

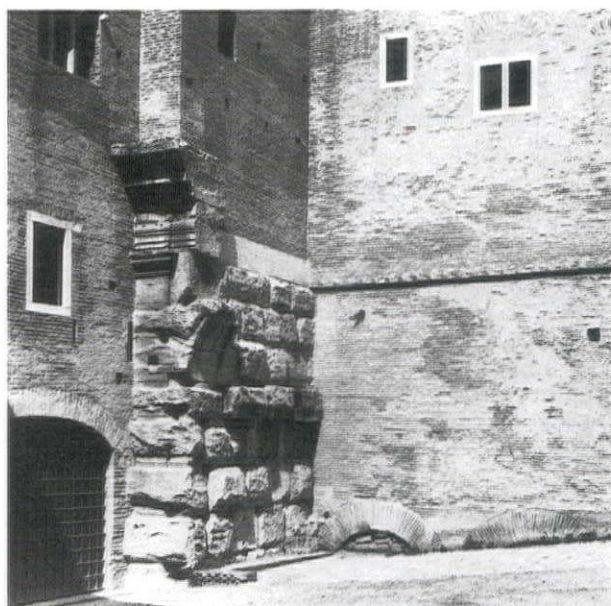
P E R S P E C T A 2 4

The Yale Architectural Journal

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The Yale Architectural Journal



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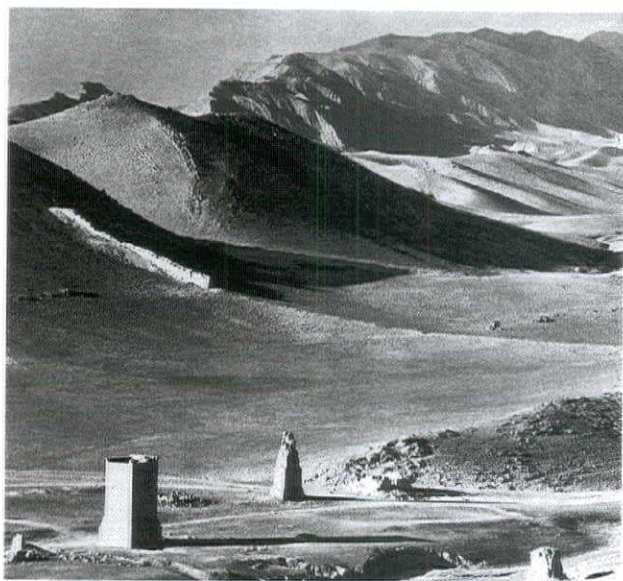
In memory of

Herbert M. Hodgman, 1959-1988.

Yale Master of Architecture 1985.

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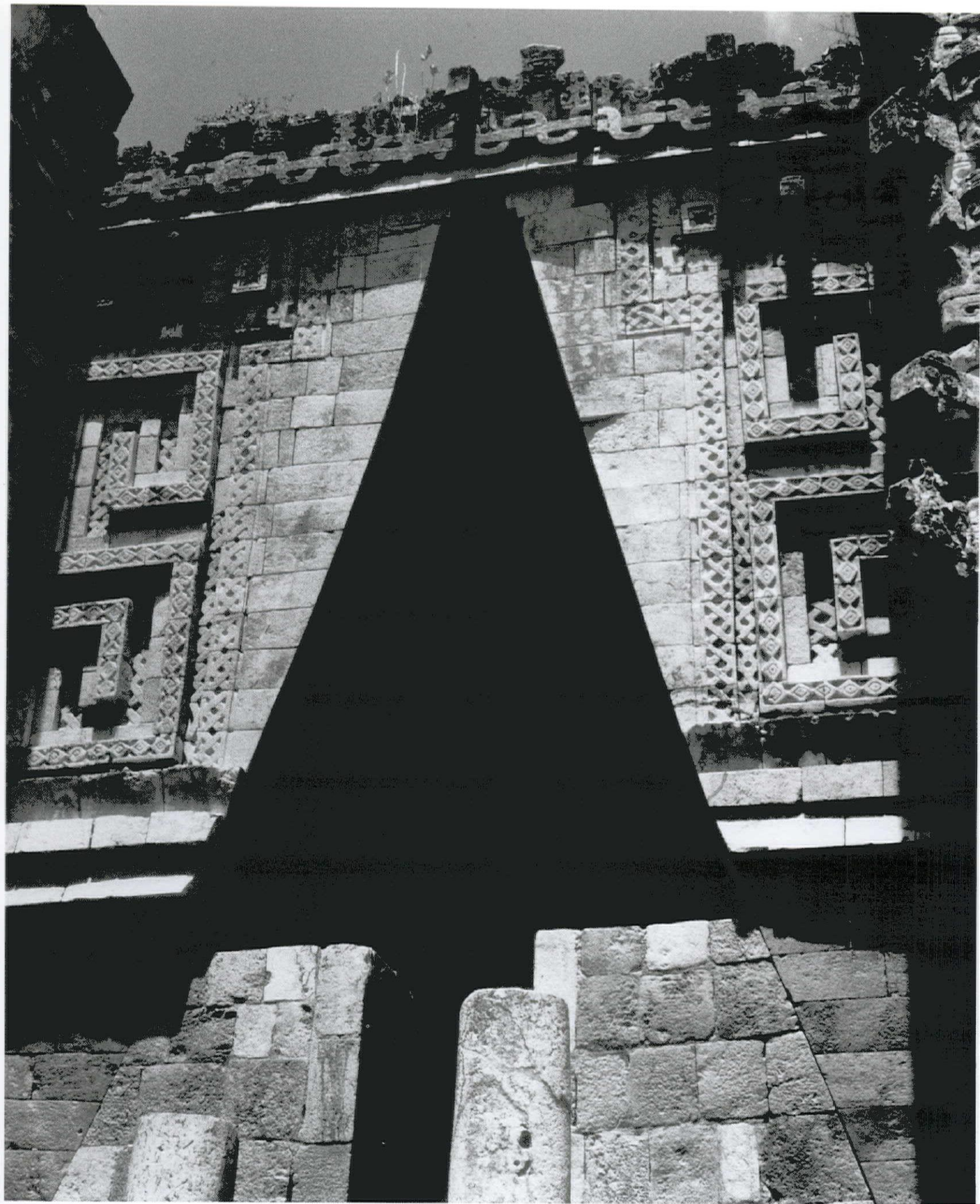
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The man-made world of things, the human artifice erected by *homo faber*, becomes a home for mortal men, whose stability will endure and outlast the ever-changing movement of their lives and actions, only inso-much as it transcends both the sheer functionalism of things produced for consumption and the sheer utility of objects produced for use. Life in its non-biological sense, the span of time each man has between birth and death, manifests itself in action and speech, both of which share with life its essential futility. The “doing of great deeds and the speaking of great words” will leave no trace, no product that might endure after the moment of action and the spoken word has passed. If the *animal laborans* needs the help of *homo faber* to ease his labor and remove his pain, and if mortals need his help to erect a home on earth, acting and speaking men need the help of *homo faber* in his highest capacity, that is, the help of the artist, of poets and historiographers, of monument-builders or writers, because without them the only product of their activity, the story they enact and tell, would not survive at all.

Hannah Arendt

Hannah Arendt, *THE HUMAN CONDITION*
(Chicago: The University of Chicago Press,
1958), p. 173.



Notes for a Theory of Making in a Time of Necessity

Giuseppe Zambonini

*"The Japanese word shokunin is defined by both Japanese and Japanese-English dictionaries as 'craftsman' or 'artisan', but such a literal description does not fully express the deeper meaning. The Japanese apprentice is taught that shokunin means not only having technical skill, but also implies an attitude and social consciousness. These qualities are encompassed in the word shokunin, but are seldom written down . . . The shokunin demonstrates knowledge of tools and skill with them, the ability to create beauty and the capacity to work with incredible speed . . . The shokunin has a social obligation to work his best for the general welfare of the people. This obligation is both spiritual and material, in that no matter what it is, if society requires it, the shokunin's responsibility is to fulfill the requirement."*¹

¹ Toshio Odate, *JAPANESE WOODWORKING TOOLS: THEIR TRADITION, SPIRIT AND USE* (Newtown, Connecticut: The Taunton Press, 1984), p. viii.

The thesis to which these notes aspire is that every man-made form – and in particular, every architectural form – does not exist solely as static consequence to an otherwise irrelevant act of production, but conversely, that the nature of form is inlaid in the process of making.

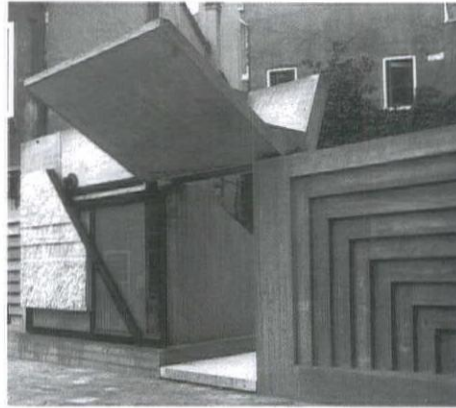
Furthermore, it is here contended that issues of quality are governed by the degree to which the materials and methods typical to the host society are integrated together. Through their employment, the maker intends to contribute to the traditions and common meanings of the collectivity in which the production activity is nested, without renouncing technological advance or personal expression.

Any activity of production involves the transformation of matter for a purpose clearly defined somewhere between society and the individual. The maker and the object to be created are tied together by an intimate relationship which does not disappear at the conclusion of the production process. This relationship can be described in different ways, in each case inseparably connected to the nature of the production process itself.

In traditional artisanry, where the maker is singularly responsible for an entire production process, the artist or craftsman is first con-



2. Palace of the Governor, Uxmal (c. 900).



3. Istituto Universitario di Architettura di Venezia, Venice (1985), Carlo Scarpa, entrance elevation.



4. IUAV, detail.

cerned with the embodiment of an idea through a unique materiality. Here the process requires the definition of an economical and efficient path of fabrication. On this path the maker will confront two dilemmas – or, more precisely, two burdens – which, because of their consequences, are permeated by morality. Morality is here intended to identify a quality that goes beyond material integrity and the business ethic. Morality is sustained by personal choice and ultimately comes to bear on society as a whole.

The first burden concerns the identification of materials and tools used in the process of transformation. The moral component must be present here because the most significant properties of material can only be discovered through a methodical investigation measured in years of pursuit. The development of this knowledge requires observation, intuition and perseverance – attributes acquired in varying degrees by way of apprenticeship and inherent sensitivity.

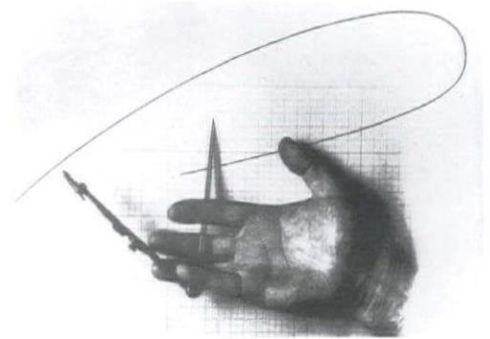
The second burden has to do with the relationship of the artisan to the history of their trade. The artisan can be involved in similar operations many times over, yet the object produced will not necessarily be the same in each case. Each experience will be different, as new techniques and processes will be tested and assessed in order to verify their relative utility. In the end, however, the artisan will rarely re-invent the object in a complete sense. The character of human artifacts comes from very far back. Each artisan experiences them first of all in use, later through study and documentation, and finally as they are brought into the production process. Although centered on the individual, this process typifies a space/time cell of society's evolution. The artisan's role in that society is epitomized by the object produced. That object – because it inevitably carries meaning – will contain all of the advancements and contradictions manifested in the society of which it is a product, speaking to the relationships among its members and, in turn, the relationship of those individuals to the environment they occupy.

Here the moral responsibility of the artisan is two-fold: it deals simultaneously with preservation and innovation. It is within the critical interpretation of these two apparent opposites that the range and quality of discussion applicable to the process of making occurs.

*"That the hand must exhibit and reveal the inherent nature of individuality as regards its fate, is easily seen from the fact that after the organ of speech it is the hand most of all by which a man actualizes and manifests himself. It is the animated artificer of his fortune; we must say of the hand that it is what man does, for in it as the effective organ of his self-fulfillment he is there present as the animating soul; and since he is ultimately and originally his own fate, the hand will thus express this innate, inherent nature."*²

It is recognized that humanity had its start through labor and that every display of evolution is dependent on this elementary activity which characterizes our species as predominant over all others. At the same time, humanity cannot exist outside a connective social structure which is itself a human innovation. George Novack states in *HUMANISM AND SOCIALISM* that "There is no difference between society and humankind . . . The study of life in society is identical with the study of the emergence and development of humankind, its making and remaking as a unique kind of life, the highest product of material organization on this planet."³

In modern times the physical and social sciences investigating the emergence of life have been integrated: on the one hand chemistry and biology, and on the other anthropology and human history. These disciplines have supported a theory of Darwinian evolution that, in turn, provided the means for Engels to set forth the "labor theory of human origins" in which the activities and results of labor were deemed responsible for the conversion of primates into humans. Novack elaborated upon this thesis by arguing that it was not growth in brain size alone that precipitated the transformation of primate to *hominid*. Rather, "the brain did not develop by itself, but in connection with other organs and their activities. The most important of these was the hand."⁴ Novack cites Washburn and Howell's contention that intelligence evolved significantly consequent to the use of tools, and that brain size "increased three-fold subsequent to the use and manufacture of implements."⁵ The emancipated hand with its opposable thumb – together with stereoscopic vision, upright posture, and the vocal organs – are seen by Novack as the pre-conditions to the hand-eye-brain complex in the primordial evolution of



5. *The Constructor* (1924), El Lissitzky.

² G. W. F. Hegel, *THE PHENOMENOLOGY OF MIND* (New York: Humanities Press, Inc., 1977), rev. ed., translated by J. B. Baillie, p. 342-3.

³ George Novack, *HUMANISM AND SOCIALISM* (New York: Pathfinder Press, 1973), p. 13.

⁴ *Ibid.*, p. 17.

⁵ *Ibid.*, p. 18.

culture. Returning to Engel's theory, Novack concludes by emphasizing that "Labor is the first manifestation of human creativity. The transformation of the primate into *Homo* is its first history-making result. The increasingly conscious and efficient practice of labor was the first step in the humanization of the animal raw material, in what anthropologists call the acculturation of humanity."⁶

⁶ Ibid., p. 24.

It is interesting to note that this process of acculturation submitted the tool-making process to a critical choice. The discovery of bronze in the Near East around 3500 B.C. coincided with, and gave birth to, the manufacture of implements, due to the particular suitability of bronze for use in tools. But, as John Keegan and Richard Holmes perceptively comment in *SOLDIERS: A HISTORY OF MEN IN BATTLE*, because of its scarcity bronze was also to be used to win the greatest possible return upon its possession and "... what larger return was there to be won than by fashioning it into implements which gave the individual power over others? ... Weapon ownership conferred superior status, enjoined the acquisition of the highest skill in weapon management [and] tended to nurture a psychic relationship between owner and object ..."⁷ This points to the emergence of battle as an organized activity, and the division of society – in the simplest terms – between those working the land and those stealing the harvest. The tool is the ambiguous protagonist of this process and one can see how scale, weight, and dynamics will probably change little when applied to the design and manufacturing of weapons.

⁷ John Keegan and Richard Holmes, *SOLDIERS: A HISTORY OF MEN IN BATTLE* (New York: Elisabeth Sifton Books/Viking Penguin, Inc., 1986), p. 22.

In the work of the Viennese artist Walter Pichler this ambiguity of the object is quite subtly but also disturbingly represented. In the three-piece sculpture *Der Erste Vogel*, *Der Zweite Vogel*, and *Der Dritte Vogel* (1975-79), a bird departing for flight is captured in three frames, each piece mounted on a pole of wood. The scale and shape of the bronze figures bring to memory a range of implements from halberd to hoe. The bronze itself, polished to an intense shine, suggests prolonged use, while the absence of any blemish alludes to the qualities of a superior alloy. The sharpness of the metal, together with its aerodynamic shape, speaks of past and future rituals and



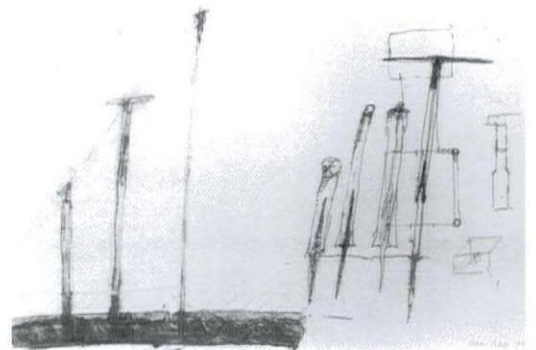
6. *Der erste Vogel* (1975),
Walter Pichler.



7. *Der zweite Vogel* (1976),
Walter Pichler.



8. *Der dritte Vogel* (1979),
Walter Pichler.



9. *Drei Vogel* (1978-1982), drawing.

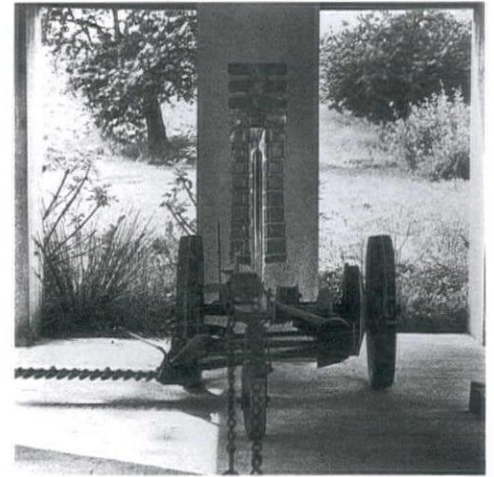
provides the instruments with a life of their own. In another piece – the *Grosse Mahmaschine* (1980) – a common plow mounted on wheels is anchored to a steel and concrete armored shield. In its stillness it assumes a threatening and mysterious, almost military, identity.

Pichler's figures are born in the depth of his personal interpretation of all our pasts, profoundly manifest in their archaic appearance. I believe, however, that it is in their technical impeccability and obsessive craftsmanship that they acquire an even greater substance and meaning.

*"For technique may be interpreted in many various ways: as a vital force, as a theory of mechanics, or as a mere convenience. In my own case as an historian, I never regarded technique as the automatism of a 'craft,' nor as the curiosities, the recipes of a 'cuisine'; but instead as a whole poetry of action, and . . . as the means for the achievement of metamorphoses. It has always seemed to me that . . . the observation of technical phenomena not only guaranteed a certain controllable objectivity, but afforded an entrance into the very heart of the problem . . . The purpose of the inquiries of a physicist or a biologist is the reconstruction of nature itself by means of a technique controlled by experiment: a method less descriptive than active, since it reconstructs an activity . . . But in viewing technique as a process and in trying to reconstruct it as such, we are given the opportunity of going beyond surface phenomena and of seeing the significance of deeper relationships."*⁸

Arrigo Rudi, an architect and lifetime collaborator of Carlo Scarpa, has spoken at length about craftsmanship as it relates to our discipline. Rudi believes that the conditions for a true craftsmanship are two: first of all, that the artisan possess a certain creative insight, and secondly, that he acquire and utilize a knowledge of the entire process in view of its goal.

In re-claiming creativity, the artisan calls back to his realm the right of, and capacity for, judgment regarding necessary technological advance – the *ad hoc* fabrication of jigs, for example, or the structural modification of tools. Knowledge of the entire process, on the other hand, is essential so that every minute choice involving materials and methods can be bent, at the artisan's discretion, so to clearly and fully address the objectives of production. It is superfluous to comment on how far from this proposed status the artisans of today are operating.



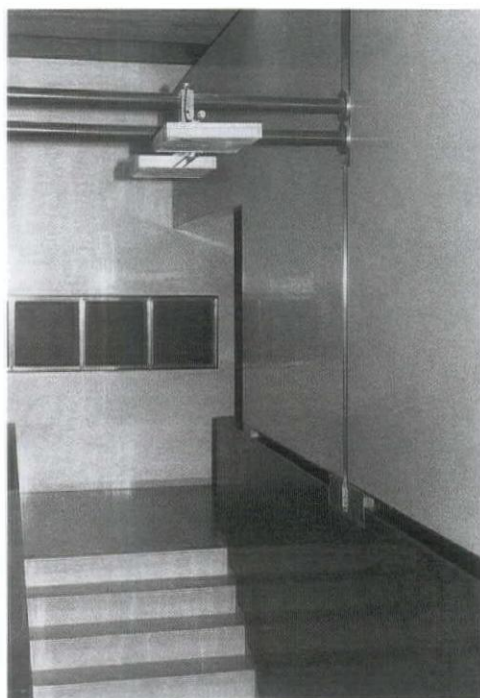
10. *Grosse Mahmaschine* (1980), Walter Pichler.

⁸ Henri Focillon, *THE LIFE OF FORMS IN ART* (New York: George Wittenborn & Sons, 1948), rev. tr. by Charles Beecher Hogan and George Kubler, p. 36.

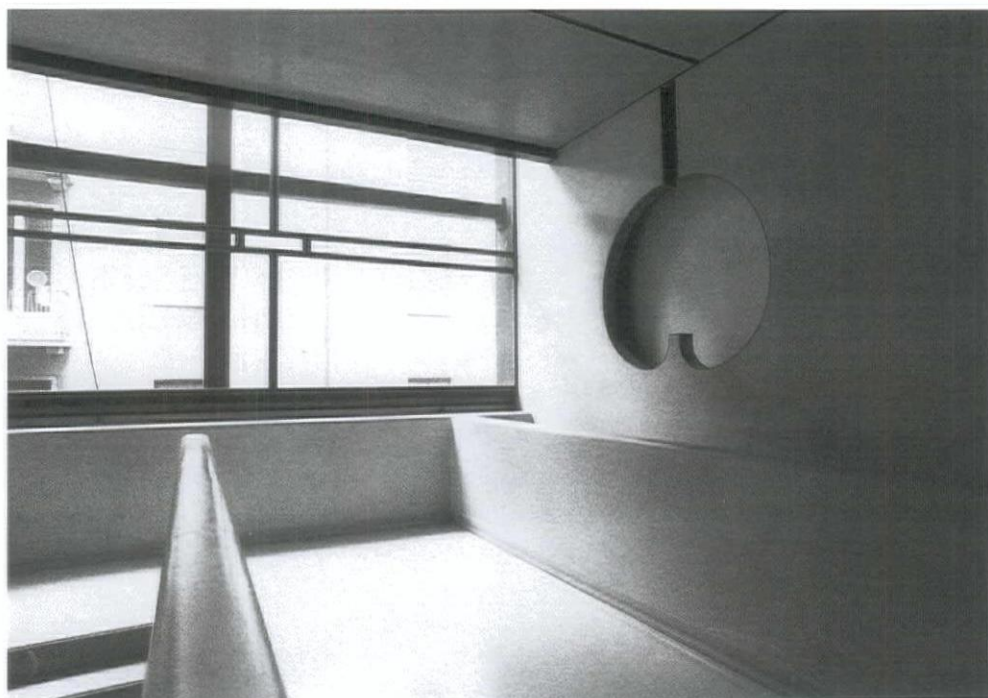
In every instance of making, when the concern for formal integrity is at stake, we must recognize and operate within a relationship of total inseparability governing material, the tools employed in its transformation, and the labor spent in the process. This is demanded by the specificity of each act of making – the specificity of time and context that renders each instance unique.

This relationship can be traced in detail through the work of Carlo Scarpa. From Scarpa's contribution to the science of building we have the opportunity to measure the importance of tradition in the process of making. Scarpa has shown that invention is tied to a process where one must interpret and extrapolate from established tradition. The recollections of Scarpa's lifetime collaborator, Eugenio De Luigi, concerning his use of *stucco alla veneziana* provide a means for understanding this process at a level of great specificity, while simultaneously speaking of an almost paradigmatic experience of making:

"When our work was to be done outside the Veneto region, Scarpa always wanted to use the local sands. He was interested in the local quality of things. When we travel to build, it is often very hard to find our materials locally though; with sand, for instance, it is possible to achieve acceptable results using local sands, but most often we cannot find a clean local sand with the right granular consistency and color. The best sand for our purposes used to come from the banks of the Brenta River, yet now, for



11. Banca Popolare di Verona, Verona (1973-78), Carlo Scarpa, plasterwork.



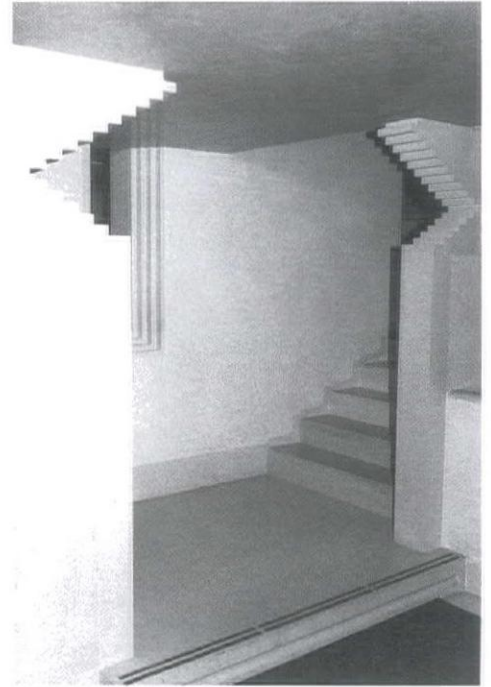
12. Banca Popolare, plasterwork.

ecological reasons, the banks of the Po are the only places from which one is allowed to take sand. Fortunately, from the Po we get an excellent clean gray sand, with a variety of granular consistencies.

"To make 'stucco alla veneziana', technically speaking, an 'intonaco' is first applied to the wall. This layer is properly called the 'sottofondo' and the best one, developed through long tradition, is made only of 'grassello di calce' (hydrated lime and sand). This technique has been either forgotten by many craftsmen or is avoided by them, because of the intense labor involved in pressing the 'calce' by hand onto the wall surface. Another 'sottofondo' is made with a finely crushed 'cotto', derived from discarded or broken clay bricks and roof tiles. 'Cotto' is excellent for use in Venice because it absorbs the humidity from the air and so no condensed water runs down the stucco. Coarser sand is used for the 'sottofondo' and a finer sand for the finish coat. However, 'calce' must be in the 'sottofondo' to aid in the absorption of moisture. The 'calce' that goes on the finish coat is as pure as possible, although it may contain some added color.

"This technique of mixture and application dates back to the Romans, as fragments of similar stucco have been found in Ercolano and Pompeii. The Romans were mixing 'calce' with ground dirt and clay, but the technique eventually evolved into the conception of the beautiful 'marmorino'. 'Marmorino' is obtained by mixing a marble powder with the 'calce' and applied only to an 'intonaco' of 'cotto'. With its marble-like hardness, a result of the intense pressure of hand application, and its shine, imparted with a hot iron, 'marmorino' is both extremely resistant to moisture and exceptionally beautiful.

"In our times many tradesmen use cement in the mixture of the 'intonaco', even though we know that the cement will eventually interact improperly with the final finish of the work. For the same reasons of supposed practicality, other tradesmen are using artificial stuccos, essentially plastic derivatives. The final calce finish coat cannot even be applied to those intonaci, nor will the color of the synthetic stucco change and improve with age as the synthetic mixture is chemically composed to remain unchanged and unaffected by time. Over time, calce either grows more beautiful in color or it self-destructs because of defects in its application. Its value will always increase, while the value of the synthetic stuccos will diminish over time. The calce may be compared to a stone, which when newly quarried has a rigid, dry quality, but which, over time, takes on a softer, more moist look, a quality of fantasy and beauty. The calce may pick up a crystalline brightness or it may oxidate to a color of sea shells found on the shore. These are all characteristics of the true material that cannot be created in any other way."⁹



13. Banca Popolare, plasterwork.

⁹ From an interview with the author in Venice, December, 1985.

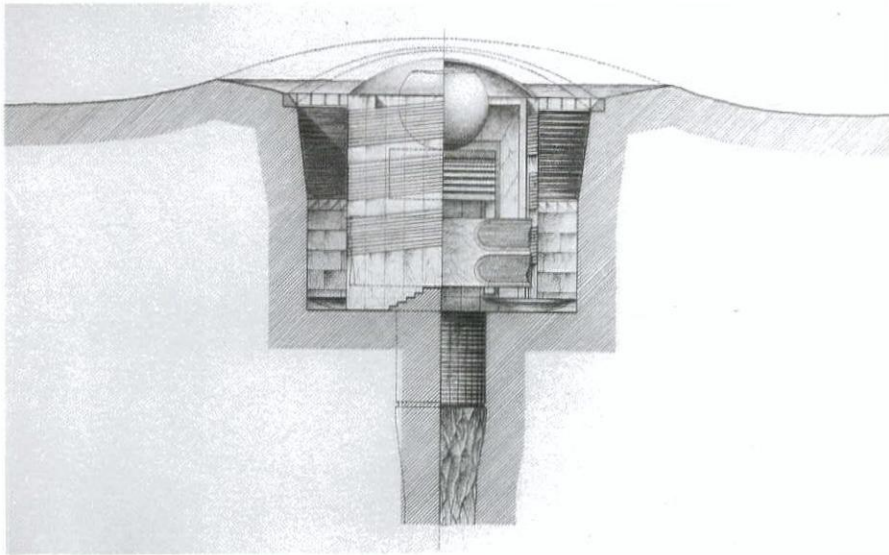
There are two values emerging through this account, presumably representative of the society in which they have found expression. By allowing or setting up certain conditions for a work to be built, society is inevitably manifest in the work itself. These two values may be referred to as *continuity* and *integration*.

The word continuity speaks of relationships in time: the extension of the design process through the building process as we trace the birth of an idea in the abstract through its two-dimensional shaping and finally to its encounter with the materials and methods of building. This process draws energy from our desire to see an idea physically realized, to see ourselves reflected by the object. The true merits of that idea are not conclusively revealed at the completion of building; it is only after some time that the idea can be truly evaluated in the work. The process itself, however, begins with drawing.

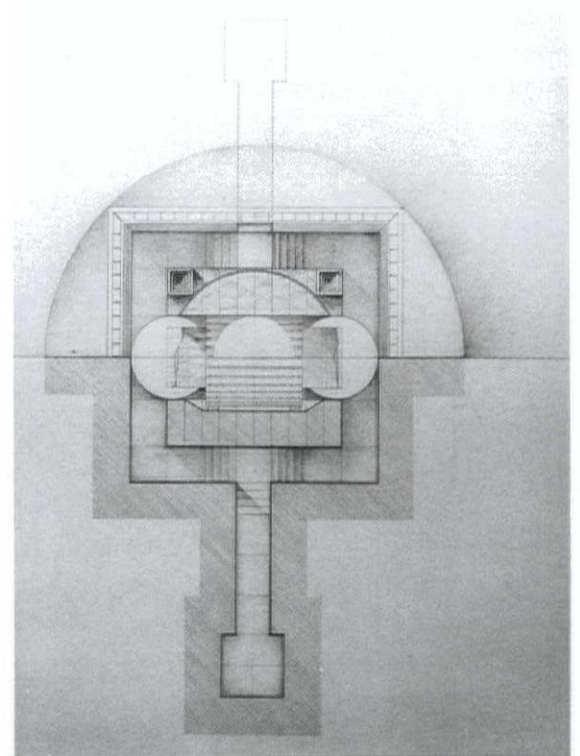
It is in the process of drawing that functional concerns are first overtaken by the desire to express emotion. This can happen even if the object is not physically realized; in this case the drawing appears as a survey of an hypothetical found condition rather than the documentation of some intention to build. Such a drawing should be read in this way to preserve its utopian status in the cultural context it proposes.



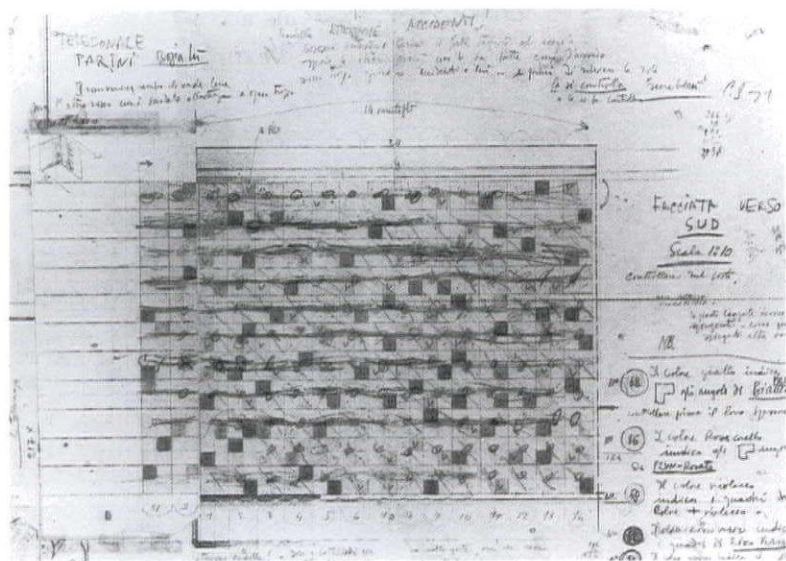
14. *Reliquary*, Project (1980), Giuseppe Zambonini, photo montage of site.



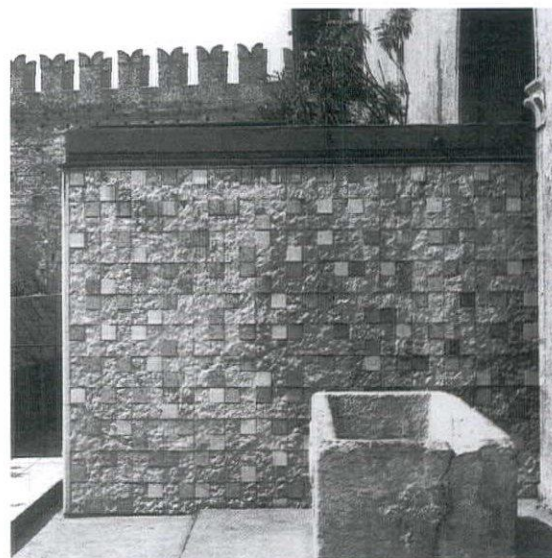
15. *Reliquary*, plan.



16. *Reliquary*, section.



17. Museo Civico di Castelvecchio, Verona (1964), Carlo Scarpa, Sacellum drawing.

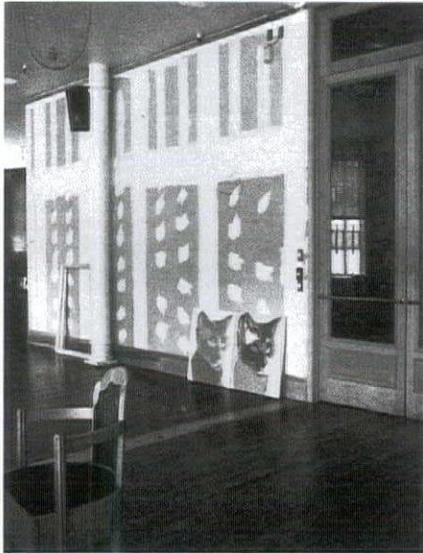


18. Museo Civico di Castelvecchio, completed work.

The design process reaches the apex of its potential tension with the development of construction drawings and the gradual definition of details. Although details are typically represented through large scale orthographic and axonometric projections, on occasion informal sketches dealing with critical aspects of material address more directly the eye and hand of the craftsman. This was often the case in the relationships of Carlo Scarpa to his tradesmen. These relationships were often so intense that Scarpa could rely on the process of physical execution as an extrapolation of his intent – predictable to a point, but also boldly dependent on a manual tradition and dexterity that Scarpa himself did not possess. In the exterior tilework for the *Sacellum* facing the main courtyard at the Museum of Castelvecchio in Verona, Scarpa sketched in color and to scale some of the possible combinations of tile and stone that were to be variously placed in each quadrant of a square. This system depends on the relative position of each quadrant and on the musical recurrence of a few colors and textures. Scarpa determined the ideal composition visually with sketches, but the final choice of material quality was left to the stonecutters themselves. The final result rests in their understanding of the new object as an episode of both personal experience and shared tradition.

Continuity, too, identifies a creative behavior between the use of design instruments and building implements that has its roots in memory and its extreme opposite in imagination. It exists far beyond the limits of the object and expresses the ancient role of the architect as *homo faber*.

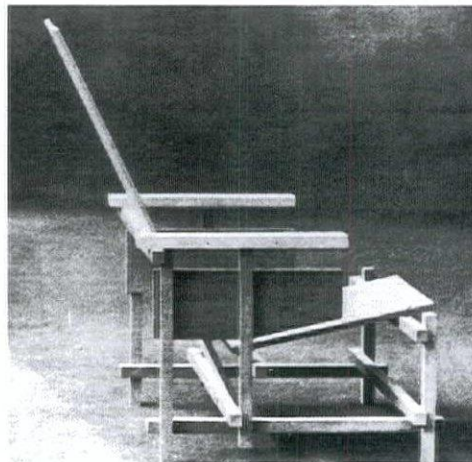
In the design profession today, however, the construction drawing basically marks the limit of the designer's responsibility in the process of making. Despite the designer's customary obligation to oversee construction of his work to completion, rarely does this supervisory experience in making



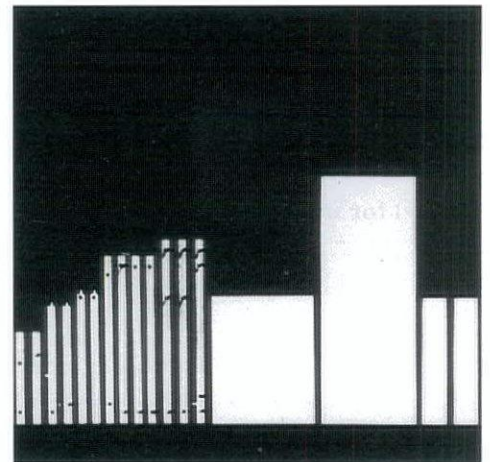
19. Studio, New York (1978), Andy Warhol, interior.

find its way back to the drawings. The drive for maximum efficiency in today's processes do not allow it. One may argue that prior knowledge of this process should render such an effort unnecessary, but this contradicts a fundamental opportunity in making: the learning each time from a new condition, permitting one to enter each project with the attitude of a "beginner." This attitude is what makes possible a new learning condition, pushing forward the limits of learning itself. Its application to the manufacture of the finished product to be sold is therefore the severing of the umbilical cord that ties the object to its creator. It is here that one learns that the object is never totally finished; that it requires adjustment in time after it begins another life; that it must be used and worn to reveal the inner qualities of its material components.

This notion of the aging of matter has its own importance in light of its deep effect on the design process – not only in the selection of materials, but in the way the product has been envisioned by the designer. A piece of furniture just completed or a house not yet occupied are at the threshold of another life. Consequently, both their actual value as objects and their projected cultural value as catalyzers of the social environment remain matters of speculation. One must see the original, shop-made prototypes of Rietveld's Red-Blue and Zig-Zag chairs to appreciate how much the aging of the objects has heightened the sensuality and manuality of their fabrication – to the point of capturing the full spirit of their spatial discovery. To this extent, continuity refers to a process that links together the various stages of design, fabrication, and use in a continuum of transformation and metamorphosis.



20. Red-Blue Chair (1919), Gerrit Rietveld.



21. Red-Blue Chair, construction elements.

Again, it is in the work of Carlo Scarpa that we see this process most clearly. I believe Scarpa's work should be regarded as an expression of a design and building process rather than a fully realized form; it is "incomplete" rather than "fragmented." The first concept addresses the issue of an infinite joinery system, the finality of which is quite unknown – or at least unpredictable. The second concept, on the other hand, addresses issues of unity and relationships of parts within the whole. It has become common-place to criticize Scarpa's work from the standpoint of unity because of its inherent resistance to precise definition. Being incomplete, however, the work possesses the basis for a renewed understanding of the future – if distant – completion it portends.

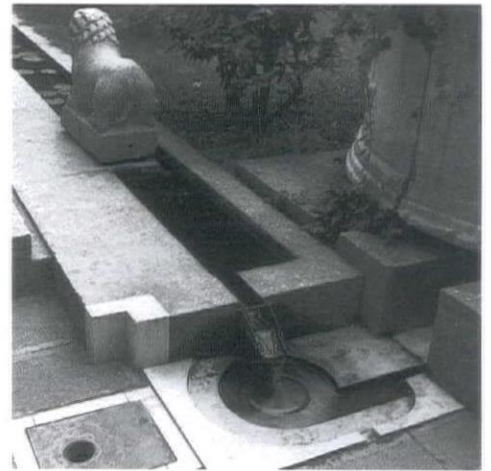
In this sense, the phenomenon of "tension" belongs not so much to the built object as it does to the state of mind of the creator. It expresses the difference between a current standpoint (an historical quality) and a future one (an ideological quality). Like the fluctuations in a controlled reservoir, this tension is never fully realized or extinguished, but only diminishes and heightens in preparation for the next work – each work, in turn, re-enacting the aspiration towards an ideal. Accepting the ideal as unreachable, we pursue it only by personal choice.

To this extent, one must modestly accept that today the process of making is so strewn with difficulties and problems beyond one's control that all our work must be seen as incomplete: as a fascinating event, living an existence of compromises, the product itself always representing the visible survival of all that endured each negative force. The object is always incomplete; its complexity demands a process of understanding that must be deferred to the future user. This is the anxiety and the joy of the incomplete, of the fragment in the larger universe over which no human has real control.

This understanding of continuity may be expanded to form a model for interpreting our relationship to history, for guiding our work into a future informed by the past. The idea of continuity does not apply to the recuperation of styles belonging to a past time, but engages a more precise attitude towards context. If one possesses the predisposition to observe and analyze the myriad contextual conditions – both favorable and unfavorable – present at any site so that they may be fed into the form-making process, history will inevitably be felt as an active component in the work. By recognizing all such work as incomplete, both form and history can be understood to be composed essentially of relationships in time and matter. At the same time it is essential to accept fundamentally that organic and inorganic matter are equally subject to life and death.



22. IUAV, entrance courtyard.



23. Fondazione Querini-Stampalia, Venice (1961-63), Carlo Scarpa, detail.

We should note that most built forms – when informed by local geologic and material conditions along with society's traditions and the communal trust – tend to preserve and reinforce their meaning in time and remain as physical documents of the causes that created them. For example, in the Parco dei Mostri in Bomarzo, volcanic rock – the soft and sensual *peperino* – was carved by Turkish slaves around 1540 under the direction of the local prince, Orsini. The park, actually a natural section of woods in a rural setting, was the scene of pagan excesses. To today's visitor, who must patiently discover innumerable carved figures, the park still offers the quality of a fantastic voyage. Equally, at the Piazza del Palio in Siena, the initial engineering of a typical hilltown problem – the elimination of rainwater on the ground – has given shape to a public space of religious and social pageantry. There, the renowned annual horse race among representatives of each *contrada* takes place within a space which is stage and audience simultaneously; orientation, buildings, and pavement all point to the original necessity for physical survival of the built environment.

If one builds within an existing urban context, decisions suspended between style and history constantly take place. To undertake, for example, the transformation of a commercial cast-iron building into a complex of residential units, is to confront not only problems of a typological nature, but a whole range of contradictions and anomalies well beyond style. Continuity here can only be regarded as a process of contextual re-generation; it can survive neither the imitation of past forms nor the introduction of entirely foreign objects in the attempt to contrast. All original conditions have left in



25. Piazza del Palio, Siena, general view.



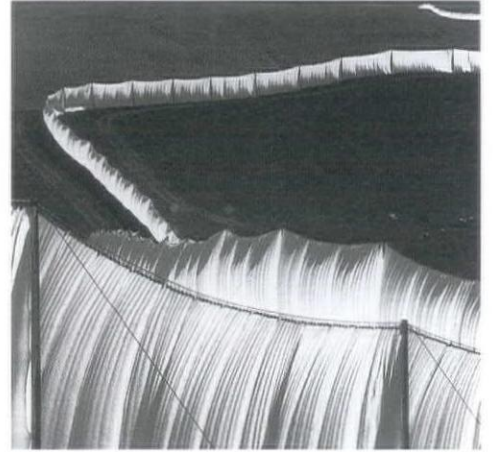
26. Piazza del Palio, central drain.



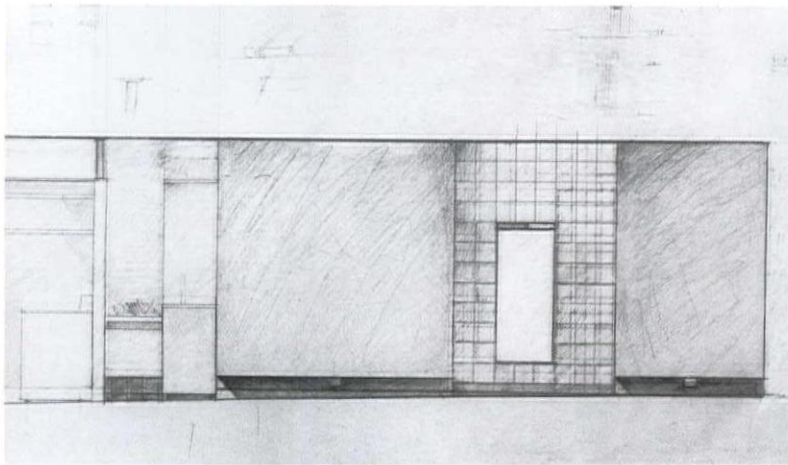
24. Parco dei Mostri, Bomarzo (1540), entrance to cave.

favor of new ones, while the underlying nature of space and material remains constant. In effect, one arrives at this project to begin where others left off, bearing in mind the years of human activity that have taken place along with the complex material changes brought about by age. In this way, we leave a trace of our existence only through another thin layer of understanding concerning the conflicts and contradictions of life; our activity can only survive as a contextual expression in this perpetually metamorphosing, forever unfinished work.

This belief is instrumental, in the work of our Atelier, in the formulation of construction details with the purpose of joining the existing space with newly introduced components. These details, which we call “third pieces” or “skirts”, create a dialectical juxtaposition of the two extremes. Through either the use of a geometric syntax or through construction manipulations, structural deviations of the existing conditions – such as a lack of plumbness in walls or levelness of floors – are extracted and exhibited in the space. The idea is to first radicalize the differences and second to establish unity. The resulting forms in this process are unpredictable from project to project and tend to reject preconceived configurations. In terms of process, they are the result of a combination of a survey of the existing with the scale representation of the new. With this technical tool the potential contained in the duality surfaces and takes shape. The meanings arising from this process are often positively ambiguous because of their complexity, since spatial solutions are carried by materials, colors, and texture, and their reading often depends on light conditions and the kinetic fruition of the space.



27. *Running Fence*, Sonoma and Marin Counties, California (1972-76), Christo.



28. Loft on Worth St., New York (1982), The Open Atelier of Design, drawing.



29. Media Room, New York (1983), The Open Atelier of Design.

If *continuity*, then, refers to a unity in time – a set of relationships to be seen in the life of artifacts and their inception – *integration* suggests another kind of unity among the makers themselves, expressed at once in their work. Integration is fundamentally opposed to the perceived necessity for standardization and specialization – two forces of tremendous impact on the production processes in today's economies. Here, the traditional succession of work by separate trades occurs at the expense of integration, allowing isolated and often contradictory ambitions to overtake the essential scope, purpose, and meaning of the work in question. A more integrated method of production depends on the coming together of trades and artisans, each capable of applying different skills, while nonetheless maintaining an understanding of the whole to which the work aspires. This notion derives from the second aspect of Arrigo Rudi's definition of craftsmanship: knowledge of the entire process in view of its goal. In this way, such disparate trades as landscaping and roofing, for example, are joined together by a geometrical awareness that brings about an essential unity in their execution.



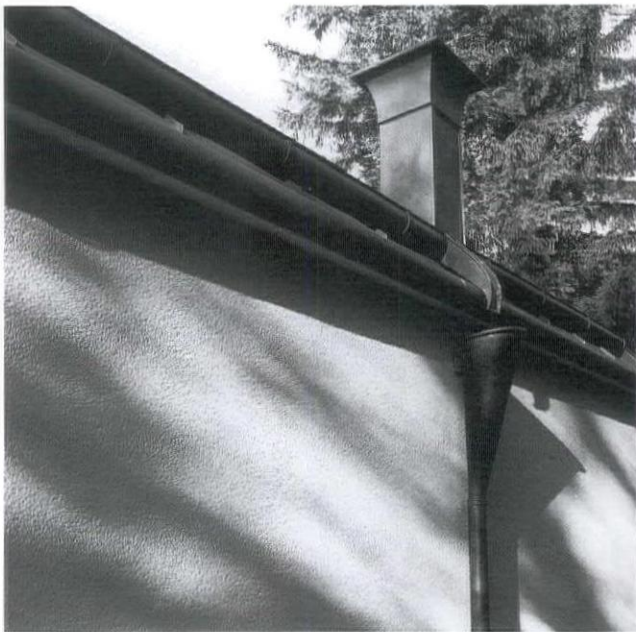
30. Ottolenghi House, Bardolino, Verona (1975), Carlo Scarpa, view of roof.



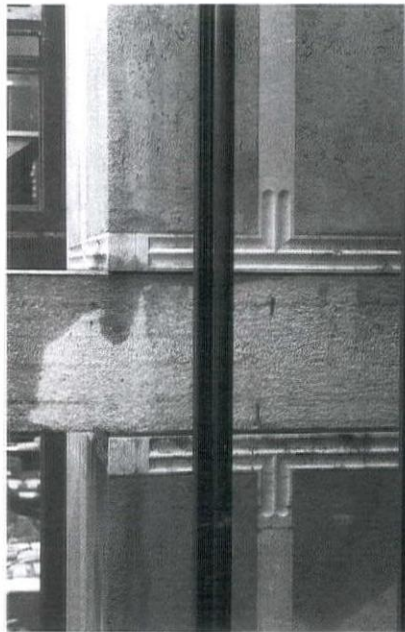
31. Ottolenghi House, passage to roof.

Integration of the representational process in drawing with the experience of material itself is among the most difficult to communicate if one does not already believe that material – in its structural and aesthetic properties – precedes the transforming idea. This belief contradicts a tendency in recent years whereby drawing has been given pre-eminence in the conceptual process, leaving to distant executors all decisions concerning how best to build the work. Such a process sanctifies the role of the designer as a maker of images, while abdicating a truly creative function to teams of accountants,

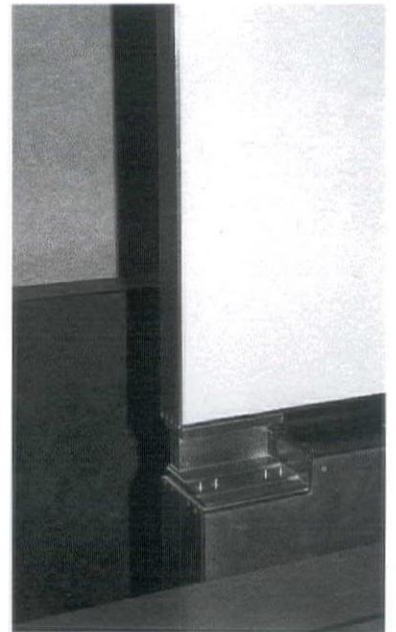
lawyers, and technicians. The consequences inherent in this process are both problematic and unpredictable – as far as the future life of the building is concerned. If one agrees, however, that the designer's job is to observe and interpret these material properties, and to coordinate both their conception and execution in the work itself, then knowledge of all phases and all components of building becomes crucial. Such knowledge provides the basis for every transformation proposed by the designer. Examples of this can be found throughout the construction process as it reveals itself through detail: the meeting of walls, roofs, beams, and the range of architectural elements.



32. House for Dr. Braunnegger, Vienna (1981-82), Boris Podrecca, detail of roof drain.



33. Banca Popolare, exterior wall detail.



34. Banca Popolare, interior wall detail.

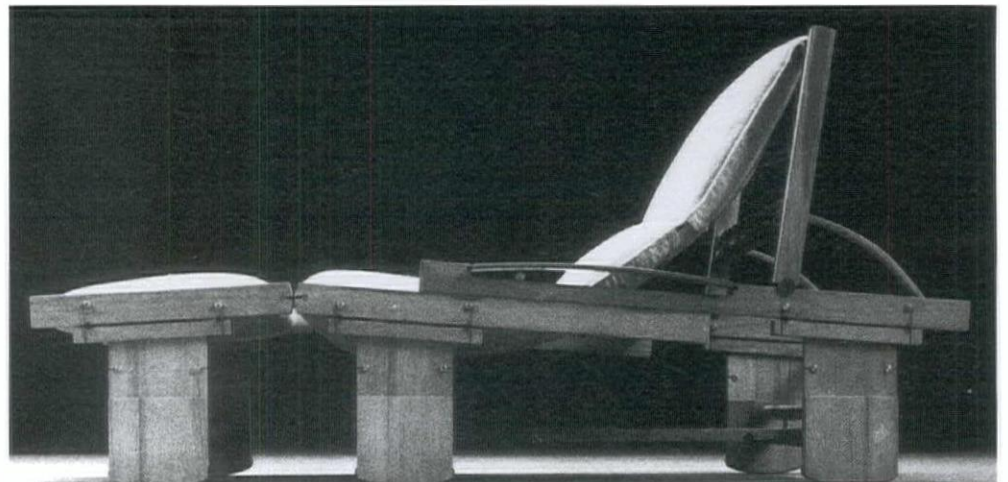
This emphasis on the direct experience of material as opposed to its abstract representation by way of some intermediate instrument – such as through drawing – is not new. It is, in fact, the most common technique used by sculptors and artists who, attracted by a strong sensual affinity to a particular material, work with it until they understand a new process of shaping – of physical or chemical transformation – previously overlooked. To some the drawing is an art form itself, parallel to its three-dimensional manifestation; but to many others the drawing remains an organizing device, rarely conveying the full meaning of the object it represents.

This identifies the difference between a process oriented fundamentally to material as opposed to ideas. The point here is not to denigrate the role of ideas in any creative enterprise, but rather to focus attention on the essences of objects themselves – on an object's capacity to carry meaning embodied in its physical qualities, in its materiality.



35. Furniture (1986), Forrest Myers, blued aluminum.

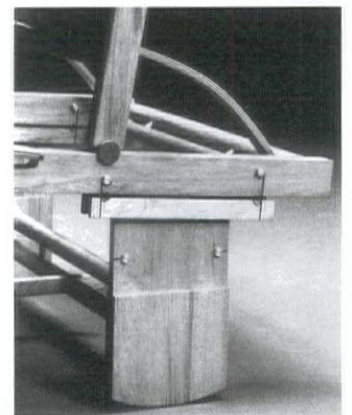
This argument clearly places material in a critical role in the form-making process. But the issues pertaining to labor (understood here as skills and attitudes) and tools (manufacturing and use) play equally important roles parallel to those involving material. There is little point in trying to extend one's understanding of material without support of the symbolic hand holding the tool or directing the machine. This raises an essential question: Must one experience manuality in order to produce works of quality? All creators exhibiting beautiful and systematic conceptions of material – whether produced with their own hands or not – have done so with full knowledge of the processes of material transformation and the physical instruments necessary to it. We know that such processes and implements are fundamentally joined; neither one can occur nor be used without the other. It is true of our times that few people have the opportunity to build with their own hands. It is equally true, however, that there is little appreciation for this manual experience either in the design schools or the profession itself. The professional / trade relationship rarely reaches deeply enough into individual capacity and lacks an intimacy necessary to the effective integration of the design and production processes.



36. Mary-John Chair, Bepi Fiore.



37. Mary-John Chair, construction drawing.



38. Mary-John Chair, detail.

Our objective remains to reach for the completion of the predicted form, a form aspiring to a superior resolution of technical, historical, and symbolic qualities. This may seem an ambitious goal for our times, when "market forces" tend to alienate the meaning of objects in order to ease their consumption. When we idealize form so as to project permanence, integration, and continuity, we are resisting the thrust of the rapidly advancing economic world.

We are returned to the notion of tension at work in the artisan's struggle – the tension felt in the pursuit of an ideal. It is clear that such ideals have ethical and ideological qualities. These are not objective ideals, rigidly defined by society, but evolving and shifting ideals, shaped by contradictions constantly affecting our work routine. Form, today, should make visible the contradictions of society: the continually evolving nature of experience and the effectively unreachable ideals to which we nonetheless aspire. This, again, is the anxiety and joy of the incomplete.

*"There is no human activity from which all intellectual intervention can be excluded – homo faber cannot be separated from homo sapiens. . . . [E]very man, outside his own job, is a 'philosopher', an artist, a man of taste, he shares a conception of the world, he has a conscious line of moral conduct, and so contributes towards maintaining or changing a conception of the world, that is, towards encouraging new modes of thought."*¹⁰

¹⁰ Antonio Gramsci, *THE MODERN PRINCE AND OTHER WRITINGS* (New York: International Publishers, 1957), p. 121.

An architectural work has significant quality fundamentally as an individual artifact. However, contemporary building practice has evolved to the extent that this quality is no longer possible. The promise of the industrial revolution – that pre-manufactured, standardized building design solutions would allow maximum research and invention – has not been realized. Standardization has not brought significant quality, only higher profit, and the processes of standardization result in both limited choice and a built-in obsolescence. In the long run, if standardization is not directed to improve quality through greater initial investment and a subsequent capitalization on the experience gained by a constant application, the results can only reveal the shortcuts in the standardizing process. This, of course, was the argument made by the Bauhaus. Thus, it is no accident for Paul Klee to state: "For quality to become a universal goal, it must be projected from the individual artist-creator to all mankind. It may then be shared and become a common patrimony." Quality permeates form and in form each one of the relationships which give it structure tends to reaffirm and reinforce the single idea which form embodies. This is what creates meaning in a physical object composed of solid and perceptually evident material components. This is why it is

only in the use and transformation of materials that artists, architects and designers have their chance of contributing to the universal status of quality.

In a society where the status of things is so strongly tied to their appearance, quality is often associated with a single and distinct material – for example, a precious metal in the construction of furniture. The absence of that single material is often enough to precipitate the value of the whole object – less of the material means less status of the object. Then we understand that without that material the object cannot exist at all, its very essence being so strongly tied to it. Gone the material, gone the idea. This is quite different from saying that at times an idea can only exist in function of a material, especially when that intimate relationship is indexed by an historical or social tradition. For instance, Michael Baxandall, writing in *PAINTING AND EXPERIENCE IN FIFTEENTH CENTURY ITALY*, reports that the legal contracts between patron and artist outlined not only the number, size and hierarchy of figures, together with the size of the painting and the time of completion, but also specified the quality of the crucial colors, such as blue, red and gold. For instance, the color blue was used strictly to describe a precise figural role in the composition. Thus, the color had to possess the highest possible level of chroma and stability over time. Since ultramarine blue was obtained by washing a ground *lapis azuli*, it was important to define the weight of the ground material as the determining parameter of color quality.¹¹ From the original stone, to the color powder, to the oil paint, to the definition of the figure in the composition, there exists a straight line that points to the artistic meaning of the work. The artist is not only the conceptual creator but also the technician of the process and the guarantor of quality.

¹¹ Michael Baxandall, *PAINTING AND EXPERIENCE IN FIFTEENTH CENTURY ITALY* (Oxford: Oxford University Press, 1972), p. 1-23.

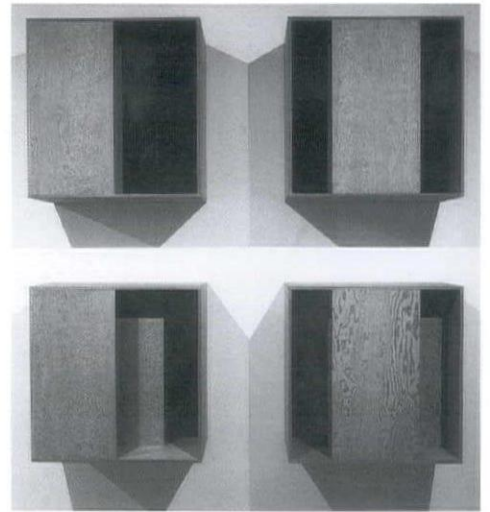
There is no question that in a majority of cases quality is still a characteristic tied to the rarity, value or intrinsic beauty of a specific material and to the harmonic symbiosis of the craft which transforms the materials under the guidance of the artisan's vision. However, in view of the importance of the status that is conferred by its association to quality as regarded in today's society, it is also clear that today we must assign an ideological value to quality. If we still believe that quality, in its growth as a "common patrimony" of humankind, must be understood and attainable by all as well as be a catalyst for improvement, we must recognize that today quality is used to distinguish class structure and to consolidate corporate identity, most especially by the building industry. If quality has become merely an expression of superior finances and corporate power, and if public administrations cannot afford the sharing of quality with the citizens at large, we must begin to see quality as possessing a politically conservative connotation.

In view of this, I would like to propose a definition of quality adapted to the economies of today and based on information and understand-

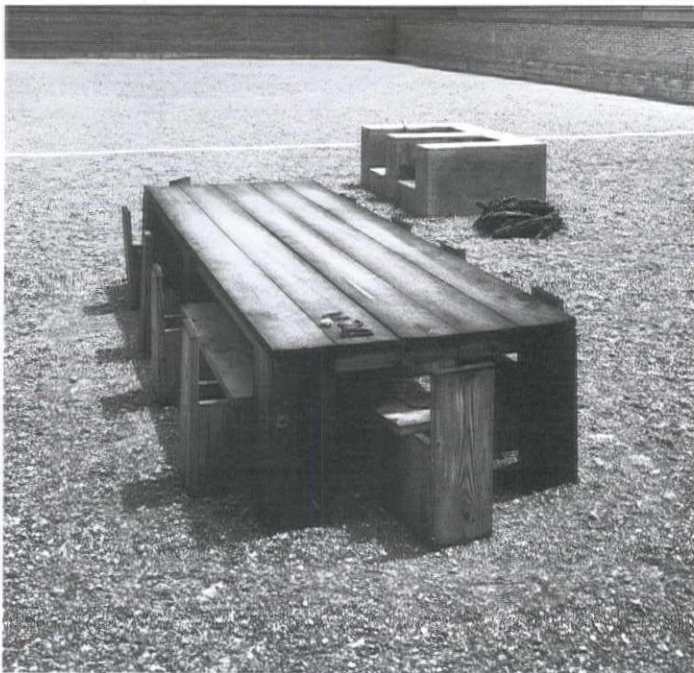
ings available to the public. That is, quality cannot be an intrinsic condition that belongs to the object anymore, but rather it must express the intent by which it is created and therein the clarity and strength of the meaning being produced by its form.

We must look not only at the quality of the material used and at the craft employed, but also at the quality of the thought process selecting and shaping the material. It is that process that will engage both user and observer in an active, participating relationship with the work and thereby give the work its meaning. The capability of the work to communicate its process of conception overcomes and enhances the seeming limitations of simple or poor materials.

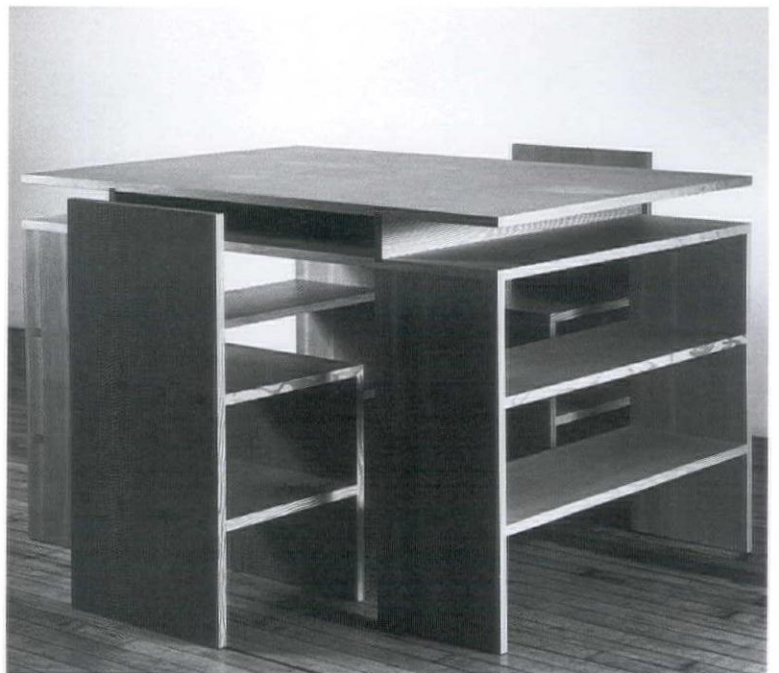
If we examine the artistic work of Donald Judd, for instance, the quality is not in the material, which is plywood, and not in the production methods, though the methods of cutting the plywood have been perfected to an exacting standard. The quality is projected by the sensual and perceptual sensations produced by the finished work. Also, Judd's pine furniture is the direct descendant of many De Stijl pieces in their disarming Cartesian simplicity, absence of color and invisible joinery. In his furniture, use meets form again with simplicity and eloquence. It is not form following function, but form expressing use in a philosophical and deeply meditated way. It is an expression of quality of the highest rank, a quality which does not need to rely on any embellishment to exist. A single, standardized material, a single building process: the quality is in what the artist communicates.



39. *Untitled* (1987), Donald Judd.

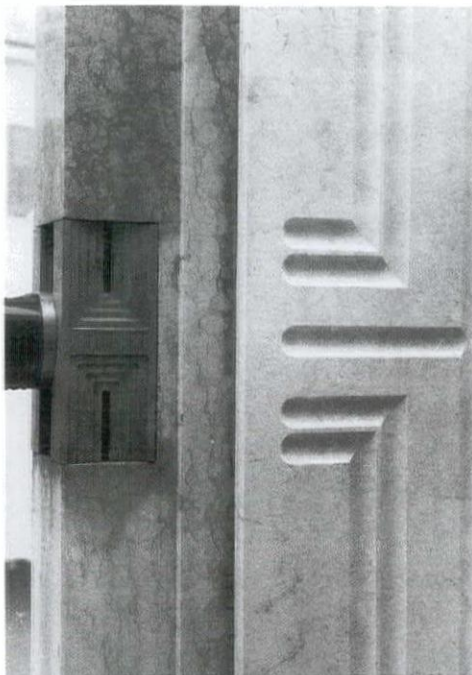


40. *Table and chairs*, Marfa, Texas (1986), Donald Judd.

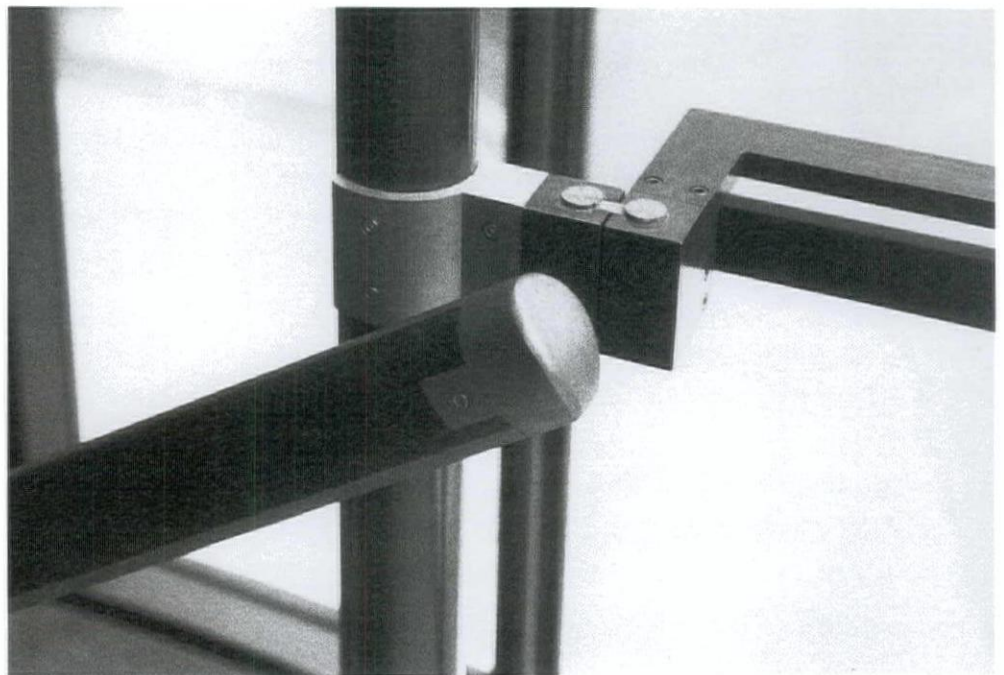


41. *Desk set* (1982), Donald Judd.

In my own work, more often than not meaningful episodes were created because of a clear understanding of a manufacturing condition (as producing use and meaning) than out of more ambitious design intents and larger budgets. This reflects the structuring of priorities so that a single and powerful idea represents the object or the building and secondary accessory ideas act as corollaries to support the clarity of the system. Mario Botta often mentions this point as a determining factor in his ability to act as a builder; it is by this determination that many of his buildings achieve a superb quality of signage. Seeing his buildings, we begin to understand that the most difficult act is to renounce the *denotata* of rich and powerful materials in the traditional way, that one must instead accept a method of representation based on the complex play of smaller-scale relationships held together by a tectonic text. It is also here that the art of joinery, the master's way of producing convincing details, can be used with optimal results, since it is in the conception of those details that we fully express the meeting of our history, in our visual culture, of all the meaningful events we have witnessed.



42. Banca Popolare, detail.

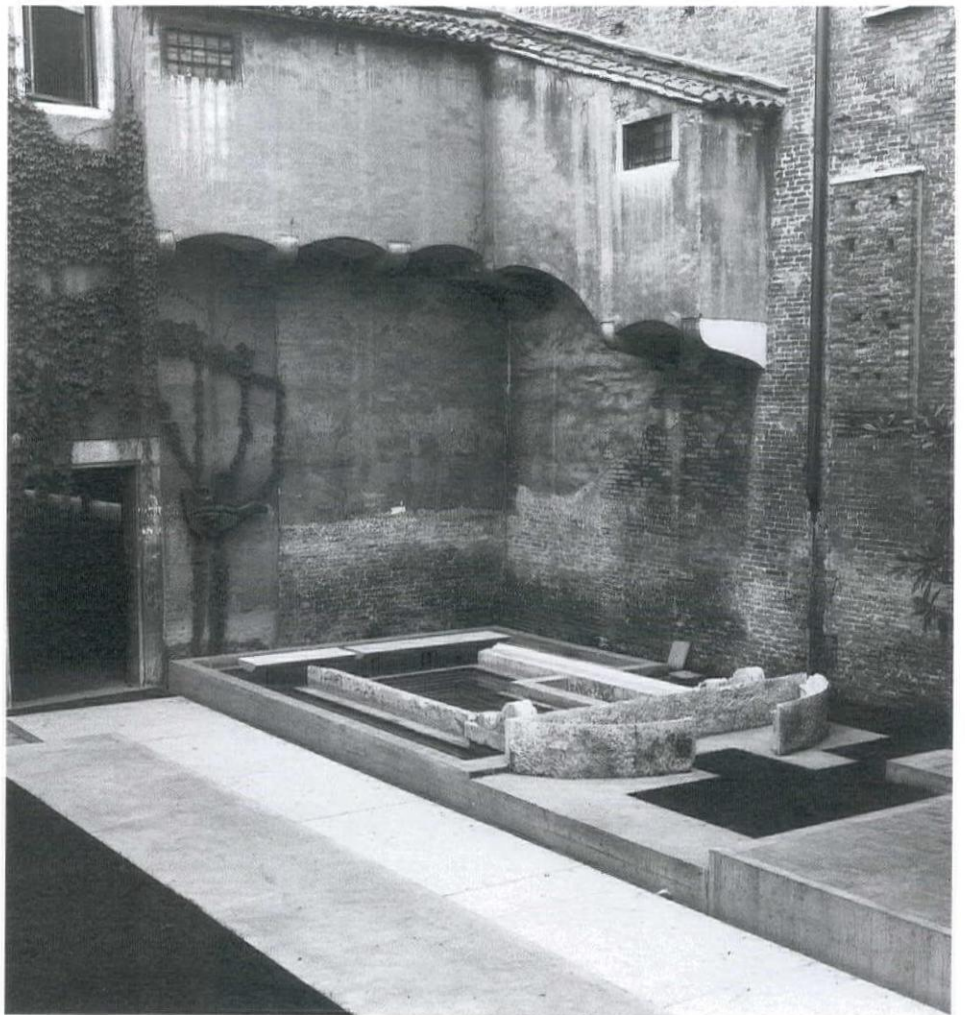


43. Banca Popolare, detail.

Carlo Scarpa used both methods to produce nearly universal meanings in his work, although he is more commonly known for his use of rare materials: cast bronze spouts, glass tiles, ebony, ivory and gold. Demanding a craftsmanship based on centuries of experience, Scarpa's work – and his poetic architectonic language capable of touching so many distant cultures – establishes a unique reference for any use of materials. Though Scarpa was able to produce such works, and his followers have been able to extrapolate new works from his ideals, we must realize today that Scarpa's era is over and

cannot be prolonged. The art of our time must have the intention of producing buildings of meaning with the utmost economy of means.

When, during a time marked by such extreme human necessity, we witness the direction of resources towards the production of an architecture that only deepens societal differences – pushing markets beyond the reach of other social strata and demonstrating possession of means – the pursuit of quality can have only revolutionary consequences.



44. IUAV, entrance courtyard.



Figuration and Continuity in the Work of H. H. Richardson

Timothy Culvahouse

O chestnut-tree, great-rooted blossomer

Are you the leaf, the blossom or the bole?

O body swayed to music, O brightening glance,

How can we know the dancer from the dance?

W. B. Yeats, "Among School Children."

The scholars of Henry Hobson Richardson – Van Rensselaer, Hitchcock, Ochsner, O’Gorman and others – have produced a wealth of historical information regarding the man and his practice, but a truly critical study of his work – that is, an exploration and evaluation of the devices which constitute his technique – has yet to be begun. Oddly, he remains among our most admired but least scrutinized architects.

We have at least three things to gain from a closer look at his work. First and most obviously, there is the possibility of a greater understanding of the work itself. Richardson is notoriously taciturn about his motives and methods. He wrote little, and little of his thinking was recorded by his contemporaries. He also drew less than we would expect, preferring to work by way of direct instruction at the site. The work comes to us virtually without com-

mentary and therefore requires careful analysis.

Beyond an increased understanding of Richardson’s work itself, we may expect from the study of that work some insight into broader architectural issues important both in his time and ours. Richardson, trained in the Beaux-Arts tradition but attracted to the medieval sublime, is an architect in whose work are reconciled a host of opposing tendencies characteristic of the mid-nineteenth century. In particular, we find the reconciliation of an interest in figuration with a desire to describe a continuous world.¹ Figuration and continuity are in a sense opposed, but they nevertheless would seem to be necessary components of experience in a world both cultural and physical, a world in which what Louis Kahn calls “the desire to express” meets the equally strong desire for a stable and secure habita-

¹ See, for example, Ann Jensen Adams, “The Birth of a Style: Henry Hobson Richardson and the Competition Drawings for Trinity Church, Boston,” *Art Bulletin*, vol. LXII, no. 3, September 1980, pp. 409-433.

tion. Further, they are necessities of a fundamentally material art such as architecture. Materials both allow and demand the recognition of and participation in any number of levels of figuration which may overlap or be nested within one another. They *allow* such participation because every material is a manifold of qualities, some of which it shares with one material, some with another. Materials *demand* participation at several levels because they so adamantly resist assignment to any one role.

Finally, because Richardson is a master of his art, those of us who make buildings may learn, by studying his buildings carefully, some useful technique. Doing so, we become only incidentally interested in Richardson himself, and not at all interested in proving any particular correspondence between his reputed intentions and the work as it exists.

Rather, we are in search of *plausible* intentions – ones which we might entertain ourselves, and in which we might enjoy instruction – and ways of fulfilling them of which we were not previously aware.

Richardson's work is conveniently concentrated for this sort of study. The great bulk of his work is within an easy drive of Boston. In the little town of North Easton, Massachusetts, for example, are five of his earlier works; in Boston and Cambridge are a number of the masterpieces of his maturity. We will be looking at two of the mature works, Austin and Sever Halls, both on the campus of Harvard University.

While Richardson's work is geographically accessible to the East Coast scholar, it is not accessible in every sense. Because Richardson's own commentary on his work is meager, and because the commentary



so far advanced by scholars is chiefly historical and documentary rather than critical, we, as contemporary critics, are left to our own devices. We begin virtually from scratch, with what we find at our fingertips, what we can get beneath our nails. Having only the surface before us, we can begin only with it.

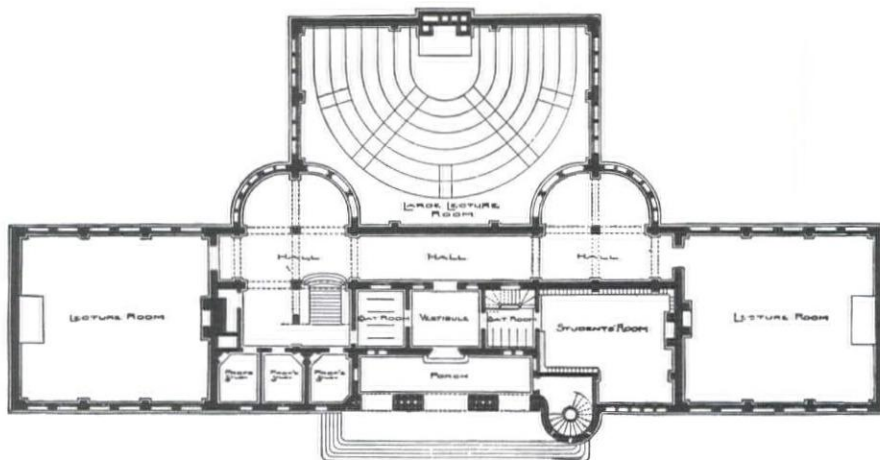
Because Austin Hall has recently been cleaned, we see its surface as it must have appeared when it was first opened to the students of the Harvard Law School in late September of 1883. Decades of soot have been washed away and the colors of the stone – white and pink, red and even blue – are again bright and clear. The building glows in the low winter sun that glances across Massachusetts Avenue and the Cambridge Common. It was built for this sun, and it is firmly in place (as many of the buildings around it are not) precisely because of the relationship between this color and the angle of light and between these colors and textures and patterns of stones [2].

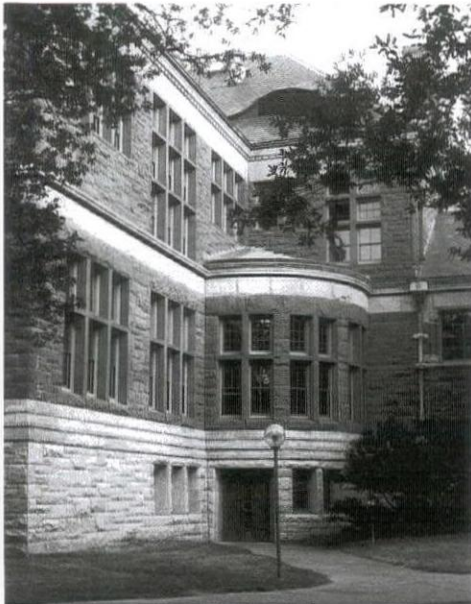
Such commensuration of light and substance is one way in which the materially conceived building may be regionally specific, addressing, as Kenneth Frampton suggests, “the contingencies of climate and the temporally inflected qualities of local light.”²

Yet the surface of Austin Hall has been more often dirty than clean, as buildings became dirty more quickly in the coal-burning final decades of the nineteenth century than they do now. We might suppose that in the very boldness of Austin’s coloration, Richardson was attempting to forestall the inevitable dimming of the fair, new building and to stay its dwindling into the already besmudged company around it. In such a view, Austin would only truly have been Austin during two brief moments of its existence, and in between merely a shadow of its former and later selves.

I would suggest, however, that it has been very much itself throughout the

² Kenneth Frampton, “Towards a Critical Regionalism: Six Points for an Architecture of Resistance,” in Hal Foster, ed., *THE ANTI-AESTHETIC* (Port Townsend, Wash.: The Bay Press, 1983), p. 26.





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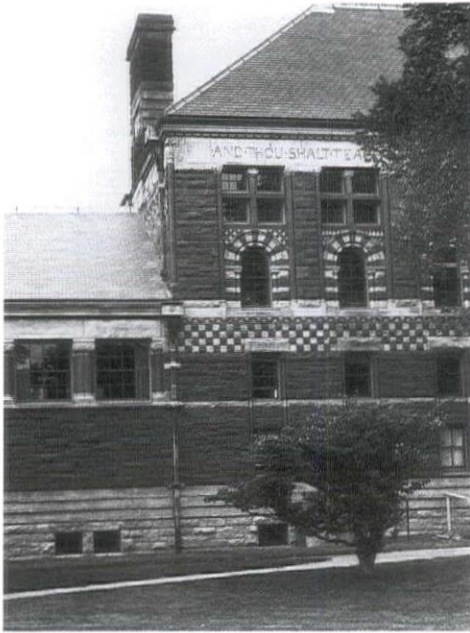
periodic changes of tone and that the changes themselves are of the very nature of the building, as of buildings generally. The alternation of aspects – brightness gradually turning to gray, then suddenly renewed – carries Austin back and forth between two scales of commitment. Grayed, it settles in comfortably among its neighbors. Clean again, it stands out from its immediate surroundings to take its place as a figure in the larger geographical context. It in fact makes that context visible as it rarely is in any explicit way, being necessarily larger than any observer's field of vision. By calling attention to a notable (but often unnoticed) characteristic of the regional context – the peculiar quality of afternoon light in that most representative of northern seasons, the cross-season of late fall and early winter – the building becomes not only a figure *in* a context but also a figure *for* that context. This is one way in which a figure may occupy a ground not merely as something contained within it but as something which defines the ground and speaks for it. When this happens, figures no longer sit within one another fortuitously, but instead depend upon each other for their realization and so knit together the work in which they appear, scale within scale.

The mutual interdependence of figure and ground apparent at the largest of scales introduces an extensive pattern of interconnectedness in Austin Hall, for here scale is nested within scale and figure within figure

in continuous succession. We find several devices which accomplish this interconnection, each depending chiefly on differences in color. The most obvious device is also the most familiar to us: the alignment, horizontally or vertically, of subordinate elements within distinct but adjacent larger elements. Most striking are the horizontal bands which encircle the building and tie the wings and tower to the central mass. The alternating bands of red and white stone both separate and connect various parts of the building [4]. While the bands tie together adjacent vertical elements, they differentiate horizontal layers. The lowermost band is of a pink, coarse granite surmounted by three tapering courses of white sandstone; together they form the building's base. Resting on this base is a first story of red sandstone. A checkered band of white and red separates the upper story, which is also predominantly of the same red stone, from the first story. A white cornice caps the whole. These bands typically continue uninterrupted through any vertically differentiated element. To further reinforce the horizontal continuity of the bands, the wooden window frames, which occur almost exclusively in the broad bands of red stone, are painted to match that stone.

The banding of Austin Hall acts, however, in a rather more complex way than this summary description would suggest. For example, the white stone of the cornice extends downward to take in the capitals of

the engaged columns occurring between the upper story windows



5

[5]. These engaged columns flank a wide pier between each pair of windows. The center portion of each pier is of rough hewn stone, predominantly red, but again white in the course just below the cornice. This course of white stone passing through column capital and pier makes the cornice more continuous with its supports than it otherwise would be. The banding thus serves to join horizontal layers as well as to differentiate them.

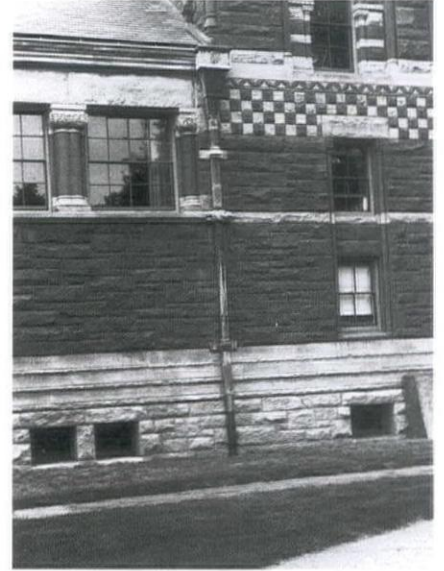
In a second instance, the cornice of the side wings continues into the central mass of the building as the checkered band between stories [6]. The white stones of the checkered band connect the wings to the central mass, but the red stones continue the lower story of the central mass vertically into the upper story,

strengthening the autonomy of the center. Opposing tendencies are thus realized simultaneously, and the banding, while remaining predominantly horizontal, acquires a vertical component as well.

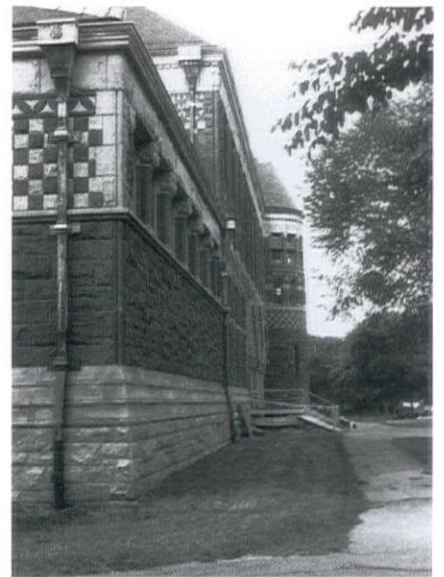
A third example of vertical connection which cuts across, but remains subordinate to, the horizontal differentiation of bands is the vertical bead which marks the remote corners of the side wings. The profile of the bead remains constant through both stories, but its color changes from red at the first story to white at the second [7].

In each of these examples, two characteristics of the material – its color and its configuration – allow both the differentiation which makes possible a rich expression of parts and those connections which assure the continuity of the whole.

The nesting of figures one within another is a second device which makes possible the simultaneous differentiation and continuity of elements.³ The horizontal bands frequently serve as the intermediate element in this sort of nesting. The bands act as figures with respect to the building as a whole, but become grounds for subordinate local figures. As we have seen, the white band of the cornice extends down to become the ground for the capitals of the engaged columns dividing the windows [5]. Not only is the band of columns as a whole tied to the band of the cornice, but the individual figures of the columns are situated within the larger band.

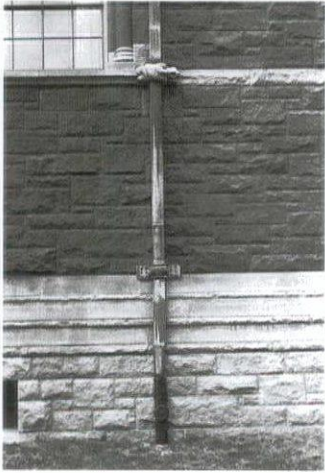


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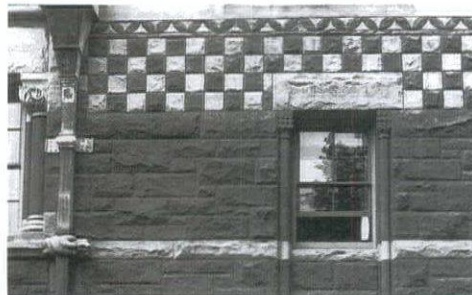
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³ For the idea that we perceive the world as nested wholes, see J. J. Gibson, *THE ECOLOGICAL APPROACH TO VISUAL PERCEPTION* (Boston: Houghton Mifflin, 1979), p. 9 ff.



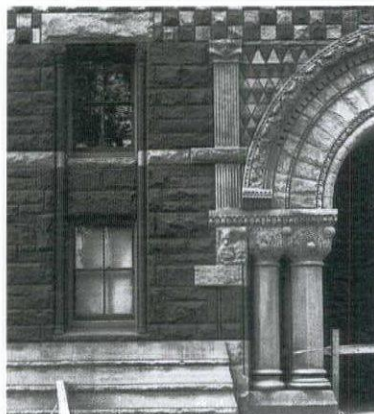
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Similar instances abound. The sill of the windows in the west wing of the building becomes a string course for the central mass; it also serves as the ground for the smaller figure of a serpent which secures the downspout [8]. The windows of the mezzanine to the left of the entry take the string course as their sill, while their lintels are nested in the checkered band above [9].



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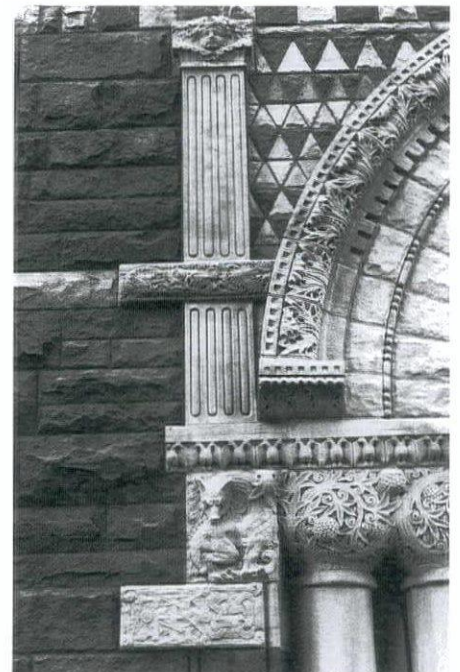
The same string course becomes part of an elaborate ornamental ensemble to the left of the entrance, perhaps the most complex example of nested figures in the whole building [10]. The ensemble contains two pairs of



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columns, one behind the other, two or three horizontal moldings, two carved vertical beads, and a pilaster, among other things. We identify all of this as an ensemble in part because some elements which are dissimilar in profile are made of the same material, while some elements which are made of different materials share the same profile. Perhaps more importantly, some elements appear specifically to rest on others, or appear to pass behind others, or assume some other demonstrable spatial and formal relationship one to another.

As we look more closely, the relationships become more complex. For example, we can see the lighter and darker segments of the righthand vertical bead either as separate elements or as a single whole [11]. The pilaster similarly

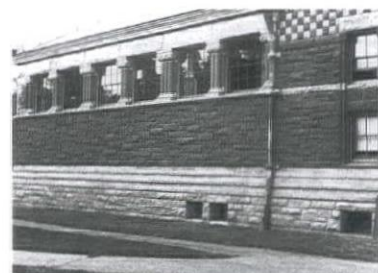


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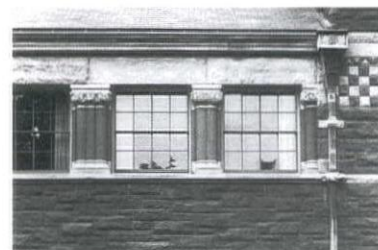
separates into upper and lower sections, divided by the horizontal molding. In these instances, the understanding of the whole takes precedence over the reading of individual elements. In other parts of the ensemble, however, the priority of the whole over the parts is not so sure. Do we see the upper molding as continuous from arch to window, or do we see it as a series of adjacent elements only? Is the left-most of these elements, the cylindrical one, primarily a part of the horizontal course or of the vertical bead? Each set of elements is united by some characteristics, while the members of the set are differentiated by others. It is easy enough to imagine that, if the uncarved portion of the horizontal molding were of the darker color of the wall surface above and below it, the sense of the continuity of the band would be shattered, even if the mortar joints continued to line up. Similarly, we could propose a series of transformations of the elements of the band which would render them increasingly like one another, until at some point they became a continuous band only, and not dissimilar elements at all. As it exists, however, profile allows one reading, while color allows another. Each element may be seen as either figure or ground, as distinct or as part of a larger whole. A fabric of interconnection is formed by way of this complexity of roles. The ensemble is both a society of elements and a catalogue of devices used – albeit more quietly – throughout the building.⁴

The repetition of smaller figures within an ensemble is another form of nesting which interconnects the elements of Austin Hall. Individual windows are repeated in groups which form larger figures within the facade as a whole [12]. Columns typically occur in pairs or triples or even, at the entry, in groups of four [13, 14]. In the pairs and triples at either wing of the building, each group has a different capital design, but in each case the two or three caps intertwine to form a common one. The individual columns appear to merge. At the entry, the column shafts remain completely independent, but the capitals merge and the outermost columns are enlarged to reinforce the closure and therefore the unity of the group. In every instance, the individual element is made, through its repetition, a systematic part of the larger whole.

In the related devices of horizontal and vertical banding, nesting of figures, and repetition in Austin Hall, we find a complex pattern of interconnectedness. Throughout this pattern, some properties of the materials differentiate among elements while other properties connect them. We discern here a decidedly pre-modernist attitude in which the differentiation of part from part in a clear definition of roles is not a fast rule. Constructional modernism would identify a peculiar characteristic of a material – that its greatest strength, for example, is in tension – and use that characteristic to assign a role to that material with as little ambiguity as possible. The canonical



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13



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⁴ Such a use of a motif to explain, to the patient observer, the workings of the whole is itself a peculiarly nineteenth century conceit.



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⁵ John Crowe Ransom, "Poetry: a Note in Ontology," in *THE WORLD'S BODY* (Baton Rouge: Louisiana State University Press, 1968), p. 115.

⁶ Some materials – vinyl, for instance – offer a far more limited range of combinations, and so cannot be used so subtly or effectively. The economy of production of man-made materials tends to limit variation even further, producing (in the case of vinyl, to continue the example) colors which are both few and far between. As a result, a close but not complete correspondence between adjacent elements is almost impossible to achieve.

⁷ For a further elaboration of the idea of a "grip" on the world, see Maurice Merleau-Ponty, *THE PHENOMENOLOGY OF PERCEPTION*, tr. Colin Smith, (New York: The Humanities Press, 1976), p. 302 ff.

example is that of the Brooklyn Bridge, in which the tensile action of the cables is set off dramatically against the compressive resistance of the piers [15]. Richardson clearly exults in the ambiguity of roles. He accepts (whether consciously or not) that buildings are both necessarily continuous and necessarily figurative.

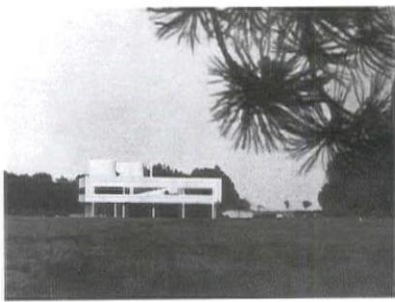
They are necessarily continuous, because they are part of a physically and temporally continuous world; they are necessarily figurative, because that is how we perceive things and represent them. These necessities may be turned to advantage. In architecture as a continuous thing we may find our home; in architecture as a figurative thing we may find our voice. The reason phenomenological discussions of architecture are often far removed from semiological discussions of the same subject is that the one attends primarily to the continuities of form, while the other attends to its figuration. To make it possible to attend to both at the same time is the offering of the material which, as John Crowe Ransom has said, "[although] not remarkable in any particular property is marvellous in its assemblage of many properties, like a mine or a field, something to be explored for the properties."⁵

Richardson's work becomes a field for exploration in which we find materials used to increase the interconnections among figures and to develop and maintain continuity in the midst of complex figuration.

Some properties of the materials differentiate elements while others connect them. Stone is a particularly good medium for this sort of thing, because so many partial correspondences are available: color but not texture, hue but not tone, reflectivity but not color, and so on.⁶ The material nature of building makes possible that continuous, progressive reduction of scale which assures us of a grip on the building, a correspondence between our field of attention and the scale of elaboration of elements of the building, at any distance.⁷

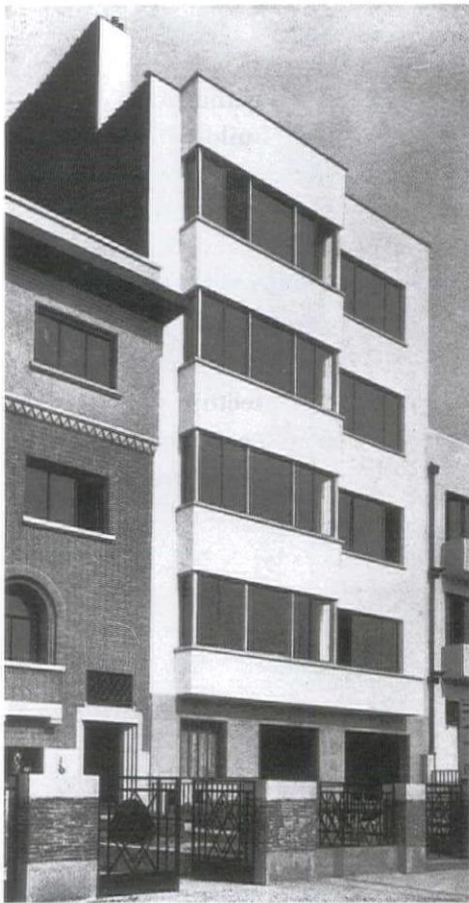
The material nature of building, while it makes possible this nesting of scales and range of experience, does not make them inevitable. The Modernist architecture of the early to mid-twentieth century, in its efforts to eliminate figurative ornament, more typically eliminated the middle and lower ranges of articulation, representational or otherwise, of the building's surface. Thus the typical Modern building – as well as the typical post-modern one, despite the renewed embrace of representational figures – is best appreciated from a distance and taken as a whole, or again at the moment one grasps the door handle, but rarely in between.

The Modernist effort to eliminate ornament succeeded, if we take ornament to be the very system of nested articulation of a building's surface, but the effort to eliminate figuration did not, because it could not. Buildings are always figurative, at one



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scale or another. The object quality that Colin Rowe has observed in Modernist work is in many cases simply the inevitable result of the elimination of subordinate levels of figuration in a building.⁸ However much the Modernist villa is stripped of figurative ornament, it is nevertheless itself a figure in the landscape or the street [16, 17]. Indeed, the re-



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duction of subordinate articulation isolates it as such. In a similar way, the Minimalist painting, despite its own lack of figural content, remains itself a figure on the gallery wall; to go a step further and remove the painting altogether renders the white gallery itself a figure, albeit one

which contains us. Only in the continuous service grid of Superstudio is the architectural figure pushed out of the field of vision of the earth-bound observer. Even here, the figure reappears as the backpack-wearing client of the system [18]. Figuration at whatever scale re-centers the work of architecture upon the human inhabitant. We take hold of the figure, register our own presence against it, and so locate ourselves.⁹

In Austin Hall, each figure, at every scale, is for us a perceptual whole and yet at the same time is in one or more ways made continuous with other figures at adjacent scales so that these wholes nest one within the other and depend one upon the other. The building acts as a regional figure, recedes into the local ground, becomes itself a ground for the articulation of openings and ornamental ensembles of all sorts which contain within themselves figures within figures down to the individual leaf. This nesting, which affords the viewer a grip on the building from any distance and makes the approach to the building a richly continuous experience, is accomplished through the exploitation of an inherent possibility of material things – that they make manifest the simultaneous continuity and figuration which characterize our world.

Our discussion so far has depended on a straightforward characterization of the opposition between figure and ground, in which the figure has always been taken to be smaller than



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⁸ Colin Rowe and Fred Koetter, *COLLAGE CITY* (Cambridge: MIT Press, 1978), p. 58 and passim. Here, Rowe and Koetter's attention is addressed primarily to the plan configuration of the building; however, the argument extends readily into the third dimension.

⁹ A dramatic example can be seen in the round stair tower to the right of the entry. At the upper stories, the tower is clearly connected to the body of the building by the several horizontal bands. At the base of the tower, however, the red stone drops below the white base course [21]. In this singular violation of the otherwise continuous base, the tower begins to step away from the building at precisely the place where we enter. It is an element of the building above, a discrete figure below. It comes down the steps to meet us as we go up.

¹⁰ Vincent Scully, *THE SHINGLE STYLE AND THE STICK STYLE*, rev. ed. (New Haven: Yale University Press, 1971), p. 9.



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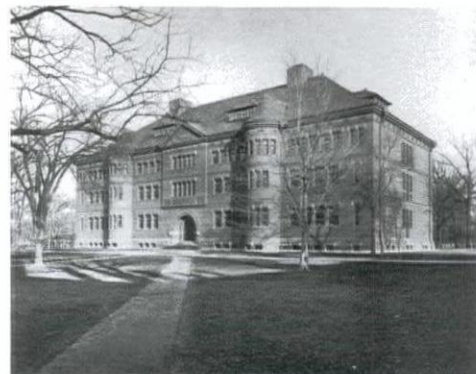
the ground and contained within it. A broader characterization of figure, in which it may even expand to become coextensive with the ground, may suggest one further way in which perceptual wholes may be nested, and may push the investigation of the simultaneous manifestation of continuity and figuration to its conclusion. To develop this broader characterization of figure, we will take a look at Richardson's Sever Hall of 1878-80, also at Harvard. One last look at Austin Hall will connect the two.

On the top floor of Austin Hall, in what was once the reading room but is now the moot court chamber, is a fireplace surrounded by finely carved pilasters and mantle [19, 20]. The capitals of the pilasters both support and become a part of the carved frieze of the mantle. The stone leaves which make up the capital seem to grow out across the frieze, not exuberantly, not even as if intended by the carver to do so, but insidiously. While the leaves cover part of the pattern of the frieze, they at the same time bring that pattern more forcefully to our attention by implying that it continues behind them. More importantly, the thin leaves passing over the shallow carving of the frieze make evident to us both the surface that has been carved away and the surface that has been revealed. In the shallow space between the two, the very notion of surface as a thing dependent upon depth but never in fact revealing that depth, instead giving us only another aspect of itself, seems to have been caught and held.

Richardson's manipulations of surface have been noted before. Vincent Scully, in *THE SHINGLE STYLE AND THE STICK STYLE*, remarks of Richardson's Codman House project of 1869 that:

*"[The] shift in emphasis [is] from the skeleton itself to the surfacing material, . . . part of the movement toward a continuity of surface, expressive of interior volumes."*¹⁰

In this instance, the effect of the surface is quite literally consistent with its composition: it is a membrane of wood shingles over a wood frame. However, Richardson's treatment of the surface as a membrane is apparent not only in his shingle houses, but can be seen as well in at least one of his brick masonry buildings, Sever Hall [21].



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It is an effect immediately apparent, but not logical. It distinguishes Richardson's building from its neighbors in the Harvard Yard, most of which are also of brick. How does one explain the sense that this masonry-bearing wall is a tautly stretched membrane? Since any strong, comprehensive effect must

depend on and be supported by many particular devices of detailing, we might ask instead: how do the details of the building produce this effect?

Among the most intriguing details in Sever Hall is a brick molding used around window openings. There are two versions of this detail, and it is intriguing chiefly because they seem to be inconsistent. Because it fails to correspond to our expectations, which are the expression of whatever knowledge we already possess, such a detail may lead us to unlooked-for insights. Far from being put off by the apparent flaw, we take up the detail with pleasure. In it, Richardson uses a brick which is divided, in plan, roughly in half into a square and a circle which are joined together by an ogee. Stacked, the bricks form a cylindrical bead which frames the window opening [22]. The bead occurs both at the

jamb and in the flat arch at the head. The jamb and head typically meet by butting into a plain, flat-faced, stone spring block [23]. It is a simple detail



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and one consistent with Modernist orthodoxy, in that the change of material is emphasized by a change of contour. However, in the alternate detail the face of the stone block is carved to continue the contour of the brick molding [24]. This is not an orthodox detail; brick, after all, is molded, while stone is carved, and one might expect the two distinct operations to produce two equally distinct forms.

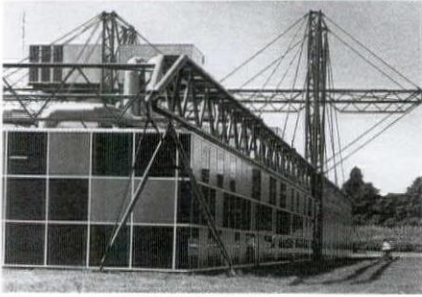
While the early purist strain of Modernism tended to eliminate subordinate levels of articulation, one more recent strain of Modernism has tended toward its proliferation. This strain, represented by the work



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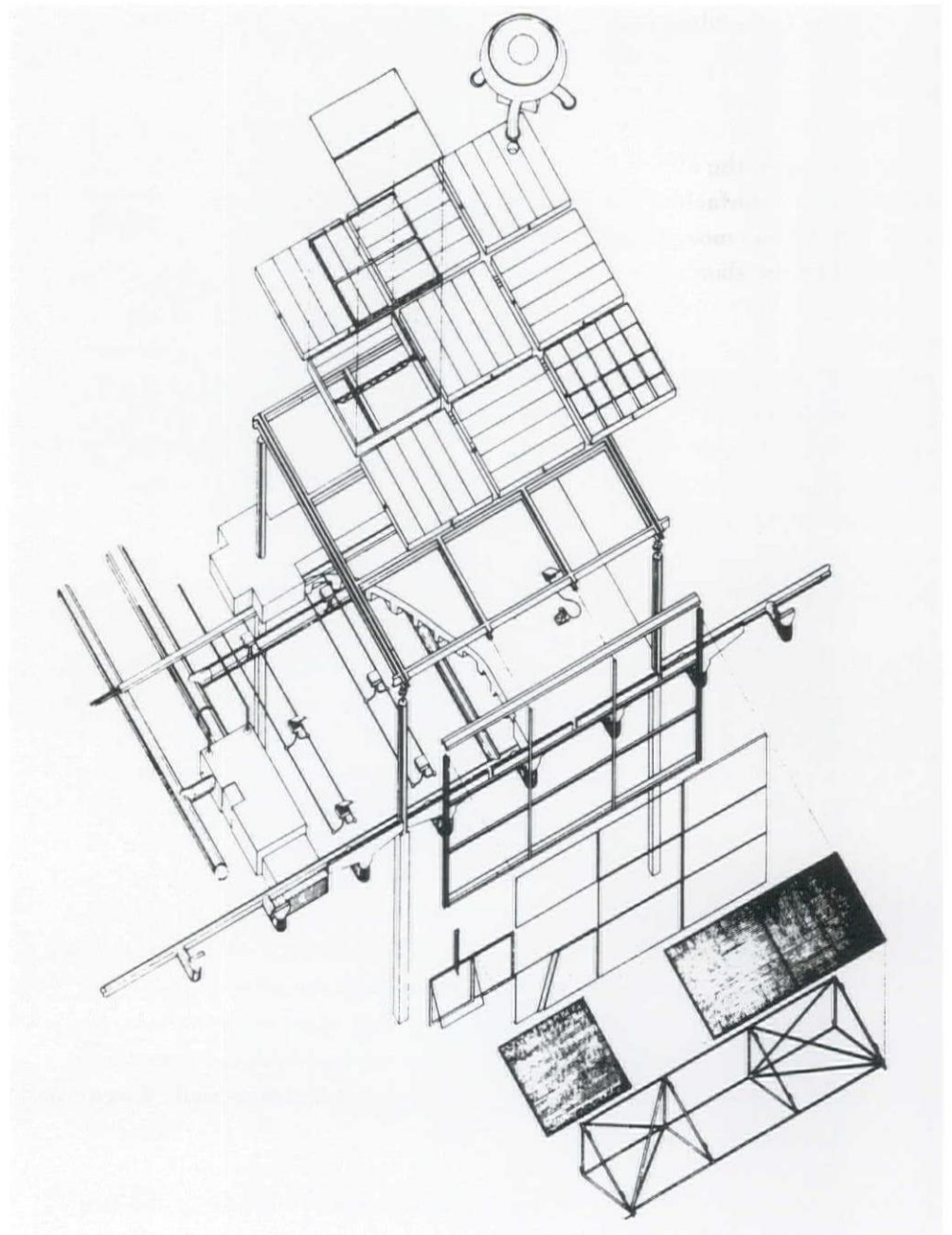


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¹¹ It is probably fair to suggest that a motive in addition to the expression of function has been at work in the work of Foster and Rogers. This secondary motive is most simply expressed in our common fascination with parts and pieces, with the visible connector and the bare sophistications of rigging. This fascination, which we all feel at one time or another, is not merely the common caprice of a race of tinkerers, but stems from the need we have as embodied perceivers of the world to get a grip on that world. As I have suggested, this need finds its fulfillment in building surfaces which are articulated in a nested hierarchy of figures, offered for our grasp from various distances. The buildings of Foster and Rogers, although not intentionally figurative, frequently offer elements which reward our attention in the way traditional architectural figures do. The scale and frequency of elements in these buildings are not, however, determined as a response to a recognized perceptual need, but rather as a function of a principle of differentiation, singularly applied.

of British architects Norman Foster and Richard Rogers, has concentrated on the differentiation of each element of construction [25, 26]. The explicit motive for this thoroughgoing discrimination of elements is the frank expression of the discrete function of each.¹¹

A critic sympathetic to the stance of Foster and Rogers might suggest that each material used in Richardson's detail – brick, stone, whatever – should be associated with just such a discrete function. It is important to realize, however, that this criticism, while invoking particular character-



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istics of materials, actually gives the principle of differentiation priority over the demands of the materials themselves. Most building materials in fact have a wide enough range of use that they can as readily be shaped like one another as they can be shaped differently; the nature of the material does not demand differentiation. The building system – frame and bearing being the two most basic types – typically determines the shape and joining of units.¹² Despite the different limits set by their manufacture, a sheet of stone veneer has more in common with an opaque glass spandrel panel than with a block of the same stone used in bearing, and is more like the former in size and shape. Similarly, rather than the differences between stone and brick requiring a difference of treatment, it is a common property of the two that they allow either diverse or similar treatment, as the occasion demands.

This is an occasion in which the carved stone block does not exclusively express its difference from brick but expresses their commonality as well. Why? One good reason for bringing two different things together is to call out a common property of the two.¹³ Two materials applied to a common end may make that end manifest in ways that a single material could not: the dissimilar characteristics act as a filter, and the similar characteristics come to the fore, expressing a common condition. The carved spring block, in concert with the molded brick, does something of this sort. It allows,

or rather establishes, a continuity of surface. The surface is uninterrupted by the change in materials, even though that change remains visible, and it is the surface itself which is seen to be a common attribute of the two.

Notice that we are now speaking of “the surface” as a thing having a degree of autonomy. “Thing,” however, is not quite right; neither, at the other extreme, is “concept” or “idea,” for both “thing” and “concept” would suggest that the surface has complete autonomy, the former as a physical object, which is absurd, and the latter as an abstraction, which is neither correct nor to the point. We might more properly say that the surface is a characteristic, not just of the materials of the building as a plurality, but also of the material nature of the building as a whole. This characteristic may be named and discussed, but it cannot be observed in isolation from the material. We might term it an abstraction bound to a referent. Further, it is a characteristic which has been emphasized by the carving of the stone to match the brick. The surface has attained figural status.

This granting of figural status to the surface of the building as a whole produces the anomaly of a figure which is coextensive with its ground. The surface must be the ground, but it is a figure as well. We can now recast our original question: what are the pre-conditions of the observed effect, the experience of tautness in a masonry wall? One is

¹² See, for elaboration, Cesar Pelli, “Architectural Form and the Tradition of Building,” *VIA 7: The University of Pennsylvania Journal of Architecture* (Cambridge: MIT Press, 1983), pp. 146–47.

¹³ For this observation, I am grateful to Professor Kent Bloomer of the Yale School of Architecture.



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that the surface of the wall must attain a figural status; to do so, it must continue, uninterrupted, even where interruptions are apparently necessary. Once surface assumes this status, the relationship between it and the volume which it surrounds becomes one of tension between the volume, which is expansive, and the surface, which constrains. In this tension lies the possibility of tautness.

With this insight in mind, we can look at other details of the building to see if they, too, support the figuration of the surface as a whole. Many do, among them the shallow dormer and bow on the Quincy Street side, through which certain necessary interruptions of the surface are minimized or even subsumed within it [27]; the elaborate molding around the Yard entrance, by which the surface forms the opening rather than being disrupted by it [28]; the carving of the ornamental panels directly into the brick, by which a continuity of material is maintained where the surface must be differentiated [29]; and finally, the window moldings themselves, the form of which supersedes the individuality of the brick and moderates the disruption of the surface by the opening, like a hem around an opening in a garment. Each of these devices reinforces the figural status of the surface of the building, and thereby supports the perception which we have of expansive tautness, unexpected in load-bearing masonry.



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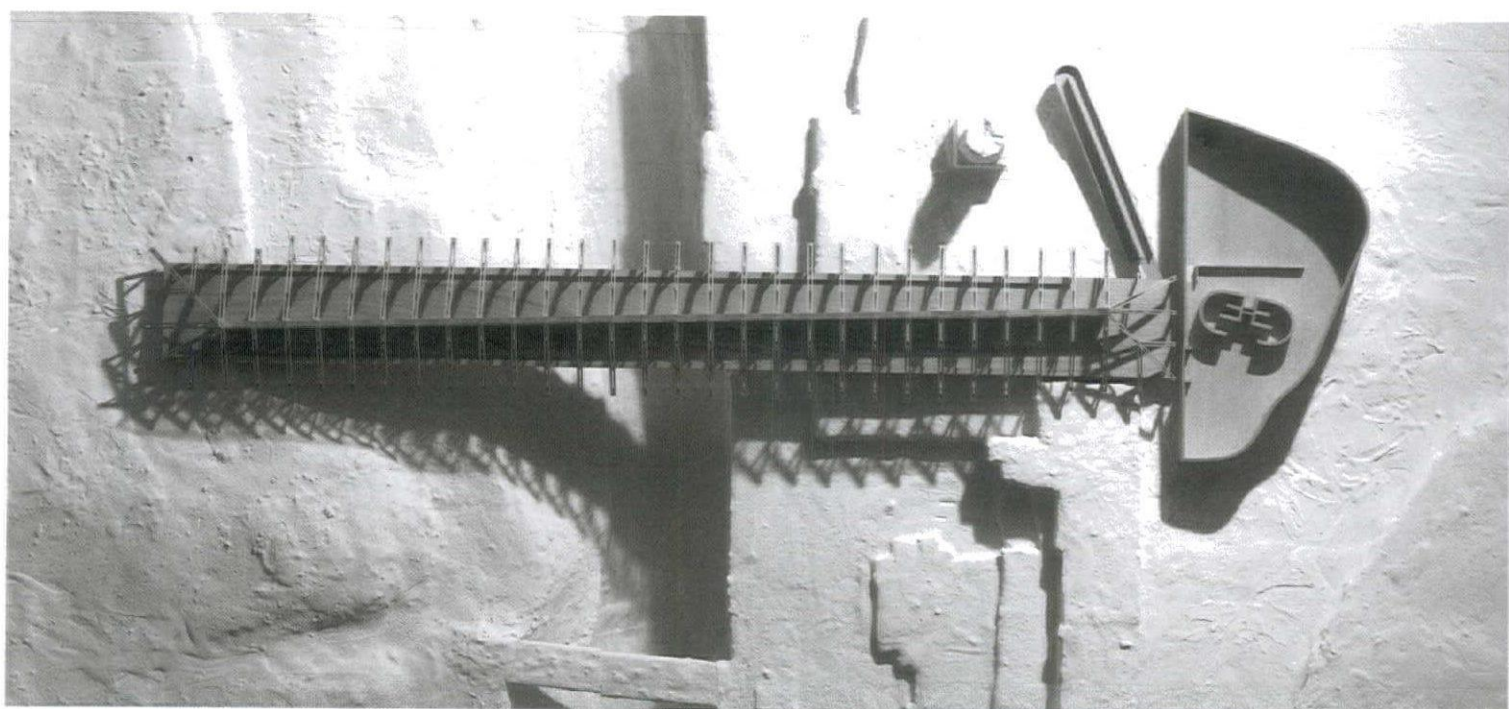
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The crucial nature of this example lies in the precision with which it locates the threshold between the object of perception and our cognitive recapitulation of it. This threshold appears, for instance, in the simple choice between the terms "plane" and "surface." The former is an abstraction, simple and pure; the latter is likewise an abstraction, but is bound to the phenomenal object with respect to which it is applied. The locus which is either "surface" or "plane" – the outermost face of the wall – is constant. Its character, however, depends on what we call it. Each corresponds to some facet of our experience, if we include intellection as a component of that experience. The one, however, holds us close to the experience itself, while the other puts us at an indeterminate distance from it. Architecture in general is a similar locus, the present character of which changes as we call it this or that.

The example of Sever Hall is equally crucial in that it demonstrates the simultaneous continuity and figuration made possible by the material nature of building, as well as the interdependence of the two in the widest sense, for here they have literally become each other. Both in this instance and in that of the fireplace surround in Austin Hall, we find the figure/ground relationships inherent in surfaces extended into extreme or attenuated modes. These are radical devices: they take us to the root of the phenomena of continuity and figuration.

In Richardson's work we find a number of suggestions brought together. First, while buildings are always figurative, at one scale or another, those buildings have an advantage which offers us figures for the grasping at every scale from the largest to the smallest. Second, it is possible to interlock figures at one scale with those at adjacent scales, ground turning into figure as the scale increases. In such a relationship, ground and figure are nested within one another not merely as a container and that which it contains, but they become mutually defining as well. The figure serves to make the ground visible. At the same time that the figure is itself distinguished from the surface of the building – capable thereby of assuming some significant role – it yet remains a part of, and thereby locates, that surface. At the extreme it may confer figural status on the surface itself. Third, the simultaneity of figuration and continuity is made possible by the material nature of the elements of building, which necessarily share certain properties but are distinguished from one another by others. Simultaneity is made necessary, as well, because figures made of material cannot float free, nor can distinctions between pieces of material be erased. From the necessities of working in the material world, Richardson has made an architecture capable at once of complex figuration *and* of the maintenance of that continuity with respect to which we place ourselves in the world.

For much helpful discussion of Richardson and particularly for insight into his relationship to the architectural debates of his time, I am indebted to Elizabeth G. Grossman, Assistant Professor of Art and Architectural History at the Rhode Island School of Design. I would like to thank Katherine Snyder for invaluable editorial advice and support.



Has a Doll Life?

Sverre Fehn and Per Olaf Fjeld

These pages and drawings derive from a conversation between Sverre Fehn and Per Olaf Fjeld that occurred in the summer of 1984. Professor Fehn and Mr. Fjeld are long-time collaborators in architectural discourse; Mr. Fjeld's essay on Professor Fehn's work, THE THOUGHT OF CONSTRUCTION, is a primary summation of their mutual investigation. This discussion during that Norwegian summer resulted from a consideration of a preoccupying theme of Professor Fehn's work: the transcendence of natural limits in the modern age. As the questioner, Mr. Fjeld seeks to position man and architecture in the vast and undefined landscape where "life and death are no longer evident in our built geography."

Sverre Fehn, what is man's role in relation to mass, and what is the order of architecture in relation to material?

The infinite room is mass. We are not living in an articulation of in and out. The mass surrounds us at all times. We are never released from the total Room, but we can edit this Room through contemplation.

It is the thought that gives the material. Each material then conveys a particular mass. Once this mass receives a composition, the world is rendered a form, "gestalt," and man his construction. The mass is now activated. It is given an order. When thought penetrates mass its result is the precise room.

Can mass then be defined?

Archimedes assigned mass its number. The incident in the bathtub unleashed a tragedy. The object's definition was stripped of its "soul." The volume as scale separated the objects from their form. The object received a definition of its true substance.

The shadow belongs to the earth. A world without it is a place without material. In death the shadow is a dream of the non-existent. Here the mask is absolute. Its embrace is without limits. The spirit is mastered by a light that casts no shadow.

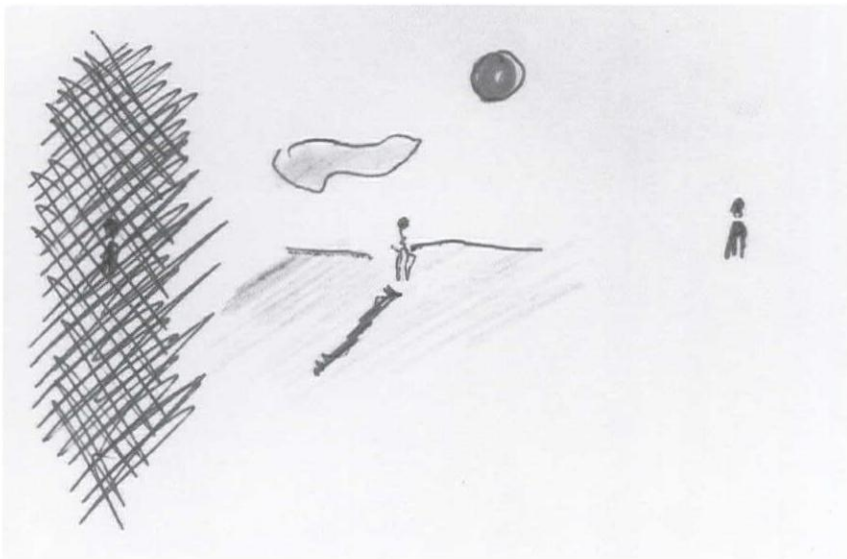
Each path taken renders an ongoing history of its dynamics. At the equator, in the middle of the day, your shadow clings to the soles of your feet, and in the next instant, you have lost it. Here, where this conversation takes place, your shadow is a facsimile of yourself one day a year, but go even farther north, and it approaches an illusive dimension once cast upon the silence of snow.

At this point I can cut out the mass where the shadow screens the construction. This gives me my place, and time stands still.

So everything belongs to the earth?

The drawings on earth are the result of a convergence of mass. A cavity fills with water that again draws its line on the earth's surface. If we replace the water with thought, the line becomes a construction man offers earth. The nature of architecture is to discover this thought-construction.

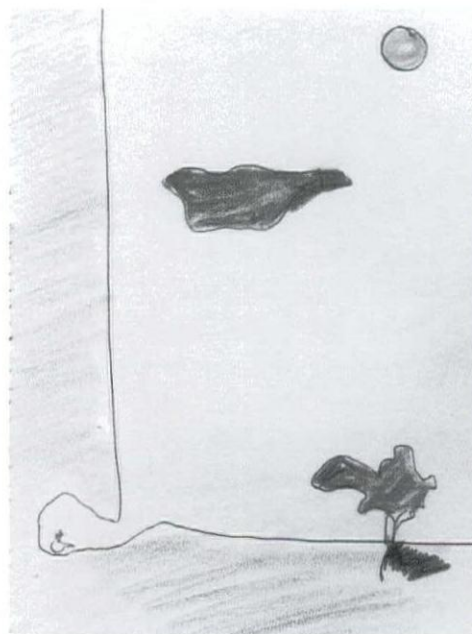
The cave-dweller is unable to free himself from the mass, but lives in his own shadow as a token of place. He replaces the earth's mass with air, the material that gave him both darkness and the undefined room. The cave adds to the heaven's volume without relinquishing its shadow. The opening remains the only respite. Outside, the tree fractures the horizon. Time will allow it to grow and add to its room. The tree mobilizes light and casts its shadow on earth, a realization of place. You are part of another's shadow, and you are no longer alone. It is here the story is told.



Do you mean the history of time?

Man's first signs were to move the mass. The stone's precise placement on earth carried a message. Man could wander between arranged masses, as the dialogue belonged to the moment. The stone and its place were a point on earth that conveyed a mass inhabited by spirit.

Later history recapitulated and lost was the conversation with the night and its stars. Victor Hugo, the French author, remarked once that with the advent of printing the art of building vanished. The written sign released history from place. The interpretation was not tied to its surroundings. The book read by all no longer gave the ordained stone the



same immediate importance. The dialogue between man and nature ceased. The book, it is true, transmitted the thought of stone, but freed from its mass. The concept of time is in disorder. The book is everlasting, as it is reprinted, protected, moved, and stored. By forsaking the mass, its history is free from time. The following day, the stone again casts its shadow, but the book is already interpreted.

Time and place must follow one another. Time in itself is a material.

So time is mass in motion?

Man has always searched for masses in motion. The dam tames the river. This wall forced into the landscape imprisons energy, and when the battle is over, the heavens are given a new mirror.

The sail, a collector of winds, sets the hull in motion and perforates this luminous mass. The boat defines the mass and gives movement its room-concept. A place in movement is the room of the moment. The objects moving in mass give it an intimacy. You are part of the material. Man's dream of the infinite Room is so beautifully expressed through Aladdin carried by the jinni of the magic lamp hovering over the earth.



And what about the sea?

The sea is an immense horizontal mass that expresses the earth's temperament. The boat is released from the shadow of the mainland in a search for the one straight line, the horizon.

I remember once in Morocco I sat by a riverbank waiting for the water to ebb in order to cross. During this interval, some boys pocketed my compass. They took my straight line. They stole the bridge before it was built.

And the sky?

If man, together with the wind, had conquered the sky before the sea, the sea then would have remained the uncharted. The vast expanse of the sea would dominate our awareness, as the heavens intimidated the Middle Ages. How would man together with the sky have plotted his mark on the earth?

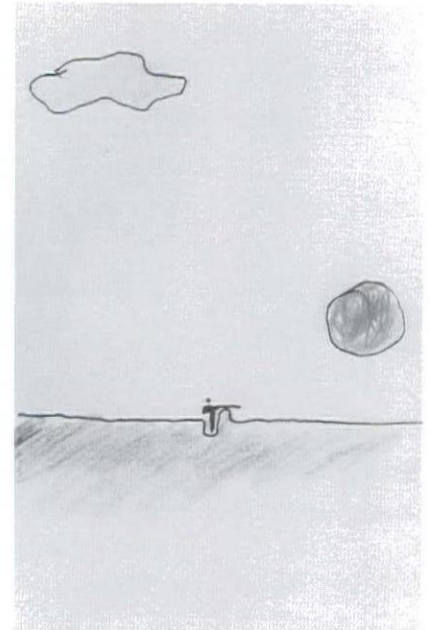
*And the understanding of mass
as material?*

Each material has an identity and a scale of its own. Earlier the log conveyed a limitation where size was a factor of the tree's species and age. The mass referred to a scale in relation to the nature of a tree. Through this limitation, man could with confidence form mass, and erect his constructions in the landscape. There was no competition. The earth's mass was still endless. By building on the unmeasurable surface, man manifested points in eternity.

Technology has changed this relationship to material. Laminated wood has no limitations. Entire forests can be glued together to produce a mass. Material no longer has an identity in relation to its source. The universe is now measurable spheres. The sun and the moon have ceased to be mysteries, as we live in a world of just one scale: the relationship of small and large.

The earth is now defined through other mass-concepts in the universe. Our world is calculated. At one time it must have been extremely exciting: the moment the construction met the earth and gave rise to its dimension.

Please continue:



As long as the earth was seen as infinite, the mass to build with had a limitation. Once the earth was finalized as a volume – that is compared to other objects – man was able through material to construct an unending mass. As technology cannot generate a natural restriction, mass directs itself. It takes over. The credibility of the tree's shadow is now lost, as it hides in a laminate's glue.

*What then is our relationship
to mass?*

Once
the column
roomed a silence
large enough
to hide behind.
I remember
the Finnish architect
Reima Pietila
said to me:
"If blind,
I would form
my architecture
from the
material's weight.
I would seek
a balance
between them.
What would
this construction
tell me?"

*Does material have its own
language?*

Each material has its own shadow.
The shadow of stone is not the same
as that of a brittle autumn leaf. The
shadow penetrates the material and
radiates its message. You converse
with material through the pores of
your skin, your ears, and your eyes.
The dialogue does not stop at the
surface, as its scent fills the air.
Through touch, you exchange heat
and the material gives an immediate
response. Speak to a stone and it
gives resonance's mystic. Speak to a
mountain ledge, and it gives sound a
mirror. Listen to a snow-covered
forest, and it offers the language of
silence. The great master in the use
of wood as a material is a musical
instrument maker. His ear gives each
piece its dimension.

*And the unhindered play with the
material's language?*

Material can be something it is not.
Oscar Niemeyer thought of a flight of
birds when he made his concrete
constructions. Jorn Utzon's Sydney
Opera has an enormous weight, but
its expression is associated with the
play of white canvas in the wind. The
mass is put into an order beyond its
reach. It is more than the material
itself bespeaks.

And the meeting with the earth?

We must again find a dialogue with the earth. The earth's division of mass such as water and air embody the great constructions. The rampart is the ultimate trade with the landscape. The earth that forms the mound and the trench that is left behind become your preservation. The fear of death is your constructor. This fear developed a sensitivity to the terrain that has created the great architecture of the fortresses. Man's fear of the bullet's strategy caused a search within the earth's mass for protection. The construction of fear in the present man-made landscape is the sidewalk's curb. The terrace with a height of fifteen centimeters gives you the urban safety.

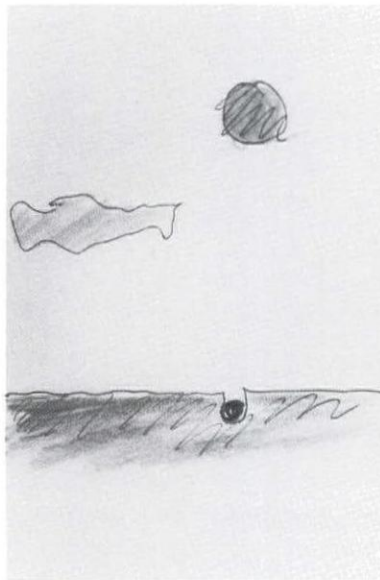
The pursuit of a technological minimalization of materials has deafened man's dialogue with the earth's masses. In the twenties, Le Corbusier's final break with the foundation wall and the column, as the only link between the earth and man's dwelling, is now left behind only as a fragment. And so came the great offer: Give the earth back to itself. Let the people in their individual homes own the horizon. Let the apartment roof be the large piazza for the social interaction for a visual conversation with the elements of the sky. This undefined expanse overwhelmed the man on the terrace. The new interplay with nature was destroyed by the force of the "invisible nothingness."

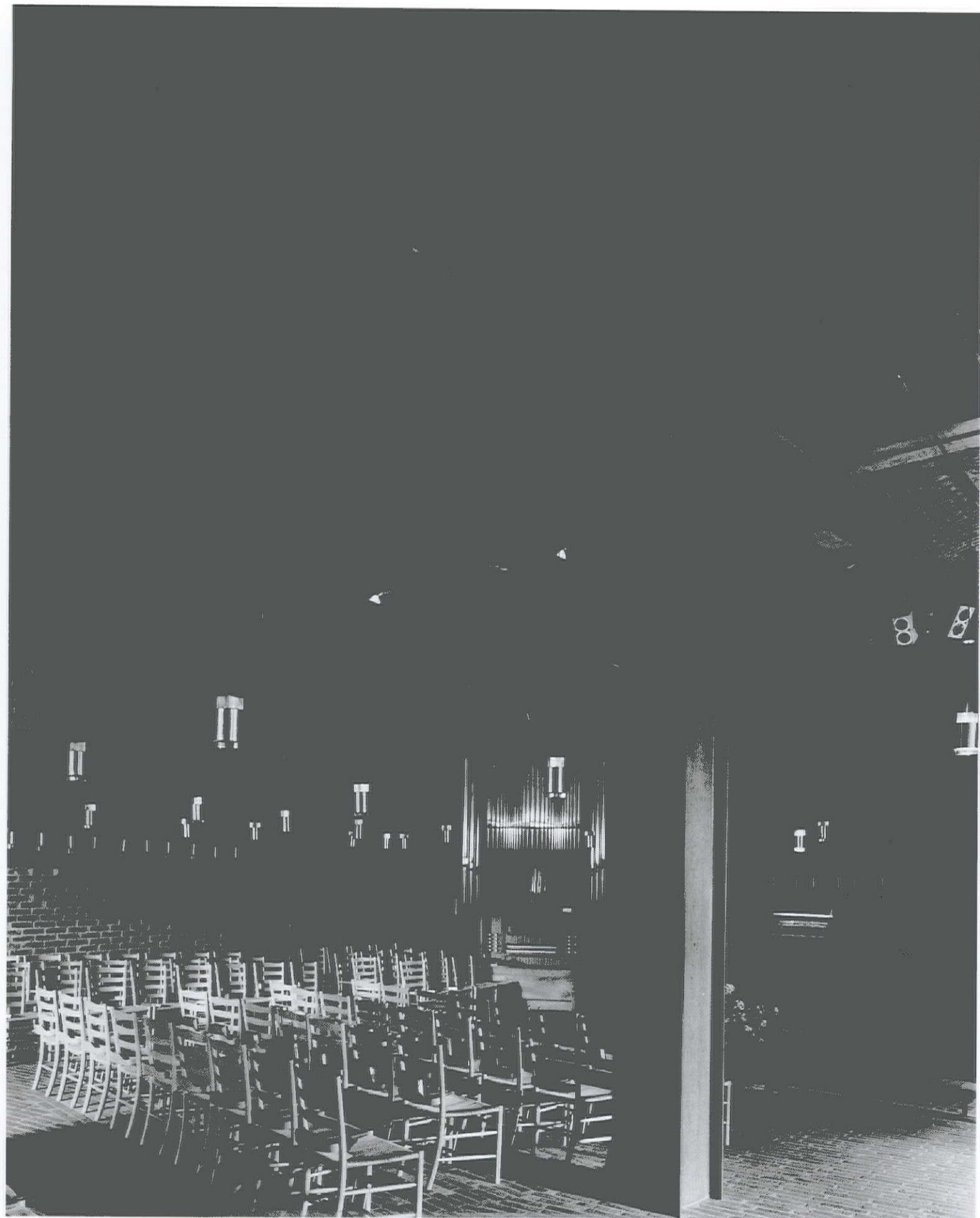
Once functionalism moved into the symbol-less, the built world collapsed. Must architecture again, through society's notations as the given mass, find a key to the division of the numbers in its meeting with the earth?

Is the mask living, has a doll life?

The bullet made a dent in the surface of the earth, and the size of the hole was the same as the bullet. Today's "bullet" has reached the invisible mystery, as it can destroy all life without rendering a mark on the surface of the earth. The spirit is now self-destructive. Matter has claimed a total victory.

The mask is left behind in conversation with the doll.





Sigurd Lewerentz and the Dilemma of the Classical

Colin St. John Wilson

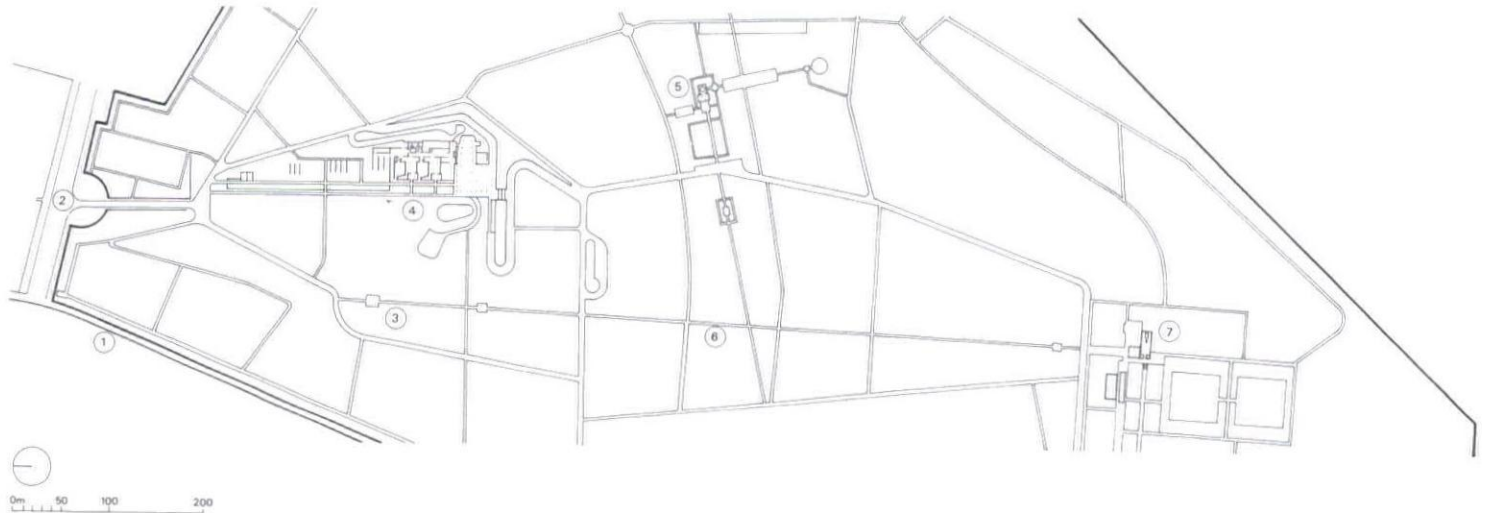
Between the portico and the body of Sigurd Lewerentz' Chapel of the Resurrection, there is a caesura; furthermore, the portico is not quite parallel to the Chapel, so that the gap between varies as if a wedge had been driven between the two. I know of no precedent for either the disengagement or the skew. But they are not the only equivocal elements in this design; so much so that we might say that the intense conviction of the "classical" language used here is challenged in equal measure by the extent to which that language is subverted.

Between the completion of that Chapel in 1925 and the Church of St. Peter at Klippan, built in 1966, there lies another kind of gap – a revision of language so stark as to be without parallel, a language of extreme Schinkelesque refinement abandoned in favor of a prohibitive reduction of means.

Lewerentz was a man of few words and certainly not given to propounding theory or offering an explanation

for the nature of his work. All that he had to say was said through building. Nevertheless, it is clear that he was an architect who had the strange gift of making what appeared to be simple concrete acts of construction – how a beam straddles a column, how a sheet of glass sits in a brick wall – carry a double meaning. "Architecture," wrote Wittgenstein, "is a gesture." For Lewerentz, it is as if our footsteps echo in another world, and as if every gesture we make in constructing the physical tectonic reality could be seen as a test-case for the claim by Adrian Stokes that "architectural forms are a language confined to the joining of a few ideographs of immense ramification" (ideographs, be it noted, that are not tied to any stylistic grammar).

The enigma of Lewerentz' architecture takes on an unexpected topicality in our time. Why did this man, who was the most poetic master of the classical language of architecture in this century, turn his back on that language?



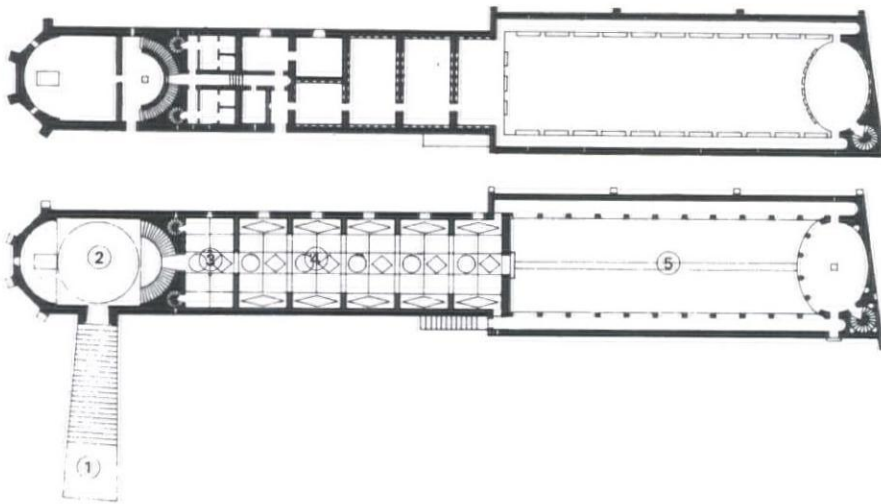
Key for Site Plan, Woodland Cemetery.

1. Railway Station.
2. North Entrance to Woodland Cemetery.
3. Grove of Remembrance.
4. Asplund: Three Crematorium Chapels (1935-1940).
5. Asplund: Woodland Cemetery (1918-1920).
6. Way of the Seven Wells.
7. Chapel of the Resurrection (1922-1926).

Part One: The Chapel of the Resurrection, Woodland Cemetery (1922-25)

The Chapel of the Resurrection can be understood only when it is seen as the penultimate term in a sequence of events running the full length, from north to south, of the Woodland Cemetery near Stockholm [2]. This route commences with the moment of arrival at the main northern entrance and concludes in the sunken burial ground that lies in the south-west corner of the cemetery grounds. Before following the course of this sequence it is helpful to recall an earlier project of Lewerentz' in which he had explored the theme of the cemetery chapel in a profoundly

original way. The project was for the cemetery at Helsingborg in 1914 [3]; this was in the early days of the practice of cremation and Maurice Maeterlinck had been drawn in by the town commissioner to help formulate a "program." It was proposed that the mourners should not return to exit through the door by which they had entered, but instead pass through a progressive "rite-of-passage" moving on from the Hall of Death up into the Hall of Life. Lewerentz extended this sequence to pass out into an arcaded columbarium with a pavilion of remembrance

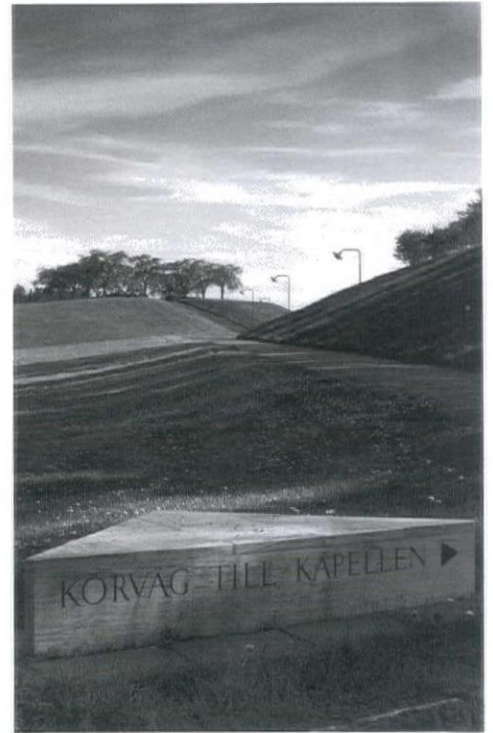


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at its far end; he further elaborated upon this theme by proposing the passage of a stream under the chapel on its cross axis, thereby compounding the ancient symbolism of the river Styx as it flowed toward the building to emerge on the far side as the fountain of life renewed. This is not merely the contrivance of a *promenade architecturale*; it is the enframing and sustaining – through architecture – of a common experience of great poignancy: the necessary acceptance of death, the decent rituals of mourning.

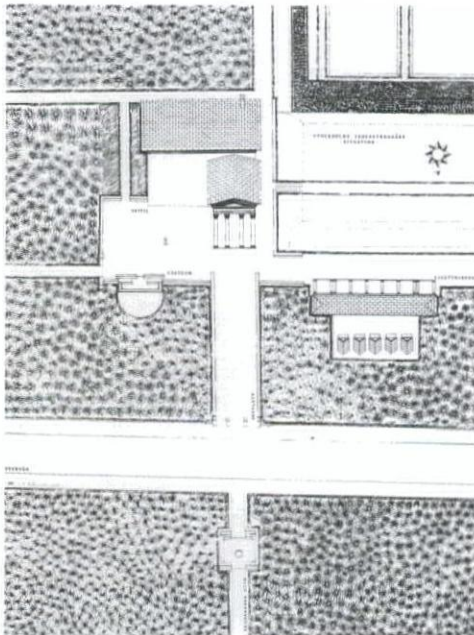
In the final version of the Chapel of the Resurrection (as conceived in March 1922), Lewerentz extends this experience of the confrontation with death to a much larger canvas, beyond the isolated building and out into the landscape at its most sublime.

The design of this Woodland Cemetery, won in competition in 1915 in a joint submission with Asplund, went through a number of evolutionary stages. It is my belief that Lewerentz was the principal agent in this work. The initial scheme proposed a wide range of episodes disposed along the forest pathways, the Way of the Cross and the Way of the Seven Wells, leading to two separate chapels. The provenance of this sublime landscape of Nordic forest and traditional grave-mound, compounded by the romantic imagery of Caspar David Friedrich, has been discussed at some length by Stuart Wrede.¹ Suffice it to say here that Lewerentz' mastery of landscape at this scale is unmatched in our time.



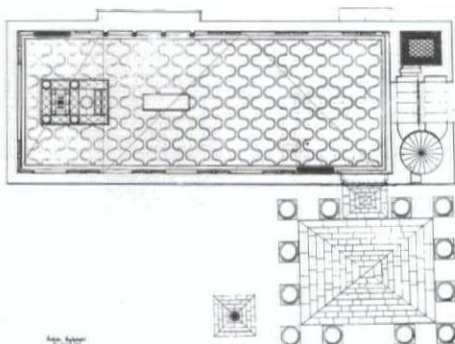
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¹ Stuart Wrede, "Architecture and Landscape: The Work of Erik Gunnar Asplund"; PERSPECTA 20: *The Yale Architectural Journal* (Cambridge: MIT Press, 1983).



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² There is one equivalent case and that is Asplund's borrowing (ten years later) of the same motif in the large Chapel of the Holy Cross constructed on the eastern part of the site.

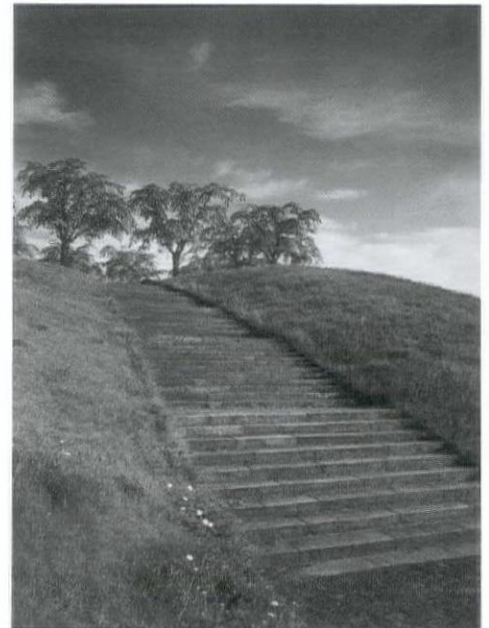


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The narrative begins at the solemn northernmost entry to the site, with its recall of the Via Sepulchra of Pompeii [4], ascending thence to the large grass-mound that recalls the bronze-age burial grounds of Agri (known as the "Maiden Mounds"), upon whose summit is set a paved square with fixed seats and surrounded by elm trees – the Grove of Remembrance [5]. From this vantage point of rest there lies straight ahead a long pathway cut through the dense woodland forest of tall pines – a thin shaft of light parting the blackness [6]. This is the Way of the Seven Wells, crossed by pathways into the forest where groups of gravestones are sprinkled at the feet of the trees. Here and there a solitary figure tends a grave. Gradually a white glimmer at the end of the forest path comes into focus, announcing the presence of a tall limestone portico; we are about to arrive at the Chapel of the Resurrection [7, 8].

As to the chapel itself, the first thing we notice is that the portico that has closed the view of the forest path is not only disengaged from the megaron form of the chapel but is set, ever so slightly, at an angle to it. This departure from the orthogonal draws with it the plane of the west gable wall of the chapel itself [9,10].

This disengagement is enigmatic. It is a condition present elsewhere in the building at the scale of detail. For instance, just as we see daylight between the roof of the portico and the eaves of the chapel, so too at eaves level of the chapel there is a deep



5

undercut between the roof slate and the stone cornice as if the plane of slates hovered above the body of the chapel itself [11,12].

I know of no precedent for such independence between portico and sanctuary; for instance, not even the Erechtheion has this freedom.² However, wherever we look in the chapel, things are not quite what we are led to expect. This ramifying strangeness takes hold of the attention in a way that seems to address the visitor personally. We are confronted by something evidently intentional, something that quite spontaneously "feels right" and yet eludes easy explanation.

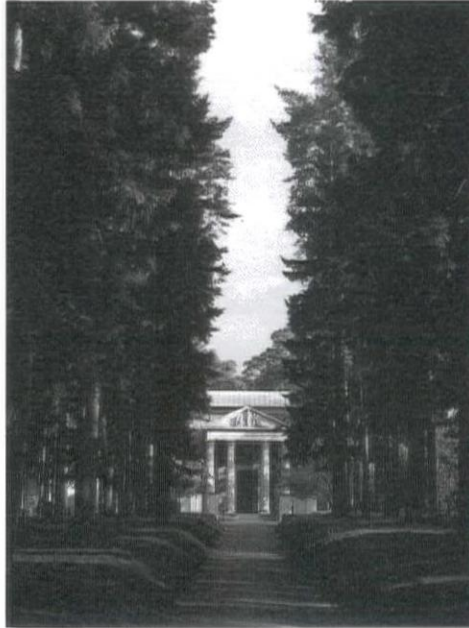
The entrance to the chapel stands behind the north-facing portico [13]. The exit is a separate, minor doorway in the west-facing gable. It is clear, therefore, that Lewerentz is applying the principles of the Rite of



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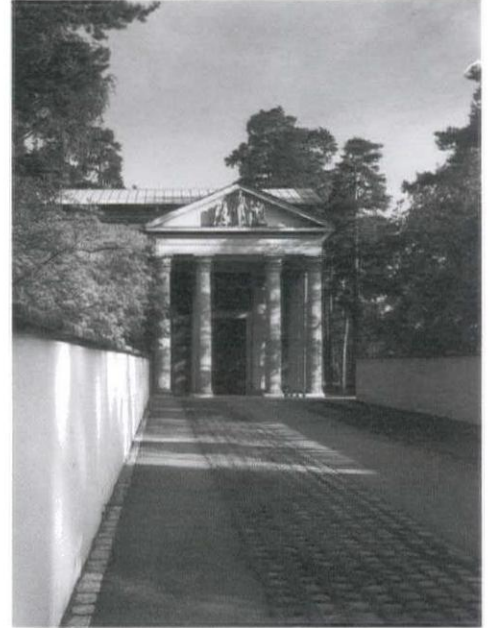
Passage. The exit opens towards a flight of steps that lead down into a sunken graveyard, surrounded by trees but also flanked along its northern edge by a range of cells in which coffins awaiting burial can be housed. It is in this sunken court that the journey that started at the northern entrance to the cemetery comes to its intended terminus [14].

I suggest here that the freeing of the portico is to compensate for the weakness inherent in locating it at the far corner of the chapel, a location necessary to the sequence of ritual inherent in the Rite of Passage procession. For this sequence would clearly require that the entrance door should be located as far from the east end as possible without actually being in the west wall, which is to be reserved as location for the exit. To have simply attached a portico in a conventional way to the corner of the chapel would have been



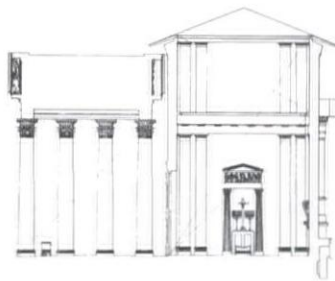
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formally very banal. On the other hand, if given the self-sufficiency that would follow from both its separation and its shift in axis, the

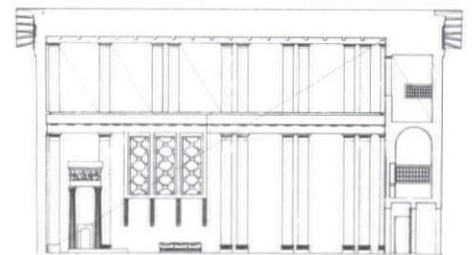


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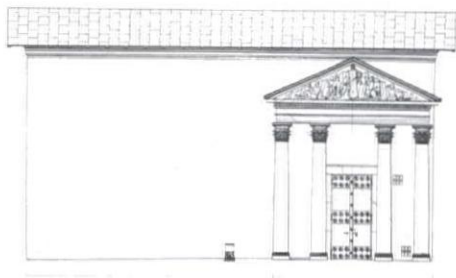
portico could win strength enough to assert itself and thereby create a strong dialogue with the austere megaron of the church.



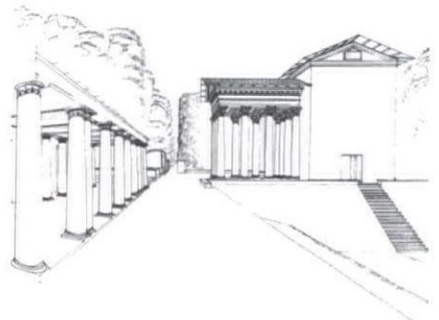
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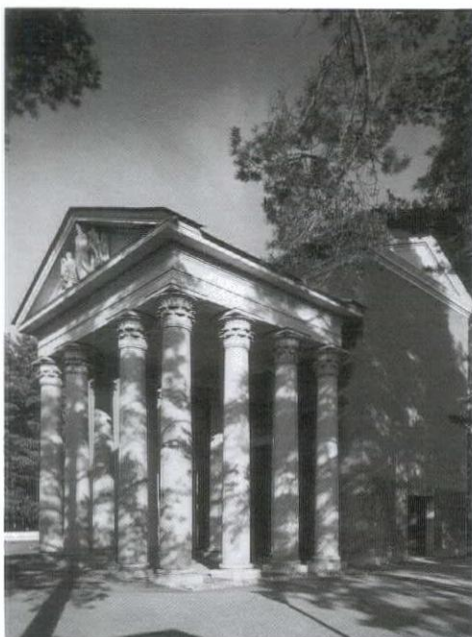
12



13



14



15

³ The intervals between the antae are irregular and their distribution on the north wall is not recalled on the south wall.



17

The “Corinthian” order of the chapel is an original invention in which memories of the Tower of the Winds in Athens are compounded with the Theban bell-capital – which, like the plane of the roof slates, is deeply undercut at the plane of connection to the square abacus. By setting this carved elaboration of limestone against the sheer, rendered surface of the chapel with its plinthless wall, the emotional charge is transmitted from the whole into the detail of the part [15,16].

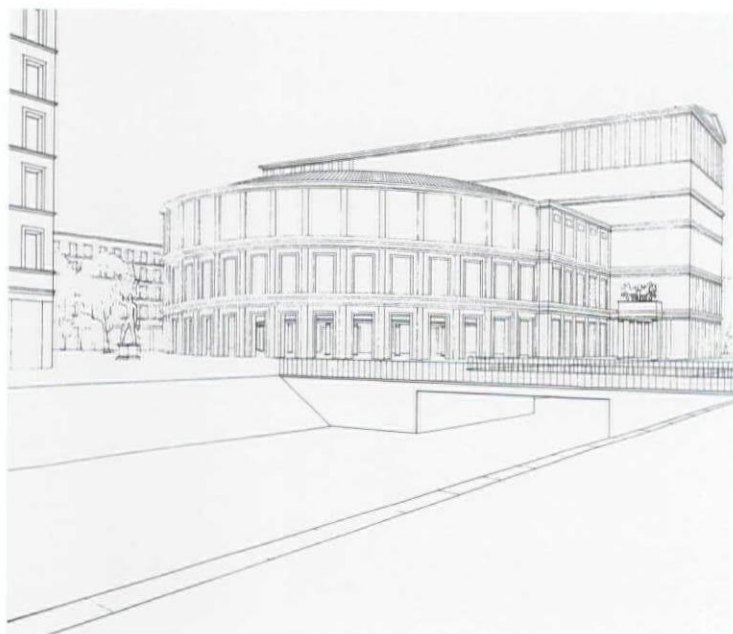
The chapel interior is dominated by the presence of a tall aedicular baldachino over the altar, strongly lit from the southern window [17]. Although some of the strangeness in

this interior is of a conventional mannerist nature (recalling in its distension and structure-less “wall-paper” of pilasters ³ the stair-hall of Michelangelo’s Biblioteca Laurenziana), the real strangeness lies in that transposition whereby the powerful aedicule – whose presence outside dominates the chapel – is recalled within by the stiff, tall stance of the baldachino [15]. There is something haunting about this insistence, its juxtaposition and transformation that hints at some metaphor we cannot grasp – a quality to which de Chirico ascribed the status of the metaphysical.

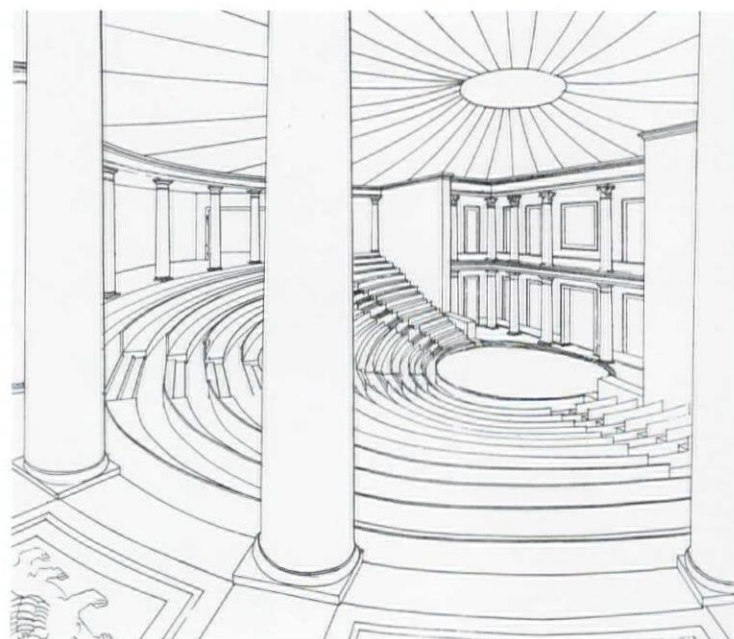
Overall, there presides in both part and whole a truly Grecian canon of proportion, founded upon the square, the golden section and their compounding in the square-root-of-five relationship. The application here is rigorous and confirms my belief that where this is so, the presence of a building becomes charged with *gravitas*: constant relationships are perceived simultaneously or in time, as verse is measured out by rhyme and this insistence builds up to an unshakeable authority [10-13].

Yet a question still hangs over this building. The language, however fluent, seems to be handled in parentheses, held somehow at arm’s length; it is interesting that at its inauguration in December, 1925, Sven Markelius was already challenging the “seductively delicate” but “unessential” nature of its detail.





18a

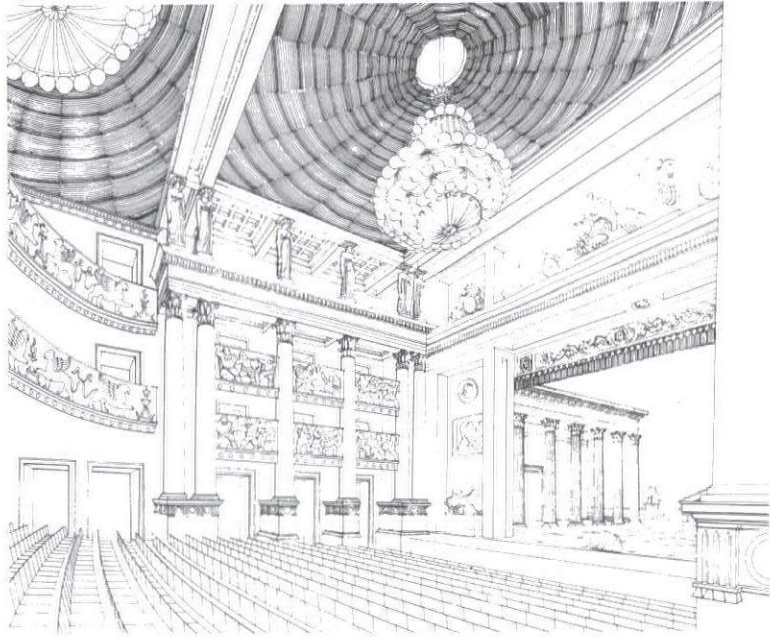


18b

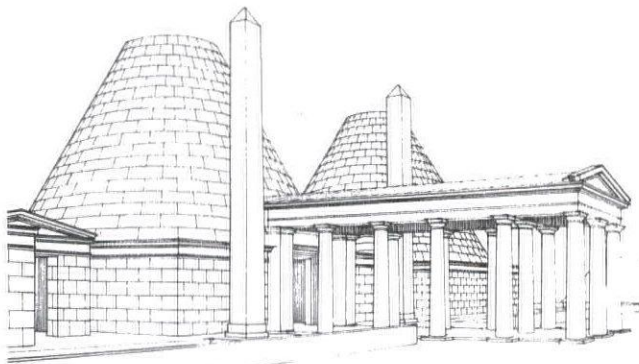
At the time of completion of this building, Lewerentz produced a further group of designs of extraordinary elegance in the manner of Schinkel. The projects are equal to anything that Schinkel himself produced; the 1926 Malmö theater [18a-c] is even richer in ideas than the Schinkel Schauspielhaus in Berlin, and little among Schinkel's monumental work can rival the cemetery projects of this period in Lewerentz' career [19a,b]. Be that as it may, the drawings, which are now unchallenged masterpieces of their kind, demonstrate a finesse in the invention and manipulation of classical themes that is truly remarkable. Certainly they establish a position of such perfection that the reasons for the subsequent rejection of this language must have had a quite exceptional urgency.

Many others, including Asplund, made the shift shortly afterwards to

the "white" architecture of the 1930 Stockholm Exhibition, but none carried that turn to the pitch which earned Lewerentz the reputation by the late 1950s of being a godfather to the Brutalists. The well known church of St. Mark's at Skarpnack, built in the late 1950s, and the less-well known, later church at Klippan, completed when Lewerentz was over 80, went far beyond the limits of "rationalist" reduction in means. There is nothing left now of that "Swedish Grace" and not a sign of the courtly language of Schinkel. This development has some parallel to the contemporary work of Le Corbusier in the Maisons Jaoul and to the wider contemporary trend towards *l'art brut*. Reyner Banham, in his 1956 book *THE NEW BRUTALISM*, had even roped Lewerentz into that loosely formulated and ill-named canon, albeit with some circumspection, since Lewerentz' motivation was clearly different from that of the



18c



19a

other architects in that book. Consideration of that difference necessarily relates to Lewerentz' turn away from the Classical language and that turn is most dramatically demonstrated in his last building – the Church of St. Peter at Klippan in southern Sweden.

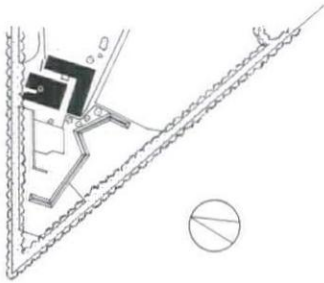


17d

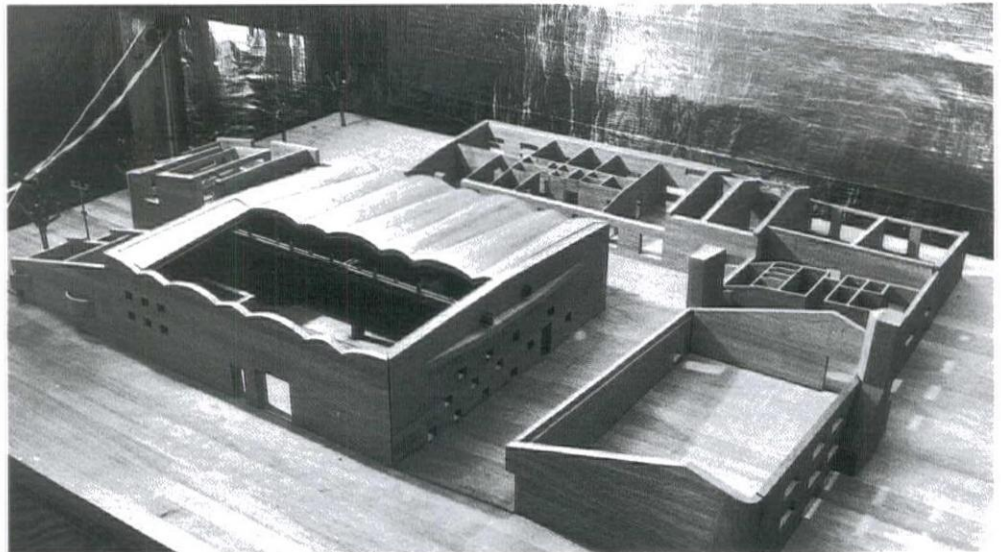
Part Two: The Church of St. Peter at Klippan (1963-66)

Confronted by the Church of St. Peter, sited on the outskirts of Klippan near Helsingborg [20], we are presented not merely with an unparalleled austerity in the handling of material "as found" and an equally unparalleled rigor in exposing to view every move in that game. We are not, in other words, being treated to an exemplary piece of candor in which the mysteries of building lore have been exorcised and the simple facts exposed at last. Instead, we are being presented with a theme of much greater depth and once again there is the element of strangeness that we found in the Resurrection Chapel – though it is of a different order. It does not lie in

the reinterpretation or distortion of ancient themes: there are no orders, no portico or pediment or symmetry to be subverted and therefore the building does not lend itself to description in conventional terms [21-25]. The building's mystery lies in the discrepancy between its *apparent* straightforwardness and its *actual* obliqueness. The harder you look, the more enigmatic it becomes. In the age of rationalism and "the new objectivity," Lewerentz had the reputation for being exasperatingly private and disdainful of all explanation. His silence seems to say, with Heraclitus, "If you do not expect the unexpected, you will not discover it."



20



21



22



23



24

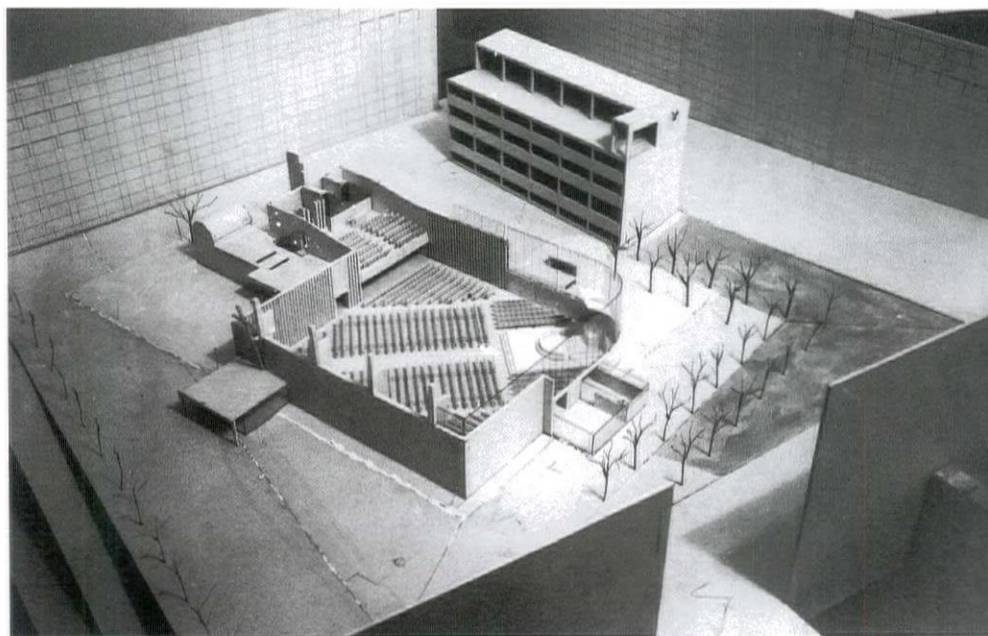


25

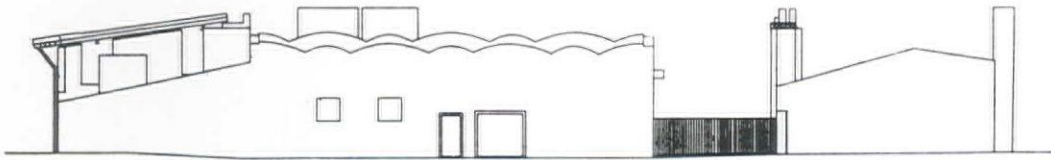
The competition design for the Johannesburg Church of 1933 [26], carried out during Lewerentz' "white" period in the thirties, prefigures a major issue in the design of the church in Klippan. As so often with Lewerentz, the great virtue and subtle originality of his thinking was instantly grasped by the most intelligent of his architectural contemporaries, but was not understood by the members of the jury. The point at issue is the rethinking of plan-form for the performance of the liturgy. This subject is now well-rehearsed and Rudolf Schwarz' *VOM BAU DER KIRCHE* of 1938⁴ stands as a remarkable document of exploration at that time. The relocation of the altar was a prime consideration. Instead of being sited at the far end of a linear (basilican) space so that the officiating priest stands between the congregation and the altar performing the office with his back to the congregation, the altar was now to be

moved into the heart of the congregation. The term that Schwarz used, "the Open Circle," corresponds closely to the term used by Lewerentz – "Circumstantes." By this conception, the congregation surrounds the performance of the sacraments, which is therefore carried out in full view of the communicants. The Johannesburg project proposes a plan of just such a form. Although in his celebrated St. Mark's Church at Skarpnack, completed in 1960, Lewerentz adopted the linear basilican form, with St. Peter's in Klippan he returns to a forceful application of the principal of "Circumstantes" [27a-c].

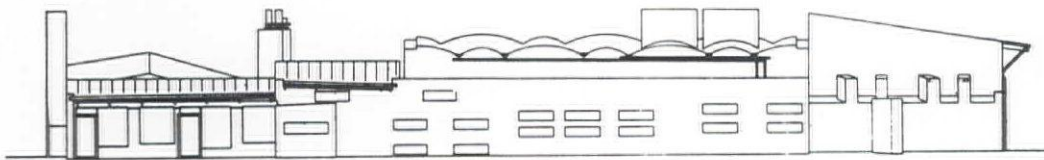
Once again, just as the Helsingborg Crematorium and the Chapel of the Resurrection grew from a reinterpretation of the ceremony of the Committal of the Dead, so here the new principle of "Circumstantes" lies at the heart of a new plan-form. It should also be emphasized that the justification for such a "new" form is precisely that it was the most ancient, indeed the original, form of celebration of the Eucharist in the primitive Church.



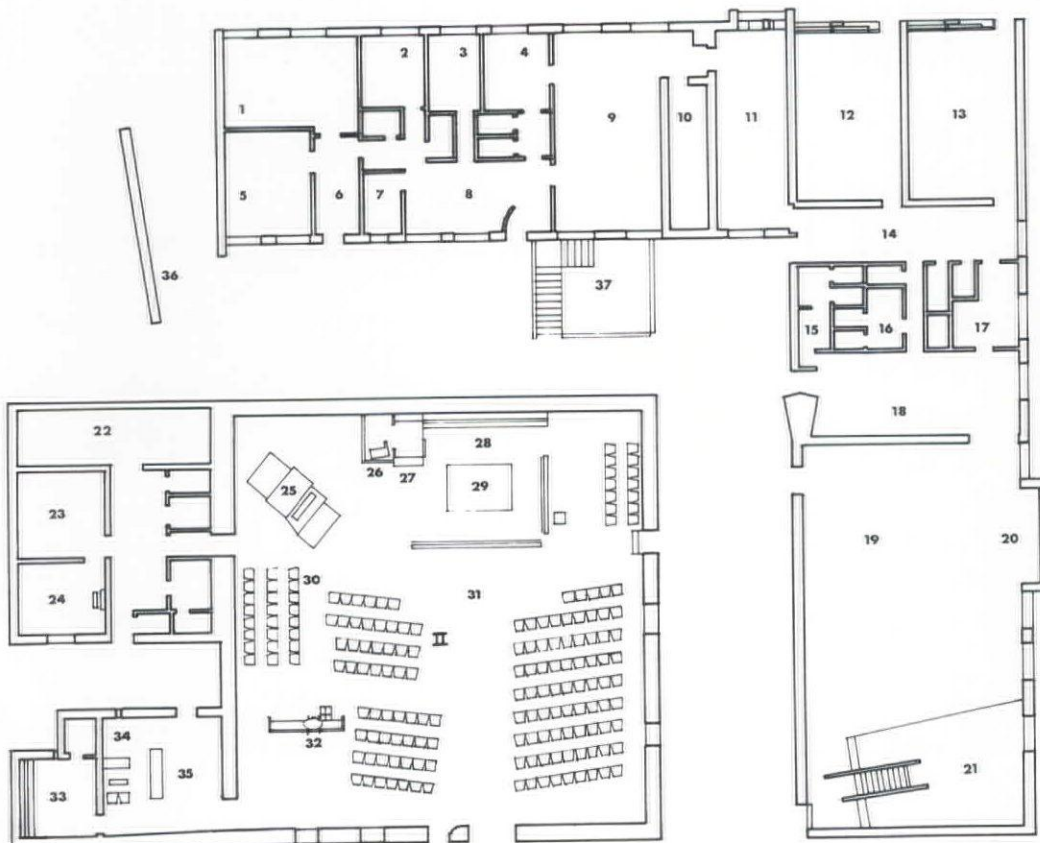
⁴ Published in translation as *THE CHURCH INCARNATE* in 1958, with an introduction by Mies Van der Rohe.



27a



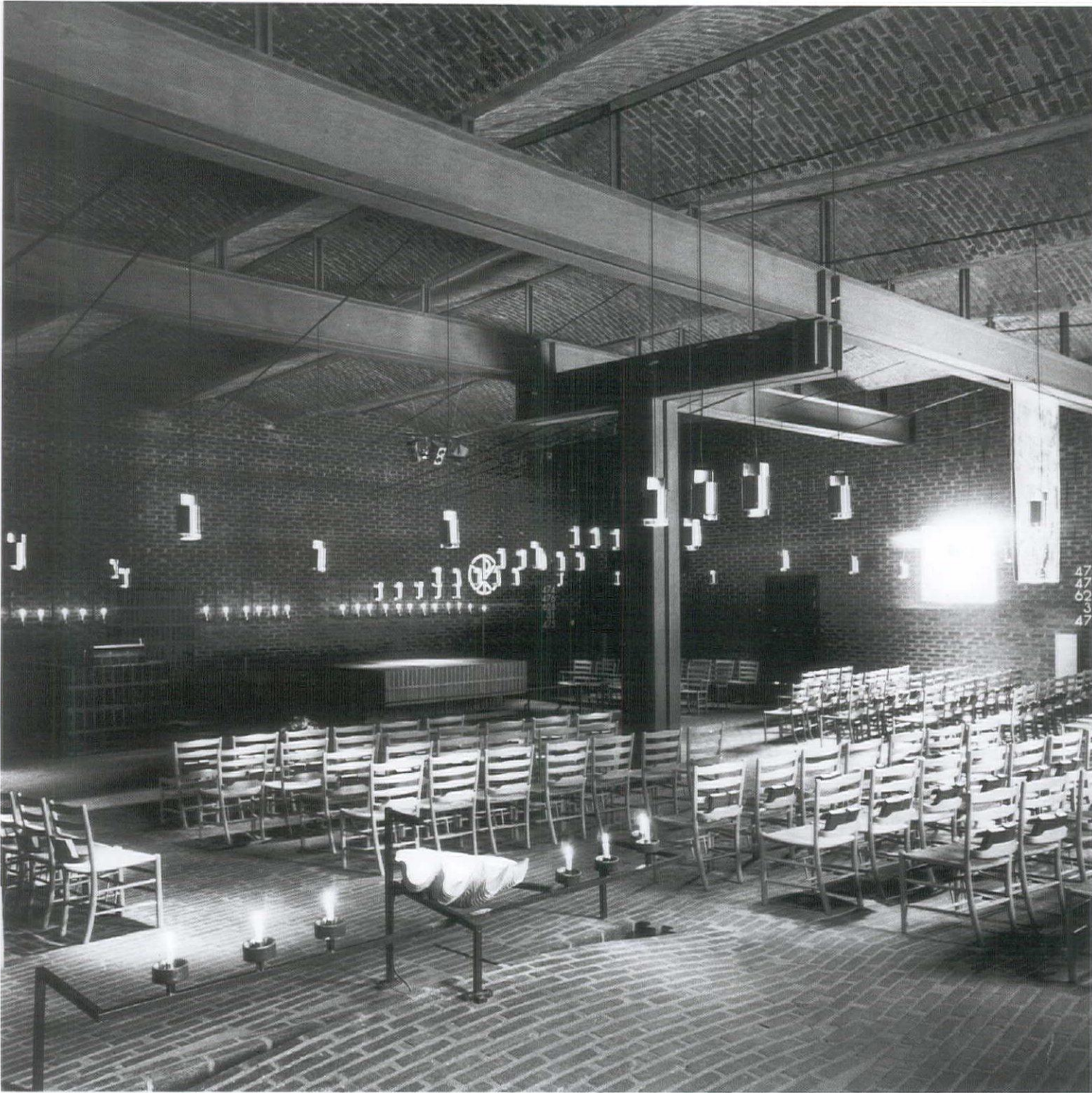
27b



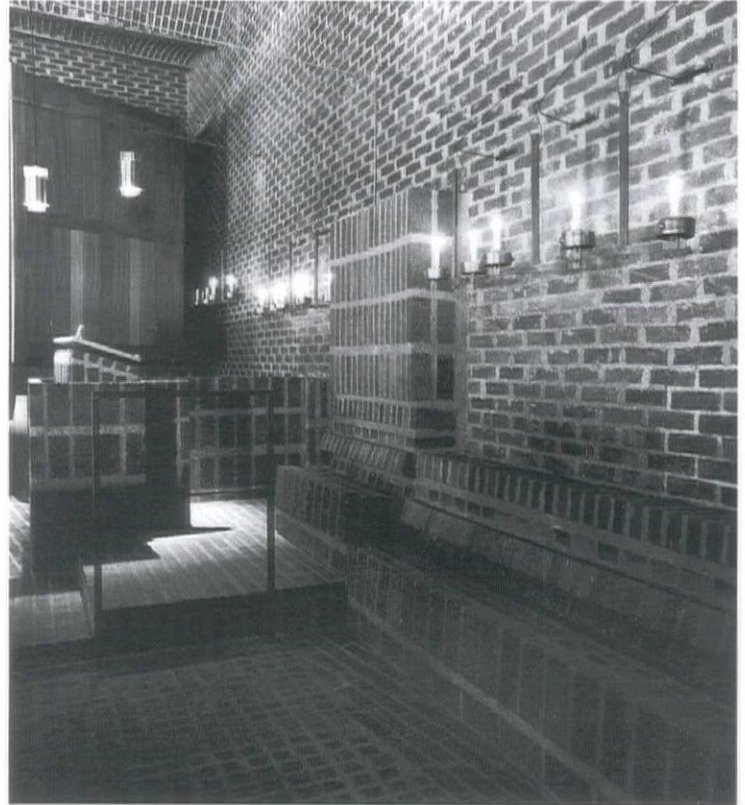
Key for Floor Plan, St. Peter's Church, Klippan :

1. Infants Room
2. Interview Room
3. Interview Room
4. Pastor's Room
5. Playroom
6. Lobby
7. Kitchen
8. Lobby
9. Administration Office
10. Archive
11. Council Chamber
12. Meeting Room
13. Confirmation Classroom
14. Lobby
- 15-16. Toilets
17. Kitchen
18. Lobby
19. Meeting Room
20. Open Fireplace
21. Stage
22. Choir
23. Vestry
24. Sacristy
25. Organ
26. Pulpit
27. Bishop's Throne
28. Priest's Bench
29. Altar
30. Choir
31. Sanctuary
32. Font
33. Waiting Room
34. Wedding Chapel
35. Porch

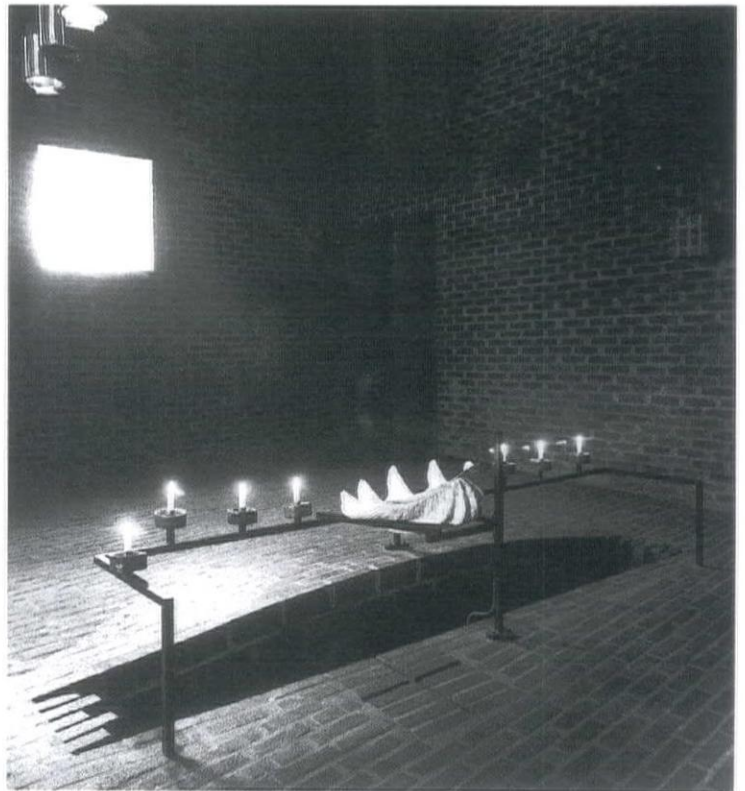
27c



Thus the plan-form of the church itself at Klippan shows the altar surrounded (counter-clockwise) by the priest's seat, pulpit, organ, choir, baptismal font, congregation, and lay-clergy [28-30]. The priest's point of entry is immediately from the sacristy to the north; the congregation have two points of entry (from west and south) directly from outside, and one (from the north) [31] through a protected entry porch to which is attached a small wedding chapel [32]. There is a bell-tower over the sacristy. The other elements of the church center – meeting room [33], communicants' classrooms, parish council [34], children's club and pastor's office – take the form of an enclosing L-shape lying protectively to the east and south against the prevailing wind and forming a communal "street-court" as an extension of the meeting rooms and the children's club. The children's club, in turn, has its own sunken courtyard at the center of this street [35].



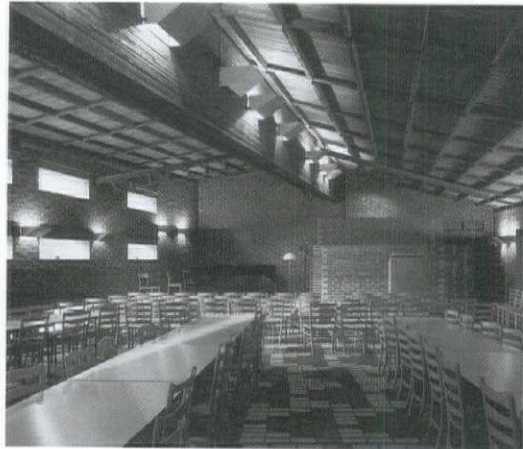
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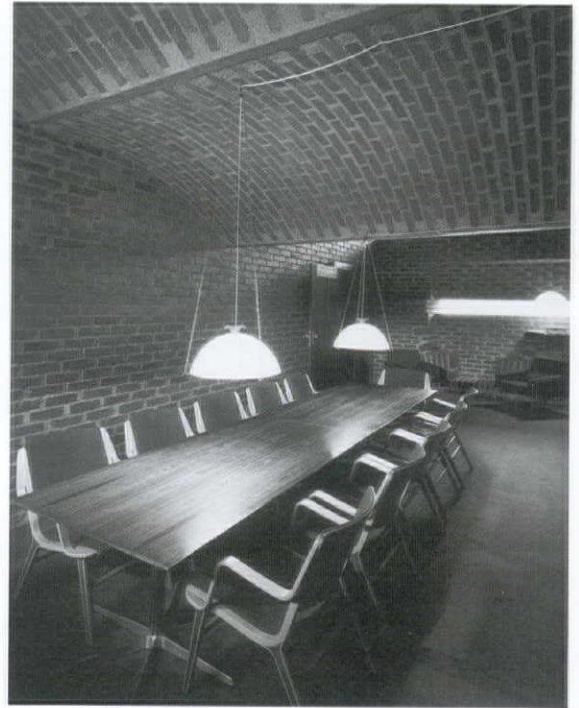
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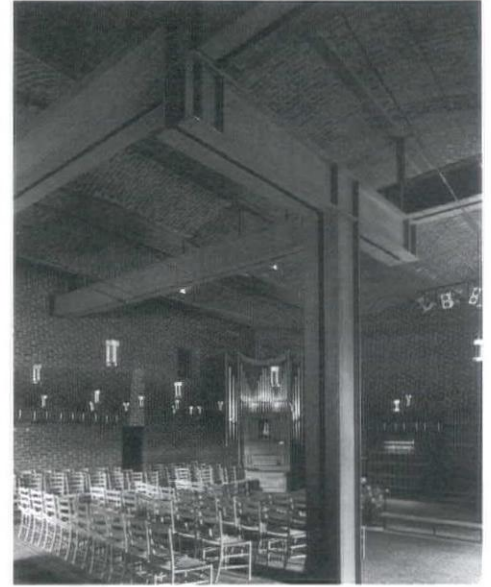


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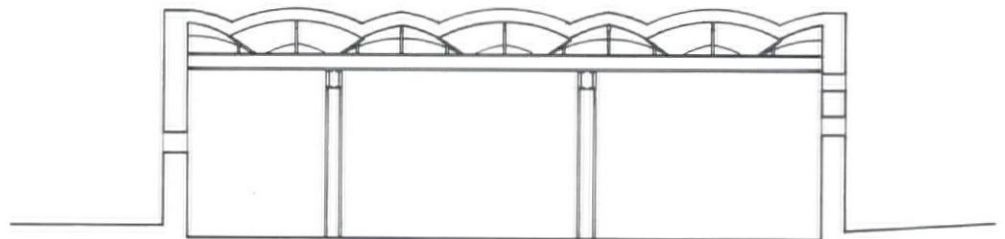
In proposing the square plan-form required by the principle of "Circumstantes," Lewerentz was confronted by the need to reduce the span of his roof members by some form of intermediate support. In this case, as at Skarpnack, the roof elements take the form of vaults. But whereas at Skarpnack the vaults invariably ran laterally to the nave axis, he now had a chance to run them along the main axis towards the altar – albeit that they require some form of intermediate support to reduce the length of the span across the entire church (eighteen meters, or approximately sixty feet). This could not be achieved in the masonry structure used elsewhere without massive invasion of the central zone of the church. Lewerentz was thus led to adopt some form of columnar support. At first he divided his space by a pair of columns [36]; later he proposed a solution which not only reduces the degree of interruption to a minimum but also (as we shall shortly see) imports a symbolic gesture which is as profoundly apt as it is original. A single column supports a short cross beam which in turn supports at each extremity a pair of lateral beams whose outer support lies in the side walls [37].

At this point we have to note that strange instinct by which Lewerentz, apparently concerned only with a dogged working-out of an issue in terms of building construction, at last arrived at a figure pregnant with symbolic meaning. For at one stroke this technical device of column and cross-beam thrusts into the center of

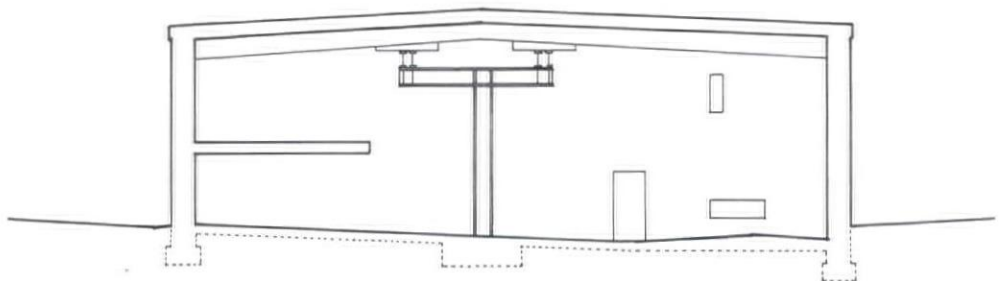
the church a form that irresistibly recalls the central symbol of both the New and the Old Testament – the Tree of Knowledge and the Cross of Redemption [38].



38



36



37

It seems worthwhile therefore to look closer at the building rules that Lewerentz set himself. In the first place we find that the use of brick is subject to three propositions stringently applied in the teeth of common sense compromise. First, Lewerentz proposes to use it for all purposes: wall, floor, vault, roof light, altar, pulpit, seat. Secondly, he will only use the standard, full-size brick: there will be no specially-shaped bricks. Thirdly, no brick is to be cut.⁵ The only way these conditions can be met is by a very free proportioning in the ratio of mortar to brick; to achieve such jointing (often

very large) a very dry mortar mix which included ground slate is employed. The overall effect is of a surface in which the bricks appear to be embedded in a matrix of mortar rather than laid up in bonded course work of conventional joints [32]. This effect brings with it memories of ancient brickwork, Byzantine and Persian, as well as the indigenous vernacular of farm buildings. Heating and ventilation are incorporated in the brickwork such that the cavity walls of the church serve as a plenum acting through a pattern of open perpend joints or through open channels at window sills. The refusal

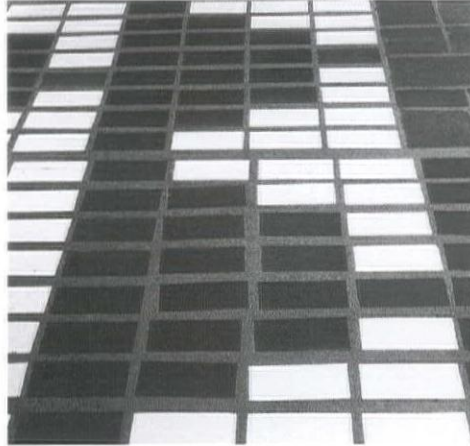
⁵ Lewerentz drew the setting-out of every brick at a scale of 1:20, and then demanded that the bricklayers should use neither plumb-line nor spirit-level.



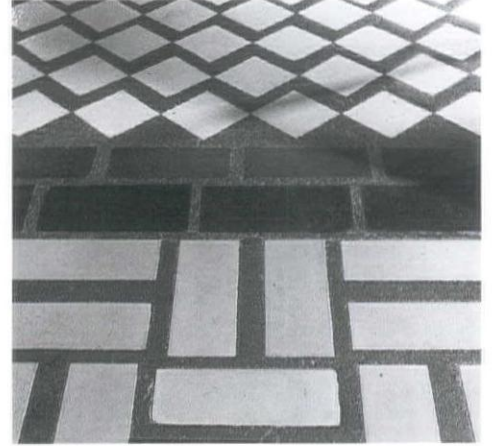
to cut a brick produces some startling results – for instance, in the window openings to offices (in which the cavity between inner and outer leaf is kept open as just such a channel for warm air) the toothwork of the outer leaf stands exposed [39]. A similar serration occurs at the springing of each vault and at each end of the fissure in the floor created by the font [30].

Similarly, floor tiles are never cut, whether they be brick or the wider range of Hoganas tiles of different color and size. Their pattern is frequently eccentric, and width of joint random, but all such work was carried out to the on-the-spot instructions of Lewerentz, who apparently spent three entire days a week on the site [40a-d,41].

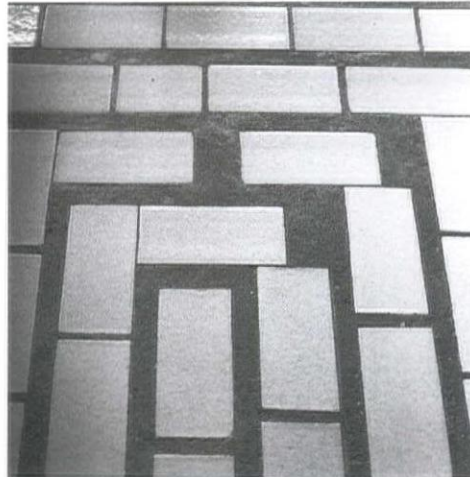
Openings – be they for door or window – are never framed *into*. Closure is effected by applying an element across the opening to the face of the wall. Thus, both door and door-frame, or glazing element, sit on the face of the wall, not in it [42a,b; 43a,b]. Consequently, the surfaces of the wall and its openings are massively complete irrespective of all trim or services.



40a



40b



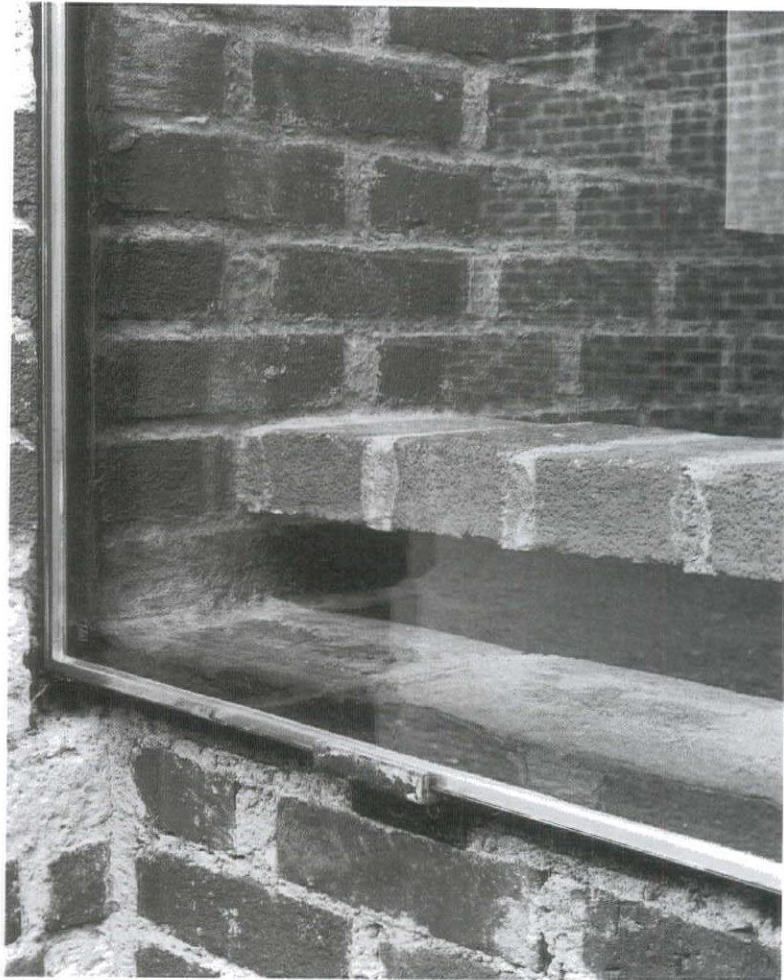
40c



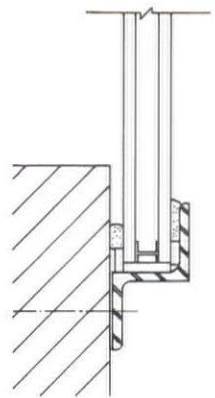
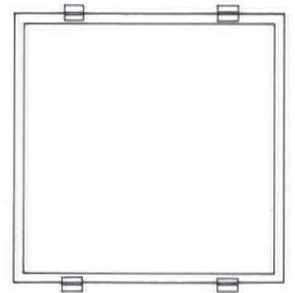
40d



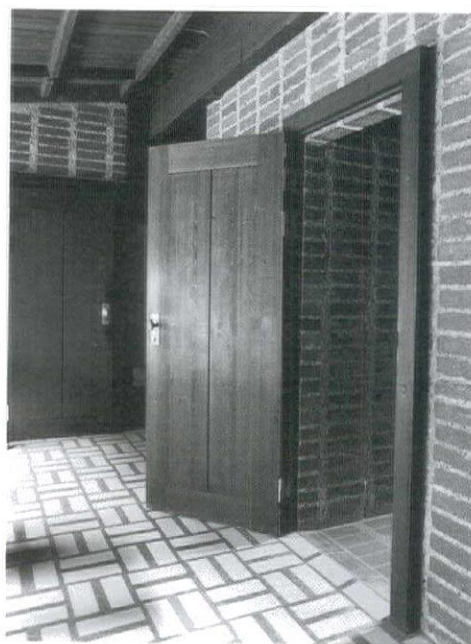
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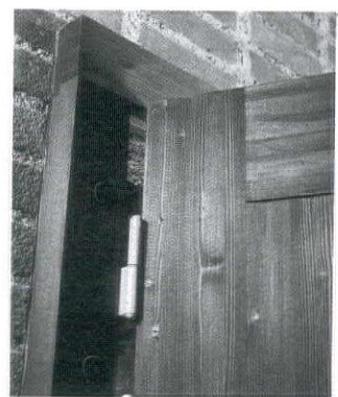
42a



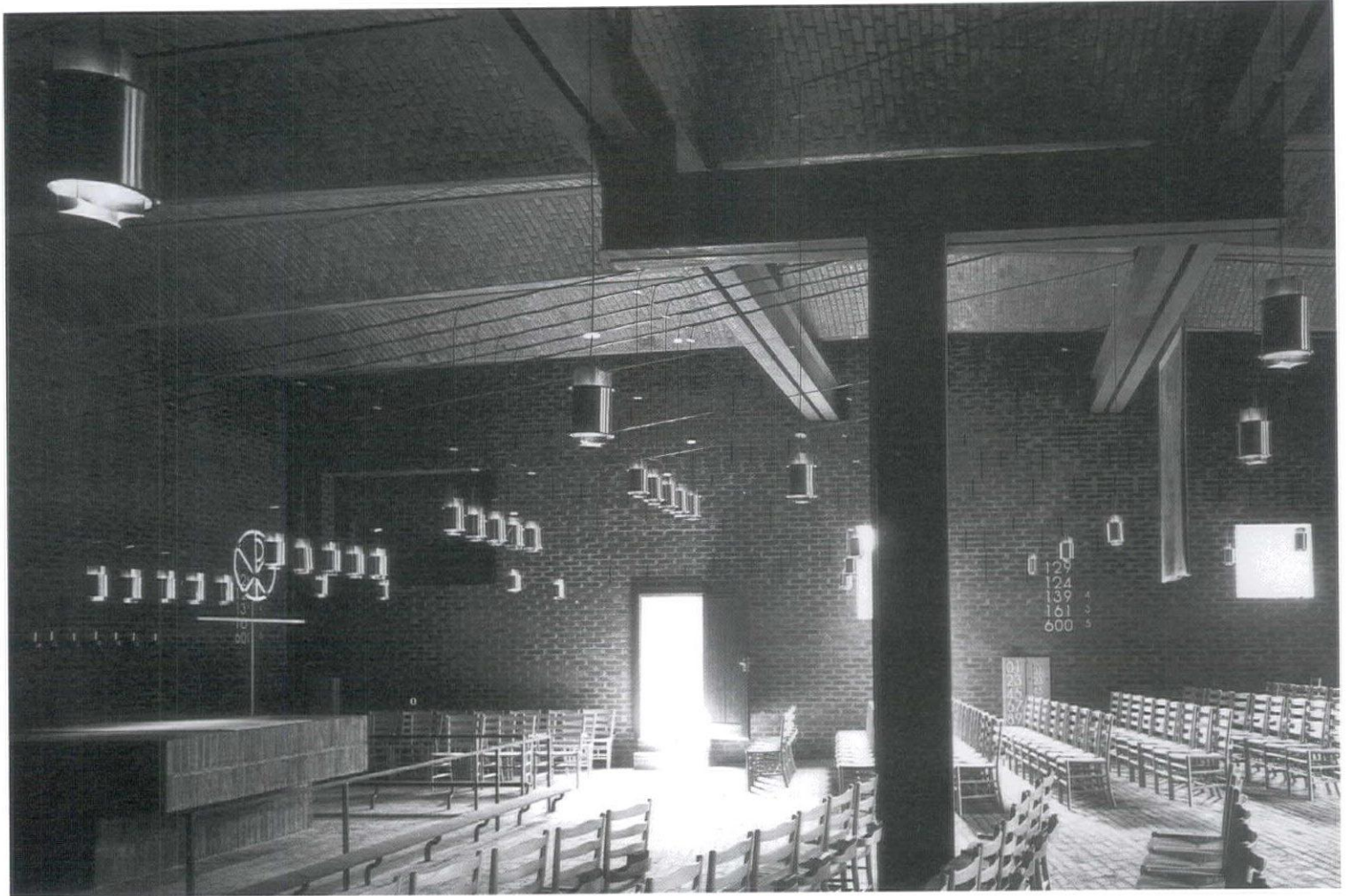
42b



43a



43b



* W. Hamilton Fyfe, editor, *ARISTOTLE'S ART OF POETRY* (London: The Oxford University Press, 1940), tr. Ingram Bywater, p. 62.

As with the Chapel of the Resurrection, we are once again confronted with the unexpected. For instance, nothing could be more straightforward than a brick; but if you write into the application the rules that we have described, then a strange spell begins to take over. And if, having spent half a lifetime designing, manufacturing, and marketing metal windows, an architect decides to have no window-frames or windows but simply to seal clear openings with double-glazed panels clamped to the outside of the brickwork, then it were better that nothing be taken for granted. A square plan seems simple enough; but let the floor as it slopes down to the altar swell into a shallow mound and burst open to reveal a well for the baptismal shell; and let a raw steel column crowned with a cross-beam stand like a crucifix off-center of that space to vie with pulpit and altar as a center of focus, and a certain drama enters in.

The column itself is not what it at first appears to be: split in two from top to bottom, its twin cross-trees – which are not symmetrical – carry at their extremities yet further beams which are also split into pairs [45-47]. Upon these beams stand steel struts to support the metal ribs that support the brick vaults at both springing and

ridge lines alternately [44]. Then again, these ribs to the vaults are neither horizontal (they pitch gently to the “center” of the church) nor do they run parallel but expand and contract as they run from wall to wall [48]. Lewerentz speaks of the vaults as a recall of the ancient symbol of the heavens, but here his treatment of them is strangely moving and insinuates into the mind a closer analogy to the rhythm of breathing – the rise and fall, the interlocking of expansion and contraction. Lewerentz (who was qualified as an engineer) worked closely with the project engineer and himself proposed the use of smaller steel sections, paired, rather than larger single sections so that light could shine through the middle of the structural assembly. To what extent these shifts and discontinuities are brought about for visual reasons or in compensation for the difference in physical performance between steel section and brick vault I do not know; the fact is that a technical requirement is transformed into a mystery and how this transformation is brought about is unfathomable.

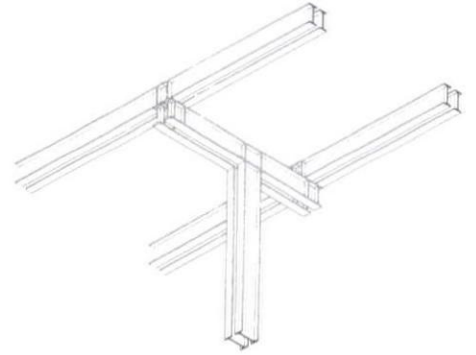
Aristotle, writing in *THE POETICS*, assigns unique significance to the ability to invent metaphor:

*"... the greatest thing by far is to be master of metaphor. It is the one thing that cannot be learnt from others and it is also a sign of genius since a good metaphor implies an intuitive perception of the similarity in dissimilars."*⁶

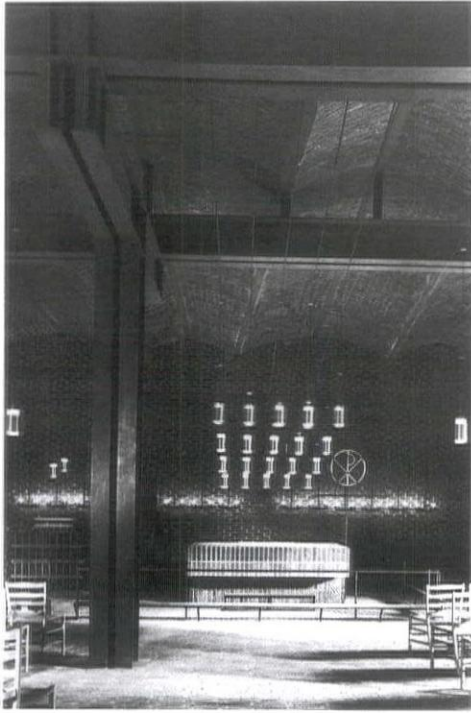
Lewerentz was indeed just such a master of metaphor; we saw it in his handling of the aedicula theme in the Chapel of the Resurrection and we see it all around us in Klippan.



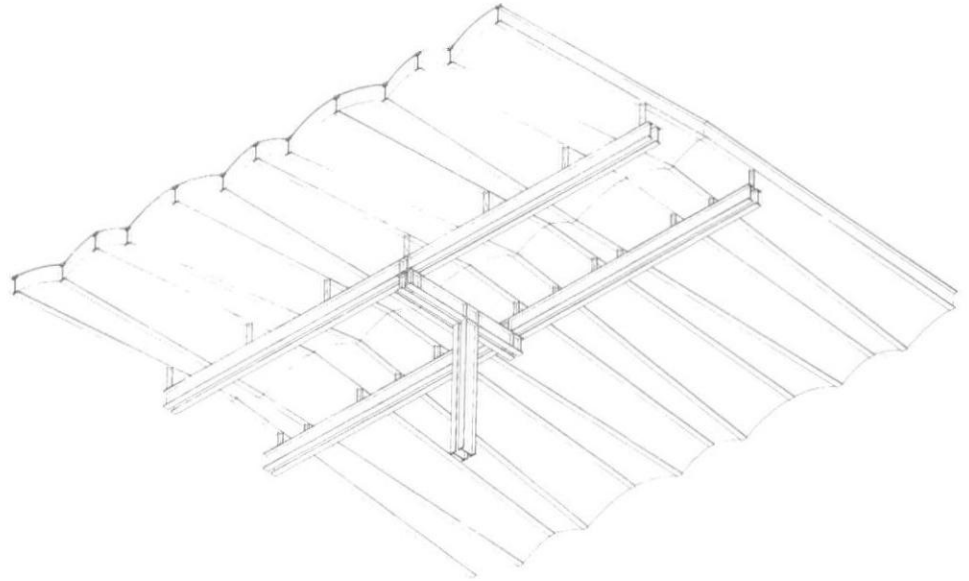
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46



47



48

Lewerentz' handling of light deepens this quality. In an age of "white architecture," of "the magnificent and knowing play of forms in light," Lewerentz invites us into darkness, to be enveloped in that space of darkness that calls upon all of the senses to read its limits and to locate ourselves within it [49]. Four small windows and two thin slots in the roof vault that throw light down into the line of procession between sacristy and altar are the only sources of daylight in the body of the church.

Lewerentz himself said that a low light-level introduces a factor of delay, slowing down the responses at the moment of entering the sanctuary since it takes time for the eye to adapt to the low level of light and to bring into focus the spatial limits and quality of surfaces determining them. He argued that such subdued light is enriching precisely in the degree to which the nature of the space unfolds gently, emerging only in response to exploration. This slow taking-possession of the space – the way in which it gradually becomes yours – in turn becomes entwined with a feeling that you are yourself enveloped in privacy: invited to pray in

solitude. The gentle inclination of the floor from the entrance towards the east wall further induces the experience of being drawn into a presence.

Such space can be activated by the disposition of lights into the focussed spaces of church ritual or it can recede into isolated centers of solitary inward focus. Light is present not so much as a source of illumination as a source to be looked at – living light, candle light.

Finally we notice that in his handling of the facades Lewerentz is cryptic to a fault. The only rhetoric left is the peal of the bells. But this too recalls Byzantine practice: just as the rough brick shed gives way to a dark interior shimmering with oriental blue and gold in the tomb of Galla Placidia so, at Klippan, it is within that the building comes to life. Here we have not only a recollection of Adolf Loos, who "wrung the neck of rhetoric," but more aptly of Le Corbusier, who said of the monastery at La Tourette, the one building that most closely approximates Klippan in its concentration, its passion and its austerity: "... it does not talk. It is on the inside that it lives ... that the essential lies."



Conclusion

We have now covered the ground that demands an answer to the question with which we started: To what end did Lewerentz, the most poetic master of the Classical language of architecture in this century, abandon that language?

As a student of Schinkel, Lewerentz would have been aware of that master's own conviction that the means of architecture would have to be "created anew. It would be a wretched business for architecture . . . if all the necessary elements . . . had been established once and for all in antiquity . . ."⁷ But Lewerentz' concern lay at a much deeper level than the pursuit of novelty.

In a remarkable chapter on Greek architecture in Lisle March Phillips' book *THE WORKS OF MAN*, we read: "Every shed builder who lays a stick on two uprights has mastered the structural principle of a Doric temple: but the Greeks alone have comprehended the inward significance of the act."⁸ In Phillips' appraisal of the unprecedented ends to which the pursuit of optical corrections was carried, he advances the notion that what started out as optical rigour became transformed somehow into an ethical obsession. "Visual perception passes into ethical conception, the two are fused together. We think with the eye and see with the mind . . . A Doric temple is saturated with ideas that were not put into it as ideas at all . . . but by another faculty (i.e. sight) . . . Nothing in this strange art is what it

seems to be . . . and the closer we carry our examination the more the mystery spreads and deepens . . ."⁹

The Doric temple, then, confronts us with a provocative paradox: that which set out to be exclusively the object of sight becomes through the sheer intensity of its pursuit the focus of quite another discipline. This insight into a paradox matches very closely the quality of experience provoked by the buildings of Lewerentz. At a time of "isms," of *l'architecture à thèse*, of buildings required to be no more than demonstrations of some narrow issue, here was an architecture of extraordinary directness, utterly transparent to the functions it was created to serve, uniquely concrete in setting forth the substance and the manner of its making.

In developing the design of Klippan, Lewerentz spoke of two things only: the interpretation of the brief (there was a consultant on liturgical matters, Lars Ridderstedt) and questions of building construction (he and the foreman, Sjöholm, are said to have worked very closely together - often far into the evening planning the next day's work) [49]. But throughout the evolution of the design there were endless alterations and on-site revisions. This arduous search reminds me of a statement by the painter Michael Andrews: "Painting is the most marvelous, elaborate and complete way of making up my mind." At Klippan we become witnesses of the extraordinary process

⁷ Karl Friedrich Schinkel, *TAGEBUCHER BRIEFE GEDANKEN*, ed. Makowski, (1922).

⁸ Lisle March Phillips, *THE WORKS OF MAN* (London: Duckworth Press, 1911), p. 113.

⁹ *Ibid.* p. 118.

by which Lewerentz, at the age of eighty, slowly made up his mind.

This evidence of intense struggle by a mature artist is reminiscent of the contemporary mood in the other arts, of Giacometti and Samuel Beckett wrestling with the "impossibility" of their craft; of disgust at the facile self-indulgence and self-promotion of those who had "never had it so good"; of an elected poverty of means – as much by the young as by the disillusioned.

An eloquent passage in Heidegger's *THE ORIGIN OF THE WORK OF ART* describes how a Greek temple "does not cause the material to disappear but rather causes it to come forth for the very first time."¹⁰ Just so in Klippan: brick was never more brick, steel more steel, glass more glass, wood more wood. In that attention to the essential nature of materials there lies a quality of respect that has its own morality. Ethics and aesthetics become one. It is not surprising therefore that the language of Classical forms was no longer available to Lewerentz. For that language was born out of an order of construction, transposed from timber and finding its final and essential refinement from the proportioning and fashioning intrinsic to stone. When Lewerentz built the Chapel of the Resurrection, the stonework of the portico was cut from the solid Ignaberga limestone. At that time in Sweden such a technology was in no way abnormal; it was not so in 1960. The sort of equivocation that satisfied a Lutyens

– rolled steel columns encased in masonry "orders" – was beneath contempt for a man for whom the spirit of Greek architecture was far closer to his heart than the law.

"Greece and poverty have always been bedfellows," wrote Herodotus. It is perhaps both chastening and reassuring to recall that the very foundation of Western culture is grounded upon something that is as simple and austere as it is difficult: the spirit that created the original and imperative ethos of the Doric out of the technology of its day. At a time when the fashionable madmen seek to revive the notion of "ritual" in order to give "meaning" to the pursuit of aesthetics and seek to reinstate the "Classical Language" in order to indulge in the shifts of rhetoric, it is salutary to do honor to the opposite mode, the true and humble process by which a new poetry was hammered out of the wrestle with necessity – in this case a profound reinterpretation of a church's sacraments. It should be equally salutary to recognize that this is the true order of things, the only way it has ever been with the creation of real architecture.

¹⁰ Martin Heidegger, *POETRY, LANGUAGE, THOUGHT* (New York: Harper and Row, 1971), p. 46.



56



The Church at Mogno-Fusio

Mario Botta

As a first principle, I consider the work of the architect to be the product of a *metier*. The *metier* is a distinct institution of man, distinct from the world of professionalism that has come to dominate the creative endeavors of our time. Today, most of man's activities have been embraced by the professions. Because of their nature, the professions are inherently limited in the way they manifest man's ambition. The professional provides solutions to specific demands, and is therefore engaged in the provision of a service. The engineer is a professional concerned with the resolution of certain technical questions posed to him by a client. The biologist is a professional engaged in the development of very specific procedures and methods defined by the world of need. In this sense, the profession is highly standardized within the prevailing system of production. It is a direct consequence to a technical fact. In a certain way, we could say that through the profession, specific solutions are requested.

The *metier*, on the other hand, constitutes an interpretation of the necessities and desires that are present within a community. As a member of this *metier*, one addresses not only a technical but a moral responsibility. The *metier* carries within its processes not only the necessary technical data to arrive at a solution, but the historical conscience of its activity as well. The *metier* is tied to a knowledge which is inherited; it has its own atavistic depth.

The professional is not prepared to find out what happened before him or what will happen after him. The *metier*, on the other hand, involves a knowledge that goes beyond the executor. There is a sensitivity in the *metier* through which one may face the problems of our age. The operational technique, however, is something different, something quite deep, a technique that man carries as an inheritance. The *metier* constitutes a discipline which offers conditions fundamentally problematic with regard to modern life. In effect, the *metier* offers more problems than solutions.

Good architecture is an architecture that interrogates us; that is, it evokes a problematic of modern life. From this point of view, I consider architecture as an instrument to resist the banalization of the modern. Architecture, by nature, offers something beyond man's life. It charges itself with values that existed before man. I believe that architecture is one of the few

human activities that can be witness to the great past while retaining the capacity to become the barometer of the sensitivity of its own era. It becomes witness to the desires of its own time. I believe that all creative activities have as their objective the recuperation of the great past. As a resistance to today's banality and in order to be witness to tomorrow, we must, paradoxically, pursue the atavic values of the past; the values of memory and the archetypal structures that architecture carries within itself. Because of this, I believe that architecture should be easily recognized. Architecture cannot be anything that responds to the solely ephemeral, or to the modern, or to the contingent. The architecture I speak of carries within itself the idea of man's habitation.

I use this introduction to link the objectives of the *metier* to the character and ambitions of my studio. I see myself as an artisan. My atelier is one of artisans. An atelier of artisans means that at each problem you start all over again. There are no recipes or systems or mechanisms available to you to solve these problems. Each time you begin you have the magic and mystery of a white sheet of a paper on the desk and a new problem to attack.

My attitude is that knowledge of the site is essential to draw even the first line. I believe that the critical reading of the site is the first design gesture. To understand a certain condition of site means that it is taken in, or absorbed, so as later to be transformed. To make architecture means to transform reality; it requires that one find a new balance or equilibrium at this place of intended construction. One must continually question the site as to its potential for transformation. I believe that every site already contains the latency of its own transformation. Landscape is not a static thing; it is constantly undergoing transformation both perceptually and temporally such that it contains the potential desire to become something different. It remains the architect's responsibility to interrogate this potential.

I have discovered that to return to the site during construction represents a confrontation with this responsibility. The site always offers unmerciful verifications of the project. When the solution is correct, the site

will be ten times better than anticipated; when the solution is poor, the site is fifty times worse. In this way, the site offers awesome trials; it does not forgive. The site suggests possibilities that could not have been seen on paper. The reality of light, sun, or any actual condition will be brought to the surface, demanding attention through some slight modification or correction. But the site will also show, without pity, those aspects of the project that remain fundamentally incorrect, aspects that speak of its essential nature as architecture. Being as yet free of the specificity that its inhabitation will inevitably bring, it attests to some other presence, some other manifestation. This presence may not be seen again until the building is abandoned. In this way, the site carries within itself the idea of its own ruin. It does not yet contain all of the small contingencies of use tied to a specific time. It is architecture in its being born and in its dying. You are, at that moment, confronted with the essence of what you have done, with only very limited means to affect it. This is a moment of coming to terms with the work.

In this way, the site is of a very different nature than the program in shaping the reality of a project. I begin with the premise that the program must always be interpreted, because the program, *per se*, remains something abstract, something ideological. It does not truly exist. The program is transitory, and therefore cannot be inextricably tied to the building's nature, to its physical presence or to its material. The program is only a conceptual diagram of the functioning of the building. I consider the program to be only a pretext that links the building to the necessities of its life at a specific time. But the architect must transform these pretexts into the objectives that he has prefigured. The architect must provide the program with a configuration – a space, a light, a matter – to make concrete its abstract nature.

There is a very simple check of this issue. Instead of executing our work as intended – instead of seeing our work through as *building* – we could, alternatively, make only full-scale models of these constructions. Such constructions might possess every aspect of the diagram, every *conceptual* aspect of the program as it has been defined by need. These models, however, would never be architecture. They would never confront material or light or the site of their containment. They would remain solely in the realm of the abstract.

Let me speak of the Church at Mogno-Fusio.

It is very meaningful, the process by which this project has been born. Last year, a very slow avalanche destroyed this seventeenth century church - the vast and central structure of this particular village - along with five or six nearby houses. This represents a very natural fact that, in the history of these mountains, has happened many times before. One reads of such events in the literature of the mountains; we hear of them in the stories and in the histories of many such villages. Nevertheless, this event affected me as I could not have predicted. When I was told of the destruction of the church - of the descending mass of snow that finally caused the bells of the church to ring for the last time, slowly erasing the work of man - I felt something new. My feeling was this: Even as a man of the twentieth century, I am witness to an extraordinary event. A small manifestation of nature has cancelled out the work of man. This has happened not in history, not in literature, not in a pre-industrial nineteenth century, but today, when we believe that with advanced technology we can control the organizational capacity of the world. This is not something that has happened as the pioneers struggled in their conquest of the mountains. It has happened as we have helplessly watched it on television. This suggests to me that the struggle of man against the mountain remains constant. We cannot suffer any delusion that because of television there may no longer be avalanches. This destruction has occurred because nature shows an extraordinary violence towards everything made by man.

A few months after the avalanche, the inhabitants of this village began to clear out the rubble, and immediately set to work rebuilding their houses. At one point I was asked to rebuild the church. I accepted with great enthusiasm, despite my belief that these people did not really have a need for such a church. The idea of the church has changed very radically in the life of this village. At this point in history it may be captured and expressed through many means other than architecture. But these men could not accept that nature would want to sweep away their fathers' work. They would not allow nature to erase the sign of an atavic work. They have asked me to

bear witness to future generations that a church has existed here. I am interested in this because here the idea of building re-proposes the concept of the atavic struggle between man and nature. This is the deepest and most religious meaning of the rebuilding of the church. I do not know whether these people believe in God, but it is clear they believe in man. This is enough to move me for their cause, to participate in this necessity to preserve the built space against the will of nature.

This is the message I would like to communicate through this new architecture: the will of man to resist in time, to bear witness to what existed before, to build for an eternity. Between the need for infinity and the awareness of one's own limitations lies the space where the architect operates.

With this understanding, I felt that the church must be placed against the moment through its own gravity. It must possess a weight sufficient to resist the banalization of the moment, a density sufficient to absorb the atavic nature of its rebuilding. It must appeal to this weight in its struggle against the mountain. I felt, initially, that to express effectively this concept required the use of only a single material. I could not imagine such a construction in composite terms because any such construction composed of many materials is, by nature, weak. I chose a stone – a local stone that one sees in the mountains around this village – with the expectation that with this one material we could do everything: the foundation, the floors, the walls, the buttressing arches, the door. Such an appropriation of stone suggested to me another aspect of this meeting of human intention and the will of the land.

The space of the church is defined by an ellipse placed along the axis of the old church, incised by a rectangular volume set entirely within. The ellipse has two centers, representing the signs of man's finding roots on earth. I gave strength to the thickness found between the inside and outside wall, excavating that thickness in order to obtain the secondary spaces necessary to the church. There is nothing on its periphery except a very small piazza. The entire form is conceived so as to offer the least resistance to the forces of the mountain.

The ellipse has been angularly cut in section so that a perfect circle is formed at its terminus. The will of the church, then, is to transform two *terrestrial* points of geometric construction into a single *celestial* point. By this transformation we obtain something that cannot truly be considered either a facade or a roof, but solely an opening toward the sky. There are two huge buttressing arches that define the central span and provide support for an enclosing structure I will call the roof.

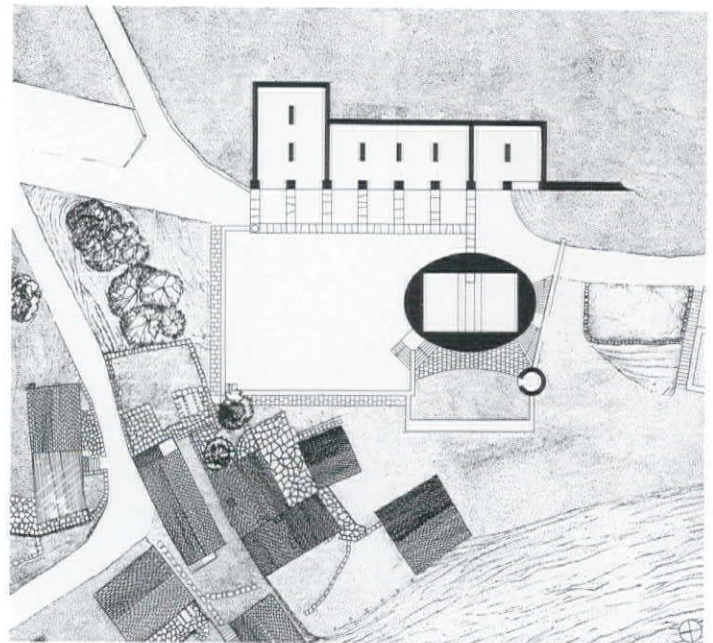
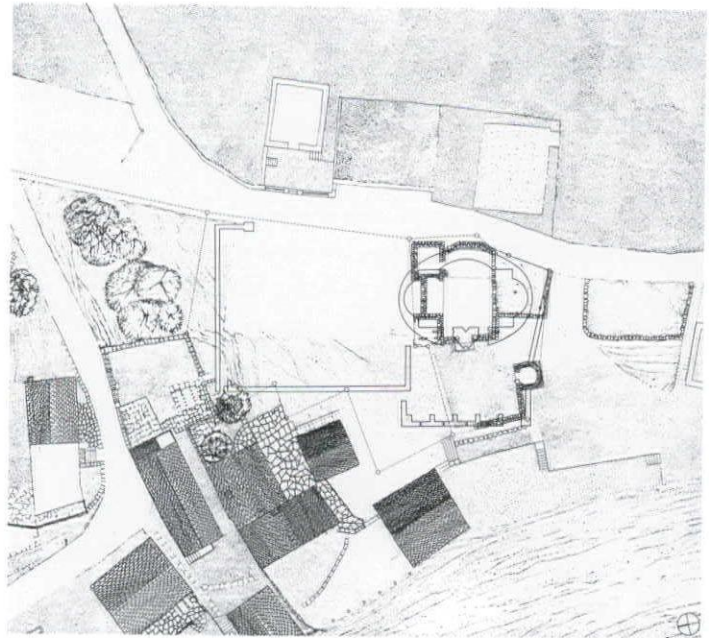
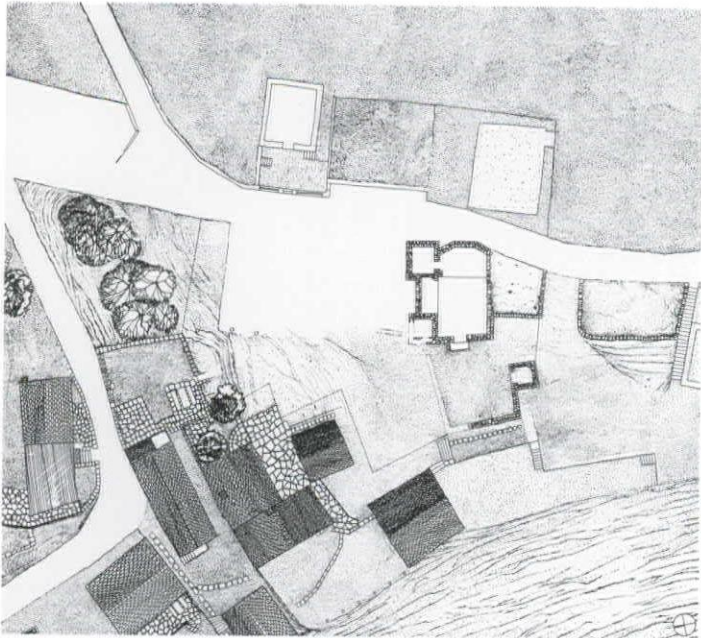
I worked very hard on this roof, thinking for a long time that it must be of stone. Eventually I understood that the roof must be a structure of our own time, since the true aspiration of this church is to be without a roof. The roof is then the ephemeral element that may change with time. Again, this is a link to the medieval church destroyed in the avalanche. We know that such medieval churches had many roofs throughout the centuries they remained in use, being rebuilt periodically as was required by their condition. In this way, the roof becomes the element that may point to different times in history, while the walls, the plan, and the spatial structure aspire to an eternity. Without the roof, the building is reduced to a ruin, which is the condition by which it was born. This convinced me to make the roof of this church entirely of glass – fully detached from the masonry structure below – as an element that is capable of being replaced in future centuries.

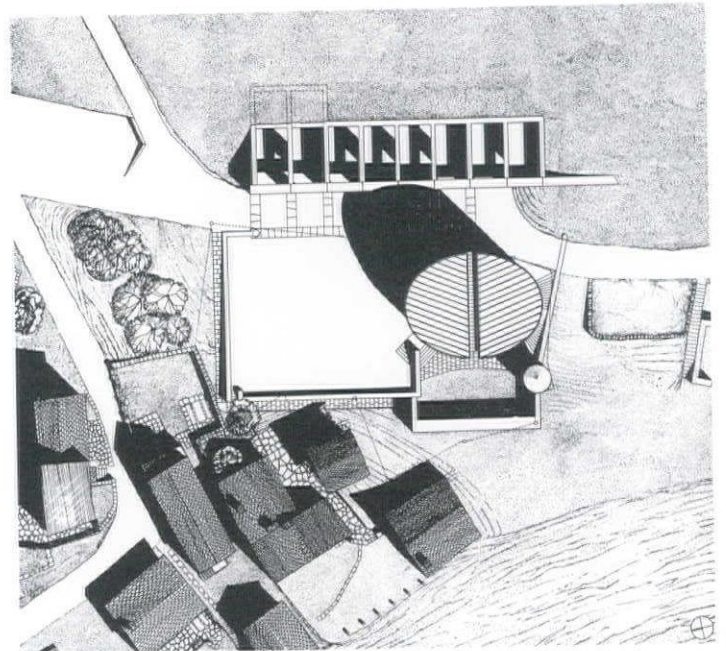
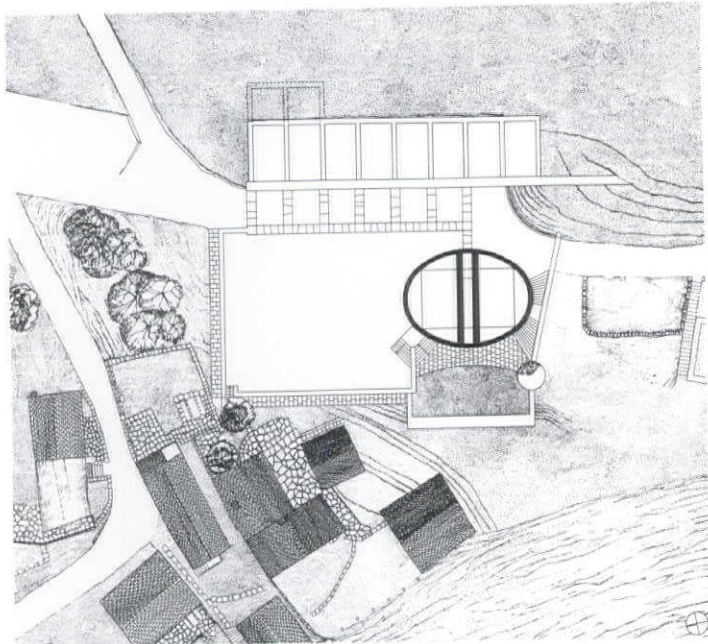
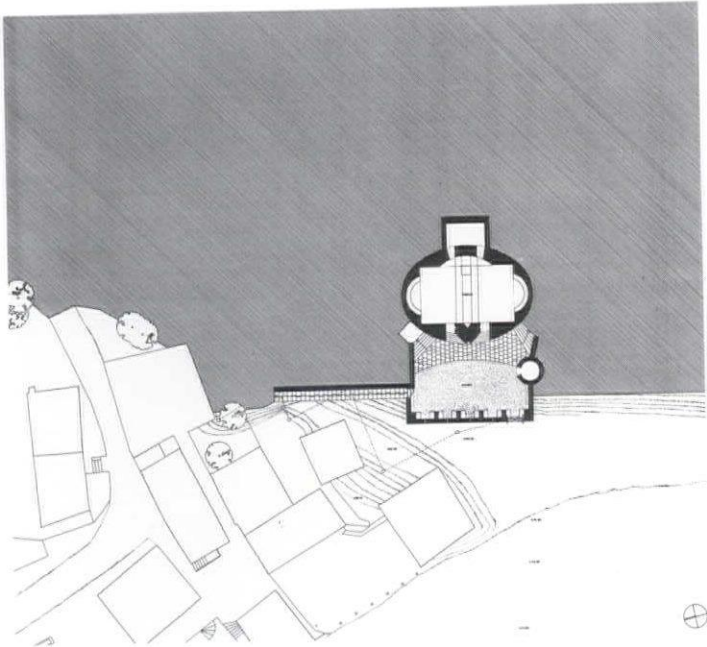
These are the elements and materials of the church. They are intentionally few, so as to make explicit the intensity and conviction of their use. They are not asked to represent every ambition, every circumstance, every moment in the life of the church and its congregation, but simply to manifest the will of an atavic work to survive.

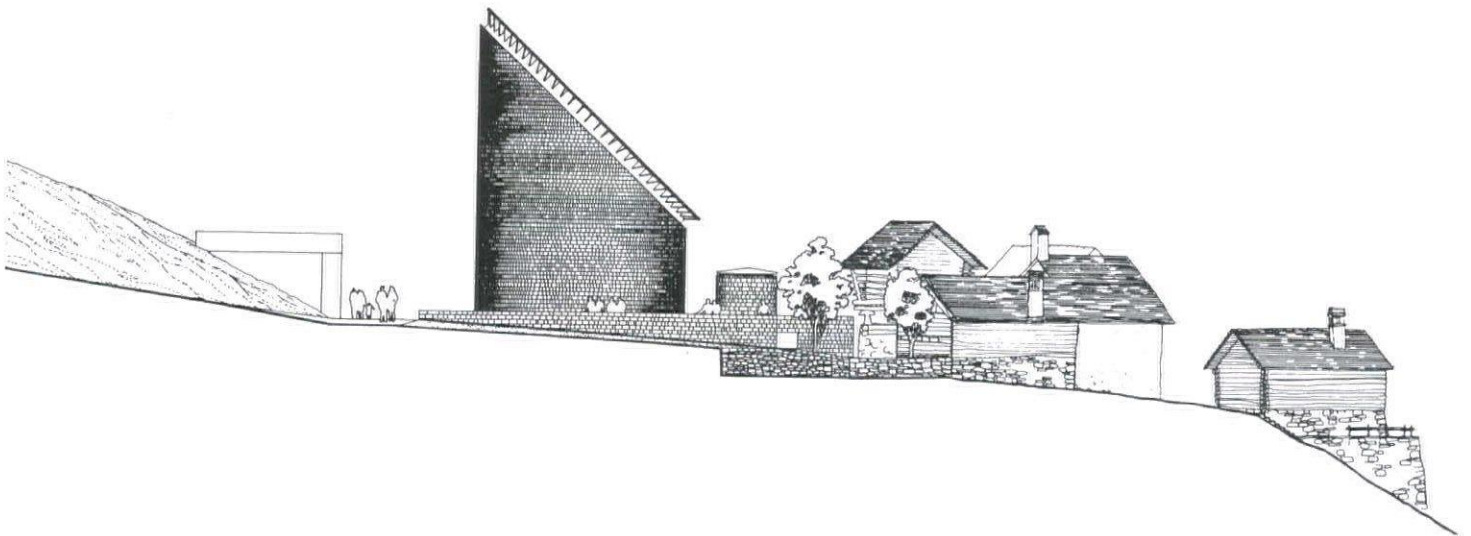
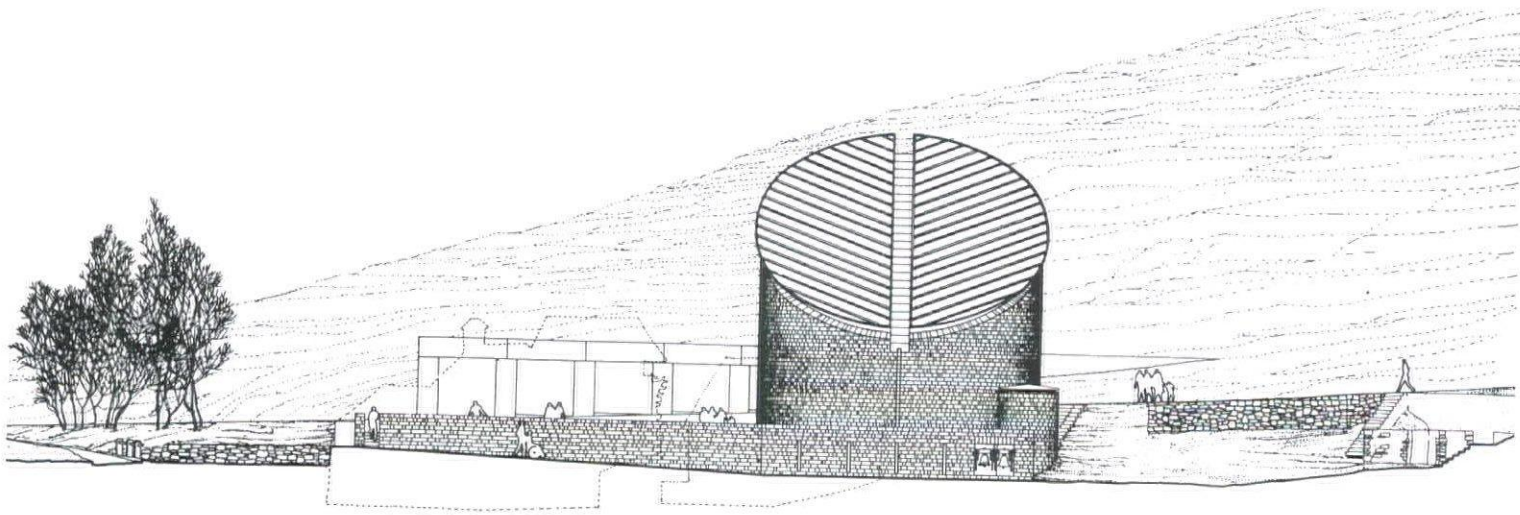
Within the complex of this village the church will be read as a large structure confronting the trees and the houses around it as a huge signal. I hope and anticipate that in the year 2000 – when all built work will be consigned to ephemerality and more and more open to consumption – there will be in this church a form of resistance, a force in the opposite direction, aspiring to be for an eternity. This is the program for the church. You can understand how its spiritual and religious meaning becomes a sign in itself.

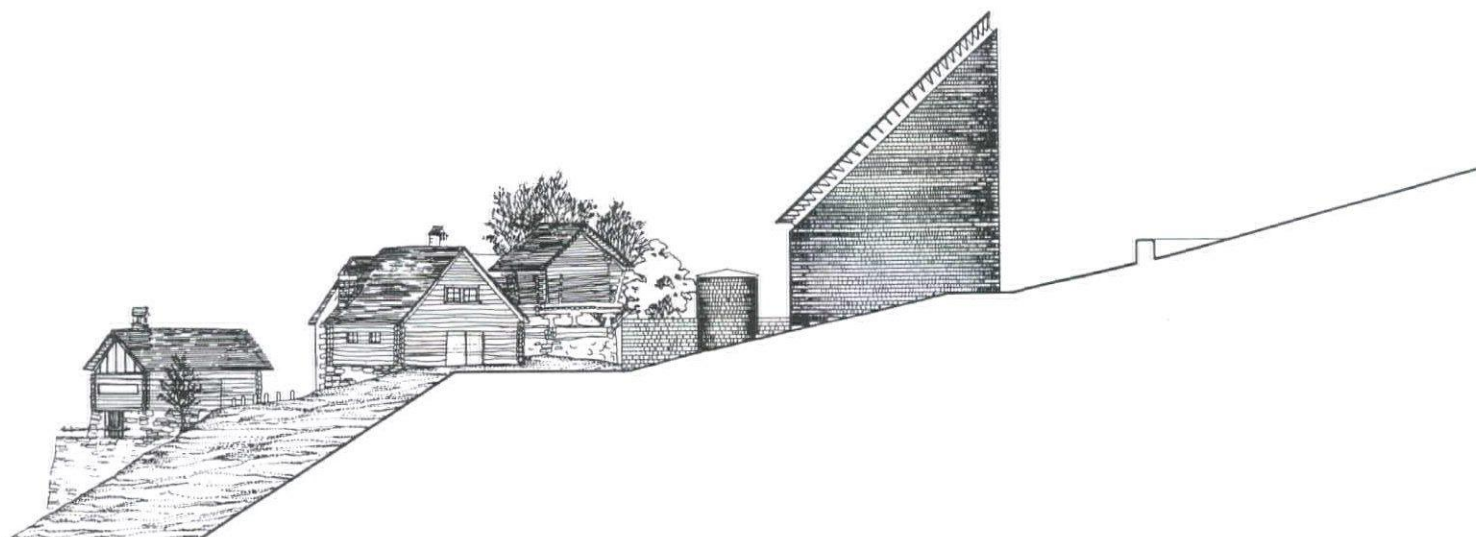
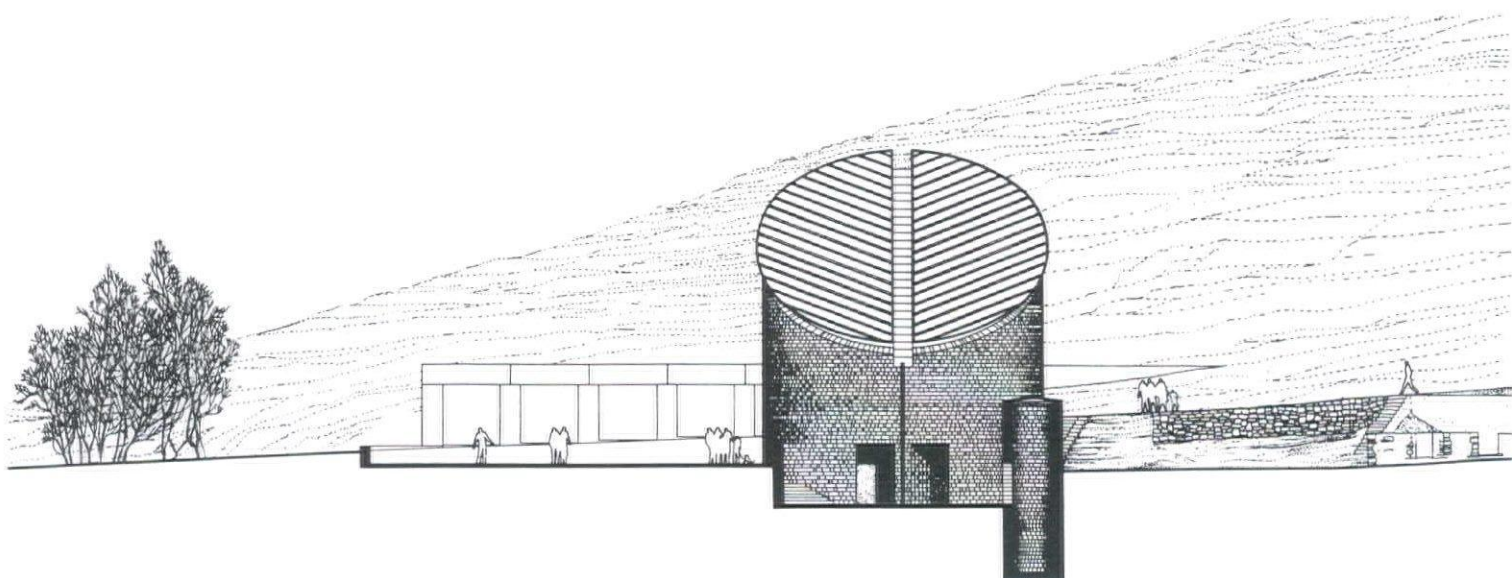
Today the architect is a citizen of the world. There are no geographical boundaries capable of containing the contradictions of our time. I believe that the architect must feel the problems of the world, must elect to take charge of all that confronts this world. I confess to feeling responsible for even the conflicts I can do nothing about. This is the condition of today's living, where there are no longer geographical, ethnical, or historical entities of sufficient isolation to remain closed within themselves. We live in a time where every man is responsible for the condition of our world. I am equally moved to hear of violence and suffering in the third world as I am to learn of the catastrophe at Chernobyl. It does not concern me that in the face of today's mundanity I will appear such a moralist. We are at the point where we either work for man or we work against man. I believe that architecture is not an aesthetic fact, but an ethical one.

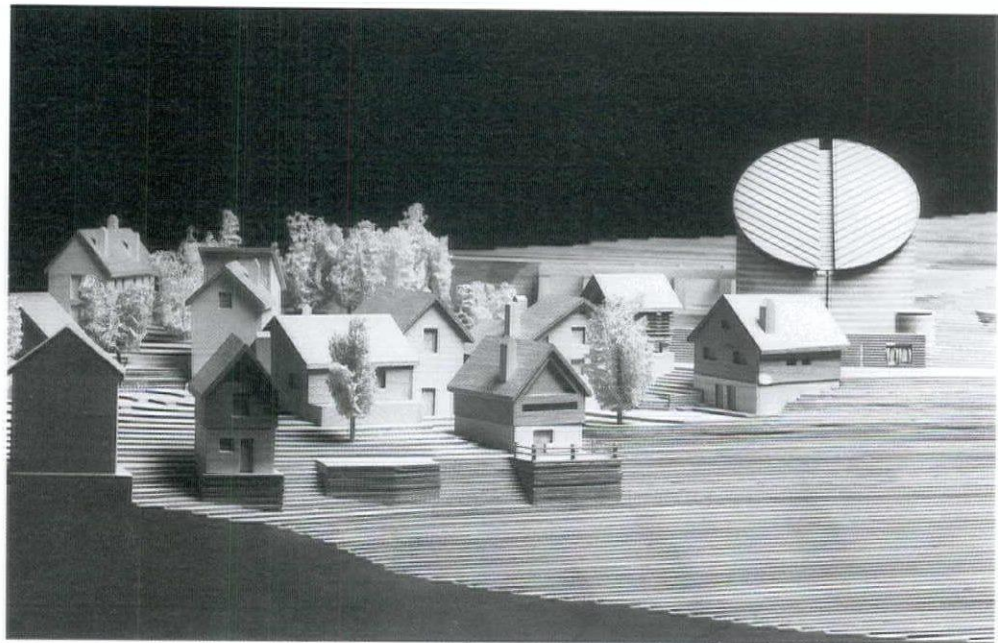
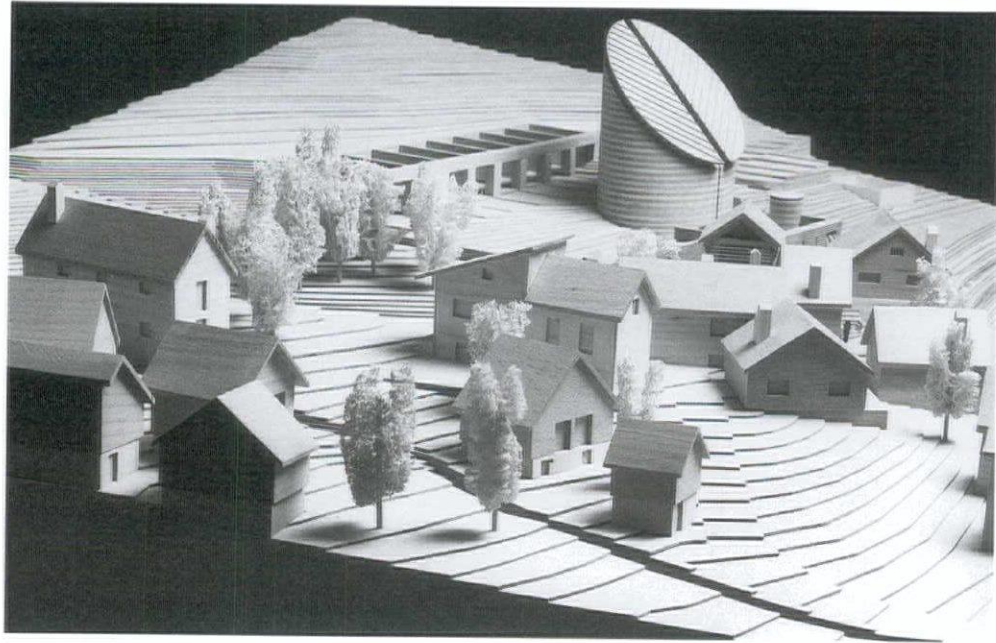
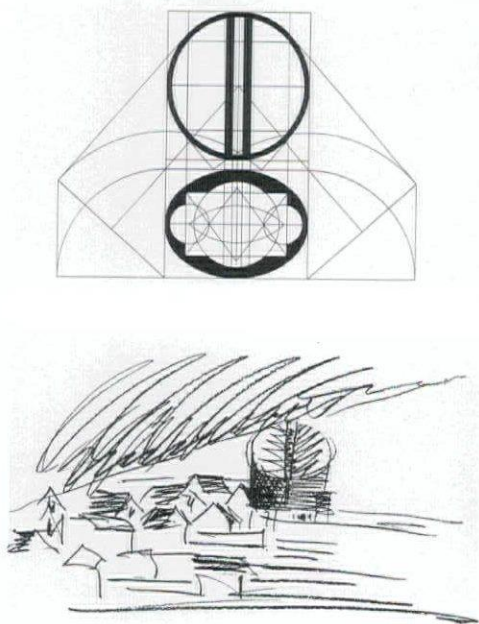


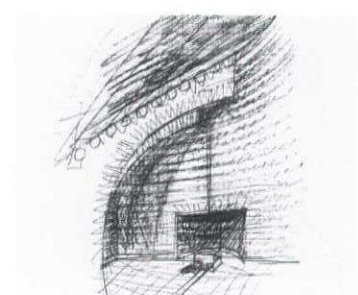
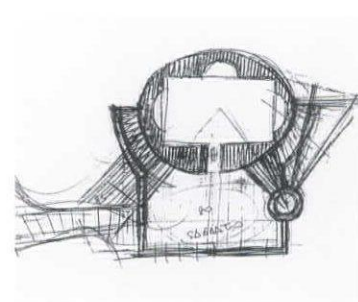
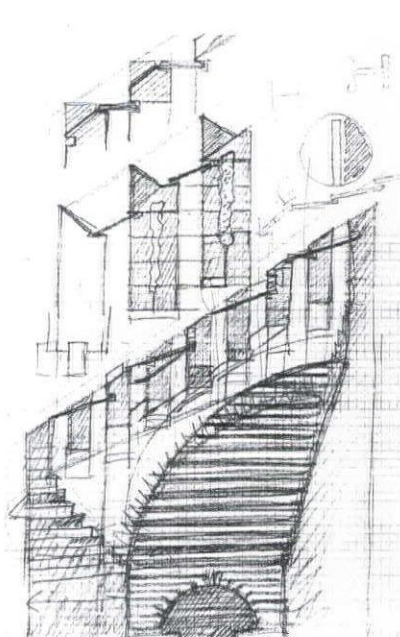
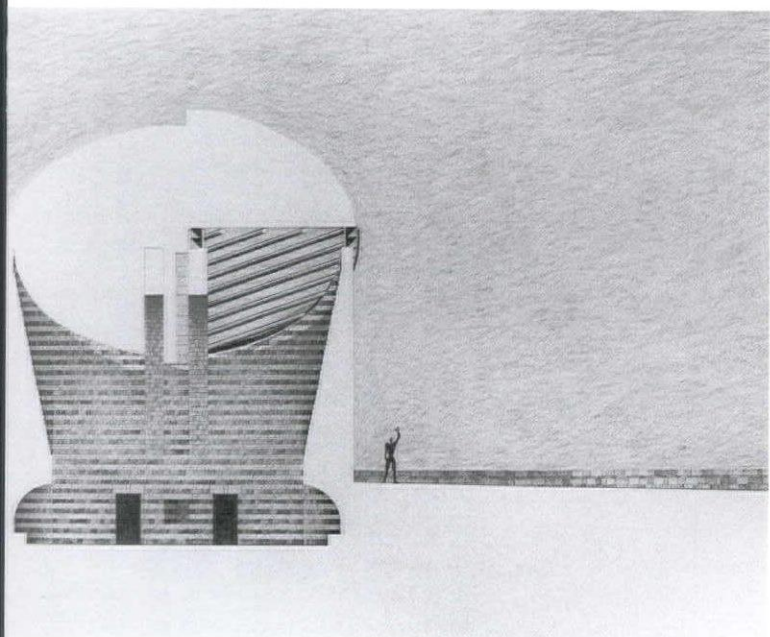
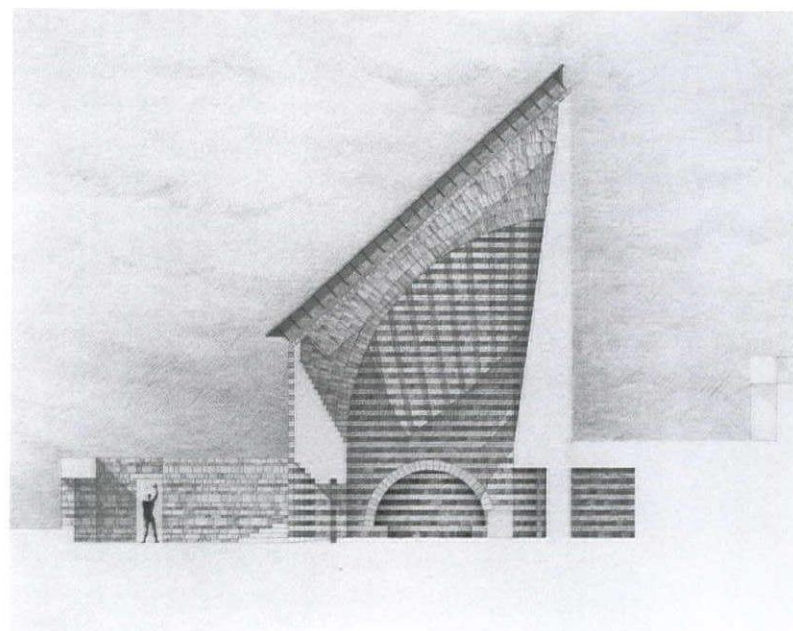
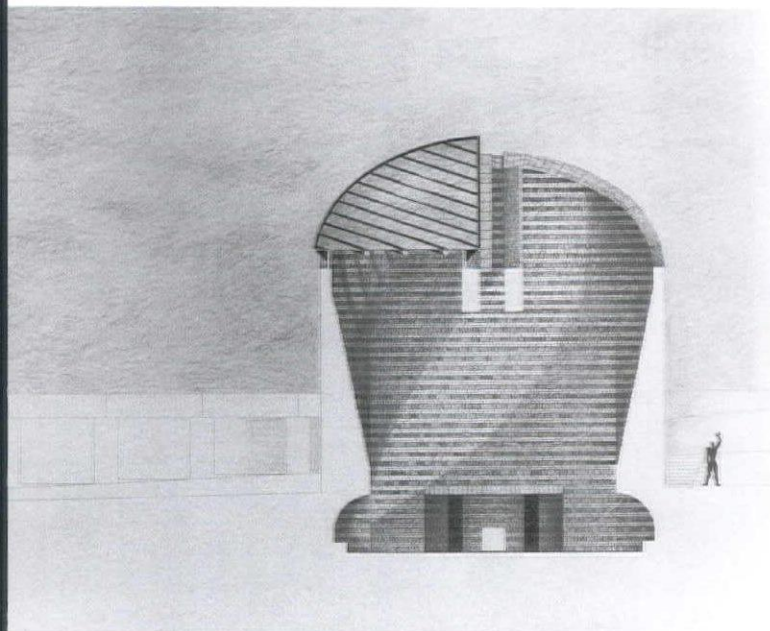












Plastic

Roland Barthes

Despite having names of Greek shepherds (Polystyrene, Polyvinyl, Polyethylene), plastic, the products of which have just been gathered in an exhibition, is in essence the stuff of alchemy. At the entrance of the stand, the public waits in a long queue in order to witness the accomplishment of the magical operation par excellence: the transmutation of matter. An ideally-shaped machine, tubulated and oblong (a shape well suited to suggest the secret of an itinerary) effortlessly draws, out of a heap of greenish crystals, shiny and fluted dressing-room tidies. At one end, raw, telluric matter, at the other, the finished, human object; and between these two extremes, nothing; nothing but a transit, hardly watched over by an attendant in a cloth cap, half-god, half-robot.

So, more than a substance, plastic is the very idea of its infinite transformation; as its everyday name indicates, it is ubiquity made visible. And it is this, in fact, which makes it a miraculous substance: a miracle is always a sudden transformation of nature. Plastic remains impregnated throughout with this wonder: it is less a thing than the trace of a movement.

And as the movement here is almost infinite, transforming the original crystals into a multitude of more and more startling objects, plastic is, all told, a spectacle to be deciphered: the very spectacle of its end-products. At the sight of each terminal form (suitcase, brush, car-body, toy, fabric, tube, basin or paper), the mind does not cease from considering the original matter as an enigma. This is because the quick-change artistry of plastic is absolute: it can become buckets as well as jewels. Hence a perpetual amazement, the reverie of man at the sight of the proliferating forms of matter, and the connections he detects between the singular of the origin and the plural of the effects. And this amazement is a pleasurable one, since the scope of the transformations gives man the measure of his power, and since the very itinerary of plastic gives him the euphoria of a prestigious free-wheeling through Nature.

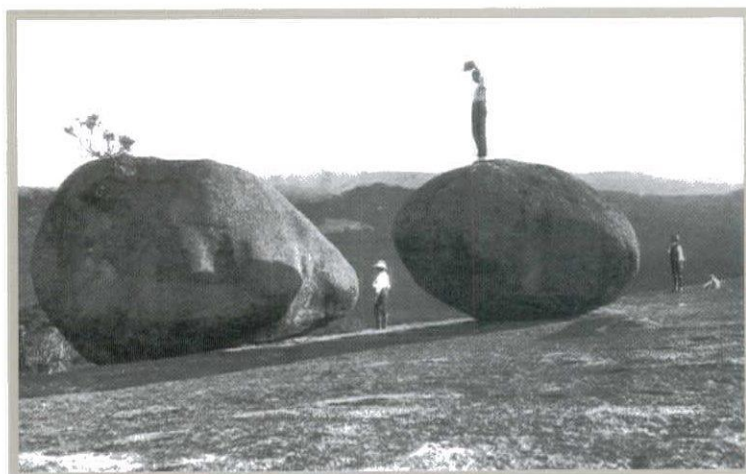
But the price to be paid for this success is that plastic, sublimated as movement, hardly exists as substance. Its reality is a negative one: neither hard nor deep, it must be content with a "substantial" attribute which

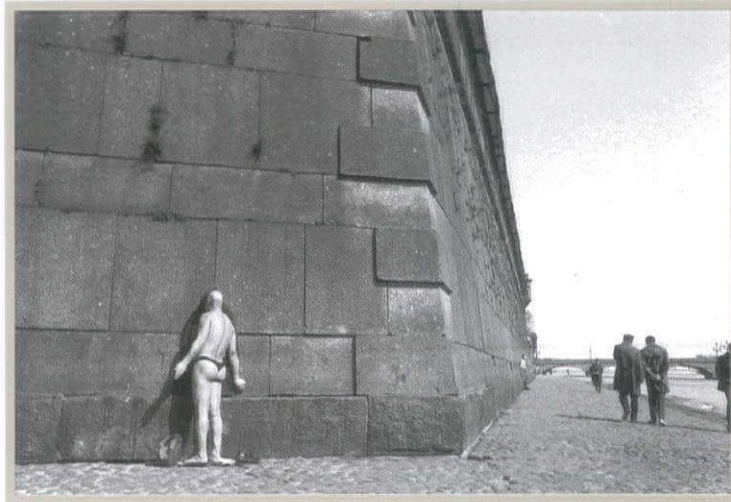
is neutral in spite of its utilitarian advantages: *resistance*, a state which merely means an absence of yielding. In the hierarchy of the major poetic substances, it figures as a disgraced material, lost between the effusiveness of rubber and the flat hardness of metal; it embodies none of the genuine produce of the mineral world: foam, fibres, strata. It is a "shaped" substance: whatever its final state, plastic keeps a flocculent appearance, something opaque, creamy and curdled, something powerless ever to achieve the triumphant smoothness of Nature. But what best reveals it for what it is is the sound it gives, at once hollow and flat; its noise is its undoing, as are its colors, for it seems capable of retaining only the most chemical-looking ones. Of yellow, red, and green, it keeps only the aggressive quality, and uses them as mere names, being able to display only concepts of colors.

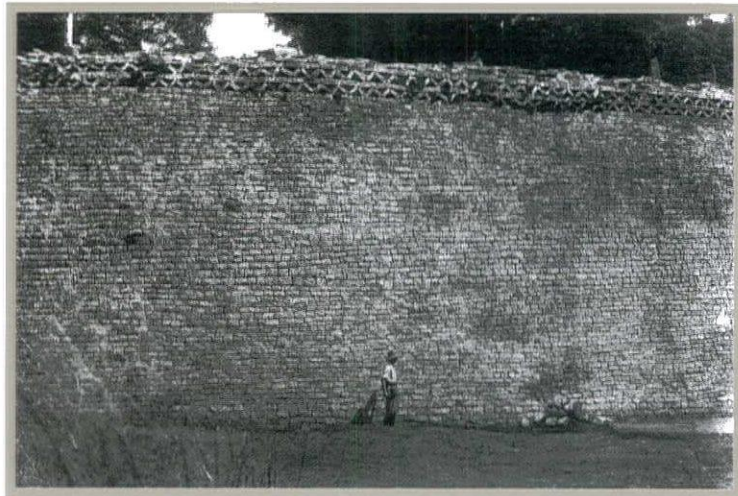
The fashion for plastic highlights an evolution in the myth of "imitation" materials. It is well known that their use is historically bourgeois in origin (the first vestimentary postiches date back to the rise of capitalism). But until now imitation materials have always indicated pretension, they belonged to the world of appearances, not to that of actual use; they aimed at reproducing cheaply the rarest substances, diamonds, silk, feathers, furs, silver, all the luxurious brilliance of the world. Plastic has climbed down, it is a household material. It is the first magical substance which consents to be prosaic. But it is precisely because this prosaic character is a triumphant reason for its existence: for the first time, artifice aims at something common, not rare. And as an immediate consequence, the age-old function of nature is modified: it is no longer the Idea, the pure Substance to be regained or imitated: an artificial Matter, more bountiful than all the natural deposits, is about to replace her, and to determine the very invention of forms. A luxurious object is still of this earth, it still recalls, albeit in a precious mode, its mineral or animal origin, the natural theme of which it is but one actualization. Plastic is wholly swallowed up in the fact of being used: ultimately, objects will be invented for the sole pleasure of using them. The hierarchy of substances is abolished: a single one replaces them all: the world *can* be plasticized, and even life itself since, we are told, they are beginning to make plastic aortas.

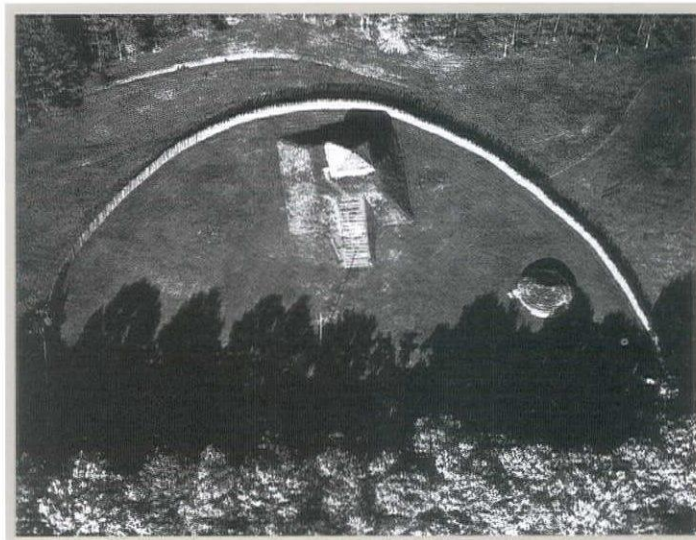
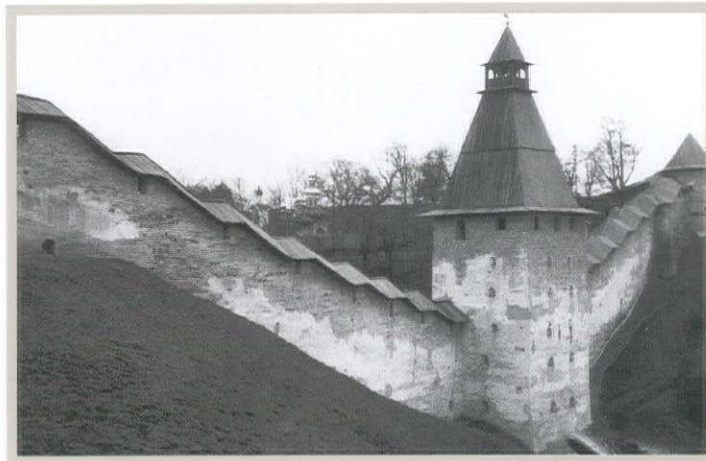
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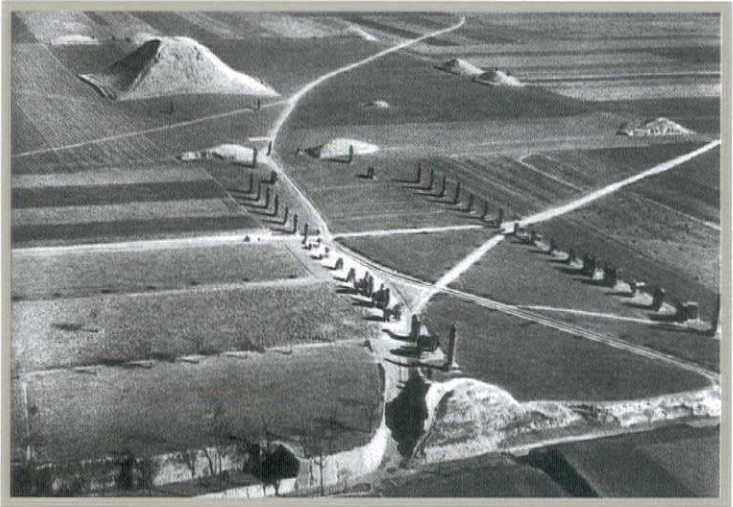
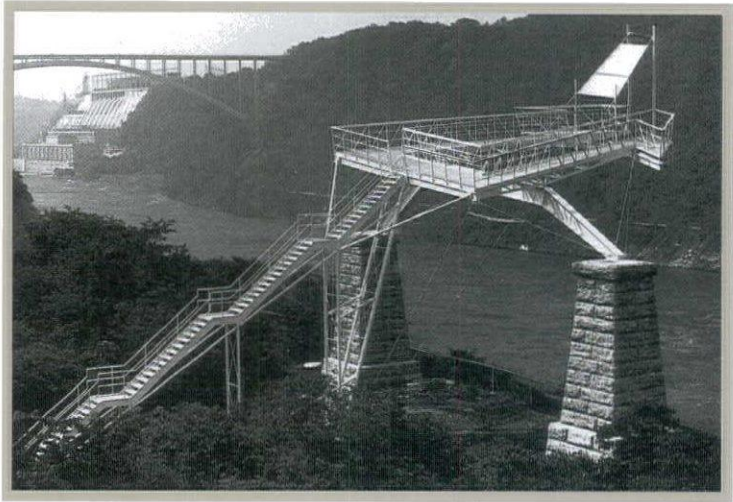
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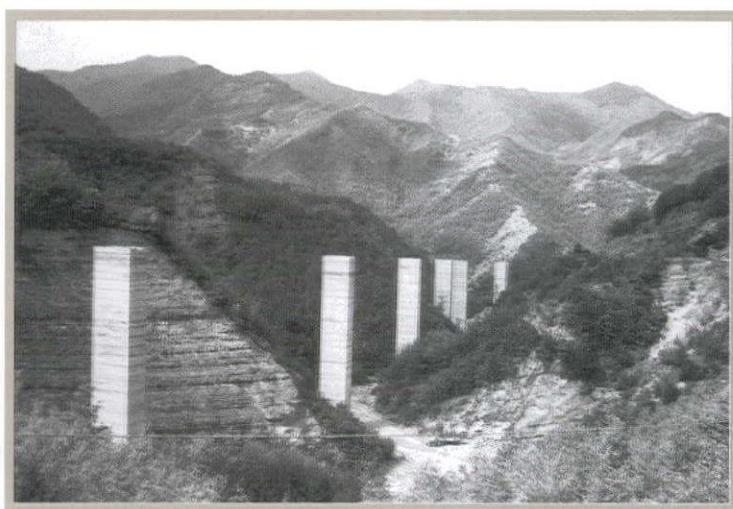
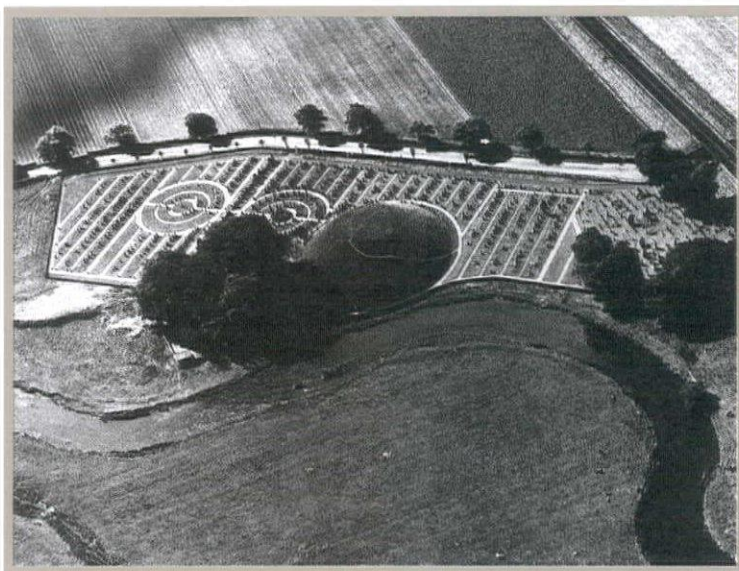




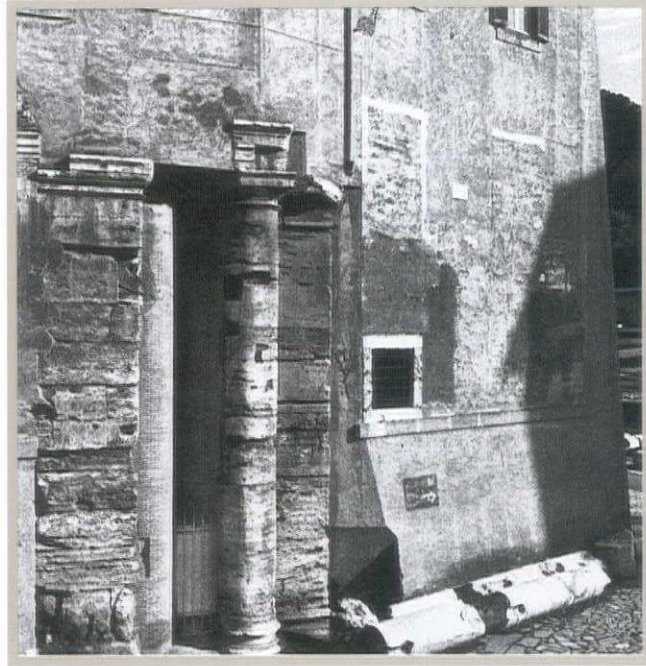


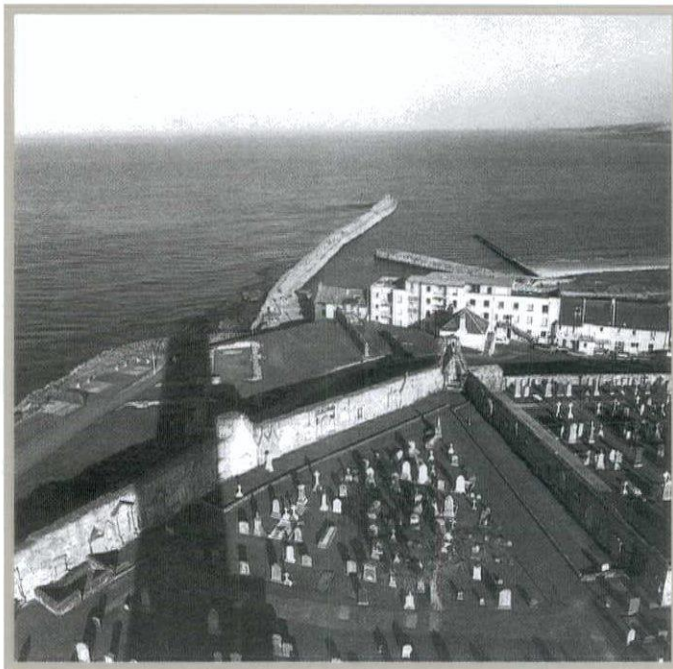
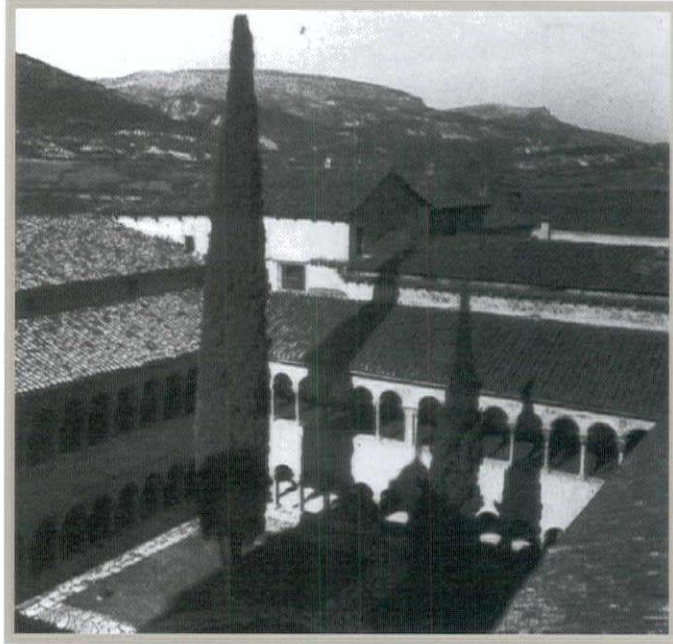


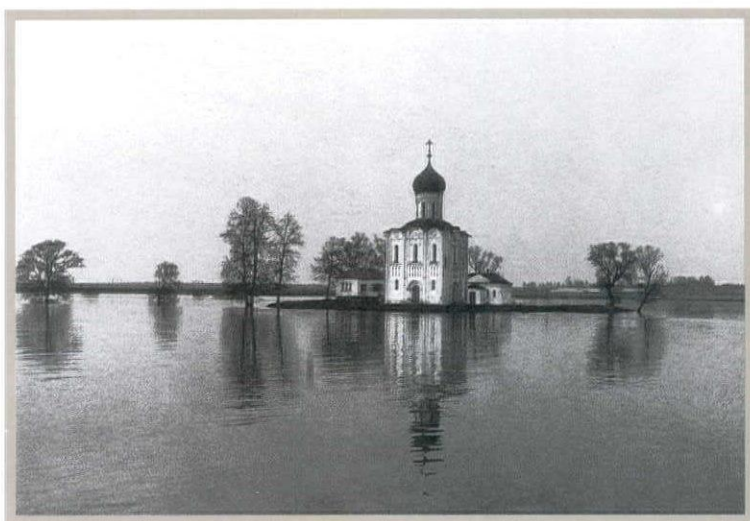












Several years ago I had occasion to return to the Smith House in Darien, Connecticut, with a photographer commissioned to document the building for publication. The particular day of our visit was quite extraordinary: a brilliant October day of very intense and colorful light, very sharp and clear as a fall day of little humidity is apt to be. I was pleased that we had this opportunity to see and record the house in such favorable conditions. When we arrived, however, and the photographer began to set up his equipment, a sudden change in wind direction brought from an adjoining property a great cloud of smoke where a neighbor was burning leaves. As the smoke thickened and enveloped the house – and as my frustration rose with the irony of such a beautiful light consumed in this gray fog – I noticed the photographer furiously taking pictures. My immediate reaction was one of alarm. I encouraged him to stop. He waved me off, insisting this was a fleeting and exceptional moment.

Several weeks later I had a chance to review these photographs. They were incredible. The image of the house as a clearly composed presence in light had been fundamentally modified. In many of these prints, the house was visible as if through an irregular scrim, circumscribed by a strange glow as the light radiated through the smoke. Its contours were only partially discernable and its precision as an object very much obscured. But this was not an image for which the house was designed; not, in any event, in the conscious operations of either myself or the owners as we had conceived the building. As the photographer took his pictures, I had been alarmed at the prospect of it being documented so uncharacteristically. In fact, it revealed to me something quite extraordinary about the building and its relationship to site.

I recall this particular experience because it illustrates to me one of the essential understandings we must all come to as architects. One likes to think that the architect has the ability to plan everything, but this is not so. In my work, I have come to rely more and more on the juxtaposition of that which one makes against that which one does not. This has to do with the play of architecture's inherent artificiality against an unpredictable and dynamic context. I believe that this dynamic quality of

natural and urban phenomena is very much a part of man's experience of architecture. This is true not simply in the appreciation of the object from without – as this experience at the Smith house illustrates – but in the actual occupation of the building's interior spaces as well. This sense of the building is conditioned by many things – rotating shadows, changing seasons, expanding and contracting light, the world of change that takes place outside its limits – in such a way that the building acquires a life much more complex than the architect could ever hope to control. I believe there is an important moment in an architect's life when one gives up one's attempts at such control. Perhaps this is when a very real dialogue with context may begin.

My particular understanding of that dialogue has led me to occupy a somewhat controversial position within the world of architectural criticism. I have been figuratively accused of placing buildings as if by helicopter onto the landscape. One might interpret this suggestion to mean that the buildings remain alien from their context; that they do not literally share the animate or organic qualities of their place. I confess that I cannot see how this might be otherwise. To the extent that buildings are made up of materials that, in a strict sense, cease to live – that are fallen and no longer grow, that are unearthed and are no longer part of a fluctuating and metamorphic cycle – one is engaged in an act of willful artificiality. Architecture is not the product of a natural process. It simply *is* what you make it. I have always thought this was a compliment being paid to me, this suggestion of the artificiality of the structure, this man-made presence that the buildings have. For some, this creates a distance between the viewer and the work, which I very much regret. I do not wish to alienate people from the landscape they choose to inhabit, nor do I wish them to feel in conflict with my work. It has simply been my intention to propose an alternate form of integration.

In my earlier work, this integration was pursued through a very intentional process of dematerialization. This has to do with an attempt to subvert the specific character of the architectural surface itself in favor of the character of light and shadow, of context and occupant, that plays

against it. One might think of this as a process aimed at neutralizing the matter of the frame so that the character of the framed is that much more intense. I am committed, however, to a rigorous investigation of the physical consequences of such an operation. To dematerialize does not mean to remove from weather and time. One must accept these things and let them inform one's construction. In this sense, the inevitability of enclosure comes to bear, and the continuity of inside and outside that was so important to early masters of the modern movement must be questioned.

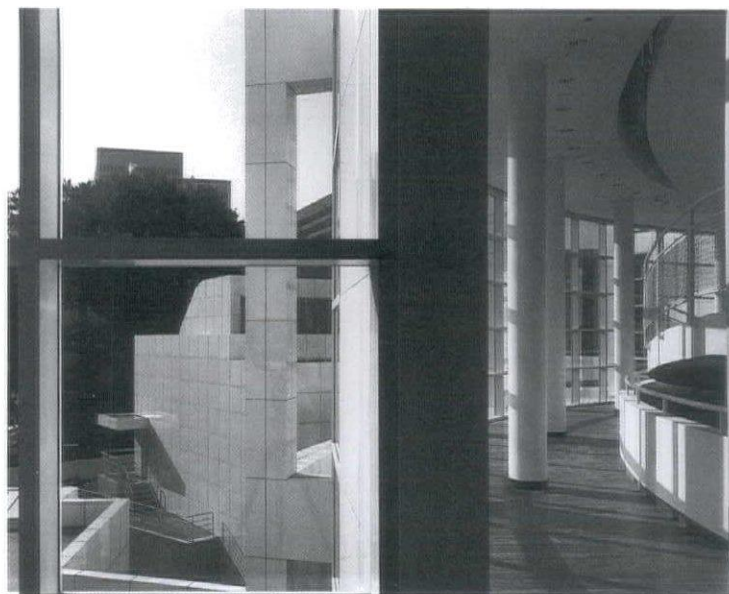
I have gone through this exercise myself. In a very early house I wanted to develop this free relationship of inside to outside space. To that end – and very much in the spirit of Frank Lloyd Wright at Falling Water, an architect and a building I continue to admire very much – I proposed a brick wall running continuously through a living space to the adjacent garden. The house was constructed as such, and in the end proved unsatisfactory to me. In the garden this brick wall rapidly began to show the affects of water and wind, to assume a thin layer of moss, to stratify, so to speak, as its lower portion soiled and its parapet weathered. Within the house itself, the wall remained as it was at the time of construction. The two halves – one inside, the other outside – had acquired two lives. The myth was destroyed.

I have come to appreciate the completeness of this separation that occurs along the plane of the building enclosure. Glass does not change this fact. A wall of glass is as strong and as powerful a membrane as any material in describing the limits of enclosed space – in setting up two futures, as it were, for one wall.

With that understanding, I am no longer in pursuit of this conceptual interpenetration of interior and exterior space. My work has proceeded with an investigation of what it means to create enclosed space; in some cases, simply to create a room. I am fascinated by the interior world of light and shadow that exists free of the degenerative qualities of weather. I believe this to be the promise of architectural space. It is perhaps the promise of white, as well. But I am also intrigued by the very different way

in which a building exists in the natural or urban worlds beyond its control.

Again, the Smith House comes to mind. Here the project was conceived so as to sit between two trees very close to the base of the building. It was very important to us that it be sited this way, and we took many precautions to insure that these trees not be lost during construction. We did this with a simple ambition: to preserve the landscape which had prompted its inhabitation. But we could not have anticipated the precise way in which those trees have grown and and affected the house over time. They have, in fact, created a virtual umbrella over both sides of the building, filtering light differently depending on the time of day or year and modelling its colors in ways much more intricate than we could ever have planned. I believe the success of the house lies in its capacity to absorb and enter into a dialogue with these temporal phenomena of light and context. They are, in the end, its material.





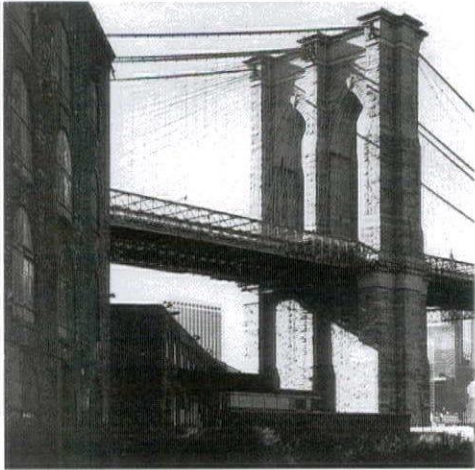
The Roof at Fujisawa

Fumihiko Maki

It is a well known fact that Japan began to modernize rapidly after the Meiji restoration. In the one hundred and twenty years that have passed since that restoration, Japan has developed into what is arguably the most industrialized nation in the world. In metropolises such as Tokyo and Osaka, traditional buildings that have survived natural disasters, fires, the war, and the effects of rapid modernization are very limited in number and scale. Old, pre-industrial streetscapes that remain fully intact are virtually non-existent. This trend toward industrialization will undoubtedly accelerate in the future, as the densities of these cities increase and, concomitantly, new construction continues to occur at a more rapid rate. Moreover, such rapid growth will be combined with increasingly stringent building codes intended to mitigate the destructive effects of natural disasters by way of particularly lightweight and sophisticated systems of construction. This is the situation in which the contemporary practitioner of architecture in Japan finds himself.

In this sense, the evolution of the industrialized city and the emergence of Modern architecture – from which contemporary architecture developed – must be seen as interrelated phenomena. The theoretical foundations of Modernism – including references to mass production, trabeate construction, investigations in new and lightweight materials, free-planning and functionalism – all suggest obvious comparisons to the world of industrialization.

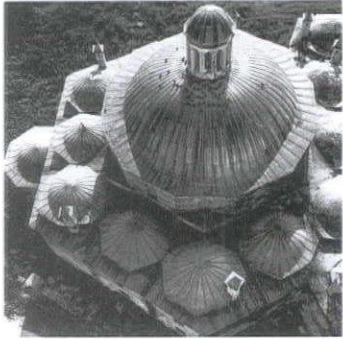
We have witnessed this expanding industrialization with some concern. The most extreme position insists that such industrialization will undermine our culture, fracture our relationship to history, and bring about the formation of a forbidding urban landscape without reference to place. The Western world has given voice to similar concerns as well. For an architect in such a predicament, a pressing question reveals itself: What is the role of history and place in this industrial city, and how does one contribute works of authenticity and resonance to such a landscape?



2

Going south in Manhattan along the East River, one encounters a series of huge concrete and steel bridges. Their stone foundations have been exposed to the elements over many years and are coated with moss. They remind one of the ruins of Roman aqueducts and the world of Piranesi. The factories and the tall, expressionless apartment buildings standing nearby are also weathering products of an early industrialized society, and appear before us as strangely reticent monuments of modern history. Cityscapes of this nature greet one in London and Manchester as well. In contrast to these examples of Western industrial vernacular that testify to the glories of a weighty past, the industrial vernacular of Japan has an entirely different aspect. The factories, high-rise apartment buildings and gas tanks that stand crowded together in the vast area reclaimed from Tokyo Bay that is visible from the expressway describe a world of abstract form. One can discern here a kind of lightness, a frail optimism that approaches lyricism. The past does not weigh down this cityscape as it does the cityscapes of the West, because here it is not allowed to accumulate. The human traces in this transitional landscape can be dated back only a few decades at the most. Features distinctive to Japan – everything from signs, vending machines, and plastic products to entire urban infrastructures – participate on an equal basis with cheaply constructed buildings in the formation of the surface of the city. If one looks closely enough, one can see in this surface composed of concrete, metals, glass, and plastic the layered, tactile quality that is distinctive to Japan. The aesthetic that this cityscape speaks of is one of fluctuation and fluidity. It is possible to recognize the existence of a unique perceptual order here.

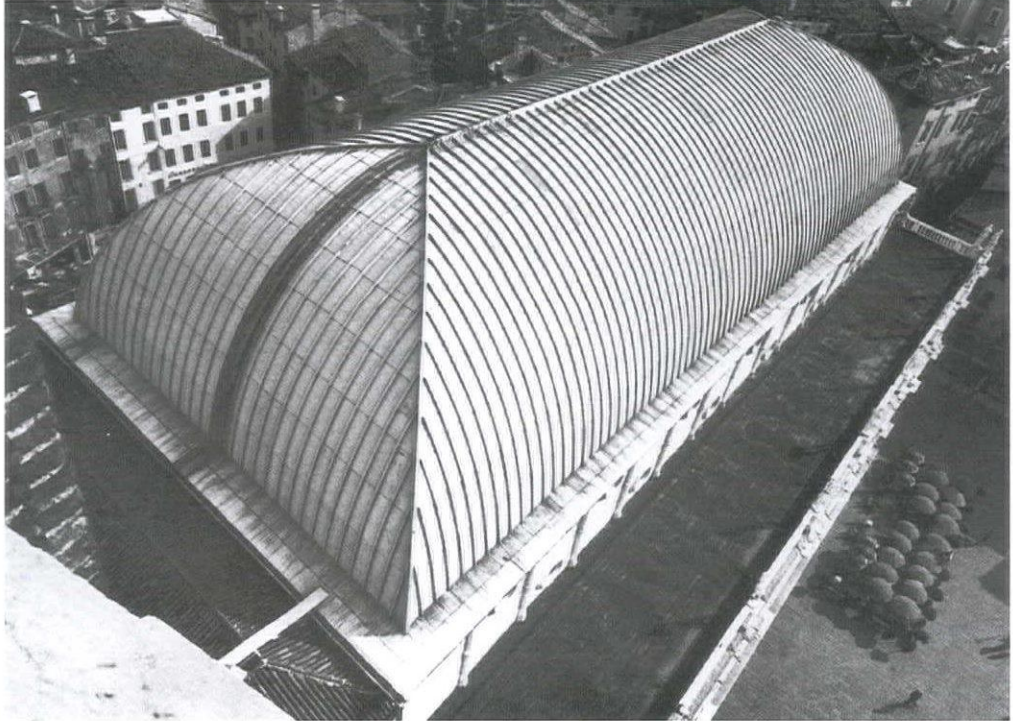
The phenomenon of the modern city cannot be understood as a manifestation of the industrial imperative alone. Notwithstanding the expectations of early twentieth century theoreticians – who foretold the development of our cities along models provided by this industrial revolution – it remains possible to identify significant distinctions between one modern city and another. The proportion of new construction to old, the persistence of local preferences, and the particular characteristics of a regional culture all con-



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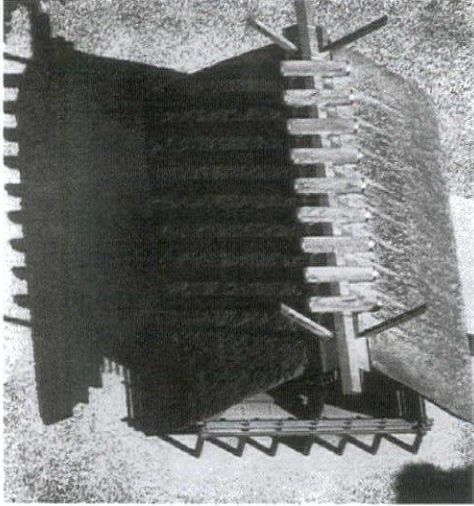
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tribute to this diversity. While it is true that modern frame construction must conform to laws of tectonics independent of the specifics of place, that particular quality of place still finds expression in our buildings.

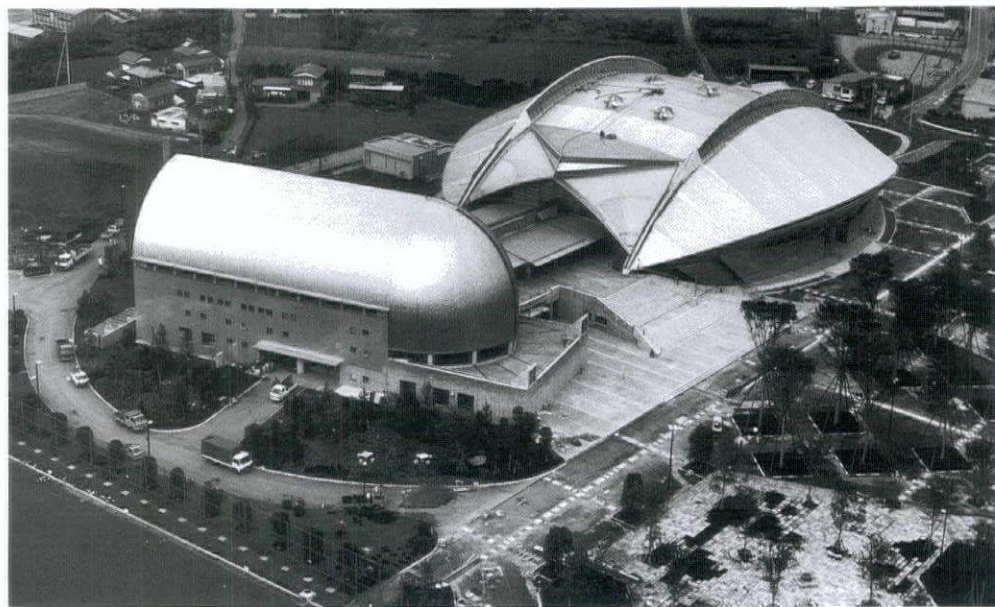
The Japanese variation derives primarily out of a historical phenomenon. Japan has many strong traditions of craft, custom, dress, and family structure. We do not, however, possess an accumulated stock of traditional architecture around which our cities could be formed. In this sense, our traditions persist in the form of intangible as opposed to tangible structures. The imprint of Japanese culture on the industrialized city is felt not in the juxtaposition of old and new artifacts – as is seen in Europe – but in the overlay of an entirely new architectural landscape on a very old culture. The integration of the two results in a very distinctive experience of the Japanese city.



6

It is this experience – this persistent expression of culture – that must form the basis of a true modern vernacular. The design and construction of individual buildings capable of speaking to both the traditional past and industrial future of Japan depends on a sensitivity to this historical fact. The challenge facing the architect today is to understand and contribute to this integration of intangible traditions with tangible artifacts – to link together the historical character of our culture with the development of a built urban landscape which cannot literally recreate its own history. Such a challenge involves the investigation of industrial artifacts with an eye for their more evocative natures, searching among them for a specific character related to regional tradition.

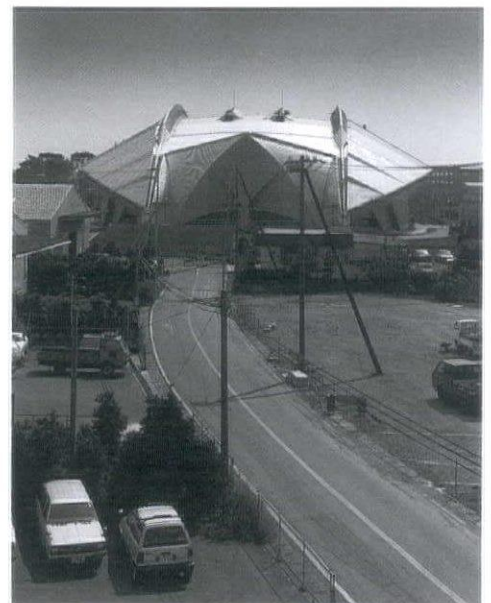
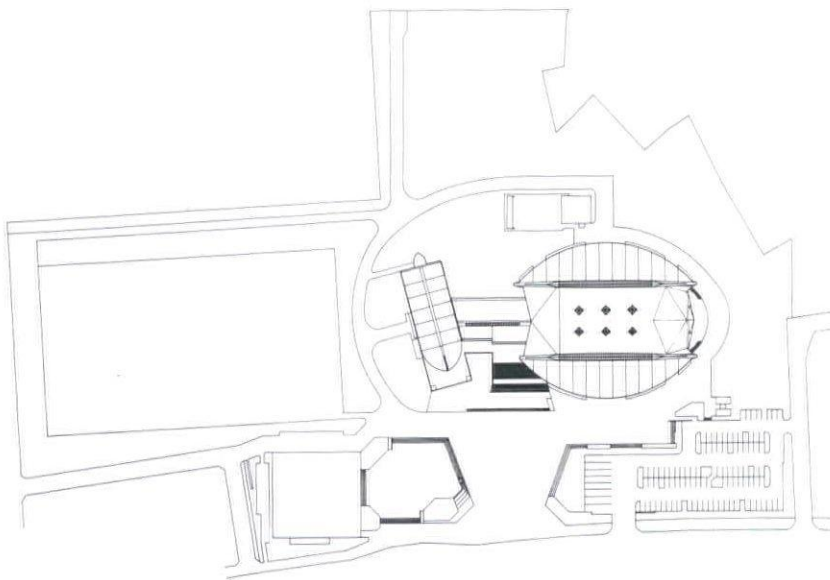
This search for a meaningful integration of the past with the future has dominated my thinking in recent years. Much of my work has been undertaken in pursuit of this integration. For an architect committed to building, this investigation is deeply involved in formal and technical matters of construction, such that the entire issue becomes manifest in their resolution. As can be seen in the battered and monolithic stone constructions of England's industrial past, or the lightweight and luminous assemblies scattered along the edge of Tokyo Bay, these issues related to place and character may be deciphered in essentially physical terms. For this reason, I believe it to be critical to the design process that one constantly reference the material nature of one's proposals to both their historical and geographic context. The study of primary architectonic elements – the foundation, walls, columns, and, perhaps of most importance here, the roof – related to any particular construction must be undertaken with a sensitivity to the material history of that element, to insure that this architecture may speak to more than its own occurrence.



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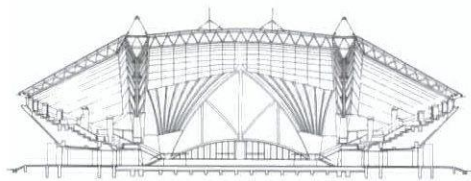
The capacity of a single architectural element to possess this dialectic was made clear to me in the conception of the roof for the Fujisawa Sports Complex. In fact, the stainless steel roof to be seen here has a complex history of its own, intimately tied up with the specifics of its coming to be – its technical and formal inception along with its actual production in the field. It is necessary to speak at some length about this technical history in order to communicate the intention of the roof as a cultural artifact, as a *constructed* artifact that stands in a complex relationship to history. In this way I believe it is possible to see the roof itself as a metaphor for the coming together of two traditions.

Fujisawa is a city located very close to the seashore, about thirty kilometers from Tokyo. The landscape of this area is, in fact, quite bleak. The particular site chosen for the new sports complex lacked any distinguishing characteristics of its own, and remains surrounded, for the most part, by smaller structures arranged in a loosely-defined configuration. The introduction of a very large structure of the scale required by the program assured that the new building would assume a strong presence in the city. We recognized early on that the successful accommodation of this program would necessitate the construction of two very large rooms, each of which would have a definition and a nature of its own. Given our experience with this particular building type, we understood the critical issues of scale that such constructions inevitably present. We also knew that the roof itself would most profoundly influence this eventual reading of scale. The manner in which this roof was conceived and developed would be crucial to the final character of the building.

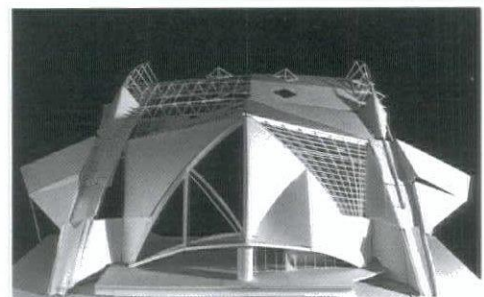


Several considerations led us to choose stainless steel as the primary material for this roof. Many of these considerations had to do with specific physical characteristics of the steel itself: its great resistance to the degenerative effects of salt air, its considerable luminosity, its capacity to be shaped and bent into fairly complex segments, and certain inherent qualities of scale suggested by its extreme thinness and fragility. We regarded each of these characteristics as advantageous to the formal and technical ordering of the roof. Their cumulative effect was to provide a point of departure of considerable rigor, a set of limitations demanding precise calculation, and considerable investigation of relevant construction procedures.

We determined through our investigation that each steel sheet would be limited to 40 centimeters in width and only 0.4 millimetres in thickness, a thickness of such fragility and susceptibility to creasing and wrinkling that extraordinary measures would be required in its manipulation. Such thin sheet steel would not be capable of maintaining an even surface in the life of the building, nor, for that matter, during construction when particularly extreme concentrated stresses would be exerted on each sheet in its transportation and manipulation. When seen against the sunlight, these inevitable imperfections would become particularly apparent. Working with the manufacturer, we were able to devise a method for producing systematic wrinkles in each sheet in such a way that these deformations would appear uniform and intentional, providing a certain texture to the roof and allowing another scale reading to be manifest in the surface itself. This texture might then speak of the nature of steel in the same way that grain speaks of wood, or the visible composition of minerals speaks of stone.



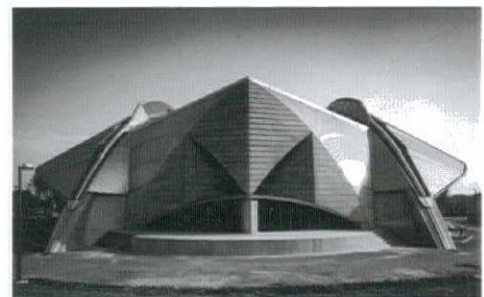
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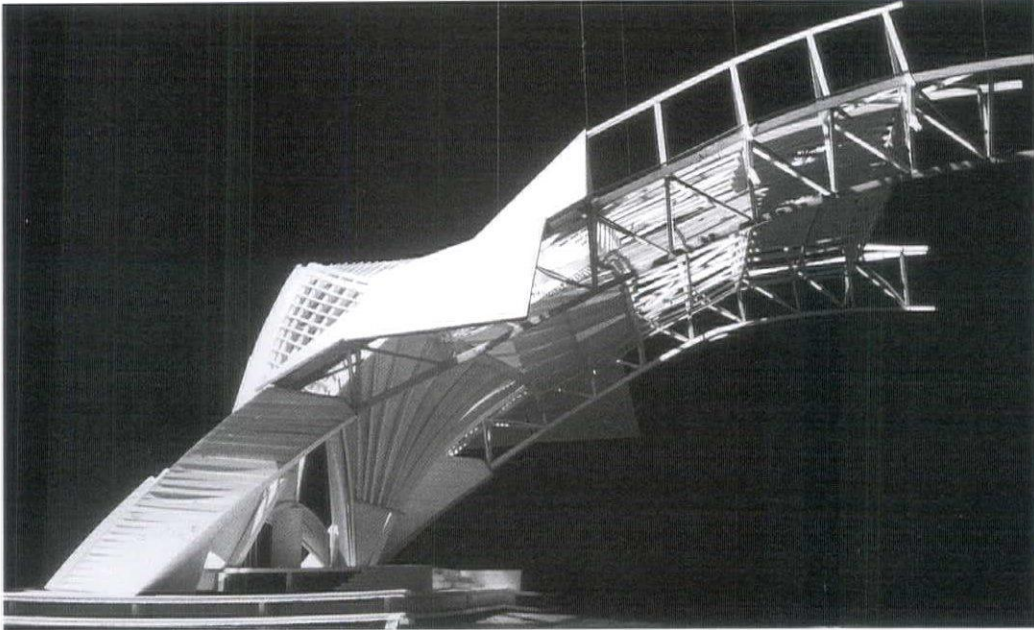
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The manner in which these steel sheets might be fabricated and joined was studied carefully so as to avoid a repetitive or mechanistic assembly, or conversely, an homogenous, membrane-like appearance that might belie the building's truly assembled nature. To this extent, we wanted very much to avoid the "inflated" quality that such large structures commonly suffer. Through many attempts in model, we were able to determine a configuration of individually-fabricated segments that collectively achieved the desired whole, while maintaining the integrity of the part. Each of these steel sheets was in itself quite unique. Rather than accept a repetitive subdivision of the roof by way of highly complex, curved segmentation – which we learned would be quite difficult to manufacture – we made liberal use of trapezoidal segments, requiring certain adjustments to be made at critical points in each sheet. Many of these adjustments had to be modified – even conceived – at the construction site itself.

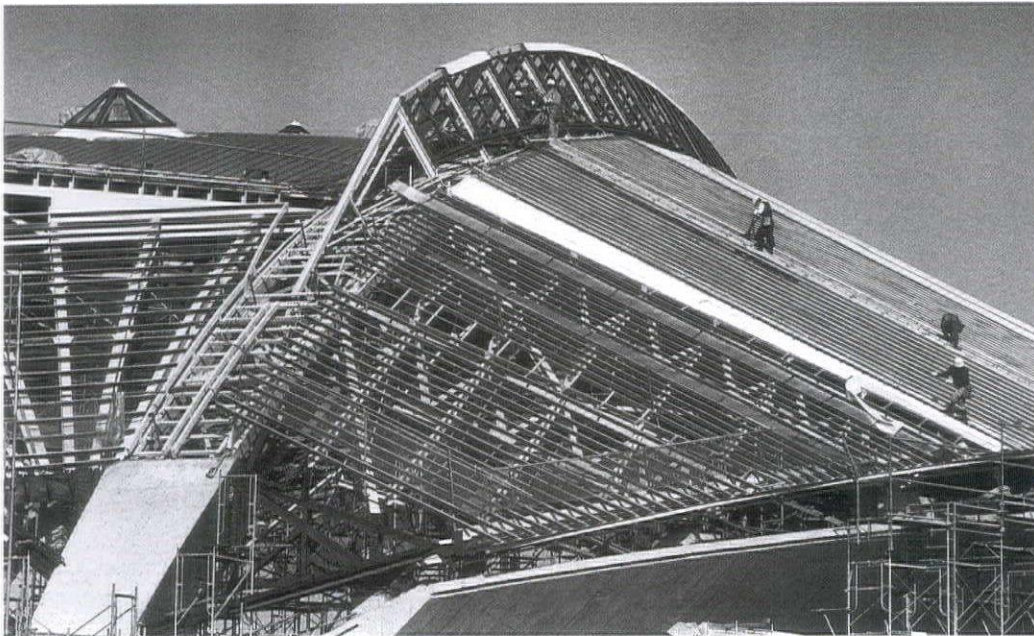
Several members of the design team were present at the site throughout construction to supervise this on-going process of study and correction. In fact, it was necessary to set up a small office at the site where the design team could work, maintaining day-to-day contact with the builders – even assisting in the construction itself – to insure that each connection and each detail was executed correctly.

In an effort to make apparent the hovering quality of the roof – to disassociate it from the more massive base of its support – we developed a series of pin connections where the meeting of these two elements could be poignantly accomplished. Such a meeting further reinforced the apparent *lightness* of the roof, allowing it to maintain an identity of its own that speaks of an almost ethereal presence. Through the development of these pin connections we were able, as well, to underline the *assembled* nature of the steel-clad roof structure, reinforcing once again our ambition not to fall victim to that "inflated" appearance, so contrary to the proper definition of scale.

The reality, or the spirit of the steel itself seemed to us to be very much tied up with its sharpness, its precision, its capacity to define an unequivocal edge. This was always on our minds as we studied each corner



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and intersection, and particularly as we explored the termination of the roof near its base. But such luminous metal has another evocation as well: I have observed that at certain times of day – in a very particular light – this luminous steel virtually disappears into the sky, suggesting an aura not unlike that of the sun during an eclipse. Its reflection of such bright light is so complete as to wholly absorb the material itself in the act of reflection. This is its paradox and mystery.

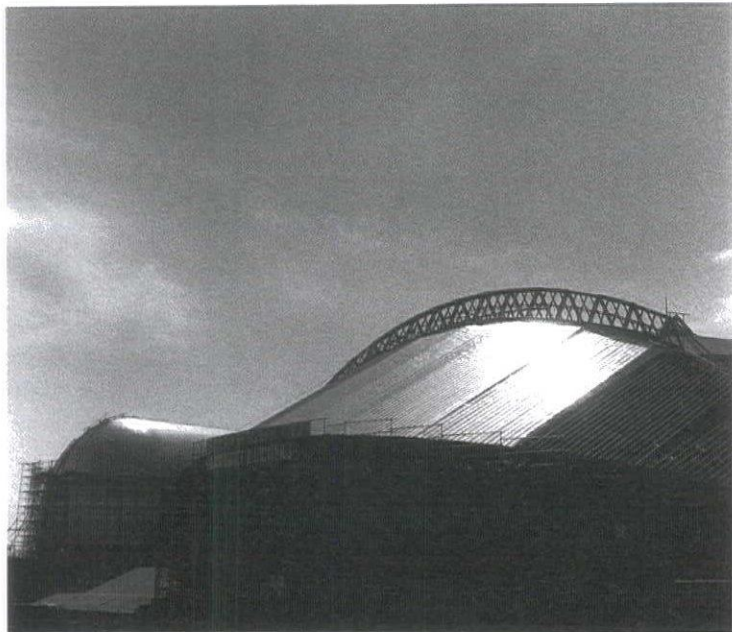
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These facts are important insofar as they document the coming together of a traditional procedure of construction with the development of a new and highly sophisticated building material. In a strict sense, the manner in which the Fujisawa sports complex was built cannot be considered innovative. Many of the procedures we evolved here might even be considered medieval. The building was constructed with the active participation of an attendant work force; a supervisory team responsible for both the conception and execution of detail was present at the site at all times; and the work being performed was of a singular and unique nature. This was not a building composed of repetitive elements, mechanically produced in great quantities for use in buildings other than Fujisawa itself. Accordingly, the complex speaks of a fundamentally traditional reality. Its character is determined by the piecing together of carefully crafted, individual components in a complex assembly not unlike its Japanese predecessors. It is here that the intangible traditions of craft and method referred to earlier exert themselves on the production of otherwise entirely modern artifacts.

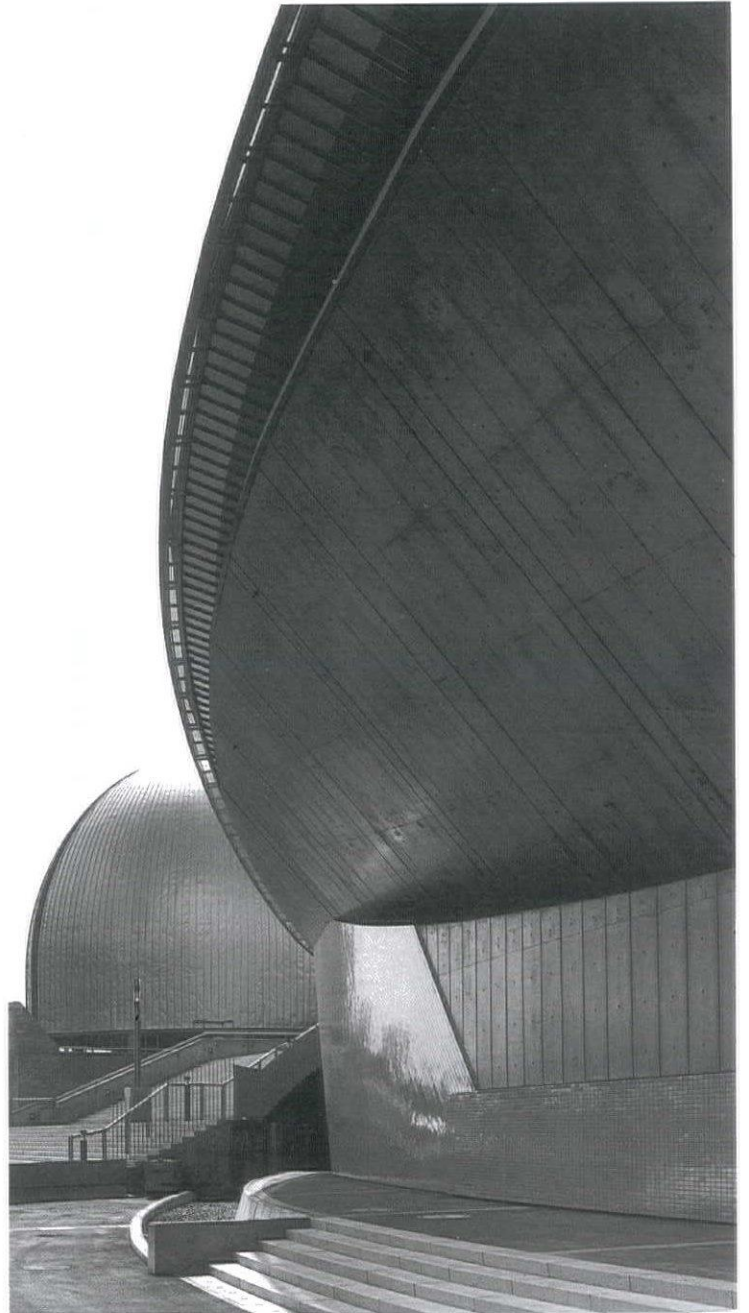
Such a reading, however, is inevitably challenged by our sense of its definitively unique character, as well as by its relationship to modern industrial construction. We see in the formal language of the building – in its scale and in the precise fabrication of elements that make it up – a type of construction that is not familiar to us through the traditional world of hand-crafted production. Despite its connection to that past, it cannot be wholly explained by or absorbed in it.



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A similar and intended ambiguity exists in the associative qualities of the sheathing itself. What does this metal roof mean? Of course, we cannot speak of this with any precision. Metal has many associations with both an industrial and a traditional reality. It is a material of hardness, precision, strength, and great reflectivity, thereby making reference to a future populated by the artifacts of an advanced science. But it also recalls the tools and equipment of an earlier time, a world of medieval helmets and weaponry, of artifacts from an iron age marked by a great fascination with such metals. This luminous steel thereby shares a past with a future – a complex relationship to time and place alongside an insistent industrial character – intended to assure it a vital history.

Tokyo has undergone many changes in physical appearance over the last century. The city, so decimated by World War II, has had to rebuild from ashes. In its rebuilding it has become – perhaps it has returned to being – a city without heaviness. It was once a city of wood and paper; it has now become a city of concrete, steel, and glass. The feeling of lightness, however, remains.

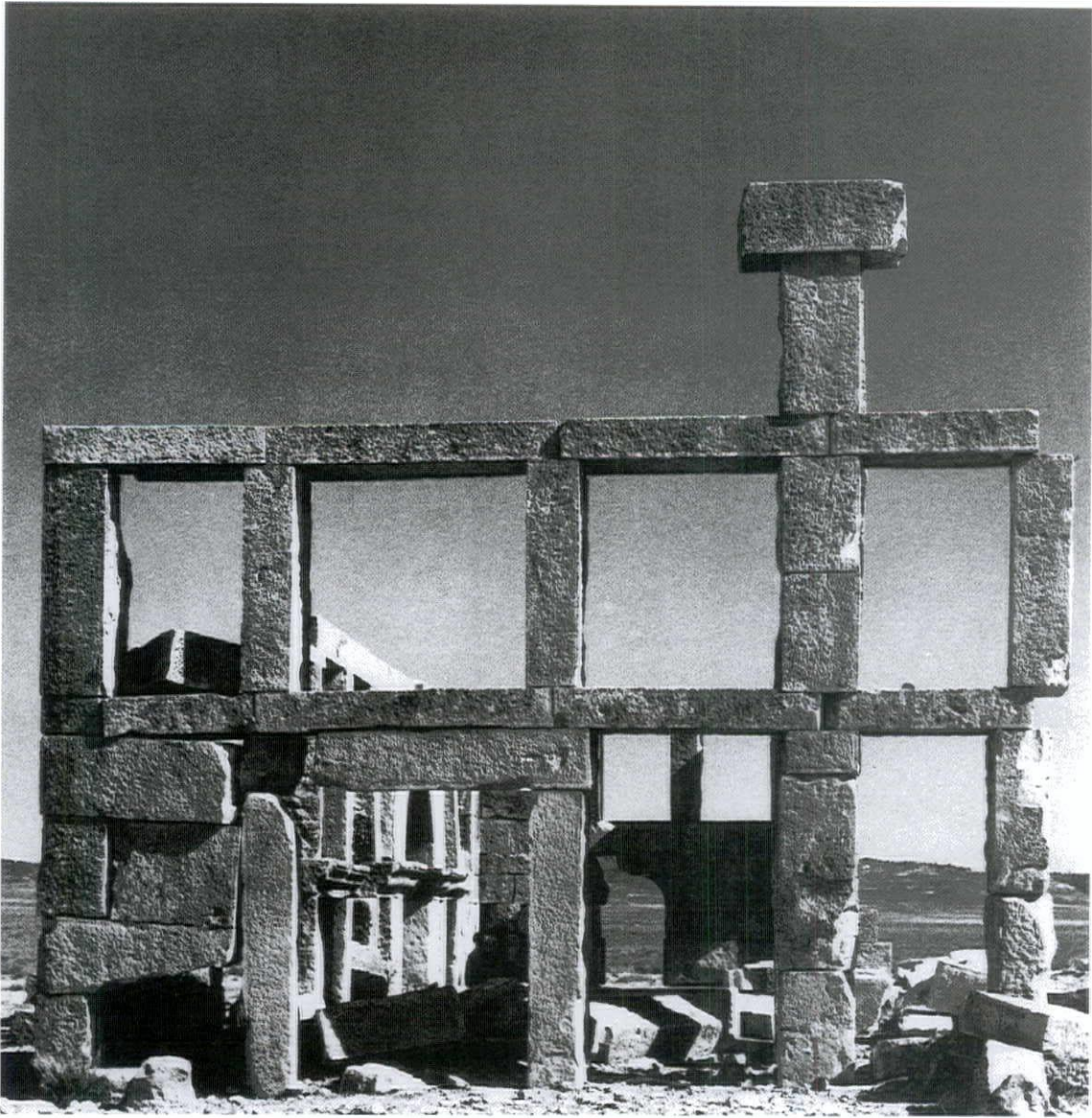
We might now return to the notion of specificity of place that introduced this essay. The sports complex at Fujisawa represents an attempt to address this problem by way of a set of material and constructive considerations guided, in turn, by an image of place and a sense of history, such that the eventual building demonstrates an unequivocal geographic inevitability. Paradoxically, it has been necessary to allow the building an ambiguous relationship to history – to both the past and the future – in an effort to define this specific connection to place. The temporal associations possible in any interpretation of this building, therefore, are manifold and complex, while it remains our intention that its geographic relationship be without ambiguity. In this way, Fujisawa might speak to a specific regional history – to the lightness and architectonic precision of its constructive legacy



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– as it is intrinsically tied to that region. In short, we wish the building to be free in time so as to be fixed in place.

The suggestion of a modern or industrial vernacular of rigorous architectural character might be found in this process. This has certainly been our struggle. If the metal roof at Fujisawa finds an evocative place among the industrial artifacts of its milieu, making explicit the ambitions of a culture in search of a more resonant architecture, we will have successfully catalyzed an investigation critical to the Japanese future.



Tectonics Considered Between the Presence and the Absence of Artifice

Carles Vallhonrat

Even if no one cared to ponder for long about how we build, it ought to be very clear, at least, that it is of consequence. Building affects us. The sensitivity toward physical constructions and spaces, like the sensitivity to mathematical notions or to music, is unique and cannot be acquired by borrowing or translating from another art, while not being a prime, conscious and finely developed sensitivity in all people. Building is of consequence also in that it exhibits the way we do things. What we build is proof of our consciousness, directness and powers of reflection, and the thoroughness with which we build is part of the meaning of delineated and configured spaces. If this were not so, we would be satisfied with merely representing spaces, and although representation is an immense art, we know that it does not contain the very essence of architecture. Representation is tentative. Drawings represent. We could place our drawings in three dimensions to represent space, but the wind would blow them all away. There is something terribly important in our understanding that representation is an experiment; we are overwhelmed by the finality of building.

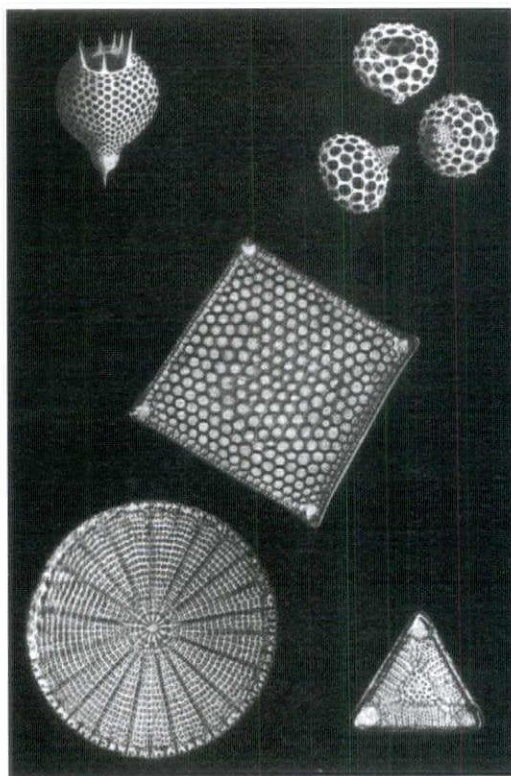
We must say then that it is important to build well. We have to understand the principles of tectonics. Must we do it to see that what we build will last the way nature lasts? Perhaps, but the grand craft of building can have a greater impact and be of truly fundamental consequence as a generating impulse at the origin and through the evolution of the work of art. If we feel compelled to make the intellectual distinction between the tectonic and formal ingredients of our compositional ways, we ought to see the role of tectonics as being part of those other formal ingredients. That its peculiarities be used in a highly expressionistic way or quietly subdued to other impulses is a matter to be defined by the overall compositional strategy. But it is within that greater plan that tectonics has its highest task.

Tectonics depends upon a very few fundamental aspects of the physical world. One, of course, is gravity and the physics that goes with it. Gravity affects what we build and the ground beneath it. Another aspect is the structure of the materials we have, or make, and a third is the way we put those materials together. How and why we do it affects the way they appear as the surfaces that bound space.

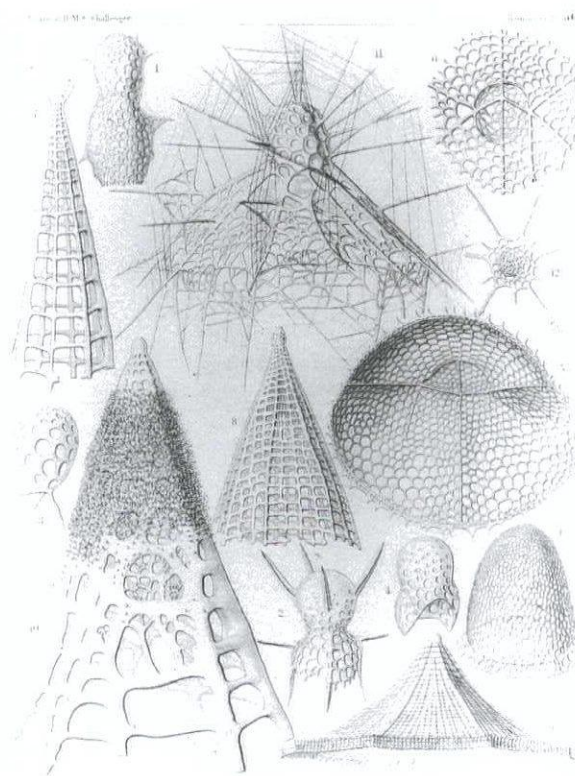
I remember a view of the enormous, heavy, cylindrical wall of Castel Sant'Angelo, its surface laced with embedded arches. Contiguous arches often come to rest on a common point which, in turn, rests on top of an arch below. I have wondered if the whole construction revealed the network of lines of travel of loads coming down to the ground, where it is easier to find fixity on points of support than to achieve sustained horizontal lines of support. Was it built this way? Was it done to avoid the breakage common to regular horizontal coursing in case of irregular settlement? Was it a way of allowing for a more controllable settlement as the wall was going higher and higher, so that any foundation displacement would not deform a too unforgiving geometry?

Gravity forces us to bring loads down, or up and then down. Little of our understanding of gravity and of how it affects our art has changed in this century. In *FOUNDATIONS OF MODERN ART*, Amedée Ozenfant shows several illustrations of radiolaria [2a,b]. Radiolaria are minute marine rhizopods that are found where the pressures of very deep waters make gravity an inconsequential force. A principal peculiarity of radiolaria is that the unique configurations of their skeletal structure seem to have evolved specifically in order to resist internal stresses and changing, external, dynamic forces. Their lesson, however inspiring, tells us nothing about the unidirectional force of gravity.

If modern engineering has found inspiration in the geometry of radiolaria, it has erred in taking them as literal models. Space-frames for instance, do not represent a solution to the problem of carrying loads to the ground, or to supports and then to the ground. Any structure made of struts, or groups of struts of equal dimensions, repeated *ad infinitum*, does not represent the trajectory of stresses traveling through the structure in their changing response to gravitational forces. Only multi-directional, external, dynamic forces could justify that kind of three-dimensional space structure. Some of the structures used in the space programs of NASA or Ariane, for example, are thus inherently justified. Here on Earth the unidirectional pull of gravity dictates



2a. Radiolaria.



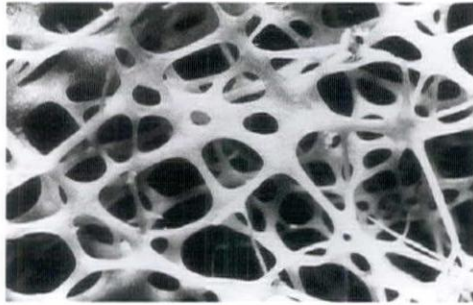
2b. Radiolaria.

mathematically quantitative restrictions on the characteristics of materials and the limits of the stresses they can bear. These restrictions, in turn, determine dimensional matrices for materials and, with the notion of limits, comes the notion of edges. So, gravity breaks down infinity. We are thus presented with the counterpoint between, on the one hand, equal increments, zero weight, the very notion of infinity, and on the other hand, gravity, incremental stresses, and the notion of boundaries. Then, it is not contrived to say that gravity is bound space. Gravity makes us go from here to there. There is nothing open ended about that.

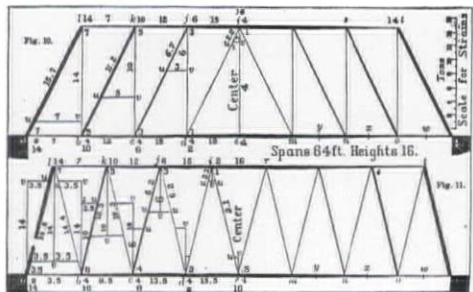
The French engineer Robert LeRico-lais, who inspired so many architects in this century, used to have in his office a human skeleton and a photograph of a tibia, enlarged many times, showing that a bone is not only hollow, but a completely sub-divided space-frame with an immense number of voids. By virtue of its construction, a tibia can take both loads traveling downward and the lateral and rotational stresses of kneeling, running or kicking a ball – all while remaining very light in structure [3].

We, though, in our art, take gravitational loads most of the time in one of two ways, either down a column or wall or else, in the middle of a span, by way of a beam or several beams, a lintel, or an arch or slab. Columns are made as thick as they need to be

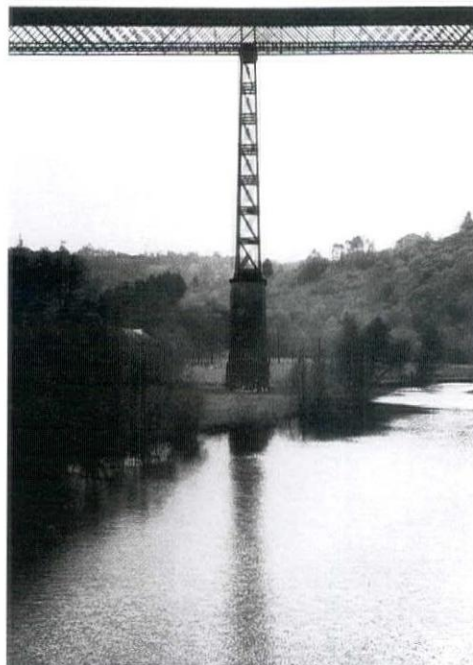
for their axial loads and then fattened to avoid buckling, or instead trussed, somewhat like the inner structure of a bone [4]. From the assembly of these elements come others, such as capitals, keystones, tie cones and bearing plates. These elements are, to great extent, responsible for the sense of proper measure that results when we use them to delineate a vertical surface, to bring those ideal surfaces down. We break down infinity: weight and the characteristics of materials force us to subdivide. When we look today at Eiffel's aqueducts, we wonder if anything so dramatic as those structures has extended our understanding of gravity since the turn of the century [5].



3. Enlarged view of bone structure.



4. Diagram of engineered truss.



5a. Viaduct at Busseau (1864), Gustave Eiffel.



5b. Viaduct at Garabit (1880-84), Gustave Eiffel, detail.

Whatever we may build, and whatever its pertinence to the composition of our *urbes*, it is seldom of repairable consequence to the ground on which it stands. I have often thought that if a supernatural wind were to blow away everything above two feet from the ground in a city such as Washington, D.C., we would be left with an extraordinary reading of the city's substructure – its civil engineering works. Such a formidable armature would let us understand, like an archaeological revelation, the network of our civilized life.

Before his book *L'ARCHITETTURA DELLA CITTÀ* was published, Aldo Rossi had been the assistant to the late Ernesto Rogers, then the editor of *CASABELLA*. If we look at those old issues, we see both the magazine and

Rossi's writings full of illustrations, some real, some fictitious, which seem to represent a sort of archeology of architecture.

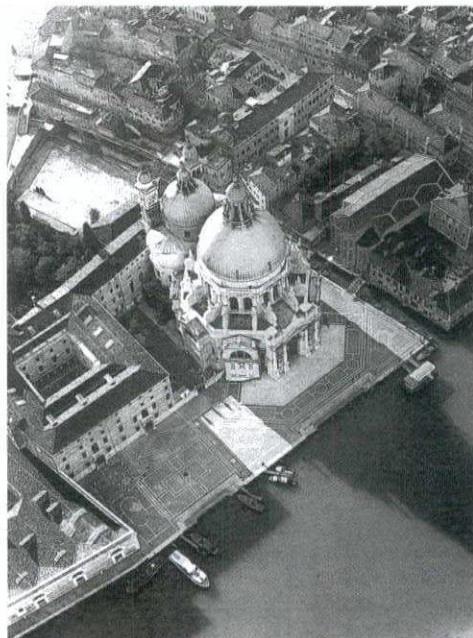
The building and its ground is an issue of intense drama and, archeology or not, its careful study is certain to dispose of any careless fantasies about the impermanence of the building's imprint on the ground [6]. At the most elementary level, gravity has as great an effect on the ground as it does on building. It is pertinent here to remember Longhena's *La Salute* on the Grand Canal in Venice [7]. The building is constructed on a giant solid cluster of wooden piles, a sort of immense *fascio* that occupies the whole diameter of the plan of the building (not the sort of *fascio* that Mussolini resurrected, seen in

Terragni's *Danteum*, but one without the axe).

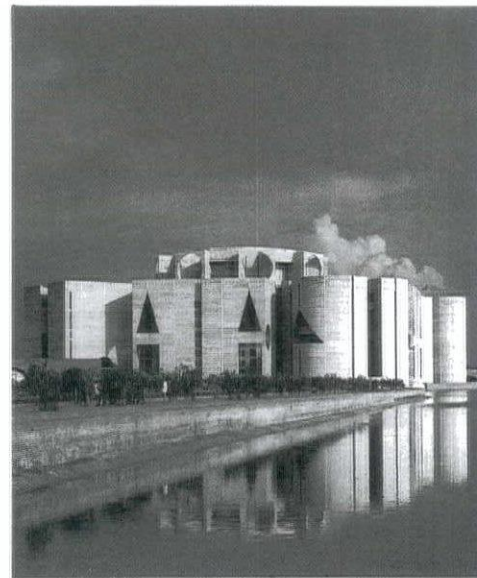
More recently, Louis Kahn's Parliament buildings at Banglanadar (once Dacca) in Bangladesh offer at least two lessons in the relation of building to ground. The soil on which they are built is alluvial. It has the bearing capacity of only 0.7 tons per square foot, close to that of a beach. Brick masonry construction, built on spread footings or a full bearing slab, cannot be heavier than the soil can take on the full area under the building. That amount of area can only bear so many bricks. Thus, one can build in brick only to a certain height before necessarily having to stop in order to avoid the collapse of the soil. That creates a plateau. Above that plateau at Banglanadar,



6. Waterworks, Berlin (1890).



7. S. Maria della Salute, Venice (1631-82). Baldassare Longhena.

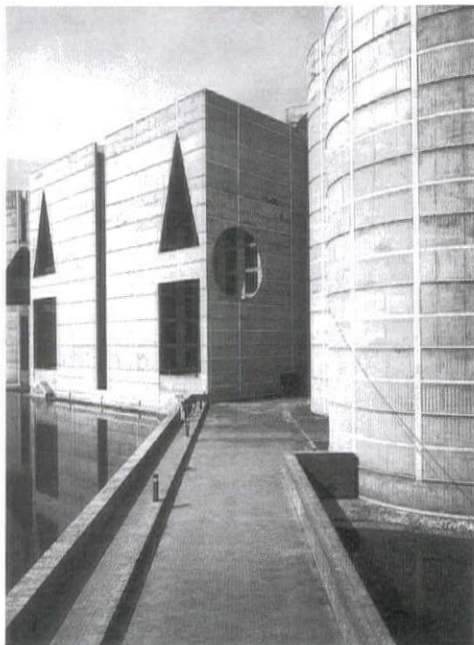


8a. National Assembly Complex, Dacca (1962-74), Louis I. Kahn.

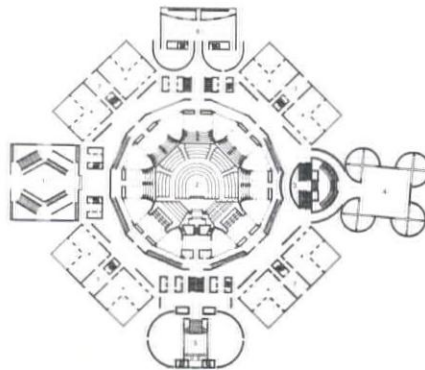
the remaining structures are made of concrete, even though concrete construction was expensive for the then East Pakistanis, as the steel had to be imported from China. The concrete is built on concrete piles that are driven deep into the ground. In this case their bearing capacity is not equivalent to the area of soil they occupy, but to the friction between the sides of the piles and the surrounding soil all along their length, plus some bearing capacity provided by the ball cast at the bottom of the piles. The driving of the piles compacts the soil in the areas immediately against the shaft. That compacting pressure, which diminishes going away from the pile until it reaches an area of presumably undisturbed soil, determines the area of influence of the pile and that, in

turn, determines the minimum distance between piles. Dividing the total area under the Assembly Building by the area of influence of each pile determines the total number of piles and with it the total weight that can be supported on that amount of area. The building continues to go up until the ground cannot support any more weight. Another plateau is reached, and there ends the concrete construction. Amusingly, the limitation on the permissible number of piles prevented the completion of the top of the Assembly Building with the concrete light hoods of the original design and forced the adoption of steel for the construction of the Assembly Room roof [8a-d].

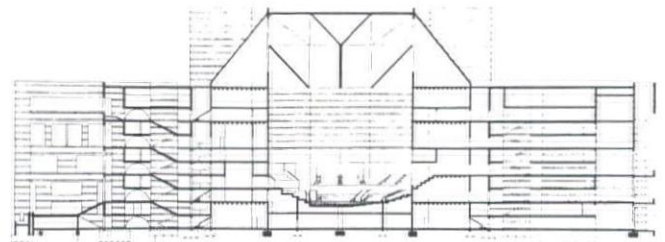
It is useful to remember that elementary experiment made in soil labs: a column on a large flat base is placed on top of a bucket of level sand and then water is added to the sand. Although the water occupies only the interstices between the grains of sand, the column becomes increasingly de-stabilized until it falls. Here the meaning is clear. No building exists without some soil work – this is a sort of permanence that will never go away. There is a certain inevitability between what happens above and below, a fixity of relation. One cannot disregard the enormous importance of the plane separating above and below. That plane is basic to the tectonics of building. If we have to build that flat plane in the open, we must pay attention to draining water well, and thus to the



8b. National Assembly Complex.



8c. National Assembly Complex, plan.



8d. National Assembly Complex, section.

geometry of slopes. That is what we do to build terraces and gently paved areas. It is the beginning of our taking possession of the land.

The subsequent realization is that soil, more often than not, is not after all a material that gives an easy fixity of support because of its granular nature. The case of foundations on rock can only be listed as an exception. A line of support is at best an assembly of points of support, and as such can only receive loads the same way. The consequence of this is that one can only assume a fixed horizontal line of resolution of loads only with great care.

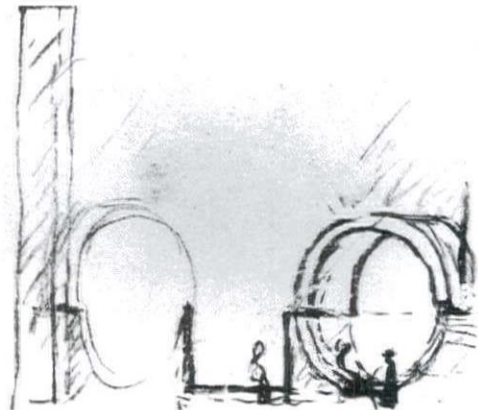
Kahn and the structural engineer August Komendant were discussing one day the problems of the con-

struction of masonry arches in earthquake zones. Komendant had just explained that the forces surging up from the ground during an earthquake were equal to those bearing on the arch under normal conditions because it is the same weight of the building that the soil is responding to during an earthquake, although in an upward direction.

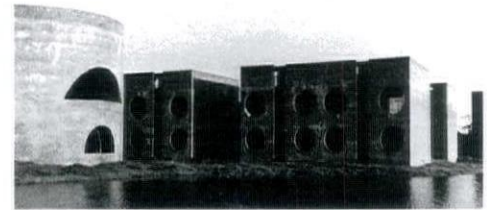
"Then," said Kahn, "if I draw an upside-down arch under a right-side-up arch, I have the right solution?"

"Yes, that's right," said Komendant. Think how many double arches (holes) this has produced in places outside of earthquake zones! Some time later Kahn found a diagram explaining that same resolution of arches in earthquake conditions in one of Leonardo's Notebooks and was immensely pleased [9a,b].

The question is often asked as to whether there are other materials significant enough for our work to belong to the basic repertoire of wood, stone, brick, steel and glass. We quickly think of concrete, of the work of Perret, Le Corbusier and, closer to our modern American heart, Louis Kahn. We do not seem able to forget that the first experiments with cast concrete were made by people working with plaster castings. The casting techniques and the inherent plasticity of the new material, rather than the advantages of the stronger mix, seem to have dominated the interest of Perret and Corbu. Kahn, with his profoundly philosophical mind, saw in concrete the potential for being the new material creation of modern man. He truly believed that the chemical



9a National Assembly Complex, sketch of brick arches.



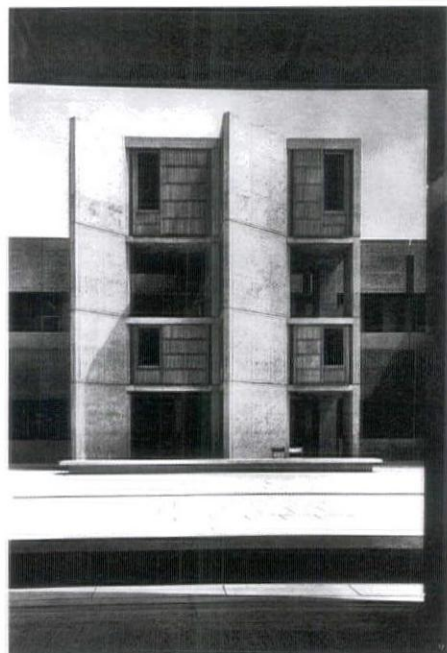
9b National Assembly Complex, brick arches.

phenomenon of concrete's composition and transformation during the complex curing processes had its parallel in the natural phenomena that had always given us materials. The analytical methods that were simultaneously developing in the engineering of concrete interested Kahn less, perhaps because these techniques hinted at a sort of ingenuity that did not get to the nature of things but seemed, rather, to force a strict correlation between computational equations and shapes – too often one equation at a time. The developing techniques required a specificity in the analysis of stresses that it was not in Kahn's nature to like.

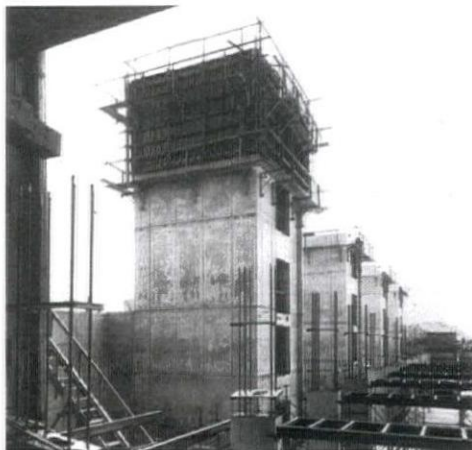
There is perhaps a greater display of the nature and range of concrete work in the Richards Building and the Salk Institute than in any other pair of works by any other architect in this century [10a-c]. This is more because they display how concrete is made than because the behavior of the material is expressed in the construction of the buildings. Concrete – these days one always means reinforced concrete – is a complex material. The buried reinforcing obscures the fact that it can have its properties as an isotropic material either affirmed or denied by the design of the reinforcing. By the time we make the geometry of the reinforcing cages emphasize the linear path of stresses, we are equating the behavior of concrete with that of isotropic materials like wood and

rolled steel, or extrusions where the long fibers of the material, or its shape, allow the structure to take stresses that are different along at least one of the three x, y, and z axes.

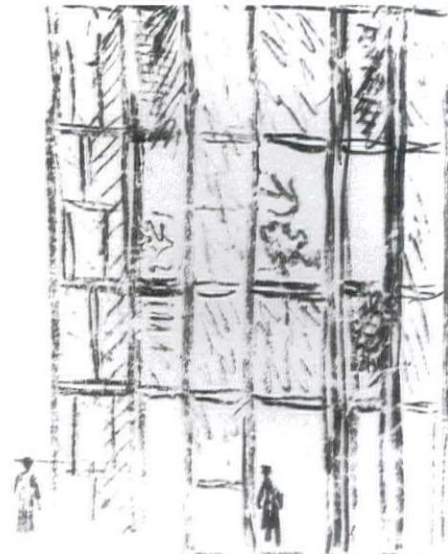
Because of the way in which concrete buries its reinforcing, it would be necessary to use some kind of X-ray machine to discover the truth behind the surface. Of course technical drawings show the steel reinforcing, but regular, devoted observers read form. It is form that makes the art. The miracles must be miracles of form.



10a. Salk Institute, La Jolla (1959-65), Louis I. Kahn.



10b. Salk Institute, service towers under construction.

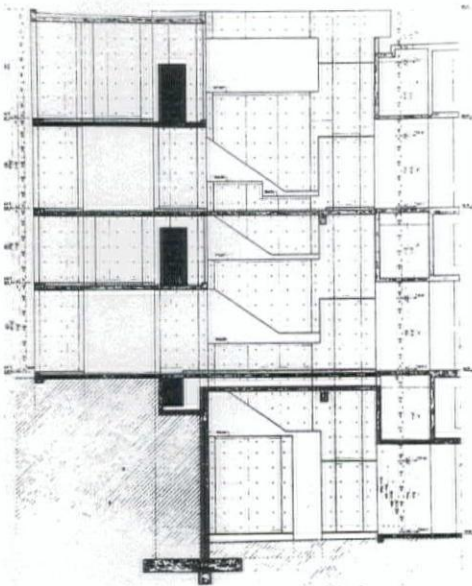


10c. Salk Institute, sketch.

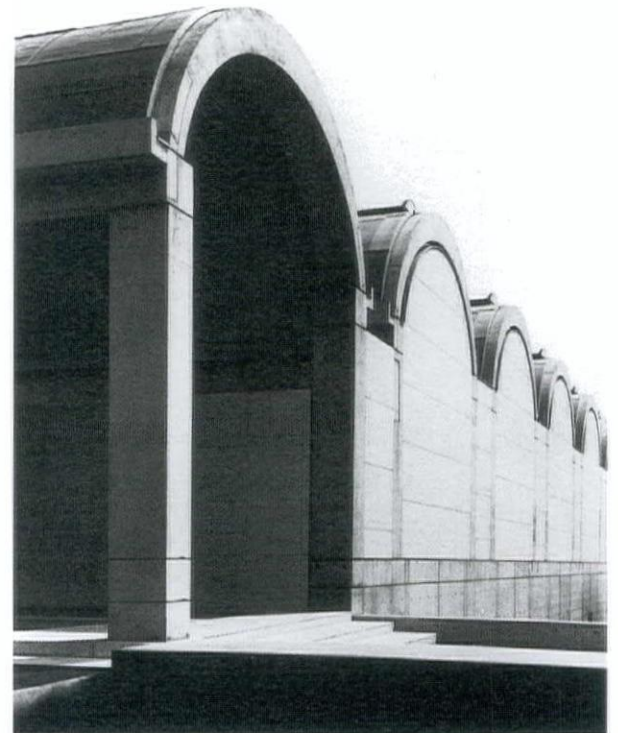
Those who study concrete as an architectural material without studying the history of its engineering development may find it perplexing. Since the work on the design of the Salk Laboratories, I have felt that the way those wonderful walls were made has had more influence on our contemporary understanding of concrete than has any other building of the last three decades. Kahn at Salk made walls greater. The greatness of those walls comes from the way they show how Kahn made them and, as he was very fond of saying, because of the way they "told, tell, and will forever tell" the way they were made [11].

Walls are generic elements, conceived of as having a very elementary task. Walls have no structural complexities; their principal job is to resist overturning and, when carrying a slab or a roof, they generally bear simple loads. Yet the imprint of the form work and the screw tie heads is a limited representation of their behavior or of the nature of concrete. At Salk it is easier to understand the walls than the intricacies of the more sophisticated parts of the structure, particularly the post-tensioned Veerandal trusses and the box girders. If the fact that the building is designed to resist earthquakes is added to these complexities, the intricacies become even more indecipherable.

Along the years, Kahn became interested more and more in the separation of elementary forces and in the simplest structural forms: compression, in a column, an arch, a vault; and tension, in a post-tensioned beam, a cable running straight down or in a catenary. The closing beams at the end of the roof vaults at the Kimbell Museum are a case in point [12]. At a certain moment in the design work, Kahn could not get the profile he wanted. The depth of the arching beams (they are not arches) at the end of the vaults is greater in the middle than at the supports, to his great regret – or fury, rather. Komendant, the engineer for that job, had developed and drawn six possible profiles for those beams, all tapered. That Kahn wanted a profile of even depth



11. Salk Institute, working drawing of concrete formwork.



12. Kimbell Museum of Art, Fort Worth (1972), Louis I. Kahn.

without stress-analysis specificity either had not been said to Komendant or else Komendant had not wanted to hear it. The calendar was catching up with the job. Komendant cantankerously refused to resolve the seventh profile, and Kahn had to live with it. The profile looks wonderful today only because Kahn's hand and sense of line and proportion could make most earthly things look glorious once he put a piece of tracing paper over them and retraced them. But the present profile of those arching beams does not express literally the beauty of the elementary outline that Kahn saw in those cycloidal vaults.

I do not know when the word technology started to be used extensively, but I suppose it was after the Second World War. Technology has been of only limited consequence to architecture, I think, principally for two reasons. One is that our understanding of the behavior of materials of use to architecture has not changed significantly in that time, and the other is that the development of materials has advanced at the service of industries and purposes generated by those outside our field. So all the progress in developing new materials serves us less than it might and, of course, compared with the technological advances in science generally, what new technology there is for architecture can only be viewed as a limited achievement.

The one technical innovation that has affected our art is the increase in the size of the increments with which we build: the size of glass, or the size of rolled steel, for instance. This development has brought about a change in our sense of scale, for the sizes have changed in relation to our customary cultural sense of good measure. This increase in the size of construction elements has also tended to make more remote and unclear the sense of the articulation of parts that one used to use to facilitate a reading of the behavior of materials. An enormous portion of Eiffel's beautiful aqueducts could today be made with one single rolled-steel I-beam. This is indeed an artistic catastrophe. A catastrophe for what it does not let us learn, a catastrophe for being bigger without being better, neither in its configuration nor in its use of the material.

The new fabrication equipment and tooling are, in fact, an explosion of the notion of the crafts as we understood them in the past. The extraordinary revolution in manufacturing that has come with the introduction of automation and computerized systems has not, in this country at least, touched the construction industry. That extraordinary technology has already the capacity for affecting the way we shape things now, but no such changes have reached us. Seldom has a new technique altered the imagery of building with anything less than a full cultural transformation. The evolution of Gothic structures and the develop-

ment of modern construction, with the appearance of carbon steel in the second half of the nineteenth century, are cases in point. Such transformation requires a fusion, a oneness of formal and tectonic creativity that must be absolute to exist.

An enormous anxiety and desire for that level of creativity exists among us all. We can only lament that examples of that oneness are rare. The work of Auguste Perret had a good deal of that impetus. Closer to home, Kahn's doublet of Richards and Salk is an example of work that could have reached, if continued, a level of realization on that order. As it is now, however, the bureaucratic complexity inherent in building seems to have derailed that realization. I fear that the material, concrete itself, could prove to be not simple enough. It was Kahn's extraordinary intensity and depth of intent that prompted a sense of adventure in the other participants. There were those builders who were interested in building better than anyone else, who felt that they could foster an advancement in their art. They believed that new ways of building were coming into being for them to pioneer. There was at the time a general belief in innovation in construction, which seems now to have been suspended.

In the twentieth century, we have Perret and Kahn, who stand at the beginning and end of Modernism. I do not believe that the Moderns were moved by a desire for perfecting construction. Although affected by the new industrialization and manufacturing techniques, it was more in what they perceived as a total transformation of the old realism into a new one that they looked for the substance of their new art. A deep sense of realism was at the root of the work of such a man as Cézanne (Ozenfant said, very beautifully, that Cézanne had decided to put appearance aside) [13]. But the generating impulse for the Moderns was a new conception of space, a dissolution of the sense of boundaries and a yearning to go beyond that old sense of physical reality. They were inter-



13. *Mont Sainte-Victoire* (1902-06), Cézanne.

ested in glass and thin steel because these were ideal materials to dematerialize their constructions. Even the Constructivists built like sculptors, decomposing and unbinding space, space that before Cubism, the Suprematists, Moholy-Nagy and the rest was always conceived of as bound. Their work does not express tectonic intent, with perhaps the single exception of Mies, and his contribution was rather late.

The truly great Modernists were the early ones. In his preface to the 1952 edition of *FOUNDATIONS OF MODERN ART*, Ozenfant surprisingly and brutally oversimplified the complex impulses of the early Moderns by reducing their body of thought to a reaction against the work of the scientists: "Engendered by the most lyrical of scientists, the Atomic Age was secretly born at the University of Chicago on December 2nd, 1942. . . The new vision of the world was, but yesterday, the province of some few advanced specialists, physicists, and astronomers." The Modernists' adventurous excursion into the space of modern physics, where space and structure are nearly a mental set of liaisons, or *reseaux*, is still today the most powerful challenge to those for whom the ordinary physical nature of building is a reminder that we must build with materials as well as tell with art.

In that great cylindrical wall of Castel Sant'Angelo the masonry network seemed to tie the stresses to the wall, guiding them down to rest deep in the ground. That wall, it seemed to me, was made to produce the first graceful crack one could possibly think of. One knew that if a crack were to come, one could tell how it would travel. Thus, we can accept the proposition that to reticulate a surface controls cracks.

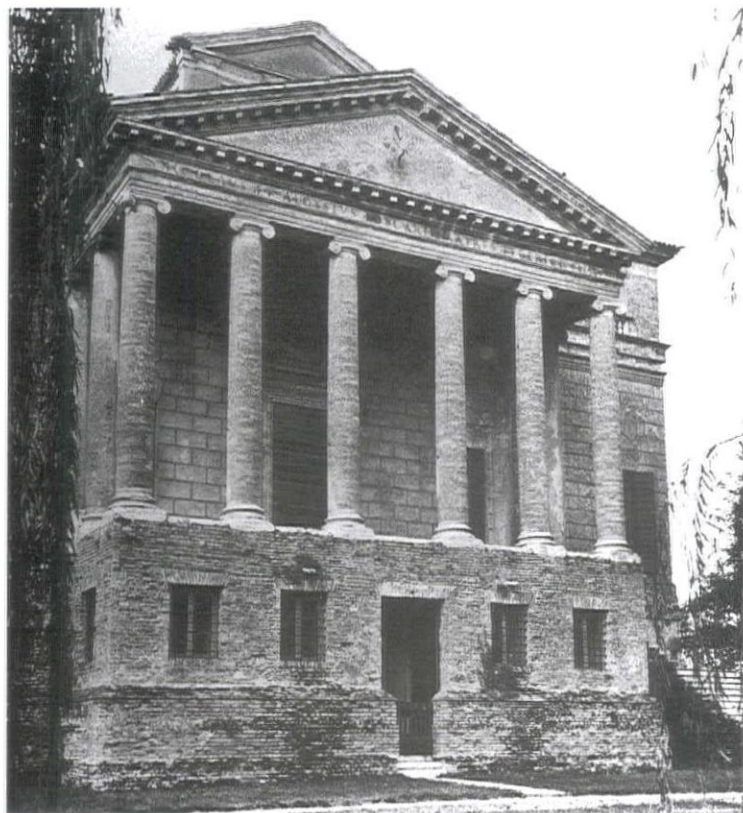
We know well a few materials which, by themselves, can do most of the tasks we perform to build. We have been able to build entirely of wood, or stone, or brick. There are also other materials to which it would be inappropriate to assign the job of performing all the building tasks. A room is not a steel tank. Steel is used to carry linear loads; every other task has to be performed by secondary materials. Steel frame construction requires the use of decks and panels, at which point the comfort of using familiar materials starts to fade away. But knowingly, we build with a controlled group of materials, and we combine systems.

New materials generally come with narrow specificity and leave unresolved, more often than not, the problem of their relation to existing generic systems. One can imagine the entire repertoire of construction materials organized along that grand counterpoint between mass or masonry materials and that other group that comes out of point loads, and the notion of frame and infill panels. Consequently, we think about surface as an issue that pertains to both. Surface finishes are then applied. They mask structures. The use of surface materials without regard for the nature of the frame as a structural concept – thereby turning the wall into a panel – has a problematic lineage.

Of course the separation of appearance from substance has a long history, a quite dramatic one at that. Even the word color has, buried in its history, the notion of to hide or to mask. In the Villa Malcontenta, Palladio had imitated stone with beautifully layered stucco [14]. The upper coats of the stucco, a mix rich in marmolina, were of such transparency that the shadow of a wild, beautifully-hued lavender flower climbing the east wall seemed to travel deep into the material. Here the absence of stone had forced the creation of a new attribute in the surfacing material.

Vitruvius speaks of the separation of the surface of the wall from the rubble fill. It is extravagant to use strong and durable materials

throughout the thickness of a wall. We know that a material will have a different task to perform in the center of a wall than on its surface. That gives us, to start, the license to consider surface a justifiable concept, but it does not absolve us from the duty of searching for a surface material that can be coherently integrated with the walls as, for example, a tile surface on burnt-clay masonry. The issue is one of compatibility of the chemical composition of the materials. Travertine and concrete are compatible materials [15]. The walls of the Big House on the Salk project were to have been of travertine and concrete. Modern construction, with the pre-eminence of the notion of frame and its ability to absolve the building fabric from the elementary duty of bearing loads,



14. Villa Foscari, "La Malcontenta," Mira (1555), Andrea Palladio.



15. Kimbell Museum of Art, detail of travertine and concrete.

leaves us with the task of structuring, both figuratively and literally, the incremental parts and layers of the vertical surfaces. They remain as the planes where our eyes go to search for both the identity of materials and structure and for the character of the spaces we build.

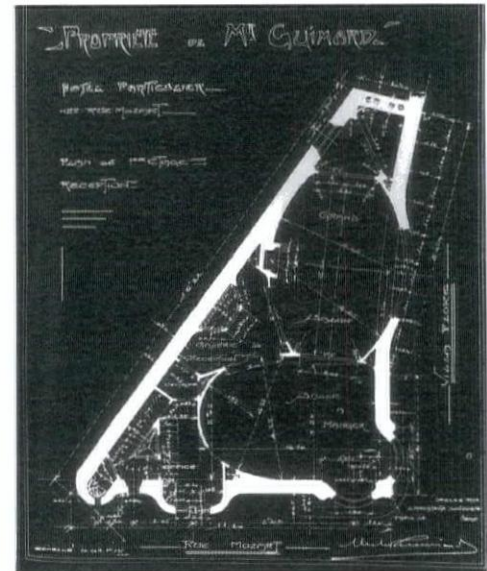
Words have ages. It is perhaps because of the gentle rhetoric of the more academic critics in our field that we seem to have acquired, only recently, the word materiality. It is a word that we, in our schools, have come now to use as a coined clue to a position. When reference and allusion, sign, and the representational aspects of an object of criticism – a building, of course – have dominated the commentary, often someone will bring in materiality as a way of calling us back to sobriety and the forgotten virtues: How do we build? How do we structure what we build? What materials do we use? It is as if the mission of tectonics, or of the discipline of building, were to be the necessary antidote to our intemperance as readers of our architectural culture.

I believe that we are waylaid by a polarizing pair of notions, both of which do have, at least, the appearance of truth. One is that what we are offered by technology is naive and full of industrial expediencies and lacks truly scientific and philosophical substance. The other is that architecture does not need so much technical elaboration – post and beam and little more is all we need, as if the world were flat.

If we isolate materiality as an ingredient, as a principle even, to comply with, we will also isolate how to compose, as it were, perhaps, the very opposite. We can argue that to compose we do not need any of the order and repertoire of elements that materials and structure bring to architecture. Hotel Guimard is



16a. Hotel Guimard, Paris (1909-12), Hector Guimard.



16b. Hotel Guimard, first floor plan.

sheer, pure composition. The internal spatial reality of its rooms and sequences are, within those deep exterior walls, like a gift in a box, no matter that the box, meaning those outer walls themselves, are much less successful [16a,b].

At the other extreme, we have suffered the abuse of structural and systems expressionism – witness brutalism or abundant “hi-tech.” This polarization between composition and materiality may also be seen in a comparison between two photographs of the Church Am Steinhof designed by Otto Wagner, that exquisite master of composition. These two images – one documenting construction, the other depicting the completed building – reveal an extraordinary proliferation of mate-

rials drawn from nearly all categories: metals (cast and rolled), aluminum and lead bolts, hand-wrought parts, stones, cementitious materials, tiles, solid masonries, sheathed and anchored woods, many kinds of glass. This excess is a genuine provocation to those not so early modern aesthetic “theologians” who called for austerity and truthfulness [17a-e].

Regardless of the rhetorical exertions on both sides, to concede that we are totally, or even partially, back to that immoderation, with however gentle differences of style, would be lamentable – lamentable for our cultivation of the discipline necessary to build well. When we study old structures with a restricted repertoire of materials and groups of

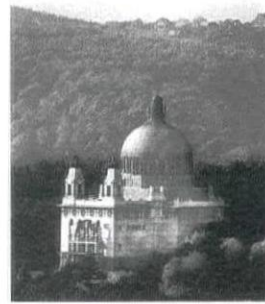
assemblies, or the works of architects who, for whatever reasons, built within genres of techniques, the clarity we gain is not simply in understanding a point of order and coherence, but in seeing that those genres represent a point of obvious compositional force. Above all, we cannot build without the sense that the way we build is an active ingredient of the compositional strategies by which we try to achieve the ideal, or the idea of bound, sequential, and delineated spaces. Yet, regardless of the gifts granted us by the construction as the artifice, our art exists between its presence and its absence.



17a. Church of St. Leopold, Am Steinhof (1905-07), Otto Wagner.



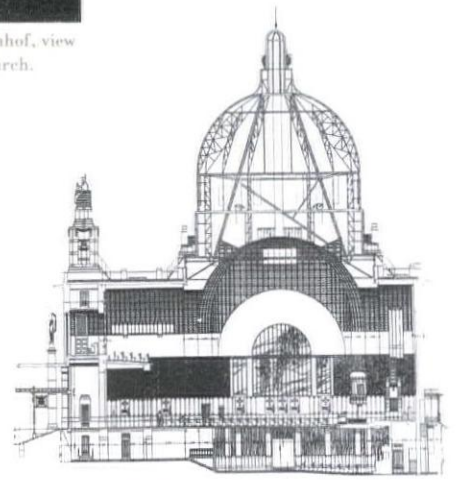
17b. Church Am Steinhof, construction photograph.



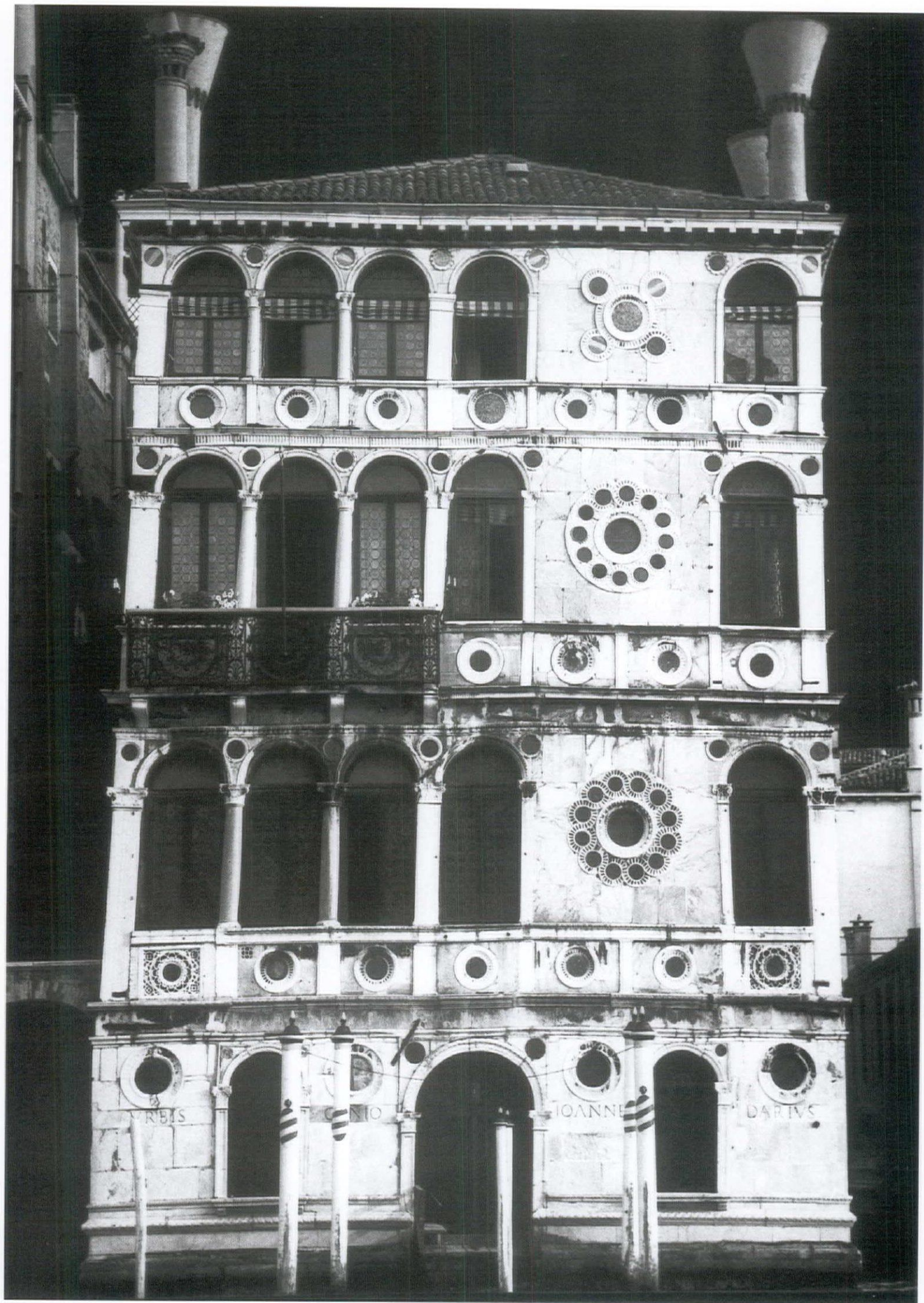
17c. Church Am Steinhof, view of completed church.



17e. Church Am Steinhof, structure between domes.



17d. Church Am Steinhof, section.



The *Lume Materiale* in the Architecture of Venice

Marco Frascari

"Knowledge is the material cause of poesis"

Antonio Conti, PROSE AND POESIE

This is an ontological storytelling of architectural events, a theoretical reflection, a narration of a technological *mythos* where stones change themselves in light through architecture, and architecture exists because of light. It is a Venetian tale¹ about the most undefinable of substances: light – the light which can only exist through the substances of Venetian architecture. It is a story about the Venetian light. This *mythos* is embodied in the words of an enigmatic sentence devised for his own tombstone by Carlo Scarpa, a Venetian architect, with the intent of describing the nature of his architectural *oeuvre* to posterity:

*"I am a man of Byzantium who came to Venice
by way of Greece."*²

This sequence of geographical denomination reflects an essential commonality of place. In each of these places the constructed world is conceived as a vehicle for the revealing of light through its embodiment in the material dimension of architecture. Scarpa's architecture embodies light. In his architecture there is a playful confluence of the oriental with the western light, as both kinds of light are embodied in the built world of Venice. This embodiment of light in Scarpa's work is so dominant that one can imagine etched in each of his buildings the same inscription carved by a Byzantine architect on a stone in the Archbishopric Chapel at Ravenna:

*"Light is either born here, or imprisoned,
reigns here in freedom."*

This light is an entity that can be named using an Italian locution of a Venetian flavor: *lume materiale*. Such a locution is intended to point out the palpable presence of light – something born in the materials of construction and imprisoned in the body of an edifice as the mind is imprisoned in the body of a man. This palpable material light, however, is free to express itself, and rules the construing of architectural events posited by the

¹ As Moshe Barasch has pointed out in his discussion of Italian art theory (see *THEORIES OF ART*, New York, 1985), in Venetian art literature, the tradition is that the presentation of theories is not organized following a logical structure or systematic arrangement of concepts. Alternatively, the presentation is done in an urban tone by the Venetian theoreticians in free dialogue, or in a story-telling format. The main theories are presented colloquially in a casual manner, with a rich mythological overtone which hides a sophisticated theoretical framework. This essay intends to belong to this Venetian tradition.

² See Giuseppe Zambonini, "Process and Theme in the Work of Carlo Scarpa," *PERSPECTA* 20: *The Yale Architectural Journal*, (Cambridge: MIT Press, 1983).

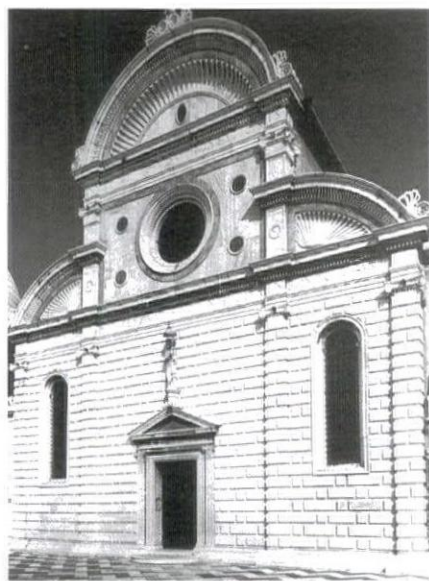


2. Grand Canal, Venice, fifteenth century engraving.

material resolution of elements and the detailing of construction. In this way, the *lume materiale* is a tangible essence of architecture which can be used as a touchstone for the discovery of the true nature of the substances composing a constructed world. An understanding of the material qualities embodied in this *lume materiale* will allow us to decipher the metamorphosis of that constructed world, bringing to light the hidden and peculiar nature of a visual alchemy concealed in Venetian architecture.

Architecture is co-existent with light. Absence of light effaces architecture; without light it ceases to exist in a real sense. A mound of stones, a splendid Venetian home, a wonderful Byzantine dome, and the most extraordinary Greek temple are the same inert matter without light. Conversely, there is no light without the architectural material which makes up the constructed world. The color of elements made up of *pietra d'Istria* (Istrian limestone), placed in a brick wall and covered with a thin veneer of *intonaco di coccio pesto*³ (red plaster), remains inert and unchanged – showing a constant texture throughout the varied play of natural and artificial light – unless an architectural presence exerts itself. This presence transforms the materials, framing them in a meaningful dialogue and bringing forward through an almost metamorphic process the nature of a playful Venetian light.

³ The *intonaco di coccio pesto* is typical of Venice and is made with crushed old roof tiles, sand, and quick lime.



3. Chiesa di S. Michele in Isola, Venice (1527).
Mauro Codussi.

The *pietra d'Istria* is a salt-white stone, more coarse than marble, which gradually dims to a neutral grey when exposed to regular washing by occasional rains in a comparatively clean air. Without benefit of these washing rains, however – protected by overhangs or recesses in elevation – it blackens under layers of accumulated soot. Palladio magisterially uses this dual quality of the light of the *pietra d'Istria* in the design of the facades of his Venetian churches. Each of these churches explore the conflating and interpenetrating of two facades – one low and squat, the other tall and monumental. The implication of, and the relationship between, these low and tall facades is emphasized by the reaction of the *pietra d'Istria* to the effects of weathering. The color of the tall facade is light; its colossal order, friezes, and pediment are washed clean by the rain and come to represent the sacred temple of God. The low facade, however, is dark and unwashed; it is the house of nature and the representation of human dwelling. This possibility of converting stone in light through architecture is beautifully acknowledged by Pietro Delfino, a monk of the Camaldolese branch of the Benedictine Order, in a letter describing the work of Mauro Codussi concerning the facade of San Michele in Isola (the church of the cemetery of Venice):

"... lumina in se convertat...ubi consistam."⁴

[*"The facade, now complete and perfect, shiner of such a beauty so that in turns in itself the light of the eyes (lumina in se convertat) of all those who walk or sail by."*]

Man has used the refractory qualities of material to define mythological times (the Gold, Silver, Bronze, and Iron Ages), and to mark the intervals of marriage (paper, silver, gold, and diamond anniversaries). In Venice, the nature of material is still related to this temporal signifying power. Here the past, the present, and the possible future are marked by an appropriate use of material. The light of different ages is marked within the public and private spaces of Venice; the stones tell stories of when the city was *Serenissimo*, the *Dominante*, the *Regina dell'Adriatico*. They are what John Ruskin called the sacred stones of the past, the worked matter which brings to light the past of our fathers.

This account of the Venetian use of material as a basis for the construing of artifacts has been a preamble to the Venetian tale of the *lume materiale*. The story begins in Byzantium, toward the end of the fifteenth century, during an era marked by a profound fascination with the qualities of oriental life – a fascination embraced by one of the most powerful of Venetian diplomats, Giovanni Dario. Dario had been sent on frequent diplomatic campaigns as cultural and political advisor to the Venetian *Bailo* residing in Byzantium, to assist in his dealings with the labyrinthine Ottoman government. A Venetian born in Crete, Dario had been greatly acclaimed following his return to Venice in 1484 for having successfully coaxed the Turks to ratify a peace treaty after a long and disastrous war. In appreciation for this extraordinary achievement, the Venetian Republic rewarded Dario with generosity. This made possible the realization of Dario's dream: the construction of a free-standing and exceptionally beautiful palace on a narrow lot in the Sestiere of Dorsuduro, at San Vio, where the Rio delle Toreselle meets the Canale Grande.

Ca'Dario is the best representative of *lume materiale* in the city of Venice. It is a building about Venice. Early in its construction, Dario had an inscription carved in the lower story of the building:

URBIS GENIO JOANNES DARIUS

(*Giovanni Dario to the Genius of the City*)

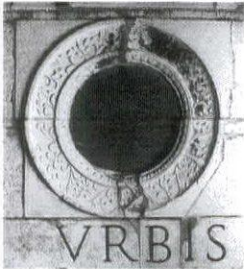
⁴ See L. Olivato Puppi and Lionello Puppi, *MAURO CODUSSI E L'ARCHITETTURA VENEZIANA DEL PRIMO RINASCIMENTO* (Milan: 1977).



4. Portrait of Mehmed II, Sultan of the Ottoman Empire [1451-81], Gentile Bellini.



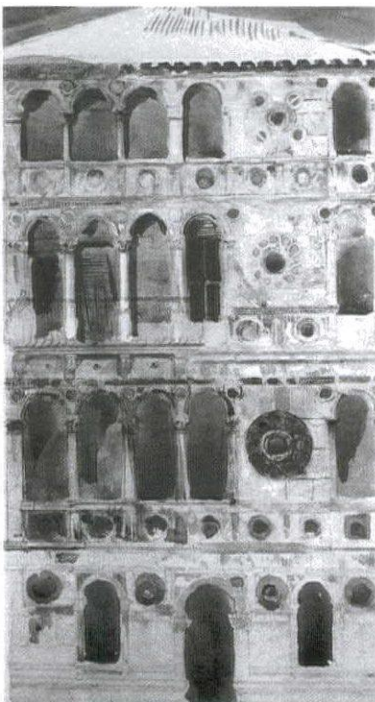
5. Ca'Dario, Venice (1487-97), view before restoration.



6. Ca'Dario, detail.



7. Ca'Dario, detail.



8. *Ca'Dario* (1849), John Ruskin, watercolor.

This inscription is fundamental for understanding the role of this building in our story. With this inscription, Dario dedicated the building to the genius of the city (*Urbis Genio*). The grandeur of the palace and the radiant surfaces of its marble were not intended to celebrate Dario but the city of his fascination.

Ca'Dario is a hybrid – or “monstrous” – building. It is a combination of bold, Gothic elements, Tuscan traditions, Lombardic decorations, and Byzantine memories. It dominates the aim of a *restituti ad pristinum*. This is the desire of a perspicuous representation of the past in the present. The “monstrous” Ca'Dario is an expression of the multi-faceted culture of Venice. It is a real monster of architecture – understood not in the sense of abnormality, but in its ethnological meaning of an extraordinary event. “Monster” derives from the latin verb *monstrare* – to show the way – which in itself, derives from *moneo* – to give guidance. In this way, Ca'Dario is an extraordinary hybrid that combines the architecture of the West and the East with the influences of Rome and Greece. It results from a dialogue between a refined understanding of classical composition and a rich taste for the arabesque. Ca'Dario is a material representation of the Venetian enchantment with voyages and memories.

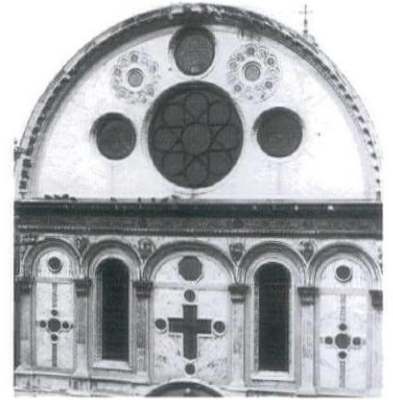
The construction of the palace began in 1487 and terminated a decade later. Although the design of Ca'Dario has been attributed to Pietro Lombardo and his school, there is no record of an architect, or *proto*, being placed in charge of its construction. Indeed, Ca'Dario correlates with no other building in Venice, except perhaps the church of Santa Maria dei Miracoli, known to have been designed by Lombardo. Many inconsistencies of facade and plan, however, occur throughout the building design, suggesting the inattention of a trained architect. Furthermore, the peculiar inscription in the lower story could be taken as indirect proof that Dario himself designed and built the edifice, perhaps with the help of a late Gothic masterbuilder and a group of Lombardic stonecutters.

A positivistic interpretation of the nature of the material used for facing the brick wall at Ca'Dario will conclude that this facade is the product of a peculiar site situation – as are most buildings on the islands of the Venetian lagoon. Such an interpretation insists that due to the extreme constraints of space (with little room for the site fabrication of elements, the low bearing capacity of Venetian soils, and the remote location of working quarries with a suitable marble), the traditional methods of stone and brick construction could not be implemented. It was for this reason, such an argument maintains, that many Venetian buildings were routinely constructed of second-hand materials, pillaged from abandoned sites throughout the city. Alternatively, one could argue that the Venetians developed this system of construc-

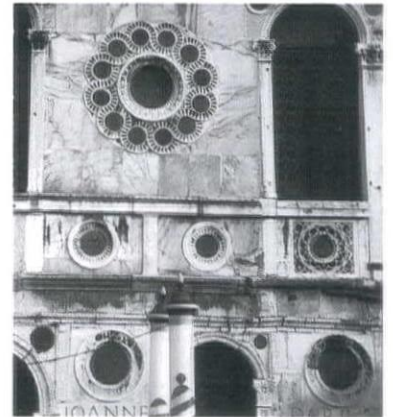
tion not in response to the peculiar condition of their city, but rather as a consequence to their understanding of the “maternal” nature of materials. The material itself becomes the matrix of the order of construction. The use of second hand marble is not a clever solution to the problem of space and cost, but is rather a use of the material itself as the measure of the *cosmesis* of the facade. In the Venetian palace, this marble *cosmesis* of bare brick walls is the principle of a cosmos – the stating of a Venetian Measure. From this point of view, *cosmesis* is both ornament and decoration. When identified in the formal qualities of a material, it becomes the matrix of architecture itself.

At Ca’Dario, this process of identification and transformation is represented by the use of the *patere*, or stone patens – the ornamental circles of porphyry obtained by the slicing of a column in horizontal segments. This is, indeed, a different process for achieving architectural signification within the guise of the *lume materiale*. Decoration – the human search for a proper decor, a dignifying representation – has always been achieved by the substitution of a more for a less dignifying material. The Venetians, however, do not adhere to a traditional process whereby the tectonic expression evolved in association with the less dignifying is retained in the new. This phenomenon is well known in connection to the Doric temple – a representation of wood construction in stone. This is not to be found at Ca’Dario. The dignifying materials of the facade are transformed within the logic of the materials themselves. Stone elements taken from other buildings are transformed by technical operations proper to stone work, producing tectonic figures of wonder and ingenious variety in contrast to the purely functional aspects of the built artifact. In this transformation of materials, technology is directly identified with the tectonic dimension of architecture. These qualities result from the union of specific formal characteristics (the lines and planes of the composition) with the fundamentally visual (the glittering), engaged with the tactile (the smoothness). The *lume materiale*, in this sense, is a rich substance producing a tangible built poetry out of elemental knowledge.

The elements of this palace stem from the visual world of materials, but the light embodied in them transcends their limits as built anecdotes within the tale of construction and brings their reality to a surreal game. Arrigo Rudi, a pupil and collaborator of Scarpa’s, once said that “you cannot walk in a building designed by Scarpa with your hands in the pockets.”⁵ In Venice one experiences the same sensation. The stones of its *campi* and *calli* invite touch; if they are refused, they will touch you through their light. In this way, the senses of vision and touch are inseparable in construing the material nature of architecture. Vasco Ronchi concludes his historical survey documenting a physicists understanding of the nature of light:



9. S. Maria dei Miracoli, Venice (1481-9), Pietro Lombardo, detail.



10. Ca’Dario, detail.

⁵ Statement made in a Ph.D. seminar, University of Pennsylvania, Spring, 1985.

⁶ See Vasco Ronchi, *THE HISTORY OF LIGHT*, p. 284.

*"To the word light, therefore, only one meaning remains: absence of darkness, the very same meaning attributed to it by philosophers two thousand years ago. That 'there is light' simply means that the psyche is not idle but produces phantoms, even if only in a dream."*⁶

Light is a palpable presence in the Venetian dream to the extent that we believe what was once said by the Greek philosopher Leucippus of Miletus:

*"... every modification, either produced or received, is due to a contact: all our perceptions are due to the sense touch and all our senses are but variations of the sense of touch. As a consequence, since our soul does not come out to touch the objects of the outside world, it is necessary that these objects themselves come to touch our soul by passing through our senses. Now, we do not actually see the objects coming near to us when we perceive them; therefore, they must send to our soul 'something' that represents them, some image, some eidiola, some kind of shadow or material simulacrum which envelops the bodies, quivers on the surface and can detach itself from them in order to bring to our soul the shape, the colors, and all the other qualities of the bodies from which they emanate."*⁷



11. Ca'Dario, detail.

⁷ *Ibid.*, p. 7.



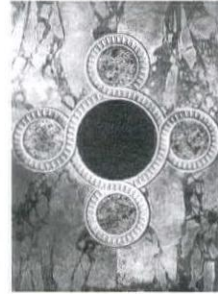
12. Ca'Dario, interior.

Through light, architecture becomes a corporeal figure, transforming material into intellectual pleasure. In these materials are present the cosmos and the *cosmesis* of the constructed world, the bare structure and its pleasurable reclothing, the skeleton of an edifice and its necessary decorative flesh.

The lower portion of the facade at Ca'Dario and the structural elements at each level are composed of Istrian limestone. In the upper levels the dominant decorative materials are large and small patens of porphyry from Byzantium. Occasionally, the larger of the patens are surrounded by smaller varieties in green serpentine. All of these patens are set in a surface of *bardiglio* slabs – a mottled red marble from Verona – and *giallo antico* – a yellow marble from Numidia. The relationships to be found among the second-hand pieces of this construction are not based on syntactical principles of tolerance, but rather on poetic plays in this giant marble puzzle. These marble and glass features are defined by a piercing light, which engraves their lines and sublimates them to a symbol of repose, certitude and solemnity. This is a light-filled, playful world. Void predominates over solid in such a way that light may penetrate deeply the walls of the palace; its material elements are plunged in light, taking part in its abundance and its watery reflections.⁸ The glass panes of the windows built with the traditional glass circles mounted in lead participate actively in this material puzzle. This Venetian glass is a material which can imprison light. Indeed, these glass patens act as do the marble patens, transforming the nature of light and making it a material of construction. Furthermore, the round shape of these patens is transformed by way of a technology which transforms the nature of the material; each disk of glass is formed as it is dropped in a hot, molten state onto a spinning wheel, whereupon it is allowed to cool and solidify. Through this transformational process, a new tectonic figure is cast, perspicuously presenting the colloidal nature of glass.

This same, round shape – animated by precious, polished, and glittering materials – dominates the architectural imagery of a book published by Aldo Manuzio a decade after the completion of Ca'Dario.⁹ Manuzio's book, which has been defined as a fifteenth century FINNEGAN'S WAKE for its peculiar use of vernacular language, bears a transliterated Greek title, HYPNOHEROTOMACHIA POLIPHI (Poliphio's Strife of Love in a Dream). The images of material used in Ca'Dario can be the formal reference in reading Poliphio's descriptions of buildings seen in his architectural dream, and especially in the description of the temple of Venus Physioza:

"Around this entire abandoned construction there was an inner belt; that is, of empty steps, which were made of excellent, heavy, continuous, oriental jasper, perhaps from Cyprus. The color was mottled and



13. Ca'Dario, detail of marble paten.



14. *The Miraculous Healing of the Daughter of Benvegnudo da San Polo* (c. 1500), Giovanni Mansueti, detail.

⁸ In its present state, unfortunately, many of the side openings have been filled up because of static reasons. A succession of owners have presided over the building's slow decay. The first to extensively renew the building was Rawdon Lubbock Brown, a respected scholar of Venetian history and a friend of John Ruskin, who undertook this work between 1837 and 1842. In 1942 the palace was rescued from near collapse by repairs which kept the tilt built by the passing of time in the walls. There were additional repairs in 1960. Except for a late nineteenth century iron parapet and the addition of a few new marble patere, the facade above the ground floor is seen in its original state. On the ground floor the openings were modified by Brown. The original arrangement here is not known.

⁹ The author of this fabulous book is Francesco Colonna. Although the front page does not state any name, the name of the author is embodied in the text by the initials of the chapters of the book. Placed in line they read: *Polliam Frater Francisicus Columna Peramavit* (Francesco Colonna Loved Pollia). The identification of Colonna is still an open question. It has been suggested he could have been a Venetian monk or a Roman prince.

¹⁰ This is a rough translation, since it is impossible to render the layering of material in the language of Colonna. The original text reads: "Di questa disertata fabbricaturra il cinto interiore, cioè gli vacui gradi constavano facti di optimo diaspro, ponderoso continio ed orientale, e forse Cyriaco. Di coloramento confuso, cum varicante undicula diversissimo. Gli labii dille quali capsule, e il socco bellissimamente erano infimbriate in circuito continio di Oro obrizio, indule gululatione, sopra la cohaesione dilla justa divisione dille tabelle, Cum operatura transcendente lo humano cogitato, et exactissimo expresso et ultimo conato."



15. *The Meeting of S. Ursula with the Spouse* (1495), Vittore Carpaccio, detail.



16. *The Healing of Anianus* (1499), Cima da Conegliano, detail.

extremely wavy and varied. The contours of the niches and the paten of the plinth were beautifully fringed in a continuous circle with grooved and fluted Obrizio gold, above the joints of the justly proportioned squares, with craftsmanship and refined, precise expressions that transcend human knowledge, and with limitless ambition . . ."¹⁰

Ca'Dario is indeed the embodiment of this limitless ambition. It represents the nature of intellectual pleasure in the metamorphosis of construction, through the power of signification latent in material.

The metamorphosis of Venetian light is embodied in architectural material as the *lume materiale* is embodied in the pigments of the paintings of Giorgione and Titian – or any other accomplished painter of the Venetian School. This is so even to the extent that a building composed of colored marble and a painting in oil both will fundamentally change with the passage of time. Just as these oils fade through exposure to natural light and the chemical affects of ambient air, so will a colored marble oxidize and transform itself over time. This relationship of light and material in both painting and construction is further understood if one considers the theoretical writings and architectural landscapes which populate these paintings of the Venetian School. The concept of *regola* (rule) which is the very focus of the Renaissance Florentine School of painting is fully neglected in Venice. The Venetians rejected the search for a rationalization of site in favor of a phenomenology of site. The most evident phenomenon is the fusion of light and color known as *lume veneziano* or *colorito veneziano*. This concept of light as the soul of color has guided the painters of the Venetian School throughout their search for a representation of texture – that is, the rendering of light in relationship to the material quality of the painted subject.

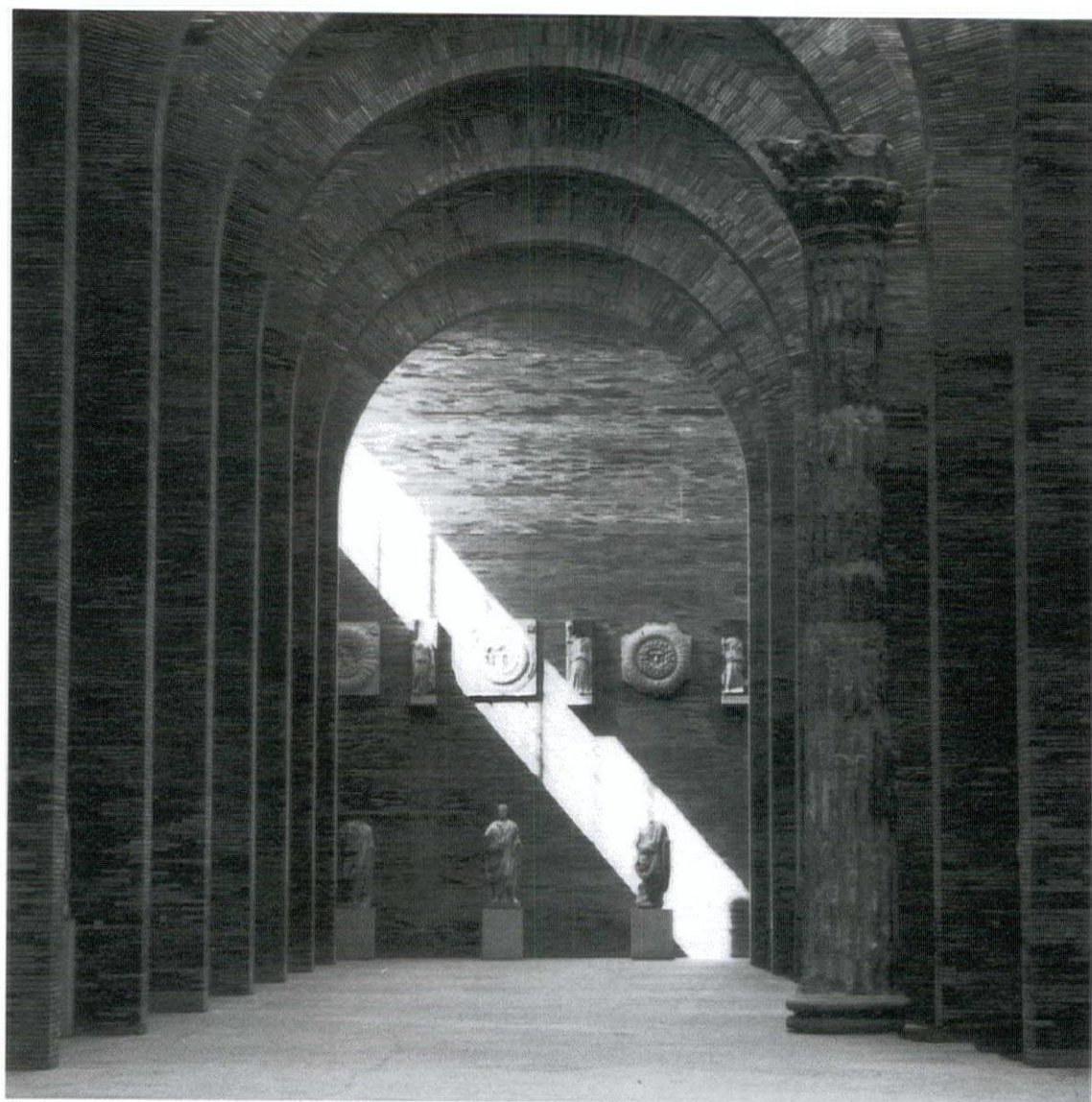
This Venetian interest in the *colorito* and *lume* in material presence is even more evident in the connection between the stone decoration and ornament of the facade of Ca'Dario and the architectural elements and marble inlays appearing in the paintings of Vittore Carpaccio. It has been suggested that the major events of Dario's diplomatic career were the source of two episodes – the *Arrival of the Ambassadors* and *The Dismissal* – treated in the painting of the *teleri* of the legend of Saint Ursula by Carpaccio. The *lume materiale* transforms the nature of Carpaccio's representations from a surreal, painted event to a real, constructed world. Paradoxically, the edifices in these paintings can be seen as architecture, while the built Venetian palaces themselves can be regarded as huge, painted backdrops – beautiful wall veils, in fact. The materials to be found in these paintings represent the material qualities of architecture, whereas the materials in the Venetian facades repre-

sent the light necessary to bring architecture into a corporeal presence – a transformation based on *phantasia*. Consequently, Palazzo Dario – as any other true Venetian building – is first and foremost a construction of *phantasia*.

This Venetian tale of materiality and architectural poetry thus ends with a Latin word which cannot be translated. *Phantasia* cannot be rendered using the word fantasy. Its meaning must be explained through an appeal to its etymological Greek root, *phos*, which means light. It is the light advocated by Louis Kahn – a silent light which tells the real story of architecture, inventing its nature. Light is indeed the most intangible of the materials of architecture, existing only through the stones of the built world. These stones have a meaning, however, only by the force of light that is *phantasia* in their use. Light is the alchemic catalyst of the tectonics of the constructed world. The technology of light is the dignifying and sometimes ironic procedure by which we transform the constructed world into a corporeal reality.



17. *The Dismissal of the Ambassadors* (1495), Vittore Carpaccio, detail.



The Idea of Lasting

A Conversation with Rafael Moneo

Editors

We would like to open this talk by recalling a comment you have made on a previous occasion concerning the nature of architecture in history. You have said: "I see the buildings of the past conveying another reality which I would like to reach. I am pushing to think about what this reality is as the first theoretical question of today." This is an intriguing proposition. What do you suppose constitutes that reality, and why does it seem absent from our present world of construction?

Moneo

I realize that there is a lot of ambiguity concerning the idea of *reality*. When I say that the buildings of the past are conveying another reality, I am referring to a *consistency* that those of today do not possess. Such a consistency is far from the concept of reality as a simple imitation of known models of architectural types. It relates to the existing coherence between built form and image. In the past, the act of construction itself was conveying – or implying – the form and image of the building as one. That provides the feeling of authenticity – a concept that parallels consistency – that I believe I was alluding to when I spoke of this reality.

Editors

Perhaps we should address this problem through a consideration of both materiality and abstraction. How might these two issues be related? How do they manifest themselves in buildings of the past as distinct from those of today?

Moneo

The kind of abstraction that architecture suggests always implies materiality. This does not mean that materials always carry the same importance. In a Gothic cathedral facade, for example, the problem of material is secondary, I think, to matters of iconography. The way in which this iconography is captured in stone is, in the end, much more important than the stone itself. 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.

On the other hand, when buildings enter into the realm of materiality, they become much more unpredictable; there is always some degree of unpredictability effected by material in the work of the architect. In this moment the transference occurs that brings buildings from drawings to reality. I think this is one of the more exciting moments for the architect.

The museum at Merida suggests something of that experience for me. In this particular project, the choice of the brick was fundamental to its nature. It would not be the same in another material. I don't believe that the walls of this museum would be placed at the same interval, with the same distance between them, had we chosen to execute them in concrete as opposed to brick. In this sense, distance – or if you prefer, the sensation of closeness – depends on material. I experienced this phenomenon vividly at an exhibition of Richard Serra's work in New York not long ago. Serra's sculpture depends on those very large sheets of steel. A purely visual critique of this work would conclude that its substance – its most important effect – is exclusively the spatial reality that has been created by their placement. Of course, if all those sculptures had been built with cardboard, they would not be the same at all. These pieces depend on their weight and the particular qualities of steel to achieve their reality. Similarly, I could not have done the museum at Merida with a material other than brick. I believe the correct distance between the walls has been achieved. This means that the intended material of the building must be present at its conception.



2. *Clara-Clara*, Paris (1982-83), Richard Serra.

There are other architectural aspects of the brick as well. At first glance, it may seem that the fabric evident in the walls of the museum is extremely literal. One thinks that I am referring to the Roman walls on whose foundations we have built by way of a process that is unequivocal – that offers only a literal reproduction of Roman precedent. I would say that this is not the case at all. It is, in fact, exactly the opposite. Roman fabric work, for example, would be fundamentally different in terms of the nature of the joint between bricks. Roman brick work always exhibits a much thicker mortar joint than I have pursued at Merida. I have worked very hard to do away with this joint altogether. It isn't simply for the pleasure of doing so; it reflects the wish to get away from an apparent literality. This lack of a joint makes the museum's wall much more abstract. At the same time, this wall provides a support for the archaeological pieces, a wall which is much more beautiful being, as it is, less

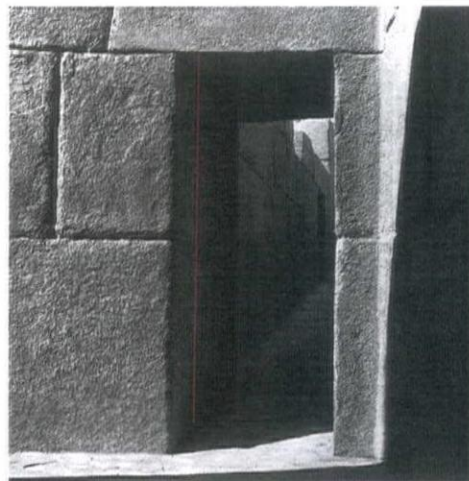
contaminated by the presence of the joint. In essence, then, I wanted to achieve two things: first, to be more abstract, and thus more distant from the Roman; and second, to use brick in a way that allowed a better appreciation of Roman archaeological fragments. When someone interprets these walls as literal reproductions of their Roman antecedents, I believe this to be a very incomplete interpretation. The wall is not as literal as it may seem. The conscious use of material allows a much more complex and rich architecture. I try in my work to take advantage of this.

Editors

Could you define abstract in terms of material? The concept of abstraction is often used to mean that there is no expression of material. You seem to be saying that abstraction is, or has to do with, the lack of a joint.

Moneo

Yes. Using the brick without a joint – or, more precisely, a dry joint without the presence of mortar – secures the *brickness* of the material, keeps the brick in a more pure state, and allows the wall to remain as an almost abstract architectural element, without becoming the kind of agglomeration that these walls tend to be. I believe the abstract use of materials depends on our attempts to keep their own identities alive, without dissolving them in the reality of the architectural element.



3. Lower Temple of Chephren, Giza (c. 2600-2500 B.C.).

Editors

There is another aspect to the spatial and formal configuration of Merida that we find compelling in terms of this issue. It is apparent that the museum has not been structured in the manner of its Roman predecessor. One finds here a series of parallel brick walls without the perpendicular complement that traditionally generates the cellular masonry building. The presence of those perpendicular walls would be necessary to complete the image of the Roman building. At Merida, this brick construction is used in conjunction with a counterpoint slab system, the two combining to produce a fundamentally different concept of space than that generated by the cellular plan. Merida is certainly related to its Roman antecedent in many ways – the presence of the brick alone suggests such a relationship – but remains distinct from that model in very fundamental ways as well. The method of design, then, seems to be one of original investigation as opposed to appropriation.

Moneo

I think that is a rather accurate reading of what occurred in the museum. The literalness of the Roman wall construction is distorted by the way in which we used the concrete slab. This interweaving of an old technique with a new one avoids the possibility of the museum being literally “Roman.” From this point of view I believe that the museum could only in a very superficial reading be connected to the Roman past. It keeps something of the Roman atmosphere, but of course it strongly conforms to the reality of the construction itself. I refer to this “construction itself” as the acceptance of the weight and presence of the slabs. Both elements together – the brick walls and the concrete slabs – constitute the material substance of the building. The constructional reality of the museum is defined not only by these brick walls, but also by their relationship to the actuality of the continuous slab.

Editors

Might it be true that the introduction of this counterpoint material suggests an experience of brick that is abstract? We might then abandon the notion that abstraction is a property of the object itself. Perhaps this thing we call abstract is, alternatively, a condition of the viewer. Accordingly, our experience of Merida has been abstracted from the traditional and anticipated experience of Roman construction.

Moneo

I think that the issue you have raised has to do with the manner in which architecture is produced. Very often we see through the history of art how much our method of working is the result of some procedure that subtly changes the way in which materials are used, resulting in the creation of an entirely new object and an entirely new being. I think that one should not be troubled by seeing one's work as a procedure of hybridization. Architecture often proceeds from other architecture by means of this unexpected use of materials, transforming something familiar into something fundamentally changed by way of this new intervention.



4. Museum of Roman Art, Merida (1980-85), interior.

Editors

Do you believe that a successful work of architecture must limit itself to a minimal palette of materials?



5. Propylea, The Acropolis.

Moneo

No, I don't think so. It is true that there is marvelous architecture that relies on the presence of only one material; the Greek temple sets the most satisfying example of such an operation. But one could consider many other examples of an architecture in which the richness of materials and their plurality of composition produce the most astonishing effect. At the church of San Marco, for instance, you will find quite fantastic architecture composed of many different materials, many different elements, many different iconographic subjects.

There are many ways to achieve a satisfying architectural experience; I don't believe it is simply a matter of striving for the highest rhetorical levels by means of a relentlessly edited palette. I think that this attitude has a lot to do with Modern architecture – and perhaps more do to with what followed Modern architecture. In the 1950's and 60's it was not uncommon to see such an emphasis on this possibility for abstraction through a process of material reduction – a process that reduced the experience of architecture to the appreciation of a single material presence, such that it remained devoid of any other presence that could in any way distract. This has to do with the moment in which architecture tries to be only a formal event.

My most recent experience as a builder took place in Seville, a very beautiful city characterized by a complexity and richness in both visual and spatial atmosphere. In this context any stylistic abstraction one might attempt would pose a great danger of "schematicity." I tried to overcome this difficulty by working with a very rich and textured building of many different materials. These materials were then joined in such a way that it became possible to address even the smallest scale of the city. I pursued this strategy in the hopes of creating a work that might live with repose in the city. When you are trying to achieve such a repose among existing buildings – without creating the problem of a radical encounter – you are brought into providing this kind of richness and variety characteristic of the Sevillian atmosphere. I attempted to achieve this by working with brick and concrete and marble and wood and cast iron and ceramic tile, collectively textured in such a way as to stand in a comfortable situation within the existing building circumstances.

Editors

In working with these various materials, is there an assigned "value" or meaning fixed for each component in the composition?

Moneo

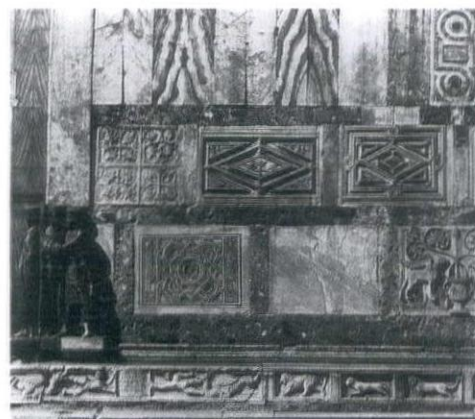
When you are working with different materials, the texture itself – the construction of the texture – becomes the crucial issue. That was, in this case, the solution for giving interest to a wall that wanted not to be just a mute wall, but something able to live together with its surroundings. This attempt did not involve the indiscriminate use of a variety of materials, but an investigation of elements and combinations to achieve the condition of a wall that wanted to be continuous unto itself.

Such a method may be contrasted to a sequential system of "structure" and "infill," where one layers through the construction the secondary elements of enclosure, inhabiting what at the very beginning would be the structure of the building itself. I was not, in this case, interested in such a reading. I preferred here to achieve a continuity between the different elements and materials that have been used, not allowing for the association that is always implicit in "filling up" the structure of a grid.

It should be understood, however, that advanced techniques of construction very often favor the "schematicity" of visual character that I have here tried so hard to avoid. There is great pressure exerted on today's architect to provide a schematic answer. Economy, in its broadest sense, requires schematic solutions, as do all the factors that economy implies – speed, industrialization, repetition of elements, ease of transportation – such that the entire process of building has been transformed. Mimetic figuration is very often the mark of much schematic thought.



6. Church of S. Marco, Venice (1063-85), view from Piazza.



7. Church of S. Marco, detail.

Editors

Do you think that the problem of materiality is different in recent architecture than it has been in the past?

Moneo

Yes, I believe so. I am very concerned about that. Not in the sense that it makes me sad, but rather in the sense that I am ready to accept that architecture can become something different from what it has been in history. I have the impression that buildings are going to last less well than they have in the past. This is not simply a matter of lack of solidity. There is a widespread yet largely unarticulated belief that buildings are going to disappear, and I share this sensation as well. Architecture is now prepared for being an ephemeral art. That is very evident in this world – particularly the United States, where the society is so sensitive to changes and advancements in building technology. That is one of the reasons why architecture today so frequently appeals to the superficial image of its predecessors; today's society does not believe in the lasting condition of its own creations. The initial impact of the building is what counts, not its long life. My point of view, however, is that this durability – this condition of being built to last – is very powerful. One must still fight for that. Of course, I understand that I am going against the mainstream in this, but I believe that from many points of view, it would be favorable to have more stable cities, more stable architecture, more durable and less ephemeral constructions. I realize that being against ephemerality is a very difficult issue, but that is the position which I have taken, with the awareness that I could be mistaken.

Editors

Could you explain what you mean by "ephemeral"? A literal definition might suggest that it refers simply to a condition of "not lasting." Since very few architects would advocate such a position, we assume you mean something different. Are you speaking of the ephemerality that concerns the world of ideas – the notion that architecture should somehow transcend the physical, or refer to an idea that is ostensibly more critical or of a higher order than the lasting quality of the building itself?

Monaco

I would say that in other times, ideas were realized through the building itself. Now it seems that these ideas don't exist except in a description of the process, and that once the building has been completed, it doesn't deserve to last. For those architects who believe that the most important issues at hand concern their own ideas, the problem of ephemerality is of no importance; you simply keep records of those ideas in other media. Others would argue, however, that by defining a project, you are providing life to a building, creating this new being that is going to be itself. Then the idea of lasting – the idea that this being must support itself – means that you are connecting the idea of permanence with the idea of architecture. If you believe that you are providing life to something that did not exist before, you are naturally trying to provide the longest life. From this point of view, I would say that I am trying to provide a long life to the buildings I have conceived. The idea of permanence has for me a value. Architecture is not simply the brilliant expression of an idea. After the architect has finished his work, the idea which motivated it is somehow dead, and at the same time, kept alive by the reality of the building. I believe that this reality of the building idea transcends into a new thing that should be sustained by itself.

It should be remembered that when we are speaking of buildings and ideas, we are exaggerating relationships. I would be in absolute agreement with the notion that buildings are charged with theoretical content, but I don't know exactly what kinds of ideas a building conveys. It is certainly true that buildings are done with ideological commitments, but I don't think buildings are mere translations of ideas. Sometimes you will find a particularly clear solution to the problems posed by a given building, but there are few that do not at least approach this condition. This is the contradiction we face: the more our buildings are about specifics, the more they can be submitted to ideas. However, people who speak about ideas in building do not want to consider their specificity in the contention that architecture conveys ideas.

When I speak of lasting and permanence – of an architecture that is not ephemeral – I mean only to emphasize the *actuality* of the building as its lasting domain. As one comes to understand that a building conveys its reality through the support of material, it becomes increasingly possible to will the long life of the building. There is no doubt that the work of the architect should be an expression of personal commitment, but once this commitment has been clearly expressed, one should not worry too much if it disappears from the reading of the work itself.

We are speaking of very slippery issues, concepts that each generation has considered, and continues to think about. From this point of view, I see architecture as always addressing the same questions throughout history. Each generation will try to answer this question of meaning in the work of architecture – what we are calling the reality of the building – in its own way. For some, this reality will be found in the fulfillment of perceived functional concerns, for others in the interpretation of program or in the investigation of typology. For others still, the reality of the building will be sought in its lasting tangible presence, which speaks about the architectural principles behind its construction. That is where I would like to be.

Editors

Perhaps this question remains unanswered because it is encountered as if without precedent each time we build; it is experienced in each construction we undertake.

Moneo

I think so. That is also the pleasure of the builder: to feel, somehow, in the process of making – even in the roughest way of solving problems – that the entire conception of the world is implicit. To experience and understand a building is to realize the continuity it proposes between an idea of the world and the construction itself. It speaks of the builder's understanding of the world – the way in which he *wanted* to understand the world. This communication allows us to appreciate the values and judgments of those who caused it to be built.

Editors

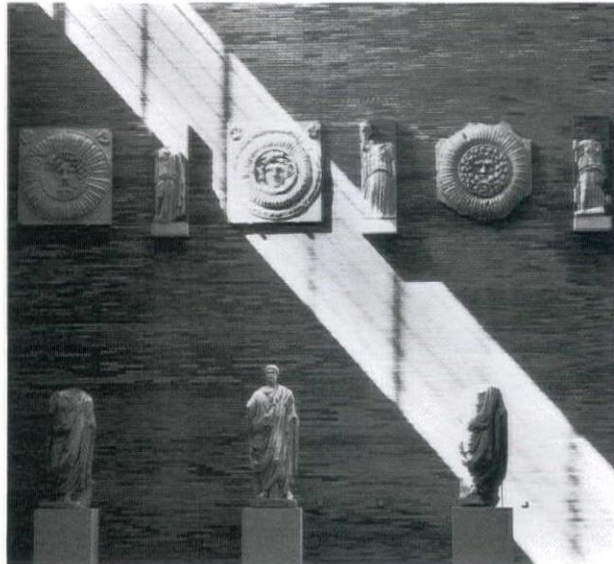
You mentioned your belief that the questions considered by the architect today are no different than those considered by the architect of the past. Others might argue that modern life is characterized by a loss of imperatives – imperatives governing the technology, scale, place, and meaning of our work. So many things seem now open to choice that surely were not in previous eras.

Moneo

It is true that we often look at the past as a time when things were well-defined – when it was possible to follow deterministically the suggestions of one's context or *milieu*, always guiding one towards the right architecture. I am not completely convinced of this. I believe that all times have felt the lack of imperatives we feel today. That is the point where a structuralist reading of history would insist that our times are not so apocalyptic as we may think. I would support the idea that our circumstances are not so different than those of an earlier era. When one finally understands a certain period in the history of art or culture, it becomes clear that the turmoil we feel today has, in fact, always occurred.

Architects need to invent these supposed imperatives. That is where this idea of building as a reflection of a particular conception of the world comes into play. The architect will always seek to transgress seemingly inevitable realities – realities that are considered to be unwavering or that seem to be approachable in only one way. Architecture deals with invention, despite these so-called imperatives. They *are* imperatives, but never in the way we are thinking. Imperatives have always been remodeled by the architect in order to find their particular means of expression. It was this process that gave to previous architecture the sense of reality we are now trying to understand. That is where I would suggest that today's architecture is less real. Construction itself – the act of construction itself – was in the last term responsible for the figurative presence that the building had; one was unable to distinguish various levels of reality that we now readily discriminate in today's construction.

This returns us to your opening question about reality. I hope that some of these reflections help us towards an answer We will try many different times to figure this out.



8. Museum of Roman Art, Merida, interior.



Robert Meagher

To think of human being as *homo faber* is to say, with the young philosopher Marx, that fabricating – or making – is the essentially definitive activity of human being. This perspective, of course, rests upon several arguable assumptions: that economic concerns dominate contemporary society; that production constitutes the core of economics; and that the theory and practice of production are essentially architectural. Indeed, however deep and disparate may be the quarrels, both intra- and extra-mural, over the details of economic planning and management, the defining centrality of production is no less an article of faith within capitalist circles than within Marxist ones – and virtually every developed or developing nation lies within a precinct of one or the other economic and social structure. Furthermore, if we look to Greek roots to inquire into this humanly defining activity, we find that, presiding over the activity of fabrication – the act of production encompassed by the Greek word *technê* – is the architect, the *architekton*, or “master-producer.” By this understanding, what distinguishes the architect from the common worker (*tekton*) is that the architect stands officially nearer to the origins, the foundational principles (*archai*) of the activity of production. In short, if society may be reduced to economics and economics to production, and if it is thus uncontroversial common sense to think of production as the definitive human activity, then within these circumstances, it is the architect

who stands as the preeminent producer, the theoretician and practitioner whose principles and vision guide others’ hands.

Consequently, if architecture – understood as an expanded, magisterial concept, embracing a wide range of specific activities and professions – presides over production, further reflection upon the theory and practice of architecture might reveal the essential parameters of human being, understood as the preeminently productive being. What I undertake here then, albeit briefly, is a philosophical examination of the act of production, invoking two altogether familiar myths, that of Prometheus and that of Adam. My aim is to disclose the paradigmatic significance of architecture as the essentially human activity, unavoidably entangled in the ambiguities of idea and matter.

Before going any further with the imprecision of such words as “production” or “fabrication” or “making,” we must clarify what is meant by *technê*, the mythical gift of Prometheus and the proper trust of the architect. *Technê* is making something into something it is not. Making love, and as a consequence, creating a child, or ploughing and seeding a field and, as a consequence, producing a crop are not properly considered *technê*; for in each of these we are merely participating in a process

which has its own purposes, without our intervening in, much less contravening, those purposes. Neither is it *technê* when we make a joke or produce a poem; for jokes and poems are made, as it were, from thin air. Thoughts are immaterial as, for all practical purposes, are words. Finally, any chance, random, or inadvertent activity, despite what it may produce, is never a true instance of *technê*, which may be defined as the conscious, willful working or reworking of matter until it becomes not only what it was not but also what it was our intention that it should become. Thus it is an instance of *technê* when we cut down a tree to make lumber for a house, or logs for a fire, or paper for a book.

From these admittedly commonplace examples we may derive all the essential principles of *technê*: that it is conscious, willful, materially violent, and materially productive. Interestingly, the ancient Greek word most commonly used to mean "matter" or "material" is *hulê*, whose first meaning is simply "wood." This word in its ambiguity represents a missing link between the natural and the artificial. It points simultaneously back towards trees and ahead towards matter, thus revealing the passage from one to the other. Wood, halfway from tree to raw material, is still recognizably natural and yet is, in the multiplicity of its uses, a metaphor for all that is malleable. Wood is not what the architect sees either firstly or finally. First there is the tree and finally there is the house. In the meantime there is wood.

This movement from tree to house is and must be a leap of imagination before it becomes a practical undertaking, which is to say that a house must be imagined before it can be built. To the naked eye a tree represents itself as what it is, an other being with its own life and its own purposes. Seen for itself, in itself, it is an object of simple

gazing, something to know and perhaps to wonder at. If, as we are gazing at a tree, rain begins to fall, we may be inspired to look at the tree and see in its extended arms welcoming shelter from the rain, not as if this were some intrinsic purpose of the tree's unfolding but merely as a happy coincidence. Then, instead of gazing any longer at the tree, we run to it; and in doing so, we begin to see it in our terms, as a refuge, as useful. So far, however, we have not altered the tree. Our presence, complete with human need and desire, is as yet unintrusive. Suppose, however, we begin to have more permanent designs upon the tree and wonder how it might become for us an enduring refuge from the elements. Not without alterations. Not without the tree's destruction. Not without work, the stages of which we rehearse in our mind. When the rain stops, we get up and step back from the tree. It and its neighbors are now lumber to us and for our envisioned shelter. Hegel, Marx, and the early Heidegger, to be sure, would prefer more complex formulations for these ideas, but the story remains essentially the same. Human being essentially realizes itself through negating what is and transforming it in accord with human idea and will.

This, then, is the core of human genius: to look at a forest and see not the trees but a village of houses or a fleet of ships, or to look at a deer and see not a deer but a shirt, a pair of shoes, and a week's meals; and then, of course, materially to realize one's vision. Seeing beyond immediately given realities is, after all, not enough. Francis Bacon spoke with contempt of the impotent transcendence of ancient and medieval wisdom, which he likened to the impotent fantasies of boys. Effectual wisdom, Bacon argued, is necessarily at one with power. It is not enough to know the world; one must alter it, bend it to one's purposes, improve it. There is nothing essentially new or modern, however, in this notion, for this same fusion of idea and

power are found in the ancient myth of Prometheus, to which we now turn.

Prometheus, true to the meaning of his name, brings foresight, the capacity and the inclination to look ahead, beyond what is to what might be; but also he brings fire, the transforming power *par excellence*. Under the influence of fire, flesh becomes food, wood and coal become fuel, ore becomes steel, water becomes steam; and, in this process, the world becomes more inhabitable, more sustaining, and more controllable. *Technê*, in short, represents the convergence of imagination and power, of idea and fire. There is another dimension, however, to the name and the gift of Prometheus, the first *architekton*. Prometheus, the provider, bestows upon humankind the imagination not only to see beyond the present but also to see beyond the personal. In this way, the imagination and the fire which Prometheus brings are as full of heart as they are of technological promise. Compassion lies at their core. Aeschylus, for one, makes this profoundly clear in his rendering of the Promethean myth. Prometheus comes to humankind with imagination and fire, because he finds the state of mortals pitiable. He perceives the world as less than welcoming, less than gracious towards humans. Distilled to few words, Prometheus sees that the world, as it is, does not suit human beings. It is too cold, too harsh, too withholding, too threatening, too alien. Human beings need roofs, walls, fires, weapons and tools in order to make their way and to hold their own. For human beings, to see the world as it is evokes not wonder but despair. Contrary to the preeminently contemplative vision of Plato and Aristotle – who found the world to be a finished cosmos, perfectly in order and perfectly pleasing – Prometheus saw in the world an expression of divine indifference, even hostility, towards human being. Before this world can be perfectly pleasing to the

eye of human being, it must be worked upon, violently transformed by idea and fire. Such was the conviction of Prometheus; and for better or worse, no conviction could be called more characteristically modern and western than his.

Already twice in this discussion the “violent” character of *technê* has been cited and perhaps requires direct explanation. By “violence” something quite precise is intended here. We may find the conceptual clarity required if we contrast two ancient Greek words for power: *bia* and *energia*. *Bia* is a power or force external to an object and made to bear upon it, whereas *energia* is the power or force intrinsic to an object and at work within it. When I lift a chess piece from one square on a game board and set it down on another, when I open and close a door, no less than when I cut down a tree or pound papyrus into paper, I am exercising *bia* or violence. When I water a seed, warm an egg, or feed an orphaned animal, however, I am endeavoring to cooperate with the unfolding of the *energia* or life force at work within the seed, the egg, or the animal. In short, violence works upon an object, while energy works within an object.

Violence, therefore, is governed not by any perception of the essential or intrinsic potential of an object but rather by a perception of its potential usefulness. An ornithologist studies the ways of birds, seeking not to disturb but to understand them; and this activity is altogether passive and non-violent. The hunter, on the other hand, sees birds as sport, a meal, or perhaps as a decorative trophy; and thus the hunter’s vision, like his weapon, is active and violent. This vision moves, as it were, from the inside out. It is, as Heidegger calls it, “projective,” which is to say that it projects human need or desire onto an external object. The ornithologist strives to “take in” the bird, its

anatomy, its coloration, its movements, as fully as the human eye is capable of doing so; but the hunter "takes aim at" the bird, a different matter altogether. The first stage in the hunter's vision is to free itself from the bird; and once that freedom is achieved and the bird essentially negated, then the bird, negligible in itself, may be shot and cooked, stuffed, or left to lie where it falls, depending on the hunter's current needs and desires, which may stem from such diverse sources as hunger, sadism, boredom, or vanity.

In the exercise of *technê*, then, imaginative freedom is essential and prior to violence. That the architect possesses and practices such freedom is apparent, whether an architect is altering an existing structure or envisioning an as yet non-existent one. That the architect's freedom is always constrained and limited by matter is no less apparent; for every architectural vision must in the end refer, even defer, to matter. Speaking properly and precisely, the architect is a maker, not a creator. Architectural works, always only relatively creative, remain instances of *technê*, things constructed from matter, not created from nothingness.

In fact, no distinction is more decisive for the architect than that between "creating" and "constructing"; and no text is more illuminating of this distinction than the creation myth in Genesis, whose authority need be no more than descriptive. In this text, since the respective natures of both God and Adam are defined solely by their activities, the distinction between the act of creating and the act of constructing proves at the same time definitive of God and of Adam; God is one who creates and Adam is one who constructs. Both activities, however, are essentially acts of speech. God speaks over the void and summons from the void a cosmos of beings, with Adam as the

pinnacle of their perfection; and Adam, created to act in the image of God, speaks over the cosmos of created beings, giving to each its name.

The idea of a word so powerful that it creates what it utters is peculiarly Middle-Eastern and simply foreign to ancient Greece. Such a word is absolutely free, since prior to its utterance there is nothing. It is radically arbitrary, answerable to nothing beyond itself. The divine word proceeds from the infinite, impenetrable willfulness of God and literally constitutes external, finite reality. Adam, for all his similarities to God, however, is far more constrained and accountable in his exercise of speech. Adam speaks not over the void but over the created cosmos. He calls all things not into existence but to task. He bestows names, not existence. Nonetheless, his names are powerful; for it is said that whatever he calls each thing, that is what it is.

The key to the meaning of Adam's power lies in the significance of names in the ancient Middle East, a matter like all others in this essay complex beyond the synoptic demands of this discussion. Nonetheless, we may say that names were seen to confer upon anyone or anything their substance, their identity. Names, in short, construe reality, relative to the name-giver. In entrusting the creation to Adam and in empowering Adam to construe the creation, God gave to Adam nothing less than effective sovereignty. In case we might skeptically wonder what is, after all, in a name, we should consider several examples of the foreseeable range of Adam's name-giving power. When an animal, say a cow, is brought before Adam, it is for him to construe it as something to worship or to harness or to eat or to milk or simply to acknowledge respectfully and let be. Similarly, when Adam confronts a river, he must decide whether its waters are to be for drinking, or for the

cleansing of sins, or for aquatic sports, or for commercial traffic, or for the convenient receiving of sewage. Consider, as well, the power of such names as "enemy" and "inhuman" and "resource" and "property" and "criminal" and "insane." Can we, in fact, name one contemporary ethical debate which does not finally resolve itself into an issue of naming and thus in the imaginative defining of reality?

Adam's situation, as described in Genesis and as discernable in everyday experience, is quite ethically precarious. His is always the second word, not the word that creates but the word that construes. Everything which he names and describes and puts to his use already exists and is something in itself before it becomes whatever it is to be for him; and there is always the possibility that his names and definitions and purposes deny, distort, and violate those beings on which they are bestowed. For Adam, faced with a silent cosmos, unrevealing of its own intrinsic purposes, there is one hope for integrity; that the creator God will speak directly to Adam and articulate the divine will mutely embodied in creation. If Adam's will is not to violate God's, then Adam's words over creation must repeat God's words over the void. The Hebraeo-Christian tradition is at one on at least this: that neither Adam nor his progeny are entitled to undo creation; and it must be recognized that all human creation is necessarily premised upon the destruction of the divine creation or of what is prior to, and independent of, human creation. The consummate sin, then, is not to do what God would never under any condition do but rather to do what only God under any condition is empowered and entitled to do. Sin is at its core the mimicking of God, the inevitably catastrophic imitation of the act of creation.

Minus, of course, the epithet of sin, this is precisely the

ambition of modern *technê*: to re-create the world. The preeminent theoreticians of modern science and technology, such as Hobbes, Descartes, Kant, Hegel, Feuerbach, and Marx, are quite outspoken on this point. The realization of this eminently human ambition requires the radicalization of both elements of *technê*: idea and fire. Human imagination must be liberated from every scruple, from every vestigial deference to Being or to God. This liberation is the work of a new metaphysics, contemptuous of contemplation and of faith, and celebrative of human being as the defining center of existence. Apart from the constraints of conscience, there is the sheer resistance of things to human design. Fire must be refined until it is able to reduce all things to their simplest element, reverting creation at least in principle to formlessness. Indeed, the quest for the physical equivalent of the biblical void, or of Aristotelian prime matter – material utterly receptive to human creativity – is an obsession of our age. The discovery and manipulation of, for example, atomic, subatomic, and genetic structures and the consequent formation of synthetic substances and viable mutants represent quite staggering stages in the human endeavor to appropriate creative power.

What humankind come of age must realize, claims Feuerbach, is that the figure of God in Genesis is no more than a primitive, provisional stand-in for human being. The act of creation described in Genesis lies not in the past but in the future, as the ultimate calling of human being. Creation is properly a human, and not a divine, prerogative. Marx says as much when he proposes as the human ideal the negation of all existing otherness and the imposition of the human stamp upon it. If we are to understand the vision of the early Marx, we would do well to consider the sight of any large city from the window of an airplane as we circle to land. Nearly everything that meets our

eyes is the willful work of human beings. What is now dry land, supporting massive structures, may once have been water or marsh; and the rivers or canals before our eyes may have been diverted or even created by human intent and hands. The patches of green below us, trees and parks, were planned and planted. The all-embracing patchwork of concrete structures and streets were first sketched and then poured into place, effacing whatever once stood or lay in their place. Now, if we imagine the entirety of the world similarly transformed until nothing wild, nothing alien, nothing random confronts us, until all that exists reflects human will and power, then we grasp the dream from which our age has yet to awaken.

Having taken this long to sketch with the broadest of pens the idea and ideology of *technê*, there can be no question of developing now a critique of the same. Instead, I will conclude with a series of unadorned comments, which may provoke further thought. As both a beneficiary and a victim of modern *technê*, I am not uniformly confident that its modern practitioners possess the compassion and goodwill of Prometheus. Prometheus defied the Gods and brought transforming power to human beings so that their sorry plight might be alleviated, not deepened. His aim was to improve, not to eradicate, the cosmos as a human habitat. Neither am I confident that human beings will ever be capable of uttering the first word, the creative word. It appears that, in attempting to appropriate creative power, modern *technê* has amassed primarily destructive power, power perversely suited to uttering the last word, the word which would send the world into the void instead of summoning it therefrom. Creation, divine or human, by definition requires a formless void, virtual

nothingness; and I fear that the void toward which our technology is unwittingly pushing us is not the one from which it will subsequently be able to call forth anything which we shall ever look upon, much less see to be good. Finally, Marx justified the abolition of nature and the erection of a cosmic human construct on the Hegelian grounds that otherness is alienating. There are some of us, however, who find an untouched wilderness far less alienating than a complete, humanly designed and controlled environment and who see in the vision of a humanly constructed cosmos not a dream but a nightmare.

Awakening from this vision, it may then be the challenge and the responsibility of the contemporary *architekton* to conserve rather than to abolish otherness and to hold as suspect any self-aggrandizing humanism that presumes to eclipse or diminish the non-human. A "wisely conceived humanism," in the words of Levi-Strauss, is one which "does not center on man but gives him a reasonable place within nature, rather than letting him make himself master and plunderer." Man, suggests Levi-Strauss, "is worthy of respect more as a living being than as the lord and master of creation." Heidegger's word *Gelassenheit* is as apt as any to describe the antidote to human tyranny. After years of proposing that the cosmos should be made into a human workshop with *homo faber* at its determining center, Heidegger re-considered his position and proposed, instead, *Gelassenheit*, or "letting all things be." This, of course, is a prescription for contemplation, not for *technê*; but a *technê* experienced in contemplation, riddled with the scruples of Adam, and inspired by the benevolence of Prometheus is at least likely to leave the world as inhabitable as it found it.

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1. Austin Hall, Harvard University, Cambridge (1881), detail.

Has A Doll Life? Sverre Fehn and Per Olaf Fjeld

1. Museum at Røros, Project
(1986), Sverre Fehn, model.

"The town of Røros is situated on a mountain above the timber-line. Until a decade ago, its livelihood was based on copper-mining. The museum building describes a promenade - a travel - through this forgotten process, from the factories which housed the melting-furnaces (now left on the site as ruins), over the river, to the hills of cinders. The objects in the exhibition are displayed against this background, so that they are given form by the light reflected from the water and the treeless landscape."

Sverre Fehn

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4. The Basilica, Vicenza (1549),
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6. Shinto Shrine of Kamiji-Yama,
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from the third to the sixth centu-
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1. Ca'Dario, Venice (1487-97).

The Idea Of Lasting, Rafael Moneo

1. Museum of Roman Art, Merida
(1980-85), Rafael Moneo, interior.

Technê Robert Meagher

1. Elohim creating Adam (1795),
William Blake, Tate Gallery,
London.

"The subject of Elohim creating Adam is based on Genesis 1.27: 'So God created man in his own image, in the image of God created he him.' Elohim is one of several Hebrew names for God. A literal translation (it is a respectful plural) is 'judges', and as such it alludes to God in his judicial (or in Blakean terms, Urizenic) aspect, as opposed to the name Jehovah or Yahveh, which alludes to him in his merciful aspect. Elohim was both creator and judge, and therefore represented the vengeful aspect of God; in Blake's view he created man in order to judge him. A somewhat strange aspect of this design is that Adam is not depicted as being made in the image of God, whereas in the colour-printed drawing God judging Adam (also in the Tate Gallery) his features are identical with the Creator's."

"Blake's portrayal is full of Sturm und Drang. The winged and bearded Elohim, weary after the first five days of creation, his face strained with the titanic exertion of bringing the cosmos to birth, hovers against the background of a vast sun setting beneath gloomy clouds. He reaches out unseeingly with his arms and gives the impression of blindly, literally, moulding into form and life from clay the horrified creature Adam, the natural man or mortal worm, who is entwined by the coils of the serpent materialism."