

THE FORGOTTEN FACADE

by

Valerie Thiel

B.S., University of Washington  
June 1976

SUBMITTED IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARCHITECTURE

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

February 1980

© Valerie Thiel 1980

The Author hereby grants to M.I.T. permission to reproduce and to distribute publicly copies of this thesis document in whole or in part.

Signature of Author .....  
Department of Architecture  
February 1980)

Certified by .....  
John Myer, Thesis Supervisor,  
Professor of Architecture

Accepted by .....  
Maurice Smith, Chairman,  
Departmental Committee for Graduate Students

Rotch  
RECEIVED  
FEB 21 1980  
LIBRARY



Room 14-0551  
77 Massachusetts Avenue  
Cambridge, MA 02139  
Ph: 617.253.2800  
Email: [docs@mit.edu](mailto:docs@mit.edu)  
<http://libraries.mit.edu/docs>

## **DISCLAIMER OF QUALITY**

Due to the condition of the original material, there are unavoidable flaws in this reproduction. We have made every effort possible to provide you with the best copy available. If you are dissatisfied with this product and find it unusable, please contact Document Services as soon as possible.

Thank you.

The images contained in this document are of the best quality available.

## THE FORGOTTEN FACADE

by

Valerie Thiel

Submitted to the Department of Architecture  
on January 18, 1980 in partial fulfillment of the requirements  
for the Degree of Master of Architecture

## ABSTRACT

The art of facade design seems to have been lost in the course of adoption of Modern Architectural doctrines. The facades of Casa Batlló by Antonio Gaudí and Château de Maisons by Francois Mansart are analyzed for the purpose of exploring alternatives to the functional, inarticulate elevations of Modern Architecture. This study seeks to expose the concepts and methods underlying the facade design of Casa Batlló and Château de Maisons so that their principles may be abstracted and applied by the contemporary designer. The criterion governing the selection of these buildings is made explicit in the course of the analysis.

Thesis Supervisor:

John Myer

Title:

Professor of Architecture

## ACKNOWLEDGEMENTS

I would like to offer thanks to my supervisor, Jack Myer, whose sensitive and insightful comments helped broaden the scope of this study. His encouragement and enthusiasm helped make this study a truly enjoyable learning experience. I am also indebted by my readers, Professors Lawrence B. Anderson and Henry Millon. Their advise guided the selection of useful background readings and references. I am also very grateful for their aid in helping me to structure and develop my analysis.

## TABLE OF CONTENTS

	Page
abstract	2
acknowledgements	3
table of contents	4
INTRODUCTION	5
ANALYSIS OF CASA BATLLÓ	11
ANALYSIS OF CHÂTEAU DE MAISON-SUR-SEINE, GARDEN FACADE	41
CONCLUSION	65
bibliography	67

## INTRODUCTION

This thesis results from a long frustration with the external appearance of contemporary buildings. Conceptually one expects a building to be substantive and body-like, generating a sense of shelter and a feeling of closure. This is the child's conception of house and was the traditional architectural approach. Technology made it possible to take the substance out of the walls and concentrate it in very strong members where it is not useful for defining space. As a result Modern Architecture has the appearance of being only skin deep. Buildings are merely structure covered by skin. The skin is for the most part textureless, monochromatic metal or brutal concrete. At best it is wood or masonry which has been starkly detailed. Economy is an important factor but esthetics are an underlying determinant favoring "clean" minimalism even when cost is not limiting.

The facade is the link between the interior and exterior. The differences between interior and exterior are typically greater than between any two functions of the building. The sheltered, more private world of the interior and the public world outside are functionally and conceptually very different. When the interior and exterior are very different, they can not be satisfactorily resolved in a single plane of merely 2 to 6 inches. Typically in Modern Architecture the curtain wall is a plane

that partially defines the interior space (figure 1). This same thin plane also defines the exterior space. Adjoining these two volumes with no transition is extremely disturbing. Passing through such minimal closure to enter is awkward at best. Not only are interior and exterior desecrated by the bad architecture but the substance of the building itself will be questioned. If the building seems to be predominantly membrane,



fig. 1 Crane Hall IIT. Mies van der Rohe



An example of quality Modern Architecture but the building appears to be an assemblage of sticks and planes instead of a "home". There is no sense of tradition or permanence.

fig. 2 Peabody Terrace, married student housing. José Luis Sert

it has little chance of evoking a sense of "firmitas".

Whereas the machine imagery of Modern Architecture may have once represented hope for a new democratic world, it now has taken on aspects of depersonalization and monotony. Modern Architecture commonly has the appearance of being an expedient assemblage of sticks and planes (figure 2). Furthermore, the detailing of these buildings often implies that what was assembled could be easily disassembled, implying properties of a disposable commodity. Often paneling has the appearance of being stuck on the frame instead of being integral with the body of the architecture.

Modern architects have tended to concern themselves only with aspects which are addressed in an eighth inch scale model or not even that (figure 3). The intimate scale is tragically overlooked. As a result one suffers the impression that our architecture is impersonal. Large surfaces are neglected and are left with no features or ornament of any kind. When a large expanse of wall is left blank it begins to take on the appearance of an excluding barrier. With no relieving detail the contrast of solid and void is uncomfortably harsh. This lack of detail in Modern Architecture is devastating to the spirit. Just as a blank human face would be disconcerting, predominantly featureless architecture can give the uncomfortable and hard-to-pinpoint feeling of incompleteness.

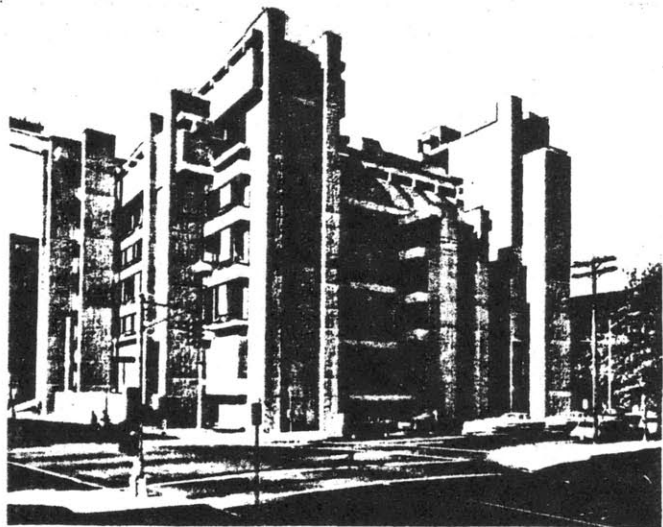


fig. 3 Art and Architecture Building,  
Yale. Paul Rudolph

There has been a great deal of criticism of Modern Architecture in the past decade and earlier (#14, 21, 33). Critics such as Venturi have called for architecture which is enriched with ambiguity and contradiction. Others call for the reincorporation of meaning and content into contemporary architecture. Modern architects are reluctant to use the ancient vocabulary of classical orders because new technologies have made the language structurally obsolete. It is possible to use the old language in conjunction with new technology but then the problem remains of how to breathe new life into the old vocabulary. Awareness of history and world cultures creates the centuries-old problem of developing a meaningful architectural vocabulary. Since the mid 18th century this problem has increased with increasing freedom from technology and the accumulation of published sources. Venturi's call to a decorated and enriched architecture sounds exciting and challenging but achieving these goals is more difficult. Examining current architecture one might conclude that no one knows how to design a facade. The times seem to be ripe for a move toward elaboration but it is as if architects have forgotten how to enrich the facade. The work to date of the so-called Post-Modern architects is little better than that of Modern Architecture (figure 4). Although they have brought a new interest and playfulness into architecture, the effects tend to have the quality of cosmetics, as if avoiding real architectural issues (figure 5).

Historical references should be used from the standpoint of observing

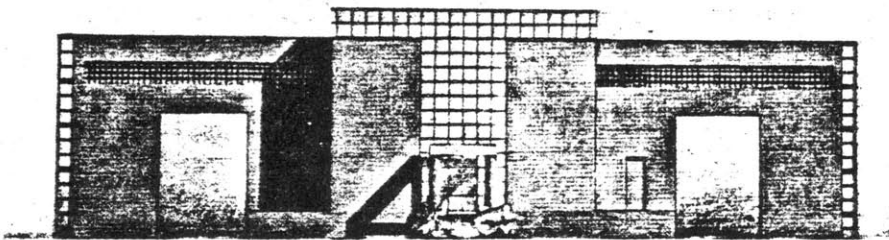


fig. 4 House, project. Diana Agrest, Mario Gandelsonas

principles that can be applied to contemporary situations. Second-rate architecture results if mere appearances are extracted. Historicism cannot directly provide the answers to architectural vocabulary. Concepts governing the use and manipulation of elements should be the focus of study. When concepts of transition, definition, rhythm, associational content are understood, imagination will find the means of applying these principles within the current technologic and economic situation. This study is aimed at uncovering concepts and principles which are not bound to any particular architectural vocabulary.

This thesis is an analysis of two building facades which have gracefully avoided the ills of Modern Architecture as described above. The methodology of selecting these particular two buildings was as follows:

This study was begun with a search of books and periodicals for facade designs that would be worthy of study. A wide range of books were surveyed including the Pelican Series of Art and Architecture and texts on architecture of specific areas of the world such as California and New England, provinces of Italy and France, Spain, Japan and Germany. Architectural journals of this decade (1970's) were searched including Progressive Architecture, Architectural Record, Japan Architect, Architettura, as well as many issues of Architectural Design and Architectural Review. From this search, pictures were collected of at least 100 facades which were deemed interesting. Out of these, eight were selected which were

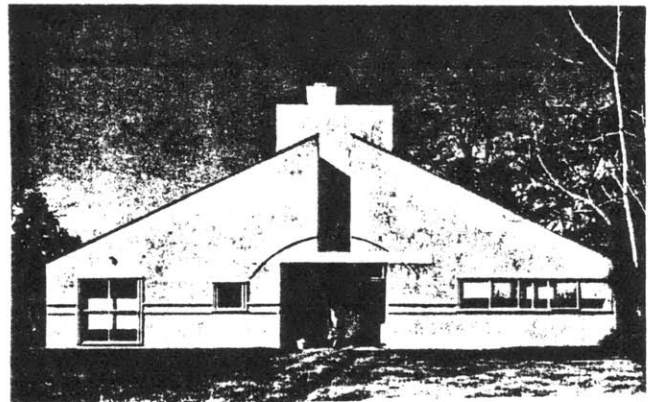


fig. 5 Residence, Chestnut Hill, Pa.  
Venturi and Rauch

judged to pose greatly improved alternatives to the characteristics of Modern Architecture under attack. These eight were:

Casa Batlló by Antonio Gaudí  
Château de Maisons by Francois Mansart  
Seattle's Pioneer Building by Elmer Fisher  
Ca'D'oro by Raverti  
S. Maria della Pace by Cortona  
S. Lorenzo Library Vestibule by Michelangelo  
Sever Hall by H.H. Richardson  
Santa Maria Novella, Rome by Alberti

Believing that twentieth century architectural practice needs to relearn the art of facade enrichment and detailing, I have focused this study on only two of the eight buildings instead of studying the most notable aspects of several buildings. The attempt has been to study the more subtle means of facade elaboration. The two most complex buildings were chosen for analysis: Casa Batlló and Château of Maisons. These buildings address diverse issues. Casa Batlló is an urban building having one primary facade which faces a busy boulevard. Château de Maisons is an example of architecture in the round, standing exposed on a flat site. While each of these buildings uses a very different vocabulary, the focus will not be on that particular vocabulary but on the underlying principles governing manipulation of the architectural elements and shaping the resolution of the facade.

Although principles of definition, balance, transition, scale, appropriate character, rhythm may be generalized, architecture must always be, to some degree, a personal experience. I do certainly recognize that the specific choice of these buildings was largely intuitive. The analysis is meant as a beginning, a constructive step in the direction of developing a reawakened sensitivity for the facade or exterior edge.

ANALYSIS OF  
CASA BATLLÓ, BARCELONA  
ANTONIO GAUDÍ

The Casa Batlló was remodeled in 1904-1906 by Antonio Gaudí. Gaudí was hired to convert the first floor\* to a residence for the owners. The ground floor was to become a business office and the rest of the building was to be used as apartments. Gaudí added a 5th story and an expressive roof. Gaudí took generous liberties with the facade, transforming an ordinary building into a work of craftsmanship and art.

At the lower stories Gaudí built outward from the existing building. A structural system of Montjuich stone was used to provide a framework for large glass windows. The upper facade remains a load-bearing wall which he covered with colored ceramic fragments and pieces of glass and metal. Cast iron balconies were added to the upper windows and a small terrace was sculptured out of the corner of the 5th story. An elaborate roof structure of parabolic arches was tiled with red ceramic tiles which were varnished to give a metallic appearance. (#6, pp.372,141)

\* the European system of numbering floors has been used throughout this paper

### Gaudí's Background

The most thorough text covering Gaudí's life and works is that written by César Martinell (#6), a student of Gaudí. Although he is probably the best source of insight into Gaudí's background, this information only begins to give an understanding of Gaudí's unique architecture.

Gaudí studied at Escuela Superior de Arquitectura of Barcelona but he was not a good student. When Gaudí graduated, Neoclassicism was in vogue along with Medieval, Renaissance, and Arabic styles.

Martinell says that Gaudí's ambition was to create a contemporary Catalan Architecture. (#6, p.200) In 1900 Barcelona was a progressive city with ambitions for international importance. (#2) The people felt they were receiving unfair treatment under Spain. Gaudí sympathized with the Catalan rebels who saw Spain as an oppressor.

Several texts have noted that Gaudí greatly admired the architectural writings of Viollet-Le-Duc. (#4, #6, #7) Sweeney and Sert say that Gaudí borrowed a volume of Viollet-Le-Duc's works from a fellow student and returned it full of drawings. (#7, p.56) Gaudí's interest in Viollet-Le-Duc is consistent with Gaudí's interest in Medieval and Greek architecture which were most praised by Viollet-Le-Duc. Sweeney and Sert note that Gaudí frequently said he was trying to do as the Greeks would have done today. These authors interpret this appreciation of the Greeks as seeing the building as a sculptural unit. (#7, p.162)

Gaudí also appreciated the classical elegance of the Greeks. Martinell has documented writings of Gaudí on the subject of ornamentation. In his writings Gaudí speaks of beauty: "Beauty must not be overloaded with elements but rather should display a sobriety by which Elegance is achieved - ie Elegance is Beauty obtained by minimal means." (#6, p.125)

Although love for classical architecture is clear from his writings I think other factors override an appreciation for elegant forms. His architectural vocabulary seems to be derived from his great sensibility to people and other living things. Significant in his writings on ornamentation is the argument that "... to be interesting, ornament should represent objects which remind us of poetic ideas" (#6, p.125). Gaudí wanted to

create a vocabulary that was understandable by lay-people: "It is obvious that it is necessary to create an ornament based on our way of life which will interest the wise as well as the not-so-wise." (#6,p.125) The use of naturalistic imagery was a means of communicating with non-architects.

### Architecture as a Creation of Life

Gaudí believed that an artist must give life to his works. (#6,p.130) The sense of life is probably the most powerful aspect of the Batlló facade. It goes far to explain the intensity of Gaudí's unique design. A whole world of life exists within the facade. Movement, color, and imaginative associations are used to animate the surface and invoke the spirit of life. Each of these aspects are discussed below.

### Associative Meaning

Gaudí has "given life" to his architecture by filling the facade with associative meaning. The suggestive forms have stimulated many interpretations. The casa has been called "house of yawns".(#2) Architectural Design (1978) called the facade a "...vision of a vertical lake with flowers and water lilies." (#1,p.93) Borràs likened the winding rhythms of the facade to sea-waves or gusts of wind.(#2) Martinell says that Gaudí took delight in the sea where he found the synthesis of space, light, color, movement and life. Gaudí created the qualities of the sea in his facade: "the mobile surface of transparent water and third dimension of depth combined with the reflection of sky". (#6,p.125)

The form of the roof encourages metaphors. Architectural Design likened the roof to a dragon - "a universal symbol of the link between water and earth; of the thunderstorm providing rain which fertilizes the earth" (#1,p.93) Charles Jencks (1977) has read political as well as naturalistic symbolism into the dragon metaphor. He believes the dragon can be interpreted as Spain, the oppressor of the Catalonians. The dragon is slain by the three-dimensional cross (atop the tower). The bones and skulls of dead martyrs are found beneath on the lower facade.(#21,p.100) The roof

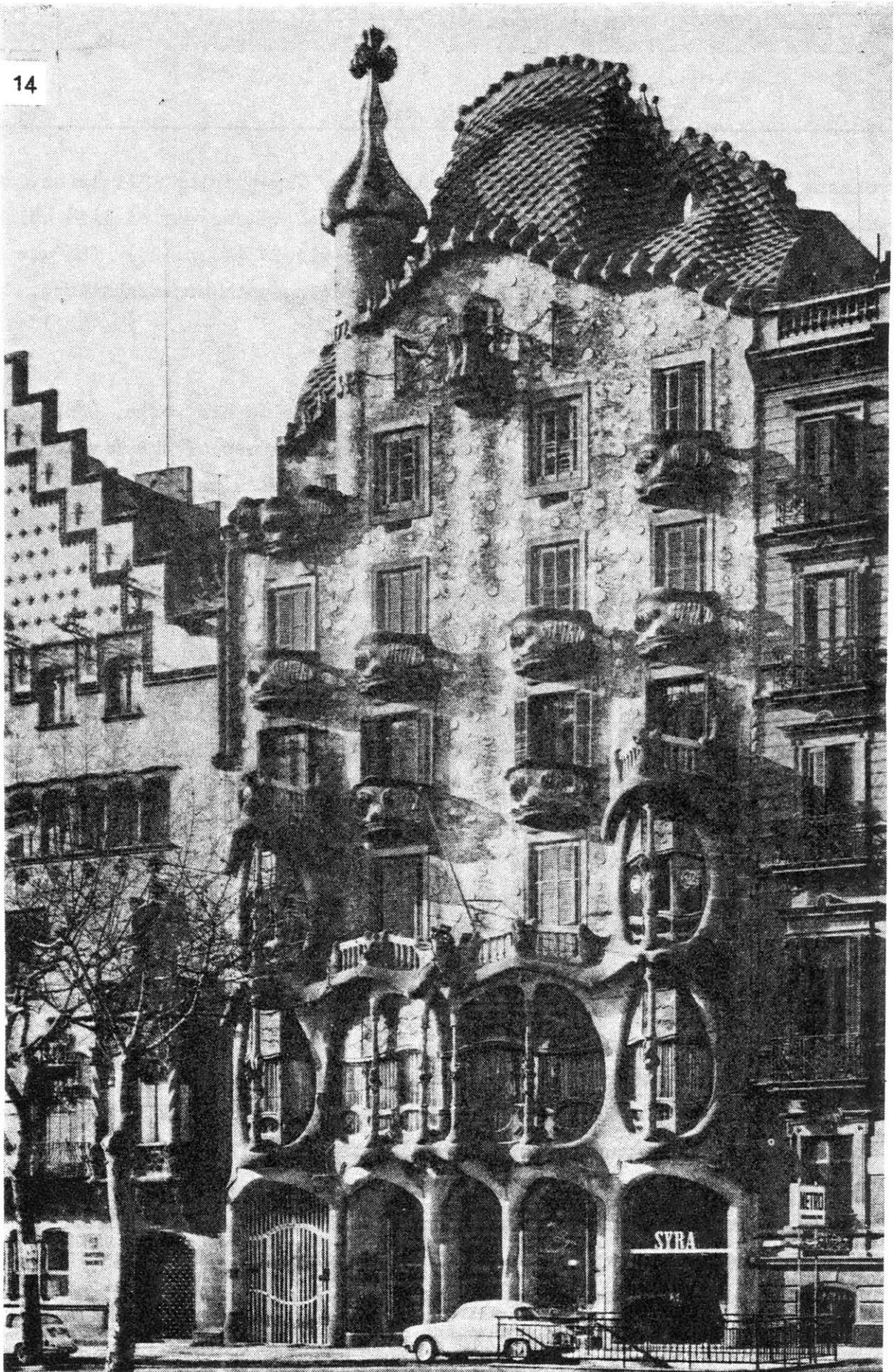


fig. 6 Casa Batlló. Antonio Gaudí (from Pane, Antonio Gaudí, plate 300)

also resembles a ruffled hat making it easy to read the whole facade as a face (figure 7). The tower is then like a feather in the cap - a detail added to give a flair of personality and individuality. Since the tower has no apparent function, it reinforces the whimsical, playful character of the building. The roof is particularly uncommon in that it has a very amorphous shape. While the facade is basically quite ordered, having definite boundaries at the street and sides, the skyline imposes few restrictions. The amorphous shape reflects this freedom.

The slender columns of the first story welcome metaphorical readings. Perhaps they are most like bony limbs (figure 8). They fuse to the upper lintel in a manner more characteristic of living anatomy than of built structure. The decorations at the mid-column are like knee joints and the broadened base is like a foot or hoof. Another reading of these columns would be as legs of a piece of furniture or the railings of a balcony. Gaudi seems to have used the first-story windows as a metaphor for the eye and vision. As open "eyes", these windows seem alert and ready to engage the observer in a dialog. Translucent upper sections of the windows look

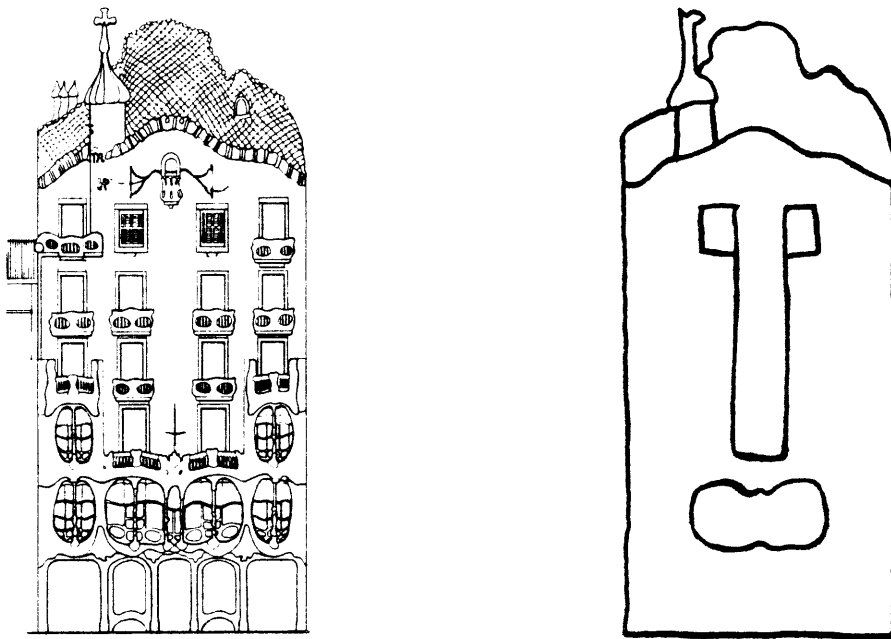


fig. 7

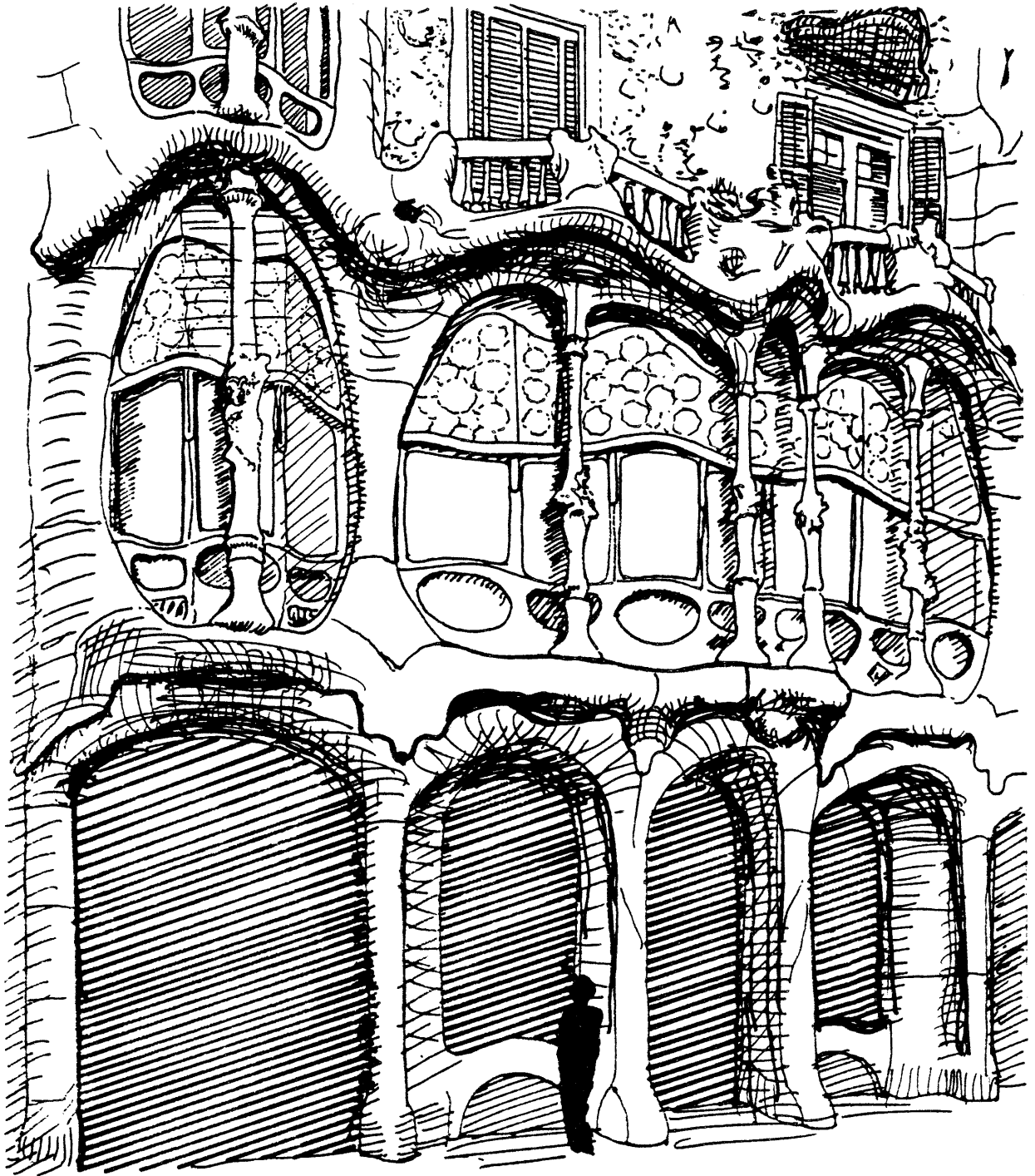


fig. 8 Casa Batlló, lower facade

like giant eyelids. The vertical sliding action of opening the windows is strongly allusive to opening eyes.

The "eyes" of the metal balconies also look down at the observer. Figure 9 represents the appearance of the facade at night with all apertures lighted from within. Light shines through the small metal balconies giving the appearance of eyes in the night.

The natural forms Gaudí used have a sense of age even before weathering. The bone-imagery suggests extreme age. The creature images - dragon, balcony faces, bat-like forms - in the lower stonework suggest a grotto world where a different sense of time prevails.

Naturalistic forms were also used for the facade of the Casa Mila (figure 10). But there, the sense of the grotto is not relieved or contrasted. Compared with the Casa Mila, the Batlló facade is delicate and varied. The Casa Mila has an earthy organic appearance. Without the mixture of delicate forms, the heavy earthiness of the Casa Mila becomes monotonous and somewhat ugly.

The Batlló facade seems to express a poetic drama between the forces

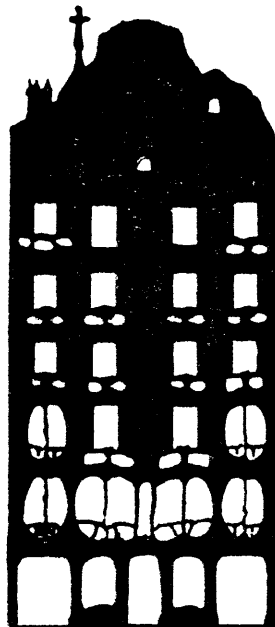


fig. 9

of good and evil, day and night. Casa Batlló combines grotto-like, sinister imagery with the delicate and saintly in a poetic, mystical way. The facade becomes a meeting ground of good and evil. One feels good will triumph. The blue of the shimmering "water" is like a natural spring. The scene is like the coming of dawn where fairies dance in the morning light. The sun can be seen through the rainbow. The creatures of the shadows will withdraw with the coming light of dawn.

Gaudí takes the imagery toward a picturesque, Disneyland-like world but the success of the building is that he has managed to teeter at the brink without going over. The forms have heavy associational content. Colors and textures are very expressionistic. The naturalistic imagery is so potent that the house would fit in a fairy tale. But the fairy tale is kept within the frame of the believable because it fits its context, its vocabulary is understandable, and its decorative elements are primarily functional. It is a fairy tale but it is everything else as well. The structure is real and sophisticated. The expressionism is deeply based in structural logic and has a strong underlying geometry. The basic fenestra-



fig. 10 Casa Mila, Antonio Gaudí  
(from Mower, David, Gaudí, Oresko Books Ltd, London, 1977, p.58)

tion has been derived from principles of composition. The whole is governed by a system of logic as well as a poetic painterly approach.

### Color

Gaudí believed color was essential to ornament: "Ornamentation has been, is and always will be colored; nature offers us no objects in monochrome or uniform color, whether in vegetation or in geology, in topography or in the animal kingdom".(#6,p.125) Collins notes that Gaudí was fascinated by Moslem art.(#4,p.13) This interest lead him to travel to Andalusia and Tangier. Gaudí's manipulation of colored ceramic tile seems to have received inspiration from these sources.

The surface of the upper facade is brought alive by the use of color. Fragments of colored tile and glass cover the upper wall surface. The impression of the color is soft and teasing, changing with the reflection of light. From a distance the color is predominantly blue, but a patchy blue that fades out and reappears like a sky with misty, white clouds. Looking closer one discovers a rainbow of colors in an impressionistic, pointillistic fashion. Martinell observed that the wall surface undulates very gently in such a way that the light is not reflected uniformly.(#6,p.373) Just as the surface of a pond can captivate one's imagination, the wall surface provides a mesmerizing world of color and life. As the angle of the sun's rays changes, a multiplicity of subtle changes dances across the wall's surface. Movement of the observer as well as changes in ambient light and the time of day cause apparent changes on the wall surface.

### Craftsmanship and Sense of Human Dignity

Borràs describes Gaudí as a deeply religious man who also identified with the problems of the working class.(#2) In terms of the workers' relationship to the architecture, the Batlló facade is akin to Gothic architecture. Martinell says that Gaudí believed that the esthetic structure was one which revealed the means of construction and the problems solved

in construction, making these pleasing. (#6, p.125) Choice of materials and details allowed the workman to demonstrate his skills and contribute to the architectural process. On the upper facade the pattern of the colored ceramic surface appears to be the result of design decisions made in the process of construction. The subtle color pattern appears to have been guided by actual atmospheric effects. The built-up texture of ceramic discs and fragments of glass allows the observer to perceive that the workman's hands literally touched every corner of the facade.

The stonework of the lower facade also demonstrates craftsmanship. The sculpturing of stone structural forms required the builders to act simultaneously as finish detailers. The decoration has not been applied by a second trade, but by the builders acting with special care.

### Three-Dimensionality

Three-dimensionality of the Batlló facade contributes to the apparent movement and sense of life. Three-dimensionality gives an illusion of movement as the angle of vision changes. As the observer moves, elements in different planes move relative to one another and light is reflected differently from different planes. The movement and life of the observer is echoed by the reciprocal movement of the building.

The Batlló facade, particularly the lower facade, is highly three-dimensional. In the process of remodeling, Gaudi projected the first story, the residence of the owners, several feet forward. While columns remain on the line of the previous wall supporting the upper facade, a second line of piers was added to carry the load of the projected story (figure 11). The depth of the exterior edge was therefore considerably increased.

At the ground story the glass surface is recessed inside the line of the added piers so that although the circulation path was narrowed, in reality little sidewalk space has been taken from the public. The captured

public space has been transformed into arched niches which allow the pedestrian to step out of the circulation path while looking in the large glazed display windows. This captured public space creates a narrow transition zone between the busy sidewalk and the retail shop inside. Sky reflections, which would interfere with merchandise visibility, are subdued. Large display windows maximize visibility without the disadvantage of a monotonous flat glass surface. From an angle the facade appears to be primarily stone because only the projecting piers are visible. As the pedestrian passes by the store front, the depth of the arched apertures welcomes exploration.

The first-story facade is also very three-dimensional. Its large windows project even beyond the piers below. The large glass windows are segmented and curved so the centers of the windows bow outward. Figure

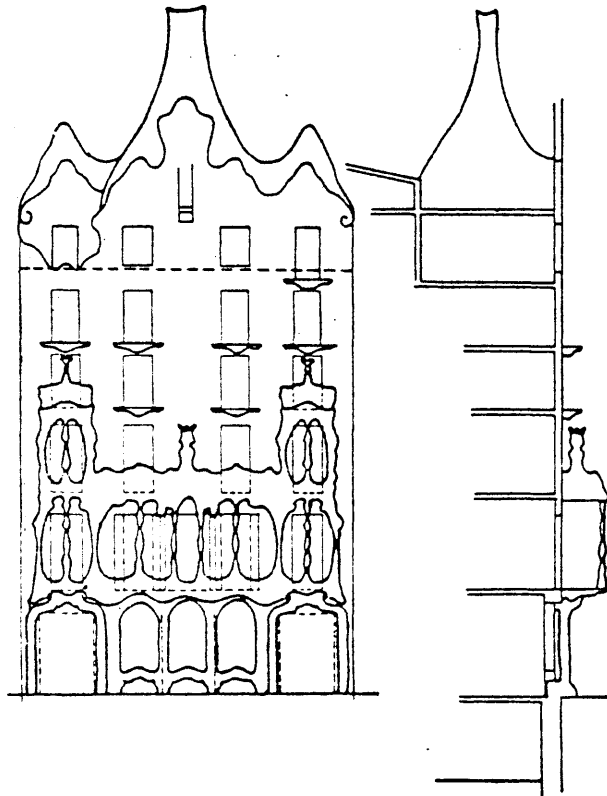


fig. 11 Tracing from proposal made for the building permit  
(from #6, figure 434)

12 shows this undulation of the window surface.

The very slender stone columns, whose function is the support of the projecting balconies are perhaps the most unique elements of the facade. Instead of performing a dual role by acting as mullions for the windows, they are held separate from the windows. The windows are run continuously in back of the slender columns, again creating more sense of depth.

Three-dimensionality and exaggeration of window depth emphasize the importance of the transition between inside and out. The meaning of facade as a divider between inside and out can be developed by giving the facade generous three-dimensional depth. Thus the facade is not merely a barrier but it is a zone that can be occupied.

#### Elaboration of the Facade

The Batlló facade has basically three different zones (figure 13). The lower facade meets the street developing a theme of interaction between inside and outside. The large arches encourage window-shopping and

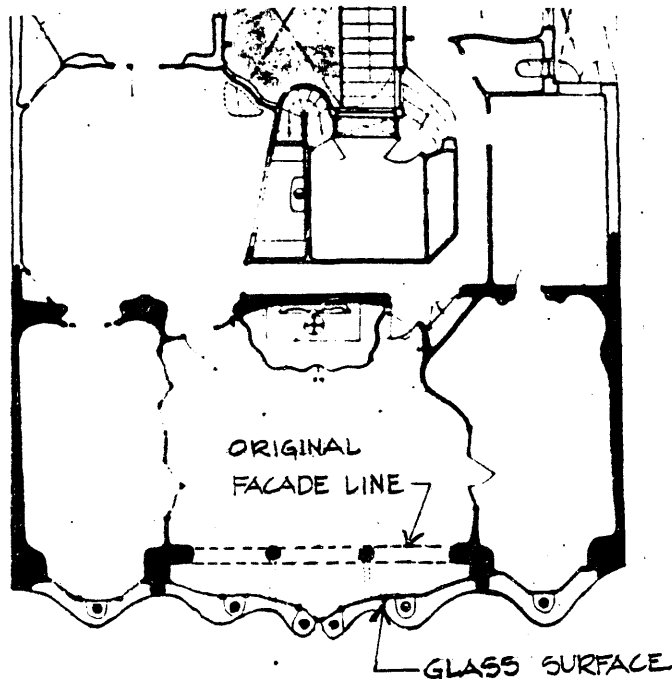


fig. 12 First-floor plan (front), Casa Batlló  
(from Pane, Roberto, Gaudi, Edizioni di Comunita, Milan, 1964)

entry. The large first-floor windows express viewing from within. The broad central terrace provides a platform to step outside and view the street from above. The upper facade is a more passive middle zone. It reflects the original character of the building. The third zone is the roof. It terminates the facade at the skyline.

### Drama of Contrasts

The composition of the Batlló facade has been made alive and interesting by antithesis of the upper and lower facade. The contrasting characteristics of the upper and lower facade create a powerful drama as they are interlocked and fused at the second story. These contrasts are played against each other to add vigor and interest.

The antithesis has been developed by contrasts of materials, textures, shapes, and the opposition of structural systems. The lower facade is predominantly glass framed by sculptured stone. The windows are large and have amorphous shapes. In contrast, the upper facade is predominantly

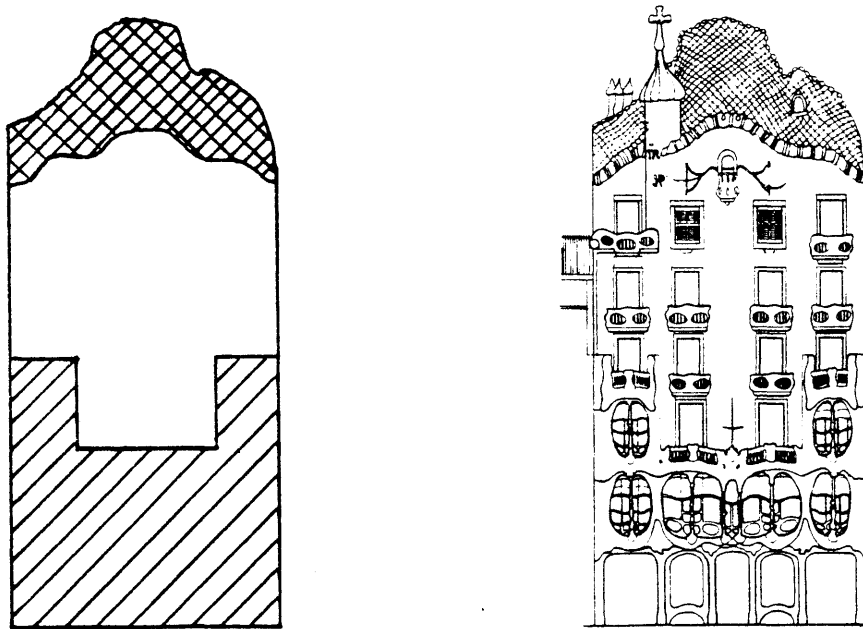


fig. 13

wall. Rectangular windows are set in the wall in a regular manner. The diagrams showing the void-to-solid relationships of the facade (figure 21) make these differences very apparent. Color and texture are also contrasted. Whereas the upper facade is multicolored, the more monochromic, tanish-gray hue of the stone dominates the lower facade. The smooth texture of the stone contrasts the irregular wall surface above.

The two very different systems of the upper and lower facade interlock at the second story. Stone and glass reach upward at the sides as the colored wall surface penetrates downward in the center touching the second-floor balcony (figure 13).

The overall effect of these contrasts is the creation of interest and complexity which is almost hypnotizing. The effect may be likened to gazing in a pool of rippling water. The mind is lead to believe that great secrets and wisdom are contained within its surface.

The complexity of the facade is amplified by the incongruity and contrast between anticipated size and actual size. From a distance the sizes of the ground-story archways and the first-story windows appear smaller than they are. The plainness of the ground story and the unusual slenderness and delicate detailing of the first-story window columns makes the window openings appear smaller than the 12 to 13 feet which they are in reality. As one approaches the facade the apparent size must be reconciled with the discovery of the actual size.

### Rhythm

Rhythm is another aspect of the facade's vigor and sense of inner movement. The rhythm of the lower facade is illustrated in figure 14. The piers of the ground story are clustered toward the center as if suggesting compressive action (figure 14 d). This pattern emphasizes the axis of symmetry and helps to unify the composition of the facade.

The pattern of the first-story stone wall (figure 14 b) moves in the opposite direction. The first story appears to be expanding like a balloon. The taut wall surface draws the eye outward, and then upward. The

slender stone columns of the first story play a counterpoint to this rhythm (figure 14 c). While the wall surrounding the large center window appears to be drawing apart, the columns seem to be drawing together. Superimposed on these rhythms is still another but more regular rhythm of the window mullions (figure 14 a).

In addition to the apparent motion inward and outward from the center, the facade undulates forward and backward (figure 12). The effect is very much like waves reflecting back and forth off the edges of a small pond. The facade appears to be alive with inner movement.

#### Window Detailing

The arched apertures of the ground-story shop windows are approximately 13 feet high, larger than would be guessed from an unmarked elevation (figure 15). Although the first story of Casa Batlló lines up with the neighboring facade, the ground-story windows are considerably taller than that of adjoining buildings. The large size makes the ground-story windows appear grand. The openness seems to welcome the public.

The eloquent first-story windows reveal a high level of care taken for the comfort and delight of the clients. These windows provide the visibility and abundant light of large picture windows without compromising a sense of human presence and scale. The first-story windows are approxi-

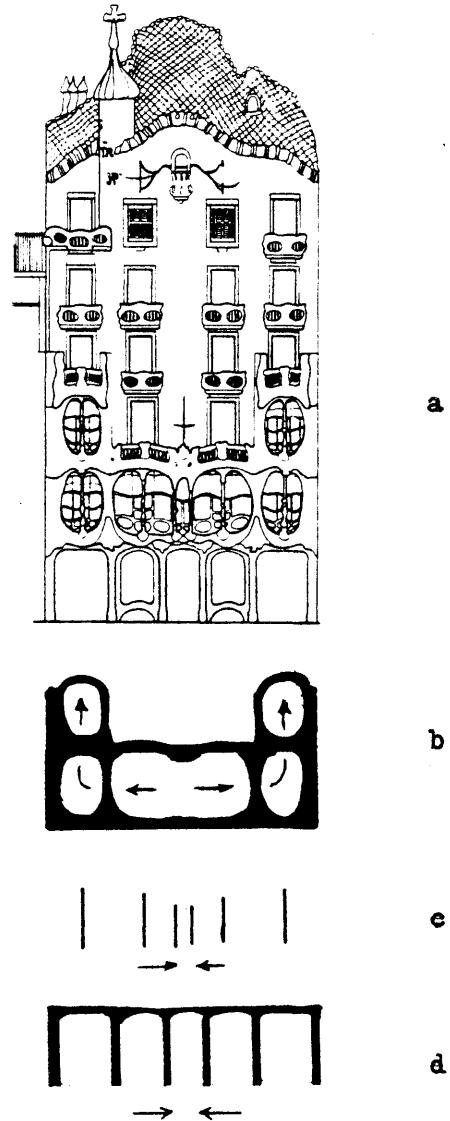


fig. 14 Rhythm of lower facade

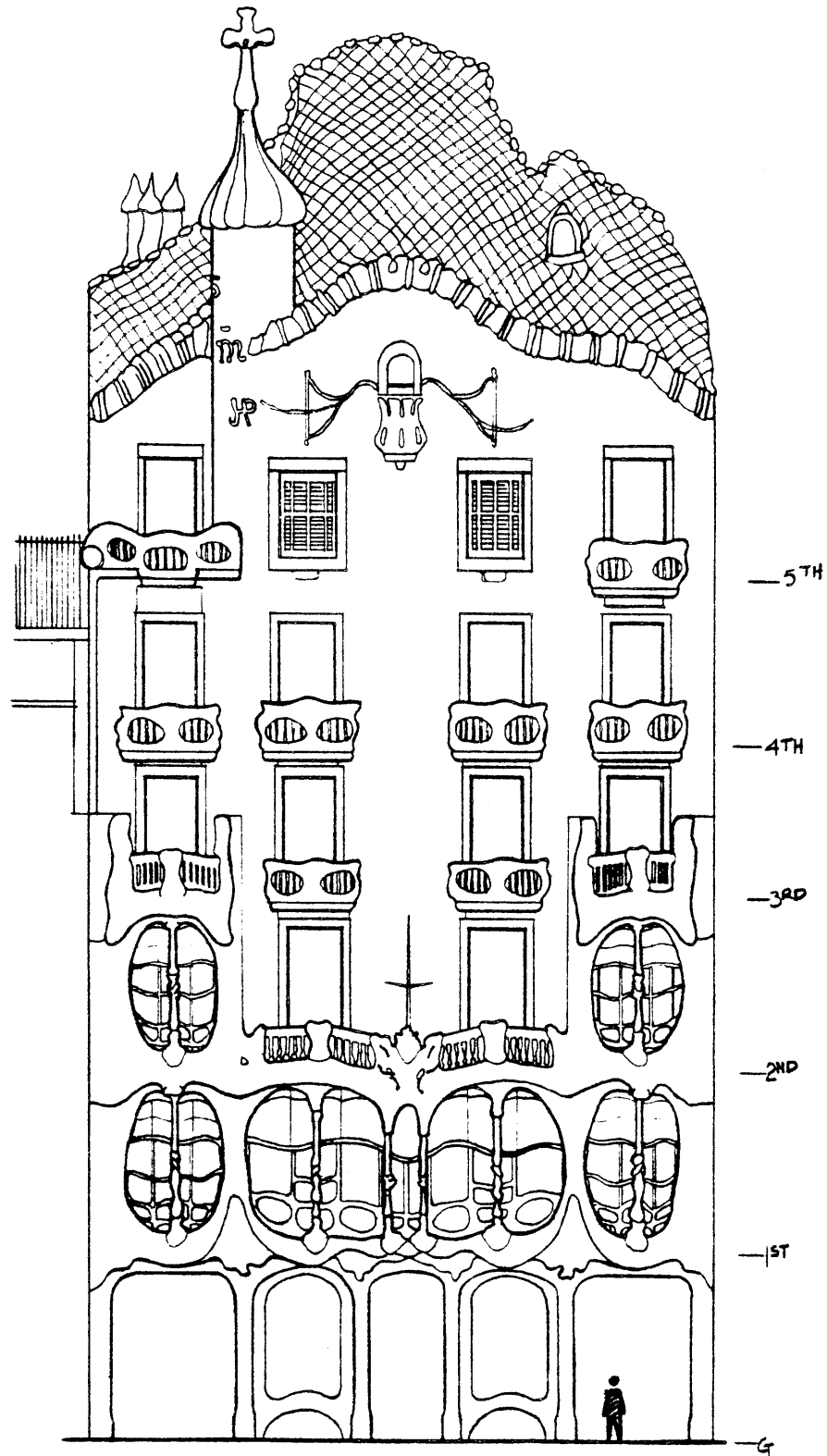


fig. 15 Casa Batlló, Antonio Gaudí  
(not a measured elevation)

mately 12 feet high, but they have been carefully subdivided to reduce their scale. These windows actually consist of three types of glazing. The upper part of the window uses translucent glass which is leaded in a pattern of discs, like that of the ceramic discs laid in the surface of the wall above. The lower part of the window reads like a transom with windows cut in it. The center of the window is operable. A clue to the scale of the large windows is given by the knot of decoration at the mid height of the window columns. This decoration occurs at about head height. Because the location of this decoration is unexpected, from the corner of the eye, it can be mistaken for a person standing at the window. As an observer moves along the street, the column moves with respect to the mullions behind. The effect of the column acting in parallax is particularly suggestive of movement and life within. It appears as if a person at the window were moving.

The facade is more three-dimensional and more decorated at the lower floors where the efforts are most easily seen. The facade is increasingly planar and less decorated with increased height.

The windows used in the upper facade are simple but they have been thoughtfully detailed. The broad casing around the windows of the upper facade dignify the windows. If it were not for the broad casing, the windows would appear overpowered by the colorful and lively wall surface. This treatment has the same effect as would a decorated frame on a plain wall, announcing the importance of the window. The fifth-story windows that Gaudí added measure approximately  $4\frac{1}{2}$  x 7 feet. They are about 1.6 times higher than they are wide, which are the proportions of the golden mean. Upright, rectilinear windows are suggestive of use. Human presence is further articulated by the operable shutters. The layering of shutters outside of glazed sash helps differentiate the transition from inside to out. The presence of these multiple elements gives the occupant options for control of visibility, climate, and light quality.

### Unifying Systems of Order

The contrasts and the diverse array of forms are successful because they occur within a unified composition. Various means have been employed to maintain the strong unity. Underlying the lively play of form and contrasts is a strong unifying form together with a system of compositional and geometric order, repeated motifs and structural logic. The means of achieving a unified whole is very insightful because underlying unity is a necessary framework for a rich and varied facade.

### Unifying Form

The body-likeness of Casa Batlló is an important means by which the elaborate complexity has been unified into a compositional whole. The facade is primarily symmetrical. This is important to the compositional order. Symmetry is perhaps the most easily recognized ordering component because it is a characteristic of the human figure. While much of the vocabulary and imagery is new and unusual, the eye immediately recognizes symmetry which reduces the problem of pattern comprehension by half. Symmetry is also consistent with the creaturely forms. Higher forms of animal life tend to exhibit frontal symmetry about the vertical axis. Symmetry is consistent with the creature-like imagery of Casa Batlló. Perception of Casa Batlló as creature-like reinforces the sense of compositional whole since creatures have unified bodies.

The form of the roof also helps to unite the facade. The roof folds downward at the sides indicating closure.

### Geometric Order

The upper-story windows give the facade a strong sense of order. Much of the basic geometry was established by the original builder. But Gaudí employed the ordering system of his predecessor, playing off his organic forms against it. The upper floor which Gaudí added enhances the sense of order, providing a logical terminus for the skyward progression of floor and window dimensions. The floor-to-floor dimensions are large

at the ground level and progressively diminish at each successive story. The building meets the ground at a small slope but the street to first floor dimension can be approximated at just over 15 feet. The floor to floor dimensions of the upper stories are then 14, 12 $\frac{1}{4}$ , 11 $\frac{1}{2}$ , 11 $\frac{1}{2}$ , and 12 feet in ascending order (figure 16). Decreasing the dimensions of the upper stories dramatizes the effect of perspective, accenting the verticality of the facade. Upper stories are also made to appear more distant due to the stepping back of the facade above the main floor and the change in material.

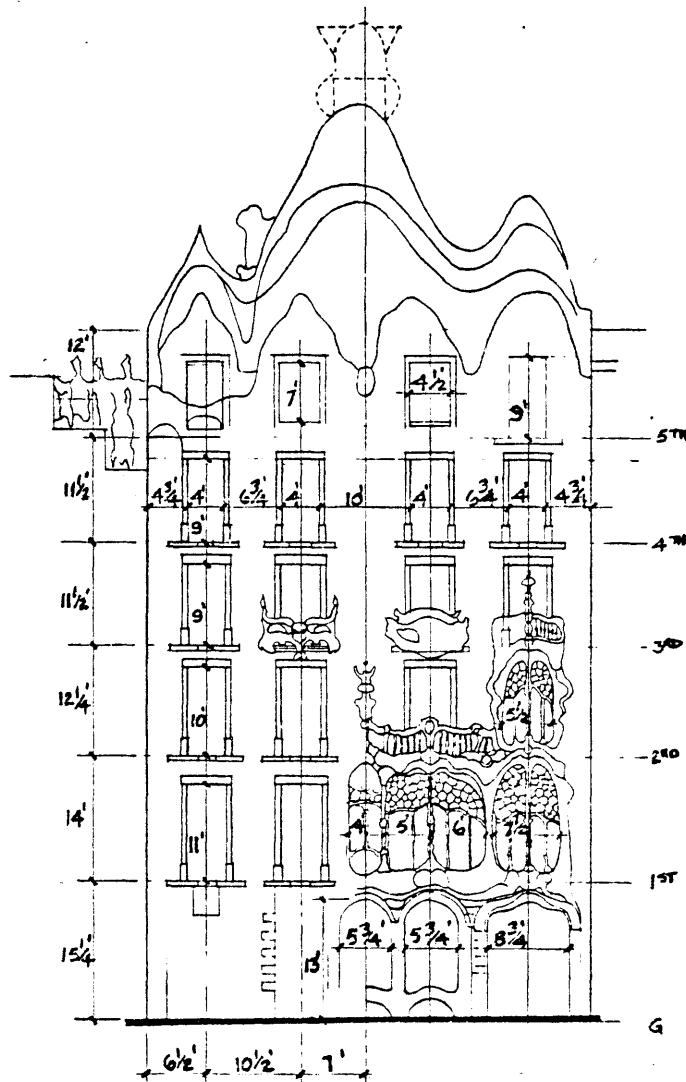
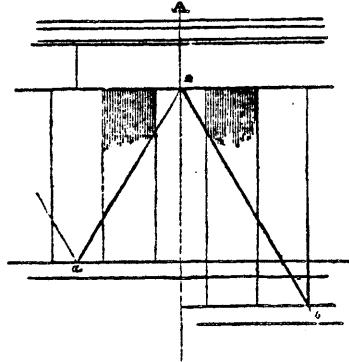
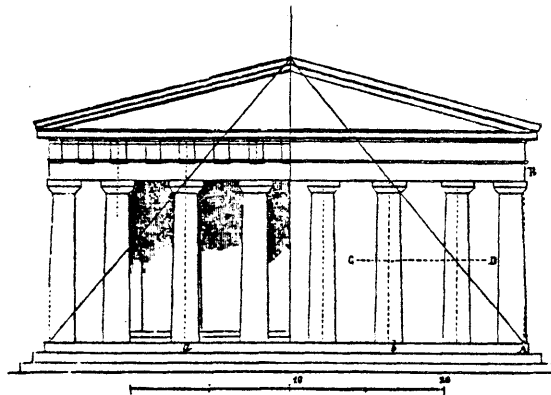


fig. 16 Tracing from Gaudi's proposal



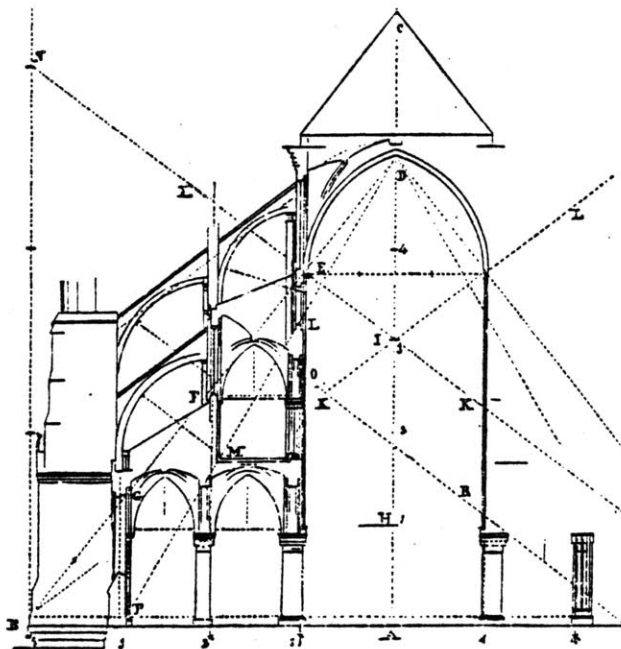
- a. triangle located from column center (a) or outer edge (b)



- b.

fig.17 Equilateral triangle (a), Egyptian triangle (b) from Viollet-Le-Duc, Discourses on Architecture

Analysis of the overall geometric relations has been made to better understand the facade. Gaudí's drawings of the Batlló facade do not show what if any geometrical principles were used in the design of the facade. However, Gaudí admired Viollet-Le-Duc (#7,p.56) whose text, Discourses on Architecture (1875), describes geometrical manipulations. Viollet-Le-Duc illustrated the use of three different triangles: the equilateral triangle, the Pythagorean triangle, and the Egyptian triangle. Drawings from his book are shown in figures 17 and 18. Figure 17 a and b illustrates the use of an equilateral triangle and an Egyptian triangle with Greek examples. Figure 18 demonstrates the use of all three triangles on the section of a Gothic cathedral. Despite the lack of any conclusive evidence about intentions, many geometric relations can be observed in the drawings prepared by Gaudí for the building department.



TRANSVERSE SECTION OF THE CATHEDRAL OF PARIS.

fig. 18 Application of geometry from Viollet-Le-Duc, Discourses on Architecture

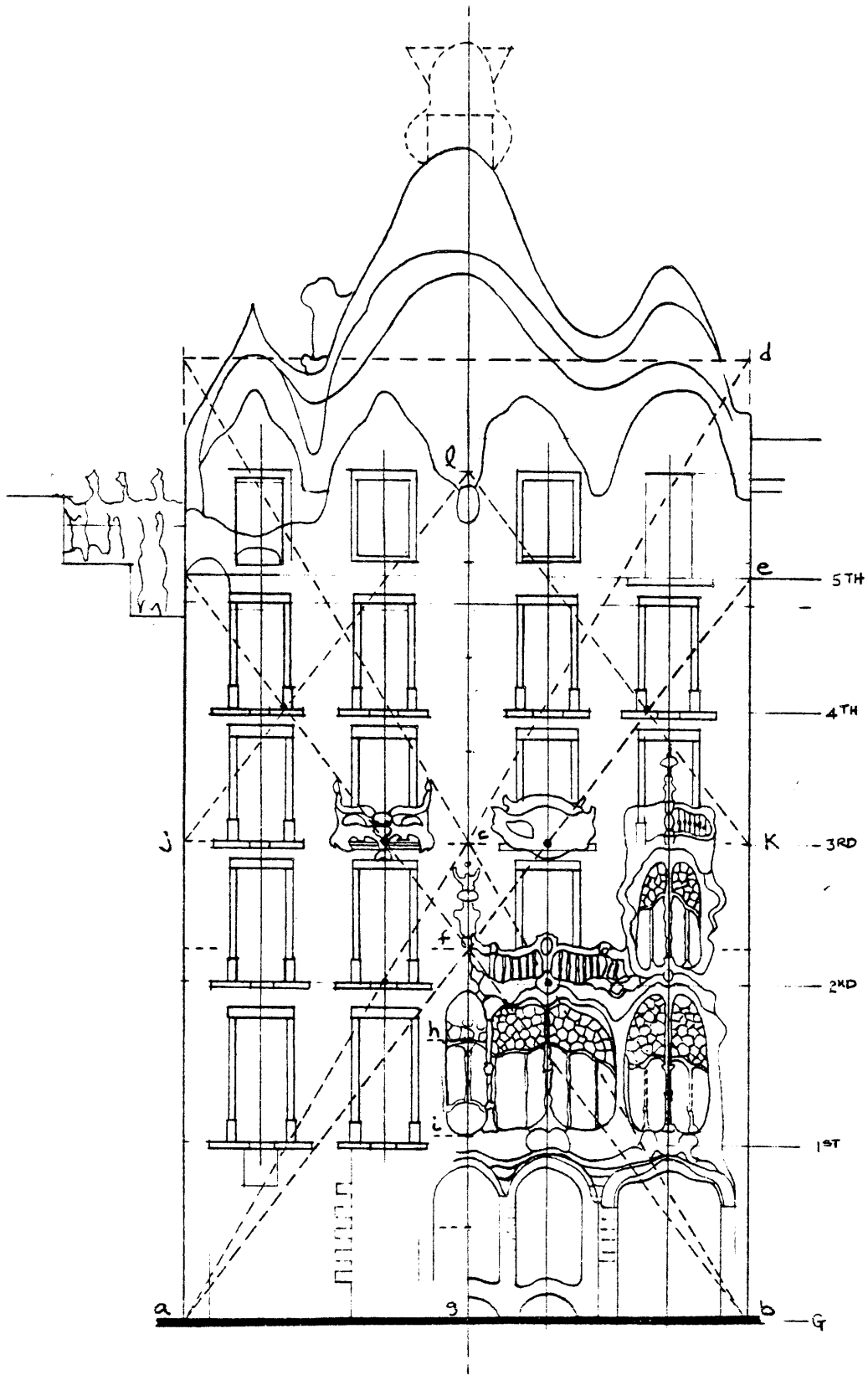


fig. 19 Geometric relations. Tracing from Gaudí's proposal

The visual center of the remodeled Batlló facade occurs at the apex of an equilateral triangle (acb) with its base at the street level (figure 19). The apex coincides with the third floor line of the original building. The remodeled facade is roughly double the height of this equilateral triangle. In Discourses on Architecture Viollet-Le-Duc described the equilateral triangle as the most satisfying geometric shape. "There is no geometrical figure which conveys greater satisfaction to the mind, none which better fulfills those conditions of stability and regularity which appeal most agreeably to the eye and mind".

If the base of the facade is divided into 3 units and 4 of these same units are measured vertically along the edge of the facade, the Pythagorean triangle (abe) so constructed coincides with the 5th floor line. A small terrace has been cut in the building making this level particularly legible (figure 6). From some viewpoints, this level marks the skyline on the left side since the terrace facade is set back several feet and cannot be easily seen from the street. These overall proportions are relevant when the building is viewed from across the boulevard.

When the building is viewed from the sidewalk on which it fronts, little of the facade above the second floor balcony is visible. Since the facade above this level is stepped back, this balcony appears to crown the lower facade. The top of the second-floor balcony occurs at the height where the Pythagorean triangle (aeb) intersects the axis of symmetry (point f). That is, this "lower facade" is half the height to the small roof terrace. The top of the second-floor balcony also defines the corner of the smaller Pythagorean triangle (afg) whose side (fg) is 4 units high. These units have been marked in figure 19. Point i marks the bottom of the first floor windows. Point h marks the horizontal division of these windows. The second story is a transition zone between the upper and lower facades. The proportions of the upper facade follow a geometry similar to the lower facade. If triangle jlk, identical to triangle afb, is placed with its base at the third floor line, the apex coincides with the top of the fifth-story windows. Although these two identical triangles afb and jlk are separated by the second floor, from the street this dis-

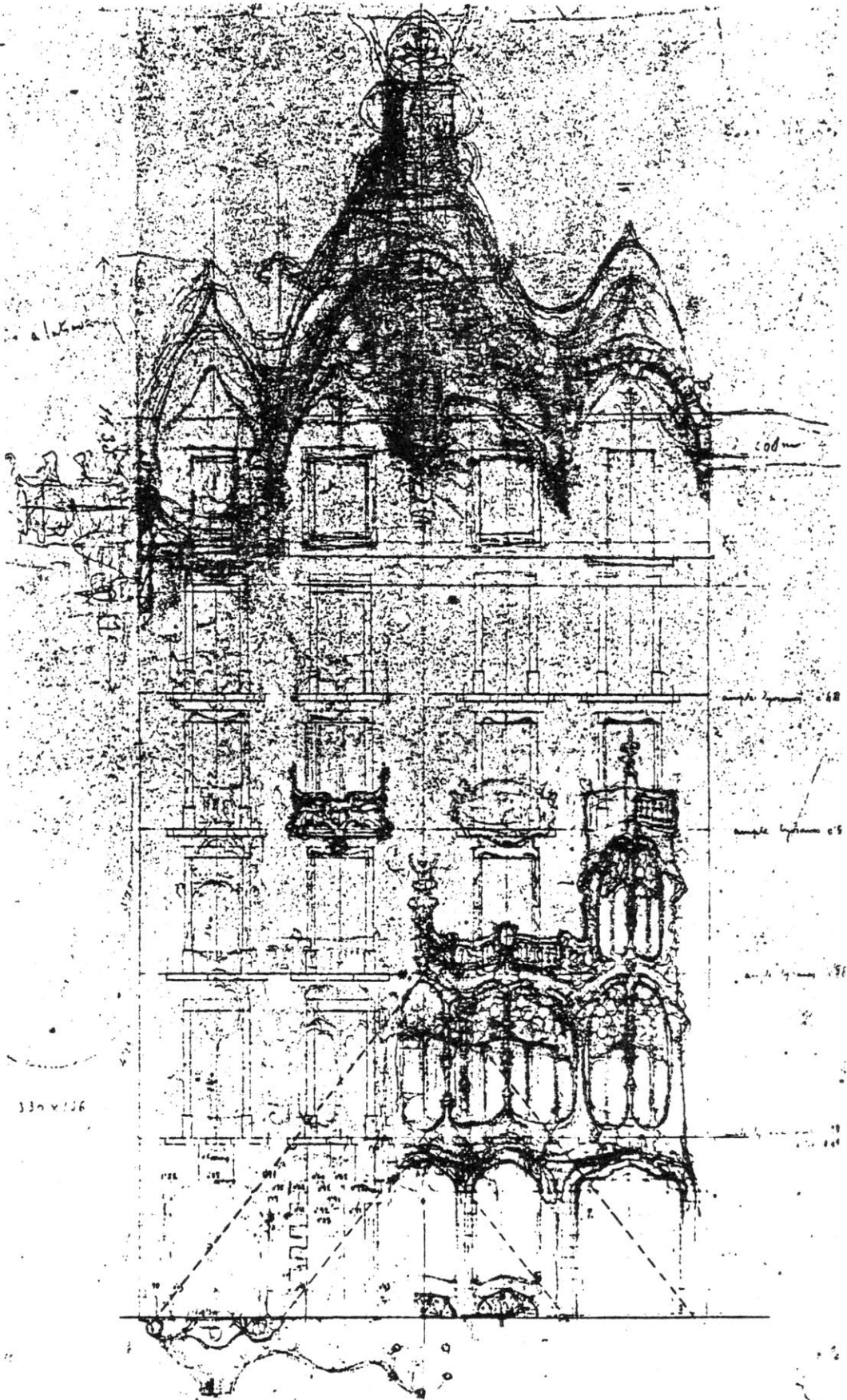


fig. 20 Gaudi's drawing for building permit (from #2)

tance is reduced to zero due to the setback of the upper facade.

The broad proportions of the Egyptian triangle suggest great stability and strength. The Egyptian triangle is generated as the diagonal section of a pyramid whose base is square and whose vertical section parallel to an edge is an equilateral triangle. (#34,p.417) Its base measures 4 units and its height 2.5 units. Viollet-Le-Duc noted that the Egyptian triangle was especially valuable "... for encouraging contrasts between width and height." (#34,p.424) This triangle suits the more horizontal emphasis of the lower facade with its great pregnant windows and powerful presence. If the base of an Egyptian triangle is placed at street level with its base corners at the center of the outer doorway piers, the apex falls at the second-floor line (figure 20). The rhythms of the window mullions and decoration draw special attention to this point. If a similar triangle is constructed from the center of the next set of piers the apex falls at the first-floor line.

### Repetition of Motifs

Repetition of architectural elements is an important component of the compositional order. Some elements of simple repetition are shown in figure 21. The rectangular windows appear to be the same element repeated throughout the upper facade. Actually French doors are used to give access to the balconies but the balcony railings obscure the lower part of the French doors. The proportions of the doors that are visible above the balcony rails have almost identical appearance to the rectangular windows. This is illustrated in figure 21 b where only the apertures visible in daylight have been darkened.

The balcony-window combinations may also be interpreted as an element of repetition. Considered alone, the repetition of the windows is rather bland. However with the addition of the balconies the effect is quite different. The balcony-window combinations create a playful variety.

These combinations are illustrated in figure 22. Cast-iron balconies and punched windows (A) are repeated in a regular fashion in the upper stories. Repetition of the stone-framed windows (D) have a more pragmatic aspect. Placement of these windows, one above the other, eases the transition from the horizontality of the lower facade into the verticality of the whole facade. These repeated windows help the eye turn the corner upwards. Repetition of a motif from the lower facade helps ease the transition to the upper facade.

Another type of repetition is the use of the same motif at different scales. The term "reverberation" has been applied to this compositional device by Kaufmann. (#22,p.188) Reverberation has been used to develop the transition from lower to upper facade. Figure 15 shows the interlocking of materials. Stone arms reach up to either side of the large central balcony. These "arms" end with a repetition of the same pattern. Each "arm" ends in a small balcony. To each side of this small balcony the stone continues upward, again like arms reaching upward.

Reverberation is also evident in the proliferation of creature-like

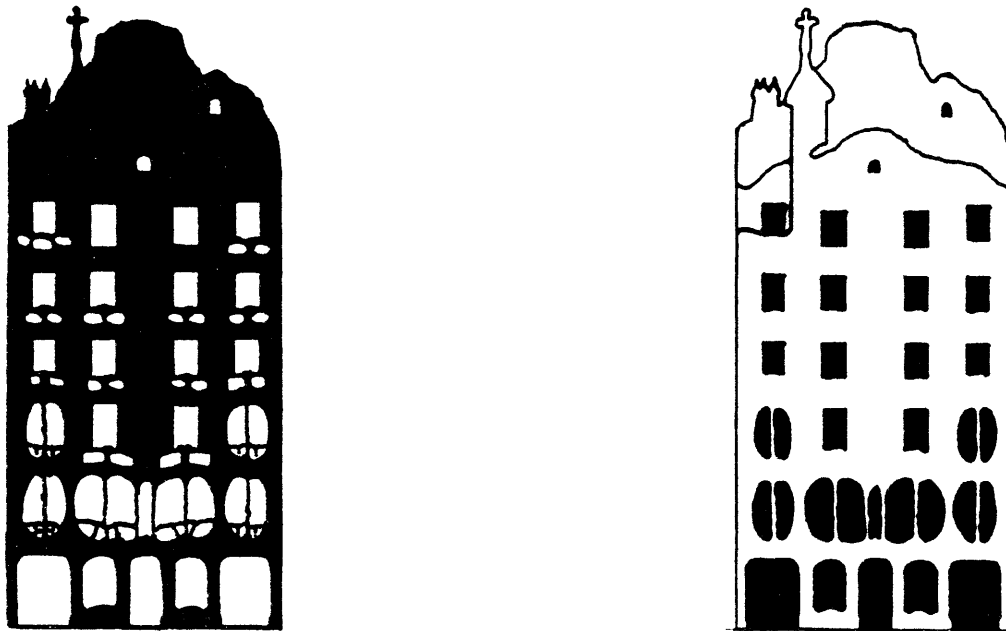


fig. 21 Void-to-solid relationships

forms at different scales. The large central windows of the first story are like two huge eyes. These rounded eye-like shapes occur again at a smaller scale. The metal balconies appear to have similar "eyes". Another example of the reverberation of creature-like imagery can be found in the lower facade. At the second floor, a small bird-like form acts like a figurehead at the prow of the main balcony. This sculptural piece of stone appears to be repeated by the structure and windows of the main story. These windows are not unlike a bat with its wings outstretched. Reverberation of naturalistic motifs helps establish similarity between the upper and lower facade. The consistent use of naturalistic associations gives unity to the whole.

#### Structure as Sculptured Ornament

Insight into Gaudi's derivation of form can be found in the writings of Viollet-Le-Duc. In Discourses on Architecture Viollet-Le-Duc praised Greek Architecture for its perfected match of decoration and technical

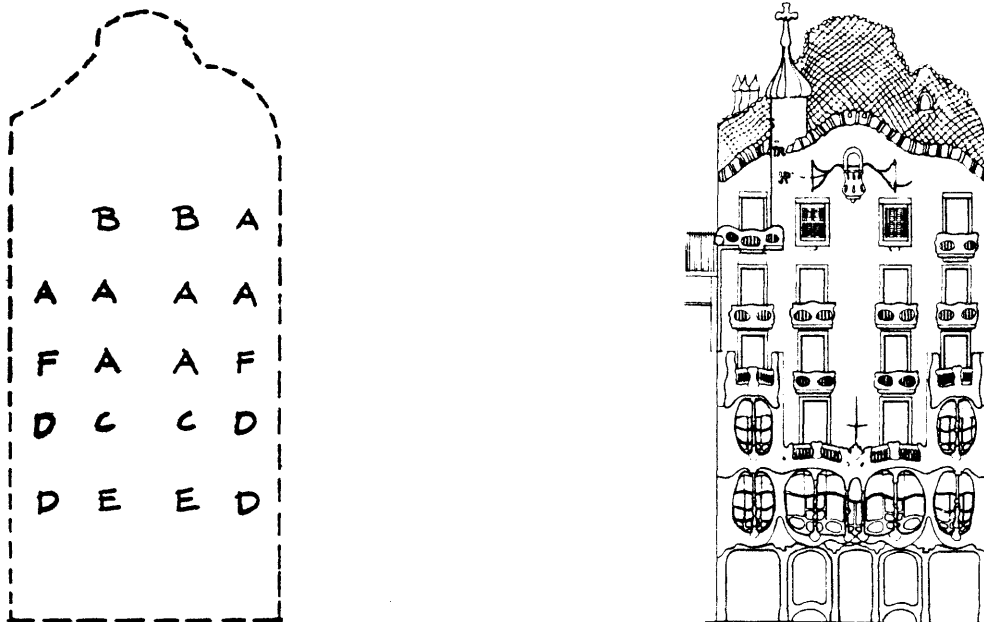


fig. 22 Repetition

function saying that "external form is the result of construction - like a naked man whose body surface is a consequence of his needs."(#34,p.73) Viollet-Le-Duc argued that Greek form was simultaneously shaped by the dictates of art and science. Decoration was made an integral part of functional elements. Gaudí frequently said he was trying to do as the Greeks would have done today.(#7,p.162) He admired the Greek sculptural approach to architecture and their resolution of structure and art in a unified whole.

In the lower stories of Casa Batlló, Gaudí made use of structure as an element of interest. Actually very little non-structural ornamentation was used. Having separated the columns from the plane of the mullions and glazing, Gaudí was able to treat these elements sculpturally. The columns act both structurally, to support the balcony, and decoratively in the spirit of the Greeks.

However Gaudí did not follow the Greeks literally. His columns have no capital, shaft or base. His structural vocabulary has been imaginatively derived taking as a theme the fusing of structural elements instead of elaboration of their junctions. Gaudí believed it was illogical to accent the junctions of post with lintel. He believed the traditional designation of supporting and supported elements is arbitrary because each element supports those above and is supported by those below.(#6,p.129) Instead of placing decoration at the junction of post and beam, to hide the discontinuity, Gaudí sculptured the stone so that it takes on a monolithic appearance. Although the column fuses with the lintel Gaudí acknowledged the upper part of the column with shadow lines and an abrupt change in profile. The lower part of the column has also been marked in this fashion. The base of the columns are broad, spreading the load over the support on which they sit.

### Urban Context

Casa Batlló is a successful urban building. It makes a positive contribution to the street environment. It addresses issues of context. Symmetry is broken at the top of the facade to reconcile adjacent roof lines.

The Batlló roof line is dropped at the left side and raised at the right to accommodate the lines of the adjoining buildings. The drawing Gaudí presented to the building department showed the heights of the neighboring buildings (figure 20). The small fifth-story terrace makes a gesture to the low profile immediately adjoining it on the left. Gaudí's design presented to the building department was almost symmetrical with the exception of this small terrace. The building as constructed has less symmetry. On the preliminary sketch the presence of the small terrace appears hardly noticeable, but constructed in three-dimensions, it appears that the upper corner of the building has been cut out. To balance the hole that has been cut from the building, the tower has been added.

Although the facade is about 76 feet high, the roof extending even higher, the building has a strong sense of belonging to the street, and the pedestrian. The projected facade of the lower two stories fits the scale of the passer-by. The second floor occurs at 30 feet above the sidewalk. At this level the facade steps back providing a balcony for the second floor. Just below the balcony, the store has been projected and then undercut creating a strong shadow line which acts much as a cornice defining that part of the building which belongs to the scale of the pedestrian (figure 8). A strong horizontal shadow line is also employed below the windows of the main floor. Together these two shadow lines give a horizontality to the facade that is appropriate to the activity of the street. This amount of horizontality engages the tall building in a sympathetic dialog with the street. Continuing the comparison of the horizontal lines with a cornice, the facade above the second-floor balcony becomes a poetic "sky" to the lower facade. Indeed, the play of light on the colored ceramic fragments that cover the upper facade, makes a good analogy to the sky.

Summary

The chief strategies developed by the Batlló facade are summarized below:

A naturalistic vocabulary, understandable to all, is employed.

Elements are layered three-dimensionally to develop the facade as a zone of transition and to create interest as the elements appear to move relative to one another.

Contrasting forms, colors, and structural systems of the upper and lower facades are juxtaposed to enliven the facade.

The facade is subdivided so that the lower facade suits the scale of the pedestrian.

Rhythmic patterns of columns and mullions are superimposed to increase the sense of inner movement.

The rich complexity of the facade is unified by consistent imagery, geometric order and structural logic.

ANALYSIS OF  
CHÂTEAU DE MAISON-SUR-SEINE,  
GARDEN FACADE  
FRANCOIS MANSART

Maisons-sur-Seine was designed by Francois Mansart over the period 1642-1646. The client was a man of wealth and ambition whose riches had been unscrupulously acquired. (#9, p.48) The powerful appearance of Maisons is expressive of the power of Mansart's client. The château embodies a sense of pride and self-esteem. Its appearance commands the title of "Grand Residence", asserting that the château is master of the lands and surrounding gardens. Maisons sits in majestic repose on a flat site. The project includes a huge complex with château, stables, numerous gatehouses and large gardens.

As designed, the château with entry court, is surrounded by a dry moat. The northwest court facade with projecting wings greets visitors. The facade which will be analyzed here is the garden facade which faces southeast (figure 23,25). Because the garden facade is bordered by a moat, Mansart has assured that the facade will be viewed from a distance where the compositional power can be appreciated. Limiting access along the building edge, assures that the facade will only be perceived in its grand entirety. The exception occurs along the central axis of the building where the power of symmetry is not destroyed.

It is to be noted that this example is generically different than an urban situation. Maisons is an example of architecture in the round. The

château has, in fact, four important elevations. However the interrelations between elevations as the château is viewed obliquely are not considered. This study is limited to the garden facade.

### Sources of Influence

Braham and Smith's book, Francois Mansart, (1973) is, to date, the most comprehensive study of Mansart's life and works. In this text Smith notes probable sources of influence on Mansart's work. Mansart was trained as a mason. Since he had no formal schooling he apparently acquired his skill as an architect from practical experience and careful observation. The design of Maisons benefited from contemporary French work and from Mansart's experience with several similar projects. Smith notes that as

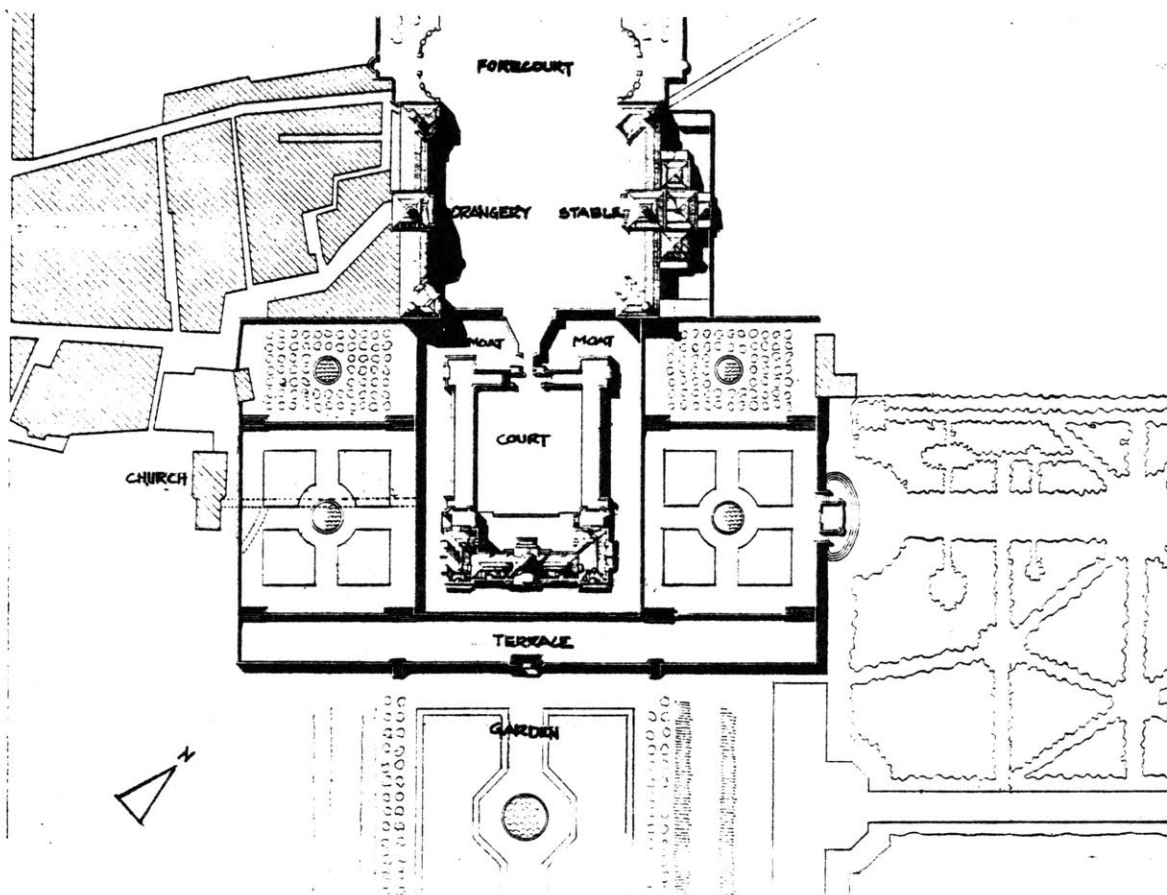


fig. 23 Site plan, Château de Maisons, Francois Mansart  
(from #9, fig. 183)

an apprentice mason, work caused Mansart to travel to the French towns of Toulouse and Rouen where he was in contact with relatively advanced examples of classical detailing. The Hôtel d'Assézat of Toulouse used superimposed orders and coupled columns. Italian detailing could also have been observed on various hôtel facades. Parisian sources which Smith believes inspired Maisons are de Brosse's Luxembourg Palace (1615-24) and the facade of St. Gervais (1616). (#9, p.13) Mansart's earlier projects also served to inform the design of Maisons. The massing is a refinement of earlier designs at Berny (1623) and Balleroy (1626) which developed a dominant central pavilion with side pavilions roofed independently. Maisons' wall treatment is like that at Blois, his previous commission. (#9, p.49)

Smith believes that Mansart never visited Italy, but was able to acquire an understanding of classical architecture from French buildings and from source books. Mansart's library included Vitruvius, Alberti, Palladio, Serlio, Scamozze, and Philibert de l'Orme. (#9, p.175)

#### Massing of the Facade

The horizontality of Maisons' garden facade is hierarchically differentiated into compacted, block-like pavilions (figure 24). Maisons consists of individually unified elements which have been compositionally organized into a powerful whole. Standing alone, the side pavilions are

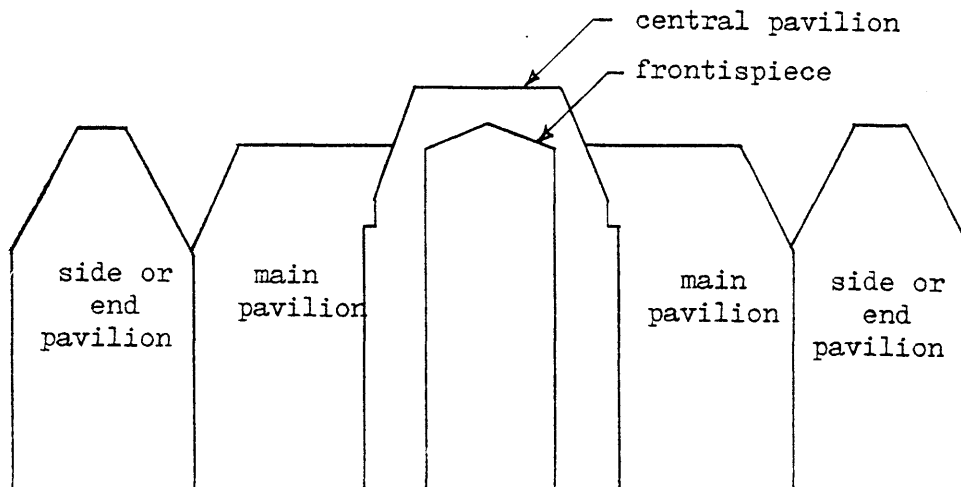


fig. 24

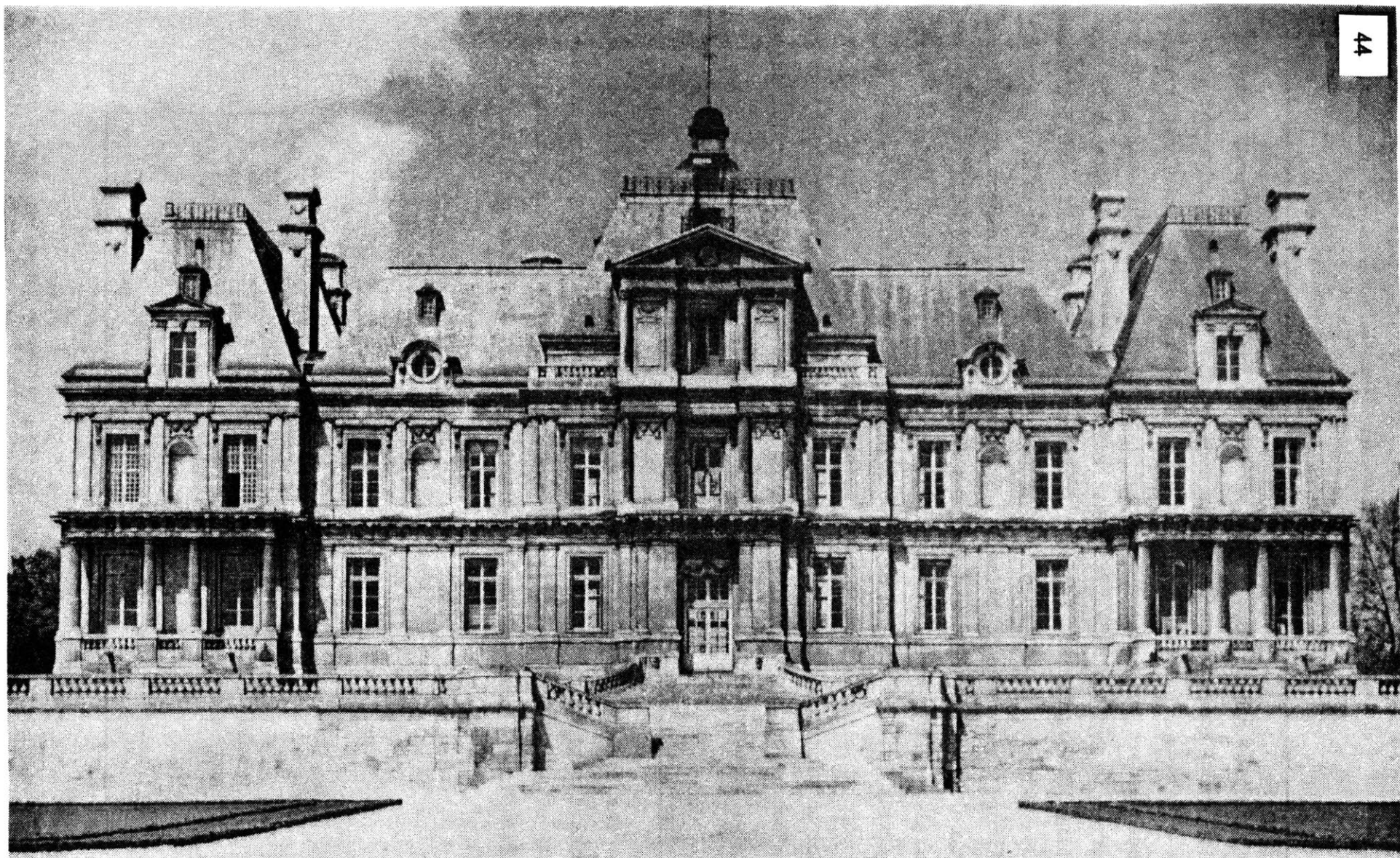
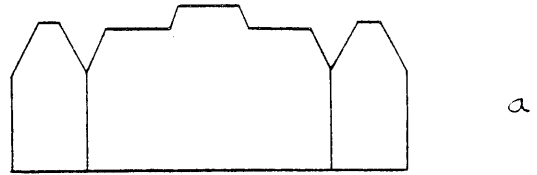


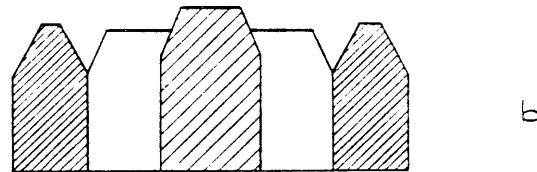
fig. 25 Chateau de Maisons, garden facade (from #9, fig. 207)

unified entities. They have symmetry and are decisively bounded by their roofs and lateral chimneys. Their central axis of symmetry has been accented by a niche and an attic window with pediment. The central pavilion and the main pavilion also have many of these characteristics of individual identity.

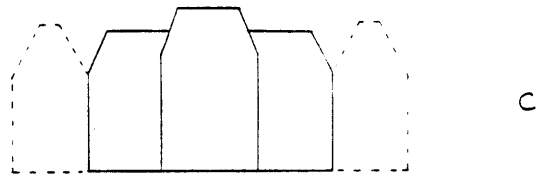
Massing is the primary compositional device used to unite the pavilions. The pavilions are massed in triadic groupings (figure 26). Figure 26 a shows the trinity of the central building and side pavilions. The projected pavilions may be interpreted as elements of a trinity (26b) or the main pavilions can be read as subordinate wings of the central pavilion (26c). Triadic massing confers importance on the central form and subordinates the lateral masses.



a



b



c

fig. 26

Maisons makes use of the visual tension created between the identical end blocks to contain the field of interest. The compositional drama created by these distanced elements finds resolution in the central pavilion.

Roof form organizes the block-like pavilions into tightly related parts of the whole. The roofs of the end and central pavilions have a closed form. Instead of reaching a peak, the roofs rise to a horizontal line that reinforces the block-like massing. The roof over the main block is lower and seems to be continuous behind the central piece. The horizontality of this roof relates the side pavilions to the central block. The roof of the main block also acts as a backdrop to the powerful accent of the high central roof.

Massing emphasizes closure and containment. The roofs express shelter. The end masses distinctly bound the edges of the château. The dominant central pavilion seems to be "guarded" by the strong lateral masses. The end pavilions are in turn confined by massive chimneys. The outlines of the pavilions are crisply defined by coupled pilasters which accentuate the corners.

### Evocation of Man-Like Identity

The erect verticality of the projected pavilions differentiates the building from ground form. The upright stature of the pavilions could be likened to that of men. The verticality breaks the austere flatness of the land, clearly marking the chateau as an artifact of man.

The projected pavilions are like three seated figures, a leader and his two subordinates (figure 27). The pavilions do not directly resemble men but they have qualities in common with the human being. The three projected pavilions each have self-contained unity. They are each symmetrical about their front vertical axis. Their facades read as predominantly surface with interesting features and are penetrated by numerous apertures. The pavilions have a base, middle and a top. Large hat-like roofs give the appearance of completeness.

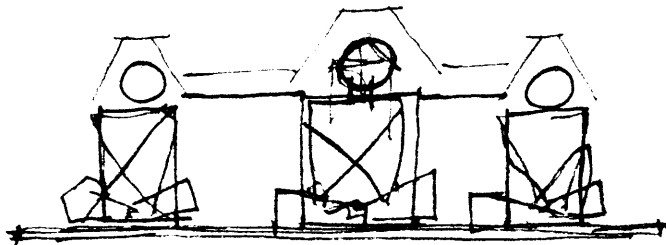


fig. 27

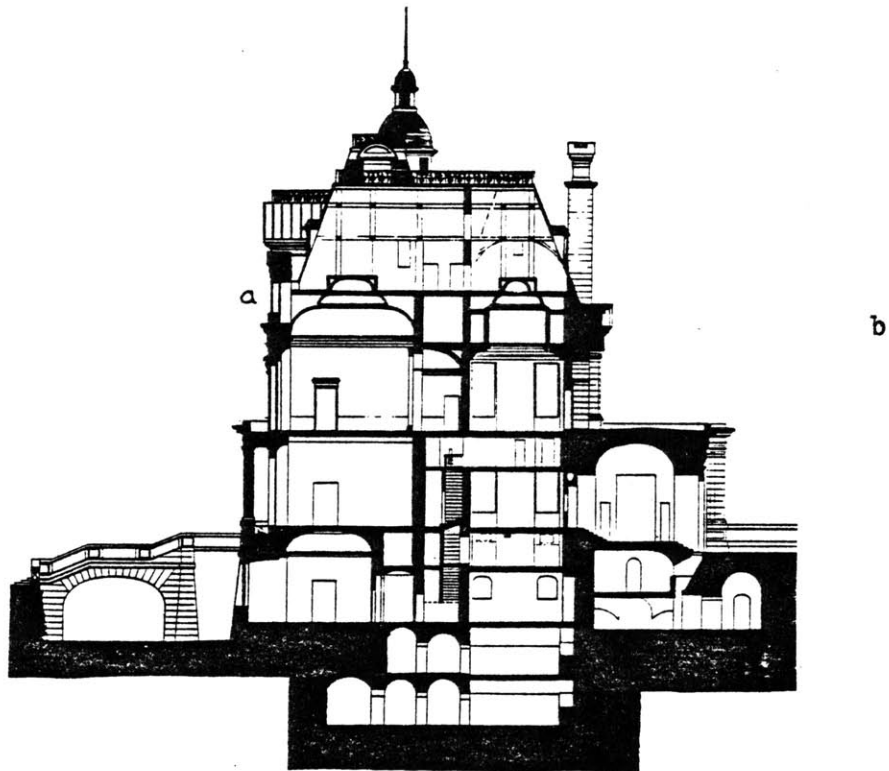
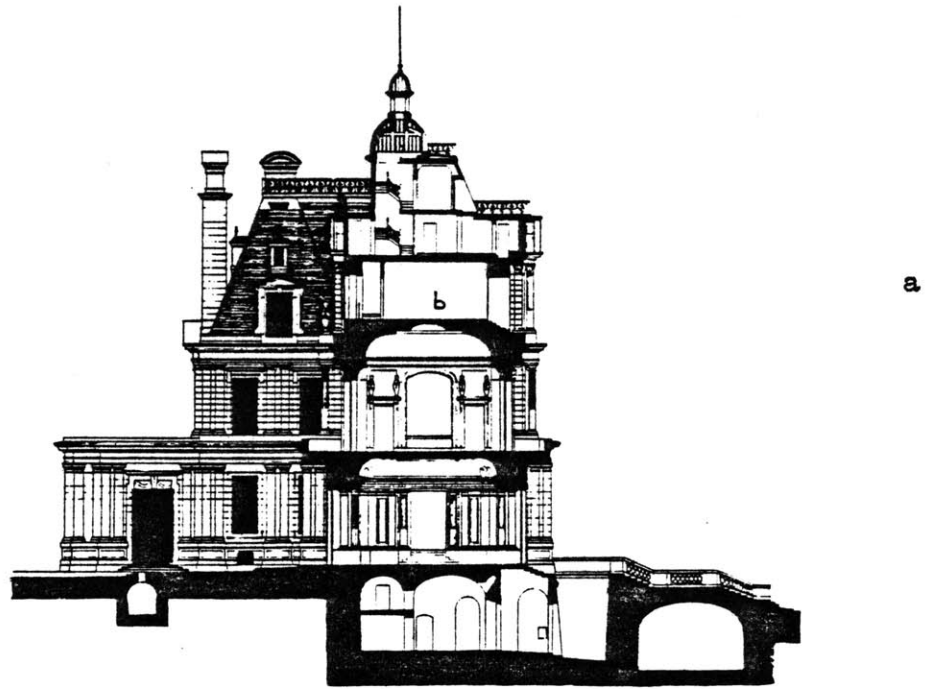


fig. 28 Section through central pavilion (a), section through side pavilion (b). (from #9, figs.228,229)

### Facade As An End In Itself

Maisons is a building within a building. The facade has been developed as a separate problem from the interior. The massing of the exterior bears little relationship to the organization of the plan (figure 29). Although the facade is symmetrical, the plan is not. The facade makes little attempt to express interior uses. For instance, the facade gives no indication of the grand stair nor of the asymmetry of the large central chamber ("F" in figure 29).

There is not a direct correspondence between interior and exterior in section either. The floor line of the second-story room "b" in figure 28 a falls above what is implied by the facade. Mansart has juggled most of his windows cleverly but it is clear that their location has been determined by the elevation. For example, the attic story window "a" in figure 28 b lights only ceiling structure.

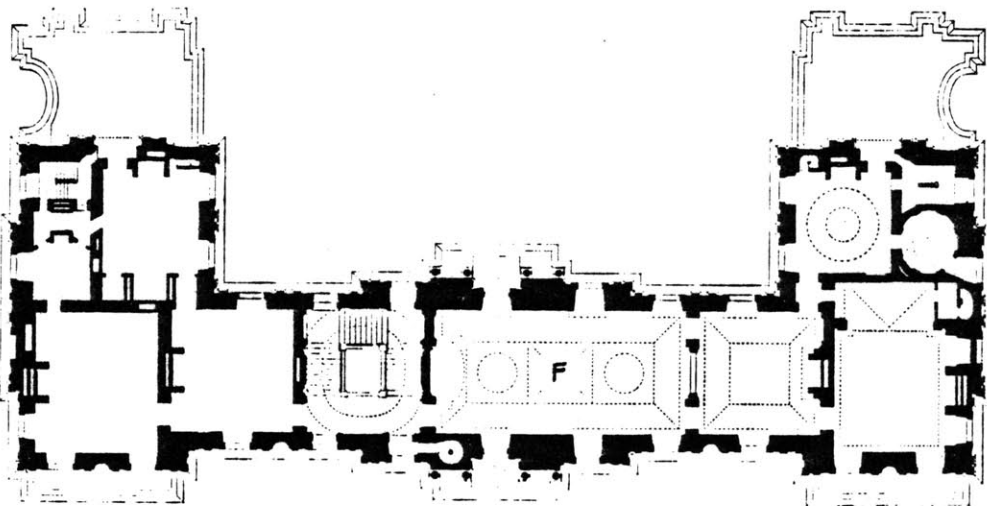


fig. 29 First-floor plan, Chateau de Maisons  
(from #9, figure 224)

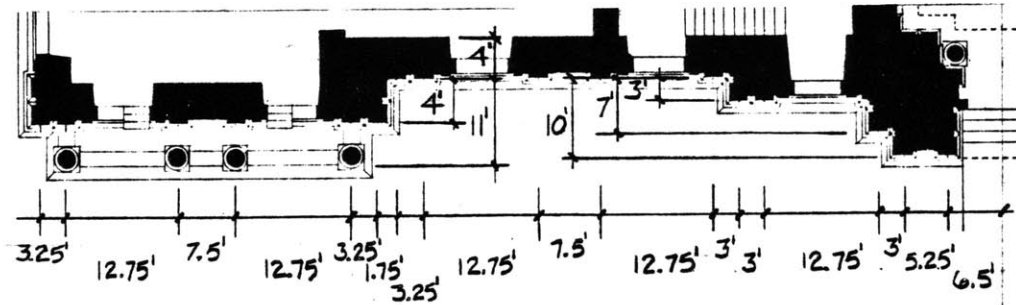


fig. 30 Ground-floor plan of exterior wall

Thick Wall As A Transition Between Interior And Exterior

The facade is not just a surface, but has three-dimensional depth. It is a transition zone resolving the discontinuities between the exterior and interior. The nature of the windows at Maisons is very different from that of typical modern architecture where the window is a plane that partially defines the interior space. At Maisons the window is a place in itself. On the interior, the zone of the windows is deep, the wall being approximately 4 feet thick (figure 30). Having established a sense of

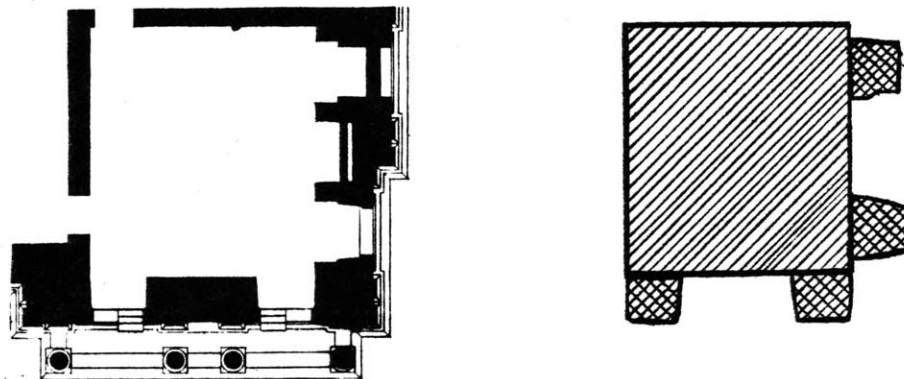


fig. 31 Plan showing relation of windows to room

place the existence of the windows is justified by themselves instead of solely by the function of the room. The depth of the window partially disengages the windows from the use implications of the interior (figure 31).

Whereas continuity between exterior and interior was an important goal of much twentieth century design, at Maisons, the discontinuity of interior and exterior is a source of architectural intrigue. As the interior is warped to meet the exterior across the thick zone of the facade, exciting three-dimensional relations are created. The interior rooms of Maisons are typified by very stable, self-contained spaces. However in the zone of the thick exterior edge dynamic spatial relations are generated. Figure 32 illustrates the interesting section which has resulted as the elevation was reconciled with the interior spaces. The second-floor balcony is reached by descending while the section overhead steps up. The section dramatizes the opening to the outdoors.

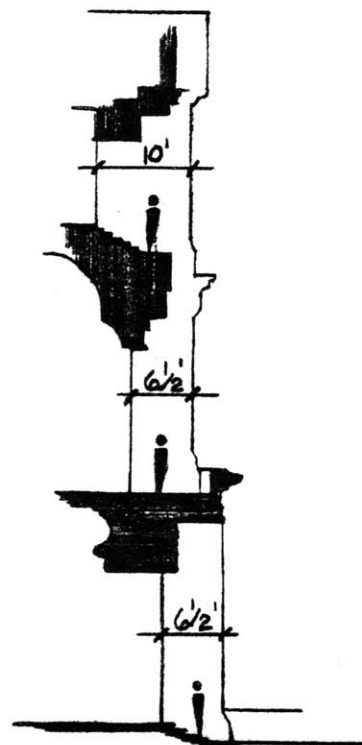


fig. 32 Section, central pavilion

### Underlying Geometry

There is no direct evidence of geometrical devices Mansart used to design the château facades. No drawings of the building attributable to Mansart have survived. (#9, p.220) He left no written word of his intentions. (#9, p.8) However a drawing of the garden facade dated at approximately the time of construction can be analyzed to better understand the geometrical order which is visible at every scale of the building. This

drawing was apparently made during later stages of construction. It is accurate except for some details such as the decoration of the cast iron balconies and the size of the chimneys.

The massing of the facade and the location of important features can be described by systems of triangles and by simple proportional relationships. First, a meaningful base line has to be determined. From the garden, the base story that walls the dry moat is not visible. The building appears to be standing upon a stone plinth, the bottom of which is defined by a rim just visible above the railing of the moat. The top of this rim (line x-x, figure 34) is the datum line on which a system of triangles can be constructed (figures 34 and 35).

The length of the facade can be divided into equal units based on the proportions of the court facade (figure 33). If this strategy is followed, the side pavilions of the court facade are 3 units wide, the central pavilion 4 units wide, and the frontispiece measures 2 of these consistent

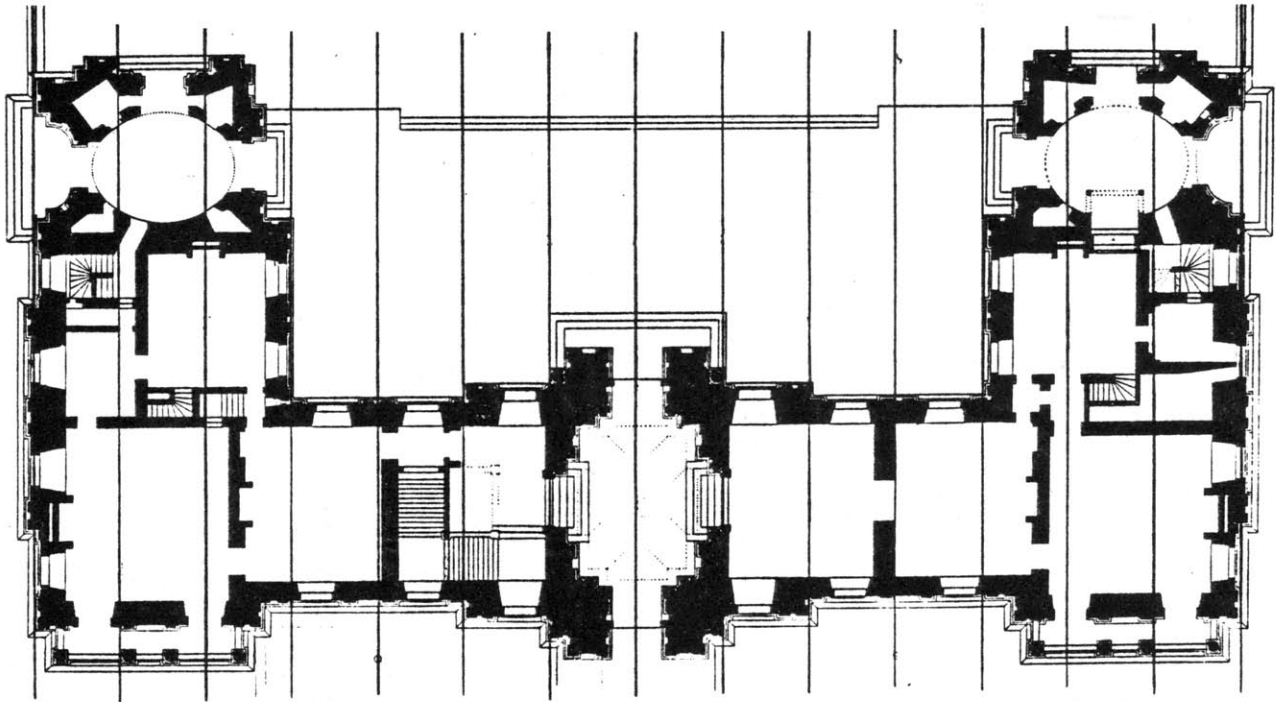


fig. 33 Ground-floor plan, Château de Maisons  
(from Sauvageot, C., Palais, châteaux et maisons de France, 1867)

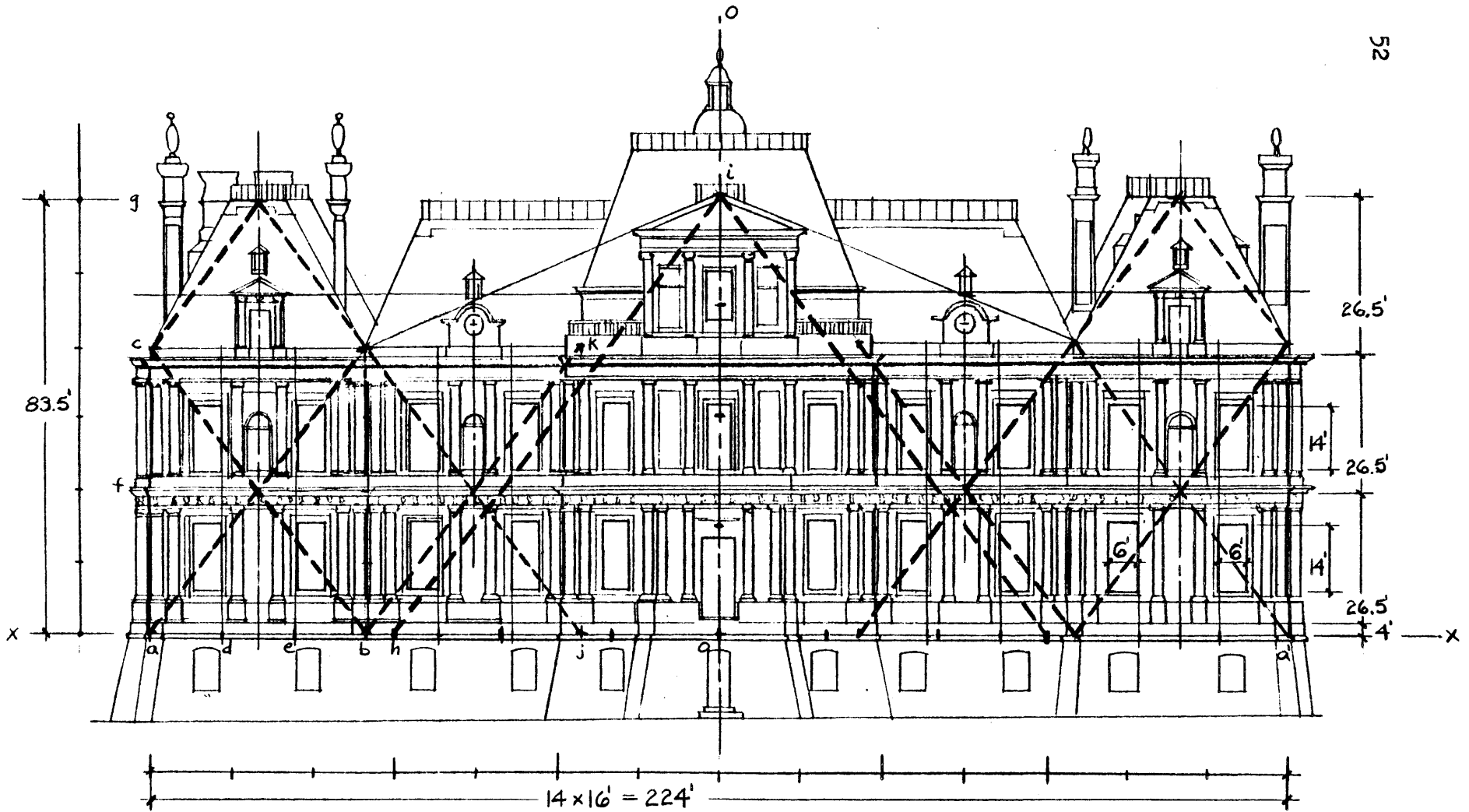


fig. 34 Geometric relations (base drawing is a tracing of elevation made during construction)

units. The central pavilions and frontispiece have the same width on both the court and garden facades. On the garden facade, the side pavilions project only 4 feet and have been proportioned narrower than on the court facade. Smith noted that this subtle narrowing of the side pavilions is an example of the care with which Mansart handled the massing. Smith observed that because the garden side pavilions are only slightly projected they appear broader than if they were readable as free-standing blocks (#9,p.49) The pediment of the frontispiece coincides with the apex of a Pythagorean triangle hoi where point h is 4 units from the axis of symmetry o-o (figure 34). If an equilateral triangle is constructed from this same point, its apex coincides with the top of the lantern (figure 35, triangle hlm). The equilateral triangles, nrp and stw, whose corners are 1 and 2 units from the axis of symmetry, have their third corners at the bottom of the ground-floor cornice and the top of the first-floor cornice, respectively. The result of this construction is that length op is twice ow and half ol. An arc having radius oa' almost intersects point l. The height to the top of the lantern is approximately half the length.

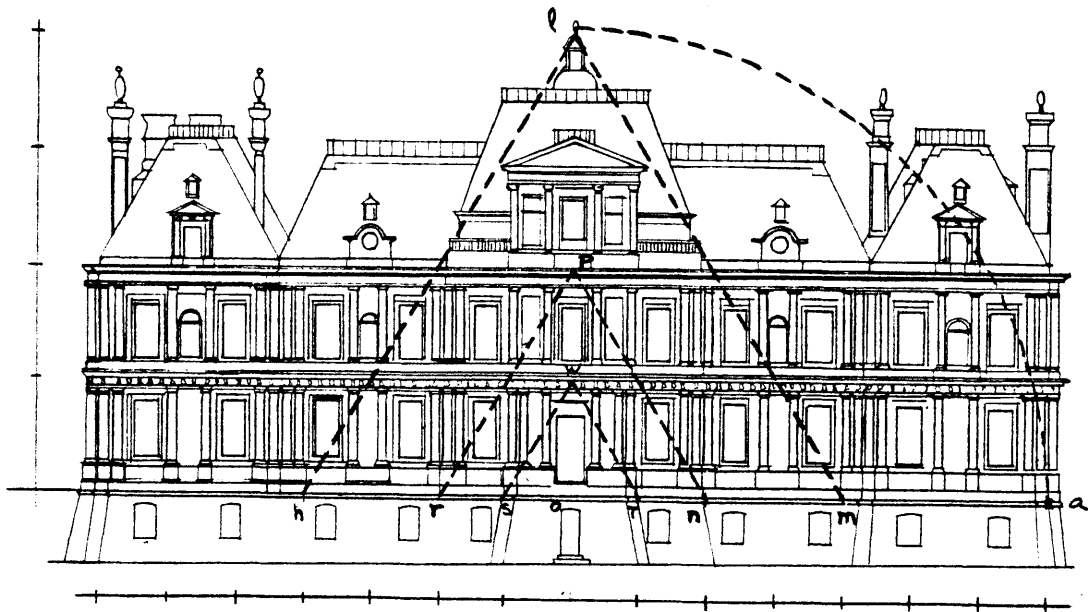


fig. 35 Geometric relations  
(base drawing is a tracing of an elevation made during construction)

It is interesting to note that over 200 years later Viollet-Le-Duc described a geometric procedure very similar to the one which is speculated here. Figure 36 is taken from Viollet-Le-Duc's Discourses on Architecture where he described the design of a hypothetical château. It is possible that this geometric technique was part of the French château tradition of which Mansart had been a participant.

The garden side pavilions have a diminished set of consistent units. The proportions of the side pavilions coincide with the Pythagorean triangle abc (figure 33) where side ab is divided into 3 parts and side ac measures 4 of these same units. The division of ab into 3 parts locates the interior edges of the windows (points d and e). The division of ac into 4 consistent units locates the ground-story cornice at f. Extending these units upward locates g which coincides with the top of the side roofs.

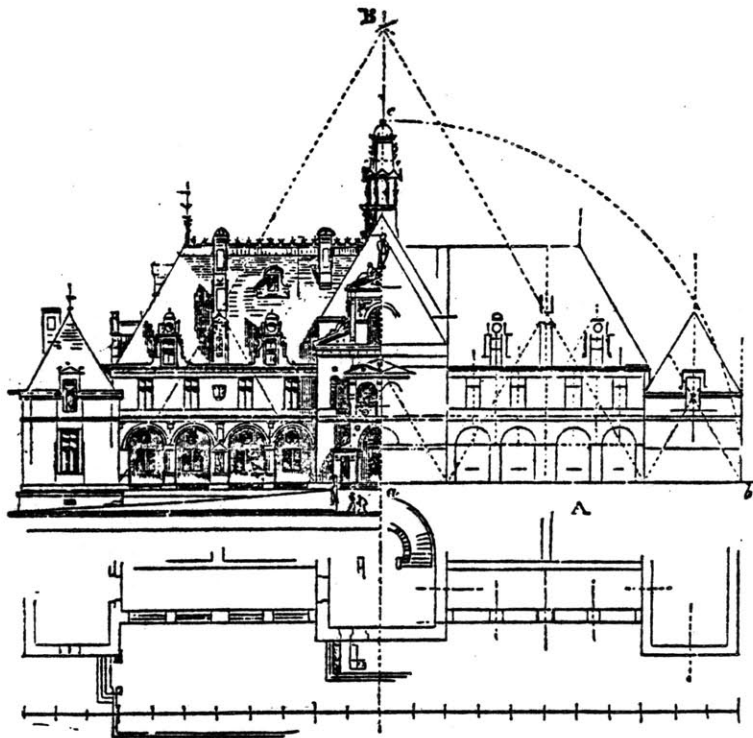


fig. 36 Hypothetical château from Viollet-Le-Duc, Discourses on Architecture

Elaboration Of Wall Surface

The facade is a careful balance of vertical and horizontal. The vertical lines of the general massing, columns and tall windows have been balanced by the strong horizontality of the ground- and first-story entablature (figure 37). The shadow lines of the cornices divide the facade into three almost equal zones: base, middle and roof. This horizontal banding relates the chateau to its flat site and helps to tie the clus-

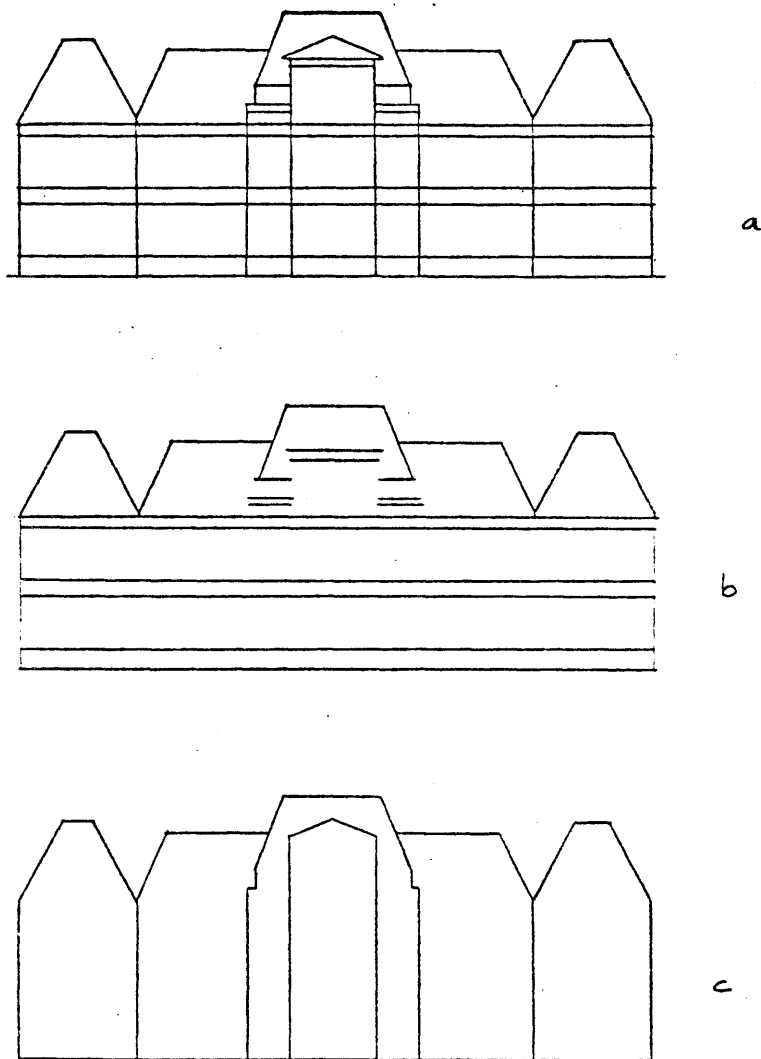


fig. 37

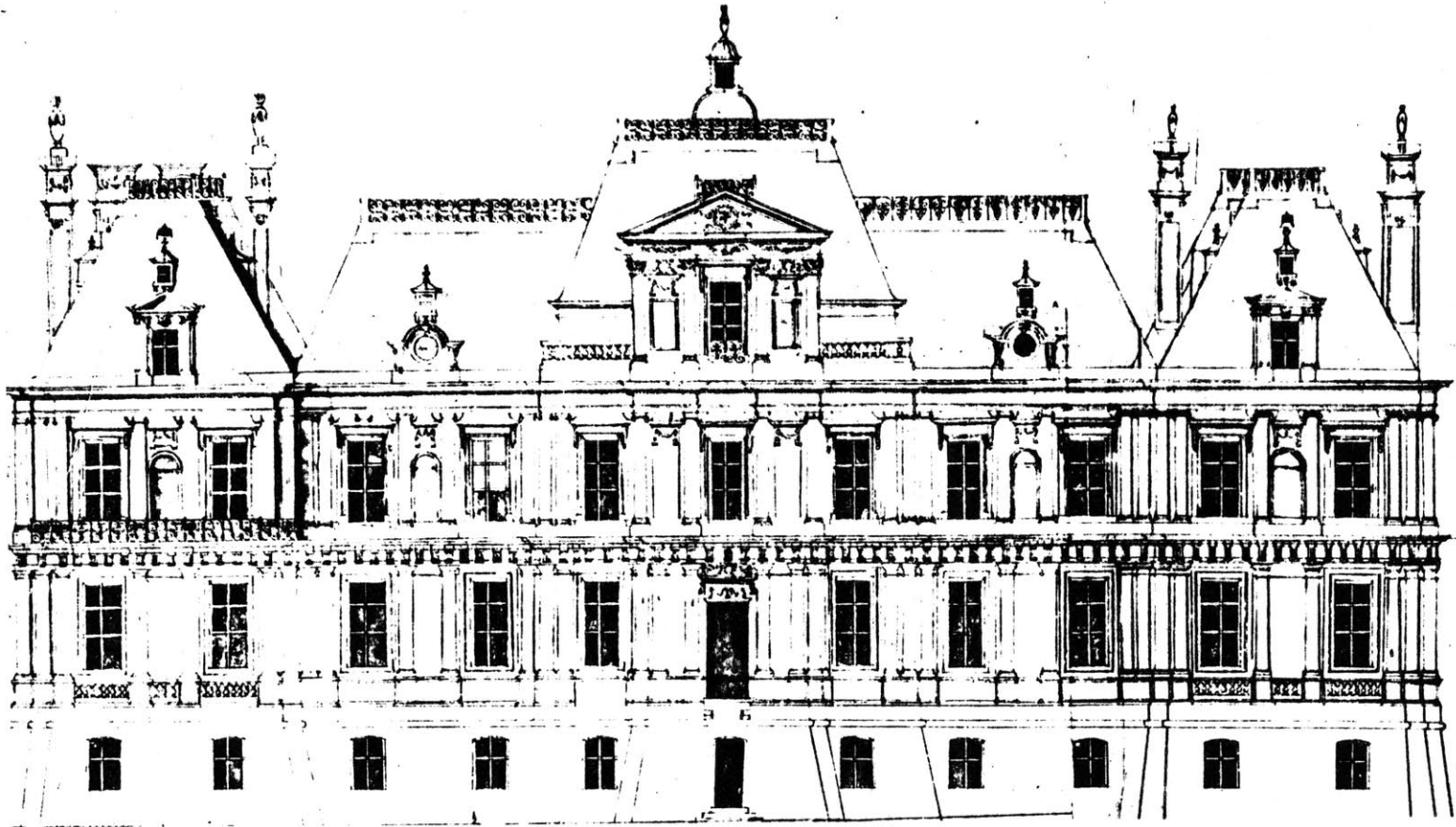


fig. 38 Chateau de Maisons, garden facade (from Sauvageot, C., Palais, chateaux et maisons de France, 1867)

tered pavilions into a compositional whole.

Elaboration of the facade consistently reinforces the organization of the massing. The motif of the side pavilions is repeated almost verbatim on the facade of the main pavilion (a in figure 39). The repeated motif of pilasters, four windows, niche, and attic window reads as a background echo of the dominant end pieces setting up a pattern of A-a-B-a-A. The subordinate quality of the repeated unit allows the central block to be relatively all the more powerful.

The facade of Maisons has been enriched by the superposition of repetitive elements: windows, pilasters, columns, niches, carved ornamentation (figure 38). Onto the general massing, Mansart applied layer on layer of linear definition. Each layer additively enriches the whole. Windows have been framed by two concentric lines of trim and a small cornice in the case of the first-story windows. Between the windows pilasters have been used decoratively so that little wall surface remains unadorned.

Consistent treatment of the wall also contributes to the cohesion of the pavilions. Windows, pilasters and niches have similar mutual relationships and have a relatively uniform distribution across the length of the facade. In particular, the even repetition of identical windows gives

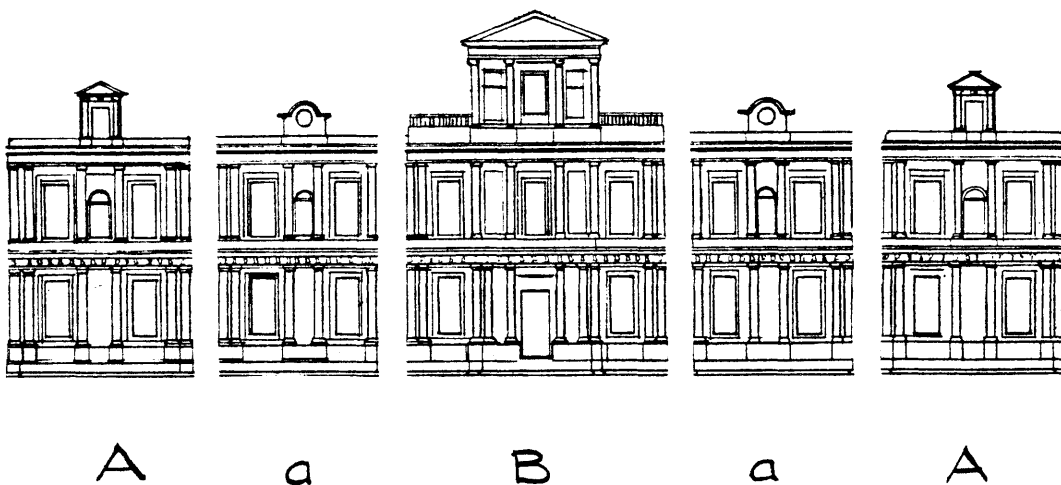


fig. 39

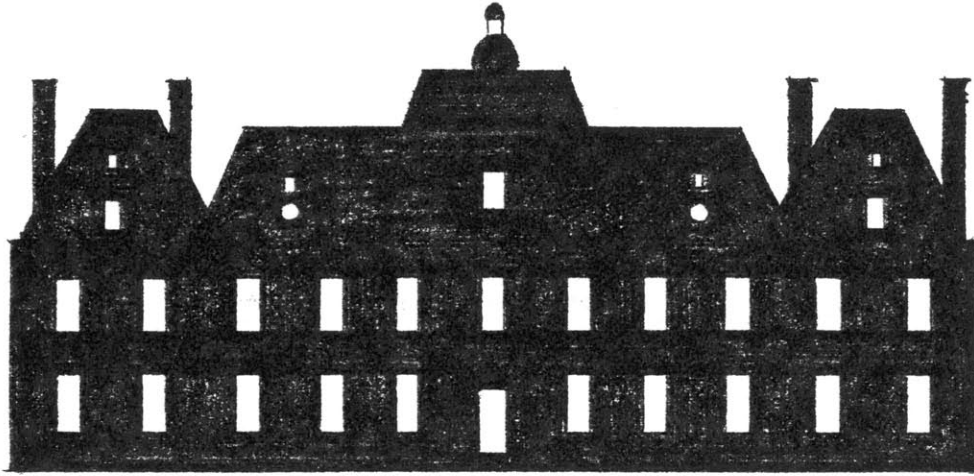
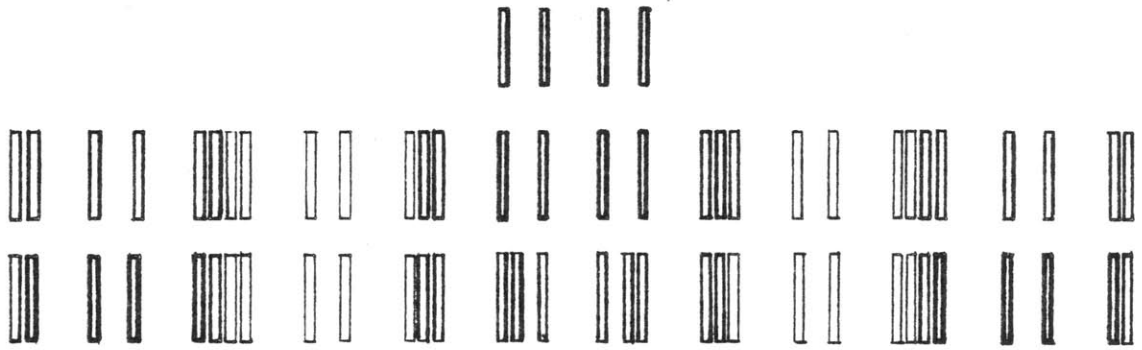


fig. 40 Void-to-solid relations



elevation



plan

fig. 41 Pattern of pilasters and columns

consistency to the whole facade (figure 40).

Positioning of the pilasters and columns in elevation and plan is illustrated in figure 41. The pilasters break up the wall, relieving competition with the voids. The overall distribution of the pilasters is quite uniform, however local concentration of pilasters emphasizes the corners of the pavilions. Pilasters, instead of wall, have been used to sharply define the massing. The pilasters appear to be structural and the wall reads as infill.

Architectural elements are positioned so that they align diagonally, drawing the eye up across the facade and working to link the different floors. Key features of the facade coincide with  $60^\circ$  diagonals (figure 42). The diagonals are defined by the corners of windows and niches and by column capitals and bases. The triangular geometry formed by these lines reinforce symmetries of the pavilions and general facade.

Columns are positioned in a hierarchical triadic grouping (figure

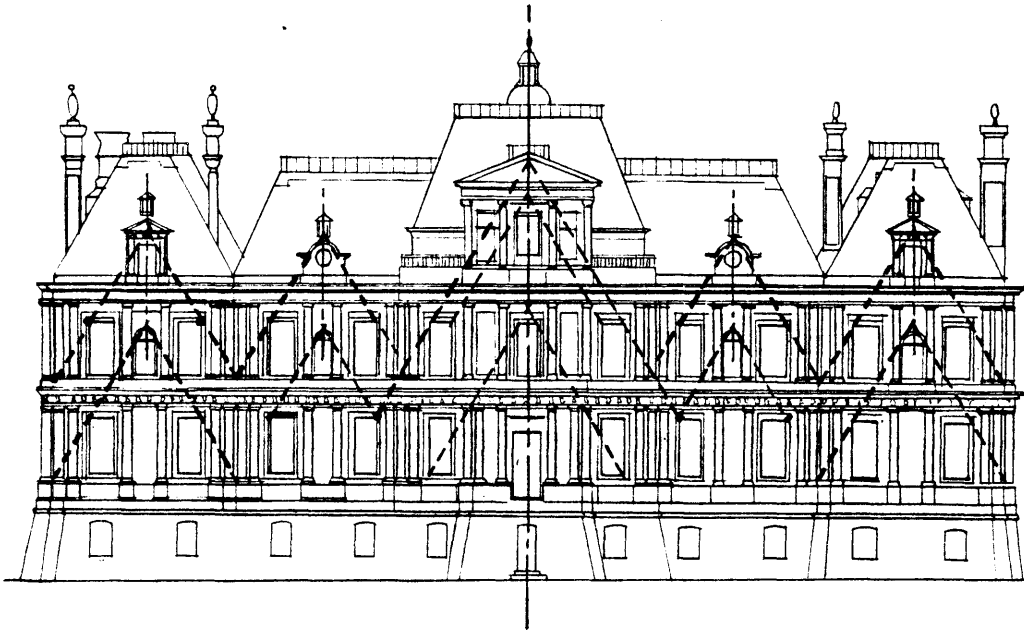


fig. 42

43). This arrangement accentuates the massing of the pavilions and highlights the general symmetry. The symmetry of the whole is also accentuated over the symmetries of the side pavilions by the use of wider intercolumnar spacing on axis of the frontispiece (a) than on axis of the side pavilions (b). The shadows cast by the columns and their entablature distinguish them from the pilasters.

The rectilinearity and crispness of line is relieved by careful ornamentation. Decoration increases with height, drawing attention upward. The orders proceed from Doric to Ionic to the Corinthian with ascending height. At the ground story the wall is unadorned except for the rhythm of windows and pilasters. The first-story wall has received additional decoration. Carved ornament is consistently located over windows and niches enhancing the general rhythm.

Elaboration of the facade enables the observer to mentally explore and inhabit the surface. The niches reveal surface depth, creating space which can be mentally occupied. The detailing of the pilasters also makes the wall appear substantially deep. Smith has observed that Mansart's pilaster detailing gives the impression of square piers embedded in the wall instead of mere surface decoration. (#9, p.45) Figure 44 illustrates the implications of the four corner details used on the garden facade.

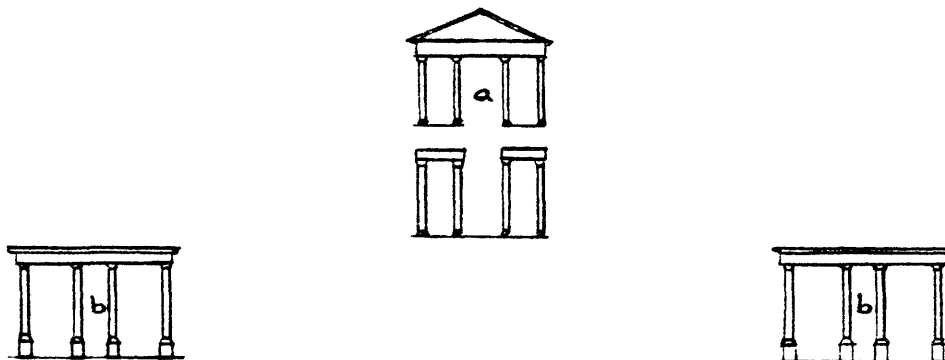


fig. 43

Central Pavilion And Frontispiece

The central pavilion breaks forward in three parts as if it were the superposition of facade upon facade. (#9,p.50) The wall topped by line a-a (figure 45) supporting the central roof has been almost hidden by the superposition of the central pavilion (rectangle bcde). A pilaster appears to have been hidden behind the central pavilion by this layering process. Over these facades is superimposed the frontispiece (defined by points fgjhi) which is fused back into the other masses.

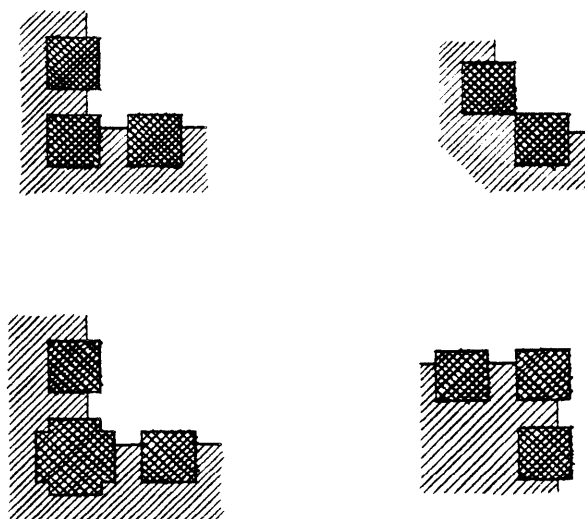


fig. 44 Detailing of pilasters, plan (adapted from #9)

The facade depth is greatest at the entrance. The frontispiece offers entry and accents the central pavilion with a majestic gesture. The shadows cast by the recessed openings of all three floors catch the eye

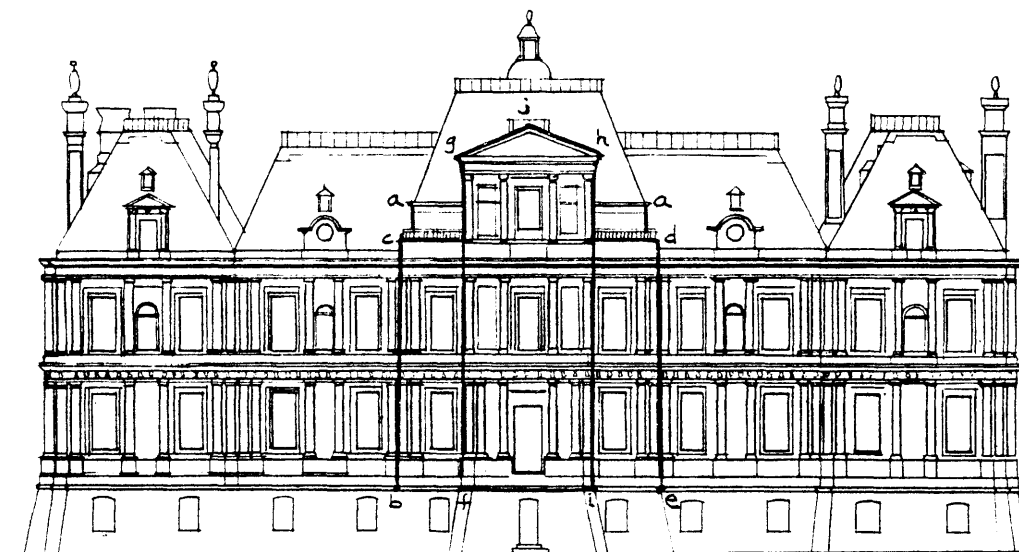


fig. 45

and invite exploration. The sense of grandeur is increased by emphasis of the vertical dimension. Columns of the upper stories direct the eye upward. The entablature has been broken back to offer minimum resistance. The subtle stepping back of the upper-story orders (figure 28 a) gives the illusion of even greater height.

At the ground floor, Doric piers with their entablature project forward (figure 46) lengthening the transition between inside and out as well as reducing the immediate height of the surface being penetrated. The door is set back within the zone of transition so that from within the piers frame the garden beyond. The deep balcony windows of the upper floors are similarly framed by the deep wall and columns.

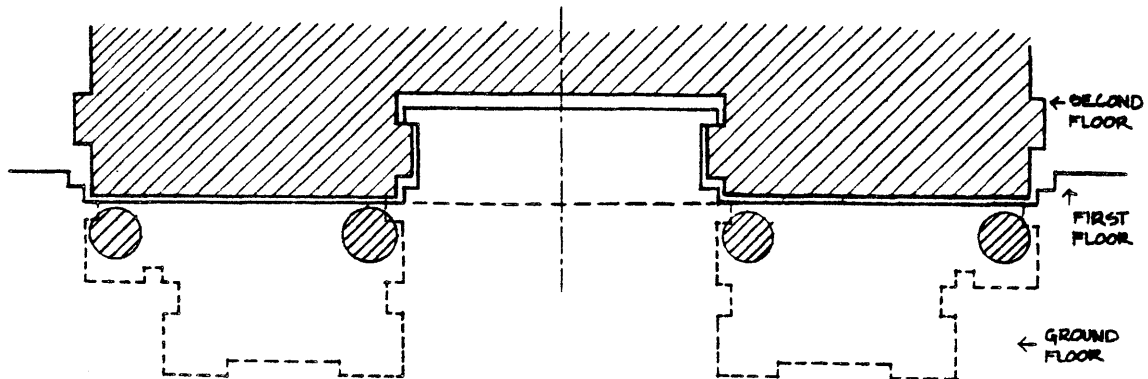


fig. 46 Frontispiece, garden facade  
(adapted from #9)

Summary

Important architectural concepts developed by the garden facade of Maisons are noted below:

The massing is organized hierarchically.

Compositional tension between strong end pieces is used to unite the composition.

Access along the building edge is limited, which assures that the facade will be perceived in its grand entirety.

Man-like identities are evoked by the facade.

The château is designed as a building within a building, one external and one internal.

A "thick wall" defines a zone of transition between interior and exterior.

From the interior, windows become partly disengaged from the rooms by having a separate identity as "place".

Elements are located along diagonals, drawing the eye up across the facade.

The composition is enriched by the superposition of facade upon facade.

Superimposed sets of evenly distributed repetitive elements enrich the facade.



## CONCLUSION

Based on the reading of diverse literary sources supplemented by criticism of Modern Architecture, this study has precipitated a set of criteria for judging facades. The criteria were implicit in the selection of the facades but the analysis has been a discovery process, necessary to making the criteria explicit.

The basic criterion derived from this analysis is three-fold.

Firstly, the facade must act as a transition zone between interior and exterior. The greater the difference between the inside and outside worlds, the more definition is needed. The facade should be handled as a three-dimensional zone, developing the transition between interior and exterior and creating a sense of place for activities to occur such as entry, looking in the windows, looking out the windows, inhabitation of the exterior edge. While *Maisons* uses a heavy masonry wall to define the thick zone of the facade, the study of *Casa Batlló* demonstrated the development of a thick three-dimensional exterior edge using a lighter-weight frame wall system.

Secondly, the associative content of the facade is an important design tool. The appearance of the facade can suggest an affinity to the human being by incorporating characteristics that are body-like or by the use of metaphorical imagery. Reference to a familiar, man-inhabited world is a wel-

come relief in the alienating, impersonal world of technology and machines.

Thirdly, elaboration of the facade should be developed to make the facade satisfying at all scales. Massing and large scale features make the facade interesting at a distance. Then within the overall whole, the eye should be able to find interest in subparts which are themselves unified identities inviting further exploration. Manipulation of the wall and its applied elements should encourage actual or virtual interaction with the building. The elements of the facade should have a sufficient amount of decoration to describe their function while rendering them in an artful way. Architectural elements should be identifiable when removed from their context in the facade. The elements should have a separate life in themselves. Enrichment can be used to move the eye up across the facade stimulating the mind. Elaboration of the facade relieves the competition between void and solid by breaking down and softening the wall. Window trim assists the transition from solid to void.

Each of the buildings in this study has a different architectural vocabulary. Maisons employs classical elements to enrich the facade. Casa Batlló uses an imaginative naturalistic vocabulary. The principles important to the success of the facade have been shown to be independent of the particular architectural grammar so long as the architectural elements are carefully defined, consistent with the criteria above.

Sensitivity to age old issues of the facade needs to be reawakened. Architects need to re-examine the principles underlying the tradition of rich delightful facades. As this study is only a beginning, much more thoughtful analysis is needed. Analysis needs to be closely related to the design profession where the derived principles can be imaginatively implemented. The aim is not old architecture but continuation of the tradition of creative new architecture.

## BIBLIOGRAPHY

Gaudí and Casa Batlló

1. Architectural Design, nos. 2-3, 1978, p.93
2. Borràs, Maria Lluïsa, Global Architecture, "Gaudí", Tokyo, 1972
3. Casanelles, E., Antonio Gaudí, A Reappraisal, Graphic Society Ltd, NY, 1965
4. Collins, George, Antonio Gaudí, George Braziller Inc. NY, 1960
5. Grady, JH, Art Bulletin, "Book Review of 'Gaudí' by Martinell", v.59, 1977, p.457
6. Martinell, Cesar, Gaudí, His Life, His Theories, His Work, MIT Press, 1967
7. Sweeney and Sert, Antonio Gaudí, Praeger, NY, 1960

Francois Mansart and Château de Maisons

8. Blunt, Anthony, Art and Architecture in France 1500-1700, Penguin Books, 1953
9. Braham, Allen and Smith, Peter, Francois Mansart, Zwemmer Ltd., 1973
10. Deshairs, Leon, Château de Maisons, Librairie des Arts Decoratifs, Paris

General

11. Ackerman, The Architecture of Michelangelo, Pelican Books, 1971
12. Alberti, Leone Battista, Ten Books on Architecture, translated by James Leoni, edited by Joseph Rykwert, Alec Tiranti Ltd, London, 1955
13. Banham, Reyner, Theory and Design in the First Machine Age, The Architectural Press, London, 1960.
14. Blake, Peter, Form Follows Fiasco, Little, Brown and Company, Boston, 1974
15. Bloomer, Kent and Moore, Charles W., Body, Memory, and Architecture, New Haven and London, Yale University Press, 1977
16. Collins, Peter, Changing Ideals in Modern Architecture 1750-1950, Faber and Faber, London 1965
17. Dennis, Michael, French Hotel Plans
18. Drexler, Arthur, The Architecture of the Ecole des Beaux Arts, The Museum of Modern Art, NY, 1977
19. Edwards, Trystan, Good and Bad Manners in Architecture, John Tiranti Ltd, 1944

20. Hercy, George, High Victorian Architecture, a study in Associationism, John Hopkins University Press, Baltimore 1972
21. Jencks, Charles, The Language of Post Modern Architecture, Rizzoli International Publications, NY, 1977
22. Kaufmann, Emil, Architecture in the Age of Reason, Harvard University Press, 1955
23. Landow, George, The Aesthetic and Critical Theories of John Ruskin, Princeton University Press, 1971
24. Laugier, Marc-Antoine, An Essay on Architecture, Hennesley and Ingalls Inc., translated by Wolfgang and Anni Herrmann 1977
25. Le Corbusier, The Modulor, 2nd edition translated by Peter de Francia and Anna Bostock, MIT Press, 1954
26. Lyndon, Donlyn, Architectural Record, "5 Ways to People Places", Sept. 1975, p.90
27. Myer, John and Margaret, Patterns of Association
28. Palladio, Andrea, The Four Books of Architecture, Dover Publications Inc, NY, 1965 (1570 Venice)
29. Robertson, Howard, The Principles of Architectural Composition, Architectural Press Ltd. 1924
30. Scott, Geoffrey, The Architecture of Humanism, Peter Smith, Gloucester Mass. 1965
31. Summerson, John, The Classical Language of Architecture, MIT Press 1963
32. Tzonis, Alexander, Towards a Non-Oppressive Environment, i Press Inc, Boston 1972
33. Venturi, Robert, Complexity and Contradiction in Architecture, The Museum of Modern Art, 1966
34. Viollet-Le-Duc, Eugène Emmanuel, Discourses on Architecture, James Osgood and Company, Boston, 1875
35. Wittkomer, Rudolf, Architecture Principles in the Age of Humanism, Alec Tiranti Ltd, London, 1952
36. Wright, F.L., The Future of Architecture, Horizon Press, 1953