CHAPTER 1

TEN TIMELESS CANONS

The real act of discovery is not in finding new lands but in seeing them with new eyes.

—MARCEL PROUST

No matter how talented a designer is, instinct, inspiration, and vision do not suffice. As with other creative endeavors, architects must let reason be their guide, not whim. Canons have been formulated and tested throughout centuries of experiments, and it is from looking at good buildings and thinking about what makes them successful that we can learn to distinguish the good from the inadequate.

Canons are useful guidelines that will help us to evaluate the choices architects have to make. They are nothing more. They do, however, define classical architecture. If they are found together on a piece of architecture or in an ensemble, there cannot be any doubt about its classicism.

These are the canons I propose:

1. bilateral symmetry
2. anthropomorphism
3. clear and simple geometry
4. defined space
5. juxtaposition of discrete forms
6. emphasis on center, corners, and sides
7. limited inventory of parts
8. inherent formal hierarchies
9. tripartite organization: the rule of three
10. regularity

There are undoubtedly others, and the material covered in these ten could be organized in different ways, but I believe that this group can provide the basis for a sound design process.

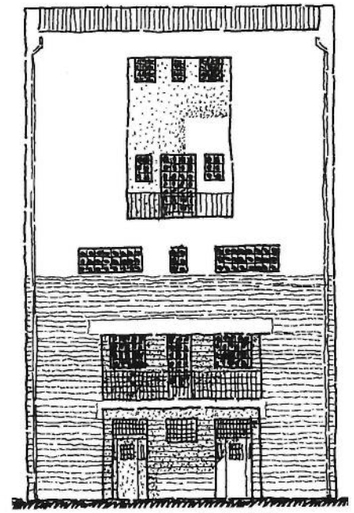
BILATERAL SYMMETRY

Most classical compositions are symmetrical, that is to say, the left side of the building is a mirror image of the right. Bilateral symmetry is the most obvious and probably the most effective form of visual order. It proclaims permanence and immutability. Symmetry in architecture sends a powerful message because we are attuned to the symmetry of our bodies. Without symmetry, we would experience difficulties maintaining our equilibrium. Symmetry is a sign of health, or at least of normalcy. True, no one is perfectly symmetrical, and we expect to see slight variations between one half and the other, in buildings as well as in people.

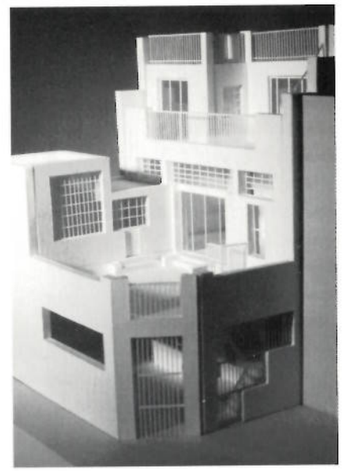
The plane that divides a composition is, of course, an abstraction. It is usually referred to as the *axis of symmetry* because it is represented as a line on a plan or an elevation. The unique nature of the axis is recognized in the special dash-dot line used on construction drawings. The axis is the most important line in a design because it structures and organizes the whole. Although it does not have a physical reality and therefore is invisible, the axis is the backbone of a design. It plays a paradoxical role, comparable to that of the conductor of an orchestra; the only silent person on the stage, he is the most important musician there.

Symmetry is a visual necessity, evidence that architectural form makes its own demands. On the interior, the plan of one side of a building need not reflect the other. Variations are often required by functional or site pressures, but they must be concealed by a symmetrical facade. Such an assertion contradicts the modernist dictum of the 1930s that required that the building envelope faithfully reflect the interior. The early Viennese modernist Adolf Loos continued to adhere to the tradition of symmetrical facades, behind which he wanted to be free to organize the volumes as he saw fit. That freedom was clear on the rear elevation, which he felt could be relaxed (figs. 1.1, 1.2). He referred to this design approach as *Raumplan*, or plan of volumes.

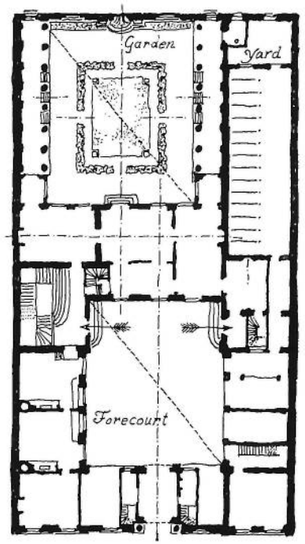
Classical architects have found skillful ways to bend or shift axes of symmetry gracefully. "French hôtel" is the name given to a large urban establishment that, in the past, combined the functions of a residence with those of an administrative, financial, and political center for a rich and powerful family. The presence of such a complex was clearly advertised on the street side, often with a monumental porte cochere carrying the coat of arms of the family. This was placed in the middle of a forbidding wall enclosing a forecourt and framed by a pair of identical pavilions or the extremities of wings. Although there were other design solutions, this particular symmetrical design was extremely successful and was the model for many variations over a period of three hundred years. At the Hôtel d'Hallwyl in Paris, the eighteenth-century architect Claude Nicolas Ledoux was faced with a regular but small site (fig. 1.3). Convention required that the house stand between forecourt and garden, and he managed to give both a reasonable size and a



1.1. House for Tristan Tzara, Paris, 1930. Adolf Loos. Street facade.



1.2. House for Tristan Tzara. Rear elevation.



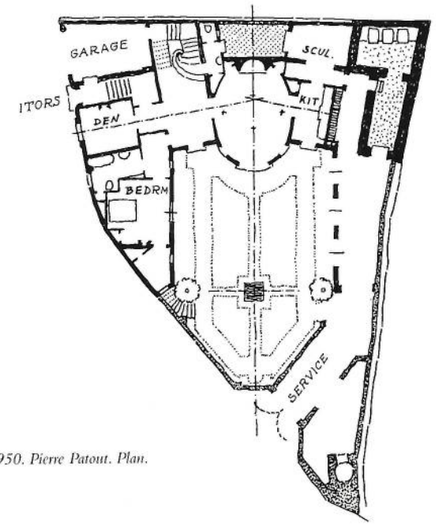
1.3. Hotel d'Hallwyl, Rue Michel-le-Comte, Paris, 1766. Claude Nicolas Ledoux.

1.4. Hotel d'Hallwyl. Street facade.

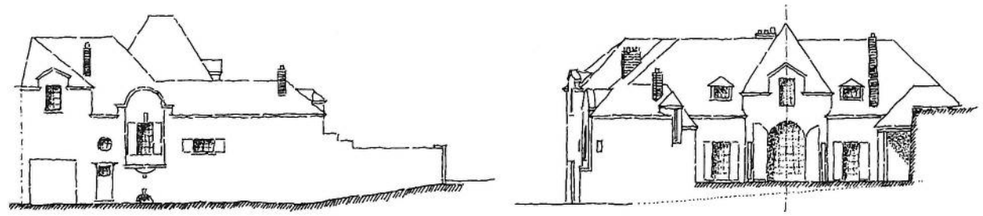
regular shape. The main difficulty was accommodating service buildings that were twice as large as the house. Ledoux solved the problem by extending the stables—for fifteen horses—along the side of the garden in back. This meant the axis of symmetry that controlled the street facade and the forecourt had to be shifted laterally so that the rear facade would appear symmetrical from the garden as well. Visitors enter the house in the rear corners of the courtyard and reach the center from the sides. They are oblivious to the fact that the axis of symmetry of the entire design is dislocated (fig. 1.4).

Fitting a classical—that is a harmonious and symmetrical—design in a small and wildly irregular site was brilliantly accomplished in the Loire Valley area by the French architect Pierre Patout in the early 1950s. Party walls make up two sides of the triangular site and the third side borders a curving street with a substantial slope. The main axis coincides with the longest possible vista within the site. The two main spaces of the composition are the living room and the small formal garden; they are lined up on the axis, which originates in the hearth inside and terminates at a fountain outside. The cross-axis, bent to make regular spaces possible in other rooms, intersects the main axis in the oval living room. Nearly symmetrical wings frame the formal garden, and the tall roof over the living room gives stability to the composition (figs. 1.5–1.8).

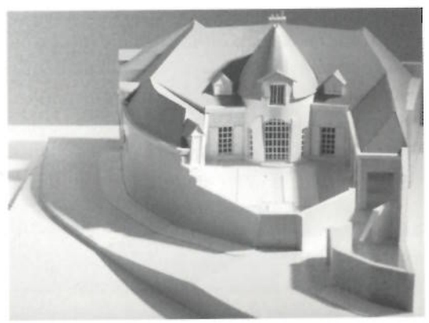
In classical architecture, one expects to find an opening at the center of the main facade. This was true of ancient Greek temples, where front and back had an uneven number of bays framed by an even number of columns. To make this intention perfectly clear, porticos along the sides of the building have a column at the center that precludes a door. In Paestum, for example, the Temple of Ceres (fig. 1.9) has six columns in the front and thirteen on the side. A rare exception is the so-called basilica with nine columns in the front and eighteen on the side (fig. 1.10). It is now believed



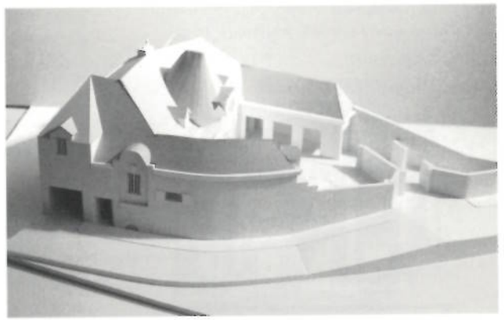
1.5. House in western France, c. 1950. Pierre Patout. Plan.



1.6. House in western France. Elevations.

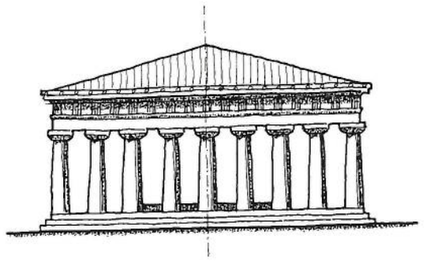


1.7. House in western France. Model showing the garden facade.



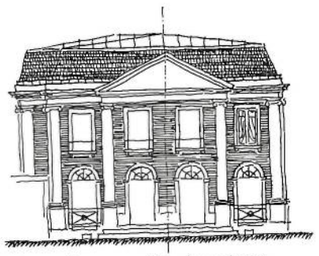
1.8. House in western France. Model showing the street wall.

1.9. Temple of Ceres, Paestum, c. 500 B.C.



1.10. Basilica, Paestum, c. 500 B.C. Reconstitution by Henri Labrouste.

1.11. Federal house, Fayetteville, New York, c. 1830.



1.12. House in Sceaux, near Paris, date unknown.

that this temple was dedicated to both Zeus and Hera, two deities of nearly equal status, which explains the division right on the main axis.

The preference for a door on center certainly reflects anthropomorphism. Buildings that do not follow the rule are somewhat unsatisfactory, regardless of the other qualities they may possess. Consider a charming house in Fayetteville, New York, with a facade divided in two bays by a central pier (fig. 1.11). Another house at Sceaux, near Paris, boasts classical features, among which is a pediment (fig. 1.12). There are two bays under the pediment, where we would expect to see three. A pediment is essentially a ceremonial embrace, a way to gather elements together to form a unit. In these two houses, that unity is destroyed by a solid piece of masonry in the middle, which splits the composition.

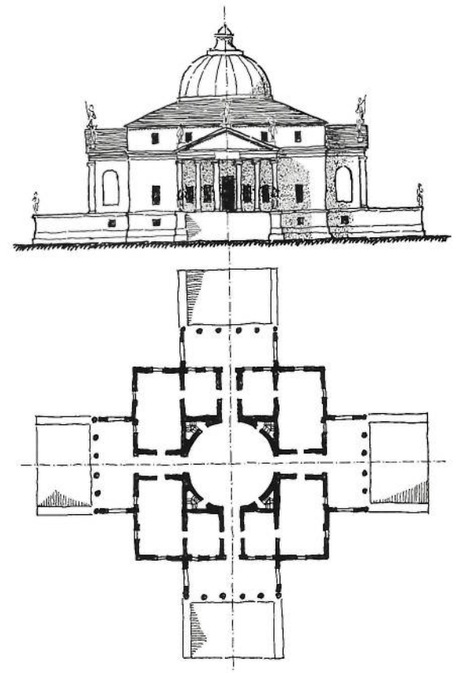
ANTHROPOMORPHISM

Most classical buildings present a front, a back, and two sides to the world, but only the front and the back are symmetrical. If the facade you are looking at is not symmetrical, you are probably looking at a side. There are exceptions to this rule, of course. One of the most notable is Palladio's Villa Rotonda, a design viewed with veneration by most architects (fig. 1.13). There, the two perpendicular axes of symmetry are identical and so are the four facades. In this iconic design, Palladio's main objective was formal perfection, which he achieved through the use of square and circle, centered on a vertical axis. In his opinion, neither site conditions, functional demands, nor any other factor required that one facade be different from the other three.

In large compositions, symmetry is needed to balance lateral or secondary facades, but at the royal palace of Versailles, there simply is no lateral facade. The cross axis is located *outside*, and parallel to, the facade of the central block overlooking the park. The axis stretches out north and south

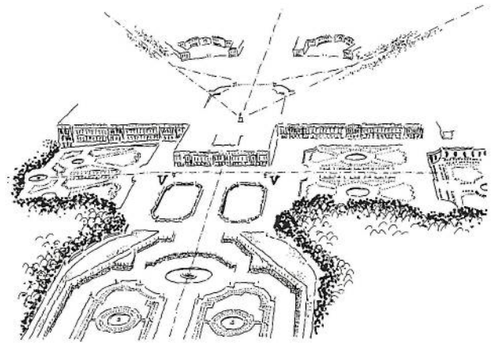
from a large terrace in the middle, soberly defined by a few steps and two large vases marking the corners (fig. 1.14). That axis forms the backbone of two large gardens, the winter garden on the north and the summer garden on the south (fig. 1.15). This strategy unites the building and garden into a single composition.

The "front" of a building is often defined as the side with the main entrance. This makes sense in public buildings, but it is not necessarily the case in residential architecture, where the public front may be more guarded than the private side overlooking the garden. Even in a palace the size of Versailles, the main facade is unquestionably that facing the royal gardens. Although symbolically important and very grand, the city side is more severe. Again anthropomorphism should be our guide to understanding the classical message: In the human body, the face is clearly distinguished by the location of the eyes and other sensors. Similarly in buildings, the front should be where there are more windows, or "wind-eyes" as they used to be called. It is therefore natural to accept the fact that many buildings, public or private, are entered through the back.

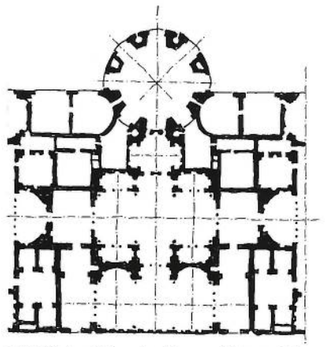


1.13. Villa Rotonda, near Vicenza, 1566. Andrea Palladio. Plan and elevation.

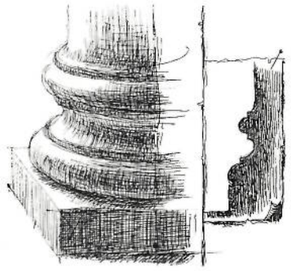
1.14. Royal palace at Versailles, begun 1661. Louis Le Vau and J. H. Mansart. The cross-axis of the vast composition is marked by two large vases at the corners of the west terrace.



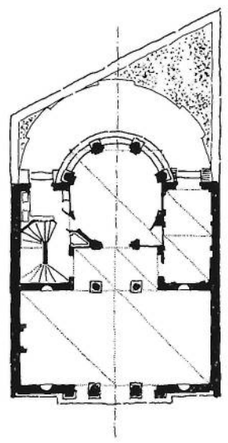
1.15. Royal palace at Versailles. Bird's-eye view. The cross-axis stretches from the north garden on the left to the south garden on the right. The vases are marked "V."



1.16. Baths of Caracalla, Rome, c. 215 A.D. Plan.



1.17. Palazzo Chiericati, Vicenza, 1551–57. Andrea Palladio. Attic base in the courtyard.



1.18. Town house, Boulogne sur Seine, 1933. Emilio Terry. The main floor is entirely derived from squares.

CLEAR AND SIMPLE GEOMETRY

According to Ledoux, "The circle and the square are the letters of the alphabet designers use in the fabric of their best works." Squares and circles are, with the triangle, the easiest forms to identify; they are the least ambiguous. They are perfect in their regularity. That is why they are the most commonly used forms in classical buildings. In the huge plans of Roman baths, there are rectangular rooms—inevitably derived from the square—some of which terminate in a semicircular niche called an exedra (fig. 1.16). The small circles that punctuate the plan represent columns. At the other extreme of the scale, the profiles of classical moldings are made up of segments of circles alternating with straight lines, either vertical or horizontal. Column shafts are cylindrical and, in the Attic base, which is the most frequently used design, so are the *fillets* that occur three times. In elevation and in section, both shafts and fillets appear on drawings as straight lines. The *torus*, which occurs twice in the base, and the single *scotia* in between, are drawn as segments of circles (fig. 1.17). From the bottom up, the sequence is a torus, a fillet, a scotia, a fillet, another torus, and a third fillet.

Classical openings are based on the square. In a typical door or window, the width of the opening is half the height. Why a double square? Because it is the easiest rectangle to identify; even an untrained eye will see that it is made of two squares, one above the other. Classical architecture favors the vertical over the horizontal because, as the French architect Auguste Perret put it, "A vertical window is a frame for a human being." The ratio 1 : 2 is ubiquitous. A case in point is the enormous door of the Pantheon in Rome. In large public buildings such as the Louvre in Paris, where openings must be proportionate to the size of palatial rooms, the height of windows is often increased to three or four times their width. It is neither practical nor necessary to increase the width of windows.

In contrast to the classical window, the horizontal window advocated by Le Corbusier does not do much to dignify human beings. It is the outcome of the "free facade" ideology, essentially derived from the spanning capabilities of reinforced concrete. Referred to as a "strip window," the horizontal window does not take into consideration the importance of people in the built environment. Nor does it recognize the wall as a substantial element.

Squares and circles fit into one another harmoniously, that is, in an easy, natural way. A circle can either be tangent to the sides of a square or intersect the four corners. An equilateral triangle also fits in a circle, and a circle fits in an equilateral triangle, but the square and the triangle are incompatible. When the square and the circle must be modified, the circle either becomes a hexagon or an octagon, and the square also can turn into an octagon. As restricted as these operations appear, they open up an immense range of formal and spatial configurations. Above all, a classical architect does not want to arbitrarily modify, truncate, warp, or otherwise mutilate a pure shape. Geometric figures must be handled with consideration.

The respect for clear and simple forms and their relationship with one another is expressed by following simple rules. Circles and squares normally do not overlap or jostle one another for supremacy; one could say that they like to live side by side in peace. In plan, an axis of symmetry is the backbone of the composition involving a series of varied spaces, corresponding to a straight sight line through a series of openings, informing the visitor of the spatial sequence ahead.

A small town house built in 1933 by Emilio Terry in Boulogne-sur-Seine is a fine exercise in geometry applied to classical planning (fig. 1.18). The plan is based on a series of squares and double squares related to one another in a straightforward way. The main block of the town house is approximately square in plan. Half is occupied by the drawing room, which is therefore made of two smaller squares. The dining room would almost fit in half the drawing room; its shape is a slightly elongated circle. The little study on the side, also a double square, would fit four times in the living room. Even the small, columniated hallway at the center is in the proportion 1 : 2. The hallway plays an essential part in the monumental *enfilade*, or series of openings on axis, and resolves the circulation efficiently.

1.19. Louis XVI Chapel, Boulevard Haussmann, Paris, 1815–26. Pierre Fontaine.

Translated into the third dimension, the squares of a plan become cubes, and the circles become cylinders or hemispheres. It is well known that the shapes of Palladio's rooms are combinations of cubes and half-cubes. The shaft of a classical column is a vertical cylinder, and the most common vault in classical architecture is the barrel vault, a half-cylinder. Classical domes usually are half-spheres or approximations. The Louis XVI chapel in Paris, by Pierre Fontaine, also is an elegant exercise in pure geometry (fig. 1.19). It consists essentially of a cubic block surmounted by a hemisphere. There are three projections on the sides and on the back of the main block, all in the shape of a half-cylinder capped by a quarter-sphere. The front facade is distinguished by a single pediment—an isosceles triangle—that is supported by four Doric columns

1.20. Louis XVI Chapel. Interior.

(cylinders). The entablature runs around the entire building, holding the shapes together. The geometric purity of the design creates a serene and powerful effect. The same disciplined simplicity characterizes the interior (fig. 1.20).

DEFINED SPACE

What distinguishes classical architecture from other form-languages is not so much the shape or the size of its rooms but the fact that there are rooms at all. Twentieth-century architects intended to blur the definition of space with their buildings. Frank Lloyd Wright made it one of his main goals to "destroy the box," as he put it, and he was quite good at it. People now realize again that there is something satisfactory in being inside a well-defined space. To limit the formal vocabulary of architects to the two basic shapes of square and circle may appear to restrict their freedom. In fact, rules do not constrain; they liberate as long as they are properly understood and sensibly applied. No one would doubt the expressive power of poetry, yet it is the more exacting rules that distinguish poetry from prose.

Twentieth-century architects have used the terms "free plan" and "open plan" to characterize their designs. This implies that other types of planning must be "restrained" or "closed." But good planning, open or not, must follow some rules. Undisciplined planning is not "free"; it is arbitrary, confusing, capricious, or disorderly.

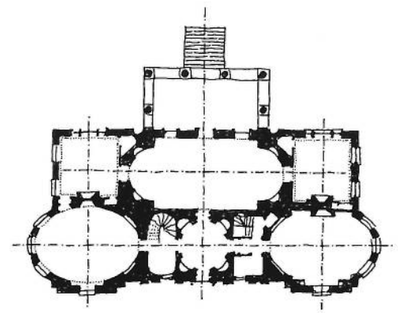
In classical thinking, the basic spatial unit is called a room, but it is not necessarily found inside a building. The term must be understood broadly as a well-defined portion of space, indoors or outdoors. For such a room to exist, it must be defined by firm boundaries and openings must be few in number and moderate in size. The significance of doors or windows does not increase with their size or number. The fewer the openings, the more important they become; too many openings weaken the sense of enclosure and the clear definition of space.

Classical rooms are regular spaces, also called figural spaces. Regular spaces are sometimes obtained by carving them out of less important spaces around them, called residual or ancillary spaces. The variety of classical rooms is inexhaustible. They may be large or small, simple or complex, polygonal or circular in plan, ornate or plain. They may be capped by flat ceilings, vaults of varied shapes, or domes. The plan of Woodlands in Philadelphia (fig. 1.21) includes squares, circles, rectangles, ovals, and rooms that combine rectangular and circular parts. A cohesive design is achieved with axes of symmetry and the visual device of enfilade.

Because of their size, outdoor rooms can accept a solid object at their center, especially in urban contexts. Obelisks, monumental statues, and fountains are the most commonly used markers. In a park, a pool or a lawn is a restful and welcome surface. A pool has the additional merit of reflecting the sky, and this is enough to create the impression of a vault.

The boundaries of outdoor rooms may take forms other than walls, but they must be clear enough to define a space and strong enough to contain it. The influential eighteenth-century architectural theorist Abbé Laugier suggested that the basic strategy should be similar in an urban or a rural context: outdoor rooms are carved out of the city fabric or out of the forest. In one of the famous views of the ideal city attributed to the school of Piero della Francesca, an urban square is defined by a substantial layering of the ground plane and a two-dimensional pattern, aided by five objects: a fountain in the middle and columns marking the four corners of the space (fig. 1.22). The diminutive fountain does not encroach on the open space and simply acts as a symbolic marker. The columns are very tall and they seem to enclose the space in a virtual cube. The urban fabric consists of a variety of buildings, the most significant of which is a triumphal arch on axis with the outdoor room.

The Pont Alexandre III in Paris is one of the rare bridges designed as an outdoor room (fig. 1.23). About 300 feet long and 75 feet wide, it is

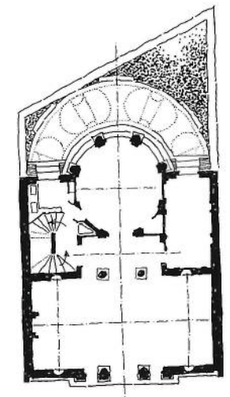


1.21. Woodlands, Philadelphia, completed 1789.

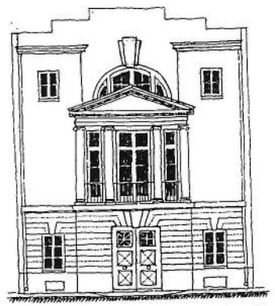
1.22. Ideal City, from a painting of the school of Piero della Francesca, c. 1480.

1.23. Pont Alexandre III, Paris, 1897–1900. L.J Résal, chief engineer. J. H. Mansart's golden dome can be seen in the background.

1.24. Dormer window in a mill in the Anjou region of France.



1.25. Town house, Boulogne sur Seine. The main floor plan is coordinated by lines of vision and symmetry.



1.26. Town house, Boulogne sur Seine. Street facade.

part of an enfilade of grand urban spaces terminating in the magnificent dome of Jules Hardouin Mansart's Invalides chapel. The bridge was designed by a team of architects and engineers working in collaboration. To allow the eye to embrace the entire perspective over the bridge, the surface is absolutely horizontal, challenging the engineers to create a daringly low arch. The monumental pylons that mark the corners are both structural and emblematic, acting as a grand gateway to the gigantic square in front of the Hôtel des Invalides.

JUXTAPOSITION OF DISCRETE FORMS

In classical architecture, every component is complete in itself. Forms are sharply defined, and so are the spaces between them. Boundaries are clearly outlined and ambiguity and overlap systematically avoided. In a village in western France, a stone dormer on an old mill has a perfect square opening surmounted by a triangular pediment (fig. 1.24). Between them, a third element acts as a mediator; it is a rectangle taking the place of the conventional frieze. The simple moldings delineating the main components are in character with the bold geometry of the overall design.

Every classical space is a complete world. In a classical building, you never have the disconcerting impression of having a foot in one room and the other in another. Knowing exactly where you are contributes to self-awareness. It helps you become aware of who you are at the moment. This does not mean that the transition between spaces is abrupt. The enfilade, for example, is an arrangement that makes clear where you are going and where you are coming from.

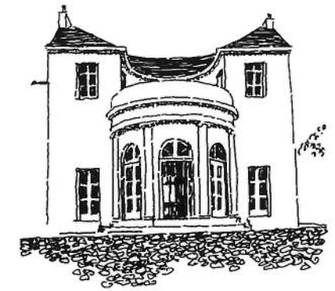
Let us turn again to Emilio Terry's design for a town house (fig. 1.25). From the entrance at street level, stairs lead up to a small vestibule at

the heart of the *piano nobile*, or principal story, of the house. There the three major rooms are revealed in enfilade along the main axis of symmetry. Secondary axes and counter axes hold the composition together by pointing out symmetrical relationships. The main axis continues past the oval dining room, which opens on the garden-terrace built over the garage and reaches out to the woodland of the Bois de Boulogne.

The street facade (fig. 1.26) is as clearly organized as the plan. The main openings are centered, one on each level and each with a different form, appropriate to its function and to its location. While the main door to the house is suitably plain, the large opening on the piano nobile is given prominence with a small temple front. The third and last of the main openings, on the third level, is a so-called thermal window. Four smaller, rectangular windows mark each corner of the rectangular facade. The rustication, or exaggerated stonework, of the ground floor gives a strong base to the temple front.

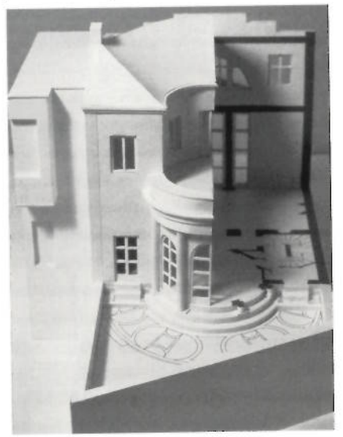
The garden facade, more private, is also freer (fig. 1.27). The vertical surface of the wall is maintained and reaffirmed by rectangular windows in the four corners, as in the design of the street facade. But three-dimensional geometry takes over in the middle section, where the oval shape of the dining room projects beyond the plane of the wall. As if to compensate, the upper part of the same wall is recessed to coincide with the inner enclosure of the dining room. In other words, the wall plane is split into two curved surfaces, convex below and concave above. The cylindrical form of the dining room enriches the wall and transforms it completely, but it does not annihilate it.

The juxtaposition of discrete forms in the plan of the house is the guiding principle of the three-dimensional development of the design (figs. 1.28, 1.29). It was particularly striking in the back, which has been completely obscured by renovation. Fortunately, the street facade is intact.



1.27. Town house, Boulogne sur Seine. Garden side, now destroyed.

1.28. Town house, Boulogne sur Seine. Half-model.

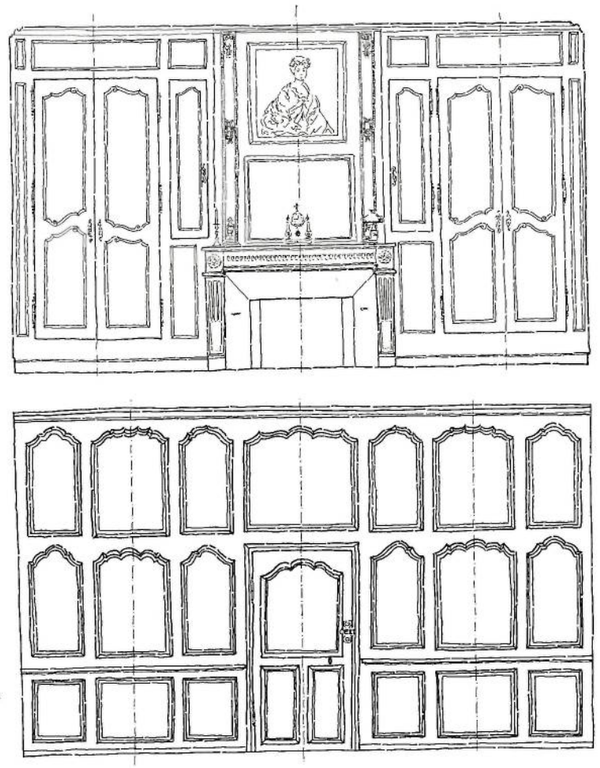


1.29. Town house, Boulogne sur Seine. Half-model.

EMPHASIS ON CENTER, CORNERS, AND SIDES

A room defines a portion of space, and that space must be celebrated. The essence of the room is its emptiness. Since space by itself is invisible, it can only receive visual significance from the thoughtful design of the enclosure. In a well-designed room, homogeneity is achieved when opposite walls share the same basic articulation. They reflect one another and they share axes of symmetry. This is how all four walls address themselves to the center of the room. Two paneled walls (figs. 1.30, 1.31) present enough similarities for visual comfort, yet close examination reveals that they were not built at the same time. Both walls are divided in three parts, and the center bays are occupied by significant elements facing one another: a door on one side and a fireplace on the other. Unity and balance are thus achieved.

Although Frank Lloyd Wright always denied any influence on his work, he did agree with the Chinese philosopher Lao-Tse that the reality of a room consists not in its walls but in the space within. The success of Wright's best early rooms lies precisely in the fact that there is no furniture in the middle. Exception was made for the dining table, which plays an important social and ceremonial role and finds its natural place in the center of the room. To make sure no one moved the



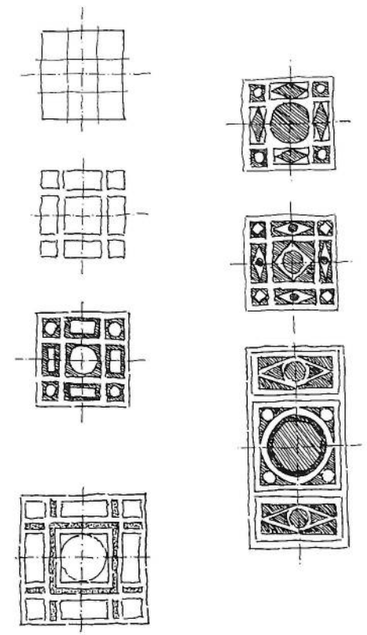
1.30, 1.31. Two opposite walls in an eighteenth-century room in western France.

table, Wright had it screwed to the floor. This does not contradict the notion of clearly defined space since the diners, facing one another across the table, form a sort of enclosure. At about the same time, Charles Rennie Mackintosh demonstrated brilliantly the power of chairs with very tall backs to create the impression of a mini-room within a larger one, best seen in his well-known designs for Mrs. Cranston's tea rooms in Glasgow.

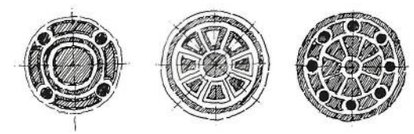
To achieve spatial unity, floor and ceiling should also reflect each other, with the difference that the ceiling can and should be three-dimensional above, while the floor must be absolutely flat. Even optical illusions of relief make walking uncomfortable.

While the center of a room should be open, the corners should be solid. It is in their nature to be so, as is easily demonstrated by drawing a rectangle. All that is necessary to create the figure are the four points marking the corners. The lines connecting them are secondary. In a rectangular room as well as in the four-point diagram, the sides can be interpreted as "soft" and the corners as "hard." For this reason, openings naturally belong in the sides, not in the corners.

Although we tend to pay more attention to the decoration of walls and ceilings, especially when we are seated, the articulation of a floor can either help with the coherence of a room or contribute to its disintegration. Consider the popular pattern that architects call the "nine-square diagram" (fig. 1.32). If the size of the four squares in the corners is reduced, the square in the middle grows larger and the four figures along the sides become long and narrow rectangles. The center square dominates by its size and accentuates the primacy of space; the small squares focus on the four corners of the room and add density to them; finally, the long and narrow rectangles along the sides contribute to the framing of the central area. Each of the nine quadrangles makes a special contribution to the shape of the room. This diagram works with almost any rectangular room, providing a wealth



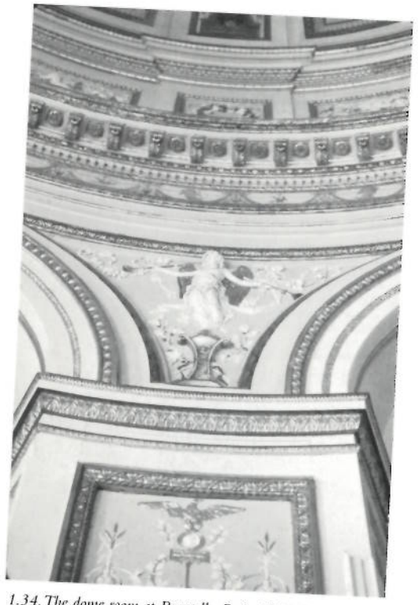
1.32. The nine-square diagram used in floor articulation.



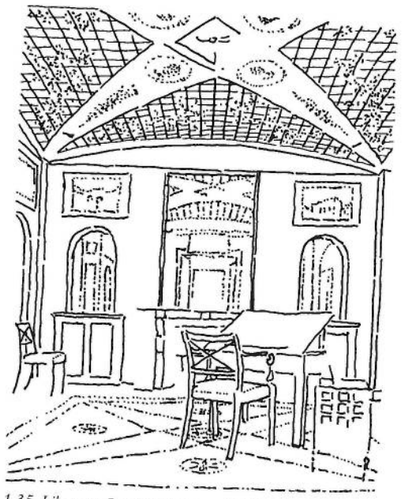
1.33. Floor patterns in circular rooms.

of variations. Once again, care must be taken to avoid overlaps and any impression of depth. The varied shapes of the floor design must be juxtaposed, as in a large mosaic, and they should organize the floor area hierarchically

Floor articulation in circular rooms should be based on the essential geometry of a circle, which consists of concentric circles and straight lines radiating from the center (fig. 1.33). Although circles are not directional, buildings usually are, and perpendicular axes of symmetry may be nec-



1.34. The dome room at Bagatelle, Paris, 1775. François Joseph Bélanger.



1.35. Library at Pitzhanger Manor, Middlesex, 1802. Sir John Soane.

essary to anchor circular rooms and orient them consistently with the overall composition. This is why circular rooms are generally divided in multiples of four: eight, twelve, or sixteen sides.

To confirm the unity of a circular space, the wall should carry a simple, repetitive subdivision such as A-A-A or A-B-A-B. As in rectangular rooms, opposite walls should reflect one another (fig. 1.34). They all frame the same space, and the eye should meet a similar design when looking from one side of the room to the other. Discrepancies in the articulation of opposite walls are confusing and disorienting.

It does not matter much how closely the division of the floor matches that of the walls, since the roles of walls and floors are very different. But it is important—if we are to perceive a clear spatial identity in a room—that the articulation of the floor reflect the articulation of the ceiling. The library at Pitshanger Manor, Sir John Soane's house in Middlesex, demonstrates the level of unity achieved when floor and ceiling carry closely related designs (fig. 1.35).

LIMITED INVENTORY OF PARTS

The vocabulary of the classical language is made of specific, distinct, and easily recognizable elements; that is the main characteristic of any style. While there is a tendency to identify styles with earlier periods of history and to dismiss them as irrelevant to our time, the classical has the potential to express contemporary sensibilities and to satisfy today's needs.

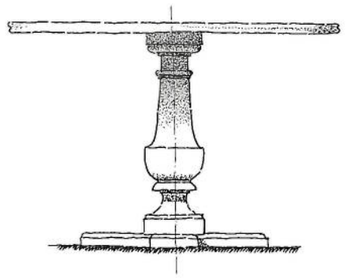
Each element of the classical vocabulary is so sharply defined and has such a strong individuality that it cannot be confused with another. All have specific roles to play in a composition. The column, with its distinctive base and capital, is the most important. There are several variations on the design of columns, each called an *order*, in recognition of their principal use as ordering devices. Often acting as structural supports, columns have other functions in design. They are as often used to express structure as to actually carry loads. Even more often they simply articulate a bay system, *ordonnance* in French, an untranslatable word that means the general formal *parti*, or organization, of a facade. Sometimes columns are used in pairs to frame an opening and emphasize its importance.

Columns can be freestanding, *engaged* (partially buried), in a wall, or flattened against a wall to form pilasters. They are wonderful elements, refined to perfection over centuries by gifted architects who devoted considerable attention to them. It is no wonder that fine columns look as if they had been caressed by lovers' hands! Indeed, columns are a metaphor for human beings. They are endowed with the elegance, the grace, and the dignity we all wish we had. Columns are a subtle combination of geometric and organic forms. The main part, the shaft, is basically a cylinder, but it never is just that. It is subtly modified by a delicate swelling called *entasis*. Even more than base and capital, entasis is the distinctive mark of a classical column. Without it, the shaft would be an abstract form, an impersonal rod, or an inanimate cylinder.

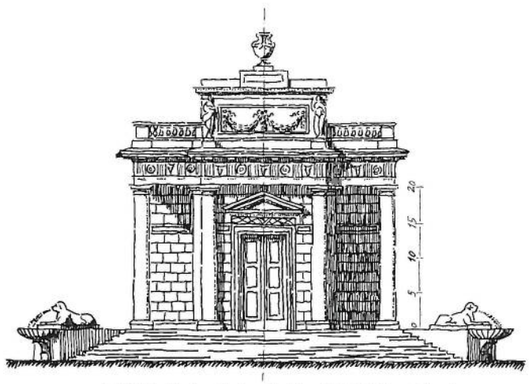
Some writers have attempted to assign a specific and therefore limited personality to each order, the Doric, the Ionic, and the Corinthian, in particular. This approach, carried too far, is probably a mistake. To remain a metaphor, a thing must remain in the realm of generalities. It is where and how the orders are employed, and to what purpose, that they contribute to the character of a design. The most that can be said is that it seemed reasonable for Thomas Jefferson to use the sober Doric order (fig. 1.36) at Monticello, his house in Virginia, and nobody will dispute the selection of the Corinthian (fig. 1.37) for the magnificent Pantheon in Rome. But there are also many successful designs for Doric temples, Ionic residences, and Corinthian garden pavilions. On the other hand, it would be difficult to sanction the Ionic order on a factory or the Corinthian on a prison.

1.36. Doric order at Monticello, Charlottesville, Virginia, 1777–1809. Thomas Jefferson.

1.37. Corinthian order at the Pantheon in Rome.



1.38. Stone table, c. 1950. Jean-Charles Moreux.



1.39. The Marino Casino. Dublin, 1759. William Chambers.

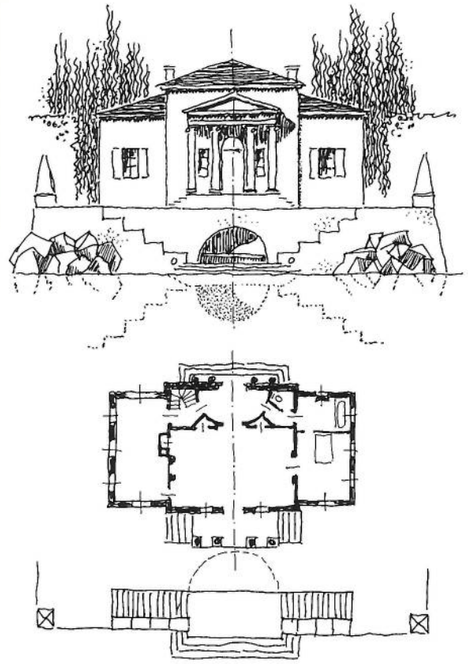
A column may be used alone as a monument or a marker in a park or a city, but typically columns are part of a colonnade. Columns may be raised on pedestals, which have three parts as well: a *base*, a *die*, and a *cap*. The complete order includes entablature and pedestal, thus reiterating the "rule of three." Columns may also stand on plain dice, cubic blocks without moldings, which should never be taller than they are wide.

Surprising as it may seem, only two or three more elements, such as balustrades (fig. 1.38) or openings in walls, are needed to complete the basic vocabulary of the classical. Notwithstanding a widespread belief to the contrary, classical elements are flexible and versatile, and they play different roles in different places in buildings. The frame of a door can adopt the profile of an *architrave*, or a chimney may be based on the design of a pedestal. So may a *stylobate*, the base of an entire building, in which case the pedestal is stretched to the required length. Indoors, the much-used *dado,* or wainscot, is an interpretation of the stylobate. And the cornice, a transitional member between wall and ceiling, often is borrowed from the upper part of an entablature.

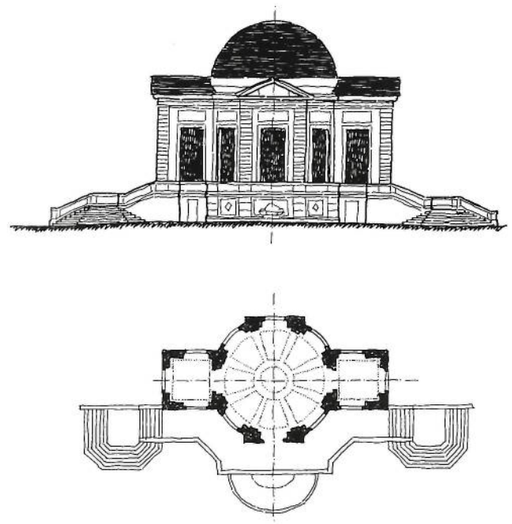
INHERENT FORMAL HIERARCHIES

In design, hierarchy means the ordering of parts according to their importance. Rooms that are important, whether for functional reasons or representational purposes, belong to the center and to the front of a building. Secondary functions are housed in the wings, i.e., the lateral parts of the building, in the back, or in the basement. This instinctive classification results from the fact that the important organs are found in the center and towards the top of the human body. Observe how the eighteenth-century English architect William Chambers made the central portion of the Marino Casino in Dublin (fig. 1.39) more prominent than the sides, while a running Doric order maintains the unity of a deceptively small building. Begun as a one-room garden building, it ended up as a three-story residence with all the necessary support spaces.

Classical designs also signify status by raising important rooms above the ground plane. This tendency derives from the hierarchy inherent in the metaphorical use of the terms "high" and "low." The expressions "looking up" and "looking down" are not idle. Nor is the term piano nobile. On the north shore of Lake Geneva,



1.40. Bath house, 1922. Emilio Terry.

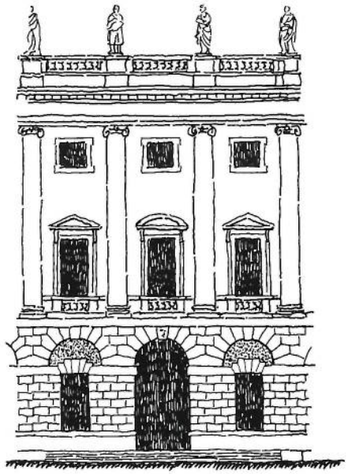


1.41. Pavillon de l'Aurore, Sceaux, c. 1672. Claude Perrault or Antoine Le Pautre.

Emilio Terry raised a bathhouse upon a massive podium to endow a simple pleasure building with dignity (fig. 1.40).

Another way to enhance important rooms is to give them regular geometric forms. They are then said to be figural spaces. Minor functions are squeezed in the oddly shaped residual spaces found around or between figural spaces. Under Louis XIV, prime minister Colbert ran France from a domed circular room framed by two offices for his aides. Although regular in shape, their size and position indicate their secondary status (fig. 1.41).

Classical columns themselves have a built-in hierarchy that suggests a kinship with the organic world. The base of a column is plainer than the capital, and the shaft itself is wider at the bottom than it is at the top. When orders are superposed, the more slender are placed above sturdier ones. Starting at the bottom, the sequence will be Doric, Ionic, and Corinthian. Structural logic is always observed, and the Ionic is never seen under the Doric, or the Corinthian under the Ionic. In spite of these restrictions, a great deal of flexibility is possible. For instance, a second Doric may be placed directly over a



1.42. Design for a palace, attributed to Colen Campbell.

1.43. Eighteenth-century facade, Place Dauphine, Paris, seen from the ground.

Doric, or a Corinthian over a Doric, without the mediation of an Ionic. A single order may also stand by itself on a plain base (fig. 1.42).

Hierarchy requires greater height for the public rooms on the piano nobile. This is the most important story, and it is the climax of a composition, but its location, level with the ground or elevated, is determined by a variety of factors. In most cases, additional stories are found above or below. Their height decreases progressively as they get farther away from the piano nobile. Seen from the ground, the physical reduction of the floor heights will be optically enhanced by perspective (fig. 1.43).

TRIPARTITE ORGANIZATION: THE RULE OF THREE

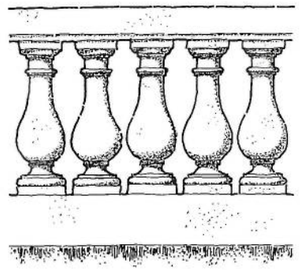
It is critical for a composition to have three parts: a beginning, a middle, and an end. This rule takes many forms, and it can be seen even in the elementary components of the classical language. A column begins with a base, continues with a shaft, and ends with a capital. It would be unnatural to begin the description of a column at the top. A building is constructed from the ground up; in this sense it can be compared with a growing plant. Louis Kahn, who was profoundly influenced by his Beaux-Arts training, made a strong case for the design process of any building to begin at the ground level and continue upwards.

Many other elements of the classical vocabulary are tripartite: the entablature, with architrave, frieze, and cornice; the pedestal, made of plinth, die and cornice; the balustrade, with a plinth, a row of balusters, and a handrail. Three distinct parts can even be identified in the individual baluster: base, shaft, and capital (fig. 1.44).

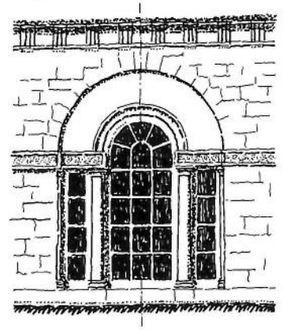
Laterally, the rule of three takes another form. As we have seen, symmetry postulates a middle and two sides, as in A-B-A. The Palladian window (fig. 1.45) is a particularly striking example.

Even in very large compositions which can be read as C-B-A-B-C, the A and C parts are usually more important than the B parts, which are often treated as links. In fact, these links may even be voids; if the A and C parts have enough in common to appear formally related, a physical connection is not necessary. In Robert Adam's Pulteney Bridge in Bath (fig. 1.46), two rows of shops facing each other are framed by customs offices at both ends. The middle shop is given a more monumental appearance than the others for no other reason than that the classical canon mandates a dominant center. The prominence of the end pavilions is motivated by a similar demand: the beginning and the end of a formal composition must be emphasized. Links are played down, so that the whole appears to be made of three strong parts connected by hyphens.

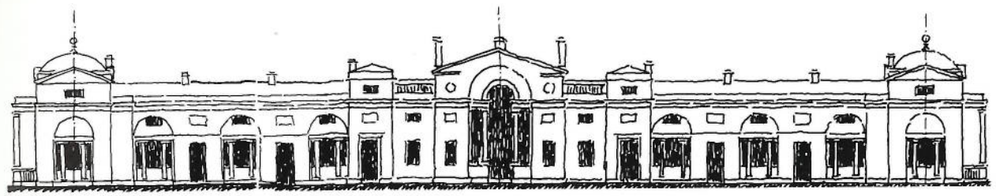
At the Couvent des Capucins in Paris (fig. 1.47), designed by Alexandre Théodore Brongniart, the room on the right is given as monumental a facade as the much larger church on the left for the sake of visual balance. The



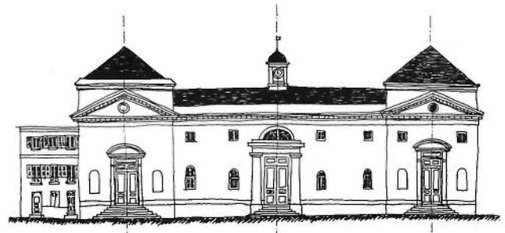
1.44. Eighteenth-century stone balustrade in Georges Gromort's house in Paris.



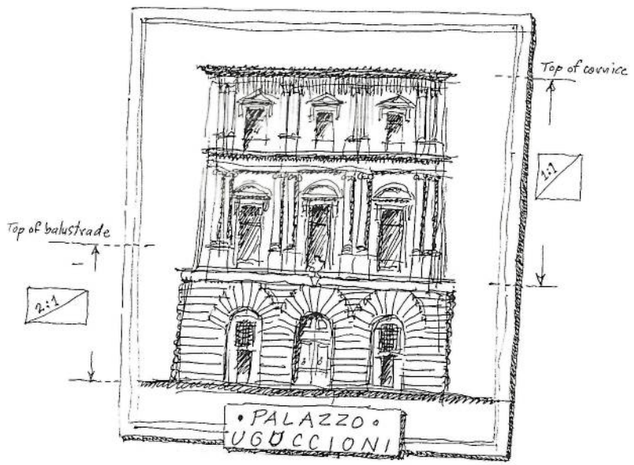
1.45. Eighteenth-century British adaptation of the Palladian window.



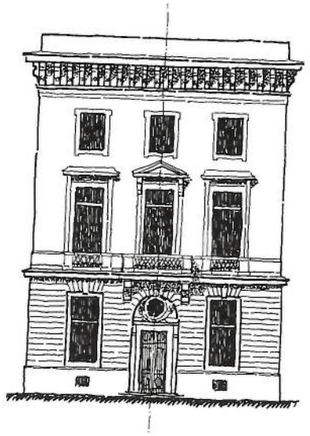
1.46. Pulteney Bridge, Bath, c. 1769. Robert Adam. Longitudinal section.



1.47. Former Couvent des Capucins, Paris, 1783. Alexandre-Théodore Brongniart.



1.48. Palazzo Uguccioni, Florence, c.1550. Attributed to Raphael.



1.49. Hôtel de la Monnaie, Paris, 1775. Jacques-Denis Antoine. One of the end pavilions of the lateral facade.

middle section is essentially a link between church and meeting room; it is a shallow structure that screens the courtyard. Nevertheless, the door in the middle dominates the composition, mainly because of its central location but also because it is much more ornate than the rest of the facade.

In these last two designs, the main door—or what looks like one—is placed right in the middle. The main entrance always is one of the most important elements of a building. Entering a building is, or should be, gaining access to a privileged place, and it should be celebrated. What better way is there than to give the place of honor to the main entrance?

One of the more satisfying classical archetypes is a facade that combines a horizontal division into three parts with a vertical layering of three tiers. The pattern is a vertical nine-square diagram with an opening in each square, as can be seen at Palazzo Uguccioni in Florence (fig. 1.48). Two hundred years later, a similar strategy was used at the Hôtel de la Monnaie in Paris (fig. 1.49). The major difference between the two designs is the presence of superimposed orders on the upper two stories of the palazzo.

The lateral division of a wide facade into three parts has greater presence when the central portion of the building is moved forward or backward. In a design schema that has rarely failed, a colonnade surmounted by a pediment gathers two stories in one gesture (fig. 1.50). This gives prominence to the center portion and makes possible a double reading of the three-tier concept. One reading is that of three clearly expressed stories; in another reading, there is the rusticated base and the entablature with the pediment at the top; between them is a large area encompassing two stories.

The "rule of three" is one of the canons that has made classical architecture so enduring. We sense in it a powerful metaphor for the three main phases of life itself.

REGULARITY

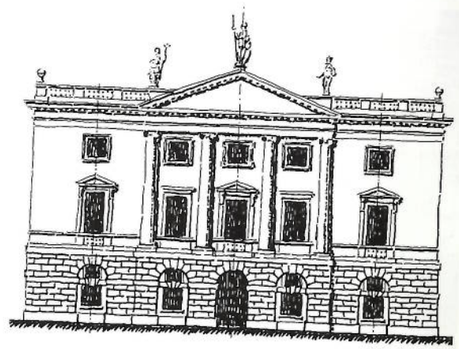
Environmental chaos is disquieting, and regular patterns in architecture are reassuring. What guidelines can help us to generate visual order? First we must realize that not everything in the world can be organized. That said, the elements to be organized should fit in a few categories; if they are too disparate, they will be difficult to sort out. A third principle is that, to be clear to the eye, ordering devices must be simple patterns or grids.

A grid for a plan should be more regular than a grid for a facade. The reason for that is based on experience: there are many more opportunities to see a facade than to visually apprehend the plan of a building or that of an urban area. When the plan fits into a simple grid, the mind grasps it more easily. The mental image we carry with us is like a map, which helps us find our way.

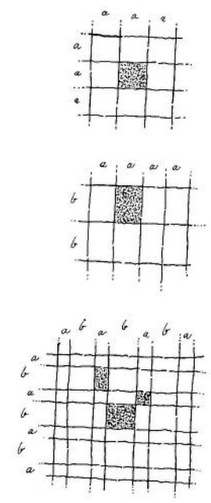
Appropriate plan grids (fig. 1.51) are made from squares [a x a] and rectangles [a x b]. Varied frameworks can be obtained by alternating [a] and [b] in two directions. One result is a plaid pattern, made of three different elements: a small square (a x a), a large square (b x b) and a rectangle (a x b).

Simple grids suitable for elevations (fig. 1.52) are obtained from a single horizontal module [a] or two alternating modules [a and b]. As a rule, vertical divisions can be equal or decrease in height as they move up from the main floor. The height of the ground floor must always be different from the others to acknowledge its unique position. A general design rule extrapolated from this case can be formulated very simply: different things must always *look* different from one another.

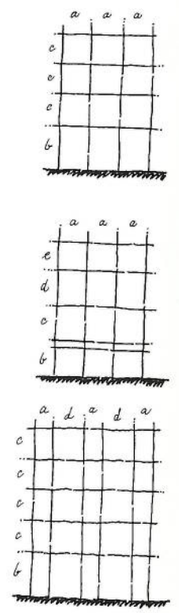
One of the earlier buildings endowed with extreme regularity was the Palazzo Strozzi (fig. 1.53), erected in Florence by Cosimo il Vecchio for his two sons at the very beginning of the Renaissance. Perfectly symmetrical in plan, sec-



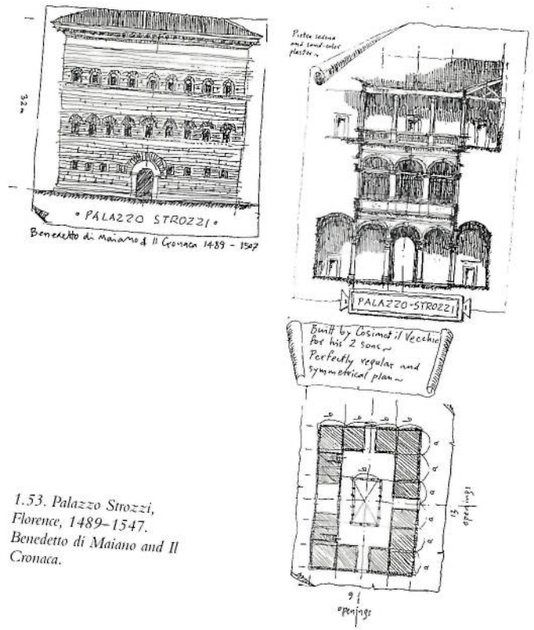
1.50. Project for the Bank of England, c. 1732. Theodore Jacobsen.



1.51. Simple grids used to organize plans.



1.52. Simple grids used to organize facades.



1.53. Palazzo Strozzi, Florence, 1489–1547. Benedetto di Maiano and Il Cronaca.

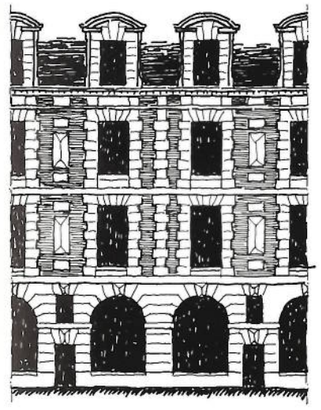
1.54. Court of honor, Hôtel des Invalides, Paris, 1671–76. Libéral Bruant.

tion, and elevation, the building exudes enormous power and serenity. Imagine the impression it must have made in the turbulent 1500s.

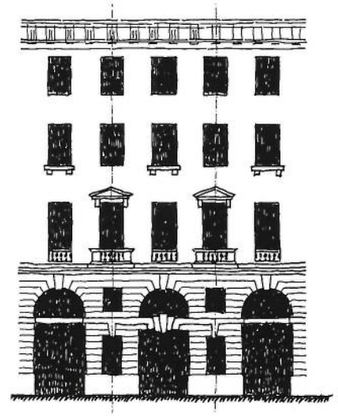
Visual unity cannot be achieved without a great deal of repetition in large architectural compositions. The court of honor at Hôtel des Invalides (fig. 1.54) measures 300 by 200 feet and is surrounded by two tiers of open galleries on all sides. Thousands could and still can watch parades and ceremonies from there in relative comfort. The austerity of the design is due less to its regularity than to the military nature of the program.

Regularity of a less severe character can be experienced in coordinated street designs such as those in Bath, London, and Paris, among other cities. Subtle variations repeated at regular intervals introduce rhythm and reduce the fatigue induced by monotony. In many cases, the ground floor is formed by arches flexible enough to accommodate one or two stories and to satisfy a variety of needs: shops, vehicular and pedestrian entrances without altering the unity of the wall (figs. 1.55, 1.56).

The regularity sought in classical architecture places strong demands on the architect, who must balance requirements of function, structure, and visual harmony. Sometimes the visual imperatives for symmetry and regularity require that a door or a window be placed on a facade where it is not needed. The conflict is then resolved by the addition of what is called, erroneously, a "false opening." A better term would be "metaphorical opening." On an ancillary building at the chateau in Cheverny, a blind arch is included to visually organize the elevation of a pavilion (fig. 1.57). Similarly, in a design for a stable (fig.1.58), the only necessary opening is surrounded by as many as eight non-functional openings. A two-dimensional representation of an animated and balanced facade seemed more satisfying than a blank wall with a single opening, whose asymmetrical position would have been disturbing.



1.55. Place Dauphine. Reconstitution of the facade.



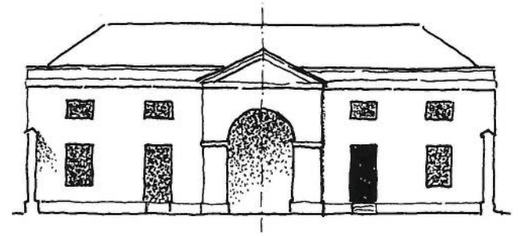
1.56. Eighteenth-century facade, Rue de Condé, Paris.

1.57. Outbuildings at Cheverny, probably built in the seventeenth century.

Another solution to the conflict between function and the need for regularity is to make an opening as unobtrusive as possible. "Invisible doors" are nowhere more common than in Florence, where, as an example, a door disguised as a pier is adjacent to another disguised as rusticated stone (fig. 1.59).

Blind windows and invisible doors are part of a larger issue, that of trompe-l'oeil, which early modernists regarded as an ethical issue. In spite of its name, trompe-l'oeil rarely fools the eye. Its purpose is not to create illusions but to induce a mood through allusions.

This discussion illustrates the strategies with which classical architecture ensures visual order. In the final analysis, regularity is one of the more effective ways to achieve peace and balance. It is essentially a rhythmical repetition of one or more elements, and its most common form is the arcade or the colonnade, which can assume any character, grand or modest, simple or complex, severe or friendly.



1.58. The only functional opening in this design is the door to the right of the central arch.

1.59. Town house in Florence with doors disguised as masonry, invisible when closed.