THE WATERGATE PROJECT: A CONTRAPUNTAL MULTI-USE URBAN COMPLEX IN WASHINGTON, DC

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INTRODUCTION

Watergate is one of North America's most imaginative and powerful architectural ensembles. Few modern projects of this scale and inventiveness have been so fittingly integrated within an existing and well-defined urban fabric without overpowering its neighbors, or creating a situation of conflict. Large contemporary urban interventions are usually conceived as objects unto themselves or as predictable replicas of their environs. There are, of course, some highly successful exceptions, such as New York's Rockefeller Centre, which are exemplars of meaningful integration of imposing projects on an existing city, but these are rare.

By today's standards where significance in architecture is measured in terms of spectacle and flamboyance, Watergate is a dignified and rigorous urban project. Neither conventional as an urban design project, nor radical in its housing premise, it is nevertheless as provocative as anything in Europe. Because Moretti grasped the essence of Washington so accurately, he was able to bring to the city a new vision of urbanity. Watergate would prove to be an unequivocally European import grafted unto a typical North-American city, its most remarkable and successful characteristic being its relationship to its immediate context and the city in general. As an urban intervention, Watergate is an inspiring example of how a Roman architect, Luigi Moretti, succeeded in introducing a project of considerable proportions in the fabric of Washington, a city he had never visited before he received the commission. Visually and symbolically, the richness of the traditional city is derived from the fact that there exists a legible distinction and balance between *urban fabric* and *urban monument*. Fabric was generally made up of small, single buildings which constituted the private domain, while monuments housed public functions and constituted the punctuation marks of a city. In the past, fabric represented the background of the city, while monuments were the foreground buildings and which made the architectural statements. Because fabric-buildings were mainly small and built over time, they could be adjusted to the changing nature of their environment.

Due to dictates of scale and over-emphasis on the pragmatics of design, the modern city has jettisoned all sense of organic growth with its inherent correcting mechanisms. *Large* no longer necessarily implies importance, and *importance* is not necessarily expressed in architecturally significant ways. What makes Watergate exemplary both as a work of urbanism and of architecture is its well-resolved fit in the city (*Fig 1*).



Figure 1 View of the complex along Virginia Avenue

The project, despite its size and singular architectural vocabulary, speaks of Washington, and of the specificity of its site. A new building can relate to an existing one either by extension, or by opposition. Watergate manages to do both, it is simultaneously a *fabric project* and it is playing a contrapuntal role in the city.

THE SITE

To appreciate the context of Watergate, it is important to understand the master planning premise of the city (*Fig.2*). Washington is an artificial creation designed by the French military engineer, Major Pierre Charles L'Enfant. L'Enfant was asked in 1791 by George Washington to prepare a plan for the new capital city. With the exception of two outcroppings - Jenkins Hill, site of the Capitol, and Arlington Hill, site of the National Cemetery - Washington is essentially flat. The Potomac and its subsidiary branches are the only tangible edges of the city. L'Enfant's plan is an orderly construct of two superimposed grids, a simple orthogonal lattice of streets, over which is juxtaposed a more complex and larger network of diagonal avenues. The avenues serve to visually

connect the important monuments of the city and provide them with reciprocity. Where two grids converge, L'Enfant located *rond-points* on which public buildings were placed. The concept of two superimposed grids across a plateau is patent, but the resolution of



Figure 2 *Pierre-Charles L'Enfant* Plan of the New Capital City

the grid at the river's edge was never fully worked out. L'Enfant's plan resulted in many awkward points of collision between the geometric street pattern and the picturesque edge of the river.

Watergate lies in the transition zone between two urban realities, the natural and the manmade. Watergate's site is a large triangular tract of land bordered by three roadways, New Hampshire Avenue, Virginia Avenue, and the Rock Creek and Potomac Parkway (*Fig. 3*).



Figure 3 Studio Moretti The site of Watergate at the junction of Virginia and New Hampshire Avenues

The avenues are prototypical of the city's principal arteries bordered by eight to tenstorey freestanding buildings, while the parkway is a picturesque vehicular artery which follows the wavy river's edge (*Figs. 1 and 4*). The difference in character between the avenues and the parkway is significant, and it is precisely this difference in setting which Moretti exploited to the fullest.



Figure 4 View of the Parkway on the West side of the site

A COMPLEX CONTEXTUAL CONDITION

Architecture and urban planning must be conceived to co-exist with the physical environment, in harmony with historical and cultural context. In contrast to the Post-Modernist concern for contextualism as a justification for eclecticism or stylistic historicism, Watergate deals with the question of contextualism by establishing meaningful connections to its surroundings. The project avoids the pitfalls of impersonating its environment and resorting to meaningless stylistic games. Watergate is a lesson in intelligent contextualism.

The site of Watergate lies within the transition zone between the natural and the manmade environments of Washington. The contextual conditions are complex and represent many contradictions. The site is triangular, sloping towards the Potomac in an uneven manner, and relates to the geometric street grid on two sides, and to the curvilinear riverfront drive on the third. The river side is open, park-like, rural in character, and imbued with spatial variety. The city sides along the avenues are regular, with buildings following the street alignment in an orderly manner. Thus, the edge conditions of the site vary significantly in scale and circumstances. It will be shown later how Moretti successfully addressed this contradiction without creating a duality between riverfront and street buildings. It is patent that the site's most important asset is its visual and symbolic relationship to the Potomac. The river-view relationship is the obvious given which governed the plan from the onset. Moretti's manifest response to this duality was the creation of a series of semi-public green spaces all relating to the river while at the same time holding together the built entities of the project. This idea of a series of open spaces created by fingers of a hand open towards the river is diametrically opposite to that of the urban wall which Moretti created along the avenues (Fig. 5).



Figure 5 *Studio Moretti* The Morphology of Watergate: an urban wall towards the city and open spaces towards the Potomac

THE DESIGN PROCESS

I was fortunate to have been an assistant architect on the project in Moretti's Rome office during the decisive design years of the project. With Watergate, as with all projects in the office, the design process was a very personal one because Moretti followed no definable methodology. For most of Moretti's contemporaries, program, site conditions and urban parameters guided the design process and eventually determined the final concept, but for Moretti, the notion of a program-driven design was anathema. For him, the process began with a few free sketches which were often translated into real paintings (*Fig.6*). These paintings¹ were subjective reactions to the problem at hand and they allowed Moretti to express his feeling for site and the disposition of buildings. To the uninformed viewer, these works have seemed to have been abstractions not unlike those of Sonia Delaunay and Kandinsky (*Fig.7*). Freed from quantitative and geometric constraints, Moretti was able to deal with design in the same way that an artist would solve a formal problem. Hence, Watergate began as a sculptural idea which spoke of questions of form and space, figure and ground, and morphology.

¹ These paintings were not meant to be descriptive of the design intentions, nor done as serious planning explorations. They must be interpreted, I believe, as pleasurable exercises executed by someone who loved painting and drawing, and who wished to express his feelings in a visual manner.



Figure 6 Luigi Moretti One of the early painted renderings of Watergate



Figure 7 Sonia Delaunay

Because of Moretti's keen interest in both sculpture and sciences, focus on morphological facet of Watergate took precedence over functional resolution. This was especially true during the early design phases. Traditionally, morphology was that branch of biology which dealt with the study of structure and external form of an organism as a whole, considered separately from function. In architecture, as in botany and biology, morphology was for Moretti an essential focal point as well as a theoretical orientation. Morphology was a means of understanding and defining concepts of structure, form, and space and a way to establish a clear relationship between natural setting and man-made

forms.

If one idea could express the quintessential spirit of the project, it would be the *curve*. Watergate was born of the curve, or more precisely, of the interplay of curves. Only one of the very early sketches contained straight lines. As the design development progressed, curves became more complex, more varied, and more prominent. The curve became engraved in the DNA of Watergate. The design process during these early phases was all about articulating curvilinear forms of buildings and open spaces.

Moretti's curves were never geometrically constructed. They had to be hand-drawn and 'felt'. He repeatedly referred to a curve 'made by an angry thumb'². For Moretti, whereas Renaissance and Baroque curves were constructed geometrically, modern curvilinear shapes were free, amorphous, and expressive. His models were Gaudi, Aalto, Steiner and Mendelsohn, who in his view were true modern form-makers. It was impossible to discuss the nature of a 'curve' with Moretti. The question always came down to sensation and subjectivity. Moretti spoke of the *circle* as being a Renaissance shape, the *oval* as being Baroque, and the free unstructured shape as modern.

The architecture of Moretti is inevitably compared to that of Giovanni Michelucci. Both architects broke away from the straightjacket of International Modernism. Michelucci was the only architect of significance besides Moretti in Italy to explore the use of nongeometric, curved forms. He was the author of the iconic and controversial Church of San Giovanni (*Fig.8*) overlooking the Autostrade del Sole near Florence³. Although it has been suggested there is a resemblance between the work of the two architects, such comparison is questionable. The form of San Giovanni was influenced by German Expressionist architecture and by Le Corbusier's church at Ronchamp. Michelucci's shapes were predicated on a structural system and on spatial configurations. Watergate, by contrast, followed an opposite approach. Its morphology was established strictly according to a formal configuration of buildings and their contiguous open spaces. The figure and ground relationship was developed well before internal spatial considerations were defined. The structural system followed the form, rather than the reverse. It is worth noting that in Moretti's only other North American project, Place Victoria (Fig.9), the structural engineer Pierluigi Nervi played a dominant role. Here the structural system was, from the very start the principal determinant of the form.⁴ In Watergate,

² I have discussed in my first chapter the intricacy of translating Moretti's freehand curves into construction documents. Watergate was designed and built well before computers were used in the preparation of drawings. Fig. 8 illustrates one of the attempts to give a geometric dimension to freehand curves.

³ Although Moretti enjoyed discussing the work of other architects, especially those of his Italian confreres, he never made references to the work of Michelucci.

⁴ I have explained in the second chapter the significant contribution of Pierluigi Nervi in the design of Place Victoria in Montreal. Moretti's initial design called for three highly sculptural towers, but the structural and technical exigencies of the modern skyscraper made this wish impractical. Moreover, Nervi's rationalist and conservative structural approach dampened Moretti's gestural impulses.



Figure 8 Giovanni Michelucci Church of San Giovanni overlooking the Autostrade del Sole near Florence

the structural system was merely at the service of form.



Figure 9 *Pierluigi Nervi and Luigi Moretti* Place Victoria, Montreal Canada

As with all large projects, Watergate underwent numerous phases during the design process. The number of active players involved in the project was overwhelming and each had a determinant impact on the final design. Among the *dramatis personae* were real estate consultants, project managers, client's representatives, general and sub-

contractors, the Fine Arts Commission, various government agencies, landscape architects, structural engineers, mechanical engineers, local architects and their associates, and Moretti and his associates.⁵ On most occasions these experts contributed to the design, but at times their input in fact served to dilute the final outcome. Fortunately, the three aspects of the project which Moretti held most dear, the positioning of the buildings on the site, the forms of the buildings and the open spaces, and the treatment of the envelope, were never seriously compromised.

A HISTORICAL ANTECEDENT

The issue of historical precedent never came up in discussion during the early phases of Watergate. Moretti made constant reference to past architectural models when designing most projects, but Watergate was a creation developed according to subjective criteria which could be defined simply as what was right for the site and the city. Moretti focused his attention on the experiential condition of the project, namely, on the ambient mood created by architecture. He felt deep sympathy for the project because of his strong emotional reaction to Washington and to the site.

The first time Moretti made any direct historical allusion was when he presented the final proposal to the Washington Fine Arts Commission. He described the Watergate project as being akin to John Wood the Younger's plan for the town of Bath in England (*Fig. 10*). Though Moretti may not have been directly inspired by Wood's Royal Crescent, he used it as a justification to the Commission for his own plan. The similarity between the two projects is striking, but where the projects differ significantly is in the details of the plan and in the architectural expression of the facades. The Georgian uniformity of the Crescent with its geometrically constructed elliptical plan is in direct opposition to Watergate's form with its free curves and highly irregular facades. What makes the projects comparable is the concept of a large curvilinear building defining and holding a gently sloping open green space.

Moretti argued that Watergate, was in point of fact, a continuation of a Romantic and picturesque English town-planning tradition of complimentary relationship between nature and architecture in which each is at the service of the other (*Fig. 11*). Although Washington was planned according to French rationalist principles, and not as an English

⁵ The principal members of the design team included the Roman architectural office of Luigi Moretti with the collaboration of the architects Lucio Causa and Giovanni Quadarella as well as the engineer Pierluigi Borlenghi, the Washington architectural firm of Corning, Moore, Elmore, Fischer, the structural engineers Heinzman and Clifton of Washington, the surveyors firm T.Y. Lin & Associates of New York and General Engineers Associates of Washington, the mechanical engineers Day and Zimmerman of Philadelphia, the landscape architect Boris Timchenko of Washington, the general contractors Magazine Brothers Construction Corporation of Washington, and the Watergate Construction Corporation of Washington



Figure 10 John Wood the Younger The Royal Crescent, Bath, England



Figure 11 *Luigi Moretti* Diagram submitted to the Fine Arts Commission of Washington.

Picturesque city, Moretti convinced the Commission that the plan of Watergate was suited for the site. He asserted that the jagged edges of the city along the Potomac belonged to a world totally different from that which L'Enfant had created. Bath was indeed a valid antecedent as a 'crescent in the park' and as a relevant model of the integration of architecture and nature, but not as a prototype of collective housing. Bath's Royal Crescent is a grouping of contiguous identical single-family houses, while the buildings of Watergate are traditional apartment blocks consisting of dwelling units strung along central common corridors on each floor. The rhythmic quality of the Royal Crescent would have made no sense in the context of a very long and linear apartment block. It was for that reason that Moretti demanded facades which expressed horizontality rather than verticality. It should be noted that the only building element that is uniform in the buildings of Watergate is the column grid but Moretti, unlike most contemporary architects of the time, chose not to reveal the structural rhythm, which he considered unimportant as a design instrument. Expression of structure was not one of his concerns in this instance.

EVOLUTION OF THE PLANNING PARTI

It is fortunate that the vast majority of Moretti's studies have been preserved and stored in the State Archives in Rome and in Mendrisio, Switzerland. These studies are a valuable tool to trace the development of Watergate's concept and to understand Moretti's very personal approach to the design of a large urban ensemble. The sequence of sketches is truly revelatory.

One of the first planning sketches of Watergate (Fig. 12) shows a composition of three



Figure 12 *Luigi Moretti* One of the first planning sketches of Watergate

exceedingly long (between 150 and 175 meters) concentric curvilinear buildings having their imaginary centre somewhere offshore. Between these curved bar-buildings are peppered clusters of low-rise townhouses, which Moretti enigmatically labeled Pompeian houses, presumably because these were planned around private atriums. The long buildings are mostly ten floors high, while the townhouses are two or three stories. At the apex of the triangular site, where the avenues intersect, there is a small and oddly-shaped building designed to house medical offices and a temporary rental office. The plan indicates a simple network of vehicular access roads throughout the site. Although all the buildings are parallel to the river, only the first of three large bar-buildings has a view onto the Potomac. These initial proposals had many flaws, but they should be viewed as preliminary planning probes to determine the character of the project.

The second set of sketches (*Fig. 13*) represents a major re-adjustment to the previous plan.



Figure 13 *Luigi Moretti* This second study shown a major readjustment of the parti

First and most importantly, the buildings are no longer strictly parallel to the river's edge. They are reshaped, and relocated either longitudinally or perpendicularly to the Potomac. This new configuration allowed for spaces other than linear ones. Secondly, all the buildings are re-sculpted to be more varied and expressive. Thirdly, particular attention is given to the end conditions of the buildings. And lastly, the Pompeian houses are totally reconfigured into regular rows of cascading units creating a large amphitheatre of townhouses, all having unobstructed river views. These bleachers of townhouses are interwoven though the base of the tall buildings across the whole site.

In a subsequent set of studies (*Fig.14*), Moretti reshaped all the buildings, and for the first time introduced straight elements which he combined with curvilinear forms. The relationship between curved and straight forms proved uncomfortable, and the shapes of the buildings were more arbitrary and eccentric. The initial internal vehicular traffic pattern was maintained but bore little relationship to the building forms. The plan called for three major vehicular points of entry, one from each of the peripheral arteries. Finally, on the larger non-built areas of the site, Moretti placed a number of amorphously-shaped, low-rise buildings. The most significant change from the first study was the introduction of three large river-related open spaces.

In one of the last schematic studies (*Fig. 15*), Moretti altered the configuration of the townhouse layout from one large crescent to three contiguous smaller ones. As in the former study, the townhouse crescents are literally woven through the base of the barbuildings. All straight elements were banished and the play of curves and counter-curves became more complex. One of the important new changes in this proposal was the lifting of parts of the peripheral building blocks on pilotis to open two vistas to the river, one from Virginia Avenue and one from New Hampshire Avenue. The study also included small schematic plans and sections of the townhouses. In the realized project, the inclusion of town houses was dropped altogether but the idea of vistas from the avenues was maintained.



Figure 14 *Luigi Moretti* This study illustrates an attempt to introduce straight elements in a curvilinear composition



Figure 15

Luigi Moretti The penultimate diagram indicating the introduction of a triple crescent of townhouses and the lifting of parts of the buildings on pilotis

This sequence of development sketches in the archives convincingly illustrates Moretti's design method. All his studies are primarily concerned with issues of form and location of buildings on the site. Traffic systems are dealt with in a cursory manner, height considerations are limited to writing a number on a building, and sun-studies are conspicuously absent. Missing in the archives are decisive design briefs which normally help steer the design. Moretti prepared no serious analytical studies of the neighborhood and site, and made no convincing alternative design probes. Finally, studies of housing prototypes in relationship to a social agenda were never undertaken. It is somewhat bewildering that a project of the scale and importance of Watergate was realized without undertaking these pre-design investigations.



It is clear that here analytical studies played a virtually no role in determining the ultimate solution. Watergate was conceived in much the way a sculptor or a painter resolves a formal problem: by modification, transformation, and relocation of shapes. The process was one of continuous adjustment and refining, of trial-and-error, and of subjective reactions to problems. It is because of this unorthodox design approach, that

Watergate is a unique architectural and urbanistic accomplishment, which reveals Moretti's true personality explicitly. We see here a man whose work is overarching governed by intuition and subjectivity.

THE FACADES

Judging from the vast number of sketches of the facades and the related detailed correspondence between Moretti and the various parties who worked on Watergate, we can see that the facades were one of his major preoccupations. During development phases of the project, Moretti referred to the composition of facades as the making of "frozen music", a phrase borrowed from Goethe. Facades were *the* architectonic elements which would make the project sing, and he thought of these facades as being walls which defined the gardens. Moreover, since outdoor spaces were mostly concave, these walls could always be seen as a whole, as a continuum. The combination of curvilinear walls and the complex rhythm and beat of the facades make the garden spaces exceptional.

The chronology and the nature of façade sketches clearly show that Moretti considered the design of the facades as an autonomous project (*Figs. 16 and 17*) which was dealt



Figure 16 *Studio Moretti* Final design of the northeast façade along Virginia Avenue

Figure 17 *Luigi Moretti* Balcony handrail studies

with independently of floor plans or structure. This method of façade design was not at all unusual for him. Moretti was not an orthodox functionalist who believed that program could or should drive design; he did not adhere to the dictum that "form follows function". For Moretti, the design of the facade was a purely formal exercise. He conceived the building envelope of the entire complex as a giant and integral music-like composition, made up of many buildings tied together by varied progressions and rhythms. Each progression followed multiple strokes interspersed by short and long pauses, always changing for the passer-by.

One cannot judge the facades of Watergate as true expressions of interior conditions because Moretti intentionally avoided the traditional correlation between plan and elevation. He was no disciple of Le Corbusier celebrated an architecture of strict rationalism in which one read the story of the building on its façades (*Fig. 18*). This



Figure 18 *Le Corbusier* Unite d'Habitation, Marseille

freedom from the plan allowed Moretti to create one of most powerful facades of postwar architecture. Much like Gaudi's Casa Mila, Mendelsohn's Einstein Tower, or Michel de Klerk Eigen Haard Housing Cooperative, Moretti's facades have their own narrative; they speak of something more significant than mere program.

A COHERENT SPATIAL CONCEPT

Seen in plan and photographs, Watergate gives the appearance of a composition of arbitrary curvilinear buildings and strangely shaped spaces stretched across a triangular waterfront lot. The curves themselves are complex, the swelling and contraction of the buildings are eccentric, the termination of all the building blocks appears to be erratic, and the relationship of the project to the Potomac is far from obvious. Experiencing the project, however, is an entirely different matter when Moretti's full vision becomes manifest. The shape and location of the five buildings define three entirely distinct curvilinear gardens (*Fig. 19*). The gardens are all visually related to the river, but in



Figure 19 View of the central garden looking towards the river

different ways. The westerly garden is most open to the waterfront. It has a parabolic shape which implies infinity, and is framed by the hotel, the office building and one apartment block. The central garden is the largest of the three. It is the most enclosed, and is contained by three different buildings, two concave, the third convex. The third garden is a near-circular green space and the most homogeneous of the three because it is contained by a single horseshoe-shaped apartment block. Although the space is open to the Potomac as in the other two gardens, it has the most secluded character.

On the inside of the site, the building masses define the three open spaces, but towards the outside they are used to define the street and to mark the intersection of the avenues. The outside view is that of an almost continuous urban wall along two of the three sides of a triangular lot. The difference in reading of the project from inside and the outside is remarkable. The street reading is that of a large, continuous and relatively homogeneous shell playing a protective role, while the ambiance on the inside is open, free, and joyful (*Figs. 1 and 20*).



Figure 20 The ambiance inside one of the main gardens

CONCLUSION

Watergate was, in its day, the largest built project by a European architect in America. It remains to this day an emblematic architectural and urbanistic landmark in the nation's capital. Though clearly a European import, the project constitutes a compelling solution to American city building, or rebuilding. Moretti's vision of America, of the modern city, of architecture and urbanism, and of collective housing was a unique. Although his views on these questions were not consistent with the prevailing American thought, he nonetheless grasped the meaning and the spirit of the American city. Moretti knew its history well. He admired L'Enfant's plan for Washington, and he appreciated its symbolic and democratic values. He was attracted to the city's green spaces - the formal urban parks, riverside parks, public gardens and green spaces surrounding public and private buildings. He was inspired by the challenge of designing Watergate for a number of reasons - it gave him the opportunity to address in one project two opposing realities of the city, to design a project which was larger than any he had previously undertaken, to explore new notions of urban morphology, and to develop a unique architectural language of facades.

To say that Moretti was overly preoccupied with formalism would imply a misunderstanding of what his architecture is all about. Undeniably, he was deeply interested in morphology, form-making, and the sculptural aspects of architecture. But Moretti's focused concern does not diminish the relevance of his work. The vibrancy of Watergate closely resembles that of the German Expressionist architecture of the 20's and 30's of Rudolph Steiner, Hans Poelzig, and Bruno Taut, and of the Amsterdam School⁶. The term *Formalism* is burdened today by the severe opprobrium, in that it stands for an architecture devoid of political and social concerns, and that it reduces

⁶ The architects affiliated to the German Expressionist Movement and to the Amsterdam School were driven, to a large extent, by social concerns and a desire to improve their world. Moretti views were too conservative to be attracted by their social agenda, but nonetheless he appreciated their architectural inventiveness and the power of their work.

architecture to a purely aesthetic exercise. This moralist condemnation does not take into account some of the most important and eternal concerns of architecture, namely that buildings also have non-functional purposes, that they have expressive powers, that they can take on a symbolic position and that architecture, like all arts, possesses representational powers to communicate directly with the public on an emotional level.

Some have referred to Watergate as an example of *Avant-Garde* architecture and urbanism because of its originality. In my opinion, that is an erroneous interpretation of the project. Originality in and of itself does not make a project *Avant-Garde*. L'Unité d'Habition in Marseille is *Avant-Garde* because its fundamental premise is to question the validity of the traditional city and to celebrate the social transformation of modern life. L'Unité is a manifesto. Watergate does not take a critical position vis-à-vis the modern North American city, or even vis-à-vis Modernism. The project makes no real social commentary. It is an establishment complex built for a privileged clientele which resides in a contemporary semi-gated community.

Watergate is ultimately a lesson in the power of expressive architecture. It is an exemplar of the integration of large-scale architecture and landscape. It is a demonstration of what Modernism can produce when the primacy of function is replaced by the primacy of beauty. Gio Ponti wrote a thoughtful appraisal of the project:

... this architecture from Moretti's hand is no mere importation onto the soil of America ... Rather we have here the fruit of a European approach of conceiving architecture as something bound up with place ... This is a homage to the United States by an Italian architect, numbered among his country's greatest, in this authentic, unique work of creative commitment. [Watergate] pays homage to the great American non-conformists, from Frank Lloyd Wright to Eero Saarinen.⁷

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⁷ I have taken the liberty to correct a number of grammatical errors in the English text. I presume these are the result of a too literal translation of Gio Ponti's Italian text.

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