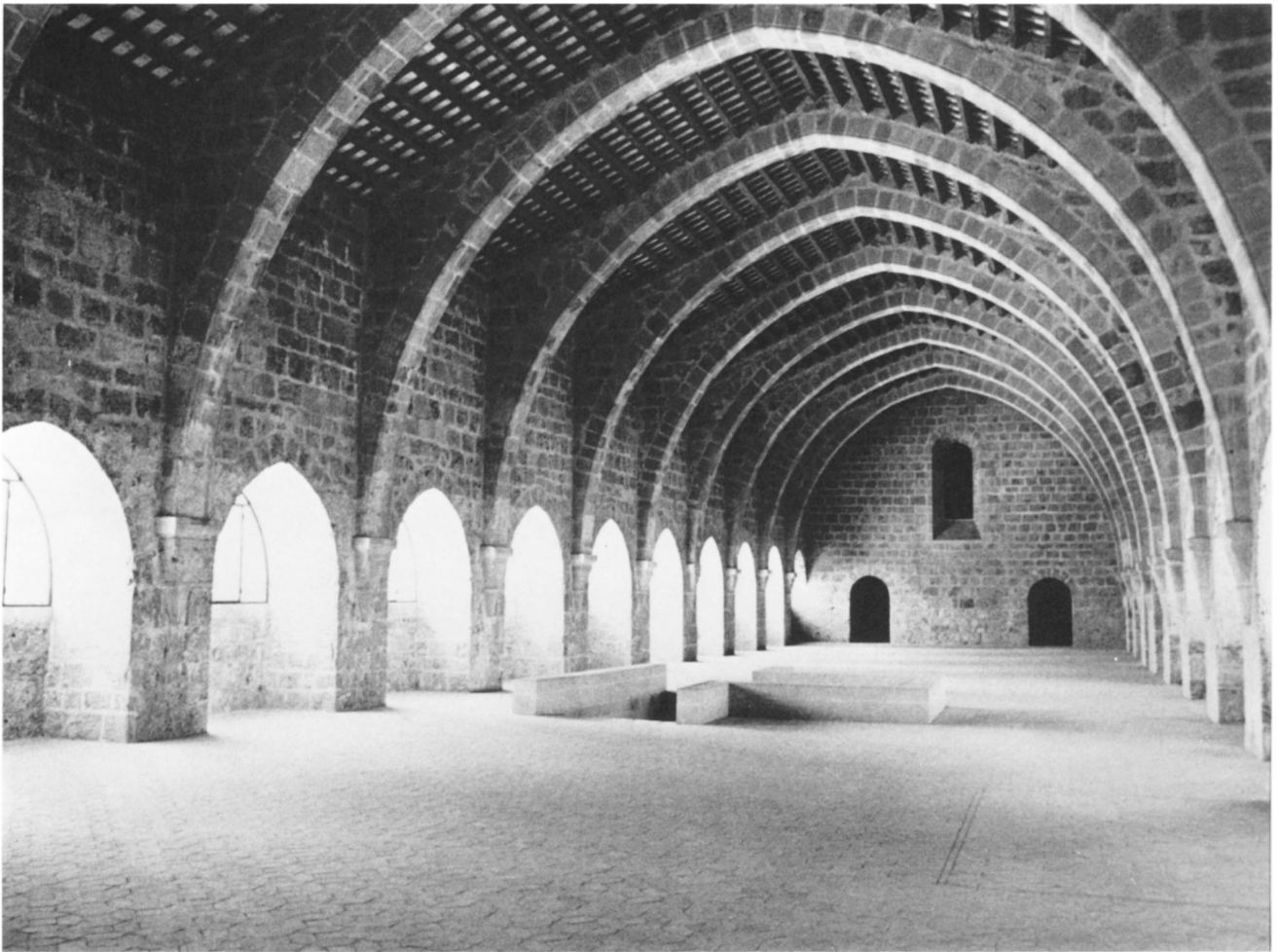


Fig. 1. Monastery of Santes Creus, dormitory of the novices. A Catalan long hall with diaphragm arches springing from corbels (photo: author).

that is, in Cataluña, Valencia, parts of Rosellón and Languedoc, and on the island of Mallorca. For our purposes here, I call this area the Catalan region. The Gothic style as found in other sections of Spain, and as exemplified by the cathedrals of Burgos, León, and Toledo, has more affinities with the classic French Gothic of the Île-de-France. While both classic French and Catalan varieties of the Gothic seem to have sought an economy of materials, Catalan Gothic shows in addition a marked tendency to combine the load-bearing and space-defining functions within single structures. Forces are therefore usually transmitted within the thickness of a building's walls, and flying buttresses seem to have been avoided wherever simple buttresses could be used instead.

Two of the most important Catalan Gothic building types are the long hall, usually with a wooden roof supported by diaphragm arches, and the hall church, which is similar in appearance to the long hall, but it is on a larger scale and commonly uses masonry rib-vaulting. In both of

these types, internal buttresses are used almost exclusively, even though some of the vaults are exceptionally high and wide and the walls are therefore correspondingly thick.

The structural operation of long halls is not usually visible from the exterior, since the outside walls are flat surfaces due to the internalization of the buttressing; at the most, the buttresses are visible externally as shallow pilaster-like projections.⁵ Outstanding examples of the long hall type are the dormitory of the novices at the Monastery of Poblet and the upper hall of the old Hospital de la Sta. Cruz (now a library) in Barcelona. The extra loads of the diaphragm arches in these buildings are carried entirely within walls of uniform thickness. More economical solutions are shown by the dormitory of the novices at the Monastery of Santes Creus (Fig. 1), the dormitory of aged monks (now a museum) at

5. More substantial external buttresses have been added to some of these long halls, such as the Salón del Tinell and the old Hospital de la Sta. Cruz in Barcelona, but they are not original.

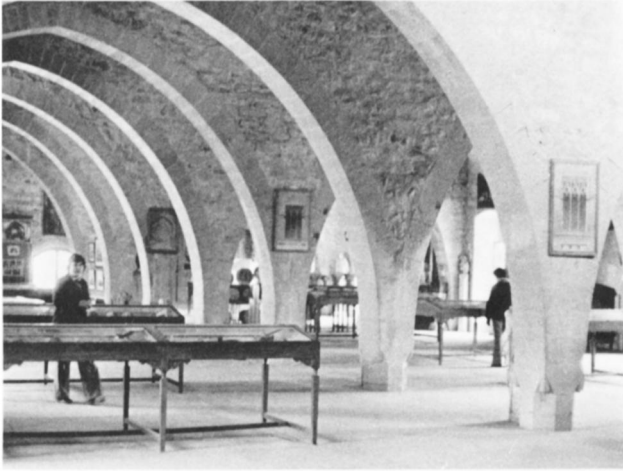


Fig. 2. Monastery of Poblet, dormitory of aged monks (now a museum). A rare double hall with arches springing from near the floor. The central columns, although much reduced, still carry capitals. There are no corbels on the outer walls (photo: author).

Poblet (Fig. 2), and the *Salón del Tinell* in the Royal Palace in Barcelona, where the stretches of wall between the arches are reduced in thickness and serve as window-niches.

In order to lessen the depth of both these types of internal buttresses, it was also advantageous for the diaphragm arches to spring from near the floor to minimize lateral thrust. This tendency is especially noticeable in the dormitory of aged monks at Poblet (Fig. 2), an unusual double-galleried hall where the central columns have almost disappeared.

It seems highly significant in this context that one of Gaudí's earliest buildings, a hall for machinery in Mataró, was a replica in wood of a traditional long hall with diaphragm arches (Fig. 3). The slight differences are that Gaudí's arches are parabolic and spring directly from the floor. Gaudí's solution appears to be a logical step in the process by which mediaeval Catalan diaphragm arches and their supporting members increasingly approximated the catenary curve as they became more efficient. The close resemblance between the dormitory of the novices at *Santes Creus* and the machine hall in Mataró has been noted by several authors, and Chueca Goitia recognizes a connection between the structure of the dormitory of aged monks at Poblet and Gaudí's use of the parabola.⁶ The structural arrangement of Gaudí's *Casa Milá* may represent a further development of this same form; while an internal system of free-standing piers helps to support the building's successive floors, the only load-bearing walls are the external ones, and the attic might be seen as a sinuous long hall (Fig. 4).

The other important Gothic building type in which a



Fig. 3. Antoni Gaudí, Machine Hall, Mataró. Interior (photo: courtesy Gaudí Archive, Columbia University).

preference for internal buttresses can be observed is the hall church, which is found throughout the Catalan region. Due to the height of the interior and the weight of the masonry rib-vaulting employed in churches, the buttresses were greatly increased in mass and depth over those used in long halls. The chapels which occupy the same relative positions between buttresses as the window-niches in some of the long halls described above are seldom as high as the main body of the church. Because of this, the upper sections of the buttresses rise above the roof and become exterior features, while their lower sections modify only the interior space and are not apparent from the outside. This is the case at *Sta. María del Pino* in Barcelona and in the nave of the Cathedral of Gerona. Only in the Cathedral of Albi and in the nave of the Cathedral of Barcelona do the window-niche chapels rise the full height of the nave, so that the buttresses are completely internal. Despite this frequent ambiguity of inside/outside, it can generally be said that the buttresses of Catalan hall churches form an integral part of the walls, whereas flying buttresses derived from the French Gothic style are much more independent in effect.

6. See fn. 4.

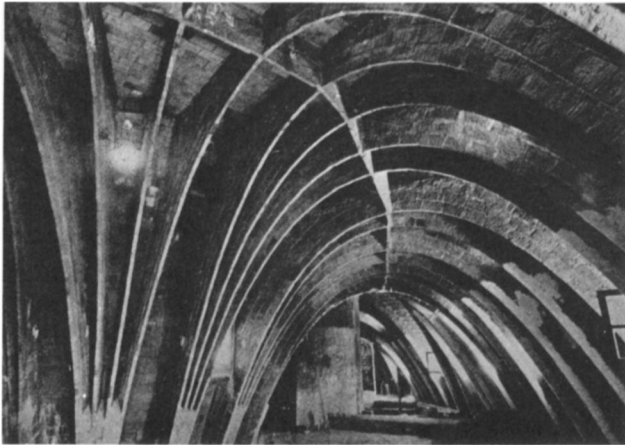


Fig. 4. Gaudí, Casa Milà, Barcelona. The attic before it was divided into apartments in 1954 (photo: courtesy Gaudí Archive, Columbia University).

It was not really possible to dispense with flying buttresses in a Catalan church of three naves, even though the very high side aisles help to transmit some of the thrust from the central nave to the lateral buttresses in the walls. Flying buttresses were therefore used to stabilize the central naves of the cathedrals of Barcelona and Palma de Mallorca. While the architects of Sta. María del Mar in Barcelona did avoid using flying buttresses to help support the vaulting of the central nave of this church, and employed solid triangular supports instead, this weighty solution is not especially economical of stone.

In general, it seems that Gaudí's disdain for flying buttresses, which he regarded as "crutches," and his assertions that he was continuing the work of the Gothic architects by completely merging structural and space-defining forms,⁷ reflect an attitude akin to that of Catalan Gothic, as opposed to the thinking of the Île-de-France which influenced much of Northern and Central Spain. In his final plans for the vaulting of the Church of the Sagrada Família, Gaudí was able to combine the essentially French quest for non-load-bearing and largely glazed walls with a perfected system of internally transmitted static forces derived from the Catalan tradition.

The extreme economy of materials characteristic of the advanced Catalan Gothic is evident, in religious architecture, in the very tall and slender piers used in the hall churches of three naves. The piers of the Cathedral of Palma de Mallorca, for example, are thinner and considerably taller than those found in French High Gothic cathedrals whose vaulting is carried at a comparable height." In secular architecture, the colonettes of double- and triple-light windows, as well as those found in some first-floor loggias of Gothic

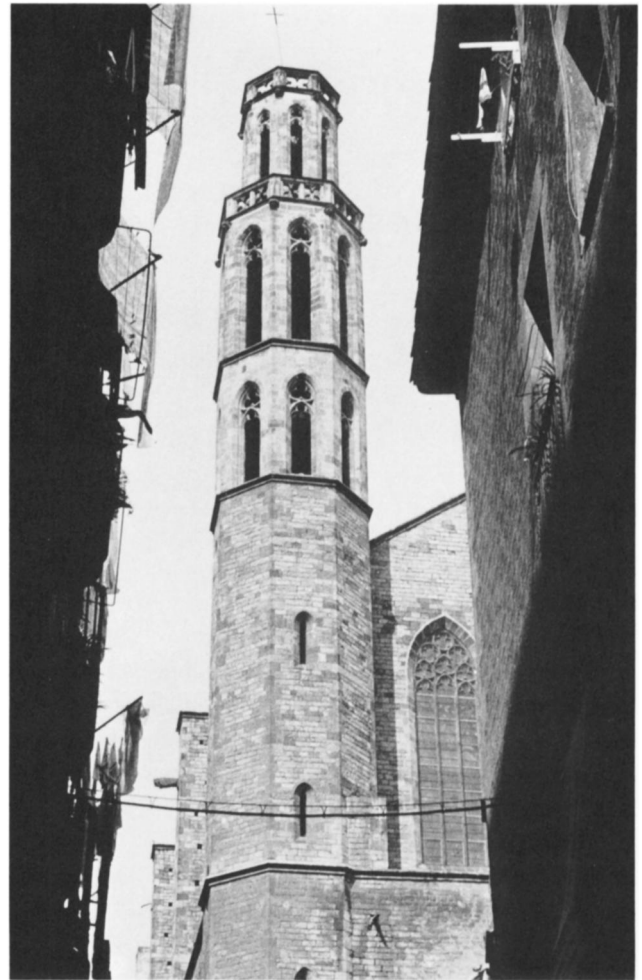


Fig. 5. Barcelona, Sta. María del Mar. Many Catalan towers have an even simpler form than this, in that they lack the small upper stage. Variations in the texture of the stonework emphasize the sharp angles.

palace courtyards (such as the Palace of the Generalitat in Barcelona and the Royal Palace at Santes Creus) are probably as slender as is structurally possible. Treads in stairways are often suspended as corbels, and flights of steps are commonly supported by parabolic arches, which were also basic to Gaudí's structural vocabulary.

It is the combination and interaction of these two principles, a striving for increased efficiency from a given amount of material and a tendency toward the integration of load-bearing and space-defining functions, which helps to determine the character of Catalan Gothic structures. Gaudí seems to have been working within a similar group of constraints as he developed his own efficient, functional forms through the use of catenary geometry and light tile vaulting. Either tendency by itself would have produced buildings of a different character. The French Gothic architects achieved a great economy of materials, but relied on flying buttresses which transmit thrusts separately from the walls

7. Collins, p. 19; Martinell, pp. 142–143; Sweeney and Sert, pp. 23, 46–47.

of a building. Alternatively, a wide range of stresses can be withstood by piers or walls of great thickness, but this solution is not economical of materials, as is evident in the transitional Gothic cathedrals of Tarragona and Lérida, and in the Romanesque in general.

Another quality which sets Catalan Gothic apart from other Gothic types of architecture is a bias toward economy in decoration, often verging on austerity. Whereas French Gothic commonly employs piers, columns, and ribs of very complex profiles, the Catalans mostly preferred simple prismatic forms, and their vaulting ribs are comparatively simpler than those found in Northern France. In this sense, the Cathedral of Barcelona is atypical and probably exhibits a French influence. Piers, as in Sta. María del Mar and the Cathedral of Palma de Mallorca, and towers, as in Sta. María del Mar (Fig. 5), the Cathedral of Barcelona, and the Monastery of Pedralbes, are often emphatically octagonal. Vast rectilinear surfaces dominate the exteriors of Sta. María del Mar, Sta. María del Pino, and the Cathedral of Gerona, among others. The monastic buildings of Poblet are some of the most extreme examples of this simplicity. Almost all vaulting ribs are of rectangular profile, and many of the capitals are sober octagons (Fig. 2). In such contexts, the textures

and colors of the materials themselves assume decorative significance.

Although many of Gaudí's structures may seem wildly erratic at first, a preoccupation with pure geometric forms is evident in his architecture as well—most frequently including paraboloids, hyperboloids, and helicoids. The range of both simple and compound shapes is great.⁸ Gaudí rarely applied heavy decoration which would hide the mathematical nature of his buildings, and he sometimes relied solely on the contrasts between different grades of masonry to create a decorative effect, as at the Teresan school and the Bellesguard villa in Barcelona, and the crypt of the Church at the Colonia Güell, at Sta. Coloma de Cervelló (Figs. 9, 11). The little Schools of the Sagrada Familia is probably Gaudí's most obviously geometric building. However, the tower of the gatehouse of the Park Güell can be seen to be a hyperboloid overlaid with opposed double spirals, and even such features as the chimneys of the Casa Milá are basically geometric compositions.

In their simplification of architectural forms, the Catalan Gothic builders sometimes eliminated capitals and arch-

8. Martinell, pp. 170–185, gives a good survey of Gaudí's use of geometry.

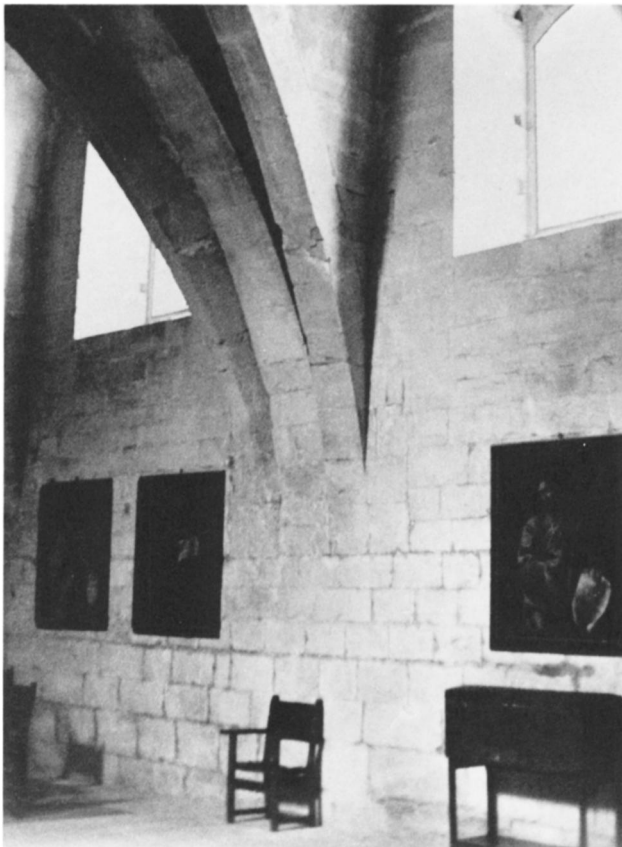


Fig. 6. Poblet, Lagares (parlor). Detail of the interior (photo: author).



Fig. 7. Barcelona, Atarazanas (now a museum). Interior (photo: author).



Fig. 8. Gaudí, Park Güell, Barcelona. Underside of a viaduct (photo: author).



Fig. 9. Gaudí, Church at the Colonia Güell, Sta. Coloma de Cervelló. Porch of the crypt. The point of separation between column and arch (left) or wall and arch (right) is no longer certain (photo: author).



Fig. 10. Toulouse, Cathedral. Detail of the crossing (photo: author).

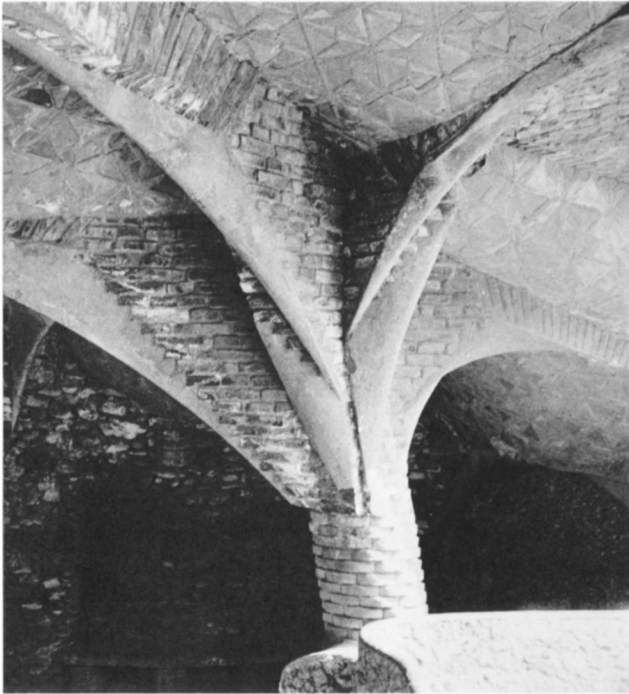


Fig. 11. Gaudí, Church at the Colonia Güell. Detail of the porch of the crypt (photo: author).

supporting corbels altogether, so that diaphragm arches and vaulting ribs spring directly from walls or columns. Examples of such developments can be seen in the Lagares (or parlor) of the Monastery of Poblet (Fig. 6), where the rib-vaulting springs from the walls, and in the Atarazanas (now a naval museum) in Barcelona (Fig. 7), where the semicircular arches rise directly from the columns. The Lonja of Palma de Mallorca makes especially elegant use of these same refinements. The lack of capitals and other decorative moldings which help to define “arch,” “column,” and “wall” suggests an essential unity and continuity of function between these traditionally separate elements. Gaudí’s parabolic arches and inclined walls and columns seem to represent a further development in this direction. In the viaducts of the Park Guell (Fig. 8) or the crypt at the Colonia Güell (Fig. 9), for instance, the distinction between column and arch has become problematical.

While the Catalan Gothic architects usually provided themselves with areas of regular shape to vault, they were occasionally faced with situations in which asymmetrical vaulting was necessary. The solutions adopted in the crossing of the Cathedral of Toulouse (Fig. 10) and in the chapter house of the Cathedral of Perpiñán are surprisingly similar



Fig. 12. Santes Creus. Arches of the second cloister (photo: author).



Fig. 13. Gaudí, Church of the Sagrada Família, Barcelona. Façade of the Nativity. The towers are simple paraboloids, recalling the frank geometry of mediaeval Catalan towers. The upper ends of the angled projections are masked by balconies. At the bottom is part of the central tympanum which Gaudí intended to fill with glass (photo: author).

to those which Gaudí used in his crypt at the Colonia Güell (Fig. 11). In each case, vaulting ribs spring at various heights from a single pier without moldings or corbels, and rise at different angles. Although Gaudí may not have seen either of these particular Gothic buildings, his approach to the vaulting of the crypt at the Colonia Güell is not as different from that of the Gothic architects as it might seem at first.

Apart from similarities of principle and of approach, several specific elements used by Gaudí appear to have possible prototypes among the Gothic buildings that he is known to have visited. None of these parallels seems to have been noticed before. Although the arches of the dormitory of the novices at Santes Creus and those of the dormitory of aged

monks at Poblet are likely antecedents for Gaudí's parabolic arches, the arcades of the second cloister at Santes Creus (Fig. 12) are even more suggestive. These simple arches are highly unusual in that they spring directly from a low curbing laid at ground level, without any pretence of support by columns. Once the classical order has been repudiated by a complete suppression of columns, it seems only a short step to change the shape of the arches from pointed to parabolic.

The Façade of the Nativity of Gaudí's Church of the Sagrada Família (Fig. 13) is a complex organism, and its components may have been inspired by a wide range of other buildings. While the lower parts of the towers are much ob-



Fig. 14. Carcassonne, Tour St. Martin (photo: author).

scured by decorative sculpture (unusual for Gaudí), their section does in fact change from square at the base to completely circular one-third of the way up (Figs. 13, 15). Between these two extremes there is a transitional zone, in which the towers might be said to have an essentially circular section with projecting, angular corners remaining from the original square plan. The so-called “beaked towers” of the walled city of Carcassonne, which Gaudí had visited, are circular Gothic towers with these same angular projections (Fig. 14).

Another important feature of the Façade of the Nativity is the system of inclined bridges which connect the towers at several levels (Fig. 13). A similar inclined bridge connects the middle stage of the tower of the Cathedral of Tarragona with the roof of the cathedral lantern (Fig. 16). This bridge is very difficult to see from any part of the city itself, but it figures prominently in the silhouette of Tarragona as seen from the low hills at a distance to the north.

The largest concentrations of mediaeval Catalan figure sculpture are found today in the cloisters of monasteries and cathedrals, with their many decorated capitals. Most compositions are presented capital by capital, even when a group

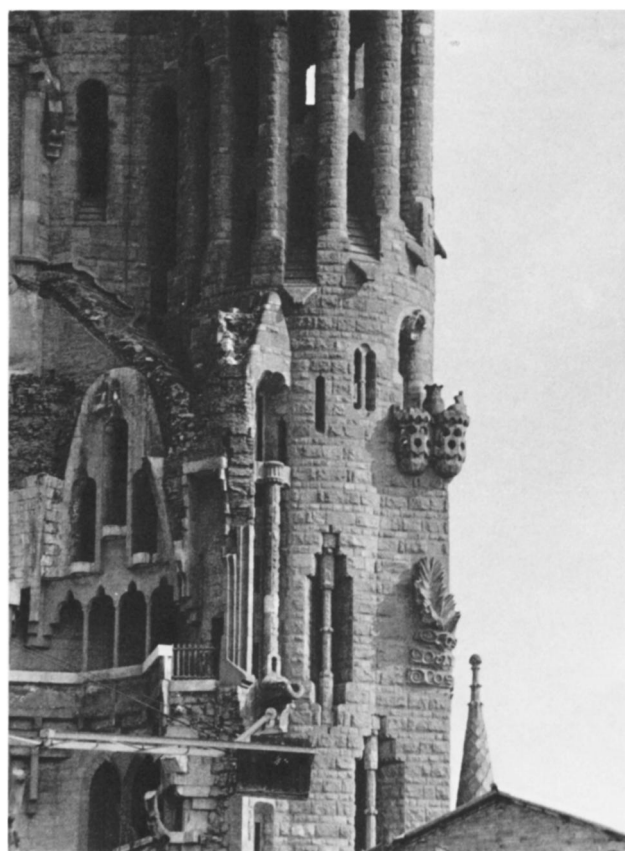


Fig. 15. Gaudí, Church of the Sagrada Família. Detail of a lateral tower. The terminus of the lateral “beak” is used as a balcony (right), below which the tower is partly circular and partly square (photo: author).

of capitals is brought together in a pier, as in the cloister of the Cathedral of Tarragona (Fig. 17). However, in the Gothic first cloister of the Monastery of Santes Creus, the arrangement of the highly realistic capital sculptures is not so much determined by the shape of the piers, and the representations assume a degree of fluid independence which is rare in mediaeval Catalan work (Fig. 18). Their feeling of freedom and vitality is echoed by some of the sculptures of the Sagrada Família, which form an integral part of the façade but which transgress its actual architectural lines (Fig. 19).

Lastly, it is usual in French Gothic for the tympana over the doors of churches to be filled with elaborately carved stone panels. On the other hand, both the cathedrals of Tarragona and Barcelona have tympana of stained glass, and Gaudí’s use of this same solution in the Sagrada Família (Fig. 13) may reflect his early contact with these Catalan Gothic buildings.

It seems in summary that many aspects of the Catalan Gothic are highly suggestive of some of the structural and



Fig. 16. Tarragona, Cathedral. A bridge connects the lantern on the left with the tower. The prismatic volumes are characteristic of Catalan Gothic (photo: author).



Fig. 17. Tarragona, Cathedral, cloister. Carved capitals (photo: author).

decorative principles which underlie the architecture of Gaudí. Catalan Gothic was not, of course, Gaudí's only formative influence. Gaudí was certainly exposed to a wide range of architectural styles, and many of his most characteristic elements, such as his exuberant colored tiles, must have been inspired by other traditions, such as the Moslem. Possible influences from geologic formations seen in the dramatic Catalan landscape and other organic processes should also not be discounted. It should always be remembered, however, that even a perfect knowledge of all Gaudí's sources would still not "explain" his accomplishments, for such influences are no more than points of departure for fundamentally new developments.

There are many possible approaches to a consideration of the work of Antoni Gaudí. Viewed with reference to the Catalan Gothic, his architecture can be seen as part of a con-

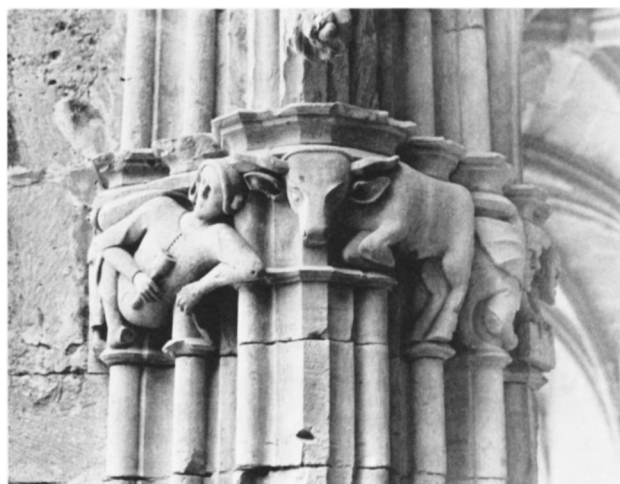


Fig. 18. Santes Creus, first cloister. Carved capitals (photo: author).



Fig. 19. Gaudí, Sagrada Família. Façade of the Nativity (detail). The flamingo (center) and flying doves (lower right) are an integral part of the masonry but have a large measure of independence. Several examples of free-standing sculpture are also visible (photo: author).

tinuing regional tradition which valued the internalization of static forces, an economy of materials, and a clear conception of pure geometric forms. It is plausible that we could find other, more specific parallels because we know how attentively Gaudí observed the buildings which he visited.

By placing Gaudí in this historical and spatial perspective, we can come to a better understanding of his accomplishments and innovations, without diminishing the significance of what he actually achieved.