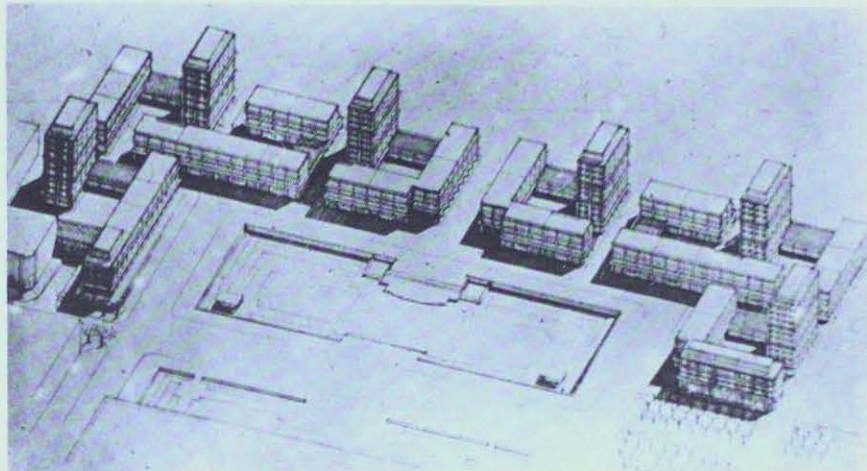


# STANDARDIZATION IN URBAN SPACE



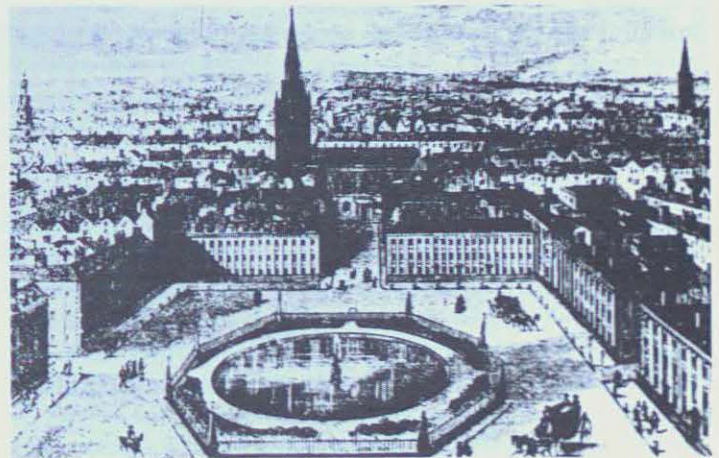
*Cité du Havre— City Hall Plaza*

*Reprinted from a paper delivered as the Preston Memorial Lecture at Cornell University, on February 14, 1978.*

Le Havre is the second largest port in France, at the mouth of the River Seine. After the occupation of France in 1940, the Germans used it as their major submarine base for attacking shipping in the Atlantic. For this reason, it was a major target for the allied air forces. The city was bombed 170 times, and the final bombing was an elaborate technique called "pattern bombing," in which waves of bombers went over the town and laid waste half a square mile of the center of the city. They didn't do any damage to the submarines; but they completely obliterated the whole core of the city.

In 1945 this devastation presented one of the major problems of urban reconstruction. The French government asked Auguste Perret, who was over 70 then, to take charge. He formed a team of about half a dozen of his former students to help, and between 1945 and 1947 they elaborated a plan which was based on a grid, with its intersections 21 feet apart. The intersections were to be the axes of the columns. What Perret was trying to do was create an urban environment of a uniform scale; and since the ground was very poor and needed pile foundations anyway, he reckoned that if the columns of the buildings were all spaced on this grid, a uniform scale would be achieved over the course of the years. It was obviously going to take many years to complete this scheme. It involved some very complicated legal manipulations. The old town had contained some areas that were very densely populated and others much less densely populated, so it was decided to disregard the existing medieval street pattern (which had been virtually obliterated) and design a new street pattern based on the grid. This street pattern had as its focus the new city hall with a plaza around it, and it is the area about that plaza and the principles involved that I want to discuss. These principles, as I understand them, are: what historical justification has one for believing that it is possible or desirable to create a plaza in which the structural elements are based on a standard grid? To what extent is this notion of a standard grid compatible with contemporary theories of construction?

Let us consider first an early drawing for the project for



*St. James Square, London*

St. James' Square in London, and compare it with what actually exists today. The drawing shows that it was originally thought of as being composed of standardized units. It was envisaged as being completely uniform and is an exact square on plan, about 150 yards by 150 yards. The original idea, which was quite clearly derived from French sources, was to have a uniform, harmonious environment in which housing units would be repeated the whole way around. What actually happened was that the various lots were sold to different people at different times, and these people built according to their individual tastes; sometimes even in different materials. It seems to me that these juxtaposed pictures show that there are four basic questions involved in all urban plazas which are created deliberately. Is standardized organization more desirable than the picturesque kind of building, in which there is no attempt to create uniformity? If we assume, for the sake of argument, that it is considered desirable to build according to a uniform standardized scheme, how can this be accomplished and how can the uniformity be maintained? How logical is it, from the point of view of building technology, to build in a completely standardized way? To what extent does that kind of standardization allow sufficient adaptability to suit the needs of individual plans?

The first issue is purely a matter of taste. This can be



Place des Vosges, Paris

profitably discussed; but I am only concerned with the other three issues: namely, to what extent can standardization be achieved and maintained, to what extent does it conform to the norms of standard building techniques, and to what extent does it allow for flexible planning?

As regards the imposition of controls and their enforcement, this is essentially a legal matter. St. James' Square was built on property that was initially owned by the king. If buildings are on crown land or state land, it is possible to establish all sorts of controls that cannot be introduced if the property is owned freehold by separate individuals. In fact, regulations were indeed made for the control of St. James' Square; but they were not enforced.

One of the buildings was designed by James Stuart, best known as one of the authors of *The Antiquities of Athens*. It displays a giant order that could be classified art-historically as both "Palladian" and "Greek Revival." The proportion of window to wall gives an idea of the kind of proportion which resulted, in those days, when an architect was not obliged to conform to a predetermined plan. These proportions do not conform to those of the façades of the earliest houses in the Square; but they do conform to a standard accepted in the 18th century, namely Palladian standards.

It seems to me that one must begin any study of architectural standardization of urban spaces by considering the fundamental difference between the standardization of structural elements which enclose spaces, and the standardization of structural elements assembled to create objects.

The Palazzo Piccolomini at Pienza does both. It was built according to Alberti's theories, and illustrates very well the reason he was so keen on having pilasters carved on the façades. He called the intervening spaces "false apertures," and went so far as to say in his *Treatise* that, ideally, each pilaster should be a single stone. Whether they are made of a single stone or carved out of masonry walling (as at Pienza), you can see that they don't have to be there at all. Yet Alberti, and those who followed him, had a very deep sense of their importance as elements of proportion. Proportion in architecture is not just a mathematical abstraction. Something visible has to be proportioned; and what they proportioned

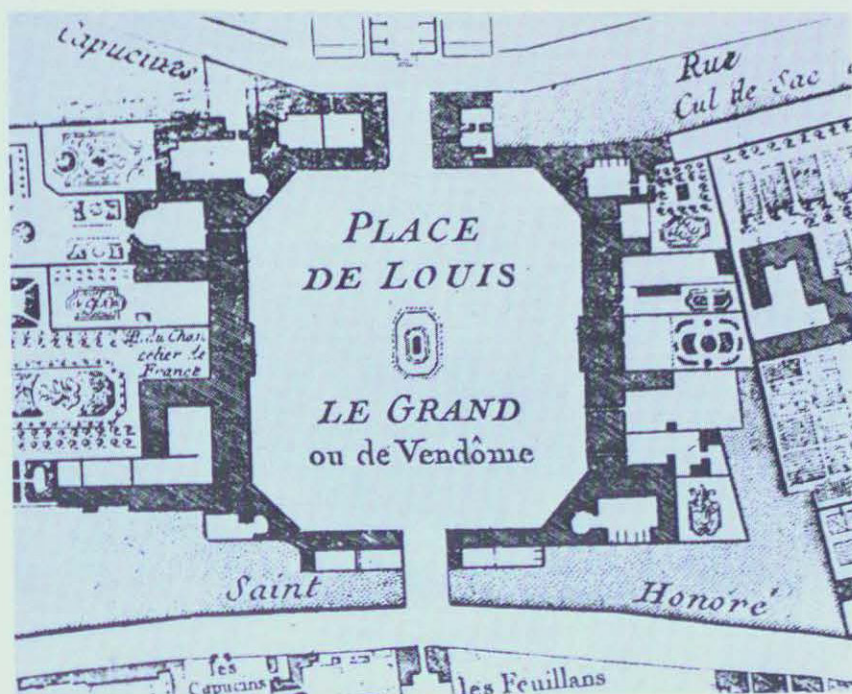
here were the spaces between the pilasters: then considered the very essence of architectural order.

When Mies van der Rohe built the Promontory Apartments in Chicago with a reinforced concrete frame, he left the structural concrete pilasters visible externally. But he realized that the effect produced was disastrous (mainly because he didn't know how to deal with concrete), so he decided that in future he would encase the whole of a building in metal elements that merely looked like pilasters and fill the spaces with glass. One can justify these on structural grounds by saying that they hold the glass in place; but we all know that they are much larger than was structurally necessary. He usually spaced the structural columns at 21 foot centers, and divided this grid into 4 bays, giving a module of 5'-3". This particular module may seem arbitrary, but it is not. It is something that was carefully worked out during preliminary studies as the module most adaptable to rooms of various sizes: one, two or several bays wide.

It strikes me as interesting that when Perret and his team were independently working on the reconstruction of Le Havre, designing apartment buildings to house 40,000 people, they also came to the conclusion that the ideal fenestration module was 5'-3". This must have proved itself as being right, because twenty years later, Mies van der Rohe designed a group of buildings in Montreal using exactly the same module.

These examples may seem to justify the notion which was propagated by Le Corbusier and which became very popular after World War I as a result of the mass production of munitions: namely the applicability to architecture of industrial standardization. But when you look at the totality of Mies's Westmount Plaza in Montreal, you can see something which, to me, is a rather disquieting characteristic of the Bauhaus attitude towards architecture in general, and urban spaces in particular. Westmount Square is not an enclosure of space; it is a series of objects in space. The buildings are objects which do not form the plaza, but stand on the plaza. The plaza itself is not defined as a space, but as a podium or mini-Acropolis.

This kind of architecture is no longer universally admired. Le Corbusier's plans for ideal cities, particularly his



Place Vendôme, Paris

project requiring the demolition of two square miles in the center of Paris, is no longer universally acceptable. And we can now understand why Parisians were not sympathetic to his ideas. You will have noted that at Le Havre the demolition had already taken place. Hence Perret's decision to re-design the whole town on a grid did not involve the negative aspects of Le Corbusier's ideals which so many people find objectionable today.

St. James' Square was obviously envisaged as being like the Place des Vosges in Paris, or Place Royale as it was formerly called. This had been built by Henry IV, grandfather of Charles II, in whose reign St. James' Square was laid out. Charles II, and many noblemen who had remained loyal to him, had just returned from 13 years exile in France; so there can be no doubt that the original concept of St. James' Square was based on the Place Royale. Both were built on ground which had been gardens of royal palaces, and Henry IV's plaza was the same size as the one in London.

It should be noted that although the plaza in Paris is square, the configuration of the total area of the land development is not. Originally, a crucial idea in the development of urban spaces was that once you have established the inner perimeter of the plaza you have a great deal of liberty in the development of what happens behind it. In Paris in 1605 (when the country was recovering from civil war and the Treasury was bankrupt), it seemed that the best way to achieve complete uniformity all around the plaza was to build one side, and then, by legal constraints, oblige every purchaser of the remaining lots to make the façades identical. This legal technique is known as a "restrictive covenant." As part of the contract, the purchaser takes the land on condition that he observes certain obligations; and the obligation imposed on property in the Place Royale was that every house had to be identical, that no property could be subdivided between heirs, and so on. A painting done in 1613 shows that still, after 470 years, the appearance of the plaza is unchanged despite all the changes in use and all the changes in social conditions that could have affected its appearance.

Why did people find such pleasure in an orderly, symmetrical space? Do ordinary people experience the same

pleasure today? Perhaps psychologists have the answers. But I don't think the merits of symmetry would have ever been questioned in the Renaissance, and during the four centuries which followed it. I think symmetrical space was valued for its intellectual quality. Wherever you moved it, you were always aware of its unity, its geometrical perfection. This was surely the main value attached to the notion of creating certain symmetrical urban spaces within the network of irregular street-patterns, such as one finds in Paris.

Another example of a symmetrical standardized plaza in Paris is the Place Vendôme. Again, it was built on the site of a garden: property owned by a single person. It was bought by the king, who originally envisaged having a square open space which would be surrounded by government buildings, and would be open on one side to what was then the main east-west thoroughfare. But he ran out of money and sold the land to the city of Paris, which agreed to buy it on condition that the land should be for domestic architecture. The size of the plaza was decreased to obtain larger lots; and the way uniformity was achieved, in this instance, was by building the facade first, and then selling the land behind it afterwards. The first lots were sold in 1699; and it was 20 years before they sold the last. Progressively, a series of houses were added behind the façade, which was built of masonry propped up by buttresses until party-walls could be added at right angles to stabilize it.

Some of the lots were larger than others, and some, especially those in the corners, involved some very tricky planning. I find it fascinating to study these plans and see how ingenious the architects of that time were. These architects managed to create all the space requirements of their wealthy and exacting clients and yet submit to the constraint of the facade. One of the advantages of this "preconstructed" facade is that it is still very easy to maintain the unity of the plaza when changing the accommodation behind it. For example, one corner of it is now the large modern head-office of IBM in Paris. By contrast, the Ministry of Justice established there before the French Revolution retains its original use. Most of the insides of the buildings have been totally transformed; but the public environment remains intact. The legal



*Palazzo Piccolomini—Detail*

restrictions imposed by the monarchy no longer exist; but successive municipal governments, concerned with the quality of urban life, have maintained the restrictions originally imposed.

In this plaza the most important module was not so much the size of the window, but the size of the ground-floor openings. These arches had to be wide enough for coaches, and span 9 feet. The window module is 5'-6"; only 3" larger than Mies' window module. The module of the pilasters and half-columns is 2'-6". Every single element is governed by one of these modules.

In our own day the great advantage of standardization, as we see it, is mass production. But these earlier standardized facades were not composed of units stamped out by machines, cast in moulds, or extruded: they were carved by hand. The man in charge of the architectural decoration of the Place Vendôme was one of the leading sculptors of his day, a specialist in architectural sculpture. His name was Jean-Baptiste Poultier, and he was a member of the Academy of Sculpture.

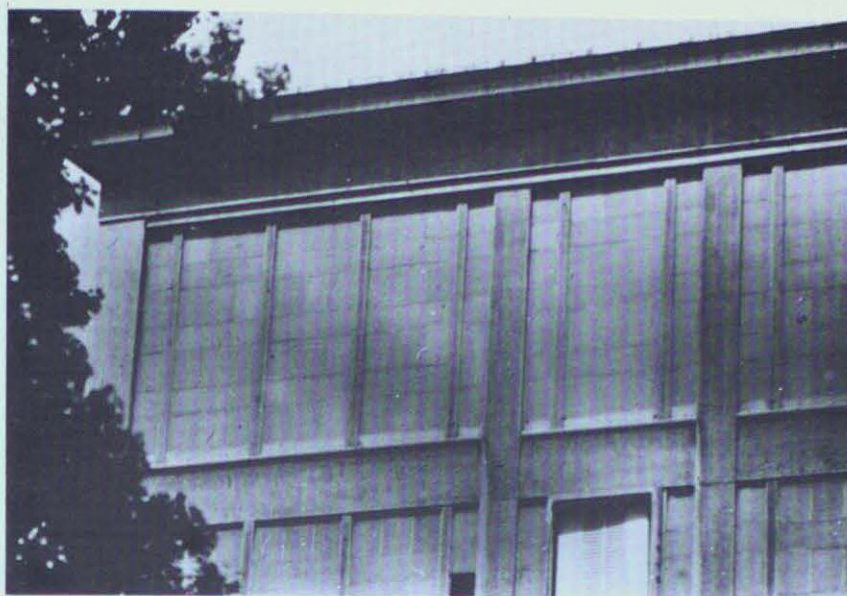
The area of the Place Vendôme is almost the same as the earlier plaza I have mentioned; and I feel certain that the architect who designed it, Jules-Hardouin Mansart, must not only have studied it, but also studied the visual effects of the great courtyard of the palace of the Louvre, a very obvious prototype. The Louvre courtyard was originally planned to be only a quarter of its present size; but it was enlarged in 1624 by adding a pavilion to Lescot's facade and repeating this symmetrically to produce a square, 128 x 128 yards. Its function was different from that of the Place Vendôme; and its third storey was only completed in the mid-18th century. But the heights of both facades were exactly the same in 1699: 58 feet. The main difference at that date was that the height of the masonry facade of the Place Vendôme contained three floors, whereas there were only two stories in the unfinished courtyard of the Louvre. For architects who weren't searching for novelty, but for perfection, the best way to achieve it was to study something which was already done, and see if it could be improved.

During the two centuries after the Place Vendôme was built, the scale of Parisian plazas increased. It increased in the Place de la Concorde, built in 1764. In the plaza built around the great Arc de Triomphe, constructed about 100 years ago by Napoleon III, the diameter of the open space was 240 metres (2.3 times the size of the Place Royale), and the whole significance of standardization tended to change because of the change in scale.

I have tried to explain the concept of standardization in its historical context: to demonstrate the difference between Renaissance notions of standardization, as understood in the 18th century, and the notion of standardization as understood by Mies van der Rohe. I want now to discuss Auguste Perret's ideas, and it will be best to begin by showing you a building that he designed in 1934, the Mobilier National, because this is like the Palazzo Piccolomini, in having an internal courtyard, and being externally an "object in space."

The Mobilier National, perched on a diagonally sloping site, was a difficult problem, because it had to fulfill diverse functions. It was to house all the state furniture (much of which had been confiscated during the French Revolution) still used to furnish embassies, ministries of the state, and so on. It also needed facilities for cleaning and restoring the furniture, for exhibiting parts of the collection to the public, and for administration of all these different operations.

Though with numerous conflicting requirements, Perret decided to adopt a standard column-spacing. Originally the axial spacing was exactly 6 metres (about 20 feet) enclosing a corridor, 3 metres wide, which ran down the middle of the main block. Externally, it was divided very much as Mies would have done it, except that whereas Mies would have used an enclosing skin of glass and metal, Perret used an infilling of precast concrete panelling, and precast window-frames within the visible reinforced-concrete skeleton. As in Mies' multi-storey buildings, everything was standardized. But it must be emphasized that, for Perret, standardization meant something more subtle than "mass production." Everything in the building was "made to measure" and even the precast elements were fabricated on the site.



*Mobilier National—Detail*

After working on the preliminary drawings, Perret eventually concluded that, with a structural grid of 6m00, the building was slightly too large. He therefore reduced the standard bay by about six inches to 5m84. The resultant standardization only related to this one particular building; a point of particular relevance to the way he was later to develop the plan of Le Havre, especially the city hall square. All his structures, or groups of structures, were thus not merely standardized, but standardized in accordance with each specific problem.

At Le Havre there are also standardized windows and panels of precast elements, and this was the basis for the whole of the plaza in front of the city hall. Perret's office worked it out on the basis of a structural grid of 6m40, with a module of 80 cms (about 21 inches). This again was ultimately modified slightly (to 78 cms) to allow for greater flexibility of the arithmetic multiples. It wasn't a round number; nor was the structural grid (6m24). Everything was finely adjusted to what was required for the internal accommodation. It should be noted that three of these modules make exactly 5'-3", and this was the size of each window.

The plaza was designed to create a focal point: a nucleus for the radiation of the plan. The size of the plaza (46,258 m<sup>2</sup>) bears a close relationship to that which was ultimately created around the Arc de Triomphe in Paris. When the plaza at Le Havre was completed in the mid-1950's, there was a tendency at the time (since Le Corbusier's ideas on urban planning were still architectural orthodoxy) to dismiss this design as being merely an insipid version of the town hall square at Nancy. It is certainly a version of it: an essentially French concept, reinterpreted by Perret with a new structural system in another French city. The skeleton frame around the plaza is only three stories above the free-standing columns, with shops on the ground floor and apartments above. The tower blocks were placed in such a position as not to destroy the continuous cornice-line of the plaza as seen from within.

Hence Perret, despite all the pressure on architects at that time to "destroy the street," and to design all buildings as objects in space, persisted in his endeavours, even though

he knew he was regarded as a reactionary. Some critics still dismiss this as "frozen classicism;" but he persisted in his belief that urban architecture was something that *enclosed* space; and insofar as he accepted that certain buildings might appropriately be "objects in space," these were the public buildings of the city.

For it should be noted that whereas the facade of the city hall at Nancy is exactly like the facades of the buildings which flank it on each side, the city hall at Le Havre is quite different. It has a different scale from that of the apartment buildings which surround it, and it is to a totally different design.

Perret shared Le Corbusier's belief that the beauty of the Parthenon resides not so much in the use of standardized forms, as in the delicate refinement of those standardized forms. But unlike Le Corbusier (who never seems to have perceived that mass produced standardization precludes such adjustments), Perret introduced Greek subtleties whenever an appropriate opportunity presented itself. In the larger and more important monuments he built, such as the Musée des Travaux Publics in Paris, he took advantage of the properties of the wooden formwork (which is flexible, as compared to the carved marble of the time of Pericles) to introduce entasis to his 42 feet high monolithic concrete columns. Each is adjusted so that it leans slightly to give horizontal and vertical curvature to the superimposed beam.

The prototype for this Museum was the main facade of the Louvre; but the whole structural system was entirely different. Was Perret simply imitating this kind of classicism because he didn't have any ideas of his own? I think he had ideas which may be very important to architects today, such as a profound sense of *place*. The plaza is in front of the Hotel de Ville at Le Havre is indeed called a "Place." It is imbued with French tradition, and with a sense of environmental identity of which the international style robbed us for half a century. A sense of place is now, I think, beginning to regain its rightful priority in our concept of architecture; and for this reason, if for no other, Perret's buildings can profitably be reappraised today.