



### **Rafael Moneo. International Portfolio, 1985–2012**

With an essay by Juan Antonio Cortés, a conversation between Rafael Moneo, Ignacio Borrego, Néstor Montenegro and Lina Toro, project descriptions by Rafael Moneo, and photographs by Duccio Malagamba. 284 pp. with ca. 400 illus. in b & w and duotone, 220x260 mm, English

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José Rafael Moneo, born in 1937 in Tudela, Navarra, obtained his architectural degree in 1961 from the ETSAM (Escuela Técnica Superior de Arquitectura de Madrid). While still a student, he worked with Francisco Javier Sáenz de Oiza. When he had completed his degree, he went to Hellebæk, Denmark, to work with Jørn Utzon. From 1984 to 1990 Moneo was chairman of the architecture department of the Harvard University Graduate School of Design.

Moneo has won gold medals from the French Academy of Architecture and the International Union of Architects, the Arnold W. Brunner Memorial Prize from the American Academy of Arts and Letters, and the Spanish government's highest honor, the Gold Medal for Achievement in the Arts. In 1996 he won the Pritzker Prize in architecture, and in 2003 he accepted the British Royal Medal of Architecture. Mohsen Mostafavi, chairman of the Architectural Association, noted that Moneo »is the closest embodiment we have of the idea of the Renaissance architect – practitioner, teacher, theorist, critic, deeply knowledgeable on the arts. His work does not just delight the eye, but always provokes thinking.«

In Spain his mark is seen everywhere – from the airport in Seville to the high-speed-train station in Madrid, the National Bank of Spain and the Museo del Prado. These projects represent the best of Spanish efforts to build a 21st-century public infrastructure. They also exemplify Moneo's devotion to the culture and architectural history of his native land, showing a clearly contemporary voice with a refined sensitivity to site and context.

Outside Spain, Moneo's most notable projects – the Davis Museum and Cultural Center at Wellesley, Massachusetts, the Audrey Jones Beck Building at the Museum of Fine Arts in Houston, Texas, the New Studios Building at the Cranbrook Academy of Art in Bloomfield Hills, Michigan, the Museum of Modern Art and Architecture in Stockholm, and the Arenberg Campus Library of the Catholic University of Leuven in Louvain-la-Neuve – have attracted much attention. The new Cathedral of Our Lady of the Angels in Los Angeles has drawn more than one million visitors in the first year it opened.

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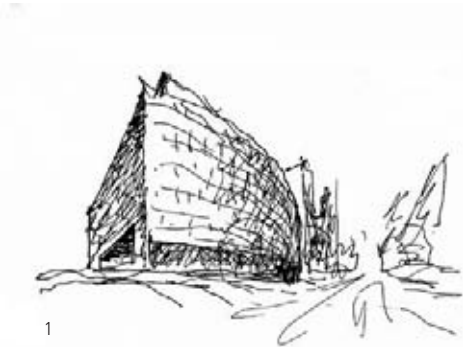
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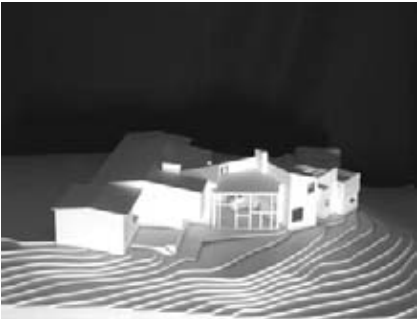
# The Discipline and its Instruments

## Comments on Rafael Moneo’s built works abroad

Juan Antonio Cortés



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### SOLVING SPECIFIC PROBLEMS

In an interview in 1985, Rafael Moneo stated: “When I begin to study a new project, my foremost concern is to identify how the ‘discipline’ that we practice, architecture, can help to resolve the problem implicit in all construction, no matter how simple it might be.”<sup>1</sup> Almost ten years later, he spoke of “an attitude to my work that is concerned not so much with the proposal of a language or a working method, but rather with the development of ideas that can resolve the specific problems of each project.”<sup>2</sup> Almost certainly, the predominant feature of Moneo’s work is his desire to resolve the problems specific to each project, while employing the tools provided by a discipline anchored in the thorough knowledge of its history. The varied repertoire of his buildings is hardly surprising as they reflect the personality of a designer whose works propose a formal solution befitting each different occasion.

The diversity evidenced in Moneo’s buildings arises from the various problems addressed by the architect. Identifying and giving priority to the design process and to face the problems is key to the success of his projects, an affirmation which generally describes his work, and in particular those examples that follow.

In the Hotel Hyatt and the Mercedes-Benz Office Building in Berlin’s Potsdamer Platz (1993-1998) (Fig. 1), Moneo had to deal with the various volumetric and access requirements of the complex urban surroundings –alignments, building heights, pedestrian and vehicular access– while solving the programs of two distinct uses. The disposition of the plan that accommodates both the offices and the hotel, the specific design for the guest rooms are all resolved in an elaborate and original configuration.

In the Pollalis House, Belmont, Massachusetts (1996-2005) (Fig. 2) Moneo faced a two-pronged problem. The proposal is an addition to a typical post-war suburban house built around 1950. The addition had to be built on a steep wooded slope at the rear of the parcel. The architect had to solve issues relating to both the architectural language of the existing house as well as to the natural surroundings. The intimate dialogue with the earlier formal language did not prevent the extension from being laid out very freely on the site. The floor plan of the addition fans out to showcase the natural landscape. At the same time, the house steps down adjusting to the slope, using the roof of the bedroom addition as a large outdoor room or deck. The centerpiece is the new double-height living room, the spatial center of the house through which the rooms in the original house and the addition relate visually to one another with the circulation along one side connecting the existing house to the new one. The large glazed wall in the living room visually draws in the landscape, and a small opening near the roof peak lets in a glimpse of the sky. The floor plan articulates the individual rooms as each one creates its own relationship with the outside.

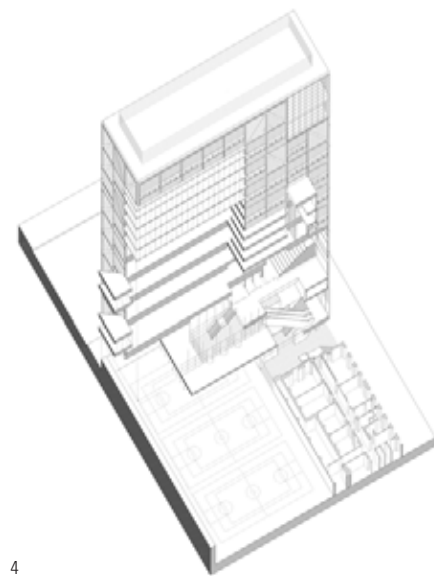
The Chace Center at the Rhode Island School of Design, Providence (2000-2008) (Fig. 3), is a building that resolves some very specific problems via its diverse program and the complex site conditions. In this case finding a solution was a real challenge. The program required the building to house a wide range of activities and at the same time channel the network of interstitial spaces that wove through the site. This network of pedestrian walkways and fire stairs connects the neighboring buildings and streets, while at the same time helps to reduce the steepness of the gradient between Main Street at the front and Benefit Street behind. With outdoor steps, long indoor stairways and a large

covered passage, the new building establishes these connections and also creates a new entrance to the existing museum. Other urban planning goals of the building were to provide continuity to the frontage of Main Street and create a physical and visual relationship between the university campus and downtown Providence.

One of the project's main achievements is its capacity to do all this without having a formal facade on Main Street. Hence, the main entrance is not placed directly on the street, but instead, in a small plaza positioned to one side. The most important feature of this solution is that the idea of a separate building, whose end result would have been its self-affirmation, is replaced with a proposal whose value resides in the way it manages to suit and fit into the location while providing solutions to all the interior and exterior needs. The project reflects Moneo's conviction that the fundamental purpose of architecture is to solve a building's specific problems as a whole.

The Northwest Corner Building at Columbia University, New York (2005-2010) (Fig. 4, 5), is particularly relevant to the issues discussed in this essay. Located at the Northwest corner of the campus, this tall block, comprised of ten double-height stories on top of a triple-height base, responds to two stringent site conditions. On the one hand, the building had to adapt to the height difference of nine meters that separated 120th Street and the higher campus level. On the other hand the structure of the new building had to span thirty-eight meters over an existing gymnasium occupying two-thirds of the site. These and other specific site characteristics once again served as design incentives for the project. In addition to finding solutions to these challenges, Moneo addressed the general question of how to build on a historic campus. In this case the campus had been planned by McKim, Mead & White in 1893-1894. Moneo decided to follow the guidelines set out by their master plan. The Columbia campus is characterized by a network of open spaces between buildings that stand intermittently along the campus edge defining its boundaries. These buildings have two facades, one facing the street, and the other looking to the campus, which is also the case with the two science buildings to which the new lab building is linked functionally. Moneo's solution follows the alignments of these buildings and forms a discontinuous L-shape as it completes the northwest corner of the campus.

The building's design features volumetric simplicity and internal complexity. Besides fulfilling the requirement of providing extensive lab space, it also introduces a pedestrian route between the 120th Street and the campus level. This is achieved via a sequence that begins with a lower entrance at the street level, continues up through a generous and well-lit space that houses a café, and finishes in a glazed double-height gallery at the campus level. The gallery and the library, which is also double-height, enjoy an open plan that looks out onto Broadway to the west and onto the campus to the east. Another interesting feature is the cross section of the lab floors, which have a wall enclosing technical spaces next to a double-height corridor, an internal spine giving access to the double-height labs facing Broadway and two levels of single-height offices facing the campus. The double height labs allow the facade that faces Broadway to have a large-scale reticular layout, while the facade overlooking the campus has contrasting scales: one similar to that on Broadway and another one corresponding to the offices. Although the design of the facades seems somewhat contrived due to a lack of regularity, it cannot be considered arbitrary as it depends on the position of the structural members, which indeed serve as a formal device that help to achieve a "picturesque" effect. The facade solution addresses the important issue of how to allow the building envelope and the structure



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to be expressed in the same plane. Such an approach breaks with a trend in recent architecture, in which the building envelope usually ignores the structure and is therefore created as an independent skin.

The Davis Museum and Cultural Center at Wellesley College (1989-1993) (Fig. 6, 7) was commissioned to house the college's valuable art collection. Instead of proposing a generic container, unrelated to the way in which the collection was organized, Moneo designed a building with a specific spatial layout and distribution. The museum becomes a powerful prism closed to the outside, or, in the architect's words, becomes a "coffer" in which the collection can be preserved and displayed. This volume should be seen as a unit, both from the outside and from within. Inside the volume the idea was to "activate the void anticipated by the solid so as to endow the space with meaning."<sup>3</sup> In addition to the skylights, another key feature defined the inner space: the double stairway which divides the floor plan asymmetrically and organizes the museum visit. The staircase not only functions vertically, it also works horizontally, increasing the distance between one gallery and the next one immediately above. Moving up the stair ramp establishes the time interval needed by visitors to adjust to the diversity of the works of art on display in the different galleries. The double stair solution avoids the awkwardness of single staircases, which when going up or down several floors at a time require getting off the stair in order to start the next flight. Most importantly, the double staircase enables visitors to choose different routes as they walk through the museum.

The stairway system thus structures the entire interior space, providing it with the intended unity and making the resulting spaces more varied in terms of size. But the architect has made the stairways perform more than just the physical function of organizing the spatial layout of the building and being the element that facilitates the upward movement to the areas lit by the skylights. He has also metaphorically defined them as 'via ascesis,' or ascetic pathway through the world of art: from art that is contemporary to us, going back to Ancient art, via Baroque, Renaissance and Medieval art. It is a pathway that enlightens us, as we travel back through the strata of time towards the very origins of culture.

#### BUILDING IN CONTEXT

The site chosen for the Davis Museum on the Wellesley College campus planned by three architects, one of whom was Frederick Law Olmsted, is famous for its picturesque beauty and outstanding features. The preliminary condition the architect had to address was building next to Paul Rudolph's highly-regarded Jewett Art Center which helps enclose the attractive Wellesley campus quadrangle. Both the decision to engage in a dialogue with the older building, and, the way in which the dialogue takes place, are both fundamental features of the project. The building's height is mitigated by two adjoining smaller volumes, the cinema, and the offices and services block, two volumes which help mediate the height of the museum in relation to Rudolph's building. Furthermore, other connections on a smaller scale are incorporated into the actual museum volume. Slight horizontal and vertical setbacks of the compact volume help identify parts associated with various museum functions. Together with the Jewett Art Center the new building forms a small plaza. A number of subtle gestures relate it to the older building. For instance, like the Jewett, it is made up of two main volumes linked by a connecting element. Rudolph designed an elaborate and geometrically complex stair sequence beginning in the quadrangle and passing below the Jewett. A passage between the new museum and the cinema is aligned with Rudolph's stair sequence, and extends it with yet



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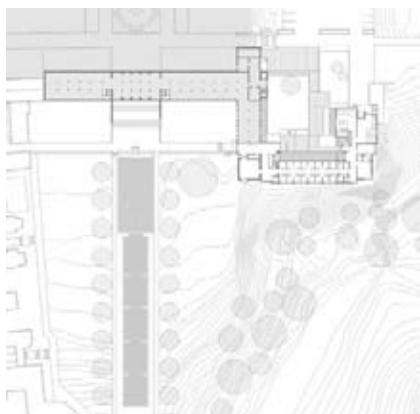


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another flight of steps. The placement of the entrances to the museum and the cinema on either side of this passageway reinforces its importance. In addition, walls of the volume housing the cinema are set parallel to the splayed lines of Rudolph's building. All of these decisions help to create the discreet though perceptible dialogue between the two buildings, so that each is mutually enhanced. In 1991 Cranbrook Academy of Art in Michigan, another campus known for the beauty of its landscape and the quality of its architectural design and sculpture commissioned Moneo to design a building that was actually delayed until 1997. The new addition was to house studios for students and the artist-in-residence. Once again, the project had to relate to a pre-existing building, the solid but contained museum designed by Eliel Saarinen, and the monumental fountain in front of it, by the sculptor Carl Milles (Fig. 8, 9). The crucial decision was to make an L-shaped building connecting with the also fundamentally L-shaped plan of Saarinen's building, but opening towards the back, rather than the front. The new building was therefore laid out like a continuation of the pre-existing one, yet avoiding mimicry or competition. The plan of the addition embraces its own outdoor space that the new studios look out onto, using materials that highlight their quasi-industrial status as workshops. An important feature of the project is the prolongation of the transversal axis of the outside circulation path through the entrance porch in the side-wing of the old building and continuing into the entrance hall of the new complex. What seems particularly successful about the new brick volume, although of a different color than the existing building, is its layout which connects both the "L"s linking to the wing of the pre-existing building by way of a slit and a small setback which separates it from the latter, while at the same time maintaining its height. The extension of Gothenburg City Hall, by Gunnar Asplund, now considered a classic comes to mind. As in the case of Wellesley project, but in a less contained manner, horizontal and vertical setbacks and changes in the window openings differentiate the various integral parts of the new building. These distinctions are in sharp, perhaps excessive contrast to the serene uniformity of the Saarinen's building.

Rafael Moneo's intervention in these beautiful American campuses and both with the proximity of works by two important architects prove his skill at responding in a positive manner to the existing features of both sites. These are not, however, isolated cases. Regarding the importance of site, Moneo once said: "It is simply about stating that architecture belongs to the site. That is how we explain why architecture has to be appropriate. To my mind this means that it has to recognize the attributes of the site, both in the positive and negative sense."<sup>4</sup> And further: "It is on the site where the specific object of a building achieves its only mode of being, where the building acquires its necessary uniqueness."<sup>5</sup> As he explained on yet another occasion, "obviously, the architectural context is a decisive factor for a project. But here I must insist that I do not regard the project as something that completes, or as a mere continuation of what is already present. What really generates a project is an idea that functions in a social or material context in a specific form."<sup>6</sup> This opinion distances his work from contextual approaches that seek –or used to seek– strict subordination to the physical context.

The Arenberg Library at the Catholic University of Leuven (1997-2002) (Fig. 10) is another academic building standing in less obvious surroundings than those of Wellesley and Cranbrook. Here we can again speak of a response to location, in strong architectural surroundings. The new building had to be placed among the remains of the Celestine convent, an architectural complex in a precarious state, located on the outskirts of the town. The aim of the project was, on the one hand, to link the half-ruined building with the urban layout and network of pathways that connect to the surrounding territory and,



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on the other hand, to give new meaning to the open areas extending from the main complex, to enclose the incomplete cloister with a new construction and at the same time to give new use to pre-existing buildings. The singular form of the project comes from the floor plan of the main volume, which was designed as a reading room. Its enclosure uses a combination of curves to suggest a basic geometric theme: the dual concave-convex nature of a line or surface. The back of the building, which is inserted into the cloister, is the standard concave shape on the inside, and convex on the outside. But the front of the building, which faces the forecourt, reverses this order acknowledging the difference between both sides. The surface of the upper floor facing onto the access court is comprised of a set of ridges or channels, like the fluted cross-section of a giant classical column shaft.



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Focusing on the site does not imply attending to just the wider surrounding landscape. It also refers to a more concentrated environment. Such is the case of LISE, the Laboratory for Interface of Science and Engineering at Harvard University, in Cambridge, Massachusetts (2000-2007) (Fig. 11). This project was another intervention in a university campus, but in one more densely built-up than the others. At Harvard the fundamental decision was to leave the ground practically open and build above and below it. For technical reasons, the initial decision was to place the new building's most sensitive area (the cleanroom) underground. As a result Moneo proposed a sunken court between the cleanroom and the adjacent Applied Science Laboratory which created a visual connection between the two, and provided access to the cleanroom from the outside. Once this strategy was adopted and given the proximity of other neighboring buildings, the location of the construction of new labs and offices above the ground was practically given. The new volume partially overlaps the existing applied science laboratory, taking a chunk out of one of its corners and, respectfully, locating the entrance to both buildings there. But the problem was that the location of the new building would almost completely block a busy campus thoroughfare, creating an obstacle to the pedestrian movement along the network of campus paths. The solution was to raise the building's square volume off the ground, and support it with three partially curved pedestals or "legs," letting the campus paths run beneath it. Their convex surfaces do not face outwards, as might be expected, but instead face inwards, creating an interstitial space that becomes the focus and plays the role of crossroads and gateway to this part of the campus. The architect associates the attractive, sculpted space defined by the three convex surfaces with Richard Serra's curved corten steel sculptures. In this case, however, the concrete walls and ceilings and the *slanted* light give the space a unique atmosphere (Fig. 12).

The process of choosing the optimal shape of the legs was the defining formal issue of the project, its architectural argument, a process based on imagining them as if they were the result of cutting into ovoid-based solids and virtually extending them to the floor of the building's prismatic form. The plan of these legs corresponds to some of the islands of grass that remain within the vertical projection of the square edge of the volume they support. The architect thus appears to have tried to counterbalance the inevitable arbitrariness of the above mentioned choice with a creative procedure that makes the legs, two of which serve as light wells to the basement floor, look as if they were inevitably determined by the configuration of other elements such as the islands of grass and the volume of the building itself. Sculpting a unique covered public space is the form-giving gesture that becomes the hallmark of this building. It may be recalled that on a very different scale and object, Moneo employed this same gesture some years ago when he designed a table for which the inside of the legs were shaped like quartered fluted column shafts. The latter looked like the remains of four whole shafts cut virtually along the vertical planes of the table top. With this process of

fragmentation, position inversion, and change of size, the architect managed to counterbalance the figurative status of the classical column shaft.

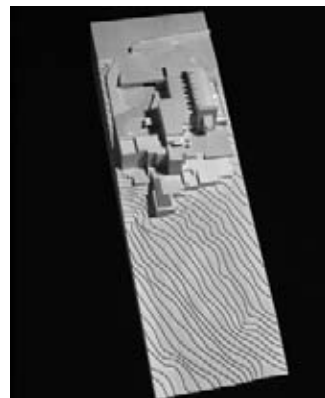
The Rabbijn Maarsenplein Housing Complex, The Hague (1999-2004) (Fig.13), is a building shaped in response to its urban context. The block was designed as the backdrop for a pre-existing church, a neutral building inserted into the urban framework helping to define the Maarsenplein open space, which itself becomes the focus. Thus, the project becomes a means of understanding the city layout in terms of figure-ground, even though the housing complex itself merges with the neutral background against which urban spaces and the unique church building stand out. Furthermore, the architect attempts to relate the project to the various scales of the surrounding buildings by breaking down the volumes, which may be too strongly emphasized in the attempt to subordinate the building to its surroundings.

In the project for the Residence of the Spanish Ambassador to the United States, Washington D.C. (1995-2002) (Fig 14), the response to the site –in this case, the topography– was also a decisive factor in the resolution of the project. In a long, narrow plot, with a steep slope, the longitudinal layout of this complex building starts at the highest point, composed of terraced volumes that adapt to the slope. There are two independent entrances to public and private. Access to the public spaces is from the higher level of the building, while the entrance to the Ambassador's home and the service quarters are on the lower level. The public reception room on the upper level receives natural daylight from a series of tall windows which give it an almost ecclesiastic feel. Despite the length of the building more than half of the plot remains open.

The Moderna Museet and Arkitekturmuseet in Stockholm (1991-1998) (Fig.15) is another example of a sensitive response to the site. The project won the first prize in an international competition that allowed the participants to choose where to place the building on Skeppsholmen, one of the islands that make up the city of Stockholm. The first decision was not to place the new building at the water's edge. This would have made the building a focal point of the island and the overall setting in the bay. Spectacular monumentality was rejected in favor of endeavoring to integrate the building to its surroundings. Next, was the observation that detached, pavilion-like buildings were a common feature of the architecture on the island. Hence, as the architect wrote: "The [new] set of rooms stand on Skeppsholmen Island with great freedom, maintaining the pavilion-like character of all the previous constructions. To live together with the other buildings of Skeppsholmen and to maintain intact the skyline of Stockholm was here an issue."<sup>7</sup> There was, however, one exception to this rule: a building 250 meters long that was originally used for rope manufacturing. To neutralize the unusual features of this building by partially hiding it, the new building was positioned in parallel and in close proximity to the former. The location both supports the museum and anchors it on the site. On the other side of the rope factory is a church that stands out on the islands skyline. It is an octagonal structure with a dome and a lantern. The principal compositional element of the museum is a square hall, extended upwards by a pyramidal shaped roof crowned with a skylight prism. It is a schematic version of the church roof which reproduces some of the characteristic features of the church. The inseparable conjunction of volumetric and spatial form, structure and light could be construed as a reference to Khan. The juxtaposition of built elements of different sizes resulted in an assemblage of broken or discontinuous silhouettes, giving the design a moderate scale and non-monumental character very much in harmony with the landscape and architecture of both the island and the city of Stockholm.



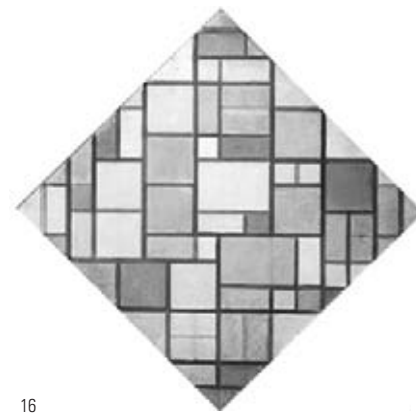
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#### COMPACTNESS AND OTHER DESIGN STRATEGIES

It is interesting to analyze the way the image of the Stockholm Museum was created. As I once wrote,<sup>8</sup> Moneo almost literally took parts of Mondrian's painting *Lozenge with Light Colors and Grey Lines* (1919) (Fig. 16) as the plan of the three units that make up the most characteristic part of the museum, and converting the painter's lines into walls, he developed compact groups of galleries arranged like a pinwheel around a central module. The assemblage of rooms "can be layered, step-like, or adopted to the oblique edge of the plot. The floor plans of the galleries are squares or double squares in various sizes, so it is possible for the skylight roofs that cover them to have different bases and, hence, different heights. This design strategy is fundamental to the architect as he sets out to systematically explore a rich geometry which embraces the rigor of mathematics, while providing simultaneously for a variety of spaces and a lively building silhouette. The resulting image is picturesque only in appearance. Far from the improvisations of chance occurrences, we are here confronted with the rationality of a process which informs the overlapping geometries of both plan and section, giving rise to a rigorously structured built form. This process results in an image that is both consistent and varied and which, while inescapably determined by the geometric and constructive system of the building, is also unequivocally linked to the pre-existing image of the church"<sup>9</sup> and the other chimney-topped roofs that are so common on the island. The grouping of the galleries can be seen as a process of densification that uses the island's pre-existing buildings as a reference, but increases their proximity, so that they evolve from detached buildings into juxtaposed rooms which results in compact blocks with changing layouts. The grouping appears to be random, but it is in fact governed by the rules that generated them.<sup>10</sup>

In an interview given in 1994, Moneo expressed his interest in "compactness because it reflects the dual category of architecture, in which internal and external spaces coincide but still maintain their independence."<sup>11</sup> The affirmation of the independence of interior and exterior is opposed to the need for continuity between the two ("fluid space") as argued by modern orthodoxy, according to which the inside of a building should be expressed on the outside. In making such statement, Moneo adheres to Robert Venturi's argument stated in *Complexity and Contradiction in Architecture* (1966), a book that he was among the first in Spain to acknowledge and appreciate. In chapter nine of the book, "The Inside and the Outside," Venturi examines the contrast between the two by using a number of historical examples, including some modern ones such as Villa Savoye and the buildings of Louis Kahn. In 1978, Rem Koolhaas continued defending the independence between the interior and the exterior of the building. In his book *Delirious New York*, Koolhaas argues in favor of segregating the inside and the outer envelope of Manhattan's high-rise buildings. Yet, by associating the independence of inside and outside with the quality of compactness, Moneo is compensating a segregating mechanism with another integrating one. This combination of both mechanisms allows him to achieve compactness of the external volume as well as of the internal spaces that are contiguous, and which fully occupy the plan. Although this compositional process endows the building with a density typical of much older architecture, Moneo makes it clear in his statements that he would not advocate returning to the classical idea of an organic whole, nor would he advocate the strict hierarchical integration of the different building parts. Compartmentalizing the floor plan does not obey the regular Modern reticular organization of space either. Here regular and closed shapes coexist alongside the free layout of the interior. Furthermore, because of its topological nature, compactness is the opposite of disintegration. Moneo is thus able to contrast form based on the idea of compactness with the typical fragmentation of much recent architecture, distinguishing himself from many of his contemporaries.

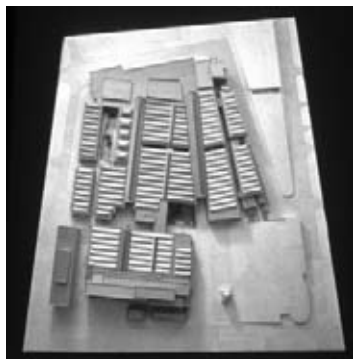




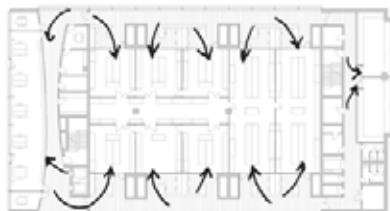
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The compactness approach is particularly appropriate for buildings whose outer walls are entirely, or almost entirely, blank –a silent but powerful way of responding to their urban location. The internal layout can be adapted to the building’s requirements, while avoiding making the program visible from the outside, dissociating the interior from the building envelope.

This is the case with another museum, the Audrey Jones Beck Building for The Museum of Fine Arts, in Houston (1992-2000) (Fig. 17) that due to land use density and its proximity to a major road occupies almost the entire rectangular plot, the building becomes a solid, inside which the numerous exhibition halls and other rooms have been made to fit compactly within the prismatic solid. The building plan was organized using a procedure similar to solidly packing the inside of a box, by cleverly assembling a set of pieces without leaving leftover spaces. The floor plan of the building, particularly the upper floor, is reminiscent of Soane’s plan for the Bank of England (Fig. 18), a building mentioned by Venturi in his 1966 book with which Rafael Moneo is familiar. Although the type of rooms in the Stockholm museum are similar to the ones used in Houston –in both plan and section as well as in the compact layout, the process by which the result was achieved would appear to be quite the opposite. In Stockholm, the rooms are combined or “packed,” so to speak, in order to obtain a specific internal layout and external envelope. Both arise from and simultaneously correspond to one another. In Houston, the outer envelope was decided upon first, and the various rooms were “fitted in” later. Thus the internal layout is independent from the envelope.

The Neurosciences and Psychology Building at Princeton University, in Princeton, New Jersey (2006-2013), follows the latter process, as the outer volumes were given an arbitrary form, or were related to the physical context, while the internal layout followed its own criteria. In the larger of the two programmes –The Neuroscience Institute– an outer band that follows the shape of the building envelope contains the offices of professors and students and an interior space defined by a perimeter corridor contains the labs. In the Psychology Department, the central strip is occupied by the service core. The compact layout of the floor plan coexists with the openness of the external facade.

Another building that was created according to characteristic layout criteria was the Souks in Beirut (1996-2009) (Fig. 19). Located in a densely built-up area of the city center, and on the site of the pre-war souks, the complex includes several taller volumes and special uses on the periphery of the block; whereas the souks themselves are built on two levels and located on the inside of the block. The constructions are arranged in a serial form, with repetitive parallel structures and roofs, so that the built areas form rows of shops and pedestrian streets. The two main streets are covered longitudinally by skylights which create spaces reminiscent of traditional Islamic architecture, a network of spaces which include covered and open spaces that retain the characteristic horizontality and density of the built up areas.

The Novartis Laboratories in Basel (2005-2008) (Fig. 20) has an unusual floor plan for a building of its kind. The usual layout relies on a central corridor with lab spaces on either side. In this case, however the layout has been reversed: the labs are grouped in a block in the center of the floor so they can be subdivided in various ways; while the circulation takes place on the perimeter. A band containing communications, services and technical rooms runs between them and serves to screen access to the labs. The plan is layered, going outwards from the center used for the laboratories to the perimeter used for circulation, providing visual contact to the outside.



21

In the Our Lady of the Angels Cathedral in Los Angeles (1996-2002) (Fig. 21) a similar reversal has taken place. As a cathedral –a basically open plan space– here it is not a question of fitting a set of larger or smaller rooms into an all-encompassing volume. However, we may indeed point to the dual quality of the architecture in which the inner space and the outer volume remain distinct.<sup>12</sup> As a result of the liturgical changes that took place in the Catholic Church during the 20th century, the chapels on either side of the nave –a characteristic feature of traditional churches– are no longer present in modern churches. This means that the inner space generally corresponds to the outside volume, separated only by a thin wall. However in the Cathedral project, Moneo returns to the traditional layout with side chapels, accompanied by a Latin cross floor plan. But he radically reverses the orientation of the chapels which here no longer open onto the nave. Instead they turn their backs to it, opening onto ambulatories running along the perimeter. In another reversal of traditional church layout, instead of locating the entrances at the foot of the church, he places them on either side of the apse at the head of the church, from where the ambulatories begin. Thus, the usual axis of circulation through the nave is replaced by lateral east-west ambulatories that lengthen the path to the main space making it more mysterious. The ultimate reason for this reversal lies in the orientation of the church: in order to maintain the traditional eastern orientation of the apse, the doors had to be placed on the east, next to the apse, facing the plaza in order to avoid having to go round the outside of the building to enter. The journey to the rear of the nave is instead made through the inside of the building, a path accompanied by the series of chapels.

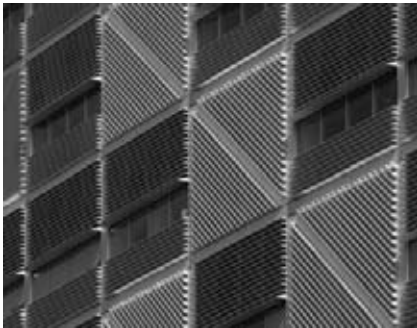
#### THE QUALITY OF LIGHT AND MATERIALITY

The experience of entering the Los Angeles Cathedral and the entire space itself are both related to the layout of the plan, but they cannot be understood unless we also consider light and the materials that define the three dimensional reality of the built space. Moneo himself points out the central role of light in a space whose aim is to restore a sense of the “transcendental.” He links the different kinds of light that flood into the cathedral with the kinds of light found in religious buildings from various architectural periods, such as Romanesque, Byzantine or Baroque. Materials also play a major role in defining space: the colored concrete of the walls, the stone floors and the wooden ceiling, are all very different from one another, but well coordinated. Alabaster, in particular, is responsible for the quality of the light that filters into the cathedral.

Light is undoubtedly a key factor in the creation of an architectural space and this is true of Moneo’s work in which light has a fundamental purpose. However, the kind of light he proposes differs according to the kinds buildings he designs. Skylights are a hallmark of the museums where he uses overhead light as a basic device for defining the exhibition spaces. The Stockholm Museum of Modern Art (Fig. 22) is the project where the lighting elements are the most fully integrated into the volume-space-structure form. In the temporary exhibition space, each skylight corresponds to one of the modules on the square grid of the ceiling structure while in the galleries of the permanent collection each pyramid-shaped roof is capped by a skylight. The volume of the Davis Museum is crowned by a series of saw-tooth skylights. According to Moneo, light becomes “the real protagonist of the space,” permeating the lower levels through the voids. In the Houston Museum of Fine Arts, the roof is a world populated by various groups of skylights that correspond to the various rooms and circulation areas fitted into the volume of the building, so light once again plays the dominant role, “the real protagonist of an architecture whose substance lies in the internal space.”



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Rafael Moneo’s concern about the appropriate use of materials and finishes is reflected in his buildings. As with some of his most well-known works in Spain, brick is the main, although not the only material that Moneo has used in buildings that have been important to his international career such as the Davis Museum and Cultural Center at Wellesley College and the addition to the Cranbrook Academy of Art. The Audrey Jones Beck Building for The Houston Museum of Fine Arts, another milestone in Moneo’s career, is clad in stone. Stone in a herring-bone pattern is also used for the Beirut Souks. Poured colored concrete, along with alabaster for the openings, are the materials used in the Cathedral of Our Lady of Los Angeles. The Stockholm Museum of Modern Art is finished in colored stucco. The Arenberg Library at the Catholic University of Leuven is finished in white stucco. According to their different character, more industrial-style materials are used in the facades of the laboratory buildings, such as metal cladding or large areas of glass. The facade of the Northwest Corner Building at the Columbia University is made of cast aluminum panels whose 45º striations create a small-scale play of light and shadows, a surface vibration framed by the horizontals and verticals (Fig. 23). As I mentioned before, the apparent arbitrary distribution of the panels on the facade, with the three stripes at different angles, has a structural justification which dispels the notion of arbitrariness. The diagonal stripes running in both directions accompany the structural reinforcements, while the horizontal-striped panels correspond to openings that are free of the diagonal bracing and in which windows have been placed. A characteristic texture is thus achieved that is inseparably linked to the structural arrangement of the facade. This careful selection of materials can sometimes find its opposite in the use contrasting materials employed in some groups of buildings, and which can on occasion seem too strong. However, the sober finish on most of the buildings mentioned above is to be commended, as it is on another two buildings that are a quite different when it comes to materials. One is the Ambassador’s Residence in Washington D.C., in which the brickwork unifies the fragmented volumes. The other building is the Neuroscience and Psychology Building at Princeton, which will be built using only, glass, with three different textures: transparent, striped translucent, and mirror glass.

#### THE ARCHITECT’S DILEMMA: NECESSITY OR ARBITRARINESS?

Throughout Rafael Moneo’s long and fruitful architectural career, there seems to have been a struggle between his desire for a rational, objective and even necessary architectural response to a problem whose initial premises will greatly determine that response and the freedom with which he also incorporates into it subjective and, at times, seemingly arbitrary elements. Often apparent in Moneo’s works, it is also an issue that has concerned him in his theoretical works, ever since the early days of his career. At the age of twenty-eight, Moneo published an article in the journal of Madrid’s Colegio Oficial de Arquitectos, with the title “A la conquista de lo irracional” (The Conquest of the Irrational).<sup>13</sup> Here, he expressed his concern about the use of historicist references which, relying on architecture’s ability to signify, were employed by some of the so-called “third generation” architects, such as Stirling and Rudolph, or Kahn and Van Eyck. Moneo expressed his hope that buildings would be capable of expressing direct and immediate feelings and experiences, without the limitations of excessive rationality, and thus manage to “lead openly and honestly towards the irrational, without having to rely on the formal realm of the past.”<sup>14</sup> On another occasion, and in the defense of freedom of invention as opposed to necessity, he stated: “I believe that some architects exaggerate when they speak of their work as if it were dictated by necessity. For me, there is always a moment of arbitrariness at the origin, an element of freedom in the choice of form that is not determined by any circumstance beyond the work itself.”<sup>15</sup> And again, a few years later, he returned to this issue

of ‘arbitrariness’: “Throughout the entire history of architecture, architectural theorists have been claiming –or trying to make us believe– that what architects did was quite simply inevitable. I am acutely aware that this is not true. There is no simple determinism for explaining architecture. In fact you start making certain (arbitrary) formal decisions that enable you to move the design process forward and create appropriate guidelines in order to build.”<sup>16</sup> On this same occasion, Moneo also declared that “this area of ‘arbitrariness’ in my work, in other people’s work, and throughout the history of architecture, ought to be one of the fields of research pursued by theorists today.”<sup>17</sup> It is an issue he examined when he developed this theme in a lecture entitled “On the Concept of Arbitrariness in Architecture” which he gave in January 2005 in Madrid on the occasion of his investiture into Real Academia de Bellas Artes de San Fernando.

This is neither the time nor the place to analyze, let alone judge, Moneo’s theoretical stance, but it can be said that the works discussed in this essay were all created using a greater or lesser degree of the arbitrariness of which he speaks. As a general rule, however, it is an arbitrariness that may be qualified as “rational” or “objective.” In other words, despite the apparent paradox this apparent freedom of formal invention is informed by necessity. Moneo himself hinted at this in one of the interviews mentioned above: “This is precisely the architect’s dilemma: on the one hand you are quite aware of the arbitrariness of form; on the other hand, you realize that the more skilled you are at achieving certain basic qualities, the more able you are to suggest to the others that the work is not arbitrary.”<sup>18</sup>

#### ARCHITECTURE AS A BRIDGE

With regard to the arbitrariness associated with form, twenty-five years ago Moneo lamented the loss of the architect’s traditional skill as a builder and the resulting disassociation between form and construction. However, “before the present disassociation, the invention of form was also the invention of its construction. One implied the other.”<sup>19</sup> This is what enabled them both to overcome the arbitrary element of form because, while it is true that “arbitrariness has always been an inherent part of architecture,” it is also true that “the arbitrariness of form disappeared in construction, and architecture acted as the bridge between the two.”<sup>20</sup> Yet, “when arbitrariness in a building is clearly visible, architecture disappears; that which is, to my mind, the most valuable attribute of architecture, i.e., bridging the gap between arbitrariness and construction, has been broken.”<sup>21</sup> I do not know whether Rafael Moneo still considers it likely that, nowadays, an architect’s knowledge of building would enable him to use architecture to bridge the gap between the arbitrariness of form that he defends and the built reality. This question becomes particularly relevant at a time and in a cultural landscape in the US and some of the more developed European countries in which construction techniques are so independent from design. But, as I mentioned before, it can certainly be said that Moneo is an architect who pays a great deal of attention to the specific materials that are employed to construct his works (“my wish to give buildings a consistency that derives from their materiality”).<sup>22</sup> Combined with the way his buildings are rooted in their site contexts, this is something that anchors his works to the real world of what is actually built.

#### SPECIFICITY AS CONCLUSION

Reaffirming what was stated at the beginning of this essay, if one were to reduce Rafael Moneo’s rich and varied architectural output, as exemplified in this series of works, to a single feature, one would have to discuss specificity. This is a term that goes a long way to explain the above mentioned



diversity of his oeuvre, a set of buildings which demonstrate the specificity of the problem to be solved, the specificity of the physical and cultural context of the project as well as the specificity of the formal solution and the way light and materiality are dealt with. Years ago Moneo stated: “a work is produced within a set of very specific coordinates. To my mind, an awareness of this specificity is what provides our work with a certain guarantee or security.”<sup>23</sup> All these specificities create a difficulty that, according to Moneo, serves as an incentive to the project. They are dealt with throughout the design process by using another form of the specific: the architectural discipline. Architecture does not need to borrow from other disciplines; it possesses its own tools. The correct application of these tools to each specific problem and location is the most outstanding contribution of the works published in this book.

1. Rafael Moneo. Interview with “Fernando Márquez and Richard Levene,” spring of 1985. In *Rafael Moneo 1967 2004*. El Croquis Editorial, El Escorial, Madrid, 2004, p. 13.
2. Rafael Moneo. “Interview with Alejandro Zaera,” winter 1994. In ibidem, p. 21.
3. *Rafael Moneo: Remarks on 21 Works*. The Monacelli Press, NY, 2010, p. 349.
4. Rafael Moneo. “The Murmur of the Site” (1992). In *Rafael Moneo 1967 2004*. El Croquis Editorial, El Escorial, Madrid, 2004, p. 636.
5. Ibidem, p. 638.
6. Rafael Moneo. “Interview with Alejandro Zaera,” winter 1994. In ibidem, p. 22.
7. Rafael Moneo. “End of the Century Paradigms (Fragmentation and Compacity in Recent Architecture).” In ibidem, p. 659.
8. Juan Antonio Cortés. “Matemáticas y *picturesque*” (1992). In *Lecciones de equilibrio*. Fundación Caja de Arquitectos, Barcelona, 2006.
9. Ibidem, pp. 183 and 187.
10. In a recent piece of writing, Rafael Moneo acknowledges this fact: “The layout reveals that the somewhat picturesque character of the skylights is secondary, and I would venture to say that it is the floor plan that determines the form of the volumes, which emerge without letting visual criteria take precedence in the project design.” *Rafael Moneo: Remarks on 21 Works*, The Monacelli Press, NY, 2010, p. 417.
11. See Rafael Moneo. “Interview with Alejandro Zaera,” winter 1994. In ibidem, p. 26.
12. Rafael Moneo. Interview with Alejandro Zaera, winter 1994. In *Rafael Moneo 1967 2004*. El Croquis Editorial, El Escorial, Madrid, 2004, p. 26.
13. Rafael Moneo. “A lo conquista de lo irracional” (The Conquest of the Irrational), *Arquitectura*, nº 87, March 1966. In a recent conversation with the architect, he said he would now replace the term “irrational” with the word “unconscious.”
14. Ibidem.
15. Rafael Moneo. “Interview with Alejandro Zaera,” winter 1994. In *Rafael Moneo 1967 2004*. El Croquis Editorial, El Escorial, Madrid, 2004, p. 23.
16. Rafael Moneo. “Interview with William Curtis,” autumn 1999. In ibidem, p. 46.
17. Ibidem.
18. Ibidem. p. 47.
19. Rafael Moneo. “The Solitude of Buildings,” (Kenzo Tange Lecture, given on March 9, 1985 on the occasion of Rafael Moneo’s appointment as Chairman of the Department of Architecture at the Graduate School of Design, Harvard University). In ibidem, p. 612.
20. Ibidem.
21. Ibidem. In a piece written a few months later, January 1986, (“Introduction.” In *Programas de curso y ejercicios de examen de Composición II*. Publications Department of Madrid School of Architecture), Rafael Moneo stated that “it is in form that we are able to grasp the logic that is imposed by construction. Architecture is thus presented to us as necessary and inevitable intermediary between form and building.” Once again we see this idea of architecture as a bridge or intermediary, although in the previous case it was between arbitrariness (of form) and construction, and here it is between form and construction, without any reference to supposed arbitrariness.
22. Rafael Moneo. “A Conversation, ‘The Idea of Lasting’.” In *Perspecta* 24, 1988. In *[Re]reading Perspecta*, The MIT Press, Cambridge, Mass. and London, 2004, p. 624: “I think that perhaps today we are so concerned with materials because we feel that their importance escapes our world somehow. It may be that we have lost contact with their meaning. This procedure involves, perhaps, a certain nostalgia for an architecture in which materials would play a more important role. Therefore my wish to give buildings a consistency that derives from their materiality is a deliberate response to a development that almost inevitably affects our work today.”
23. Rafael Moneo. “Interview by Alejandro Zaera,” Winter 1994. In *Rafael Moneo 1967 2004*, El Croquis Editorial, El Escorial, Madrid, 2004, p. 24.



# 1. Northwest Corner Building, Columbia University. 2005 – 2010

With Belén Moneo & Jeff Brock

The design for the new science building at 120th St and Broadway has its origins in the historic Morningside Heights campus plan designed by McKim, Mead & White for Columbia University in 1897. What is remarkable about this campus plan is that it is embedded in the Manhattan grid without being part of it. The greater context of Manhattan permeates the campus, yet the campus walls protect and clearly define the presence of the University, the architecture successfully merging domestic and public spaces.

It was determined very early on that the new building should respect McKim, Mead & White’s plan. Thus, the building had to measure just 65 feet in width and retain the same separation from its neighbors as indicated in that plan, carefully following the motifs established back then and, for the most part, consistently realized in the built campus. Because of the incipient construction of the Manhattanville Campus to the northwest of 125th St, the new building would have the opportunity to provide a much-needed gateway to the old campus for pedestrians coming from the new campus.

Once the urban and campus-scale approaches had been defined, the main design challenge was to develop fluid connections between street traffic and the campus, some 30 feet higher on a site severely compromised by the presence of an existing structure: the Francis S. Levien Gymnasium, which occupied the majority of the ground plane of the new building. The remaining free space on the site, a mere 65 x 65 foot square area at the corner of 120th St and Broadway, had to fit elevators, stairs, mechanical systems, and the most public parts of the program. The escalators and stairs were organized so that the building’s users would be obliged to go through the café, one level above the street and accessible to everyone using the new entrance in order to reach the campus.

The structural feat of spanning 125 feet over the existing gym was the defining gesture of the project. Its boldest expression was given to the transparent walls of the two-story library, which gave a twist to McKim, Mead & White’s description of the campus perimeter, suggesting a communication between the campus interior and the street below. The seven double-height floors of open laboratory space suspended above the library, with the commensurate structural requirements of forty-foot clear spans and a very stiff floor construction, required a sophisticated structural design. A concept of bracing the facade plane in its entirety was developed with ARUP engineers.

The irregularity of the pattern of diagonals in the facade is a direct response to the distortion of the otherwise symmetrical loading patterns extent in the simple prismatic form of the basic structure. The cantilevered “bridges” connecting the science building to its neighbors, the trusses for lateral bracing embedded in the plan, the suspended lecture hall and café spaces and, most importantly, the eccentricity of the central longitudinal column line, all exert their influence upon the perimeter frame.

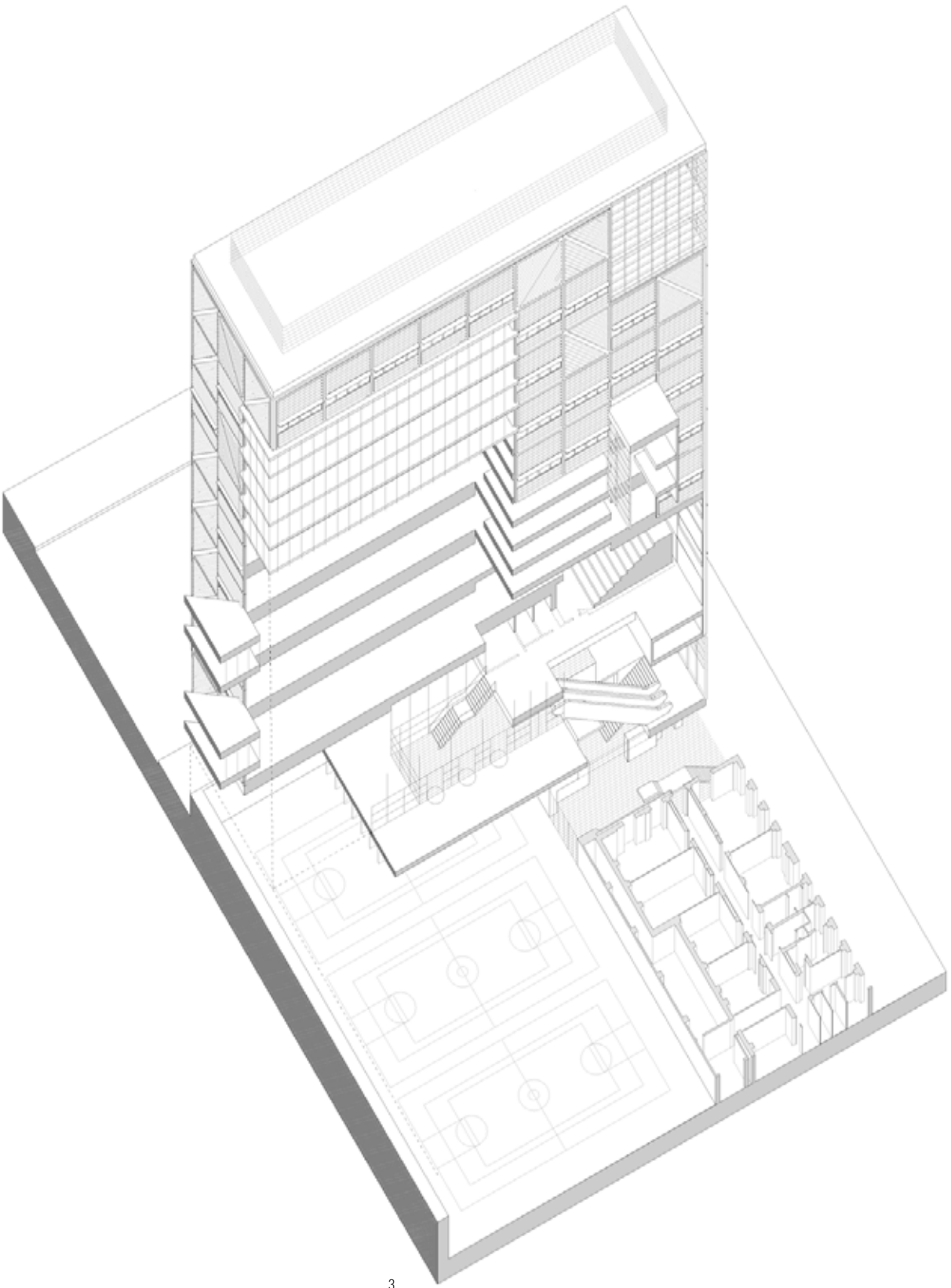
In the building’s facades the structural frame is represented by a pattern of aluminum fins, creating a patchwork of light and shadow, and the building’s mass appears as a shimmering prismatic structure sitting atop a carved stone pedestal. The campus-side facade is almost entirely glazed, revealing the interior workings of the building and again emphasizing openness to the campus community.



2. Access to the Northwest Corner Building, the Francis S. Levien Gymnasium and the interior of the campus, from the west side of 120<sup>th</sup> Street.

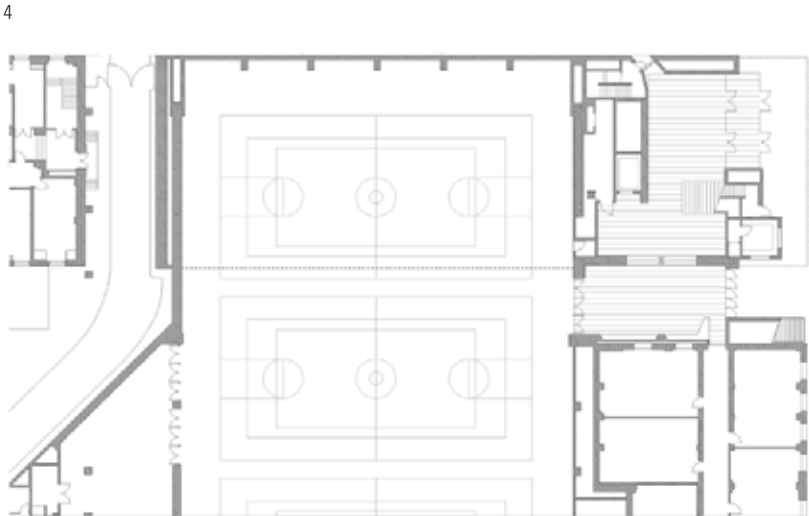
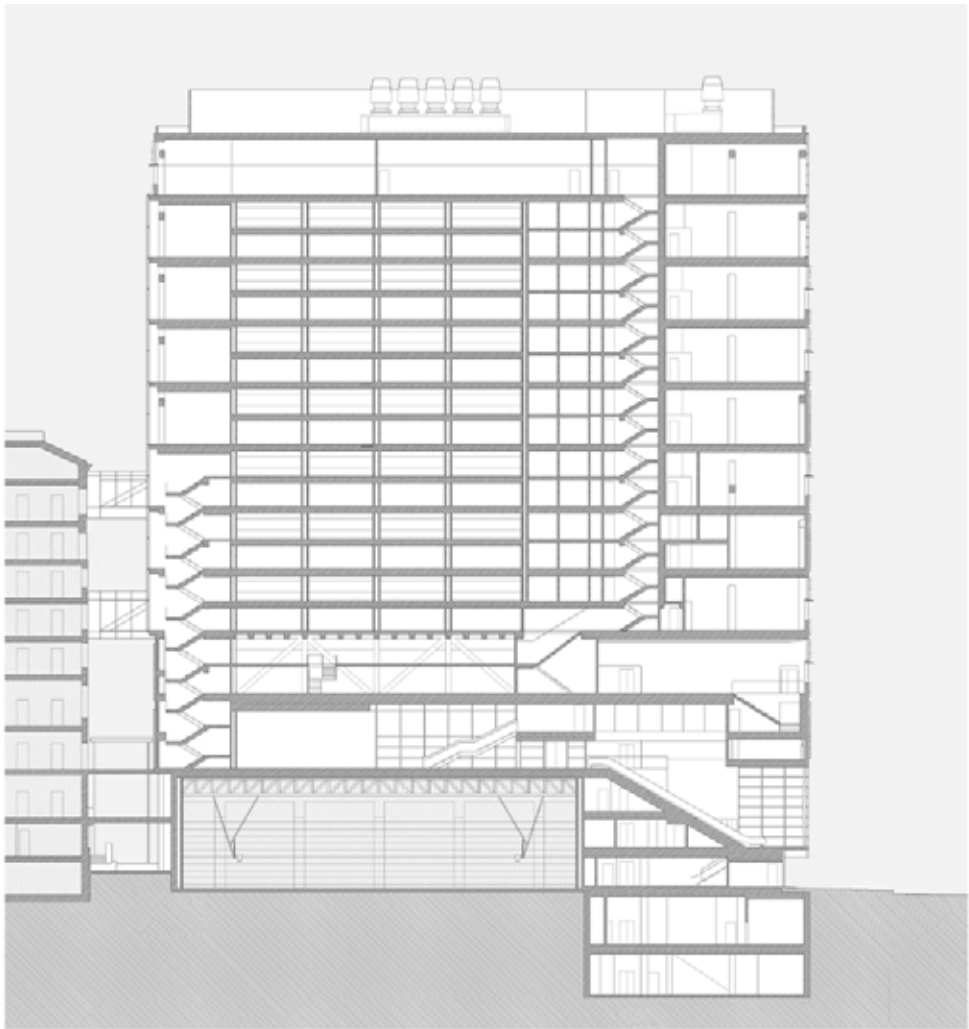


3. Cutaway axonometric drawing with superimposed floor plans.  
Francis S. Levien Gymnasium, Pupin Building, Northwest Corner Building.





- 4. Longitudinal section through the access escalator and the offices of the labs above.
- 5. Plan level +100'. Access from 120<sup>th</sup> Street.
- 6. Plan level +200'. Café.



5



6

- 7. Escalator from 120<sup>th</sup> Street to the library.
- 8. Main entrance to library and labs from upper campus level.
- 9. Library campus level with views through to Broadway from the campus.
- 10. Upper level library with structural beam.



7



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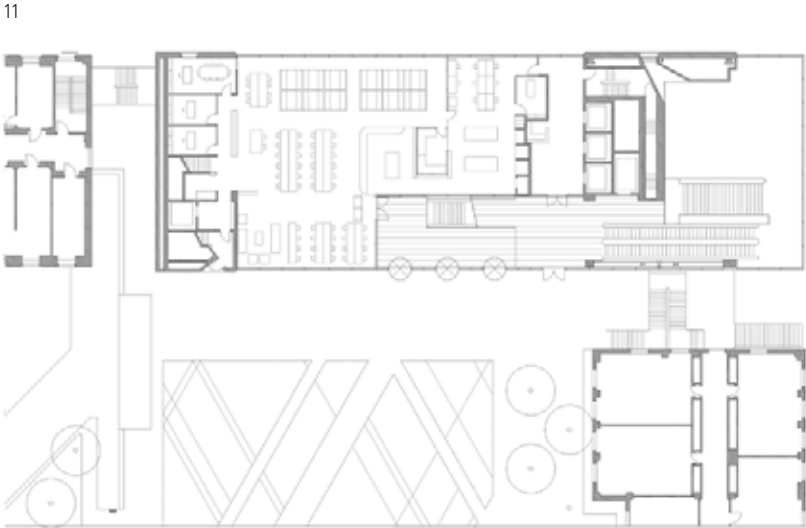
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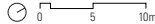
11. Longitudinal section through library floors and lecture hall.  
12. Plan level +400'.  
13. Plan level +600'.



12



13



14. Lecture Hall.  
15. Northwest corner Broadway and 120<sup>th</sup> Street. Café and entrance.  
16. Café.  
17. Entrance to café from 120<sup>th</sup> Street.



14



16



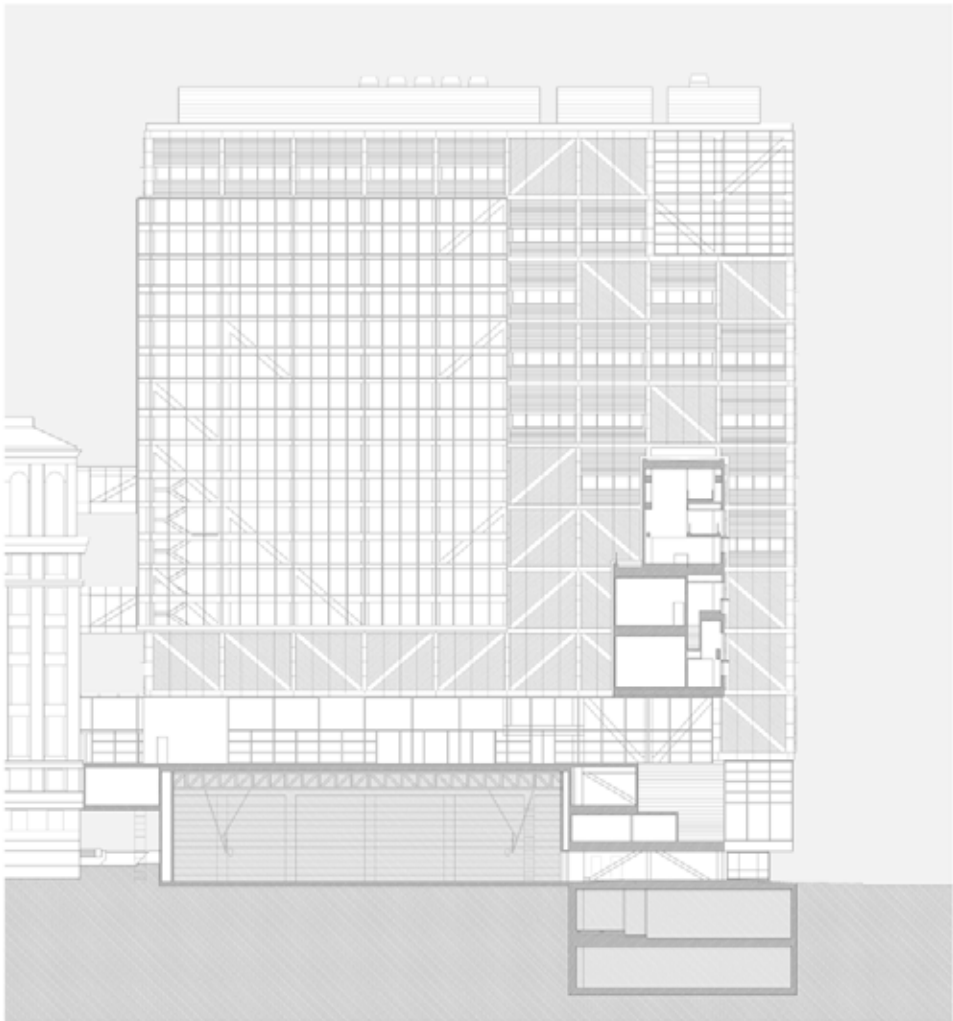
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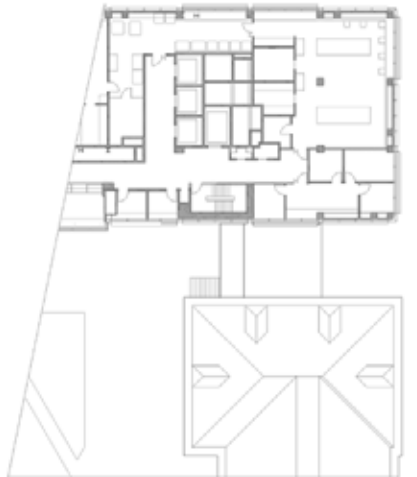
18. East elevation and cross section through the bridge to the Pupin Building.  
19. Plan level +700'.  
20. Plan level +1200'.



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21. Classroom in the connecting bridge to the Pupin Building.  
22. Library entrance and bridge to the Pupin upper campus level.



21



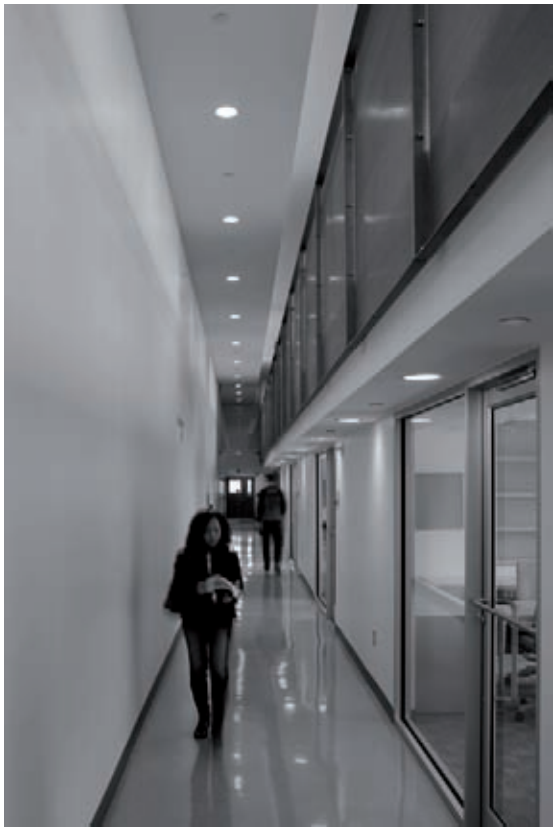
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23. View from the corner of 120th Street and Broadway.



24. Lab corridor with offices on two levels  
25. Section through gymnasium and labs.



24



25



26. Broadway facade detail.



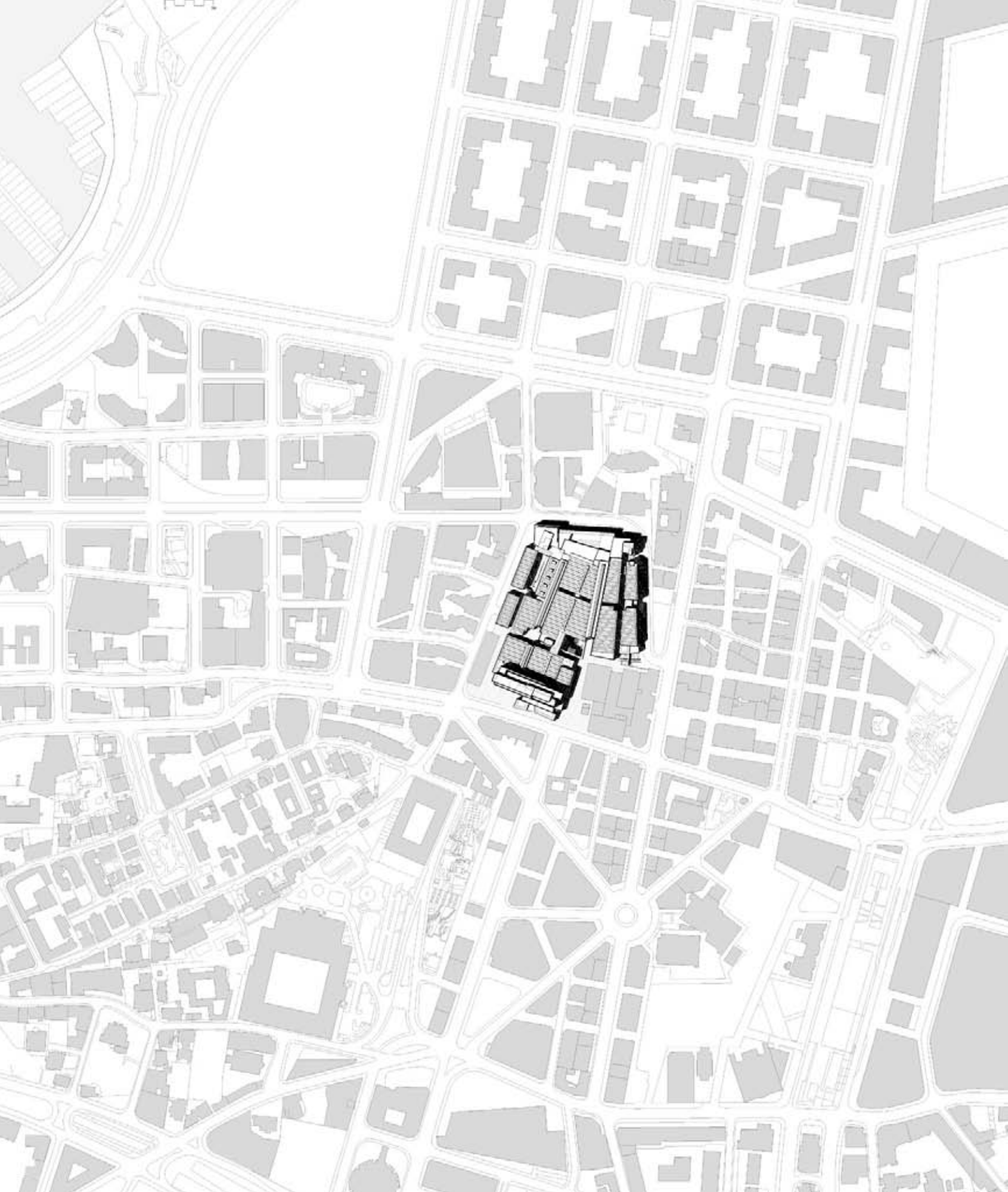
27. Detail of the aluminium panels.











## 2. The Souks of Beirut. 1996 – 2009

In 1992, Solidere –the Lebanese company in charge of bringing life back to the center of Beirut– organized an international competition for the reconstruction of the Souks. The competition proposals, which reflected the architects’ individual expression, did not accomplish the desired goals. Solidere then made a fresh attempt, using a traditional urban design approach, and commissioning a master plan from the Lebanese architect Jad Tabet. The new project, which was sensitive to the urban planning of the city, neither provided the identity that was sought for the Souks, nor did it resolve the important relationship between the Souks and the city that had been desired. In 1996, Solidere, aware of the importance of keeping the continuity between the Souks and the city, commissioned the project that is presented here.

The dramatic hole, already dug when work began on the project, was supposed to be filled with four floors of parking underneath the Souks and stood as a testament to the changing conditions of the retail trade. Archaeological evidence showed the importance that the place has held in Beirut ever since the early Phoenician settlement and, later, through the Hellenic, Roman, Byzantine, Arab, Mameluke, and finally Ottoman and French periods. The site benefitted from a strategic location; it was the meeting place of goods and people coming from the adjacent port and the city.

The goal was to find an architectural solution that revitalized the familiar character of the Souks, while accommodating contemporary shopping and retail needs. The architectural proposal tried to provide an organizing structure that would restore the former importance of the site and which could provide easily divisible spaces for merchants to occupy as needed; a structure that could accommodate all the unforeseen activities that usually occur at market places over time.

The project respected the fabric of the city and assumed a new construction for the Souks. The main Souks were kept in their pre-war location, recreating their respective sizes and roles. The Souks became the backbone of the plan and the supporting elements were placed perpendicular to them. The general urban layout reinforced the relationship of the Souks with the surrounding context by connecting the streets to the Souks. As such, the Souks would retain their pre-war openness to the city’s pedestrian traffic, a quality that has always distinguished the Beirut Souks from the self-contained character of other Souks like those of Aleppo and Istanbul.

Programmatically, the main body of the project accommodates the traditional Souks. These Souks are complemented by other modern retail needs such as larger stores, a department store, a supermarket and increased vehicular access. Office facilities and restaurants are also added at the southern and northern edges, respectively.

As in the old Souks, the incline is one of the most typical features of the project. In fact, the encounter between the sloping streets of the Souks and the horizontal planes with commercial activities on them was one of the key features of the design. The chevron pattern of the yellow stone cladding on the exterior facades extends through the entire urban fabric and endows the Souks with unity, contributing to the cheerful character of this unique place in the city center. The Souks are enhanced by all the generic elements –walls, roofs, skylights, lamps– that ultimately help to create a unique architectural atmosphere, without it being seen as one building.

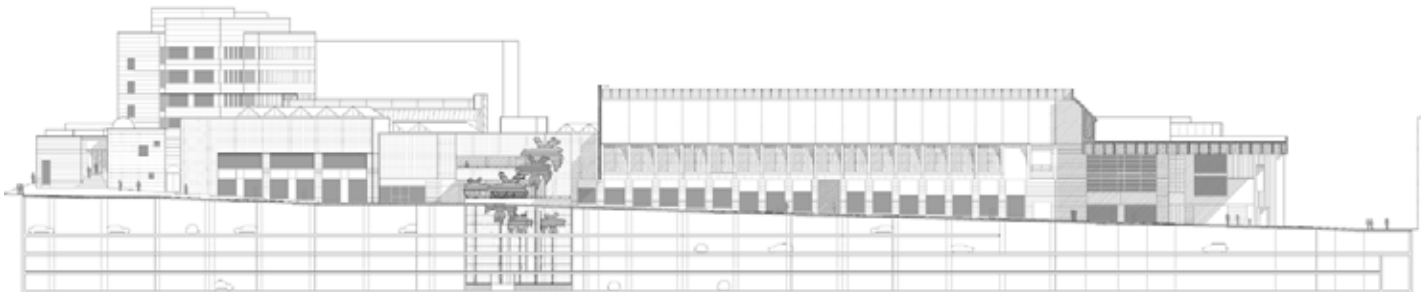
The Souks can be understood as the re-construction of what the city once was on that site. The Souks are the outcome of understanding the city –and some of its specific spaces– as the public space *par excellence*.

2. First floor plan.

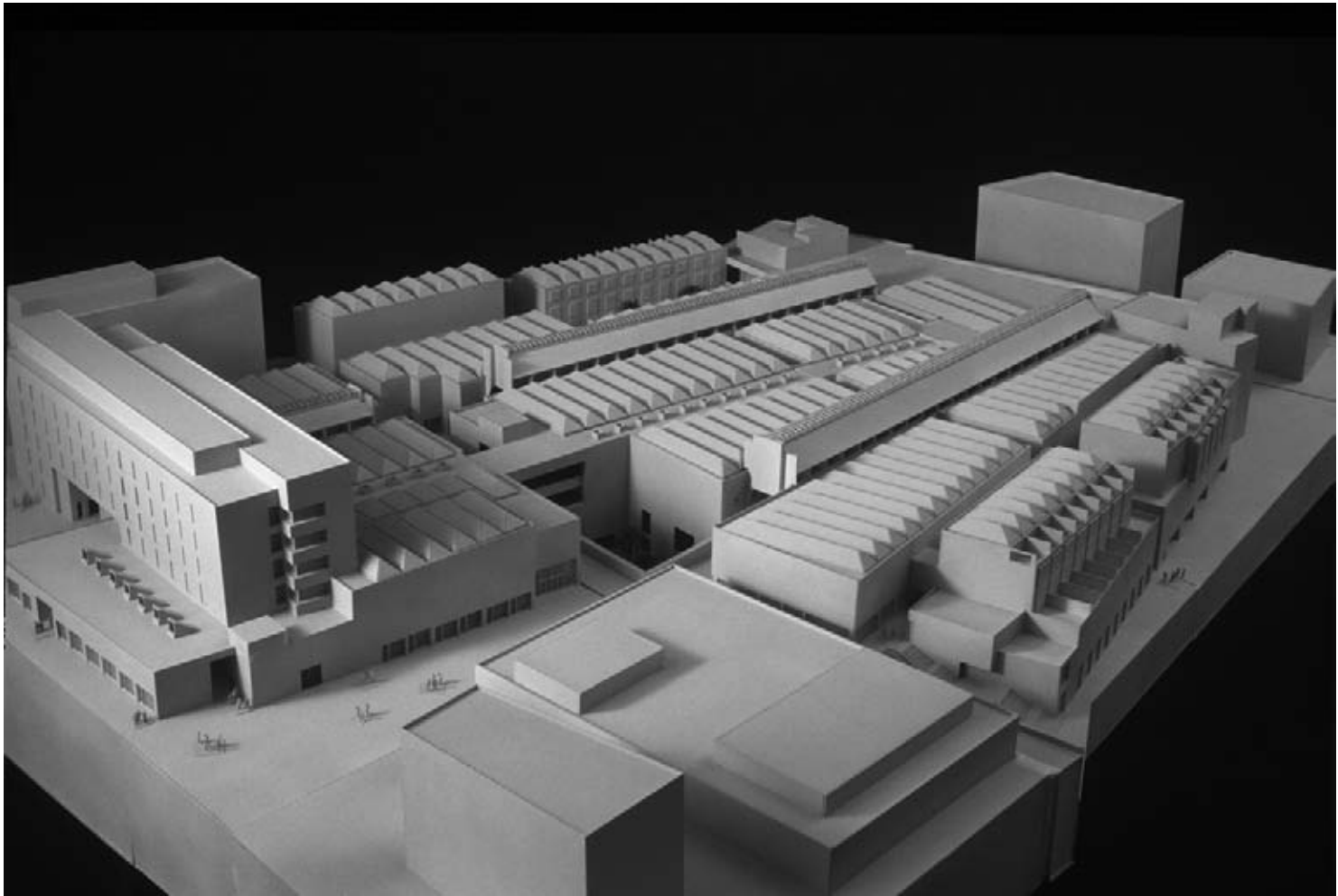


0 10 20m

3. Souk Tawileh. Longitudinal section.  
4. Model. View from Ibn Irak Plaza.



0 10 20m





5. Ground floor plan, lower level.



5

0 10 20m

- 6. Ajami Plaza.
- 7. Ajami Plaza and Souk Tawileh.



6



7

0 10 20m



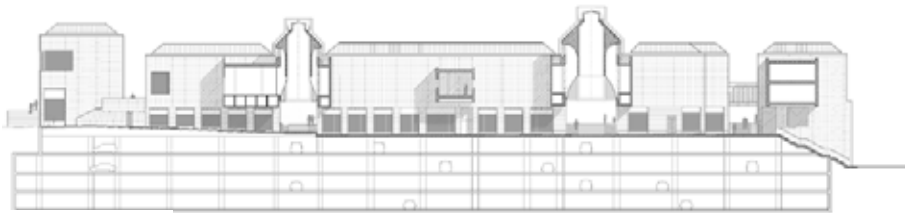
- 8. Souk Tawileh.
- 9. Souk Boustros. Transverse section through Souks Tawileh and Jamil.
- 10. Souk Sayyur. East-west section.
- 11. Model. Patio Souk Sayyur.



8



11



9



10

0 10 20m

- 12. Souk Sayyur. Patio.



12



13. Souk Jamil.



- 14. Souk Jamil. Study model.
- 15. Souk Jamil. Longitudinal section.
- 16. Souk Jamil at Souk Sayyur.



14



16



15



- 17. Entry to the Phoenician ruins.
- 18. Walkway through Phoenician ruins.
- 19. Souk Ayyass. Longitudinal section.
- 20. Phoenecian ruins.



17



18



20



19

- 21. Souk Sayyour. Entrance from the east.



21



22. Souk Sayyour. Detail of model.  
23. Aerial view of The Souks looking towards the port.



22



23



