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The Detail as a Representation of Construction

I would argue that all architecture is somehow always already implicated by a level of tolerance between fact and fiction.... Problems of representation are never really about what a building 'is.' When you look at a Greek temple, the fact that it is stone, but it is representing wood construction.

—Nader Tehrani

Or when you look at the Seagram building, where the I-beams are just standing for the columns which had to be encased in concrete. There is always a gap between that which you see and that which it represents.

—Monica Ponce de Leon

The Doric Order is a form-metaphor for a once actual structure.... [It] is not an absolute part in the Renaissance sense, it is an explaining part in the primitive sense.

—Peter Smithson, on the Parthenon

In 1838 essayist and historian Thomas Carlyle published his breakthrough book, *Sartor Resartus* (The Tailor Retailored). It was, he explained, a history of clothes, but clothes in a broad sense, including among other things, architecture. He wrote of clothes: "Hast thou...never rejoiced in them as in a warm movable house, a body round thy body, wherein that strange thee of thine sat snug, defying all variations of climate?" To Carlyle clothes are more than analogous to buildings. All clothes are symbols, and in fact, "all symbols are properly clothes; that all forms whereby spirit manifests itself to sense, whether outwardly or in the imagination, are clothes."¹ Carlyle is somewhat equivocal about the virtues of clothes, arguing at times that they act to conceal reality, then that clothes and the self are indivisible, but ultimately saying that clothes as symbols do not conceal the truth, they reveal it through the very act of concealing:

In a symbol there is concealment and yet revelation; here therefore, by silence and by speech acting together, comes a double significance.... Thus in many a painted device, or simple seal-emblem, the commonest truth stands out to us proclaimed with quite new emphasis.²

Carlyle's subsequent writings, such as *Past and Present*, are probably of greater architectural importance, but if the body as building was a key to understanding clothes for Carlyle, then the building as body was to become the key to understanding construction for architects.

Thirteen years later the Crystal Palace opened in London, marking 1851 a convenient date to mark the beginning of modern architecture. The years 1851–55 also saw the publication of four books that, while not altogether modern in their outlook, dealt with what was to become a central issue of modern architecture. What was good building? Was it solid, bare-bones, no finishes, exposed construction, or were layered construction and clad structure acceptable; and if so, should the cladding describe the construction within or speak to other themes?

The first of these books was the most popular, John Ruskin's *Stones of Venice*. He favored layered construction and his model was the Venetian Gothic. Describing the "incrustation" of St. Mark's Basilica, he wrote:

This incrustated school appears insincere at first to a Northern builder, because, accustomed to build with solid blocks of freestone, he is in the habit of supposing the external superficies of a piece of masonry to be some criterion of its thickness. But, as soon as he gets acquainted with the incrustated style, he will find that the Southern builders had no intention to deceive him. He will see that every slab of facial marble is fastened to the next by a confessed rivet, and that the joints of the armour are so visibly and openly accommodated to the contours of the substance within that he has no more right to complain of treachery than a savage would have, who, for the first time in his life seeing a man in armour, had supposed him to be made of solid steel.³

Ruskin's argument, simply put, was that structural expression was unnecessary, but structural deception was unacceptable. Thus cladding was allowed, provided it was not deceitful about the nature of the clad structure. It could, however, remain silent; incrustation had no obligation to describe the construction beneath the surface. The extent of Ruskin's influence has been debated, but architect George Gilbert Scott said essentially the same thing nine years later at the Royal Academy of Arts in London:

In the Middle Ages, either constructive parts were exposed to view, or the decorations which concealed them were designed simply as decorations without in any degree professing to be constructive; plain, honest common sense being the ruling principle, as it ought to be, and once was, in other styles.⁴

Two years after the publication of the last volume of *The Stones of Venice*, the second of the four books appeared. Architect George Edmund Street offered a dissenting opinion in *Brick and Marble in the Middle Ages*. Like Ruskin, Street saw Northern Italy as the model, but preferred the "constructional" buildings of Bergamo or Como, with their solid walls of alternating bands of stone and brick, to those of Venice:

The Venetian mode was rather likely to be destructive of good architecture, because it was sure to end in an entire concealment of the real construction of the work; the other mode, on the contrary, proceeded on true principles, and took pleasure in defining most carefully every line in the construction of the work. It might almost be said the one mode was devised with a view toward the concealment, and the other with a view to the explanation, of the real mode of construction.

Street allowed that veneering might be used in certain circumstances, but not to conceal structure:

In other parts of [St. Mark's] we have this system carried to a length which I cannot but think most mistaken, and which, I most heartily trust, may never find imitators here. In these the arches were constructed in brick, and then entirely covered with marble.... The whole system was excessively weak.⁵

Street's argument, that cladding minimized structural expression and eventually led to structural deception, has no better illustration than his own work. The Royal Courts of Justice in London (1882) shows the strong influence of the constructional architecture of Verona and uses minimal incrustation, but it does contain, along with its stone vaults, a considerable amount of concealed iron framing, a characteristic that it shares with buildings by his contemporary Gothic revivalists, Scott and William Butterfield.

To Ruskin, this was of little importance. An absence of structural expression was of no concern. He wrote, "The builder's mind is far too busy in other and higher directions to care about construction. It is full of theology, of philosophy, of thoughts about fate, about love, about death.... If the thing stands, that is all that is wanted."⁶

At the same time, a similar debate was going on in German architectural theory regarding incrustation, or as it came to be described, *Bekleidung*—cladding or raiment. In 1851 the third of the four books, the last volume of theorist Karl Bötticher's *Die Tektonik der Hellenen*, was published. Rather than the almost universal metaphors of architecture as skin and skeleton or clothing and body, Bötticher preferred to speak of husk and kernel:

The Kernform (core form) of every [architectural] member is that which is mechanically necessary, the statically functional schema; The Kunstform (art form), on the other hand, is only the functionally descriptive characteristic.

Though not functional, the Kunstform demonstrated function:

These structural components appear in an expressive form that represents most apparently and suggestively the internal concept, the essence of the mechanical function of each component for itself, as well as the reciprocal conceptual-bond-juncture-among all within the whole. This is the decorative or artistic form (Kunstform) of each component.⁷

The fourth of these books was a German language publication of 1851, Gottfried Semper's *Die vier Elemente der Baukunst*. Semper, who was to become one of Bötticher's chief critics, extensively explored the issue of cladding, but he was less interested in the constructional reality of layered building than its historical origins. Semper's arguments were based on the assumption that architecture originated with wood frame buildings that were then wrapped in carpets, skins, and textiles; and that architectural decoration must make reference to those origins. He wrote: "The wall should never be permitted to lose its original meaning as a spatial enclosure by what is represented on it; it is always advisable when painting walls to remain mindful of the carpet as the earliest spatial enclosure."⁸

Ten years later in *Der Stil*, Semper described the textile origins of most of the ornamental elements by which this wall's "meaning" was conveyed—seams, bands, and hems. The representation of these elements took precedent over the expression of actual construction: "I think that the dressing and the mask are as old as human civilization and that the joy in both is identical to those things that led men to be sculptors, painters, architects." Semper countered the "materialist" ideas of Bötticher, saying, "The destruction of reality of the material is necessary if form is to emerge as a meaningful symbol, as an autonomous human creation. The truly great master of art... also masked the material of the mask." But Semper was not indifferent to the

structure that was clad. "Masking does not help when the thing behind the mask is not right or when the mask is no good. If the material, the indispensable, is to be completely destroyed in the artistic creation..., then the material must first be completely mastered."⁹

Despite their similarities, a fundamental question separated Semper and Ruskin: if cladding were necessary and desirable, must it be descriptive of construction, whether contemporary or historical? The dispute between Bötticher and Semper deals with a question equally fundamental to nineteenth-century rationalism. Do classical orders represent the actual construction of the buildings in which they occur, as Bötticher argued, or do they represent an architectural language at its point of creation, a historical portrait of a technology long left behind? For Semper, the answer was the latter, and this ancient technology, in the case of the wall, was the textile arts. More commonly, scholars of this latter school saw the orders, Doric in particular, as stone representations of ancient wood construction. This was the Vitruvian explanation, and writers from Antoine Quatremère de Quincy in the nineteenth century to Joseph Rykwert in the twentieth have agreed. But Bötticher's position had its advocates: architectural historians Eugène Emmanuel Viollet-le-Duc and Auguste Choisy argued that, given certain cultural and material conditions, the Doric order was the logical solution, in stone, to the problem of building a temple.

To all of these writers, an "order" implied something that had a legitimacy beyond a mere decorative system. Most believed that the orders expressed construction, if not directly originating in construction. Otto Wagner's position was typical, that architectural languages developed from constructional necessity into art: "Every architectural form has arisen in construction and has successively become an art form." This remained the prevailing view of the development of the orders, and thus Semper and Bötticher, along with Ruskin, Street, and Carlyle, were to have influence that ran deep into modernism.¹⁰

Otto Wagner and H. P. Berlage

The 1884 competition for the Amsterdam Stock Exchange is of interest largely because of two unsuccessful entries, both neoclassical—one by Wagner, age forty-three, and one by H. P. Berlage, age twenty-eight. Their

work diverged in subsequent years. Berlage, who lost the competition but went on to build the Exchange, veered toward the Romanesque; Wagner remained in spirit, if not in style, a classicist. Their constructional opinions diverged as well. Berlage advocated monolithic construction; Wagner explored cladding as a constructional methodology. Ironically, both had a common starting point, the writings of Semper.

Wagner said that Semper "lacked the courage to complete his theories...and had to make do with a symbolism of construction," and, in fact, in his architecture, Semper, as a practicing architect, had little interest in cladding as a constructional system.¹¹ Wagner sought to develop the idea into a constructional reality. Unlike many modernists, Wagner thought that modern construction, particularly in stone, should be layered, not solid, and that the layers should be constructed independently, not simultaneously. This ran counter to the conventional theoretical wisdom. In 1540 Sebastiano Serlio wrote that "the sensible architect will...build the live [finish] stones into the wall, bonding them simultaneously to the bricks."¹² But Wagner had a point. Modern stone is sawn, dressed, polished, and pre-fitted off site, requiring large quantities of planning, calculation, and drafting. As a result, stone is one of the last items to arrive at the building site. Serlio's integrated veneer meant that construction could scarcely begin without the stone on site. Wagner's layered, independent system of veneers allowed for the less tightly coordinated process of construction.

The partially exposed building may simplify structural reality; the clad building can only represent it, but what to represent: the concealed structure or the nature of its own construction, e.g., the means of attaching a layer of cladding that was nonstructural? Wagner emphasized the latter. Lintels are often ignored or implied, since they are covered by the cladding, but he exposed the bolts that appear to hold it on. Elements that Street found beyond the pale—the clad lintel or arch—Wagner used freely. Bases varied in construction and design. The base of the Church of St. Leopold outside of Vienna (1907) appears solid and functional; but that of the his Postal Savings Bank (1906), also in Vienna, although rusticated granite in contrast to the smooth marble above, is symbolic, built of applied panels and detailed to demonstrate its layered construction. *fig. 1*

Despite his criticism of Semper, Wagner adopted many of Semper's symbolic constructional devices, and many of Wagner's details can

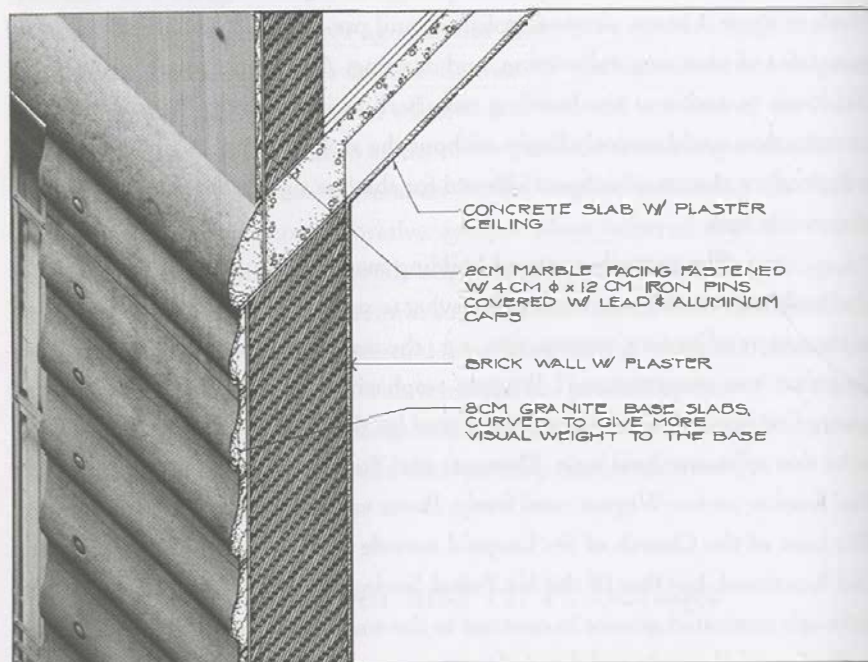
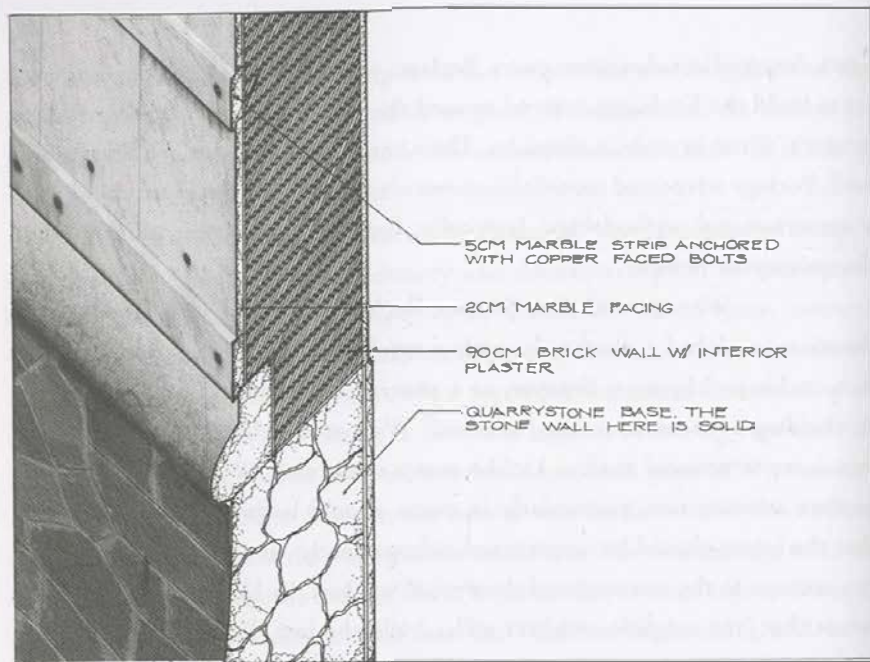


fig. 1

Top

Base, Church of St. Leopold, Otto Wagner,
Vienna, Austria, 1907

Bottom

Base, Postal Savings Bank, Otto Wagner,
Vienna, Austria, 1906

only be understood as historical references to older constructional systems rather than explanations of the concealed construction. Wagner stopped short of the application of unnecessary orders, but some of his facings contain orders by implication, such as those of the Postal Savings Bank or the Villa Wagner in Vienna (1913). Windows are located to create narrow bands of column-like proportions that are then given capitals, bases, and in some cases flutes via applied tiles or aluminum buttons. The elevations of his stucco buildings, such as the Neustiftgasse Apartments also in Vienna (1912), have seam-like corner moldings and flattened representations of rustication. Despite Wagner's claims to the contrary, Semper may have stopped short of a symbolic construction, but Wagner did not proceed by dispensing with one. This is a common phenomenon in cladding in every era: the inclusion of historical references not directly related to the particular structure that is being clad.

Berlage's biographer Pieter Singelenberg wrote that Semper marked the beginning and end points of Berlage's formal education, but by 1905, Berlage thought clad construction should be left behind. He wrote:

We architects must also first study the skeleton, just as painters and sculptors do in order to give their figures the correct form. For the cladding of every natural object is, so to speak, an exact reflection of the inner skeleton, which, in that it presents us with the perfect construction, can be called a work of architecture. But logical construction is the dominating element here, and the cladding is not a loose covering entirely negating the construction like a badly fitting suit but is totally rooted in the inner building and ultimately a form of decorated construction. This is how we want to find our way back again to the body.... For the present, therefore, it is necessary to study the skeleton—dry construction in all its simple robustness—in order to arrive at once again the full body, but without the confusion of clothing.¹⁵

Berlage's Amsterdam Stock Exchange (1903) is built of solid brick, exposed iron, and little else, paint, plaster, and trim having been dispensed with, but his work is not so pure as it appears. *fig. 2* The boardroom ceiling is built of iron beams clad with wood that were added in 1909. Despite its monolithic character, it shows a number of references to

Semper's *Der Stil*. Berlage's biographers Pieter Singelenberg and Iain Boyd Whyte point out that the stepped cornice of the interior brick wall is drawn from unhemmed textile edges, and the corner details recall Semper's discussion of the seam.

Berlage's allegiance to an architecture of exposed structure, at least in iron, was short-lived. Less than two years after the completion of the Exchange, Berlage doubted that it could be built in the same way and completely altered his attitude toward iron, as changes in fire protection laws were rapidly prohibiting its use in exposed applications. He wrote, also in 1905:

We may consider it to be a rule that iron in buildings has to stay out of sight, that it needs to be covered; as a construction material it, therefore, has meaning only as a core and is also stylistically no longer of immediate importance. This development is certainly regrettable, but to fight against it is like beating one's head against a brick wall.¹⁴

Berlage's solution was to abandon iron in favor of concrete, a system that he again explained through analogy with the body:

If one compares the new material (concrete) with the body of an animal, one can see many similarities between the two, for both have a core: iron for one, the skeleton for the other. One could further compare the envelope of flesh with the envelope of concrete.

Just as in the human body the external form is an indirect reflection of skeleton....so the concrete envelope could correspond to the structure in the same way and could also show the same deviations at certain points determined by aesthetic considerations.¹⁵

Berlage's subsequent large-scale work is built of exposed concrete and masonry, but on one occasion he experimented with clad steel construction, the Holland House in London (1916). This departure from his typical methodology could be a result of location, but it could also be the influence of Berlage's fascination with America. In 1905 he had condemned the clad steel frames of American office buildings, but after seeing Louis Sullivan's work in

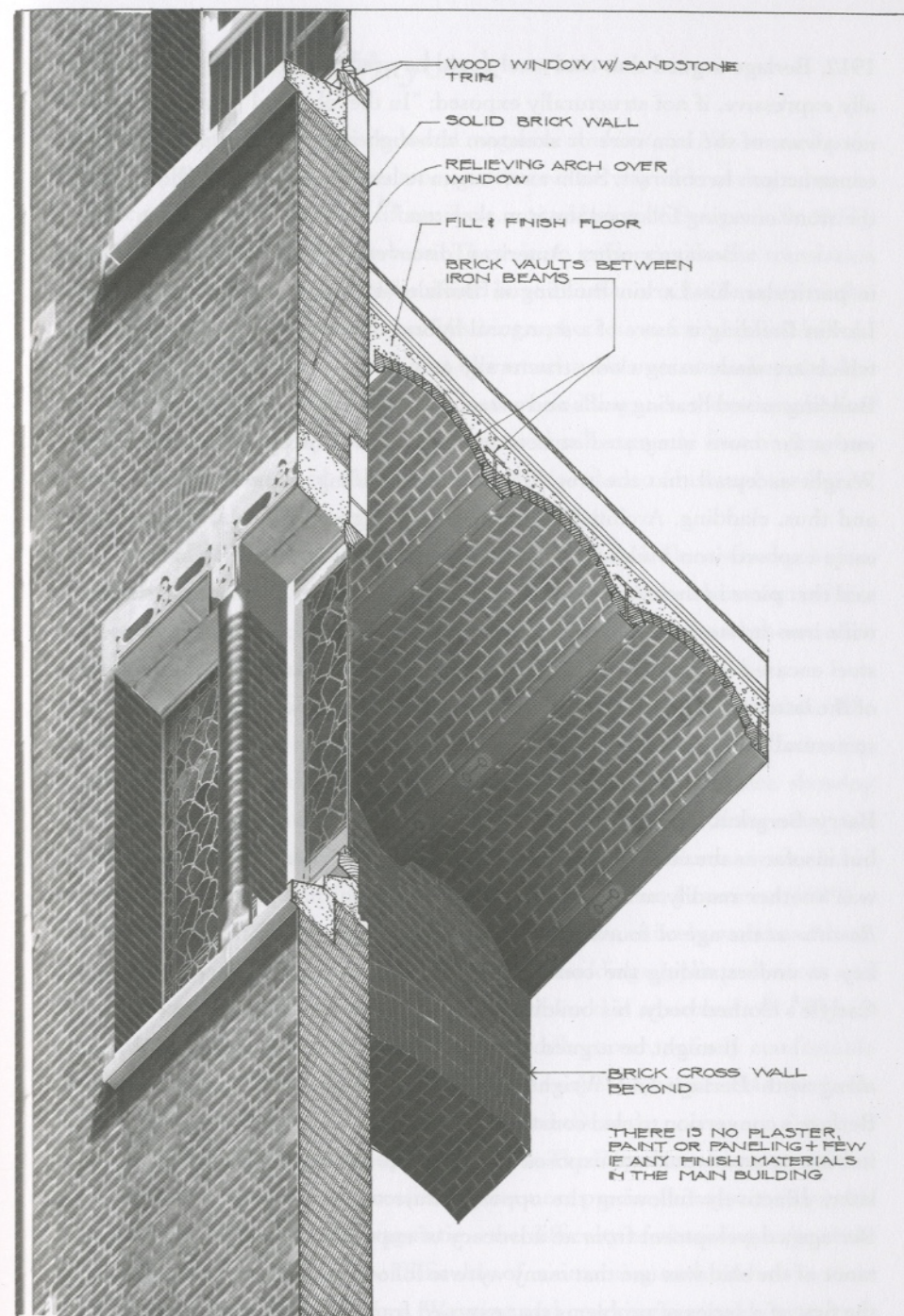


fig. 2

Wall Section, Amsterdam Stock Exchange, H. P. Berlage,
Amsterdam, Netherlands, 1903

1912, Berlage argued that clad steel could be used in a way that was structurally expressive, if not structurally exposed: "In the 'classical' skyscraper one is not aware of the iron core or skeleton, although it is the main principle of its construction. In contrast, Sullivan... began to let the construction show; that is, the stone covering followed the iron skeleton."¹⁶

Berlage's other American discovery was Frank Lloyd Wright, in particular, his Larkin Building in Buffalo (1904). The construction of the Larkin Building is more of a structural hybrid than Sullivan's office buildings, which are made using clad, structurally autonomous steel frames. The Larkin Building mixed bearing walls and a steel and concrete composite internal frame into a far more integrated structure. Like other Chicago school architects, Wright accepted that the steel-frame office building requires fire protection and thus, cladding. Architect John Root, writing in 1890, was critical of the early exposed iron buildings built in America, calling them fire hazards, and said that piers in the modern office should be built either of masonry reinforced with iron or steel, a composite integrated construction; or of self-supporting steel encased in terra-cotta, an independent one. Sullivan's office buildings are of the latter type; the Larkin Building is of the former, but neither exposed any structural iron or steel.¹⁷

Root was also a reader of Semper, and architectural historian Barry Bergdoll, among others, has explored Semper's influence in Chicago, but insofar as the clothes as cladding analogy and Wright are concerned, there was another readily available influence, for Wright had read Carlyle's *Sartor Resartus* at the age of fourteen, and the architecture as clothing analogy is one key to understanding the construction of his architecture before 1920. Like Carlyle's clothed body, his buildings revealed by concealing.¹⁸

It might be argued that, in 1918, the year of his death, Wagner, along with Berlage and Wright, had arrived at the same critical position. Berlage's conversion to clad construction was never complete, while Wright was to become an advocate of exposed construction, although not until many years later, effectively following the opposite trajectory to Berlage. Nevertheless, Berlage's development from an advocacy of exposed construction to an acceptance of the clad was one that many were to follow, and fire protection was only the first of a series of problems that exposed framing would encounter.

Bernard Maybeck

The San Francisco-based magazine *Architectural News* ceased publication in 1891 after only three issues, so there is no way of knowing what the specific contents of a planned future issue, a translation of Semper's *De Stil* by Bernard Maybeck, might have been. There is no evidence that the translation was ever made, of what sections he would have chosen, or what Semper's influence on Maybeck's work might be. His biographers have found possible links the polychromy of his work and tent-like wood roofs over stone hearths, but how Maybeck interpreted Semper's ideas on cladding, whether metaphorical or real, is uncertain. Maybeck's first client and subsequently first biographer, Charles Keeler, described Maybeck's devotion to the no finishes, bare bones, unclad structural architecture. Keeler wrote in 1904,

"If wood were to be used, then it should look like a wooden house. He abhorred shams. A wooden house should bring out all the character and virtue of wood—straight lines, wooden joinery, exposed rafters, and the wooden surface visible and left in its natural state."¹⁹

Much of Maybeck's work prior to 1904 confirms this. The Keeler House (1895) exposes every stick of its construction. The University of California Faculty Club at Berkeley (1902) is a bit more complex, showing only part of its structure. The Berkeley Hillside Club (1904) for the most part followed a no finishes style, although it appears the lower columns were clad in thin redwood boards. *fig. 3* The Leon L. Roos House in San Francisco (1909) is another matter. *fig. 4* Although its interiors are almost entirely wood and have similar cross-section and detail to these earlier buildings (split pediments and double columns), not one stick of the exposed wood is structural. *fig. 5* This is evidence that Maybeck was, at least in his middle career, entirely comfortable moving back and forth between the clad and the exposed, between the symbolic and the literal, or between the scenographic and the real.

One explanation is programmatic. The Roos House is more refined than its rustic predecessors, necessitating the more precise, nonstructural moldings. Another explanation is pragmatic—the difficulty of obtaining large-scale timbers of adequate size and the difficulty of maintaining such timbers in their precise configuration after drying. Warping and cracking inevitably occurred.

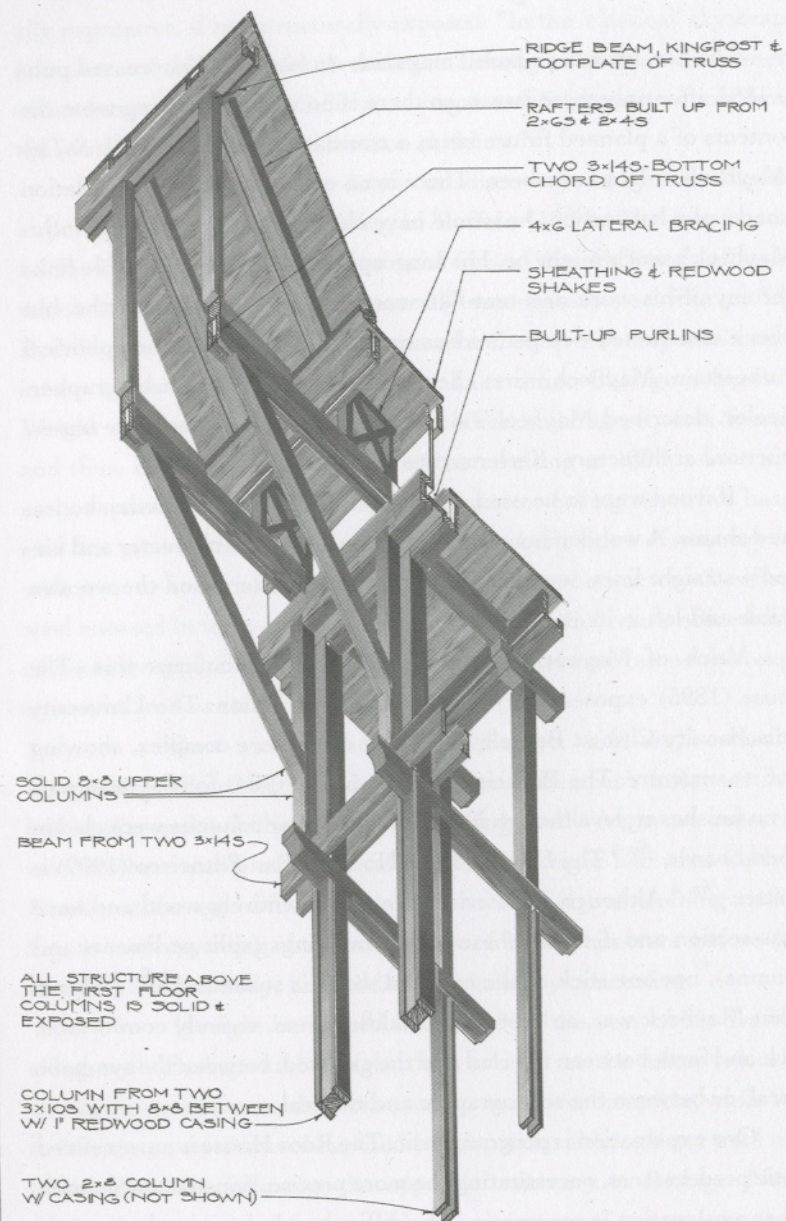


fig. 3

Wall Section, Berkeley Hillside Club, Bernard Maybeck,
Berkeley, California, 1904

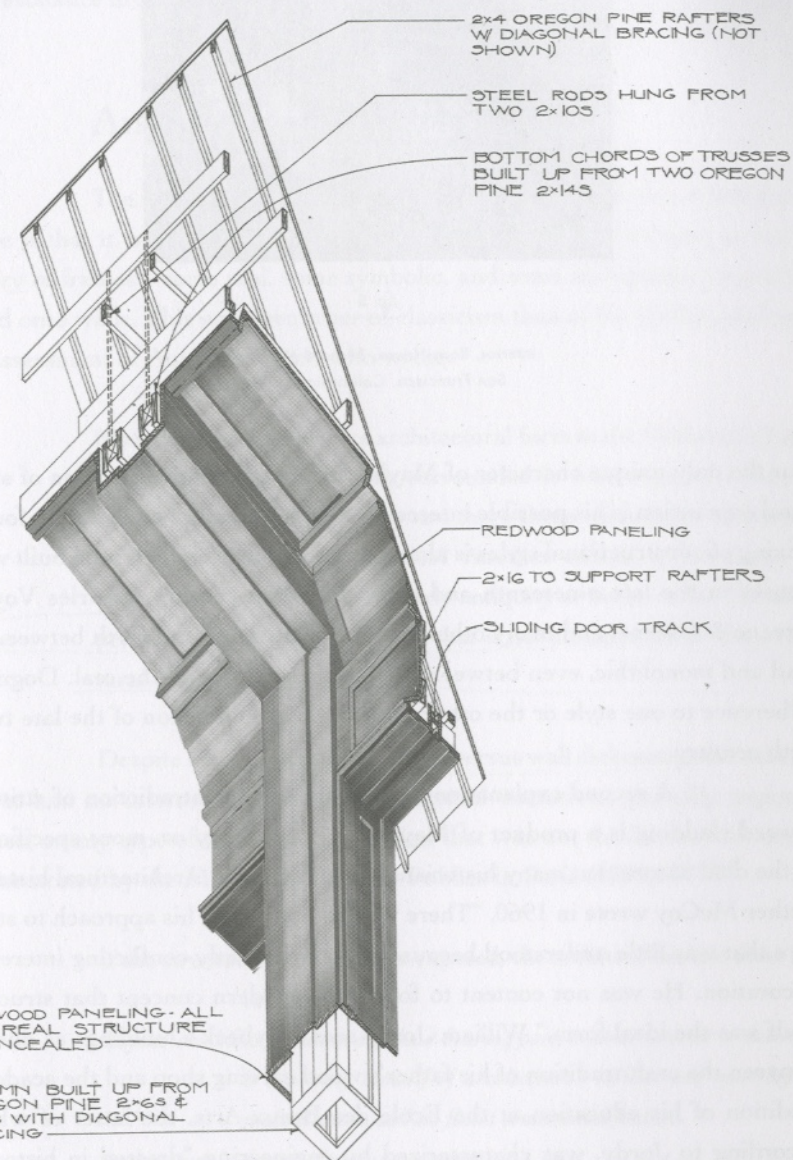


fig. 4

Wall Section, Roos House, Bernard Maybeck,
San Francisco, California, 1909



fig. 5

Interior, Roos House, Bernard Maybeck,
San Francisco, California, 1909

But the only unique character of Maybeck in regard to the question of structural expression is his possible interest in Semperian ideas of cladding, for this mixing of constructional styles is almost universal in architects who built wood houses in the late nineteenth and early twentieth century. Charles Voysey, Greene & Greene, and many others moved easily back and forth between the clad and monolithic, even between the false structure and the real. Dogmatic adherence to one style or the other is clearly a phenomenon of the late twentieth century.

A second explanation for this apparent contradiction of attitudes toward cladding is a product of Maybeck's eccentricity or, more specifically, of the dual nature that many historians see in his work. Architectural historian Esther McCoy wrote in 1960, "There was an honesty in his approach to structure that was little understood because of his apparently conflicting interest in decoration. He was not content to follow the modern concept that structure itself was the ideal form." William Jordy sees Maybeck's buildings as divided between the craft tradition of his father's wood carving shop and the academic tradition of his education at the Ecole des Beaux-Arts, the latter of which, according to Jordy, was characterized by engineering "dressed in historical costume, in contrast to the modernist's delight in its exposure."²⁰

But a third explanation is that Maybeck was comfortable with either form of structural expression, the clad and symbolic or the exposed and

literal, and it is intriguing to speculate if Semper's thought on this matter had any resonance in Maybeck's work.

Auguste Perret

The historical reality behind the development of the architectural frame is that it is not so much a history of wall opposed to a frame as it is a history of frames—some real, some symbolic, and some ambiguous—superimposed onto walls. This was even truer of classicism than of the Gothic, and was the assessment of Auguste Perret, who wrote:

How did the Romans give architectural form to the Coliseum's huge volumes of masonry? They surrounded it with engaged columns that support nothing.... Why are there these columns and pilasters on Italian Renaissance facades? Another tribute to the frame... Whether we're talking about early antiquity or the so-called Classical period, there is no architecture that is not an imitation of the structural frame.²¹

Despite his insight into the frame versus wall dichotomy, the mature Perret had no interest in ambiguous structural narratives, partially exposed frames, or any type of structural expression that was not the literal skeleton as demonstrated by the Musée des Travaux Publics in Paris (1939): *figs. 6-7*

If the structure is not fit to be exposed, the architect has not done his job properly.

Anyone who hides a column or a load-bearing part, whether interior or exterior, is depriving himself of architecture's noblest and most legitimate element, and its finest ornamental feature.

Architecture is the art of making supports sing.

And if the person who hides a column, pillar or any load-bearing part is making a MISTAKE, the one who builds a false column is committing a CRIME.²²



fig. 6

Musée des Travaux Publics, Auguste Perret,
Paris, France, 1939

Perret, although a classicist at heart, was a dedicated reader of Viollet-le-Duc, and his views on the frame reflect the influence of the latter's analysis of Roman and Gothic buildings. It was an influence that Perret would pass on to one of his employees, Le Corbusier.

Ludwig Mies van der Rohe and Le Corbusier

In 1912 Mies saw Berlage's Amsterdam Stock Exchange for the first time. He later said, "Berlage... would not accept anything that was fake and it was he who had said that nothing should be built that is not clearly constructed.... The idea of a clear construction came to me there, as one of the fundamentals that I would accept."²³ Despite this testament, the type of exposed

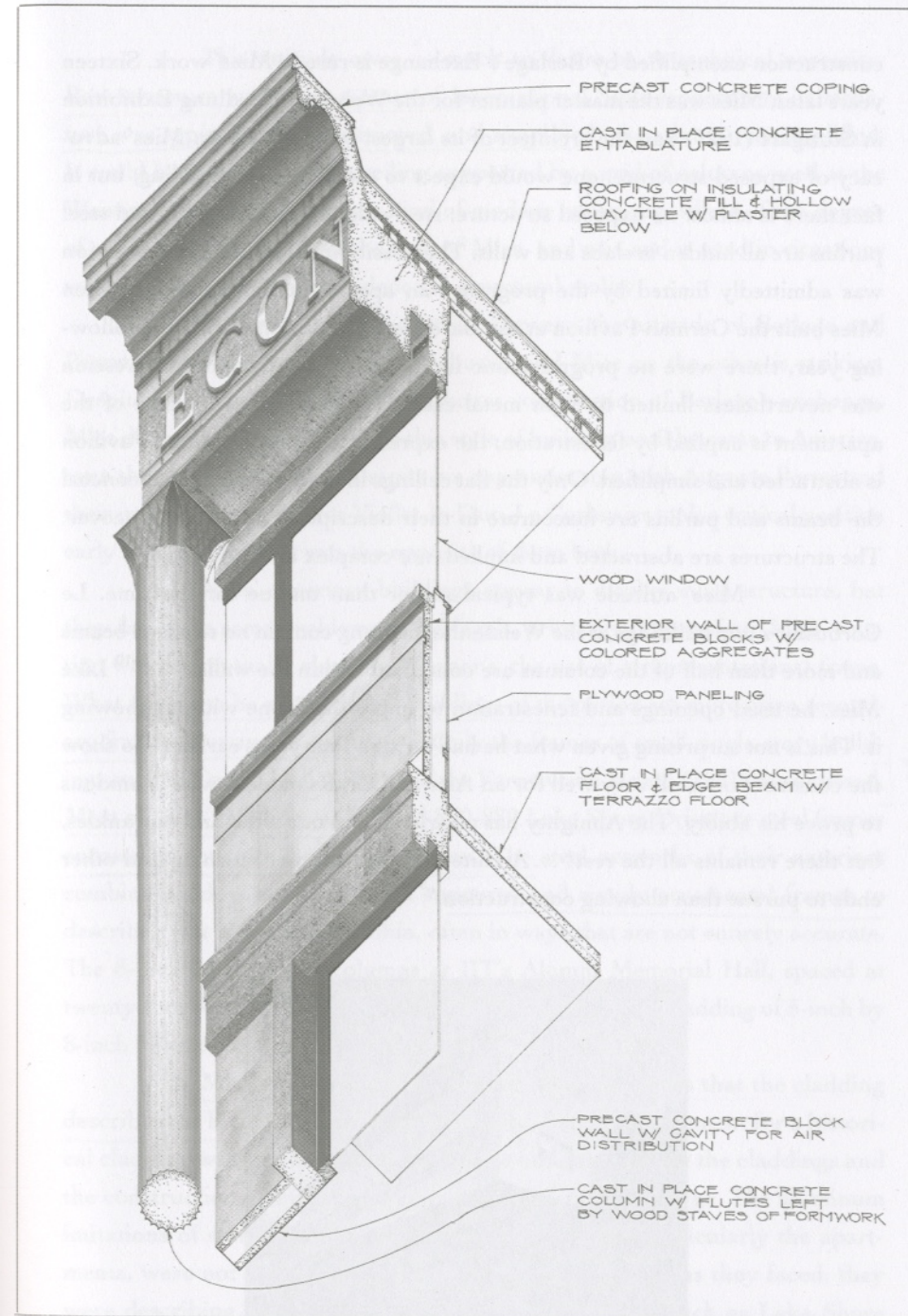


fig. 7

Wall Section, Musée des Travaux Publics, Auguste Perret,
Paris, France, 1939

construction exemplified by Berlage's Exchange is rare in Mies' work. Sixteen years later, Mies was the master planner for the Weissenhofsiedlung Exhibition in Stuttgart (1927) and the architect of its largest building. Given Mies' advocacy of exposed structure, one would expect to see this in the building, but in fact there is almost no exposed structure; steel columns, steel beams, and steel purlins are all hidden in slabs and walls. The possibility of structural expression was admittedly limited by the program—an apartment building—but when Mies built the German Pavilion at the Barcelona Exhibition (1929) the following year, there were no programmatic limitations. The structural expression was nevertheless limited to eight metal-clad columns. The steel frame of the apartment is implied by fenestration; the expression of the Barcelona Pavilion is abstracted and simplified. Only the flat ceilings in both buildings that conceal the beams and purlins are inaccurate in their description of what they cover. The structures are abstracted and implied, not complex and exposed.

Mies' attitude was typical rather than unique for the time. Le Corbusier's two buildings at the Weissenhofsiedlung contain no exposed beams and more than half of the columns are contained within the walls. ^{figs. 8-10} Like Mies, he used openings and fenestration to imply the frame without showing it. This is not surprising given what he had written four years earlier: "To show the construction is all very well for an Arts and Crafts student who is anxious to prove his ability. The Almighty has clearly shown our wrist and our ankles, but there remains all the rest! ... Architecture has another meaning and other ends to pursue than showing construction."²⁴

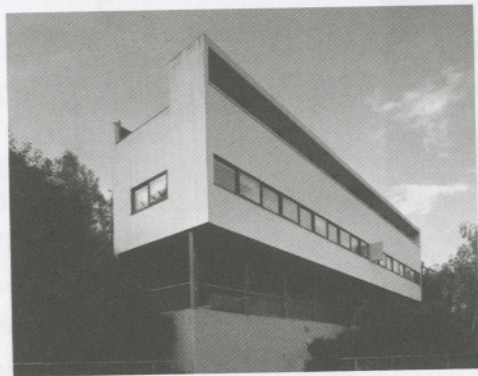


fig. 8

Weissenhofsiedlung Exhibition, Le Corbusier,
Stuttgart, Germany, 1927

This attitude owes as much to desire as to technical necessity. Raw structure was never a tenet of International Style modernism; its structure was typically clad, abstracted, and simplified, sometimes oversimplified. It could be said that the flat ceiling supported by a grid of columns used at the Weissenhofsiedlung became a kind of modern order, regardless of the degree of oversimplification, as in the case of Mies, and was and is used in situations where it had little correspondence to structural reality.

Nevertheless, the contrast between the attitude of Berlage and Perret on the one hand and Le Corbusier and Mies on the other is striking. Despite his admiration for the bare bones construction of Berlage's exchange, Mies did not attempt to replicate this style of building until he came to America, even then he did little of it. Despite his apprenticeship with Auguste Perret and their mutual admiration for Viollet-le-Duc, Le Corbusier took a critical position early in his career that was the opposite of them both.

Mies' American buildings appear to display more structure, but they faced the same problems as Berlage's, primarily fireproofing. Mies' solution was conceptually closer to Wagner's, the use of a representational frame. What appear to be exposed steel buildings of the period are more often secondary frames covering real structure. Only the frames of small single-story buildings such as Crown Hall (1956) and the Farnsworth House (1951) are exposed. Most of Mies' buildings at IIT and 860-880 Lake Shore Drive are steel frames encased in concrete for fire protection. The steel networks of their exteriors combine window mullions, brick supports, and simply ornamental frames to describe what is concealed within, often in ways that are not entirely accurate. The 8-inch by 8-inch H-columns at IIT's Alumni Memorial Hall, spaced at twenty-four feet and encased in concrete, are faced with a cladding of 5-inch by 8-inch H-sections spaced at twelve feet. ^{fig. 11}

Mies' argument, or that of his apologists, was that the cladding describes the hidden construction. In reality, Semper's argument for a historical cladding was just as often the operable one as over time the claddings and the constructions they covered began to dramatically diverge. The aluminum imitations of steel wide flanges in the late buildings, particularly the apartments, were not describing the concrete slabs and columns they faced; they were describing the steel structure of earlier buildings such as Lake Shore

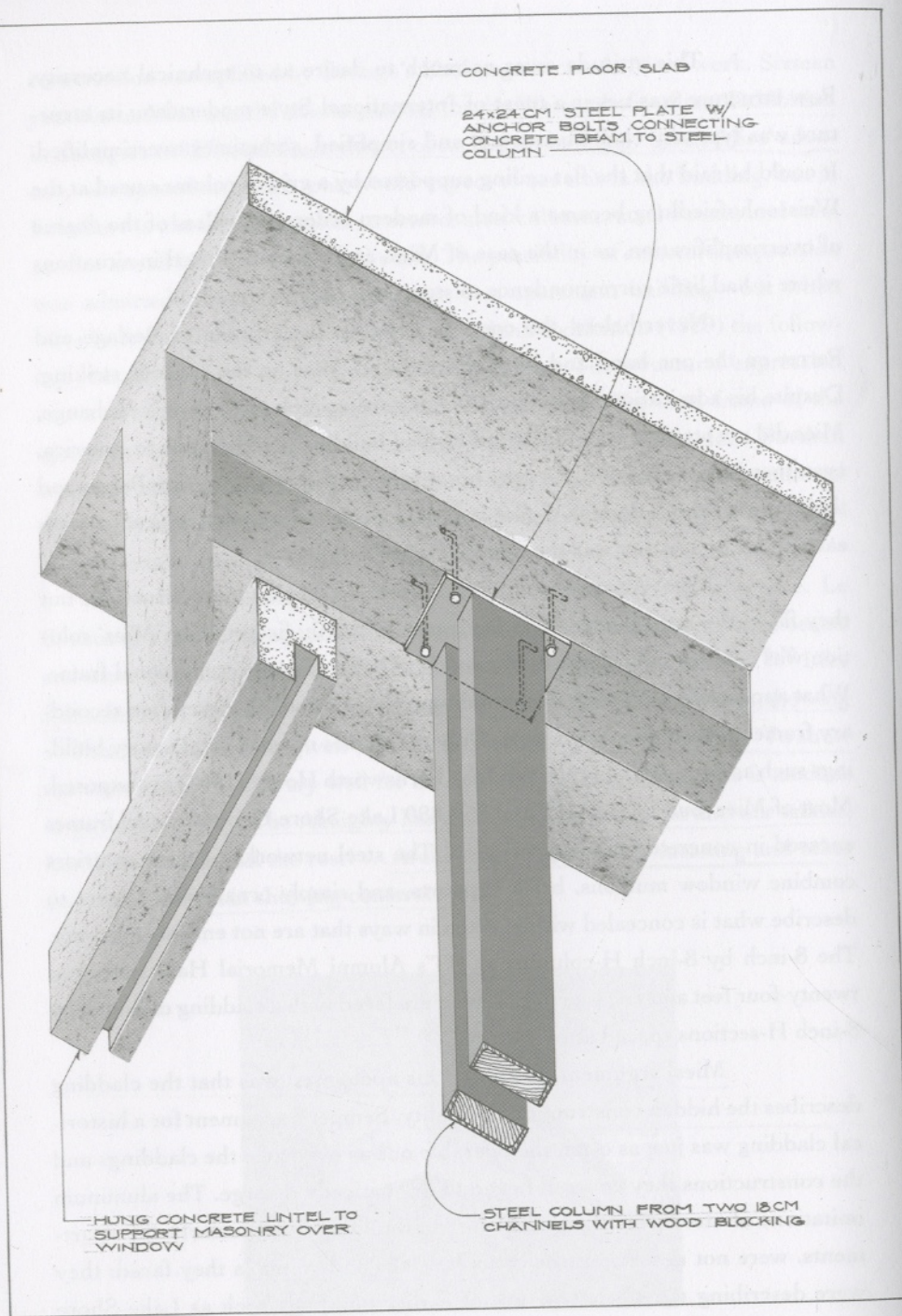


fig. 9

Wall Section Showing Structure Only, Weissenhofsiedlung Exhibition, Le Corbusier,
Stuttgart, Germany, 1927

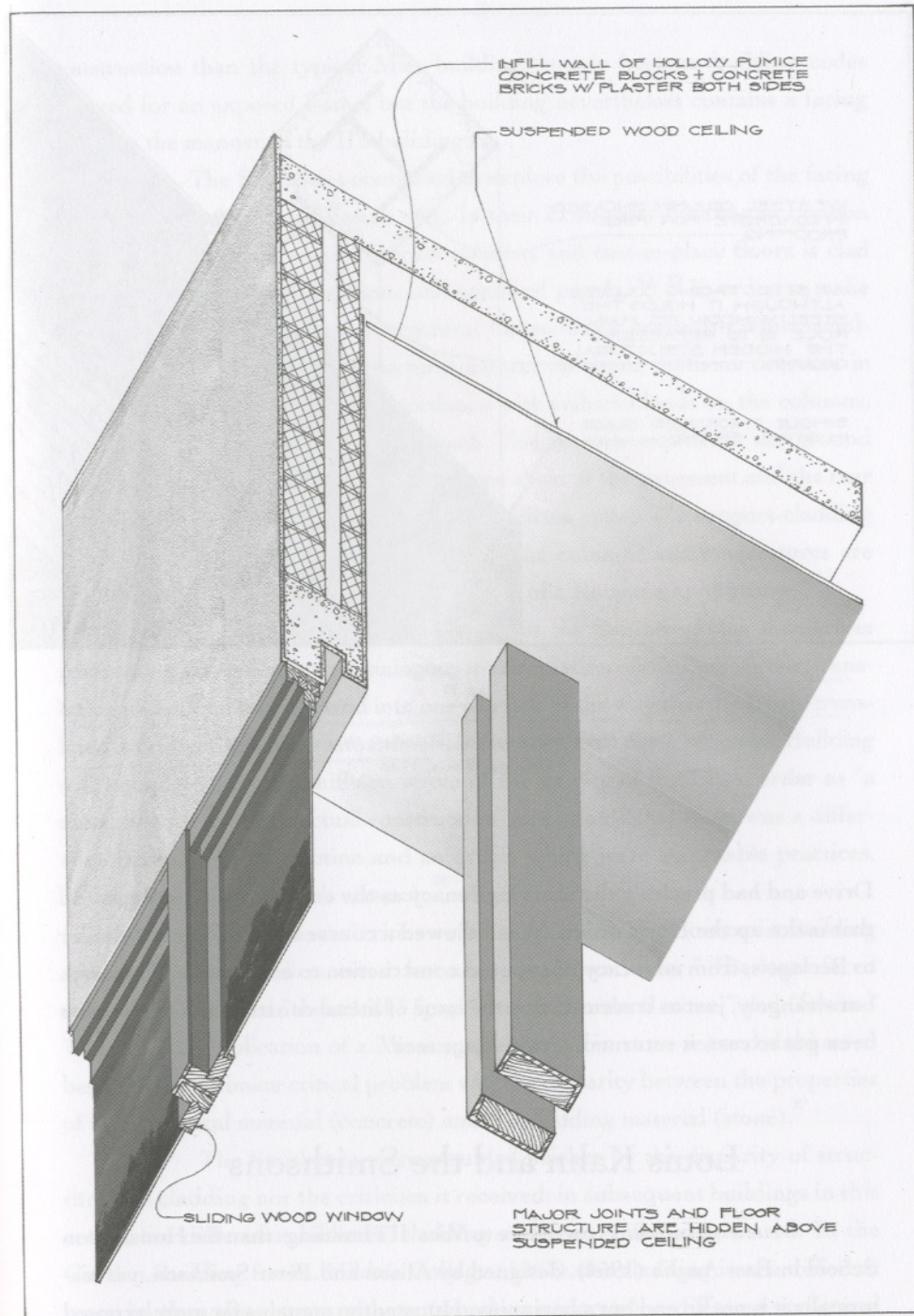


fig. 10

Wall Section Showing Structure with Finishes, Weissenhofsiedlung Exhibition, Le Corbusier,
Stuttgart, Germany, 1927

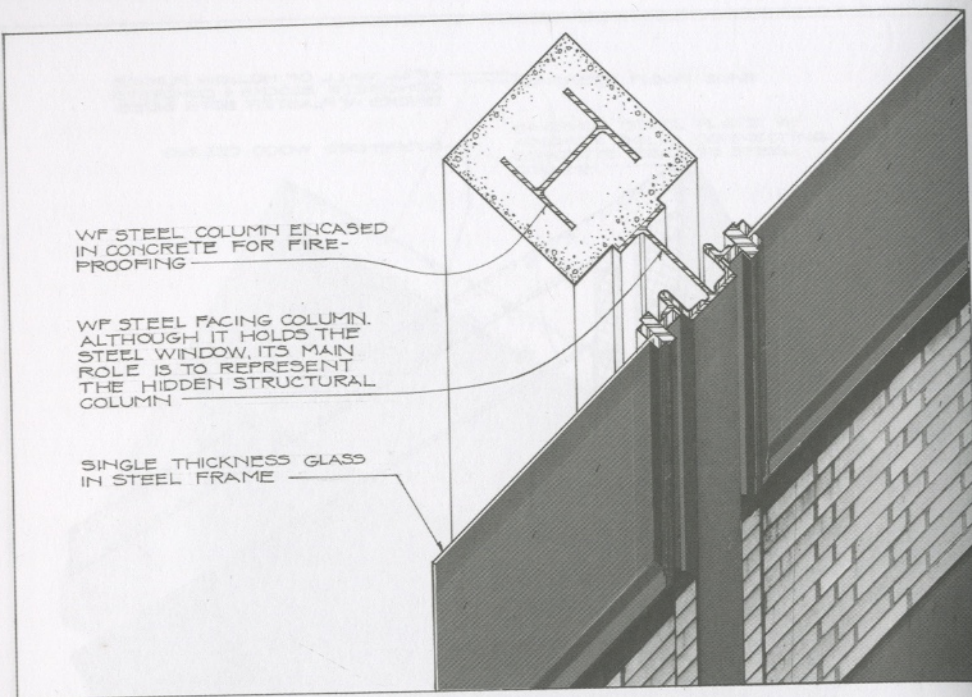


fig. 11

Wall Detail, Alumni Memorial Hall, IIT, Ludwig Mies van der Rohe,
Chicago, Illinois, 1946

Drive and had precisely the same legitimacy as the ornaments imitating wood that make up the Doric order. Mies followed a course of development similar to Berlage's, from advocacy of exposed construction to acceptance of layered, but strangely, just as it seemed that the issue of literal construction might have been put to rest, it returned with a vengeance.

Louis Kahn and the Smithsons

Few buildings owe more to Mies' IIT buildings than the Hunstanton School in East Anglia (1954), designed by Alison and Peter Smithson, yet historically it is not an end but a beginning. Hunstanton contains far more exposed

construction than the typical Mies building, largely because building codes allowed for an exposed frame, but the building nevertheless contains a facing frame in the manner of the IIT buildings.

The Smithsons continued to explore the possibilities of the facing frame but in a very non-Miesian way. In their Economist Building in London (1964), a structural frame of precast columns and cast-in-place floors is clad with red Portland stone mullions and spandrel panels. *fig. 12* In order to make the cladding communicate the structural forces that it concealed while simultaneously conveying its nonstructural nature, the stone mullions decrease in depth as the building rises, in accordance with reduced loads on the columns, although they themselves carry no load. This is made explicit at the ground floor arcade where the stone cladding stops short of the pavement and the rear of the concrete column is exposed. Peter Smithson called it "a support-cladding architecture, more or less in the way that the columns and entablatures are applied to the outside of the structural frame of a Roman amphitheater."²⁵

It is not farfetched to think that the Smithsons saw themselves performing a transformation analogous to the creation of the Doric order, translating an architecture of metal into one of stone in the way that the Doric translated wood construction into stone. In the year that the Economist Building was completed, Peter Smithson wrote of the quality of the Doric order as "a metaphor for the once actual construction" and argued that there was a difference between a construction and an order, which were acceptable practices, and ornamentation, which was not.²⁶

The Smithsons' critics were unconvinced. The Economist Building was on the whole well received, but not so much its "order." The stone-faced columns were called "theatrical," "paper maché Portland stone," and "falsies." To many, the replication of a Miesian steel facade in stone seemed dubious at best, but the ultimate critical problem was the disparity between the properties of the structural material (concrete) and the cladding material (stone).²⁷

The Smithsons were troubled neither by the disparity of structure and cladding nor the criticism it received; in subsequent buildings in this series, the difference between cladding and frame was accentuated. In the Garden Building for St. Hilda's College (1967), the cladding is of a different material than the structural base (wood on concrete), a different structural

The Doric order is simply a metaphor



fig. 12

Economist Building, Alison and Peter Smithson,
London, United Kingdom, 1964

system (frame on wall), and another technological era (Tudor England).
figs. 13-14 Clearly, the language of the cladding and the language of the structure had gone their separate ways. Yet this cladding is no more deceptive than that used by Mies at Lafayette Park in Detroit (1956), where steel mullions face the ends of masonry bearing walls, to no end other than the ornamental effect.

One year after the opening of the Economist Building, Louis Kahn completed, with Anne Tyng, the Erdman Hall Dormitories at Bryn Mawr College (1965).
fig. 15 Like many Kahn buildings, it is a concrete structure composed of three dining and common rooms, surrounded by a second structure of load-bearing masonry walls and concrete floors—the dorms themselves.
fig. 16 The client refused to consider exposed concrete as an exterior finish, so while the inner concrete structure is exposed, the outer masonry structure is wrapped with slate and cast stone. It is thus unique in contrast to his later work in that it is completely clad.

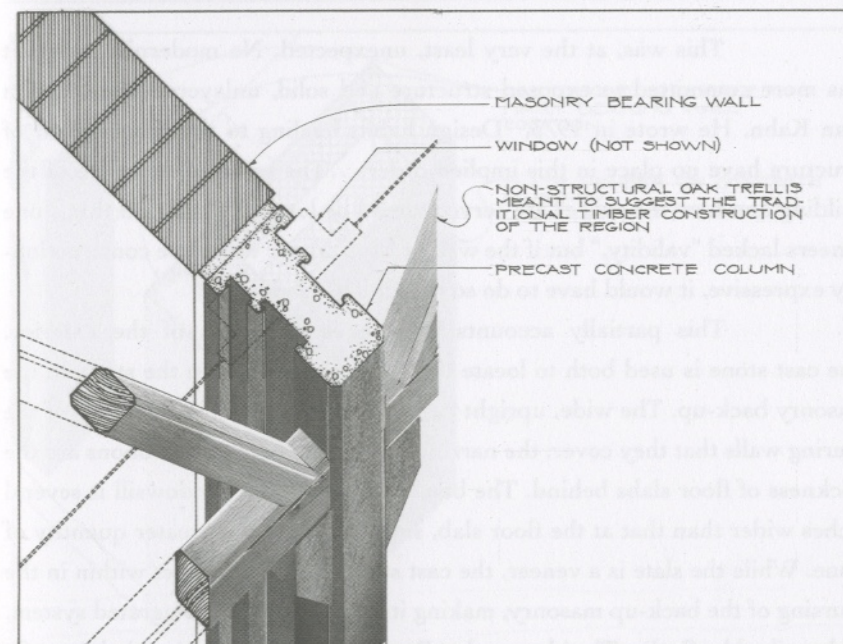
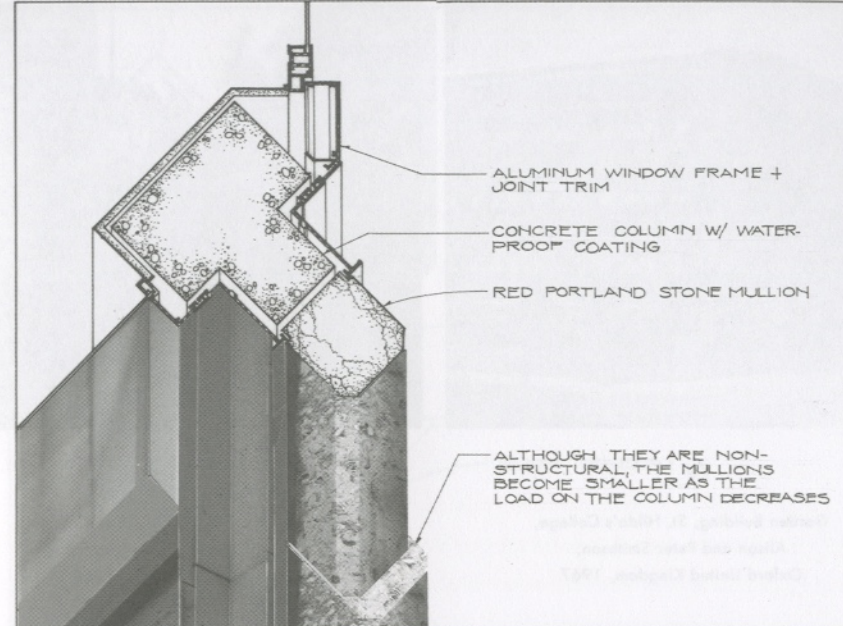


fig. 13

Top

Wall Detail, Economist Building, Alison and Peter Smithson,
London, United Kingdom, 1964

Bottom

Wall Detail, Garden Building, St. Hilda's College, Alison and Peter Smithson,
Oxford, United Kingdom, 1967

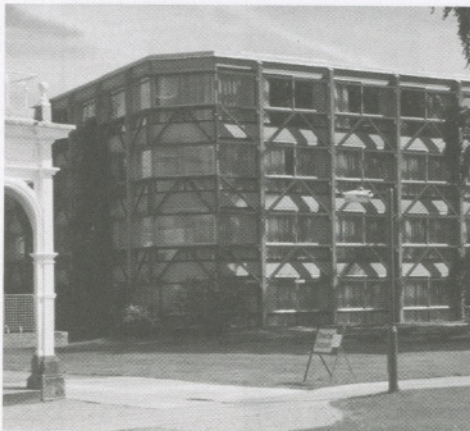


fig. 14

Garden Building, St. Hilda's College,
Alison and Peter Smithson,
Oxford United Kingdom, 1967

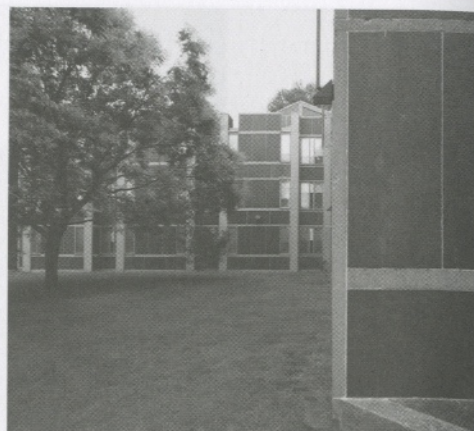


fig. 15

Erdman Hall Dormitory, Bryn Mawr College,
Louis Kahn, with Anne Tyng,
Bryn Mawr, Pennsylvania, 1965

This was, at the very least, unexpected. No modernist architect was more committed to exposed structure and solid, unlayered construction than Kahn. He wrote in 1973, "Design habits leading to the concealment of structure have no place in this implied order.... The sense of structure of the building and how the spaces are served would be lost." He had said that stone veneers lacked "validity," but if the wall of Bryn Mawr was to be constructionally expressive, it would have to do so through its cladding.²⁸

This partially accounts for the eccentricities of the exterior. The cast stone is used both to locate the structure and fasten the stone to the masonry back-up. The wide, upright cast stone caps mark the thickness of the bearing walls that they cover; the narrow, horizontal cast stone ribbons are the thickness of floor slabs behind. The band that marks the windowsill is several inches wider than that at the floor slab, since it supports a greater quantity of stone. While the slate is a veneer, the cast stone is not, as it is set within in the coursing of the back-up masonry, making it an interlocking, integrated system, as described by Serlio. The idea used at Bryn Mawr, a descriptive cladding of a structure, was an experiment that Kahn never repeated, but it was not the end of the stone veneer in his work.

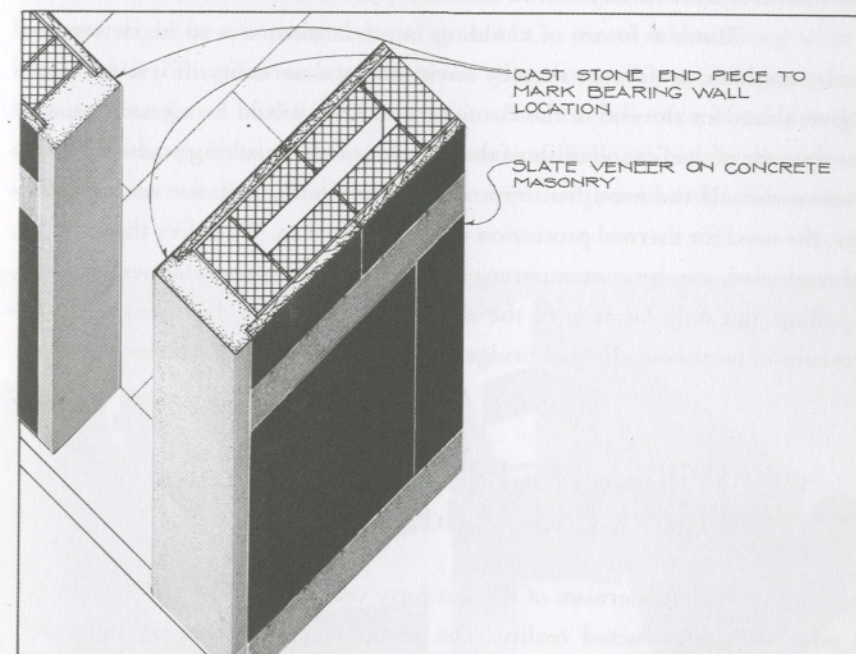
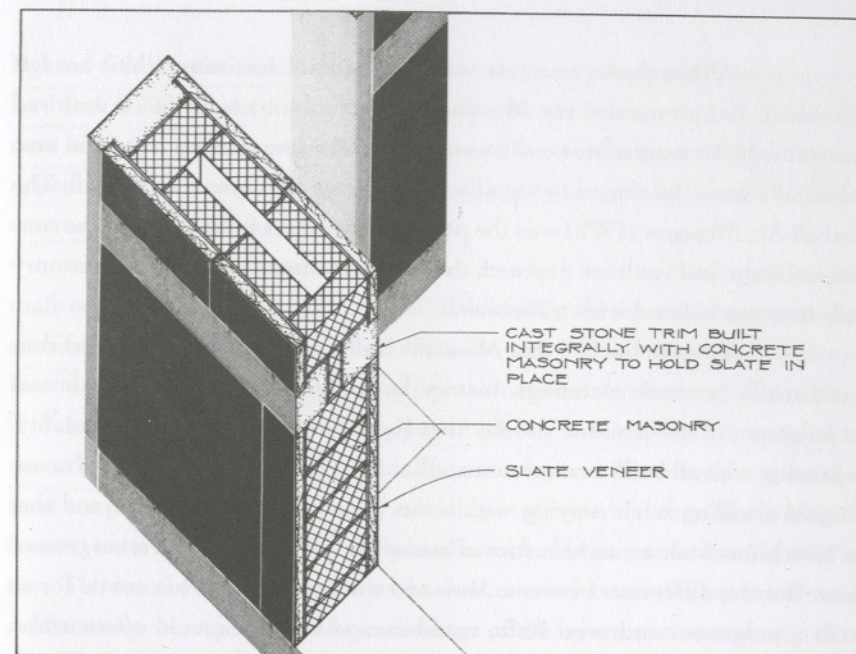


fig. 16

Stone Details, Erdman Hall Dormitory, Bryn Mawr College, Louis Kahn with Anne Tyng,
Bryn Mawr, Pennsylvania, 1965

Although the concrete walls of the Salk Institute (1966) are left unfinished, Kahn intended the Meeting House (unbuilt) to be faced with red sandstone. Kahn wanted to avoid a veneered wall masquerading as a solid one, and details were developed to literally demonstrate the layers of the wall. The Kimbell Art Museum (1972) was the partial realization of this system. The concrete columns and vault are exposed; the large expanse of non-bearing masonry walls between is faced with travertine.

Despite the fact that Mies, the Smithsons, and Kahn all used constructionally symbolic claddings, history has judged them differently. It was the judgment of the critics of the day that Kahn built an architecture of reality, dispensing with all but literal ornament, that Mies built an architecture of metaphorical cladding while staying within the boundaries of propriety, and that the Smithsons built an architecture of metaphorical cladding that transgressed them. But the difference between Mies and the Smithsons is too subtle for so harsh a judgment, and even Kahn could escape neither layered construction nor the use of unnecessary—or at least deceptive—historical motifs.

But the future of cladding in modernism was to be determined less by aesthetic preference than by environmental necessity. If it is necessary to give a date for the end of the Brutalist era, 1973 would be a good one, as it was the year of the first oil crisis of the decade and the resulting push for energy conservation. If the need for fireproofing was problematic for unclad buildings, the need for thermal protection was even more so. Walls like those of IIT, although clad, are, by contemporary standards of environmental performance, appalling, not only because of the absence of insulation, but because of the presence of numerous thermal bridges between interior and exterior.

Williams and Tsien, the Patkaus, Hadid, and Ando

The modernism of the last forty years thus inherited an aesthetic at odds with constructed reality. The aesthetic preferred solid, unlayered, exposed mono-material construction in which each part performed multiple tasks. The reality strongly encouraged—if it did not demand—the opposite,

Monolithic appearance + layered construction

layered construction, clad structure, and multiple materials performing specialized tasks. The modern architect was left with three choices: first, to build a new aesthetic reflective of layering; second, to build a layered building that appeared to be monolithic; or third, to simply, when possible, build in the old way using solid, unlayered construction.

We live in an era of context, in which even technology is contextualized, and for several buildings of 2002–2003, the context meant, to their architects, the work of Kahn. Tod Williams and Billie Tsien's Neurosciences Institute in La Jolla (1995) is located less than a mile from Kahn's Salk Institute. *fig. 17* It is an example of the first type, a building that attempts to construct a narrative of its layered construction. The outer layers of limestone and stainless steel are peeled back to expose an inner layer of concrete, thus illustrating the layered nature of the wall. *fig. 18* This is admirable, but it is not a literal construction. The metal and stone panels are backed not with concrete, but metal studs. Additionally, aluminum trim faces the edge of the layers, and we see only three of the many layers that make up the wall. The facade of the Neurosciences Institute might be a constructed narrative; but in terms of describing what is being hidden, it is a far more accurate one than many of its contemporaries. It is also a description of the real construction, not a recollection of an historical one. This was not because the architects were indifferent to history; the original intent was to match the concrete of Salk, but this proved unfeasible and the

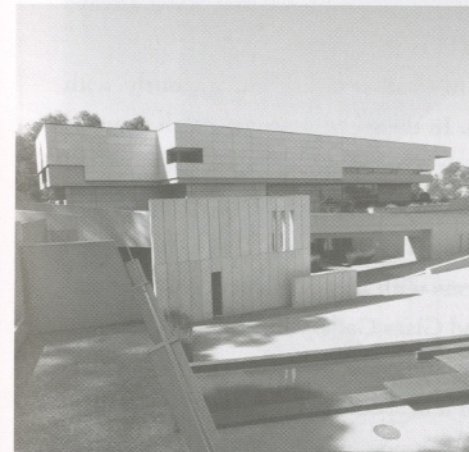


fig. 17

Neurosciences Institute, Williams and Tsien,
La Jolla, California, 1995



fig. 18

Detail, Neurosciences Institute, Williams and Tsien,
La Jolla, California, 1995

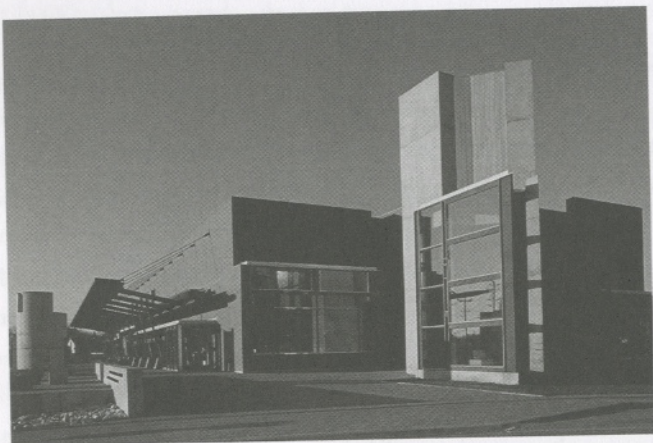


fig. 19

Canadian Clay and Glass Gallery, Patkau Architects,
Waterloo, Ontario, 1992

concrete was sandblasted. Williams said: "We didn't have the budget; we didn't have the mock-ups, and we didn't have the time."²⁹

This problem, craft, is another factor that tends to make layered construction preferable. The modern concept of craft is that only the exterior finish layer of a building needs to be precisely executed, allowing the interior structure to be more inaccurately assembled. The division of the modern wall into specialized, constructionally independent layers executed by specialized, independent subcontractors is one of a series of problems that have always existed, but that have become exacerbated in recent years.

Monolithic concrete attempts to do all its tasks simultaneously, with one material, at the same level of precision. In theory, this seems much simpler, but in practice, it is often far more difficult. Developments such as insulated concretes may change this, but the introduction of improved fireproof paints in the 1980s has done little to foster exposed steel construction. There have been somewhat isolated attempts to come to terms with this constructional phenomenon. Patkau Architects' Canadian Clay and Glass Gallery in Waterloo, Ontario (1992), exposes the edges of its layered brick and concrete masonry wall in a conscious effort to reveal this phenomenon, but it is of course far more a constructed narrative of the assembly than a reality that has simply been exposed. *figs. 19-20*

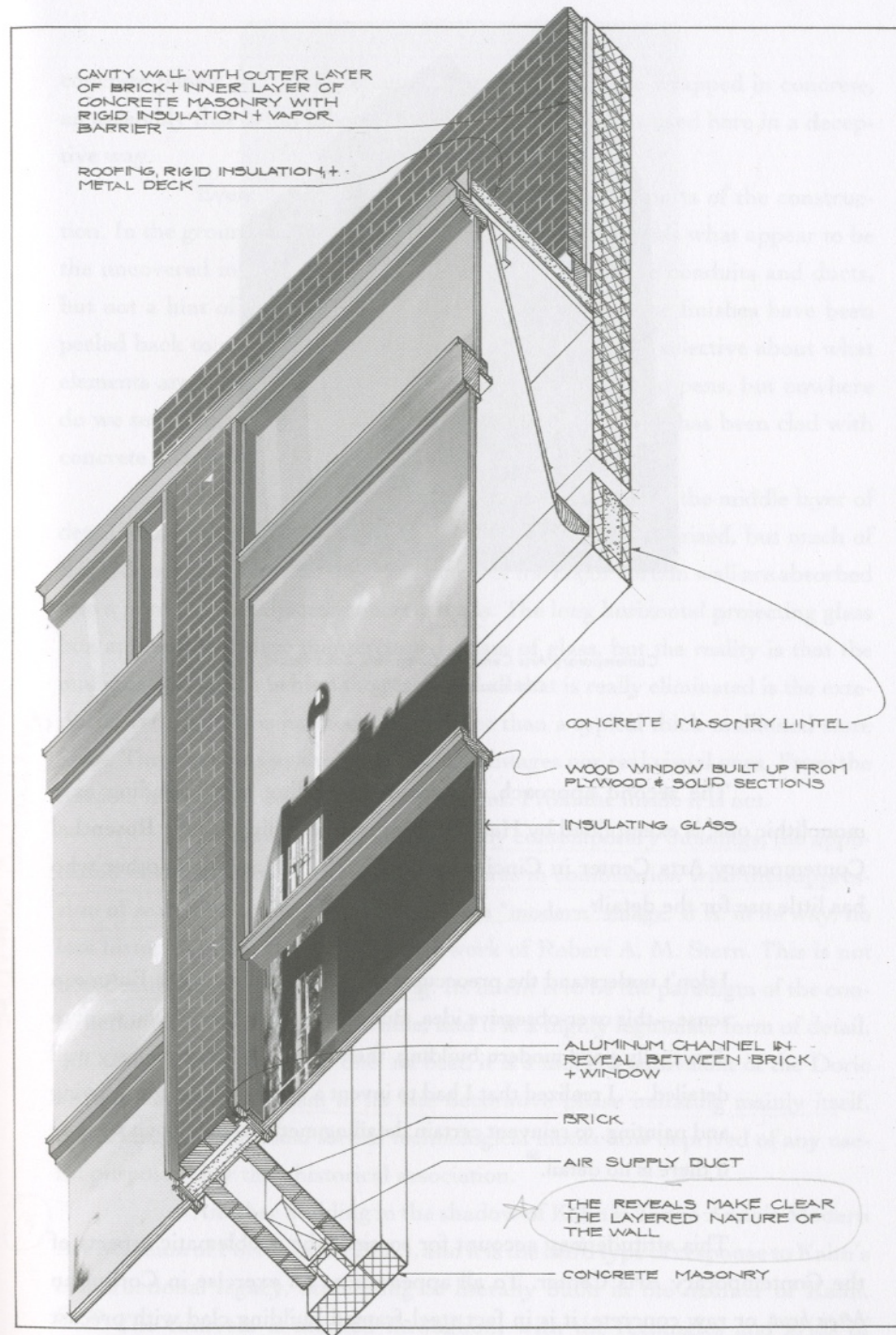


fig. 20

Wall Section, Canadian Clay and Glass Gallery, Patkau Architects,
Waterloo, Ontario, 1992

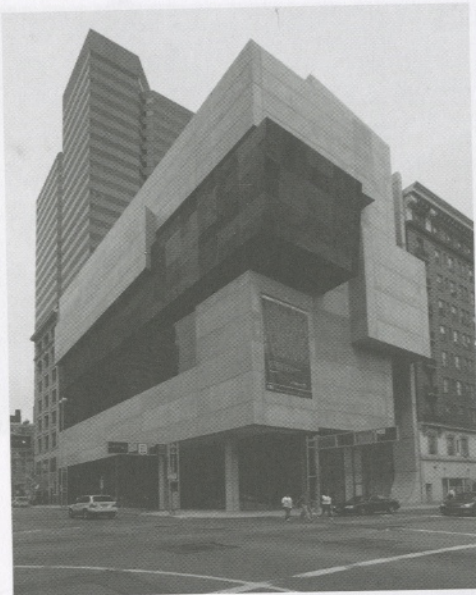


fig. 21

Contemporary Arts Center in Cincinnati, Zaha Hadid,
Cincinnati, Ohio, 2003

2 The second approach, the layered building masquerading as a monolithic one, is exemplified by Hadid's "concrete" building for the Rosenthal Contemporary Arts Center in Cincinnati (2003). *fig. 21* Hadid is another who has little use for the detail:

I don't understand the preoccupation with detailing in the European sense—this over-obsessive idea. But on the other hand if you want to do a really good modern building, then the work has to be very well detailed.... I realized that I had to invent a new language for drawing and painting, to reinvent certain detailing methods to make it seem as if there is no detail.³⁰

This attitude may account for some of the problematic aspects of the Contemporary Arts Center. To all appearances an exercise in Corbusian *béton brut*, or raw concrete, it is in fact steel-framed building clad with precast

concrete panels, and steel columns, where exposed, are wrapped in concrete, an assembly that is not inherently deceptive, but, that is used here in a deceptive way.

Even more problematic are the "exposed" parts of the construction. In the ground-floor lobby, a metal mesh ceiling reveals what appear to be the uncovered internal workings of the building. We see conduits and ducts, but not a hint of a steel beam. The implication is that the finishes have been peeled back to reveal the real construction, but Hadid is selective about what elements are shown. Peeling aside, this is in part what happens, but nowhere do we see a hint of the greater reality of a steel frame that has been clad with concrete panels fabricated offsite.

The details are, on first examination, Brutalist; the middle layer of detail, window frames in particular, are eliminated or minimized, but much of this is done in a superficial way. The jambs of the major curtain wall are absorbed into a notch in the adjacent concrete walls. The long horizontal projecting glass box appears as a clear uninterrupted prism of glass, but the reality is that the mullions are hidden behind the glass, and all that is really eliminated is the exterior cover plate. It is no more transparent than a typical thick-mullioned store front. The detail has neither technical advantages nor real visual ones. From the outside, it looks as if it might be transparent. From the inside it is not.

Selective Detailing
This is a practice seen in many contemporary buildings, the application of superfluous constructional features in combination with the suppression of real ones, to the end of achieving a "modern" image. It is, in its way, no less historicist than the neo-Colonial work of Robert A. M. Stern. This is not non-detailing; it is selective detailing. Its intent is to be the paradigm of the construction of the building as a whole, and it is a highly legitimate form of detail, but also a highly deceptive one. At best, it is a modern equivalent of the Doric order. This is modernism in its late decorative phase imitating mainly itself, mimicking its traditional formal technological motifs now deprived of any useful purpose other than historical association.

3 Another building in the shadow of Kahn is Tadao Ando's Modern Art Museum of Fort Worth (2002), and it is the third type of response to Kahn's constructional legacy, attempting to literally build in the manner of Kahn. *fig. 22* The concrete is marked throughout with the rectangles and grids of

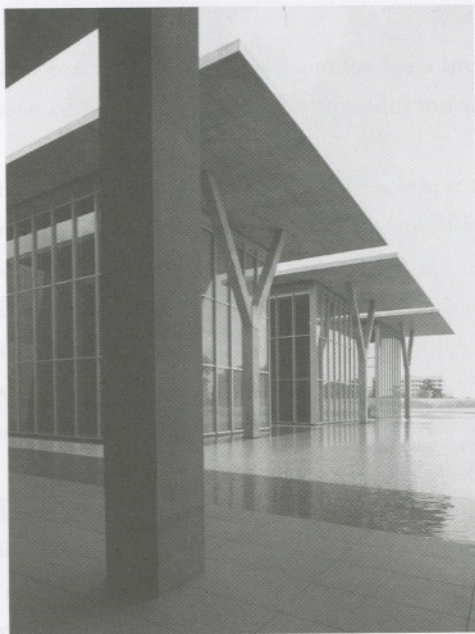


fig. 22

Modern Art Museum, Tadao Ando,
Fort Worth, Texas, 2002

small round holes associated with Kahn's Kimbell Museum across the street. The concrete finish used by Kahn (and in theory by Ando) was to leave the surface untouched after stripping away the formwork. At Kimbell, the rectangles are the mark of the plywood formwork, the round holes the mark left by the form ties that held them together. In Ando's building, every other row of form ties is ornamental, and many of the surfaces were treated after form removal to leave the impression that the walls resulting from form stripping had been perfect. At the same time, many of the real joints are suppressed. The concrete Ys that support the roof were to be cast in place. Because of the difficulty of vibrating these upright forms, the upper legs of the Ys are precast, and the joint between precast leg and cast-in-place column is hidden. Thus while false joints are added to the walls to make references to historical precedent, the real joints of the frames are hidden, because they are at odds with a predetermined image.

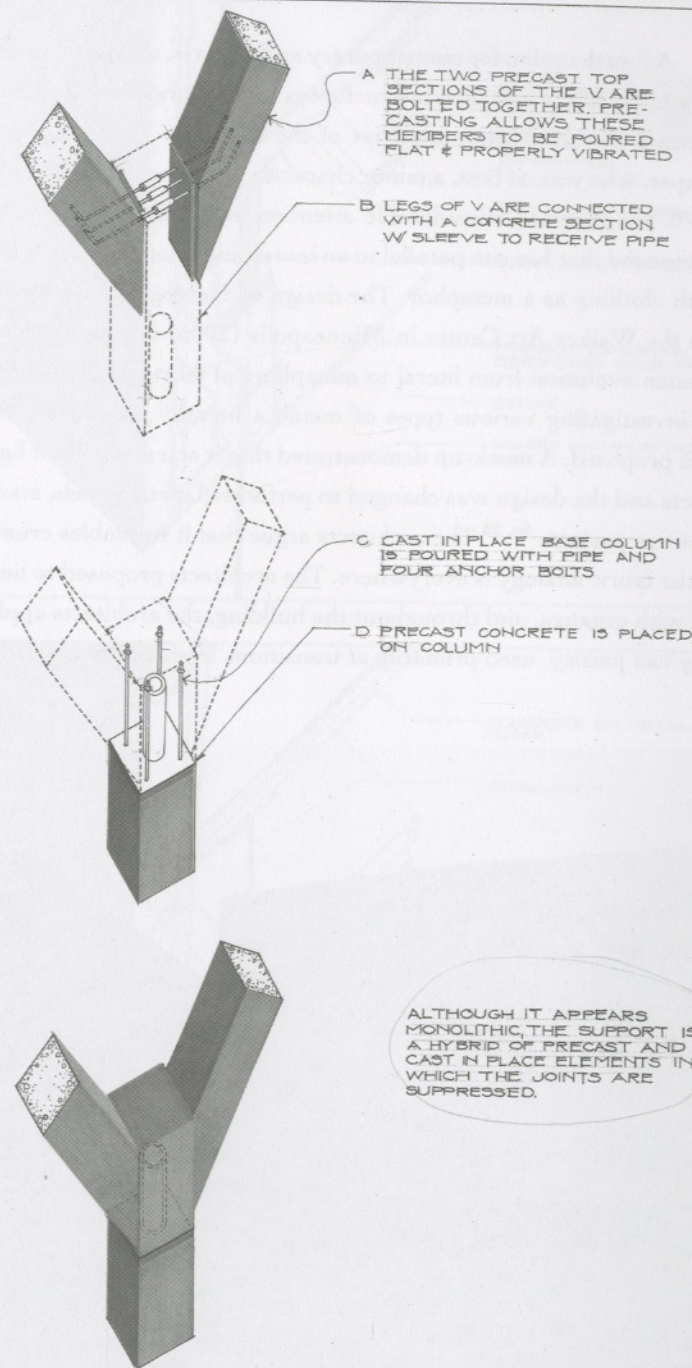


fig. 23

Column Joint Construction Sequence, Modern Art Museum, Tadao Ando,
Fort Worth, Texas, 2002

A fourth option for contemporary architects is, of course, to accept the necessity of cladding, and thus if structure is to be expressed it can only be done so through the descriptive qualities of the cladding. This is not a new theory. Semper, who was, at best, a minor character in modernist histories from 1920 to 1970, has received considerable attention in the last twenty years, a renewed interest that has run parallel to an increasing interest in the building as body with clothing as a metaphor. The design of Herzog and de Meuron's Addition to the Walker Art Center in Minneapolis (2005) is a highly accelerated Semperian evolution from literal to metaphorical fabric on a steel frame. *fig. 24* After investigating various types of metal, a literally translucent fabric exterior was proposed. A mock-up demonstrated that it acted as a giant light to attract insects and the design was changed to perforated metal panels, stamped with a repetitive pattern. *fig. 25* The architects argue that it resembles crumpled paper, but the fabric analogy is everywhere. The architects proposed to line the auditorium with organza, and throughout the building, the architects applied a pattern they call paisley, used primarily at transitions from exterior circulation



fig. 24

Addition to the Walker Art Center, Herzog and de Meuron,
Minneapolis, Minnesota, 2005

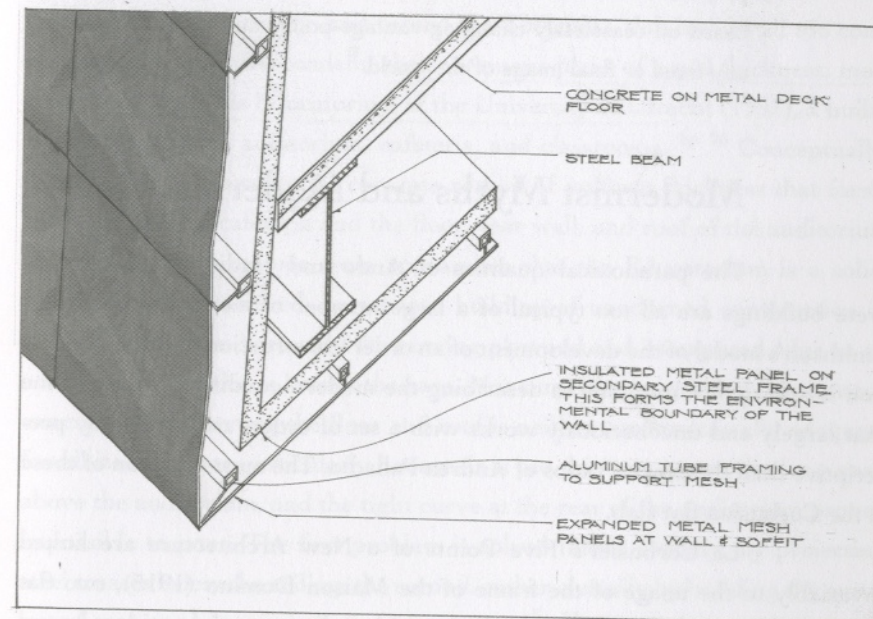
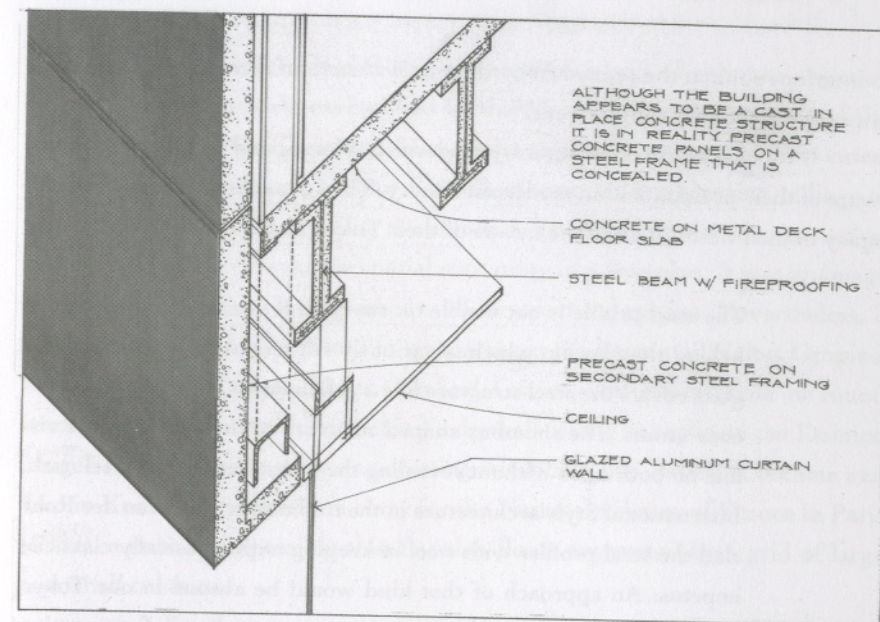


fig. 25

Wall Detail, Contemporary Arts Center in Cincinnati, Zaha Hadid,
Cincinnati, Ohio, 2003

Bottom

Wall Detail, Addition to the Walker Art Center, Herzog and de Meuron,
Minneapolis, Minnesota, 2005

to interior room, at the seams. According to *Architectural Record*, the pattern was drawn from women's underwear.³¹

Like most contemporary modernists, Herzog and de Meuron are well aware of their position within modernist history. They commented on the Miesian legacy in their description of the facade of their Tokyo Prada Store (2003):

The steel profile is not visible on the outside because it is concealed behind the glazing, which is variously flat, concave, or convex. The glass covers the steel structure like a gelatin layer with thin black silicone seams. The rhombus-shaped structure of the steel remains visible on both sides without revealing the materiality of the steel itself. International Style architecture in the tradition of Mies van der Rohe clad the steel profiles with steel in keeping with a basically classicist impetus. An approach of that kind would be absurd in our Tokyo project, because the architecture targets a strategy of perception based on ceaselessly changing vantage points and seeks to undercut any fixed or final image of the world.³²

Modernist Myths and Modernist Orders

The paradoxical qualities of Ando and Hadid's exposed concrete buildings are all too typical of a large number of modernist buildings. Smithson's model of the development of an order-construction to order decoration is a fairly accurate one in describing the modern condition, which is one that largely and unconsciously works with a set of orders no less rigidly prescriptive than the precise ratios of Andrea Palladio. The most common of these is the Corbusian flat slab.

Le Corbusier's Five Points of a New Architecture are linked invariably to the image of the frame of the Maison Domino (1915), two flat slabs supported by six cylindrical columns with no beams and no evident lateral bracing. The Maison Domino is based on the lost tile system, in which hollow clay tile blocks added to the forms are left in the concrete to give the exterior appearance of a flat slab while, in reality, creating a ribbed slab.

Maison Domino as an image not of deception, but hidden → what to hide what to reveal

The structural and spatial image of a grid of columns supporting a flat, unbroken slab, exemplified by the Maison Domino, is typical of the modernist work of Le Corbusier, Mies, Aalto, and many others. In most cases, this is achieved not through a true flat slab of concrete but by using ceilings to conceal the beams, but exposing the columns. The reason for this construction method was that it created the spatial continuity of a free plan. It was an image whose popularity rapidly dispensed with its structural origins. Nevertheless, it has had a remarkably resilient life, appearing in the houses of Walter Gropius, Rafael Soriano, Richard Meier, Michael Graves, and others, built of round steel columns and wood joists behind a drywall ceiling to replicate the Domino image. That this convention was creating something of a problem became evident in Koolhaas' competition entry for the National Library of France in Paris (1989), a cube of impossibly thin flat slab floors supported by a grid of large and small columns.

Koolhaas was unconcerned by the gap between conceptual structure and structural reality, and turned the Corbusian slab into its all too common contemporary descendent, the continuous plane of equal thickness, most conspicuously at his Educatorium at the University of Utrecht (1997), a building that houses an auditorium, cafeteria, and classrooms. *fig. 26* Conceptually, the building is a continuous concrete ribbon of uniform thickness that forms the ceiling of the cafeteria and the floor, rear wall, and roof of the auditorium above. We might assume from appearance that the Educatorium is a solid, monolithically structured, bare-bones building of unadorned construction in concrete and glass, with only the curving plywood and its exposed edge as an added layer, but this is hardly the case. Not surprisingly, the thin, continuous concrete plane forming the floor and roof is neither constructionally adequate for all its tasks nor particularly honest. It is too thin to support the long span above the auditorium, and the tight curve at the rear of the auditorium proved impossible to pour. The first problem is solved rather cleverly, by projecting steel trusses below the ceiling; the second, rather clumsily by building the curve out of cement plaster in imitation of concrete. *fig. 27* This is clear on the interior where the plaster framing is exposed, but not at all on the exterior. The curve is visible on the glazed face of the building, but not really exposed as the edge is faced with travertine.

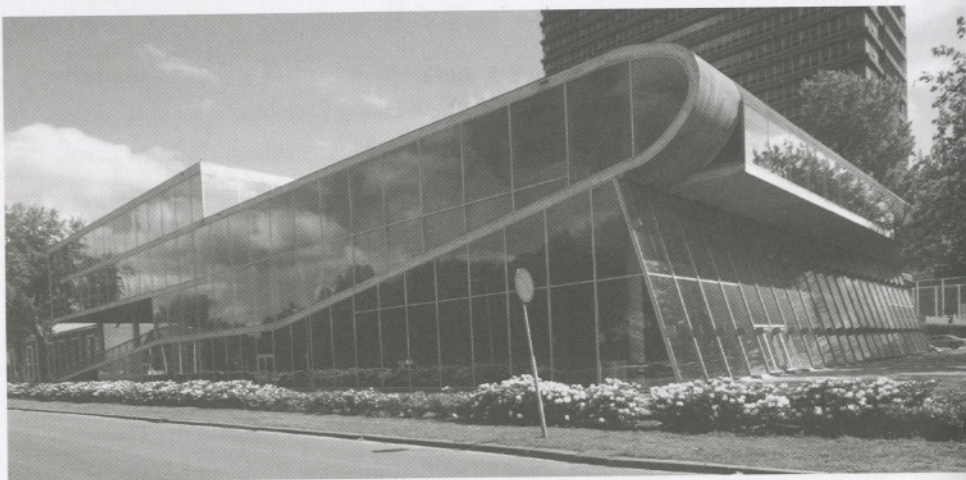


fig. 26

Educatorium, University of Utrecht, Rem Koolhaas,
Utrecht, Netherlands, 1997

The Educatorium was a primary event in the next development of this order: the morphing of the flat slab into the continuous surface, merging wall and floor, ground, and building. Few orders achieved such instant success and instant triteness as the continuous concrete ribbon that soon appeared in the work of Hadid, MVRDV, and Diller + Scofidio. The continuous concrete ribbon is only one example of the creation of the "orders" of modern building, a process made inevitable by the dominance of constructional images over constructional realities and the evolution of those images over time. The result is a constructional style that, in Smithson's terms, becomes first representational, then ornamental, in this case rather rapidly.

In any case by 1980, if modernism had not quite jettisoned the idea that its languages had constructional origins, it had at least concluded that these origins were irrelevant. Modern architecture was about the modern vision and the modern predicament, not about modern construction and modern technique. The problem, however, is that modernism has discarded none of the formal and structural elements that the constructional philosophy of modernism has generated. All of Le Corbusier's Five Points remain in place, allowing for the occasional truss or even constructionally articulate detail. The language of modern construction remains; the philosophy does not.

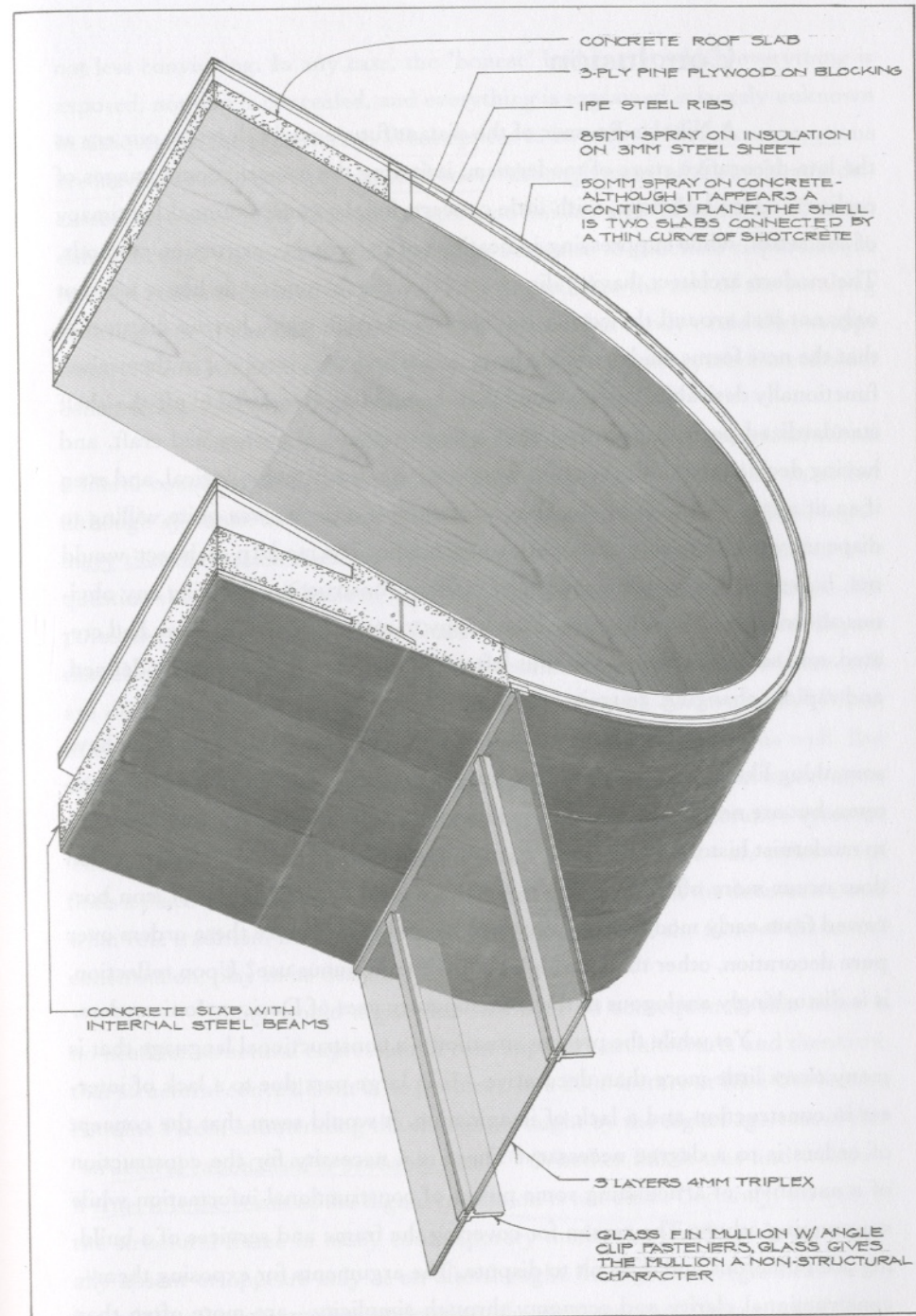


fig. 27

Wall Section, Educatorium, University of Utrecht, Rem Koolhaas,
Utrecht, Netherlands, 1997

Conclusion

A Nikolas Pevsner of the distant future might describe our era as the late-decorative stage of modernism, imitating the constructional images of earlier modern buildings, with little concern for the constructional legitimacy of the result, while suppressing indications of its actual construction methods. The modern architect, having discovered that the factory-made house was not only not just around the corner but also nowhere in sight, having discovered that the new forms made possible by concrete and steel were not in themselves functionally desirable, having found that the building composed of off-the-shelf standardized parts, in fact, required a large amount of customized craft, and having decided that if the zeitgeist were not necessarily technological, and even if so, it might just as easily be about its negative aspects, was quite willing to dispense with the reality of modern construction. The modern architect would not, however, let go of the images of modern construction. Lacking any obvious alternatives, he or she was all too happy to retain what modernism had created, and seeking a cause, was thus left with little more than a vaguely defined, and rapidly changing, zeitgeist.

It is difficult to argue that contemporary modernism does not have something like its own set of orders, images that originated in constructive systems, but are now far removed from their constructional origins, and owe more to modernist history than to constructional reality. When structural expression does occur more often than not, it is not a logical construct, but an icon borrowed from early modernism. What can be said to legitimize these orders over pure decoration, other than examples of their continuous use? Upon reflection, it is disturbingly analogous to the contemporary uses of Doric or Ionic orders.

Yet while the present situation—a constructional language that is many times little more than decorative—is in large part due to a lack of interest in construction and a lack of imagination, it would seem that the concept of orders is to a degree necessary. There is a necessity for the construction of a narrative, of articulating some pieces of constructional information while suppressing others. The reason for covering the frame and services of a building are numerous and difficult to dispute. The arguments for exposing them—constructional clarity and economy through simplicity—are more often than

not less convincing. In any case, the “honest” building in which everything is exposed, nothing is concealed, and everything is explained is largely unknown in antiquity or the present day. What appear to be entirely literal constructions are inevitably only partially exposed ones. Although many of the architects discussed here advocated a literal, no layers, no finishes style of building, all came, either through theoretical realignment or response to practical requirements, to build clad and layered buildings. They argued that the role of the resulting cladding was to describe the hidden construction, but rarely could they escape history. None has been able to dispense completely with the symbolism of older constructions, many of them constructionally unnecessary.

Smithson's argument was that there is a natural progression from a literal construction to an order to a decorative system—and that an order, although symbolic in its constructional expression, has a constructional legitimacy that decoration does not. In recent years, art historians have called into question the historical basis of Smithson's positions. Barbara Barletta has disputed the wooden origins of the Doric order, and Mark Wilson Jones argues that elements such as the triglyph, which traditionally represented a beam end, are decorations whose origins have nothing to do with construction.³³ Much of the historical analysis of Gothic rationalism has been disputed as well. But while Smithson's thesis may not be true of the totality of history, in modernism, we have seen no end to literal construction evolving into decorative systems. The question is rather if there exists an intermediate stage—an order—that finds a place as legitimate expression between the literal and the decorative, and what role tradition, history, and language, as opposed to the facts of the actual construction, play in its design.

Many would argue that this is of no consequence, that there is no need for structural expression in contemporary architecture, and therefore, that structural concealment is no problem. In a 2005 lecture at Rice University, Antoine Picon, enumerating the changes brought by the digital age, stated that “structural rationalism is probably dead.”³⁴ Whether this is true and whether, if true, it is the result of the digital revolution is not clear. Certainly, the role of the structural frame in many contemporary modernist buildings is conceptually absent or appears only as an afterthought. In any case, regardless of the intentions of contemporary modernism, the contemporary viewer is still likely

to look at a building in a structural way. Gottfried Semper's argument that constructional information is a distraction to the understanding of architecture is contradicted by a great number of traditional as well as modern buildings, and if immensely unpopular as a concept with modern theoreticians, weight remains, in the eye of the architectural beholder, the point of departure for an architectural understanding that transcends glib association and symbolism.

If one believes that architecture is the art of building, then it must tell us how it is built, and if this can be done only by partial exposure or by a symbolism of construction, how is it to be designed? If architecture is the art of building, then the partially exposed structure will be preferable to the clad one; the cladding that is descriptive of construction will be preferable to the cladding that is descriptive of history, and the cladding that is descriptive of the history of construction will be preferable to the cladding that is descriptive of the history of anything else. Thus it could be argued that the buildings discussed here are successful insofar as they make reference to the layered constructions that they clad, and unsuccessful insofar as they make references to historical constructions. Smithson is probably right, however, that the non-validity of an order is less the result of a lack of adherence to a strict set of guidelines for accuracy in cladding than the result of inevitable loss of vitality in the development of an order. The points at which architecture escapes precedent, whether an order, a style, or a tradition, are transcendent, but we should be mindful that none of these architects has been able to completely do so, and all admit the possibility that the inclusion of the historical reference is perhaps a necessary condition for this transcendence to occur.

Epigraph. Jones, *Zago Architecture and Office dA*, 35; Smithson, "A Parallel of the Orders," 561–62.

- 1 Thomas Carlyle, *Sartor Resartus* (New York: Dutton, [1838] 1965), 43, 42.
- 2 Ibid., 165.
- 3 John Ruskin, *The Stones of Venice* (New York: Hill and Wang, 1960), 151.
- 4 George Gilbert Scott, "On the Rationale of Gothic Architecture," *The Builder* (March 3, 1860), 131.
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