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perspecta 27

The Yale Architectural Journal

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perspecta 27 *The Yale Architectural Journal*

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we are familiar with history and the forms it has deposited in its sediment, but we lack the historical ability to act…we are remote from the long processes that created a tradition and also from the more recent process that sought to break that tradition. We are capable of designing any form we want, but not of justifying it, because these forms no longer grow out of real individual or common need.

GIOVANNI MICHELUCCI, *Order and Disorder.*

In the fall of 1989, we went to Italy to interview the architect Giovanni Michelucci, a man who had devoted his life to architecture and who had made important contributions to building in the twentieth century. We had found his work extremely powerful and many of his writings provocative and relevant to the issues we were beginning to explore for *Perspecta 27*.

We met with Michelucci in his home and studio in Fiesole. We spoke with his friends, his clients, and the young architects who worked with him. We studied his drawings and visited his buildings. And now, after three years of researching his work, translating and transcribing those conversations, and examining our memories of that experience, we realize that we have gathered only fragments of his immense legacy. Michelucci saw architecture not as a collection of individual acts, but rather as a continuous process of research and debate on the relationship of man to his environment. He believed that only a commitment to this process can justify the architect's work in society, and until the last days of his long and productive life he held fast to his belief in the potential of architecture to change the world for the better.

This book represents our editorial effort to engage, at different levels, the ideas that Michelucci expressed in both building and writing.

* * *

A little over a year after meeting with us, and on the eve of his one-hundredth birthday, he passed away. We would have liked to have shown him this book. We dedicate *Perspecta 27* to Giovanni Michelucci.

1 Sketch, Giovanni Michelucci.

Order and Disorder

Giovanni Michelucci

Submission and vandalism, which at a more abstract level we can define as order and disorder, coexist in both the social and urban realms of our cities as two sterile and disturbing poles. The former restricts creativity and threatens certain inalienable rights of the citizen, while the latter, chaos or disorder, represents both the delusion of destroying conventional values and the frustration of realizing that this process, far from being liberating, is often self-destructive.

Why does this polarization, which affects the foundation of our scientific and cultural worlds, continue to exert itself so forcefully? Why are we unable to find that delicate equilibrium between a norm that seeks to shape in its own image the surrounding world and even future events, and a reality that refuses to be catalogued? Perhaps it is because we seek order in a predetermined system and then realize that this system is unable to establish a creative dialogue with the reality that it is trying to regulate, a reality that is constantly changing, creating unexpected problems and demanding unforeseen solutions. This attitude is most readily expressed in our continual interest in isolated and impermeable institutions like prisons and mental hospitals, which exacerbate the polarity by enclosing in a circumscribed space both norm and antinorm, reason and folly.

Whenever a utopia crumbles, it leaves behind a motley mass of things and ideas that no longer have any meaning. The only thing that had held them together was a guiding idea so strong that it managed to turn contradictions into a consistent process. Now that the myth of progress that had once underpinned Western society has failed within the contemporary metropolis, the city appears as an intolerable chaos. The order of the past now appears as disorder, as the inability to control the relationship, which once seemed immediate, between the city and production.

It is the idea itself, then, or social behavior, that endows form with a meaning and accepts it or rejects it. Either the form can support a given development of an idea, or else the idea will destroy the form. In our case we cannot properly say that it was a new idea that caused the current crisis in modern architecture and industrial civilization. The crisis was generated by our dread of being engulfed by the process inherent in the city, a process that current cultural attitudes are

unable to change in any substantial way and that therefore only seek to slow as much as possible. Fear, rather than a thorough criticism of the industrial city, makes us search for an order that is not so much an order as a rejection of the new, a denial so great that it prevents us from finding proper uses for derelict spaces in the inner city's core, as though they were empty shells of something we no longer understand.

This is the problem: we are familiar with history and the forms it has deposited in its sediment, but we lack the historical ability to act. It is for this reason that we continually waver between historicism and academicism. In other words, we are remote from the long processes that created a tradition and also from the more recent process that sought to break that tradition. We are capable of designing any form we want but not of justifying it, because these forms no longer grow out of real individual or common need.

The form of the old districts of our cities was the result of step-by-step adjustments, a gradually achieved synthesis. The outer, peripheral city seems quite the opposite. It is laid out on the basis of a number of health factors, and other theoretical assumptions that are hard to verify in advance. While the old inner city is being exhausted by overuse, by familiarity and identification, the new, outer city has deteriorated, degraded by man's instinctive rejection of new, ready-made spaces. Contemporary architecture seems to have created a hypothetical function for a standard citizen who does not exist, just like the space intended for him.

The outer city condition is very difficult to overcome, because the more experimental the solution, i.e., the more peripheral it is, the more it forces on its inhabitants something totally unrelated to their real life. From this standpoint, it is useless to try a formal approach, a formal renewal, because the outer-city syndrome has spread to the older, poorer districts where the new facilities, by now indispensable to modern life, have warped the living spaces of the old city and made them even less inhabitable.

Yet we still firmly believe that even in a mass society we can't do without quality. So far, however, every attempt to overcome the dreariness of a large part of contemporary architecture has proven ineffectual or misleading. The revival of pretentious styles, the search for the extraordinary, the efforts to be different, seem only to produce a further sameness and loss of identity, as it would happen if everyone were to buy the same supposedly unique and inexpensive item.

If we are to answer the problem of improving the quality of our environment we must reflect on a few facts. By delegating to modern architecture the task of creating new space or even new cities, we have gradually cut off the direct relation between human beings and their environment. Yet the memory of the old city, of the old home, has not been erased, and in fact is continually rebuilt, restored, or faked. Meanwhile, no effort has been made to help man establish a creative and emotional relationship with the new environment, the new housing. This is why, as we continue to see, the prevailing behavior is either submission or vandalism.

The issue of how to make an architecture appropriate to people's needs coincides with the many efforts that are being made to restore a meaning to the city. This meaning can hardly be found in the old city, however much we love it, or in the industrial city, which has become so very repulsive as to make us reject the whole body of ideas, materials, and forms produced by the modern movement.

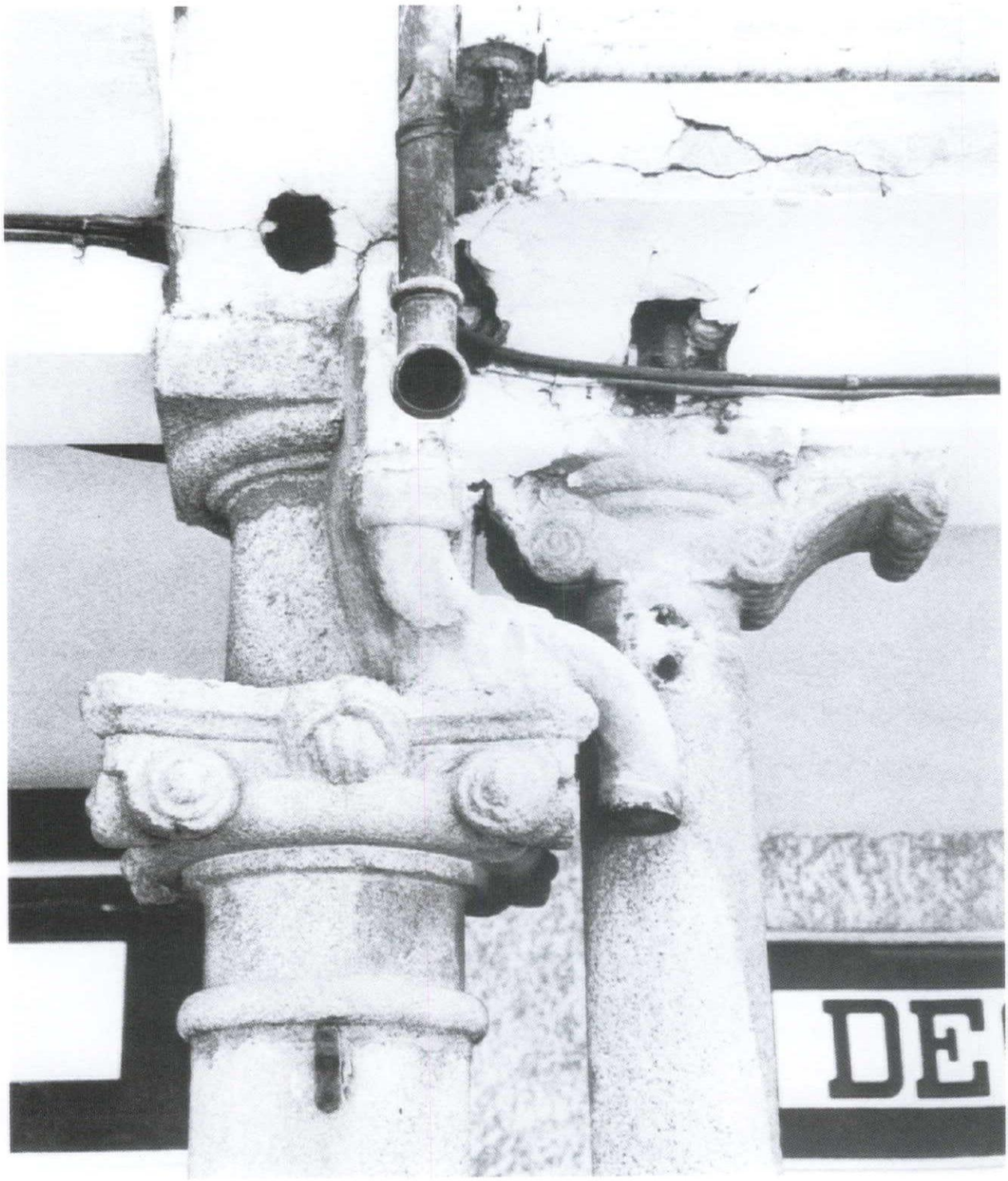
I feel that the metaphor of order and disorder, as applied to our cities, accurately expresses the difficulty of finding a coherent system of relations among the many requirements of contemporary life that we cannot ignore. And yet these demands produce a total estrangement, which no formal artifice can remedy, from the values of the old city. For this reason, it is just as well not to underestimate the widely recognized need to recover some sort of formal rigor, quite different from the rigidity of town planning grids, and to give priority to an understanding of our direction and desires over growth and development. And if no significant answer to these issues is forthcoming, the option could well be to stay where we are or to explore once more the quality of the forms from the past, whose revival now rarely goes beyond a joking mood when they remain on paper, or a cemeterial mood when they actually get built.

How can we address a formal issue so compelling as to have shaken the very roots of historical avant-gardes, which saw precisely in the search for new forms and in the explosion of the old cities' forms and institutions, and even, at times, in deviant individual behavior, the highest esthetic promises? It is always sad to realize, after a long and dramatic process that stirred enthusiasm and passionate action, that what then seemed a potentially subversive force was simply an answer to the laws of economics, which demanded bleaker cities capable of unlimited expansion.

Retrieving certain criteria of the artistic tradition or limiting urban development are hardly the right antidotes to the havoc wrought by unrestrained urbanization. Formal issues are never the decisive factor in reversing a trend, especially in situations dominated not so much by new directions but rather by fear of the present kind of development. New environments are never generated by the mere emphasis on the idea of limits, by placing restraints on something that seems out of control.

The future of the industrial city cannot be the post-industrial city. The latter is merely an extension of the former, further troubled by the critical awareness that paralyzes its actions instead of urging it to search for the new paths we badly need. A real desire for change never looks at existing repertory for inspiration. A meaning for both the city and architecture has to be discovered not in the world of their history, but in all that is not yet city.

This is not to advocate a further unlimited expansion of the city but rather to consider it as an unlimited source of interchange in culture, between productive and recreational activity, that continually shapes and reshapes its environment. In this sense, the city is never post-industrial; if anything, it precedes industry by constantly producing needs. Architecture is complementary to this process, leading by successive steps that are often difficult to plan, from the first hypotheses to their gradual realization, in an ongoing movement where it is impossible to clearly distinguish the conceptual phase from actual implementation, the invention of prototypes from the adaptation of items already existing on the market. So the whole creative process is a search for order, an order that is complex and vital as long as it finds in every new manifesation, even in disorder, either validation or an impulse to change its own form.



1

Context, Confrontation, Folly

Karsten Harries

That from the very beginning modern life should have been shadowed by the promise of a simpler, more authentic life invites questioning:

> There is a good deal of irony in the fact that to stave off physical and mental deterioration the urban dweller periodically escapes his splendidly appointed lair to seek bliss in what he thinks are primitive surroundings: a cabin, a tent, or, if he is less hidebound, a fishing village or hill town abroad. Despite his mania for mechanical comfort, his chances for finding relaxation hinge on its very absence. By dint of logic, life in old-world communities is singularly privileged.[1]

We all have experienced the lure of the unfamiliar, be it Alaskan wilderness, an Italian hill town, or Zambian village. But what lessons are we to draw from the modern urbanite's nostalgic and usually quite temporary escapes to more primitive modes of dwelling, from his willingness to put up with diarrhea, mosquitoes, and cramped quarters just to take a brief step out of his civilized world into a different mode of life? Do such escapes mean that we think life in old-world communities singularly privileged?

Much like Heidegger's often cited evocation of a Black Forest farmhouse,[2] Rudofsky's images and descriptions of what he calls "nonpedigreed architecture" carry the utopian promise of human beings living in harmony with each other and with the land. Burdened neither by technology, nor by what we usually think of as "Architecture," this architecture belongs to a specific region, as do its rocks and caves, trees and animals. "The untutored builders in space and time—the protagonists of this show—demonstrate an admirable talent for fitting their buildings into the natural surroundings. Instead of trying to 'conquer' nature, as we do, they welcome the vagaries of climate and the challenge of topography." Ephemeral as some of these structures may be, "the shapes of these houses, sometimes transmitted through a hundred generations, seem eternally valid, like those of their tools."[3]

1 Bernard Rudofsky, *Architecture Without Architects. A Short Introduction to Non-Pedigreed Architecture* (Garden City: Doubleday, 1964), n.p.

2 Martin Heidegger, "Building, Dwelling, Thinking," tr. William Lovitt, in *Basic Writings*, ed. David Farrell Krell (New York: Harper and Row, 1977), 338.

3 Rudofsky, *Architecture Without Architects*, n.p.

Ecology-minded postmodernists will listen sympathetically to Rudofsky when he suggests:

> Vernacular architecture owes its spectacular longevity to a constant redistribution of hard-won knowledge, channelled into quasi-instinctual reactions to the outer world. So-called primitive peoples have none of the devil-may-care attitude when confronted with the reality of their environment. Above all they have no desire to dominate it. Admittedly, the vernacular's unforgivable weakness is its constancy. Unlike the apparel arts or pedigreed architecture, it follows no fads and fashions but evolves only imperceptibly in time. As a rule, it is tailored to human dimensions and human needs, without frills, without the hysteria of the designer. Once a life-style has been established and habit has begotten a habitation, change for change's sake is shunned.[4]

I find it difficult to resist the spell of Rudofsky's photographs of luminous cubic houses spilling down a hillside in Siros, of bosomy Apulian trulli, of tomblike Galician granaries, of Dogon Big House symbolizing a procreating man. They leave me with an urge to travel, to search out the last traces of a way of life being eroded by the seemingly inevitable progress of our industrial culture. But if Rudofsky invites us to question that progress, he also leaves us wondering about the possibility and more importantly about the desirability of such a return to the archaic, even if we remind ourselves that "archaic" here means not so much temporally prior as closer to the *arche*, the timeless origin, i.e, more essential.

Would I want to spend the rest of my life in such an "old-world" community? I could probably afford it. But I would miss too much, always remain an outsider, and, more importantly, I would miss my own context. I have grown too accustomed to the comforts of modern life, too mobile, both literally and spiritually, to be able to recover such "serenity," seen too much not to supplement Rudofsky's moving images with other equally moving, but sadder, images of squalor and starvation. To be sure, I would like to visit the magical places Rudofsky places on our coffee table. But this does not mean that I would gladly exchange what I now have for what I at times dream of and even escape to, no more than periodic visits to Disneyland or journeys into the wilderness mean that we would like to live in such environments. The attraction of old-world cultures is inseparable from their location on the periphery of our own. And yet Rudofsky is right to ask why, "to stave off physical and mental deterioration," we should periodically escape to surroundings that we experience as figures of a vanishing, but more original, mode of dwelling.

The Austrian Rudofsky found his figure of perfection above all in white washed Thera, the southernmost of the Cyclades, whose supposed "*primitivity*" he had celebrated already as a young man in his doctoral dissertation: "*perfection* as expressed in a marvellous unity of past and present, which imparts to the stranger a sensation of timelessness."[5] Houses, half-tunnelled into the soft volcanic rock, with the walls of lava blocks, often covered by a barrel vault of a primitive concrete made of "the local pumice stone and pozzolana, volcanic ash that mixed with lime, yields an exceedingly firm hydraulic cement," seemed to belong to the landscape just as much as vineyards and fig trees, the menacing crater and the wine-dark Aegean, each house subtly different from its neighbor, each adjusting itself to its curious site in its own way, its soft contour, which Rudofsky likens to a loaf of bread, unhampered by the need to obey the dictates of level and plumb-line, ruler and compass, and yet bound to its neighbor by the subtle rule of this special soil and sky. The genius loci here speaks in timeless images of perfection.

4 Bernard Rudofsky, *The Prodigious Builders: Notes Towards a Natural History of Architecture with Regard to Those Species That Are Traditionally Neglected or Downright Ignored* (New York and London: Harcourt Brace Jovanovich, 1977), 13.

5 *Ibid.*, 238, citing his doctoral dissertation, *Eine primitive Betonbauweise auf den südlichen Kykladen* (Vienna, 1931).

The same can be said of countless "old-world" villages and towns, which preserve context without sacrificing individuality and without having to think about either. In the case of Thera, an "agitated topography," represented by the "dancing rhythms of the steps,"[6] and the Mediterranean sun with its sharp shadows saw to that. Airplanes and television have brought such sights closer to us even though modern means of communication are part of a process that has to exile such sites to the periphery of our world, endowing them with an aura of irreality. Such magical, seemingly timeless habitations seem to fall out of historical time. They belong with the narratives that begin with the "Once upon a time" that introduces the Brothers Grimm's fairy tales; they recall that time when there was no time.[7] Seen against such a background, everyday activities present themselves as timeless paradigms, especially in the medium of photography: a woman climbing steps, another occupied with the perpetual whitewashing of walls, roofs, and pavements, figures of the enduringly human that have no place in the world of television antennas and cars. That attack on distance manifested by the revolutions in transportation and communication has to destroy such a way of life, as does, more generally, the desire for an ever higher standard of living, for ever more gadgets, ever more thrills.

6 *Ibid.*, 242.

7 Cf. Mircea Eliade, *Cosmos and History. The Myth of the Eternal Return*, tr. Willard R. Trask (New York: Harper, 1959), 21.

Few tasks facing the architect are more difficult than the introduction of modern buildings into such an almost ageless context. Rudofsky gives the example of government-sponsored new housing that, following the earthquake of 1956 that devastated Thera, was to provide for the homeless. Even the Housing Department's Ministry of Public Works recognized that it would not do to rely on the clichés of the then triumphant international style. Designers were asked to respect the island's strong vernacular. "Nevertheless, in the course of planning, designing, and decision making, the traditional houses' languid lines were resolutely straightened out, their wayward curves stiffened into half-circles, the dimensions of rooms, doors, and windows standardized, and the foundations laid out perfectly parallel in homage to the Right Angle."[8] Gone were the subtle individuality and freely moulded forms of the old houses. No doubt, the designers recognized the strength of the local building tradition, but their attempt to develop a modern language that would fit this context failed. Although obviously indebted to the pregiven vocabulary, streamlined and disciplined, the new houses lacked soul. An obvious measure of the modern designers' failure was the islanders' refusal to appropriate what the government so thoughtfully had furnished. They continued to prefer the old ways of building and dwelling.

8 Rudofsky, *The Prodigious Builders*, 242.

Essentially the same story has repeated itself in countless villages, towns, and cities, where natural catastrophes such as earthquakes and fires, but more often man-made catastrophes such as wars or resolute modernization, made rebuilding necessary. Again and again a desire to honor the genius loci led historical sensitivity into an unfortunate alliance with modern design to produce buildings that borrow certain aspects of the vernacular, say the general shape of a house, especially the established roof form, without preserving the former's life. Consider, for example, post war rebuilding in such deeply scarred cities as Warsaw or Nürnberg. All too easily the attempt to preserve something of the strength of the old urban context ends up with theatrical gestures that underscore their own emptiness.

Rudofsky calls his celebration of the "old-world" vernacular "frankly polemic."[9] It is indeed impossible to miss the intended contrast between "the serenity of the architecture in so-called underdeveloped countries" and "the architectural blight in industrial countries," which Rudofsky blames on "architectural design," on what he calls

9 Rudofsky, *Architecture Without Architects*, n.p.

"pedigreed architecture," or on technological thinking, on what Ruskin had already called the "prevalent feeling of modern times, which desires to produce the largest results at the least cost,"[10] in which we can recognize the inevitable offspring of the Cartesian promise of a practical science that would render us the masters and possessors of nature. Part of both pedigreed architecture and the economic imperative is an antagonistic relationship to the environment, which treats nature as no more than a source of materials to be used and used up. The vernacular celebrated by Rudofsky, by contrast, is non confrontational, ecology-minded without having to mind ecology. "Pedigreed" architecture and engineering are both made to appear as products of a fall into sin that, like the first fall, means inevitably also the fall out of a natural realm. Primitive architecture comes to figure paradise, although Rudofsky drew the leitmotiv of his essay not from Genesis, but from Seneca's letter to Lucilius: "Life is the gift of the immortal gods, living well is the gift of philosophy. Was it philosophy that erected all the towering tenements, so dangerous to the persons who dwell in them? Believe me, that was a happy age, before the days of architects, before the days of builders."[11]

10 John Ruskin, *The Seven Lamps of Architecture* (New York: Farrar, Straus and Giroux, 1974), 16.

11 Rudofsky, *The Prodigious Builders*, 9.

2

Despite its pronounced antimodernism, Rudofsky's dream of an architecture without architects was shared by some of the founders of the modern movement. Little separates his juxtaposition of vernacular and pedigreed architecture from Adolf Loos's description of the effect of the introduction of an architect-designed villa into an Austrian lakeside village:

> Everything breathes beauty and peace...
>
> This thing there, what is it! A false note in this peace. Like an unnecessary screech. Amidst the peasants' houses, built not made by them but by God, stands a villa. The work of a good or a bad architect? I don't know. I only know that peace, rest, and beauty are gone.
>
> For God knows neither good nor bad architects. All architects are equal before his throne. In the cities, in the realms of Belial, fine distinctions are made, in keeping with the nature of vice. And I therefore ask: how is it that every architect, whether bad or good, disfigures the lake?[12]

12 Adolf Loos, "Architektur" (1909), *Trotzdem, 1909-1930* (Innsbruck: Brenner-Verlag, 1931), 93.

The atheist Loos does not hesitate to invoke God and the devil to present the contrast between buildings that were not so much built by peasants as created by Nature, using their building only as her medium. Themselves products of nature, such buildings cannot but fit into the natural context. This fit gives them a look of natural necessity. Whatever the architect designs inevitably breaks such harmony. With his work the city invades the countryside, and, in keeping with a tradition that has Cain build the first city, Loos assigns the urban realm to the devil. No matter how successful, architects belong to that realm.

Why must every architect, be he bad or good, disfigure the lake? Precisely because he insists on being more than a mere builder: he wants to be an artist. As an art, architecture has always already fallen out of the quasi-natural order of building. The architect takes his task to be more exalted than the construction of merely serviceable structures; he wants to create things of beauty, esthetic objects. Esthetics has long taught that such objects should be appreciated as self-sufficient wholes. To be appreciated as such wholes they must either distance themselves from their context and stand out as figures on the ground provided by the landscape or they must incorporate that ground; they must either turn their back to their setting like so many modern works of architecture that appear to just happen to be in this particu-

lar place (Loos's unnecessary screech) or engage that context, confront it as recalcitrant material to be appropriated, transformed, and integrated into the artist's composition. Either approach is difficult to reconcile with contextualism. Pedigreed architecture inevitably tears the landscape. Such tearing scars.

Peasant dwellings all over the world can teach us that building need not be such a violation:

> The peasant doesn't disfigure the landscape. Nor does the engineer who builds a railroad on the shore or furrows the lake's clear mirror with his ship. They create in a different manner. On the green meadow on which the new house is to rise, the peasant has marked out a place and dug out the earth for the foundations. If clay is nearby, there will be a brick kiln to supply bricks; if not, the stone round the shore will do. And while the mason lays brick upon brick, stone on stone, the carpenter has taken up his place next to him. Merry the sound of the axe. He is making the roof. What sort of roof? A beautiful roof or an ugly roof? He doesn't know. The roof...
>
> The peasant wanted to build a house for himself, his family, and his cattle, and he has succeeded. Just as his neighbor or his forbear succeeded. As every animal succeeds, which allows itself to be guided by its instincts. Is the house beautiful? Yes, it is just as beautiful as the rose or the thistle, the horse or the cow.
>
> And I ask again: why does an architect, be he a good or a bad one, disfigure the lake? [13]

13 *Ibid.*, 93-94.

Loos accuses the architect of lacking culture, a lack he is said to share with the uprooted modern city-dweller. "Culture" here names "that harmony between the inner and the outer human being which alone assures sensible thinking and acting."[14] Loos's idealized peasant has culture precisely because he has not yet fallen out of the natural order, which narrowly circumscribes his possibilities. Because he allows his creativity to be ruled by natural wants and by instincts always already bound by a particular site and climate, whatever he creates, be it a tool, a field, a path, or a house, has the look of inevitability. Not yet do human beings oppose themselves to the situation into which they have been cast. Instead of confrontation there is harmony. The devil wants confrontation, God harmony.

14 *Ibid.*, 94.

With much of this Rudofsky could have agreed. Where Loos differs from him is in his conviction that the paradise of peasant culture lies behind us, that any attempt to now return to it would betray the possibilities of a genuinely humane existence opened up by science and technology. It would be irresponsible to squander their potential of liberation. We cannot and should not attempt to return to what Loos describes as the innocent but less than fully human paradise of peasant culture. Here it is important to keep in mind that it is not old-world architecture as such that preserves context: the scattered eighteenth-century farmhouses that have survived in many modern cities look quite out of context there. Is it not the modern context shaped by technology that our building ought to honor? Loos opens up the possibility of a truly modern contextual approach to building, an approach that would be no longer regional, but international. Paradise can be regained on the basis of technology. "Technological culture" is not the oxymoron it would appear to be for Rudofsky. No more than the peasant disfigures the landscape does the engineer. Bound by considerations of efficiency, he, too, has to be attuned to his materials and the laws of nature. Such attunement rules out all ornament, indeed all esthetic extravagance. Modern bridges and harbors, with their mazes of docks and cranes, are thus beautiful in rather the same way as the work of the peasant builder. They communicate a

similar attunement to the natural order, a similar harmony between inner and outer. A well-built car or plane cannot help but be beautiful. Or think of the beauty of silos or industrial architecture. The engineer is the peasant's modern counterpart.

Such sentiments were characteristic of early modernism. Le Corbusier, too, thus extolls the engineer, who, "inspired by the law of Economy and governed by mathematical speculation, puts us into accord with universal law. He achieves harmony."[15] But, as the strain placed on the environment by technology demonstrates, to be in accord with universal law does not mean to be in tune with what we usually understand by "nature." Nuclear devastation is in accord with universal law; so are acid rain, oil spills, and asphalt deserts. Universal law is quite indifferent to human needs, including the need for a "natural" environment. Rudofsky's warning about the progressive deformation of landscape by technological progress cannot be dismissed. It calls into question the substitution of a modern industrial for primitive, agrarian contextualism. Not that his idealization of "old-world" rural life does not raise equally serious questions. When Loos likens his peasant builders to animals, he renders his own idealization of peasant life problematic. As the *animal rationale*, the thinking animal, the human being is also the displaced animal, who, if he is to create a home for himself, may not leave the world alone. Descriptions of old-world peasants as natural builders are misleading. We may think of the incandescent buildings of Thera as belonging to this island in the Aegean, as we think of the Parthenon as belonging to its rock, but the landscape to which they now appear to belong is a landscape shaped and transformed by human labor, including building. All building has its origin in a confrontation with nature that is never free of violence. As the essentially displaced animal, the human being has always already lost paradise. Thera never was paradise, even if we moderns may read this Greek island as a figure of paradise. There is no paradise to be recovered. Certainly such recovery is not accomplished by timid attempts to return to some archaic vernacular.

15 Le Corbusier, "Towards a New Architecture: Guiding Principles," in Ulrich Conrads, *Programs and Manifestoes on 20th-Century Architecture*, tr. Michael Bullock (Cambridge: MIT Press, 1975), 60.

Yet there remains the appeal of attempts to return human life to a more intimate relationship to nature. Even that arch-modernist Le Corbusier had once been convinced by a third Austrian, Camillo Sitte, of the desirability of such a return:

> Sitte's arguments were skillful, his theories seemed correct; they were based on the past. In fact, they were the past—and the miniature past, the rather insignificant flower on the roadside. This was not the past of apogees; it was the past of compromises. Sitte's eloquence went well with this touching renaissance of the "home," which in a paradox worthy of the cottage, was defined grotesquely to divert architecture from its proper task ("regionalism").[16]

16 Le Corbusier, "Guiding Principles of Town Planning," *Programs and Manifestoes*, 91.

Ronchamp makes us wonder whether Le Corbusier really ever freed himself altogether from the sentimental past. But the young Le Corbusier wanted something altogether different: to all regionalism he opposed an essentially universal architecture of confrontation. Instead of celebrating submission to pregiven contexts, Le Corbusier celebrated the violence inherent in all building, which has only been underscored by the new means technology has placed at the builder's disposal. What moved him was not so much the apparent timelessness of old-world culture, as the intoxicating pace of modern life:

> Cars, cars, speed, speed! One is carried away, seized by enthusiasm, by joy. Not by enthusiasm at seeing the shiny bodywork glistening in the light of the headlamps. But by enthusiasm over the joy of power. The frank, ingenuous enjoyment of being at the center of power, of energy. We share in this power. We are part of this society whose dawn is breaking.[17]

17 *Ibid.*, 90.

Timid contextualism cannot be reconciled with such joy at the dawn of a brave new world, which welcomes the force that tears apart slowly grown land- and townscapes. "Its energy is like a torrent swollen by storms: a destructive fury. The town is breaking in pieces, the town cannot last, the town is no good any longer. The town is too old. The torrent has no bed."[18] Le Corbusier understands architecture as an "assault upon nature." It looks not backward, anxious to preserve inherited contexts, but forward to the creation of unheard-of new contexts in which old-world architecture will look sadly out of place, a relic left over from our darker past.

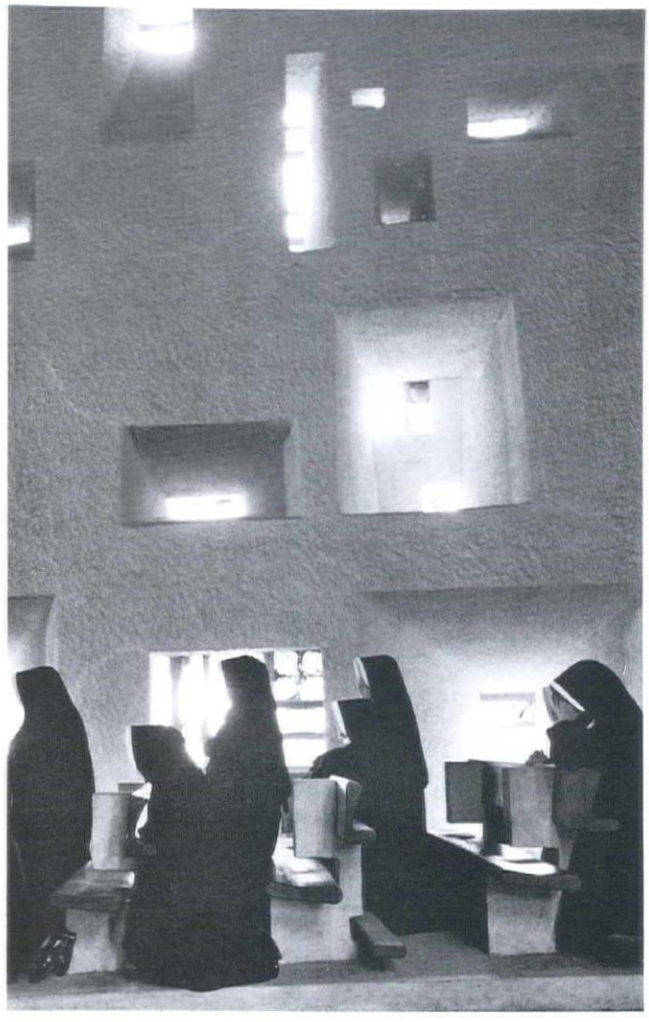
18 *Ibid.*, 90.

By now technology has demonstrated its destructive potential in ways that makes it difficult to see in Le Corbusier's dawn more than the twilight of the old day. We don't even need to think of atomic war and ecological crisis. Suppose reason were to triumph over tradition and more advanced technological thinking were to find solutions to all the problems it has so far produced: would that assault upon nature celebrated by Le Corbusier leave us a truly humane environment? Why does the thought of all landscape transformed into technoscape, of the final triumph of asphalt and vinyl siding, frighten us?

Le Corbusier was much too much an artist himself to accept the reduction of the architect to the engineer. Although he gave us the programmatic slogan "The house is a machine for living in,"[19] in the same place he also insisted on what separates the architect from the mere engineer. Architecture is an art and for the genuine artist there is "no longer any question of custom, nor of tradition, nor of adaptation to utilitarian needs. Contour and profile are a pure creation of the mind."[20] Such an

19 Le Corbusier, "Towards a New Architecture," 60.

20 *Ibid.*, 61.



2 *Ronchamp, Le Corbusier, 1957, interior.*

understanding of the architect as artist has to place him in opposition to just those forces of custom, tradition, and utilitarian needs to which Rudofsky would submit building. But this, of course, is to be expected: as much as any modern architect, Le Corbusier is associated with "pedigreed" architecture. Such architecture is confrontational by its very nature as art. It inevitably speaks with a loud voice. But need it therefore also be that unnecessary screech condemned by Loos?

3

Earlier I referred to Heidegger's description of an eighteenth-century farmhouse in the Black Forest to which he attributes many of the same values Rudofsky discovers in "nonpedigreed" architecture. But Heidegger also offers us an interpretation of the architectural type that has provided much "pedigreed" architecture with its authorizing paradigm: the Greek temple. Brief as it is, that interpretation helps us to understand the essence of architecture insofar as it is an art.

> A building, a Greek temple, portrays nothing. It simply stands there in the middle of the rock-cleft valley. The building encloses the figure of the god, and in this concealment lets it stand out onto the holy precinct through the open portico. By means of the temple, the god is present in the temple. This presence of the god is in itself the extension and delimitation of the precinct as a holy precinct. The temple and its precinct, however, do not fade away into the indefinite. It is the temple work that first fits together and at the same time gathers around itself the unity of those paths and relations in which birth and death, disaster and blessing, victory and disgrace, endurance and decline, acquire the shape of destiny for human being. The all-governing expanse of this open relational context is the world of this historical people. Only from and in this expanse does the nation first return to itself for the fulfillment of its vocation.[21]

21 Martin Heidegger, "The Origin of the Work of Art," *Poetry, Language, Thought*, tr. Albert Hofstadter (New York: Harper and Row, 1979), 41-42.

What does this tell us about architecture? Very little it would seem. The temple transports human beings into the presence of a god. The presence of the divine lets them experience a particular place as holy; at the same time the temple provides the life of the community with a focus. So understood, architecture, as opposed to mere building, has an essentially public function. Its task is to help gather scattered individuals into a genuine community by presenting the powers that preside over its life. Architecture is a presentation of the divine. It is mythopoeic creation.

The generality of Heidegger's description must leave many readers dissatisfied. Which temple is he speaking about? The temple-work is said to first open up the world of the Greek people. But how can this be? Does the building of any particular temple not presuppose the Greek world? Perhaps we should say rather that each temple re-presents and lights up this world in its own unique way by transporting those who visit it into the presence of a divinity, be it Zeus, Athena, Aphrodite, or Apollo.

If it is difficult to take literally Heidegger's claim that the temple first opens up the Greek world, it is equally difficult to take liberally his moving description of how the temple first makes the environment visible:

> Standing there, the building rests on the rocky ground. This resting of the work draws up out of the work the mystery of the rock's clumsy, yet spontaneous support. Standing there, the building holds its ground against the storm raging above it and so first makes the storm itself apparently glowing only by the grace of the sun, yet first brings to light the light of the day, the breadth of the sky, the darkness of the night. The temple's firm towering makes visible the invisible space of the air.[22]

22 *Ibid.*, 42.

Once again we must question Heidegger's claim that the temple *first* makes visible earth, sea, and sky, trees, grass, and animals. Were these not part of the temple's pregiven context? How can Heidegger claim the temple presents this context for the first time, that it is only the temple that brings to light the light that allowed the temple's builders, too, to see? Hyperbole here appears to approach nonsense.
But we have to take seriously Heidegger's claim that the temple—and we can generalize and say every genuine work of architecture—renders visible the landscape that provides its setting, as it illuminates the historical world to which it belongs, providing it with a unique focus. What grants the temple such power of illumination? Heidegger speaks of the temple's "firm towering" and "steadfastness." Standing there, the temple "holds its ground." We say of someone who refuses to yield to an enemy that he holds his ground. Would Heidegger then have us liken the temple's relationship to its setting as a kind of war? Heidegger would no doubt have added that "war" here translates the Greek *polemos*, which he understands with Heraclitus as *eris*, as *Auseinandersetzung*, or confrontation. *Auseinandersetzen* means first of all "to set apart," so that what is thus set apart is rendered visible in its own proper being. As an assertive presencing of stone ordered by spirit, the temple sets itself apart from the earth that supports it, establishes itself as a figure on the ground of the pregiven landscape. Setting itself apart from its context, the temple brackets it, where such bracketing must be understood exclusively and inclusively: as a seemingly self-sufficient stony presence the temple draws our attention, pushing its setting at a distance. Thus distanced, the setting is, so to speak, put in a frame. Framed, it is represented. The temple thus lets us look again, not just at itself, at its form and materials, but at its site. By confronting its context instead of quietly submitting to it, the work of architecture becomes a light that illuminates its surroundings, including other buildings.

The temple-work is said by Heidegger not only to set forth the earth, that upon and in which "historical man grounds his dwelling in the world,"[23] but to open up the world, where "world" names "not the mere collection of the countable or uncountable, familiar and unfamiliar things that are just there," but that most encompassing context that gives meaning to all our actions and thoughts. In *Being and Time* Heidegger shows how the world is opened up or revealed precisely when our usual ways of dealing with persons or things break down in some way, by fissures in some usually taken for granted context: a chair that has lost its leg becomes *conspicuous* in its now useless presence. Or suppose you are doing a jigsaw puzzle; a particular, strangely shaped piece cannot be found; but just its absence renders the other pieces *obtrusive* in their currently useless presence. Or take a window that should have been washed long ago and now *obstinately* refuses to be overlooked. Conspicuousness *(Auffälligkeit)*, Obtrusiveness *(Aufdringlichkeit)*, and Obstinacy *(Aufsässigkeit)* constitute disturbances in the usually smooth texture of everyday life, which precisely because it allows us to take things more or less for granted, lets us only half see them.[24] Familiarity veils. Fissures in that texture help lift the veil.

23 *Ibid.*, 46.

24 Martin Heidegger, *Being and Time*, tr. John Macquarrie and Edward Robinson (New York and Evanston: Harper and Row, 1962), 102-107.

Although Heidegger is not concerned with architecture when he discusses conspicuousness, obtrusiveness, and obstinacy in *Being and Time*, but wants to show how, within the routines of everyday life, the world is lit up by disturbances in our usual ways of dealing with persons or things, the relevance of that discussion to his later interpretation of the world-establishing power of architecture should be apparent. Insofar as it is also a work of art, the work of architecture is a building that, because it effects such disturbances, renders itself conspicuous, as it communicates a particular way of standing in the world, a particular ethos. We may want to say that what renders the work of architecture conspicuous is its beauty, but if so, we should keep in mind the traditional insistence on the uselessness of the context ruled by utility. As a useless and for this very reason conspicuous insertion into a particular setting,

3 El Pedregal, Luis Barragán, Mexico City, 1945–50.

the work of architecture renders that setting obtrusive. Thus every work of architecture places other buildings in the light of the world it has opened up.

And works of architecture are obstinate. The German *aufsässig* is perhaps better translated as "rebellious." Works of architecture refuse to fit into the pregiven context without speaking up. They stand up to that context and hold their ground. In that sense works of architecture may be considered rebellious buildings.

From this perspective Rudofsky's "frank polemic" celebration of "old-world" building may seem an attack on the very essence of architecture. But here it is important to distinguish the standpoint of the author, who is modern precisely in his discontent with the modern world, and the standpoint of those who built and dwelled in the structures he illustrates. His praise of nonconfrontational building contrasts strikingly with his own self-consciously confrontational style. In the context of our modern world his images and descriptions have somewhat the same function that Laugier's reconstruction of the primitive hut had in his time: they are meant to provoke, meant to make us uneasy about our all too comfortable way of life, to recall us to what matters. Rudofsky's invocation of the timeless vernacular of old-world building rebukes our vernacular, concerned to be up to date, subject to the latest fad or fashion.

What would an architecture look like that attempted to heed Rudofsky's lessons? Would Luis Barragan have met with his approval? Would the architectural experiments by his fellow Austrian, the painter Hundertwasser? Whatever the answer, this much is clear: any such attempt should result in a building that would confront and stand up to the modern context, calling us to a different way of life, a different ethos. As a contemporary version of old-world building it would not be another such building, but a work of architecture.

4

I turned from Heidegger's description of a Black Forest farmhouse to his interpretation of a Greek temple to suggest that the contrast between contextualist vernacular building and confrontational architecture is part of the history of building. Like all art, architecture refuses to submit to the context of the established and accepted. It thus departs from and confronts building. It is easy to understand the recurrent attacks on architecture in the name of utility and comfort. But, as I have described it, the very point of architecture is to let us take leave from the everyday, if only to return us to it, now with more open eyes, greater awareness of ideals inevitably obscured by routines of everyday life. What Heidegger says of the Greek temple, that it lets the god be present, has its analogue in the presence of God in every church, or in the presence of shared values in civic monuments. Architecture calls us out of the everyday to another place, a bit closer to the ideal. A piece of utopia lives in all architecture. This utopian aspect of architecture has to bring it into conflict with what would seem to be the point of building, which is to help make us comfortable in our world, where expectations of what comfort requires can be expected to change with changing conditions. Architecture is, however, also building. This returns us to the tension that rules what Rudofsky calls "pedigreed" and I call genuine architecture: like all building, architecture too should make us comfortable, while, like all art, it should make us uncomfortable by raising dreams of a better world, of genuine community.

But this way of putting the matter presupposes an overly reductive understanding of the requirements of dwelling. To feel at home in the world we not only require shelter, but need to illuminate that world with myths, be they of gods or God, be they of shared rights and virtues. If it is to meet the requirements of dwelling, building has to assume a mythopoeic, and that means, inevitably, also a public and political function. This is to say: vernacular building requires the illumination provided by architecture, where architecture can be either conservative or revolutionary, i.e., serve the old or present new gods.

Is architecture still able to meet this function? What can we today learn from a Greek temple or a medieval cathedral? Heidegger himself calls attention to all that separates us from such architecture:

> When, for instance, we visit the temple in Paestum at its own site or the Bamberg cathedral on its own square—the world of the work that stands there has perished.
>
> World-withdrawal and world-decay can never be undone. The works are no longer the same as they once were. It is they themselves, to be sure, that we encounter there, but they themselves are gone by. As bygone works they stand over against us in the realm of tradition and conversation.[25]

25 Heidegger, "The Origin of the Work of Art," 40-41.

Not only has the world of these works perished. There appears to be no modern architectural type to take the place of temple or cathedral, able to gather individuals once more into genuine community. As Heidegger points out in the epilogue to "The Origin of the Work of Art," we no longer look to art, and this has to include architecture, to open up our world. The ethical function that art once had, today has been claimed by reason.

Unfortunately reason has proved unequal to the assumed task. We live in the ruins of the inherited value system. To support this claim I would have to show how, notwithstanding the efforts of philosophers from Plato to Kant and indeed right down to the present, unprejudiced pure reason has shown itself incapable of discovering the true ends of human actions. Such discovery requires the aid of myth. And

even if our understanding of reality makes it difficult to take myth seriously, even if it may have become hard to separate the mythmaker from the fool, the mythopoeic function of art remains indispensable.

The need for art, and especially for architecture, remains. What kind of architecture? Temple and cathedral lie behind us. Not only has the kind of community their building presupposed and reaffirmed been lost, but few of us would wish it to return, for it is incompatible with one of our own ruling myths: the myth of the value of personal freedom. That myth has freed art, too, from its former servitude to religion and state. But if art has thus gained a new freedom, the price of the privatization of art has been its loss of public importance, its peripheral placement in a world ruled by the economic imperative.

Where does that leave building? Outside of art it would seem. As Adolf Loos remarked already in 1910:

> The house has to please everyone, as opposed to the work of art, which has to please no one. The work of art is a private affair of the artist. Not so the house. The work of art is placed in the world, although there is no need for it. The house satisfies a need. The work of art is responsible to no one, the house to everyone. The work of art wants to tear human beings out of their comfortable adjustment to the world. The house has to serve the requirements of comfort. The work of art is revolutionary, the house conservative. The work of art points out new paths to humanity and thinks of the future. The house thinks of the present. The human being loves everything that serves the requirements of comfort. He hates everything that importunes him by wanting to tear him out of the position he has gained and secured. Thus he loves the house and hates art.[26]

26 Loos, "Architektur," 107.

In a way that anticipates the romantic Marxism of a thinker like Ernst Bloch,[27] Loos assigns to art not just an esthetic, but an ethical function. It gains that function as a contrasting foil to everyday reality. Pointing to a realm denied to us by our modern world, it makes us dream of a new world, of radical negation, of revolution, even if our understanding of reality would have us judge such dreams mere foolishness.

27 See Ernst Bloch, *Das Prinzip Hoffnung* (Frankfurt: Suhrkamp, 1980), 819–73.

Where does that leave architecture? In many places Loos seems to suggest that architecture is inevitably caught in an unhappy compromise between art and building. His refusal of that compromise forced Loos to condemn ornament and to reject the nineteenth century's decorated sheds. But must every work of architecture be a decorated shed? Despite the vehemence of his critique of architecture, Loos yet holds open the possibility of architecture as an art. His paradigm is a simple grave monument: "When we find in the forest a mound, six feet long and three feet wide, raised by a shovel to form a pyramid, we turn serious and something in us says: here someone lies buried. *That is architecture.*"[28] The confrontation with death prevents us from going on with the usual business of life, carries us to another place that lies, usually well submerged, within the self. Bringing us home to ourselves, it at the same time lets us feel homeless in the everyday with all its so familiar cares and concerns. But just such a recovery of what Heidegger was to call authenticity is a function of genuine art as Loos understands it: art invites us to take leave from what we usually call reality, but only to free us and to return us to ourselves. Loos's grave in the forest is to teach us that even today there can be architecture that deserves that title. "Only a very small part of architecture belongs to art: the sepulchre and the monument. Everything else, everything that serves a purpose, is to be excluded from the realm of art."[29]

28 Loos, "Architektur," 109–10.

29 *Ibid.*, 107.

If Loos is right, the only task left to architecture is the monument, is to speak to us moderns of the emptiness of what we consider progress, is to remind us of the victory of tyrannical time over all we have achieved or can hope to achieve, can build

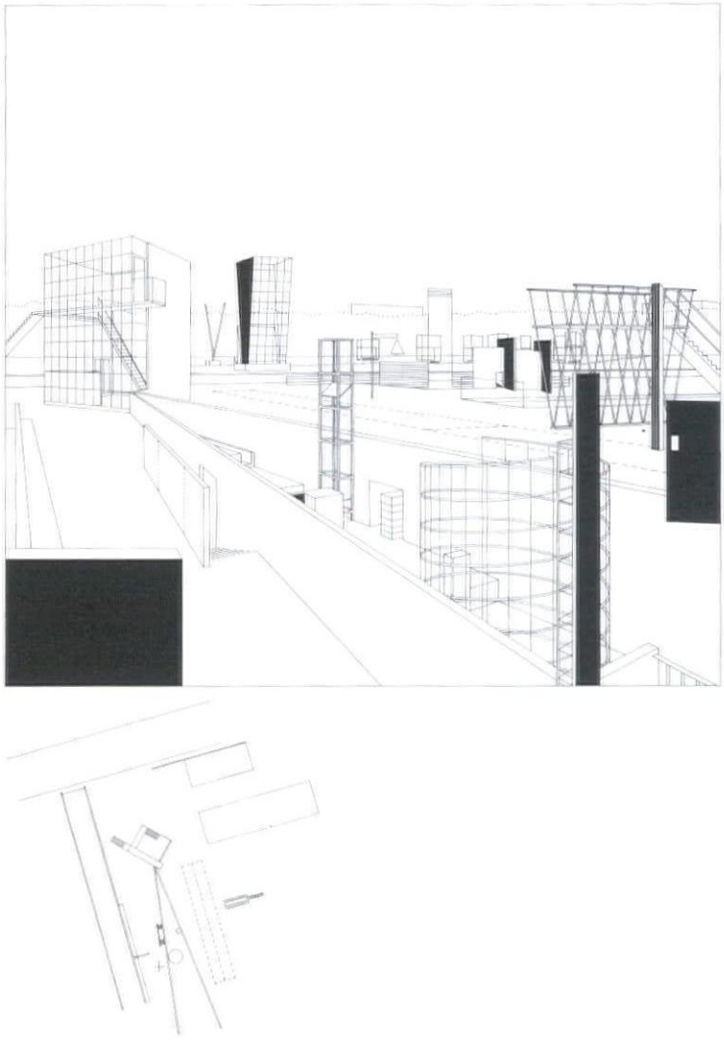
or hope to build. Genuine architecture today stands in profound affinity with death. Its ethical function is reduced to that of rendering us authentic by recalling us to our mortal finitude.

That reduction is too nihilistic to be readily accepted. Is it not possible to accept Loos's claim that architecture should provide everyday reality with a contrasting foil and still not sacrifice the future to the past, without placing architecture into a museum and without making the monument the only architecture that still preserves something of the aura that once belonged to temple and cathedral? Walter Benjamin has forced us to be suspicious of the word "aura."[30] Is the very invocation of that aura not out of place in this age of reason and technology? Is it not folly to keep trying to reoccupy the place that the death of God has left empty?

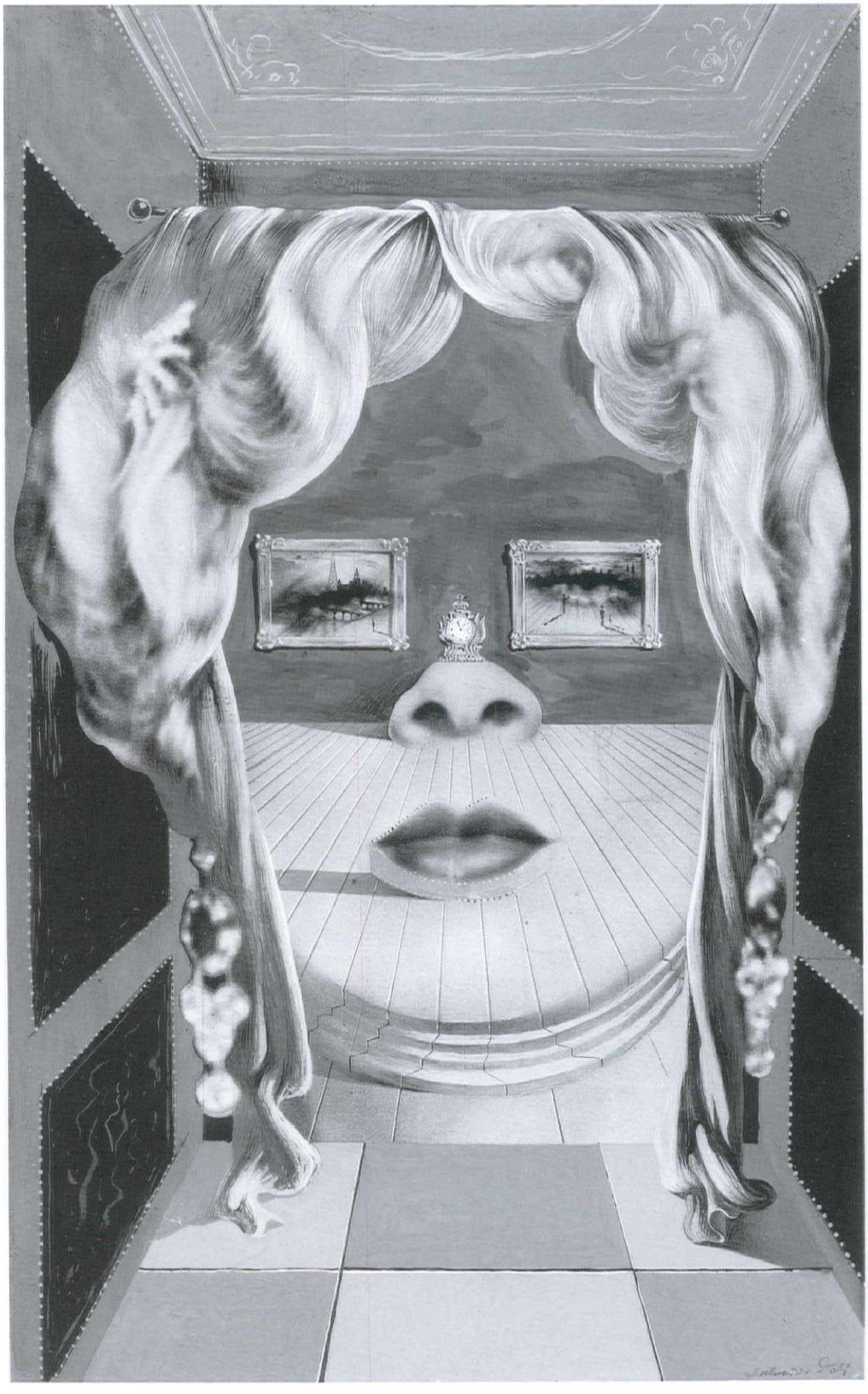
But if, as I have suggested, reason has proved incapable of providing the kind of orientation human life demands, and if the need for the mythopoeic function of art, and more especially of architecture, remains as strong as ever, even if we have grown too reasonable to take this function very seriously, where, then, is architecture to turn? From what paradigms is it now to learn? I would like to suggest, well aware of the foolishness of my suggestion, that we learn from the architectural folly, a suggestion that fits in well with an understanding of the modern artist as the jester of modern culture. This is not the place to write a history of architectural follies, in which the follies that animated eighteenth-century parks, including not only artificial ruins, memorials, and hermitages, but pleasure pavilions of various kinds, including Chinese pagodas, Moorish kiosks, and rustic chalets, would deserve extensive treatments. Such a history might well conclude with some very modern follies,[31] which point out possibilities of introducing into the context of the modern city foolish works of architecture that, responsible to no one and not to be taken too seriously, are gently revolutionary and let us dream of a better future.

30 Walter Benjamin, "Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit," in *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit* (Frankfurt: Suhrkamp, 1963), 7-63.

31 This would include recent designs by Emilio Ambasz and Steven Holl, especially Steven Holl's utopian project for the Porta Vittoria sector on the periphery of Milan, including a Dario Fo pavilion, a Primal Soup Kitchen for Unhappy Lovers. See the brochure that accompanied the exhibition Emilio Ambasz / Steven Holl. *Architecture* (New York: The Museum of Modern Art, 1989) and Steven Holl, "Within the City: Phenomena of Relations," *Design Quarterly* 139 (1989).



4 *Porta Vittoria, Steven Holl, Milan, 1987. Garden of Sounds.*



1 Mae West, *Salvador Dalí, c. 1934.*

Architectural Representation Beyond Perspectivism

Alberto Pérez-Gómez and Louise Pelletier

Computer-aided design and technical drawing have become part of the everyday life of the architect. While their undisputed precision has made the architect's task into something akin to applied science, and their efficiency is now deemed to be a proof of quality, the problem of architectural representation still begs discussion. Tools of representation underlie the conceptual elaboration of a project and the whole process of the generation of form. Even though most enlightened architects would recognize the limitations of tools of projection such as plans, sections, and elevations and predictive planning in relation to the actual meaning of their built work,[1] no alternatives are seriously considered outside the domain of modern perspectivism, which has deeply conditioned our knowledge and perception.

The functional motivations of a technological world have helped to transform perspectival tools into pragmatic projections that are unable to translate into the realm of representation the symbolic order of the world.[2] Today, the process of creation in architecture often consists of a formalistic approach that assumes that the design or representation of a building demands a set of projections. These projections are meant to act as the repository of a complete *idea* of a building, a city, or a technological object. For purposes of descriptive documentation, depiction, construction, or any imparting of objective information, the architectural profession has generally identified architectural drawings as projections. These reductive representations rely on syntactic connections between images, with each piece only a part of a dissected whole. Representations in professional practice, then, are easily reduced to the status of efficient neutral instruments devoid of inherent value. Devices such as drawings, prints, models, photographs, and computer graphics are perceived as a necessary surrogate of the built work. It is therefore crucial to see the implications of such a reductive attitude on the creative process in architecture.

This descriptive set of projections that we today take for granted is in fact our inheritance from the geometrized, homogeneous space of the nineteenth century. Our implicit trust in the application of a scientific methodology to architecture derives directly from the techniques prescribed by Jacques Nicolas Louis Durand in his *Précis des Leçons d'Architecture* (1802 and 1813).[3] Durand's legacy is the objectification of style and technique, and the establishment of apparently irreconcilable alternatives: *technological* construction (functional) versus *artistic* architecture (formal), the false dichotomy of *necessary* structure and *contingent* ornament.

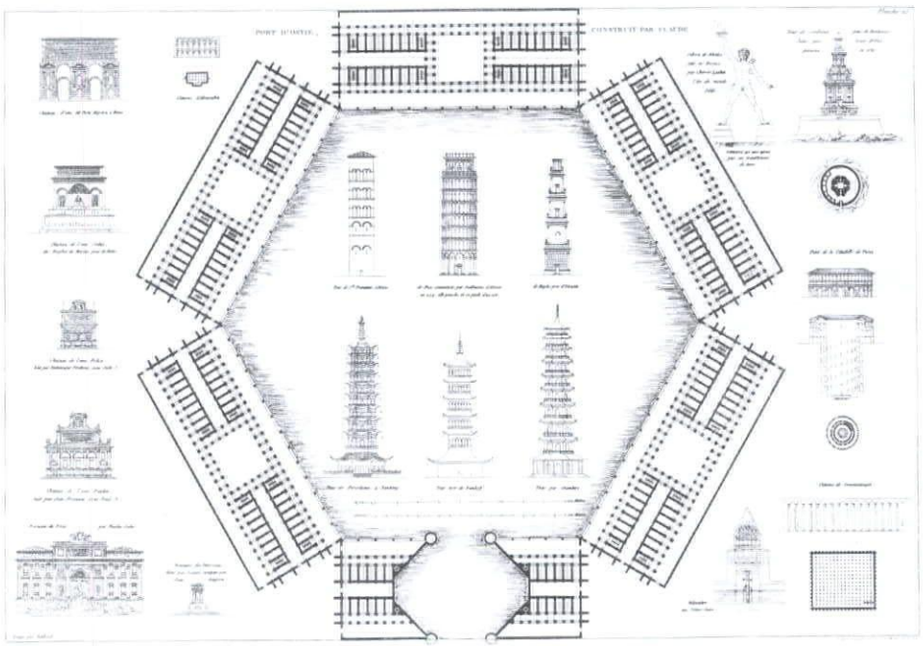
1 We use "meaning" in a sense derived from the phenomenology of Edmund Husserl and Maurice Merleau-Ponty. In this sense, meaning is a given in the prereflective engagement of man (with his body) in the world. There is no question here of meaning as the *effect* of association. Human meaning remains, primordially, a mystery whereby we *recognize* an order in the specificity of the perception. It is the objectified, *enframed* perception of objects that makes it so difficult for us to understand that this *perception with meaning* is indeed the very ground of our thoughts and actions.

2 From a phenomenological perspective a "symbol" is not a contrivance or invention. Symbols are of course historically determined but possess a transhistorical dimension, as we today have access to the meanings of the past. The symbol is also not necessarily a representation of absolute truths or transcendental theological values. It affords us a glimpse of our transhistorical embodied reality (never fixed or reducible to a formulation such as the transparent Being of Western metaphysics) and thus makes it possible for us to endure in the world despite our personal mortality. It is our position that such understanding of symbolization as a reality immanent in the world of man survives both the critique of philosophical nihilism and relativism, and as a goal of architectural design overcomes the esthetic formalism that is usually the result of this view in the self-referential products of postmodern architecture.

Though the formalization of descriptive geometry promoted a particularly simplistic objectification, the projective tool is a product of our technological world grounded in a modern world-view that we cannot simply reject. But a different use of abstraction, related to modern art, has been generated from the same historical situation. Its intention, the model of which, as we will show, is closer to a film montage, is to transcend perspective, to transcend dehumanizing technological values (often concealed in a world that we think we control) through the incorporation of a critical position about the contemporary situation that might allow a new creative process to emerge.

The objectifying vision of technology denies the possibility of realizing in one drawing or artifact a symbolic intention that might eventually be present in the built work. The fact is that the process of making the building endows it with a dimension that cannot be reproduced through the picture or image of the built work. Reciprocally, architectural representations must be regarded as having the potential to embody fully an intended order, like any other work of art.[4]

Today we recognize serious problems with our postindustrial cities and our scientistic way of conceiving and planning buildings. Many philosophers and cultural historians have described the crisis of modern science and emphasized the necessity of transcending reductionist thinking in all disciplines of human endeavor. They have accepted the ultimate need for a mythopoetic dimension of discourse, a narrative that involves an accounting of the existential anxiety that is the transhistorical nature of our mortal human life.[5] A similar intention must be incorporated into architecture. It is imperative that we not take for granted certain assumptions about architectural ideation, and that we redefine our tools in order to generate meaningful form. Our professional responsibility demands our concern for the making of a world that is not merely a comfortable or pragmatic shelter, but that offers the inhabitant a physical, formal order that reflects the depth of our human condition. In this essay we will explore the conception of building as a poetic translation rather than as a prosaic transcription of its representation.[6]



2 *Port D'Ostie, J.N.L. Durand, 1800.*

3 J.N.L. Durand gave us the first architectural theory whose values were directly extrapolated from the aims of applied science and technology. Never before Durand had the concern for meaning been subordinated to the pursuit of efficiency and economy in the production of design. For the purpose of this article it is particularly crucial to keep in mind the connection between this system of values and its tools, i.e., Durand's *Mécanisme de la Composition*, the first design methodology thoroughly dependent on the predictive quality of the projections of descriptive geometry.

4 This statement recognizes the political and public aspect of architectural meaning. The technological vision, the enframed vision, is our vision. The first step for the architect interested in retrieving an ethical praxis is to accept the necessity of self-transformation, of a recollection of being through our embodiment. The terms *embodiment* and *embodied reality* are used in their phenomenological sense. Embodiment refers specifically to a nondualistic, post-Cartesian understanding of consciousness where mind and body are not in a functional, mechanistic relation, and the boundaries between the external and internal worlds of experience vanish.

5 A short list of philosophers following this path could start with Friedrich Nietzsche and include E. Husserl, Martin Heidegger, Jose Ortega y Gasset, and, more recently, George Gusdorf, David M. Levin, and Hans Blumenberg. The implications of myth are obviously complex and often contradictory in the work of these writers. We don't use myth as a false story aimed at perpetuating the abhorrent exploitative political structures of our history. Myth cannot simply be added to form to make some kind of meaningful architecture. Our contention with Blumenberg is that myth is ultimately unavoidable in human culture and that it is our only means of articulating a truth grounded in our mortality and rationality. Even contemporary scientists now realize that narratives are crucial to the substantiation of specific theories; that the greatest precision leads to uncertainty. This mythopoetic articulation must be the point of departure of our fictive and historical narratives as we try to develop an ethical praxis. This is indeed the basis of a theory of architecture that is *not* a methodology.

There is an intimate relationship between architectural meaning and the modus operandi of the architect, the nature of his techne.[7] We must learn to recognize the differences among the representational artifacts in our architectural history. Since the Renaissance, the relationship between the intentions of architectural drawings and the built objects that they describe or depict has changed. Though subtle, these differences are nonetheless crucial. They can only be perceived if the objects are understood hermeneutically, in the "world of the works," i.e., in the context of their respective cultural worlds and particularly the conceptions of space and time on which they are grounded.[8]

On examining the most important architectural treatises in their respective contexts, we have concluded that the systematization that we take for granted in architectural drawing was once less dominant in the process of maturation from the architectural idea to the actual built work. Prior to the Renaissance, architectural drawings were rare. In the Middle Ages architects did not conceive of a whole building idea, and the very notion of a scale was unknown.[9] Filarete, discussing in his treatise the four steps to be followed in architectural creation, was careful to emphasize that in each translation from proportions to lines, to models, and to buildings, the problem is autonomous, and that the connection between the different steps is analogous to an alchemical transmutation, not to a mathematical transformation.[10] Architectural drawings could not therefore be conceived as instrumental artifacts that might be unambiguously translated into buildings.

During the Renaissance, architecture came to be understood as a liberal art, and architectural ideas were thereby increasingly conceived as geometrical *lineamenti,* as bidimensional, orthogonal projections. A gradual and complex transition from the classical theory of vision to a new mathematical and geometrical rationalization of the image was taking place.[11] But the new understanding of a perspectival image remained directly related to the notion of classical optics as a science of the transmission of light rays. The pyramid of vision, the notion on which the Renaissance idea of the image as a window on the world was based, was inherited from the euclidean notion of the visual

3 Detail of frontispiece to the 1572 latin edition of Opticae Thesaurus *by Ibn-al-Haitham Alhazen (965–1039).*

6 Addressing the problem of language, Heidegger recognized that the representative function of (scientific) prose has been exhausted. To transcend the resulting silence we must recognize the primacy of poetic speech, a saying that reveals while concealing; *aletheia,* a *different* saying of the truth.

7 See Alberto Perez-Gomez, *Architecture and the Crisis of Modern Science* (Cambridge: MIT Press, 1983), introduction and ch. 9, and "Abstraction in Modern Architecture" in *VIA 9* (Philadelphia, 1988).

8 Paul Ricoeur thoroughly develops the complex notion of the "world of the work" in several works, particularly *History and Truth* (Evanston, Illinois: Northwestern University Press, 1965) and *The Conflict of Interpretations* (Evanston, Illinois: Northwestern University Press, 1974).

9 Gothic architecture in particular was a question of construction, operating through well-established traditions and geometrical rules that would be directly applied on the site. Their expression was the result of changing labor and diverse methods supplied by itinerant bands of stonemasons who migrated with weather patterns to work on various building projects around Europe. The multiplicity of styles, such as in the cathedral of Chartres, was not perceived as an inconsistency but as a layering of varied solutions by different hands for a number of specific structural problems over the course of time. The famous discussion around the ideas and building of the Milan cathedral constitutes an excellent example of the complex process of building ideation in the Middle Ages.

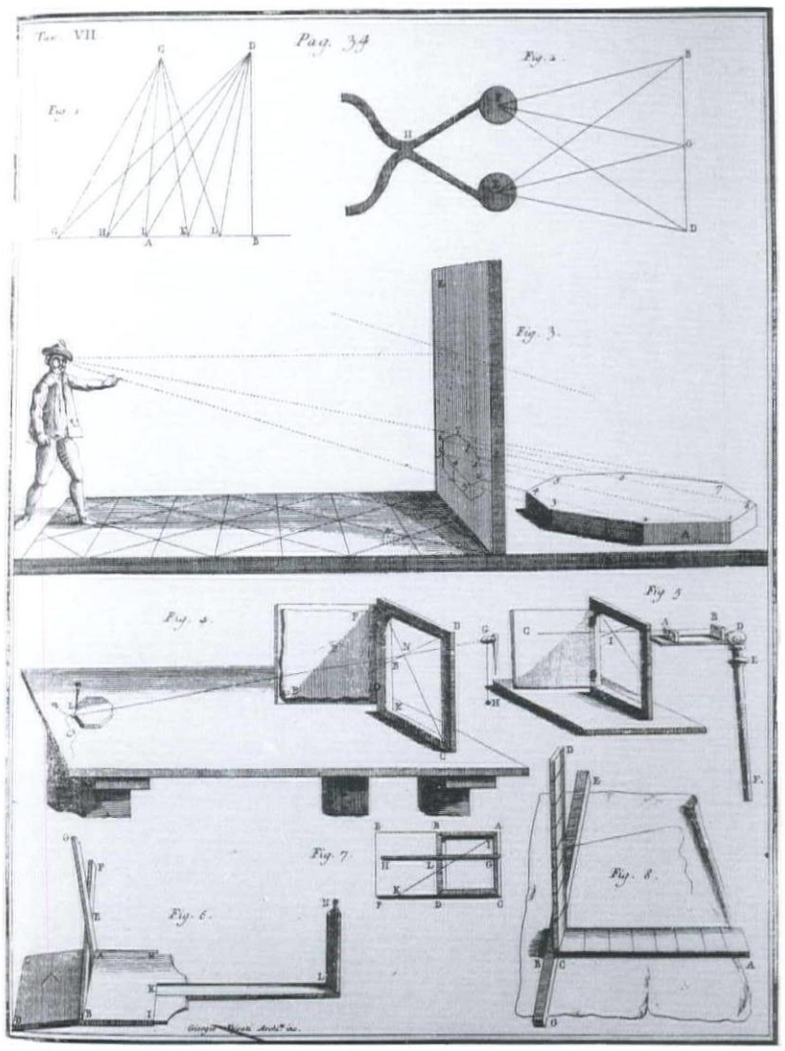
10 See Filarete's *Trattato* (reprint, Milano: Il Polifilo, 1972), in which he discusses in the form of a symposium the construction of the city of Sforzinda.

11 The medieval treatises on perspective, from Ibn Alhazen and Alkindi to Bacon, and Peckham to Vitello and Grossatesta, examine, principally, the physical and physiological phenomenon of vision. In the cultural context of the Middle Ages its application was specifically related to mathematics.

12 Alberti's central point *(punto centrico)* of the perspective construction is often wrongly associated with the "vanishing" point projected at infinity. In fact the point of convergence in the *construzione legittima* is determined and fixed by the point of sight as a "counter-eye" on the surface of the "window."

13 This is obviously a complex issue. The painter's interest in mathematical depth, in a measurable order of experience through layers of events, had as a corollary the use of architectural backdrops as the ideal means to express this concern. It would be naive to deny the often-stated connection between Renaissance paintings and the work of architects. However, as we will contend here, the use of *perspectivus artificialis* is particularly the province of painters. These complexities are the source of many simplistic misinterpretations of linear perspective as the origin of architectural ideation in the fifteenth-century. The *construzione legittima* as developed by Brunelleschi and Alberti for the art of painting was associated with architectural construction because the subject of representation had to be architectural for the perspective depth to appear.

14 Alberti had also emphasized the difference between drawings of the painter and those of the architect. In *De Re Aedificatoria* or *Ten Books*, Book 2, ch. 1, Alberti pointed out, in the context of the usefulness of rough, undecorated models in design, that the architect and the painter both revealed *depth* (*prominentias/rilievi*) in very different ways. While the painter "takes pains to emphasize the relief of objects in paintings with shading and diminishing lines and angles" (indeed, through the methods of linear perspective that he discussed in *Della Pictura*), the architect recognizes depth (*raffigura i rilievi*) by means of drawing the plan *(mediante il disegno della paintalex fundamenti descriptioni)* and represents in other drawings the shape and dimensions of each elevation "without altering the lines and maintaining the true angles." The architect draws as one who desires his work to be judged "not by the apparent perspective" (James Leoni's translation, London: Alec Tiranti, 1965), or "deceptive appearances" (Joseph Rykwert, London: MIT Press, 1988), but "valued exactly on the basis of controllable measures" (our translation). In attempting to grasp the difficulties involved in the argument, it is interesting to compare the two English translations of the text with the Italian translation by Giovanni Orlandi (Milan: Il Polifilo, 1966) and the Latin



4 Perspective machine with an illustration of binocular vision reduced to a single point, J.B. da Vignola, 1743.

cone. The eye was believed to project its visual rays onto the object, with perception occurring as a dynamic action of the beholder upon the world. Renaissance perception remained primarily tactile. The hypothesis of a vanishing point was both unnecessary for the construction of perspective, and ultimately inconceivable as the reality of perception in everyday life.[12]

Even though fifteenth-century painters were experimenting with methods of linear perspective, the geometrization of pictorial depth was not yet systematized and did not immediately influence the experience of the world or the process of architectural creation.[13] It was impossible for the Renaissance architect to conceive that the truth of the world could be reduced to its visual representation, a two-dimensional diaphanous section of the pyramid of vision. Brunelleschi, to whom we attribute the earliest example of linear perspective, worked mostly from models in his architectural practice.[14] This transition between *perspectivus naturalis* and *perspectivus artificialis* constituted a first step toward a greater rationalization of the visual image and the detachment from medieval tradition. "Natural" perspective had first been introduced into the quadrivium of sciences together with music without even referring to the art of drawing. Saint Thomas Aquinas associated perspective with music, considering it as a visual harmony, not a graphic method.[15]

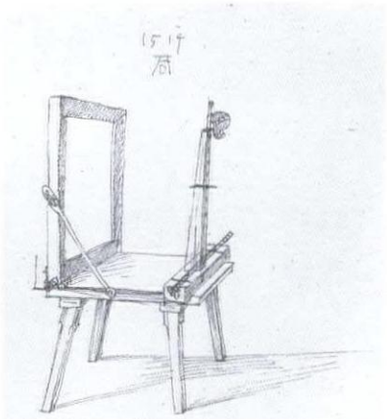
original. The translation of *prominentia* as "projection from the ground plan" by Rykwert/ Leach/ Tavernor is particularly problematic.

15 Robert Klein elaborates upon the problem of transition between *perspectivus naturalis* and *perspettivus artificialis* in his article "Pomponius Gauricus on Perspective," *Art Bulletin*, 43, 1961, 211–13. Klein draws opposite conclusions with regard to the constructive quality of Renaissance perspective, emphasizing the common reading of perspective as the origin of architectural ideation to which we have referred.

16 The best examples of this mathematical treatment of perspective are to be found in Egnazio Danti's commentary on Jacopo Barozzi da Vignola's *Due Regole della Prospettiva Prattica* (Rome, 1583), and Guidobaldo del Monte's *Montis Perspectivae libri sex* (Pesaro, 1600).

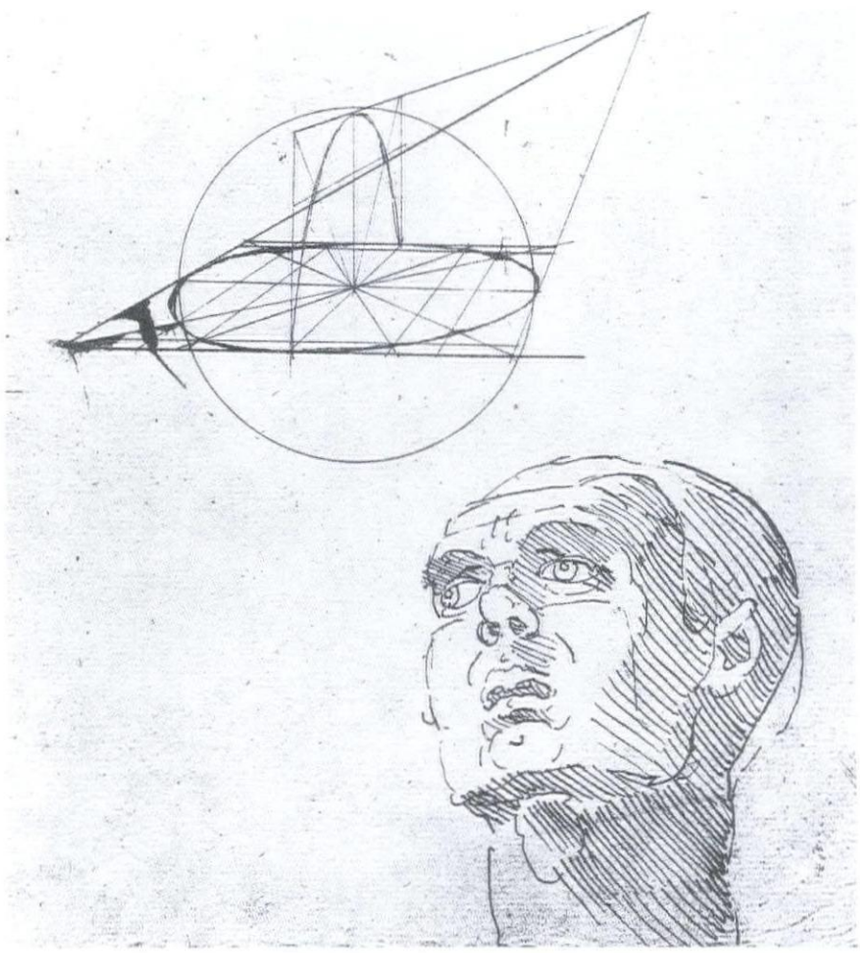
17 The distance point that determined the foreshortening was projected on the same picture plane on the horizon line at a distance from the central point equal to the distance between the eye of the observer and the plane of the image. In other words, Vignola's method introduced a second observer at the same distance from the central point who looked perpendicularly at the beholder, thereby adding an element essential for the representation of stereoscopic vision. Prior to this, with the apex of the cone of vision as a simplified eye, perspective had been monocular.

18 Dürer's machine is a wonderful metaphor for the objectification of reality that is brought about by scientific mentality. Philosophically, this coincides with the inception of what Heidegger calls "the age of the world picture," the substitution of presence (or openness to a transcendental Being) with a represented reality that necessarily conceals its ground of truth, i.e., the horizon of the object, excluded by the frame.



In treatises on perspective as the art of drawing, starting with Alberti's *Della Pictura*, binocular vision was reduced to a fixed point that was the apex of the cone of vision. The necessity of stereoscopic vision to perceive depth, however, required the introduction of a second element that would determine the foreshortening. In Alberti's method of perspective, this new element became an abstract screen (known today as the picture plane) intersecting the visual rays at a given distance. Foreshortening, however, remained the result of intuition. There was no systematization in fifteenth-century perspective treatises.

During the sixteenth century, treatises on perspective tried to translate the primarily empirical understanding of this phenomenon into a system, and became increasingly distanced from treatises on optics. These, however, remained theoretical or mathematical elucidations and had almost no practical use in perspectival representation.[16] In Vignola's *Due Regole della Prospettiva Prattica*, a second observer was introduced and became the distance point.[17] To create a perspective, the artists of the Renaissance abstracted themselves from the experienced world; the geometrization of depth in painting was a sign of an increasing rationalization of perception in general. Albrecht Dürer's perspectival apparatus, composed of an eyepiece and a glass panel, established a rigid method by which to copy nature. The image as a bidimensional section of the cone of vision was thus made literal.[18]

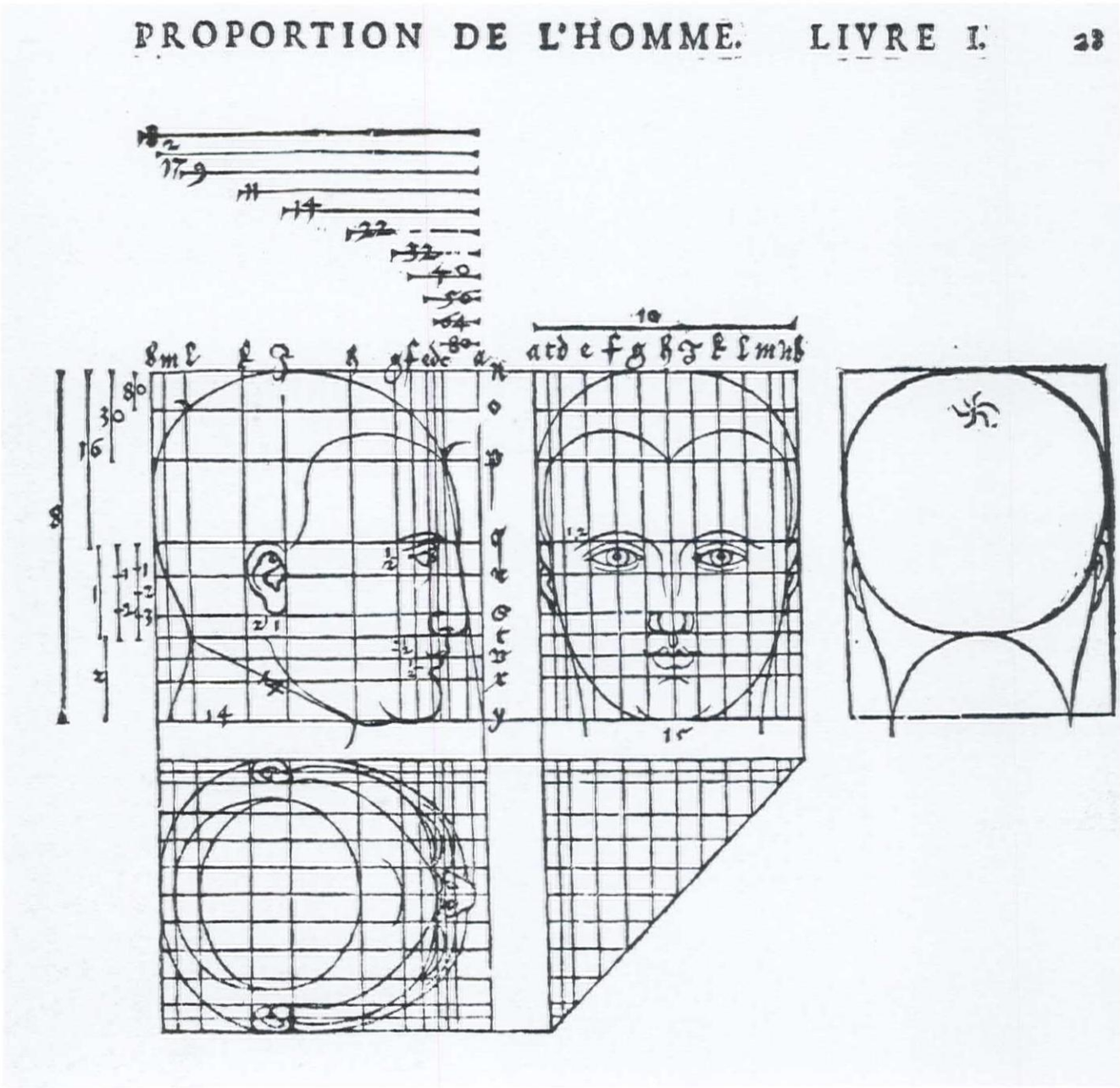


5 Perspective machine, Albrecht Dürer, 1514.

6 Sketch of the head in perspective, Albrecht Dürer, 1514.

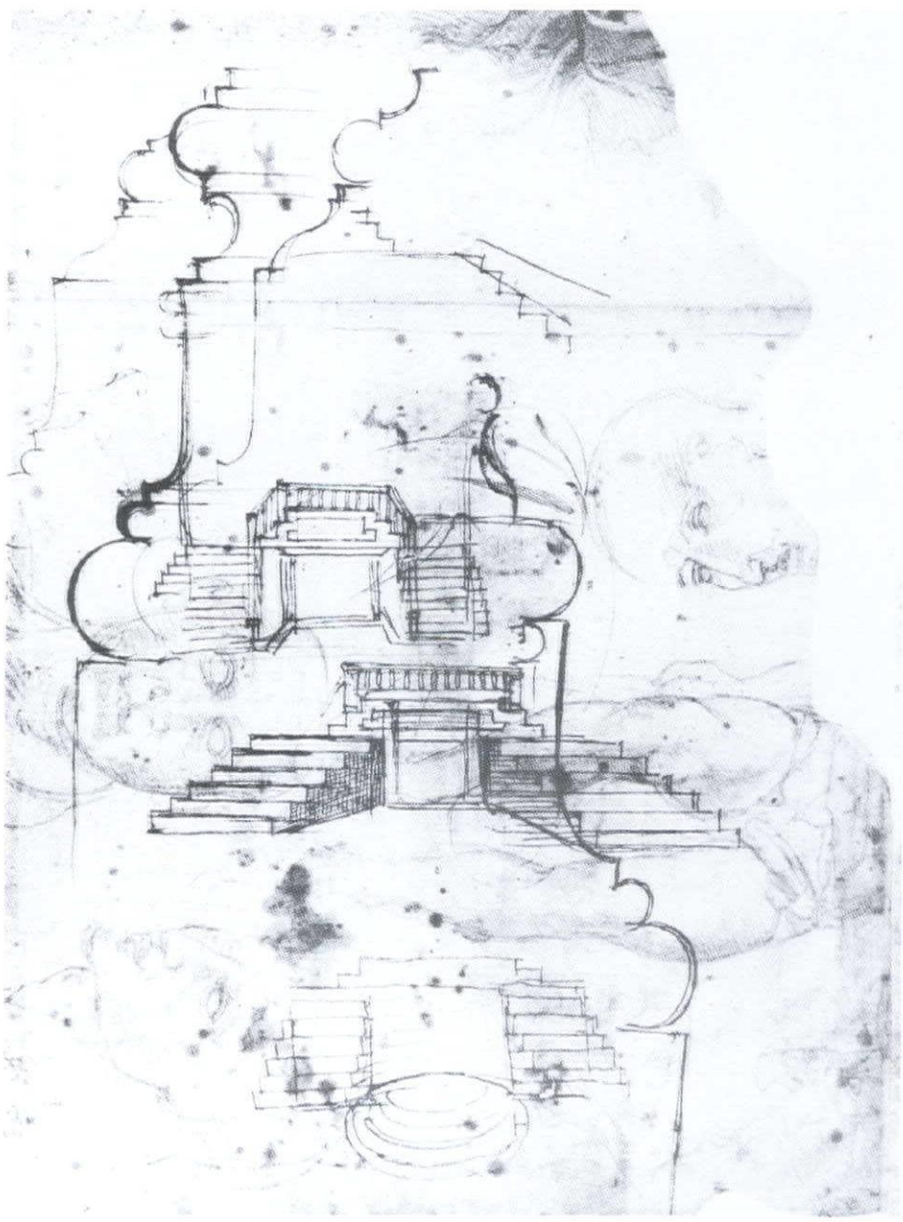
Even though the drawings by Dürer and Philibert de l'Orme may be seen as the origin of the reductionism of computer graphics, just as these artists' interest in projections marks the origin of our own belief that reality can be represented via geometrical perspective (and, later, through journalistic photography), it would be wrong to imagine that perspective always existed, either as a pictorial representation or as the assumed *truth* of real space. Renaissance drawings are not simply the same as modern drawings in their relationship to the built place. Plans and elevations were not yet systematically coordinated within the framework of descriptive geometry. These drawings were not instrumental and remained much more autonomous from the building than those that result from typical contemporary practice.

Before Dürer, a plan was generally conceived as a composite "footprint" of a building, and an elevation as a face. Vertical or horizontal sections were not commonly used



7 The head constructed by means of the "transfer method," Albrecht Dürer, 1528.

before the sixteenth century, just as anatomy rarely involved the actual dissection of cadavers until the early modern era. In the sixteenth century Michelangelo understood the living human body as the foundation of all art, and criticized Dürer's attempt to fix a static image of the human body.[19] In contrast to a growing number of his contemporaries, Michelangelo was resistant to the possibility of making architecture through projections, as he could only conceive of the human body in motion.[20] He could still, nonetheless, perceive a simple sketch as the symbol of a whole architectural intention, the seed of the whole work.[21] Michelangelo's architectural work, perhaps the most outstanding of his century, is remarkably original, founded on an embodied approach to the task of building and rejecting projections and *lineamenti*. That we are today deeply inspired by Michelangelo's architecture may be precisely because his work is based on a nonperspectival approach to designing places.



8 Sketches for the staircase and vestibule in the Laurentian Library, Michelangelo, 1525.

19 Michelangelo's entire emphasis was upon life and movement, qualities that were most often excluded from architectural theory in the Renaissance. Architects were increasingly concerned with the clarity and fixity of measure and proportions. This is Michelangelo's criticism of Dürer's *Four Books on Human Proportions* (Nuremberg, 1528): "...[he] treats only of the measure and kind of bodies, to which a certain rule cannot be given, forming the figures as stiff as stakes; and what matters more, he says not one word concerning human acts and gestures." (From Condivi's *Life of Michelangelo,* quoted by David Summers, *Michelangelo and the Language of Art,* Princeton University Press, 1981), 308; and Helmut W. Klassen, *Michelangelo: Architecture and the Vision of Anatomy* (Montreal: McGill University, 1990), 83.

20 Michelangelo achieved the fundamental dimension of depth by capturing the movement of a figure through foreshortening. Foreshortening as understood in the tradition of Renaissance perspective consists of the visual construct of a frontal geometrical plane within whose frame the depth of a body might be articulated. Things and their proportions are flattened to correspond to the intelligibility of this frame, so as not to be distorted. The extreme understanding of this is Dürer's coordinated system of projection. Foreshortening as developed by Michelangelo negates the reality of this frame field by including peripheral vision as well as what frontally stands out. This quality of vision is what also defines the conception and experience of Michelangelo's architecture. One senses in his work that our bodily presence haunts the built place in that the architecture moves with us. Including the peripheral experience, his architecture remains intelligible even when distorted. (Klassen, *Michelangelo: Architecture and the Vision of Anatomy,* 85–86.)

21 It is well established that no complete drawings of his major works were produced before the execution of the projects; the Campodoglio in Rome is a good example. For a very extended analysis of Michelangelo's work see James S. Ackerman, *The Architecture of Michelangelo* (London: A. Zweimmer, 1970).

22 In the original Vitruvian context, the Greek word *idea* refers to the three aspects of a mental image (perhaps akin to the Aristotelian *phantasm*), understood as the germ of a project. These *ideas* allowed the architect to imagine the disposition of a project's parts (Vitruvius, *The Ten Books of Architecture,* Book 1, ch. 2; Morris Hicky Morgan's translation, New York: Dover Publications, 13-14). *Ichnographia* and *orthographia* would eventually be translated as "plan" and "elevation" but do not originally involve the systematic correspondence of descriptive geometry.

23 Sciagraphy, or sciography, derives etymologically from the Greek *skia* (shadow) and *graphou* (to describe). It thus becomes related to the projection of shadows in linear perspective. In the architectural tradition, however, sciagraphy meant a "draught of a building, cut in its length and breadth, to display the interior," in other words, the profile or section. This use of the term was still present in the nineteenth century (*Encyclopedia of Architecture,* London: The Caxton Press, 1852). Modern Latin dictionaries translate *scaenographia* (the actual term as it appears in the first existing Vitruvian manuscript) as the drawing of buildings in perspective, and generally assume that this word is synonymous with *sciagraphia.* The fact is that perspective was unknown in ancient Rome, and even when Vitruvius speaks about the three types of stage sets appropriate to tragedy, comedy, and satire (Book v, ch. 6), there is no mention of perspective in connection with classical theater. Vitruvius describes the fixed *scaena* as a royal palace façade with *periaktoi,* "triangular pieces of machinery which revolve," placed beyond the doors, and whose three faces were decorated to correspond to each dramatic genre.

In northern Italy Daniele Barbaro, Palladio's friend and patron, was also very careful to emphasize that perspective was not an architectural idea in the Vitruvian sense.[22] Its use was mainly recommended for painters and stage-set designers. Barbaro believed that *sciographia* (the third Vitruvian idea), translated as "perspective," resulted from a misreading in the original text of the word *scenographia,* whose application was important only in the building of stage-sets.[23] Indeed, the frontal perspective used in scenography was concerned with the surface of the picture plane and did not involve the three-dimensionality of "lived" space, which explains its restriction to painting and theater. It is in such media that perspective fulfilled its symbolic function as a means to disclose an ontological depth.[24] Such distinctions, the norm rather than the exception during the Renaissance in Europe, reveal the difficulties involved in conceiving a work of architecture in terms of a two-dimensional set of projections.[25]

Indeed, it was only in the seventeenth century that perspective became a true Vitruvian *idea.* The inception of the Cartesian modern world and the revolution of modern science introduced during the baroque period a conflict between symbolic and mechanistic views of the world.[26] This dualistic conception of reality made it possible for perspective to become a model of human knowledge, a legitimate and scientific representation of the infinite world. Baroque perspective in art and architecture, however, was a symbolic configuration, one that allowed reality to keep the qualities that it had always possessed in an Aristotelian world. During the seventeenth century the space occupied by man was not homogenized, and the primacy of perception as the foundation of truth was hardly affected by the implications of this new science and philosophy. Thus perspective, as an architectural idea, became a privileged form of symbolization. The architecture of Versailles, for example, is not expressed merely in the plans and sections of the palace; its meaning rests primarily in the implied (perspectival) order of the garden, the city, and the world, and in the ephemeral stage sets and theatrical fireworks that were a part of palace life. Similarly, the architecture of the Jesuit church in Vienna by Andrea Pozzo can hardly be reduced to its section and elevation. Pozzo's fresco is inextricably tied to the three-dimensionality of the architectural space. Rather than remaining in the two-dimensional field of representation, the perspective is projected from a precise point situated in actual space, and fixed permanently on the pavement of the nave with a bronze marker. The spatial order of the dome is revealed only at the precise moment that a human presence occupies the station point of the illusionistic *quadrattura* fresco.

Even though the theory of perspective, as an offspring of the new science, allowed man to control and dominate the physical reality of his existence, the arts, gardening, and architecture during the seventeenth century were still concerned with the reconciliation of subject and object and with the revelation of an ordered cosmos. While man considered himself autonomous from external reality, perspective allowed him to dwell

In Book 1, ch. 2, Vitruvius describes this *scaenographia* as "*frontis et laterum abscedentium adumbratio ad circinique centrum omnium linearum responsus.*" Both Frank Granger (London: Harvard University Press, 1931) and Morris Hicky Morgan (New York: Dover Publications, 1960) in their translations of Vitruvius read this as "perspective." Granger's translation reads: "Scenography (perspective) [is] the shading of the front and the retreating sides, and the correspondence of all lines to the vanishing point (sic!) which is the centre of the circle." Hicky Morgan's translation is also problematic: "Pespective is the method of sketching a front with sides withdrawing into the background, the lines all meeting in the centre of a circle." These modern translations fail to do justice to the original text, in which there is no allusion to a vanishing point or to linear perspective. Even if *scaenographia* means "to draw buildings in perspective," the Latin origin of perspective, *perspicere,* is a verb that means simply "to see clearly or carefully, to see through."

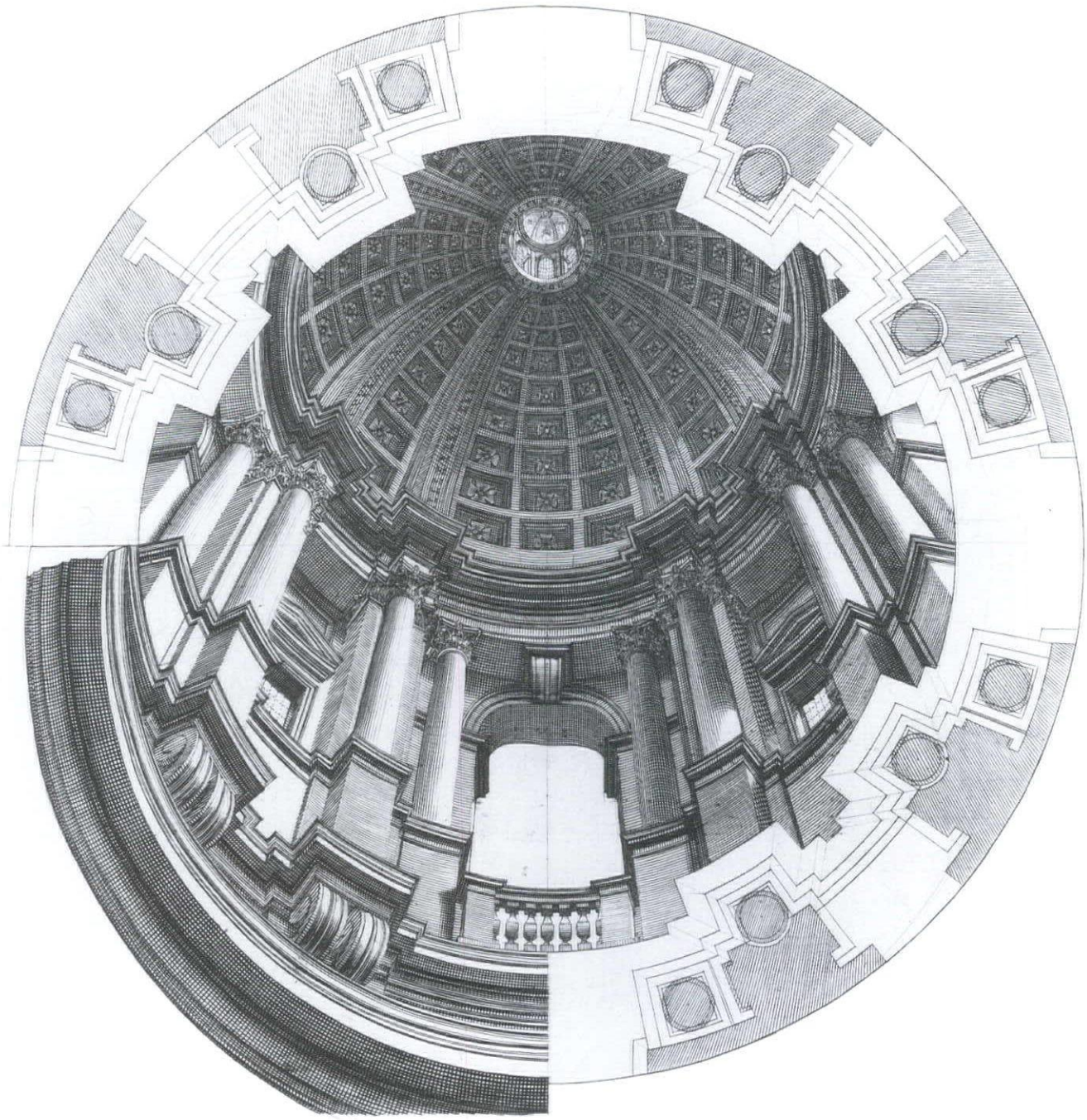
Barbaro argues that *scenographia*, which is "related to the use of perspective," is the design of stages for the three dramatic genres. Appropriate types of buildings must be shown diminishing in size and receding to the horizon. He does not agree with "those that wish to understand perspective (perspettiva) as one of the ideas that generate architectural design (dispositione)," ascribing to it the definition Vitruvius had given to *sciographia.* In his opinion it is plain that "just as animals belong by nature to a certain species," the *idea* that belongs with plan *(ichnographia)* and elevation *(orthographia)*, is the section (*profilo*), similar to the other two "ideas" that constitute architectural order (*dispositione*). In Vitruvius's conception, the section "allows for a greater knowledge of the quality and measurement of building, helps with the control of costs and the determination of the thickness of walls," etc. Barbaro, in fact, assumes that in antiquity "perspective" was applied only to the painted representations on the side of the *periaktoi. (La Practica della Perspettiva,* 130).

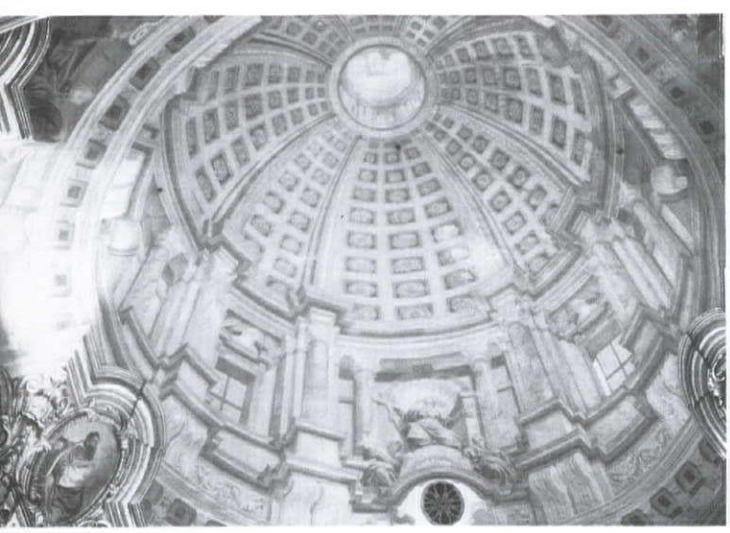
24 A subtle distinction was often drawn between *prospettiva*, generally understood as the art of drawing complex geometrical volumes constructed from their planimetric elaborations (so as to represent them three-dimensionally), and *perspettiva,* which dealt mainly with the surface of the picture plane. Both words come originally from the Latin verb *spectare*, to see. *Perspicere*, meaning to see clearly or carefully, seems to have more passive connotations than *prospicere*, meaning to look out at, to look forward or toward an object. On the other hand, the Italian *prospettiva* and *perspettiva* were often used interchangeably to name the new linear perspective. Piero della Francesca declared painting a mathematical art in *De Prospectiva Pingendi* (Parma: Biblioteca Palatina, MS. 1576; reprint, Florence, 1942). He introduced the problem of constructing regular and irregular bodies (the latter being more important for painters) as part of his treatise on linear perspective. Luca Pacioli in *De Divina Proportione* (Venice, 1509), after emphasizing the sacred (Christian) character of the golden section, most useful for architects, added fifty-nine full-page woodcuts of regular and irregular bodies drawn in perspective and based on models prepared by Leonardo.

Interestingly, Pacioli explained that the two most important solids for architects were the 26-faced solid and the 72-faced solid, both capable of approximating the constructive reality of domes and vaults. Barbaro made a distinction between the content of his published book, *La Practica della Perspettiva* (Venice, 1569), and an unpublished manuscript of practically the identical title, *La Practica della Prospettiva* (Venice: Biblioteca Marziana, MS. IT. IV, 39-5446). In the former he teaches how to render buildings in perspective in order to construct stage sets, starting from detailed instructions concerning polygons and polyhedra, while in the latter he deals mostly with the study of geometrical bodies and their relationship to perspective. *Prospettiva,* according to Barbaro, addressed the practical concerns of artists and architects, assuming that the essence of built architecture was evidently the geometrical *lineamenti* of these constructed bodies.

25 These crucial distinctions stand despite the well-documented interest of architects in the theater and the often perceived continuity between the "tragic stage" and the city of classical architecture, as exemplified in Serlio's famous engravings and Palladio's Teatro Olimpico. This ambivalence is in our opinion not a logical fault but an asset. It is, in fact, a fundamental character of Renaissance architectural intention and must be understood as having contributed to the magical depth of many architectural works and representations as we know them today.

26 The radical changes brought about in the realm of thinking by the scientific revolution cannot be overemphasized. Alexander Koyre has shown in his *Metaphysics and Measurement* (London: Chapman & Hall, 1968) how a world of fixed essences and mathematical laws deployed in a homogeneous, geometrized space, much like the Platonic model of the heavens, was assumed by Galileo to be the truth of our experience of the physical world. As an example, Galileo believed, after postulating his law of inertia, that the essence of an object was not altered by





9 Illustration of a projected fresco on a ceiling, Andrea Pozzo, 1707.

10 View of the quadrattura fresco on a shallow dome at the Jesuitenkirche, Andrea Pozzo, Vienna, 1705.

motion. This notion, now an obvious truth, was at odds with the traditional Aristotelian experience of the world, in which perception was our primary access to reality. This new conception eventually led to a skepticism regarding the physical presence of the external world. In the terms of Descartes, man became a subject confronting the world as *res extensa*, as an extension of his thinking ego.

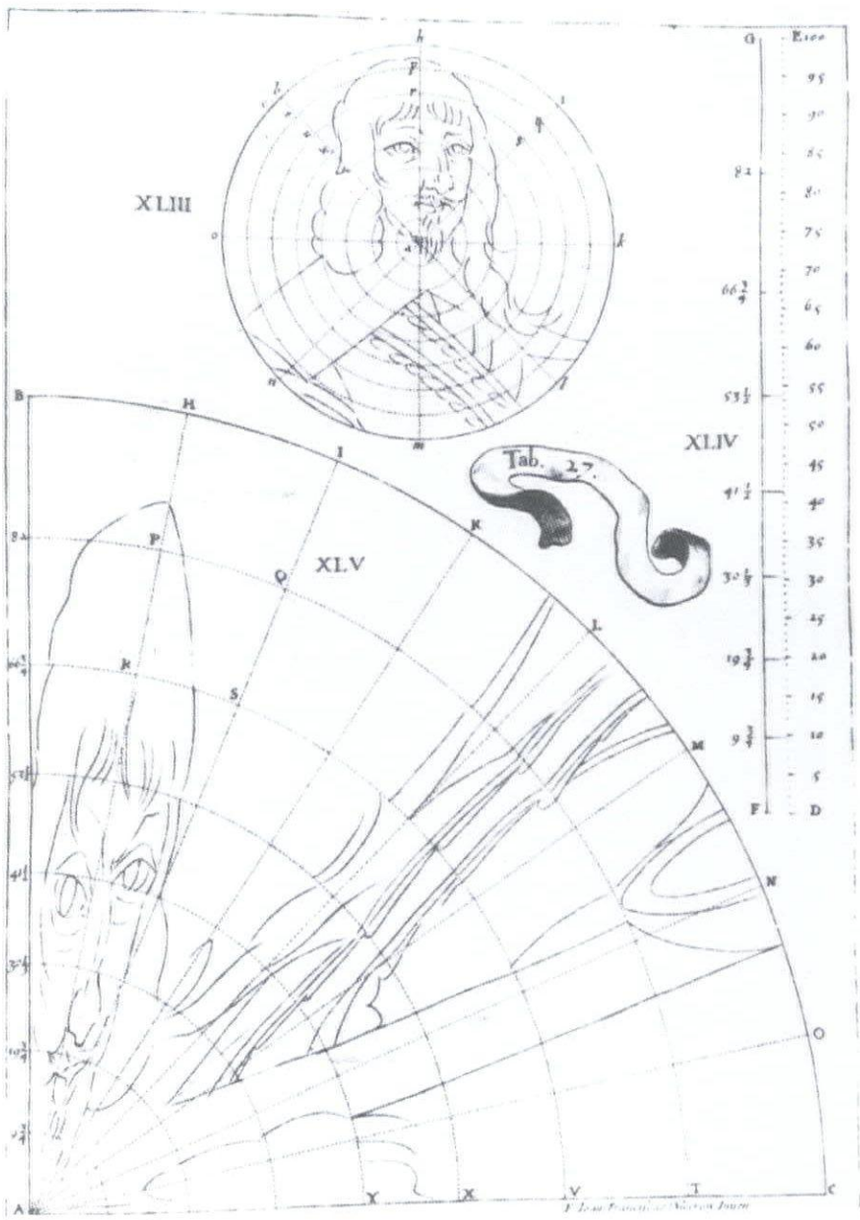
27 Anamorphosis as a projection of forms beyond the limits of the image was already known by the painters of the Renaissance. In fact, one of the earliest references to the art of anamorphosis can be found in Vignola's *Due Regole della Perspettiva Practica*, where he described a basic method that follows the same laws of visual rays that he applied to develop his theory of linear perspective. But the manipulation of images was still perceived as an act of magic, and the technique of anamorphosis remained secret. It is only during the seventeenth century that Jean-François Niceron systematized the technique as a geometric construction and made it into a method. For a detailed history of anamorphic art, see Jurgis Baltrusaitis, *Anamorphic Art* (New York: Harry N. Abrams, Inc., 1976).

28 This is also revealed in the aims of philosophical systems throughout the seventeenth century. For example, in his *Studies in Geometry of Situation* (1679), G. W. Leibniz proposed a science of extension that, unlike Cartesian analytic geometry, would be integral and not reducible to algebraic equations. But this project of a descriptive geometry more universal than algebra could still magically describe the infinite qualitative variety of natural things. This transcendental geometry was part of Leibniz's lifelong dream to postulate a universal science, called by him at various times *lingua universalis, scientia universalis, calculus philosophicus*, and *calculus universalis*. From all the disciplines of human knowledge, he tried to extrapolate the simplest constitutive elements that would allow him to establish rules of relation by which to organize the whole epistemological field into a "calculus of concepts."

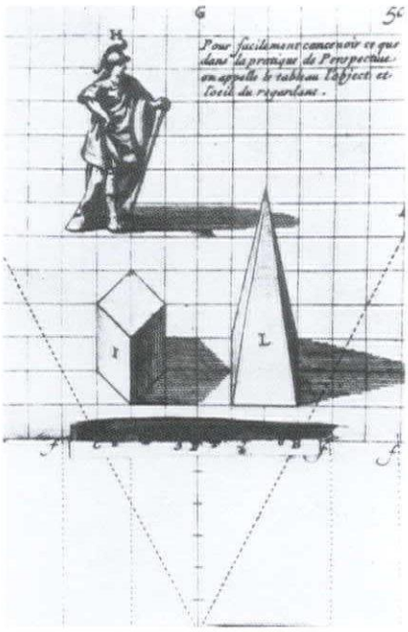
29 Niceron considered perspective as a tool partly magic, partly scientific. Rather than a technique of reduction, it was for him a vehicle by which to attain truth. In the context of the Cartesian revolution, Niceron's *Thaumaturgus Opticus* (Paris, 1646) was his reflection on appearance and reality.

meaningfully in the physical world by changing its geometric dimension. In the extreme, anamorphosis, another type of perspective projection, involved the distortion of the reality it represented. Here a geometrical theory, now clearly dominant, subjected normal perception to its own structure by placing the point of view in unexpected places, often on the surface of the drawing or painting itself.[27] By geometrizing the world in such a confounding way, man gained access to a new transcendental truth.[28] The dual nature of baroque perspective is evident in anamorphic works, whose perspective both revealed the truth of reality and reflected man's power to modify it; that is, it was a kind of magic.[29]

Even though perspective became increasingly integrated with architecture, perspectival systematization remained restricted to the creation of an illusion, qualitatively distinct from the constructed reality of the world. Perspective marked the moment of an epiphany, the revelation of meaning and the God-given geometric order of the world. For a brief time, illusion was the locus of ritual. The revelation of order occurred at the precarious moment when the vanishing point and the position of the observer met.



11 Conical anamorphosis of Louis XIII, J.F. Niceron, 1638.



12 *Simplified perspective method, Gérard Desargue, 1648.*

While most seventeenth-century philosophers were still striving to formulate the appropriate articulation of the relation between the world of appearances and the absolute truth of modern science, the work of Gérard Desargues appeared as an anomaly.[30] Desargues disregarded the transcendental dimension of geometry and the symbolic power of geometrical operations, and he ignored the symbolic implications of infinity. He sought to establish a general geometric science, one that might effectively become the basis for such diverse technical operations as perspective drawing, stone and woodcutting for construction, and the design of solar clocks. Until then, theories of perspective had always associated the point of convergence of parallel lines with the apex of the cone of vision projected on the horizon line.[31] Desargues was apparently the first one in the history of perspective to postulate a point at infinity.[32] He maintained that all lines converged toward a point at an infinite distance. Thus any system of parallel lines, or any specific geometrical figure, could be conceived as a variation of a single universal system of concurrent lines.[33]

Desargues's method allowed for the representation of complex volumes *before* construction, implementing an operation of deductive logic. Perspective became a prescriptive science that controlled practice. The scientific revolution had witnessed in Desargues's system the first attempt to endow representation with an objective autonomy.

Nevertheless, the prevailing philosophical connotations of infinity, always associated with theological questions, as well as the resistance of tradition-minded painters, craftsmen, and architects, made his system unacceptable to his contemporaries. Desargues's basic aims would eventually be fulfilled by Gaspard Monge's descriptive geometry near the end of the eighteenth century.

Once geometry lost its symbolic attributes in traditional philosophical speculation, perspective ceased to be a preferred vehicle for transforming the world into a meaningful human order. Instead, it became a simple representation of reality, a sort of empirical verification of the way in which the external world is presented to human vision. Pozzo's treatise *Rules and Examples of Proper Perspective for Painters and Architects* occupies an interesting, perhaps paradoxical, position as a work of transition. From a plan and an elevation, his method of projection is a step-by-step set of instructions for perspective drawing that establishes the absolute proportional relationship of those elements seen in perspective.[34] The last part of the book develops the method of *quadrattura*, wherein the three-dimensionality of architectural space is subjected to the law of geometry. The consequential homology of "lived" space and the geometric space of perspectival representation led the architect to assume that the projection was capable of truly depicting an architectural space, and therefore supported the possibility of actually designing in perspective. The qualitative spatiality of our existence was now identical to the objectified space of perspective.

In the eighteenth century artists, scientists, and philosophers lost interest in perspective. The process of geometrization that had started with the inception of modern science was arrested by the focus on empirical knowledge spurred by Newton's work and the identification of inherent limitations in euclidean geometry.[35] Architects seemed ready to accept the notion that there was no distinction between a stage set constructed following the method *per angolo* of Galli-Bibiena, one where there was no longer a privileged point of view, and the permanent tectonic reality of their craft. Reality was transformed into a universe of representation. The baroque illusion became a delusion in the rococo church. Even the vanishing point of the frescoes became inaccessible to the spectator, while the building appeared as a self-referential theater, one in which traditional religious rituals were no longer unquestionable vehicles for existential orientation.[36] Despite all this, and in addition to the early eighteenth-century academic attempts to ridicule the secrets of the guilds and the ensuing systematization of construction after 1750, the primacy of the built work over the *devis*, the comprehensive project with specifications, still remained. Drawings were not yet mere predictive tools.

30 For an extended analysis of the work of G. Desargues and a complete biography, see René Taton, *L'Oeuvre Mathématique de G. Desargues* (Paris: P.U.F., 1951). See also A. Perez-Gomez, *Architecture and the Crisis of Modern Science* (Cambridge: MIT Press, 1983).

31 Parallel lines did not converge in euclidean space, where tactile considerations, derived from bodily spatiality, were still more important than purely visual information. See Maurice Merleau-Ponty, *Phenomenology of Perception*, Part I, chapters 1–3.

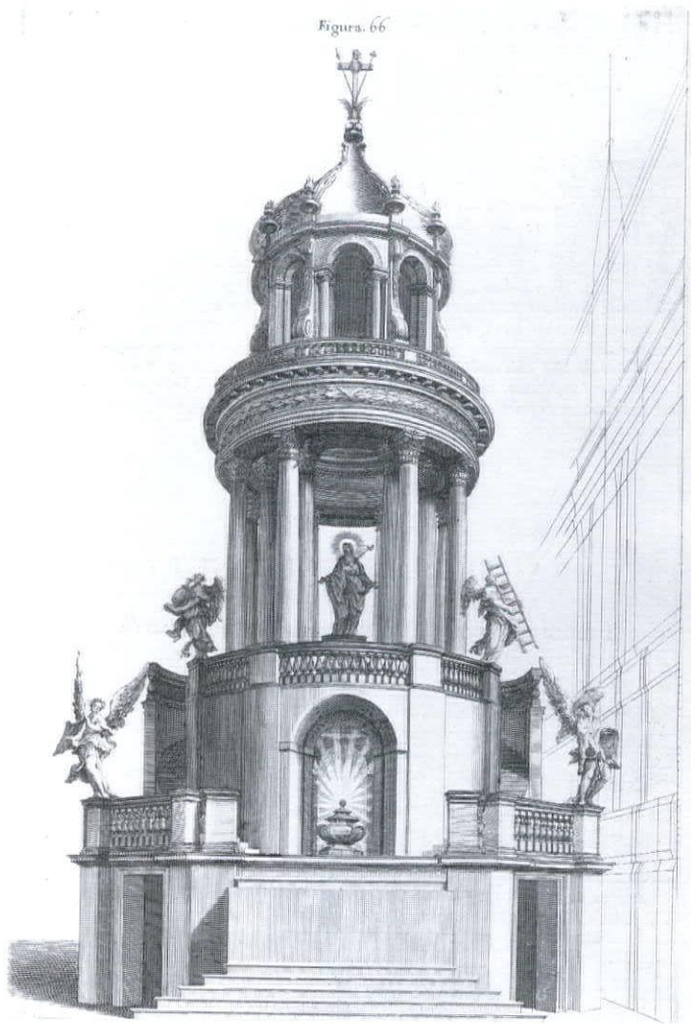
32 Kepler had already introduced a point at infinity in a work on the conic sections, *Ad Vitellionem palalipomena quibus astronomiae pars optica traditur* (1604). He was interested in the laws of optics and generally in the nature and properties of light. Desargues was in fact the first to apply that notion to different theories on perspective and stereotomy. Such an accomplishment remains difficult to appreciate from a contemporary vantage point, which regards visual perspective as the only true means of comprehending the external world.

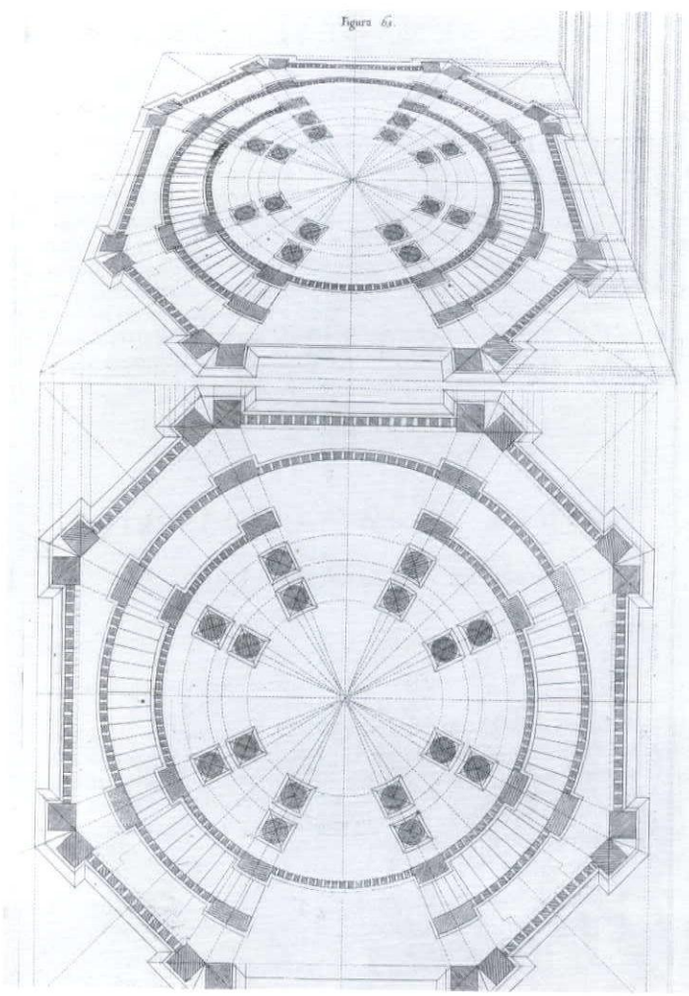
33 Orthogonal projection as we understand it today was for Desargues a simple case of perspective projection where the projective point was located at an infinite distance from the plane of projection.

34 Pozzo avoids the geometrical theory of perspective, and his theoretical discourse amounts to a collection of extremely simple rules and detailed examples of perspective constructions. His work can appear paradoxical if we compare his frescoes in *quadrattura,* which involve an epistemological recentering of man, to this very systematic establishment of proportions that seems related to Desargues's understanding of geometry.

35 Even though it is easy to recognize a relationship between Pozzo's perspective method and Durand's use of projections, descriptive geometry could not have been postulated as a systematic science before the nineteenth century. Euclidean geometry was conceived as a science of immediacy whose principles had their origin in perception. Euclid's theorems are verifiable only insofar as the things to which they make reference are accepted as variable and imprecise. The achievements of seventeenth-century geometricians had attained a limit of abstraction and were never developed further. Throughout the eighteenth century geometry as a scientific discipline was becoming obsolete. Diderot writes in his treatise *De l'Interpretation de la Nature* that "before a hundred years there will be scarcely three geometricians left in Europe." For more details about this aspect of eighteenth-century philosophy, see Yvon Belval, "La Crise de la Géometrisation de l'Univers dans la Philosophie des Lumières," *Revue Internationale de Philosophie* (Brussels, 1952).

36 Karsten Harries examines this problem in his excellent study *The Bavarian Rococo Church* (New Haven: Yale University Press, 1983).





13 and 14 Systematic coordination of plan and elevation with perspective, Andrea Pozzo, 1707.

Only after the nineteenth century and a systematization of drawing methods could the process of translation between drawing and building become transparent. The key transformation in the history of architectural drawing was the inception of descriptive geometry as the paradigmatic discipline for the builder, whether architect or engineer. The Ecole Polytechnique in Paris, founded after the French Revolution, trained the new, professional class of eminent scientists and engineers of the nineteenth century. Descriptive geometry, the fundamental core subject, allowed for the first time a systematic reduction of three-dimensional objects to two dimensions, making the control and precision demanded by the Industrial Revolution possible. Without this conceptual tool our technological world could not have come into existence. With Durand's *mécanisme de la composition* and its step-by-step instructions, the codification of architectural history into types and styles, the use of the grids and axes, transparent paper, and precise decimal measurements allowed for planning and cost estimates. Descriptive geometry became the "assumption" behind all modern architectural endeavors, ranging from the often superficially artistic drawings of the Ecole des Beaux-Arts to the functional projects of the Bauhaus.[37] Today computer graphics, with its seductive manipulations of viewpoints and delusions of three-dimensionality, is simply a more sophisticated mechanism.[38] The growing obsession with productivity and rationalization has transformed the process of maturation from the idea to the built work into a systematic representation that leaves no place for the "invisible" to emerge from the process of translation.

While descriptive geometry attempted a precise coincidence between the representation and the object, modern art remained fascinated by the enigmatic distance between the reality of the world and its projection. Facing the failure of a modern scientific mentality to acknowledge the unnameable dimension of representation,[39] artists have explored that distance, the "delay" or "fourth dimension" in Marcel Duchamp's terms, between reality and the appearance of the world. Defying reductionist assumptions without rejecting the modern power of abstraction, certain twentieth-century architects have used projections not as technical manipulations, but to discover something at once original and recognizable.[40]

nature as figurative or non-objective must reveal the presence of *being*, the presence of the *invisible* in the world of the everyday. This dimension is perhaps the only constant of true art through history. Partaking of this condition, the architectural works of the city allowed for existential orientation, cultural belonging, and the perpetuation of tradition. They were never merely "buildings." Understood primarily as an abstract order, architecture could be embodied at the scale of the reliquary, the garden, the ephemeral canvas-wood structure, or the *machina* for manifold celebrations and theatrical events. This notion is connected to the original Greek understanding of symbol as a token that would allow an old friend to be recognized by members of the household (or any institution) as a member of the same group, a part of the whole, belonging to a cosmic place. (We must remember that the word *agora* meant both a place, and an assembly of citizens participating in the decision-making process concerning the future of their *polis*.) A symbolic architecture is one that represents, one that can be recognized as part of our collective dreams, as a place of full inhabitation. This recognition is inherently difficult in a postmodern world where man is generally oblivious to his mortality and has grown accustomed to exploitation, simulations, and technological control; but it happens to be, whether intentionally or not, the most striking feature of the most admired architectural artifacts in our tradition, in which the manifold symbols reveal an order that is immediately accessible to us. Thus, creation as representation must be the ultimate objective of architectural work if our profession is to have any social meaning at all. In a technological world, this objective can be attained only after recognizing the fallacious neutrality of our tools for the generation of form.

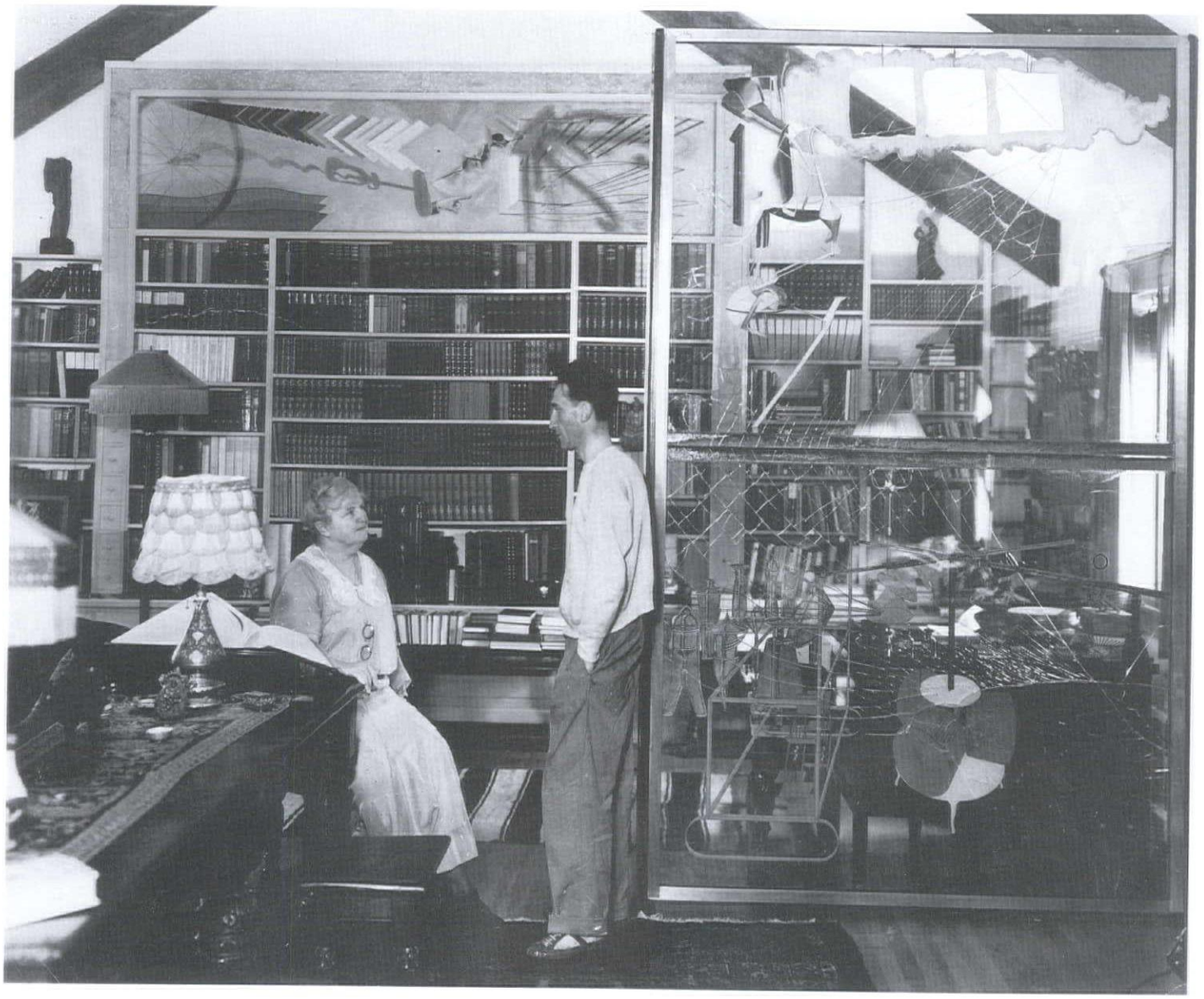
An understanding of the autonomy and polysemy of the symbols employed by the architect is an important first step in overcoming our predicament. One object, one model, or one drawing may indeed embody the full intentionality of a building. We can recognize the *invisible* (the ground of existence in the sense of Gadamer, a glimpse of our place in a totali-

37 Contrary to the post-Heideggerian understanding of mythopoesis to which we make reference in note 5 (i.e., the articulation of truth as *aletheia*), the Beaux-Arts attempt to retrieve the classical style amounts to the imposition of a myth, in the negative sense, as a fallacious representation of repressive social hierarchies. The rendering of drawings in the Beaux-Arts tradition does not change the essence of the architecture it represents, nor does it succeed in formulating an alternative to the architecture of the Ecole Polytechnique. The Beaux-Arts does not retrieve myth through drawings, but rather, only formalizes appearances, indeed much the way "post modern" styles do. This is at odds with the possibility of retrieving meaning through a phenomenological understanding of symbolization.

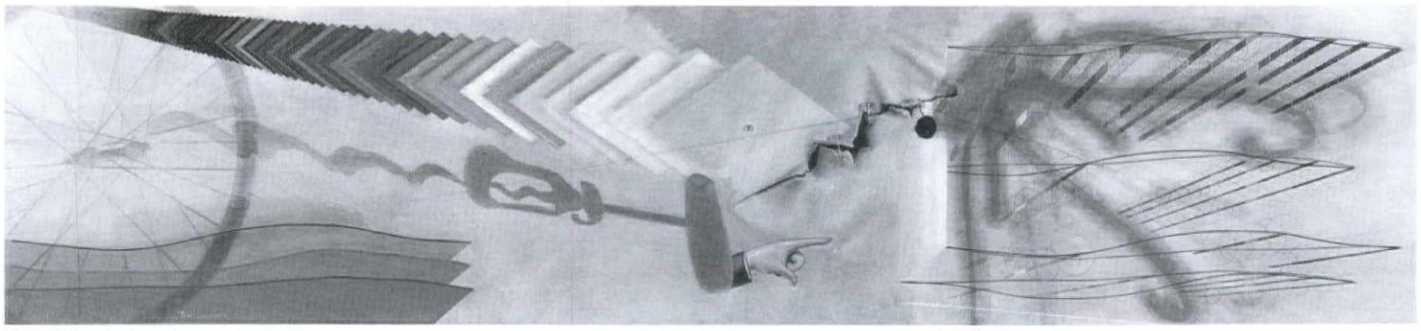
38 The question concerning the application of computers to architecture is, of course, hotly debated and as yet unresolved. The instrument is not simply the equivalent of a pencil or a chisel that could easily allow one to transcend reduction. It is the culmination of the objectifying mentality of modernity and is, therefore, inherently perspectival, in precisely the sense that we have described in this article. Computer graphics tends to be just a much quicker and more facile tool that nonetheless still relies on the projection as its base, a radical tool of industrial production. The tyranny of computer graphics is even more systematic than any other tool of representation in its rigorous establishment of a homogeneous space and its inability to combine different structures of reference. It is, of course, conceivable that the machine would transcend its binary logic and become a tool for a poetic disclosure in the realm of architecture. The fact is, however, that the results of computer graphics applications are always disappointing. The objectification of another reality appears more intense, and the tool seems clumsy at best to show animated pictures of a fallacious building.

39 The unnameable dimension of representation refers to a wholeness that can be recognized but not reduced to words and is, in the context of Gadamer's hermeneutics, the "signified" of the artistic symbol. See below, note 40.

40 Hans-Georg Gadamer has given us one of the clearest elucidations of the question of representation in art in *The Relevance of the Beautiful*, (Cambridge: Cambridge University Press, 1986). The work of art, regardless of its medium or its



15 Marcel Duchamp and Katherine Dreier in Katherine Dreier's living room, Leslie E. Bowman, 1936–37.



16 Tu M', *Marcel Duchamp, 1918.*

ty) in the artist-architect's work, similar to our recognition in the spatial experience of the building.

41 When seen from the front, the shadows cast by the "ready-mades" are seen as anamorphic projections stretched out on the surface; the bottle brush, which is the only three-dimensional object piercing the surface of the canvas perpendicularly to its plane, is reduced to a dot. But seen from the side, shadows of the "ready-mades" become "corrected" until they disappear again in the thickness of the canvas. At this point, the brush releases itself from the canvas and becomes the only visible reality of the hidden picture. In a series of essays on the work of Marcel Duchamp, *Abecedaire* (Paris: Centre Georges Pompidou, 1977), Jean Clair compares the painting *Tu m'* to classical theories on anamorphosis.

42 The *Green Box* (a written thought process for the *Large Glass*) reveals Duchamp's interest in scientific developments in the field of noneuclidean geometry.

43 In the *White Box* Duchamp asserts that "all form is the projection of another form according to a certain vanishing point and a certain distance." By analogy with this notion of projected reality, all solid bodies would constitute the possible projection of an infinity of four-dimensional entities. The entire visible domain is for Duchamp an incessant flow of anamorphosis generated by those invisible entities.

44 To understand the fundamental distinction between the two uses of projection in art and architecture, it is essential to grasp the difference between truth as exactness in the Platonic sense (the absence of shadow of Western science and metaphysics) and truth as *aletheia*, the unveiling of *being* never given in its totality, such as Heidegger posits it in his late philosophy.

Marcel Duchamp also explored the paradigm of projection and investigated the ambiguous dimension between illusion and reality. His last oil on canvas, *Tu m'* (1918), is a recapitulation of all the perspectivist deceits allowed by an opaque medium. It is his most explicit study on anamorphosis, the perspectival distortions that writers of the early seventeenth century believed dangerous in their capacity to manipulate and change the given appearance of the world. In *Tu m'* Duchamp questions the distinction between *appearance* and *apparition*. The painting is constructed as an anamorphosis, though in contrast to all traditional works of this kind, the *truth* of the image is no longer revealed to the beholder from a fixed position. As one walks around it, certain elements of the composition become visible, while others vanish.[41]

The *Bride Stripped Bare by Her Bachelors, Even (Large Glass)* (1915-23) and the *Etant Donnés* (1916) embody Duchamp's life-long struggle to reveal an invisible dimension of projection, one beyond the conventional boundaries of Renaissance painting, sculpture, and architecture.[42] The projection on the lower part of the *Large Glass* (the realm of the bachelors) was conceived according to the rules of classical perspective, derived directly from the Renaissance concept of painting as a window intersecting the cone of vision. The upper domain, however, addresses the ambiguity between illusion and reality in terms of a four-dimensional object (the bride) projected in a three-dimensional world.[43]

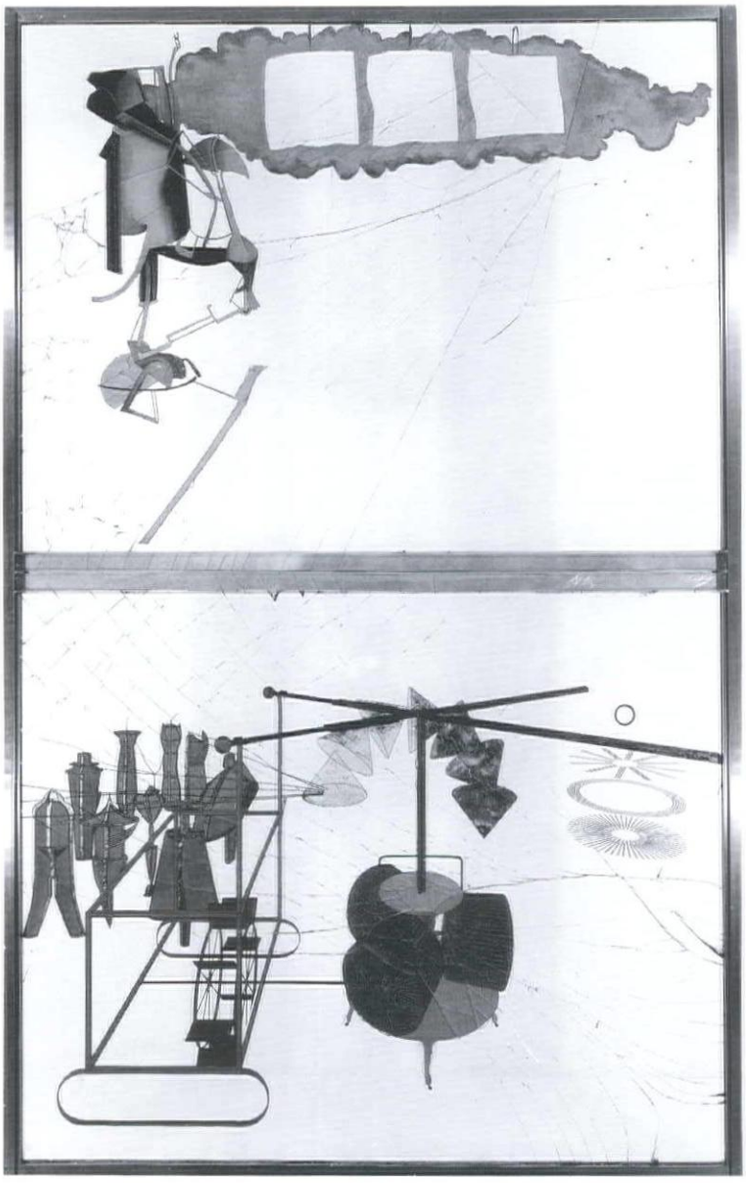
Duchamp's bride in the *Large Glass* is analogous to a shadow. The shadow, taken as a projection or as an entity in itself, is in some way determined by the object that casts it. It reveals the invisible side of the thing, outlines its hidden face as a negative vision. At a distance from the projecting light, however, the shadow becomes an autonomous entity (as in a shadow play), an abstraction of the object projecting its absence.

The early twentieth century saw the recovery of aspects of projection that had been lost to the reductions of nineteenth-century industrialization. Like Duchamp's shadows, the shadows of cinematographic projection re-embodied motion and retrieved tactile space from the perspective frame. Film offered a possibility to transcend the limitations of the technological, enframed vision through the juxtaposition of different realities. A previously invisible, uncharted aspect of experience found expression.[44]

The projection of the cone of light through the darkness of the cinema can be seen as an inversion of the Renaissance notion of the cone of vision. It illustrates the reciprocity of light and shadow as an analogue of the complementarity of presence and absence and disrupts the fixed gaze of the perspective, which is the objectifying vision of Western science and philosophy.[45] During the cinematographic projection, we sit immobile between the light and the projected images, in the enduring present of a space-time of no fixed dimensions.[46]

45 "Western metaphysics emerges from a worldly vision which takes the gift of daylight for granted and assumes, deeply unconscious of itself and its projections, the permanent presence (*parousia*) of our source of illumination: conditions of total unconcealment, making possible a vision of total lucidity in perfect possession of its (transparent) object. Western metaphysics reflects a worldly vision of truth which sees only sharp boundaries and division, the opposition permanently fixed in duality... . But this is a vision of truth which *occludes* our experience with shadows and shades (of meaning); the enchantment of the sunset hour, the uncanny light of the twilight..." David Michael Levin, *The Opening of Vision* (London: Routledge, 1988), 350–51.

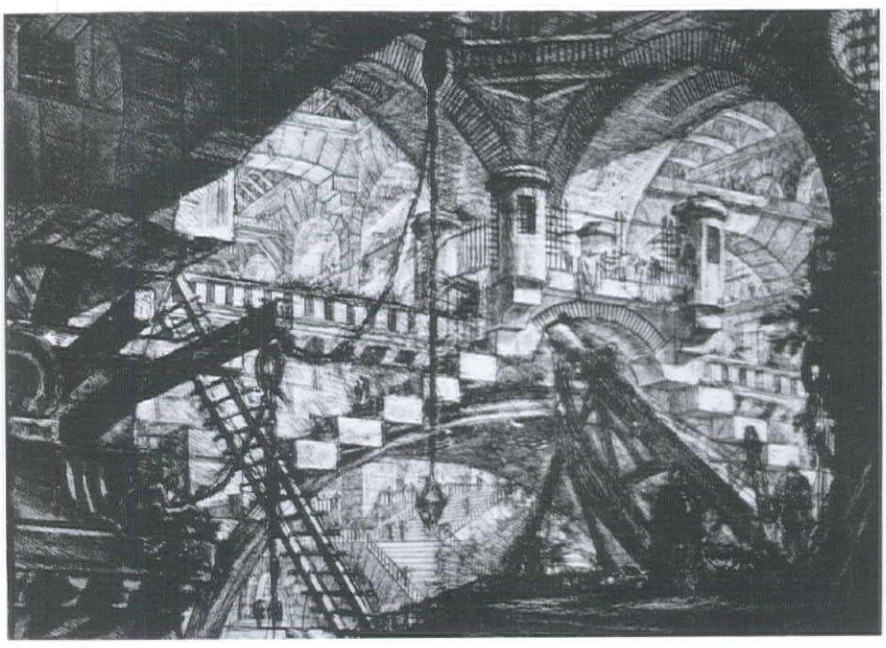
46 We can only witness the extremes and recognize their complementarity, at best (and here the quality of the film is important) the reciprocity of action and thinking in *Gelassenheit.* (We use this term in the sense of Heidegger's late writings.) As in architecture, the spectator is not passive, but rather, creatively participates in the reconstruction of tactile space suggested by the montage.



17 The Large Glass; The Bride Stripped Bare By Her Bachelors, *Marcel Duchamp, 1915–23.*

From its inception, perspective has had a potential to unify the relative time of our world with the absolute time of the image. The surrealists and, more specifically, surrealist filmmakers, were attempting to redefine the distance between the world and its representation, a distance that would allow man to recognize his place in a new order. The cinematographic montage provokes a disruption of the spatial and temporal perspective. Its narrative confounds the linear structure of filmic time, deconstructing homogeneous, geometric space.[47] The projection of cinematographic montage is analogous to the experience of an embodied, subjective spatiality, to the experience of architecture as it "could be."[48]

In the last two hundred years, given the difficulties of building a symbolic order in a world preoccupied with production and pragmatic shelter, architectural ideas have been particularly embodied in theoretical projects of many kinds. Architects such as Giovanni Battista Piranesi questioned the basis of perspective and sought new modes of meaningful representation. Piranesi's *Carceri* embody the first use of montage in architecture to deconstruct the linear perspective of space and time.[49] In the *Carceri* meaning is saved at the expense of perspectival logic. The mystery of his projective method dismembers spatial continuity and involves the beholder in a represented space that invites inhabitation but that ultimately awaits the rebuilding of its dislocated parts.



18 Carceri, no. XI *(second state), G.B. Piranesi, 1761.*

47 Sergei Eisenstein describes his "Intellectual Cinema" as a structure of composition that defines the abstract and makes it appear. His method is based on analogy, a metaphor between the figurative image and human experience:

"The power of montage resides in that it includes in the creative process the emotions and mind of the spectator. The spectator is compelled to proceed along that same creative road that the author traveled in creating the image. The spectator not only sees the represented element of the finished work, but also experiences the dynamic process of the emergence and assembly of the image just as it was experienced by the author." Sergei Eisenstein, *The Film Sense* (New York: Harcourt Brace Jovanovich, 1942).

48 In this connection see M. Merleau-Ponty, *Phenomenology of Perception* (London: Routledge & Kegan Paul, 1962), in which he establishes what embodied perception "could" be by disclosing its original reality. Merleau-Ponty's thesis, together with the posthumous notes published under the title *The Visible and the Invisible* (Evanston, Illinois: Northwestern University Press, 1968), are still among the most crucial readings for the professional architect.

49 Sergei Eisenstein's interest in Piranesi's explosion of perspective is well known. Piranesi's etchings on the *Carceri* are characterized by the entanglement of beams, stairways, and hung bridges that emerge from the depth of the image and are projected beyond the limit of the frame. The contrast of shadows creates an ambiguity between interior and exterior space. The structure of Piranesi's etchings is projected forward, beyond the edge of the drawing, into the space of the observer. Similarly, Eisenstein's intellectual montage attempted to include the presence of the spectator in the creation of the dynamic image.

This architecture represents a potentially different future order beyond the conventional categorization of the "fine arts," now obviously obsolete.[50] Such architecture cannot be seen as reduced to a syntactic set of projections. Theoretical projects have been both experimental in scientific pursuit of discovery and poetic in artistic pursuit of the world's given order. Neither intuitive nor irrational, these works are suffused with the Logos of myth.[51]

Continuing in this tradition, recent theoretical projects have sought the "deconstruction" of the logocentric metaphysical heritage of modernity as it appears in architecture, while trying to avoid, through the implementation of *poeisis*, a mere acceptance of the nihilistic status quo of poststructuralist criticism. Through their authors' radical revision of the task of making as it relates to architectural ideation, these projects attempt to recover an architecture that might reveal the presence of being. Such an architecture would remove the objectifying, instrumentalizing screen of industrial technology and would speak to our prereflective, embodied awareness.

The critical dimension implicit in these projects is well known.[52] They are not formalistic or self-referential games, nor are they merely unbuilt works. Theoretical projects question the possibility of a truly poetic architecture in a prosaic world. In this sense the projects are the architecture; they are not a surrogate for anything else.

* * *

In the context of our cities of shopping malls and traffic networks, the images of fashion, whether of old Europe or modern technology, are empty simulations. They carry no meaning except to weakly reaffirm the repressive structures of power of which those images speak. To assume that the tools of projection and perspective are supported by some sort of transcendental truth is equally nostalgic. A critical step toward our retrieval of an architecture through esthetic wonder is to question the hegemony of perspectivism and its simulations. When projections function as surrogates of buildings, when sets of drawings attempt to provide us with a "picture" of an architectural place or object, the buildings produced by such techniques must necessarily reflect the predictive quality of their conception: the possibility of a revelatory dimension is abandoned and the actualization of the architect's imagination will inevitably be lost in the translation. That this assumption of a literal relationship between the project and the building is basic to industrial production in the modern city makes a critical reassessment of this issue all the more pressing.

50 There is, of course, no way to define in absolute terms the boundaries between painting, sculpture, and architecture; these have shifted constantly through time and are closely connected to their respective content. In the recent Venice Biennale (1990) a critic noted that painters were doing sculpture, while sculptors were dealing mostly with flat surfaces.

51 Theoretical projects from Piranesi to Duchamp, including some works in film montage, establish a space that resists the domination of the rational/perspective vision. Some of the most outstanding works of architecture, such as examples by Gaudí and Le Corbusier, subverted the reductive instrumentality of architectural representation and also aimed at transcending the enframing vision. These powerful works unveil the true potential of architecture in a postmodern world.

52 Piranesi actually rejected many commissions and called himself an architect, while Boullée emphasized, in his *Essai sur l'Art*, that his architecture was of the sort of Newton's cenotaph, and not his many buildings. An important challenge that has been taken up by John Hejduk is the implementation of fictional narratives as part of the montage in order to ground the theoretical project in the world of experience. This is a complex and important aspect of the discussion that unfortunately cannot be pursued here.

1 The Flaying of Marsyas, *Titian.*

Building, theory, and tragedy in the play of architectural practice

That Skepticism Might Be a Place

John Whiteman

This text is a revision and annotation of a lecture given at Yale School of Architecture, October 31, 1989.

As in a book, so in architecture
Losing one's place
Lesson and danger in Ovid's Apollo and Marsyas

There is a story of an encounter between Apollo and the satyr Marsyas told by Ovid in his *Metamorphoses* which has found a contemporary retelling by Brigid Brophy.[1] The satyr Marsyas has challenged the god Apollo to a contest of music. The god wins, of course, and punishes his opponent for daring to issue the challenge by skinning him alive. The satyr's friends, who have watched the challenge, are understandably nervous after the result, and grief-stricken at the God's consequent retributions. Like good classical figures, they indicate their grief for their lost friend by weeping.[2] Their copious tears, which in Ovid's original story we understand to be more than the mere ornament of their sadness, are metamorphosed into a river, which is how the story comes to be in Ovid's collection—the metamorphosis of a stream of tears into a new river which will flow forever, flowing as rivers and sentences always flow, downward, in perpetual descent.

Concealed in this story, I have long felt, is a conclusion opposite the one which a crude reading might be said to force on us—"Do not challenge the Gods," or at least, "Be prepared for the consequences of such impudence." The obverse moral, drawn in favor of the loser and against the idea of a God, might be recounted as follows: Apollo's art, the art of an all-powerful god, draws no one's perpetual tears ("perpetual" because a river flows forever). No one is moved by Apollo's absolute ease with the material of music and of song. At the time of the contest Marsyas was indeed the inferior musician: he had difficulty with his art, at least in comparison to the abilities of a god. He did not become a great, an infinite artist with the power to move his audience in perpetuity until he failed, and until, in the abjection of his overwhelming failure, his skin was removed.

There is perhaps a subtle inference or suggestion being made by Ovid in this story. I like to think of it as a recognition that artists have by nature very little in the way of protective shells to their emotions and to their souls; and, further, that they spend all their lives trying to remove what little protection they have, even to the point of submitting themselves to being flayed alive.[3]

1 I read the story first in Ovid's *Metamorphoses* as a child in junior school, and it had a great impact on me. Later I stumbled upon Brophy's all too short but nonetheless evocative recounting of it in her introduction to the American writer Elizabeth Smart's prose-poetry novel *By Grand Central Station I Sat Down and Wept* (New York: Panther Books, 1966), 12-13.

2 A modern might be the more likely to indicate grief not by crying but in violence.

3 By implication I mean, in addition to musicians, to include within the extension of the term "artist" persons such as writers, painters, and those who treat their work as an artform; but specifically to include architects whose work is determined and reflexive enough to warrant the appellation.

I take Ovid to be suggesting that the work of an artist is a cry of complete vulnerability: a shriek of agony, howled in the course of a struggle whose purpose and prize is uncertain, and whose method cannot be known in advance; and, perhaps, to be suggesting further that art is a struggle which must be undertaken, even though it cannot result ever in literal and immediate success. Indeed, in the struggle for art the very concept of success may be obviated. A work of art does not terminate in a logical conclusion; its end is not thought out, but rather it ends or is finished at a point of exhaustion, when the artist can go no further, when all energy is spent.

To see such production, the work of art (so called) in the image of the flayed satyr is apt, at least initially, since a satyr, a mixture of creatures, is himself incarnate, a frozen metamorphosis — like a painting before the eye wanders across its surface, like a poem before it is sung, or like a building before the entrance of a body self-consciously possessed. The image of the flayed satyr is more appropriate still, because the one metamorphosis which still truly works in real life is that strange inversion whereby a gruesome and excruciating martyrdom (nowadays a psychological rather than a bodily one) can be transformed into a source of difficult if not eternal pleasure, a work of art, so called, but so called always after the event.

Writing in the wake of Gertrude Stein I should display more awareness than I have of the danger and the necessary distrust of the image of sacrifice which occurs in occidental art in general and in Ovid's story in particular. Yet, I have clearly reinscribed the problem of self-sacrifice within the moral of artistic production which I have drawn from Ovid's tale. I do not reinvoke this image willingly or lightly, or indeed as a state or event necessarily to be desired, even though desire is so clearly involved; and I would wish to avoid, even if I cannot, the sense of melodrama which so often accompanies the indulgent implication of the contemporary self in its work.

Instead I invoke, and wish to acknowledge, the profile of self-sacrifice in the production of a work as an unavoidable danger. It is a danger which I read as a warning, but as a warning which cannot be heeded properly. I believe that the repetition of a sacrificial gesture on the part of an artist is a form of behavior which is hard, perhaps impossible, to avoid in the production of those things which we call art. I mean to suggest further that we cannot produce the pleasures and revelations of art by simply removing the category of the art object from our talk and by wishing away the implication and the consequent stake of the self in its own production. By the term "production" I mean both the material things that a subject may produce, as art, say, but also the conjoint production of the subject itself, that is, its self.[4]

Though I mistrust essentialist claims of inherency, in this case certain difficulties which may be inherent in the work of architecture, I want to emphasize that in architecture there are tasks which cannot be undertaken with the logic of ordinary reproduction, of direct manufacture. An architect must work the edge of certain difficulties in architecture–difficulties that I think will not go away, that cannot be erased, and that are encountered by the assumption, the inheritance of the word "architecture" itself. I believe that these difficulties cannot be avoided or short circuited, else the inadvertent effects of their miscrafting will plague the final building and its reception, placing an interference in the way that the building feels, so that it is felt only in and as a distraction.

More specifically, I believe that the difficulties of architecture concern the acknowledgment and subsequent repetition in physical form of the skeptical relation between person and world. As an architect I would seek out this skeptical relation and place my work in it and against it—*against* it in the sense that one is also "against a wall" when leaning on it. I believe that we find ourselves at a distance from our objects, and that it continually occurs to us to try to cure this distance as if it were an illness. Instead I see the skeptical distance between person and thing as an unavoidable and difficult, even if

4 I do not mean that the pleasures and revelations of art should go unquestioned. Indeed, I intend precisely the reverse, that the sensations and cognitions provoked by art must be questioned always and everywhere. But I have come to insist, for myself at least, that these sensations and cognitions be questioned in and as an activity of making, specifically as a matter of production and not reproduction.

not a natural, state of affairs; and I regard the task of architecture merely to repeat this situation quietly, weakly, and as unmelodramatically as is not always possible.

Any repetition of skepticism in the material form of a building has to strike a significance on both sides of the divide that skepticism operates: that is, concretely in terms of the objective world of things and also significantly in terms of the reserve of the individual person. The building must reverberate within the structures of signification in which both the individual person and building are found and constructed, structures like language and other sign formations such as picturing, dancing, and architecture, for example.

The reserve of the person has come to involve for me an account of the logics of the eye and the body, of what Raymond Williams would have called their structures of feeling. I do not raise these once classical architectural terms and associated concerns to confirm an existing and inherited logic, or to perpetuate their misuse in the cultural project of incorporation, or to retrieve the false image of a once beautiful but now faded world, but rather, to rework a problem in which I find myself. I wish to find within the contemporary constructions of eye and body a working space, an architectural opportunity. More generally and reflexively, I wish to address in this working space the problem of architectural inheritance—to ask and act out what is it given for us to do, as architects, here and now.

The acknowledgment of these difficulties forces the task of architecture to be at once practical and theoretical. This is necessarily so insofar as the practice of architecture can only be shaped in reference to the theoretical apparatus of practical (human) being—something which I regard as an historically constructed form of signification, the way we signify ourselves to ourselves and to each other within the encompass of our artifacts, within the order of the things that we have produced, which must be taken to include buildings.

By making such a direct reference to the human subject I do not mean to declare myself as a belated humanist, implying that architecture must be only conciliatory or confirming in its regard for persons, an attitude which in its most direct form assumes that the architectural interests of a person can be accounted in a simple description and that building can respond directly to that reduced conception. Far from it; my own preference is that architecture be reflexive and difficult, even disruptive, in order to surface, explore, and rework the hidden logics of self and community and the skeptical relation between person and thing, a relation which, after reading Cavell and after re-reading Emerson, I suspect to be the very basis of our community. Architecture cannot be made, so I believe at the moment, without reference to the structure of its skeptical reception through our eyes and our bodies. Indeed it cannot be made without engaging and turning on its structure of reception, even though it will not be clear ever what that structure is.[5]

In forcing an acknowledgment of certain as yet unspecified yet definitively difficult tasks and effects in architecture, I am heading toward the threshold of tragedy in architecture. More specifically, I am headed toward (should I say, "back to?") the threshold of a tragedy that occurs in the reflexion of architectural thinking upon its object.

The reflection of thought in the production of its object does not result in a plain unsullied thing, perfectly good for everyday use. It does not leave us with a vernacular object.[6] This is so unless you want to say, as in fact I do want to say, that the intolerable burden of a self-conscious reflexion in things *is* our contemporary vernacular. But, without *that* recognition, architectural thinking can only be said to leave us with a troubled object, one that cannot be configured, properly.

5 Architecture cannot be understood theoretically, purely theoretically, because, with respect to architecture, theory itself is at once a limit and also at a limit in the understanding of architecture. Said otherwise, architecture is contained, even if the sense of it is stretched, within the construction of the term "theory," which is itself an architectural word meaning the taking of a view with respect to things and events.

6 I acknowledge that all vernacular objects (so called) are latent with images of the extraordinary. Nevertheless I feel that the above arguments go some way toward explaining the irony and difficulty encountered by architects who deny their own architecture in automatic favor of a vernacular. Usually in discussions of the difference between architecture and mere building (so called), charges of elitism start flying. My purpose in this footnote is to deny popular valorization to either side, the lover of the vernacular and the architect seduced by self-reflection in artifacts. While I shall not make much of it here, it is worth pointing out that the "*vern*" in vernacular comes from the Latin *uerne*, meaning slave. Thus the vernacular is tainted as the (strategic) product of a power system. This makes the vernacular, at least for me, a little harder to love so completely, so singularly, so unreservedly. Is the vernacular what the slave produces? Or is forced to produce? Or is it produced by the slave but not under his or her control? Or is it for the slave, but then only for the slave as a slave, not as a free person?

The acknowledgment which I seek from architecture is an acknowledgment of theory *in* architecture. I seek an acknowledgment that, even though theory clearly is a source of grief for the maker, the problem is worse; it is that thinking is not merely an irritant or an impediment to the actions of making, but is the cursed source of all our tragedy. I do not believe that tragedy ensues from external sources, say Greek gods or earthquakes, but from the dark interior of our own thinking, from the fact that every word, every picture, every sign (indeed, every building) is an elegy to its lost object. But just because this much is true—for me, perhaps for you (and it might be more horrifying in its truth than we dare to imagine)—just because thought itself might be the source of all our tragedy, more so I believe than the Freudian threat of the incompleteness of the body instilled by the fact of its various orifices, this does not mean to say that we can put theory down.

To the contrary, what is given for us to do, as conscious beings, as architects, is to work the problems of theory ever more, but to work them in practice, the practice of building. This is the acknowledgment I seek, that theory, even though it is the origin of tragedy in modern life, is also the very site in which we, as architects, must work or, rather, rework our objects.

I find myself at this moment in a long, slow descent from the reading of philosophy into the practice of architecture. Part of what I mean by the word descent—remembering in Ovid's tale the river which flows ceaselessly downward, and in tumbling down the course of my life and the sentences of my argument, I may also mean, as I slide from river to sentence, to further slip my meaning from descent to dissent—is the questioning of the placement of philosophy as being above the practical sphere of architecture, and thus to ask myself why I conceive of my progress (or rather my lack of it) as a kind of descent, like a river. And further, why do I find that, in my own conception of theory, the conception from which I am trying to disinherit myself, I have inherited the architectural metaphor of placement anyway, the placement of philosophy with respect to architecture?

I have lost my place. It is no longer clear to me where either one of them is, philosophy or architecture.

2

Architecture
Something that we do to ourselves

In pointing, as I have already, to a set of difficulties which are invoked by the word "architecture," I mean to cast the work of architecture as a struggle which cannot be ended, as something interminable. I mean therefore to describe the situation of architecture, a situation more properly understood as one of condemnation, as a fated site or arena of work. I do this in order to provoke what I regard as the forever forgotten subject matter of architecture, to force the recognition that architecture is something that we collectively, if always inadvertently, do to ourselves. Architecture manufactures and reinscribes within itself the conditions of our subjectivity. Its effects appear in the past tense, as something that already has happened to us, as something over which the exercise of control would seem to be too late. How, then, can we rework it?

In a way more fundamental to this than any other art we become unwillingly subject to architecture. Conceived more generally than individual fine building, architecture envelopes and controls our experience extensively. Other artforms—novels, paintings, plays—leave room for the mind to wander, to disassociate itself from the experience of the art. Architecture is much more compulsory, and works its cultural effects on us even when we are not looking.[7] Distraction is our only recourse from its effects. This is not to say that architecture is all of life, merely that architecture is always necessary for life and is ubiquitous in culture. Where is the life that can be lived outside of building? Everywhere culture is underwritten by architecture.

The extensive and pervasive influence of architecture in the permission, possibly the outright construction, of human subjectivity presents a perpetual difficulty of articulating architectural knowledge. Architecture and subjectivity are more intertwined than might be thought, than *can* be thought. This difficulty causes a constant turning aside from understanding the profound effects which architecture exercises in circumscribing, delineating, and otherwise forming the material conditions of human subjectivity. A strong reading of Walter Benjamin's remark that architecture is consummated only by a collectivity in a state of distraction possibly suggests that such knowledge can *never* be had.[8]

The moral which I draw from this tale of infinite difficulty has to do with the nature and purpose of theory. Specifically, I do not conceive of theory as a form of mastery, as a form of direct control of words over things, from which sense an instrumental action can be prescribed. This would be a false authority and a false expectation. Theory does not, cannot, and should not tell a person what to do. It is not the case that the world, or the part of it which we inhabit, or, again, the sphere of our inhabitation can be thought out in advance. It is not the task of theory to know in advance and to provide us with blueprints.

Rather, I have a different picture of theory itself, one in which, for the most part, theory lies dormant, inactive, unneeded, and unarticulated. From its initial sleep theory is called upon by those encountering difficulty in production, for example, architectural production.[9] It is not needed by those involved in reproduction, for they already "know what they are doing". Reproduction always involves the reproduction of an authority and an *a priori* reliance upon it.

The striking fact about theory is that it comes into being only at the moment when it is called upon. Theory or philosophy does not, in Stanley Cavell's own borrowed words, speak first. Its virtue is its responsiveness. But what makes philosophy philosophy is not that its response will be total, telling us in advance what to do everywhere. This is a mistaken desire which we place upon it. What makes it philosophy is that it will be tireless, that it will be awake and of service when other forms of discourse have fallen asleep in their own exhaustion.[10] The commitment of philosophy is to hear itself called upon, as Cavell says, and when called upon to speak, but only then, and only insofar as it has an interest and a capability.

Furthermore, as I now add to Emerson's words as filtered by Cavell's remembering of them, when our impatience and difficulty in production is erased by theory so that, in following Wittgenstein as we do, we can go on more fully with the work at hand, then theory will cease to exist, at least for a while. Its foreseeable course will have been run, its therapy complete for the moment. It will either die or, more colorfully, be

7 So much is now repeatedly claimed of language, that "The limits of my language are the limits of my world" is now a misunderstood and misquoted commonplace.

8 It is not clear that Benjamin intended the remark in this way, but rather in a weak sense, suggesting that, as individuals pursue their interests, they merely tend not to pay attention to their architecture rather than being consummately incapable of such an attention. I am suggesting that the strong version of this thesis is also interesting to consider: that one cannot have a theory of architecture. Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," in *Illuminations*, ed. Hannah Arendt, tr. Harry Zohn (New York: Schocken Books, 1969), 239.

9 Incidentally, the theorist and the producer need not be two separate individuals; we can call upon theory from within our own heads, waking ourselves up, as it were.

10 It is this aspect of tirelessness in philosophy that creates the chimera that its work, its revisions, can be total, exhaustive rather than exhausted.

killed, or it may even kill itself. Or, more quietly, it will simply run out and evaporate away, mistify not mystify. Philosophy must not merely entertain but also enact without the melodrama of a ritual its own continual demise. Else it cannot be called upon again, at some near or distant time in the future.[11]

11 It is this sense of the temporality of philosophy which I find in or, rather, retrieve from Wittgenstein's remark "When we build, we speak and write." (See 9 above.)

My overt concerns in this writing, the concerns of building, body, and modern tragedy, are each called into the play of theory by acknowledging the idea that when theorizing architecture we must inevitably theorize its construction of the subject, the self: the idea that architecture's effects are effects in and on the self. This play of concerns is threatened if architecture is treated either as a purely pragmatic endeavor or else as a purely theoretical one.

Now, I am aware of, but do not trust, the obvious fact that most of the beautiful things which we have in the contemporary world are made by people who do not think too much, and that in recent times much of the most coherent writing in history, criticism, or theory comes from those who have ceased the activity of material work.[12] There is something about the beauty of such things and the clarity of such writing which I do not trust, and which chagrins me. It is not just a matter of envy, the envy of the more lyric soul in the making or of the more clear and perspicacious mind in the writing. It is a fear of mystification, a fear of what to myself I call the "closing gesture," by which I mean an act which closes out, bars from the space of the work the fact and effects of self-consciousness. Beauty closes something out, too easily, too early.

12 For myself I still prefer the words of those who make things. Think of Richard Serra's essay "Notes on Drawing" in *Richard Serra*, ed. E. Gus (New York: Rizzoli 1988), 66-68.

The peculiar difficulty encountered here has to do with just how far an architect can take responsibility for his or her architecture, the problem of where and how to entrust, insofar as architecture is concerned in this matter, the health of the human spirit. This is precisely the burden which cannot be laid down too early, too quickly. Neither can it be assumed directly or forthrightly. Rather, it must be internalized in the architect and replayed, played back, in the course of an architect's work.

Yet, a characteristic feature ascribed to architecture in the modern period has been a failure to meet the monumental cultural aspirations which have been assigned to it; and a simultaneous failure to articulate and embrace architectural forms which can exist without the heavy weight of these aspirations. This recurrent failure, especially with respect to the problems of architecture, is tragically and subtly stated in Hegel's writing on art. Hegel saw clearly the fundamental ambiguity of our architectural aspirations: that the very materiality of architecture would, when set within the context of contemporary strategies of theory and explanation, subvert the spiritual burden that we place upon brute stone. The future of architecture in such an age cannot, he foresaw, be anything other than a futile search for rhetorical gestures or mystifications. A work of architecture must obfuscate or hide its fundamental incapacity to bear the cultural burden assigned to it; it must turn its (internal) torture to the wall. Architecture, "the highest form of all the symbolical arts," cannot, according to Hegel, but fail as symbol.[13]

13 See G.W.F. Hegel, "Vorlesungen über die Aesthetik," Bernard Bosanquet, introduction to *Hegel's Philosophy of Fine Art* (London: Routledge and Kegan Paul, 1905), 160.

Architecture, in its very object, becomes therefore a poignant form of the modern tragedy. I feel that the persistence of the modern tragedy (in my interest here, the tragedy of modern architecture, which is in modern architecture), originates ironically

in our inability to recognize the movements of symbolic form in instrumental thought and the cause of these movements in the currency of use, the tropological dimension of language and all symbolic forms. As a symbol is used within a culture, so it is altered; in creating extensive sense so apparently the body of a symbol is intensified, hardened, as it were. The alteration is both self-conscious and pathological, and the mix or division between the two paths of alteration is unknowable in principle. As moderns, we feel ourselves with false pride to be free of the pull of rhetoric, moving, so we think, in a language of plain words and a world of still plainer forms. Refusing to admit the constant flux which moves ceaselessly underneath our symbolic exchange, while simultaneously denying the power of rhetoric on the impulse of our iconoclasm, we lose ourselves in a sea of persuasions but do not notice the loss. Our schema of totalization and stability hide from us the ever shifting movement of meaning and significance.[14]

I believe that architectural thought must create a physical form of playback, a rendering of the spatial conditions of our subjectivity. This form is the form of the building and of the city. It is an architectural form. But I note that this dream problem of a concrete spirituality has often been best achieved or, rather, reworked in the small pools of privilege which have become known as artworks. The tasks of art, while immediate enough in themselves, or, more accurately, while immediate enough in ourselves, are so difficult that any instance of success is immediately canonized as art and removed from the everyday life from which it properly draws its inspirations and would, if it could, inflect (or "inflict") its effects. This rarity via extreme difficulty is why we have museums, and is why museums are at once necessary and also fundamentally disgusting.

14 Thus "the unhappy consciousness" of the modern period can be seen, not as a timeless metaphysical malaise, but as an ironic consequence of an impatient intelligence that idealizes the symbolic forms by which sense is rendered intelligible. Idealization induces the agonies of an impossible completion, all the while keeping the prospect of completion intact. A sentiment bemoaning the impossible deliverance which is currently desired of symbolic form is well expressed by Samuel Beckett: "You weep, and weep for nothing, so as not to laugh, and little by little…you begin to grieve." Samuel Beckett, *Endgame: A Play in One Act* (New York: Grove Press, 1958), 68.

3

Epiphany and enigma
Two ways of turning one's spade

Underlying and, indeed, generating Hegel's prophecies on the tragic future of art is a Romantic overvaluation of the pure sign, of symbol and metaphor as symbols of deliverance from the cruel fatigue of time. Also in Hegel's writing on art there is an implicit devaluation of less sublime, more awkward, but less mystifying and more explicit forms of rhetoric, such as allegory and metonymy. Seeing, however, the inevitability of time's ruin in the progress of modernism, is it better not to pursue the seductive purity of the symbol as an idealized form, but instead to face the doubled appearance of the meaning and its mechanism? Better not to hanker for the complete persuasion.[15]

Clearly I am now deep in the mire of the theory of symbolic technique, the cruelest conjunction of theory and practice: cruel because the two, theory and practice, are so intimately intertwined at this point, this knot which we might call the production of significance.

15 Perhaps this is too oblique a thought; the collapse of the Romantic desire for the pure symbol leads directly to a modern form of mannerism.

My distaste for the sublime acknowledges its problem, the problems for which it stands, though perhaps I have merely suppressed my desire for it. My gesture is made through a fear of mystification. I feel strongly that modern meaning must everywhere run the risk of showing the machinery of its sense, of displaying the sense of its own sense making. This, which to myself I call the *evidentiary desire*, by which I mean a turn toward the overt, is the first of the architectural criteria which I have developed for myself. [16]

I feel the need to thread my concerns through more and more specific problems of method: how can I instruct myself? What should I, what can I do? While I have said that theory cannot tell you what to do, or how to do it, I think that part of what I mean by my descent from theory to thing is the formation of certain criteria which can guide my head, my heart, and my hand in the conjoint production of artifact and self.

My guiding thoughts in this matter have been Ronald Dworkin's distinction between rules and principles.[17] By the application of criteria, a principle can be sustained, even if the specific criteria which I am following do not fit or apply. As Dworkin says, a principle may be vague, even if it is precisely and not vaguely stated. This procedure allows for the opportunity in which, by development of a work under the repeated application of specific but various criteria, an architectural principle is not merely sustained in the work itself but is also questioned and investigated. It is in this way that I expect my work to be able to repeat back to me, quietly, the dream of a skeptical placement.

I take this route, adopt this strategy, because I think it overcomes or, rather, bypasses a paradox. In Wittgenstein's words it allows me "to go on." The paradox from which I seek relief is a paradox in my desire, in the desire I have for certain types of forms, certain endpoints, the kinds of configurations at which I am prepared to leave off, to turn my spade, and say, "It is done." It is a question of where I want my configurations to lead and leave me, toward an epiphany or toward an enigma, or the more enigmatically, toward both.[18]

The criteria which I use all are aimed at what Wittgenstein might have termed a return to the ordinary. But, as Cavell has pointed out, in Wittgenstein such a phrase must be read with difficulty.[19] Part of what is meant by the ordinary is the exception which we continually take from it, the distance from it at which we place ourselves. Paradox though it may seem, or paradox that it might quite literally be, that skeptical distance must be included within the extension of the term "ordinary."[20] Thus to bring architecture back to the ordinary means for me to bring it back to the skeptical place which a naive reading of the term "ordinary" would elide. I like Stanley Cavell's Emersonian thought that skepticism might be a place, the place of the modern imagination.[21] In Emerson's own terms, it is to say that what is given is our separateness. Thus the ordinary must be taken to include the exceptions which can be taken from it, and the limit of this operation, the construction of the ordinary, is at once the limit of language and of architecture.

16 Methodologically, a criterion seems very different from a rule. The thought process associated with each is different. Specifically, one does not follow a criterion in the same way that one follows a rule. Rules are things which do not survive if they are broken. Criteria strike me as much more contingent: I apply them to see not only if the object makes sense but also if the application of the criterion itself makes sense. If it doesn't, then I simply throw out the criterion and try a new one. Also I may apply a criterion here but not there, as it were; and I do not think that this should open me to the charge of inconsistency or contradiction. Rather, my judgments of applicability must be judged themselves in another court of appeal to determine their rightfulness, a form of thought that does not have buried already deep within it an assumption of what rightfulness is. Whether this procedure allows the taking of too great a license is a difficult question, but it is not, I believe, one that can be decided by appealing to a rule or a canonized methodology.

17 Rules, Dworkin says, cannot survive their contravention. Principles can. Thus, the rule "Do not murder!" cannot survive an unpunished crime or one that goes without being deplored, whereas the principle of habeas corpus (I have a body, and by virtue of that fact I have certain rights which cannot be denied me) can indeed survive the unpunished murder of an individual, indeed, tragically, even may be heightened by it.

See his essay "Is Law a System of Rules?" in *The Philosophy of Law*, ed. R. Dworkin (Oxford: Oxford University Press, 1978).

18 The issue or tension is clearly a Judeo-Christian one. For a particularly clear articulation of the two tendencies see the opening passages of Erich Auerbach's *Mimesis*, tr. Willard R. Trask (Princeton, Princeton University Press, 1953).

19 Stanley Cavell, *This New Yet Unapproachable America: Lectures After Emerson After Wittgenstein* (Albuquerque; N.M.: Living Batch Press, 1989), 34-35.

4

Five architectural criteria

As I have said, I find myself interested in a specific constellation of criteria. In addition to *the evidentiary gesture*, the gesture of revealing, a gesture in which incidentally one runs the risk of undoing, of losing all, I have begun to develop a complex set of architectural criteria for myself. While I can see and state these criteria, I am still inept in their application, or rather in architectural performances to which they might be applied.

Beyond an evidentiary turn, I am interested first in *belittling*, a spatial equivalent to the literary technique of diurnalization. This involves fracturing the (human) tragedy as it is perceived on a grand scale, so that it occurs everywhere and repeatedly in the smallest part. This is something I see in and take from the plays of Samuel Beckett. My purpose is not to be literally diminutive or destructive, but rather to force a wider and more difficult return of the theme of tragedy.

The technique of diurnalization suggests a second criterion, that of *indirection.*[22] I distrust rule-generated configurations, because I think that rule-generated constructions bring too much of the past and the established with them. That is to say, they are a cloak for the perpetuation of authority. I especially like suggestion rather than forthrightness. I have a philosophical point in mind: that works come to life in a play of symbolic exchange, for example between word and image, between building and word, and so on. But if the play is merely a one-way conduit for a directed instruction, say, from word to image to thing, then there is no concept of a return, of a comeback from thing to word. Somehow the work is impoverished for me when this occurs.

Thus I like *duplicity*, my third criterion. I believe that the sense of ordinary which I seek cannot be apprehended all at once. Or in Emerson's lovely words, "The field is not well seen from within the field." Thus to present the ordinary a work *must* resort to duplicity, however paradoxical the thought. I seek therefore at least two planes of signification in every work, planes which slide across each other, creating the indirections of symbolic exchange: for example, the plane of the ordinary and the plane of the transfigured, the plane of the manifest and the plane of the latent.[23] This desire gives my work, as it gives any artwork, something of the structure of the joke.[24] But it is important to see that, while a work of art must possess something of the structure of the joke, it is played for very different purposes and/or in very different ways. The work of art is not itself a joke, though the distinction cannot easily be articulated, if at all.

A sense of duplicity can be held in place and in tension by a criterion which I have come to call *the edge of the noticeable.* This is a concept of progressive erasure, by which any gesture or deformation is calibrated so that, as a departure from a norm of placement within the work, its effects can be felt, but the displacement itself is not noticed, at least at first. This criterion reflects not just my desire for the ordinary, but also my love of the banal, and a sense that the banal can be made duplicitous without at first seeming to be so.

20 In its etymology the word "paradox" repeats the meaning of the sentence in which I have placed it, the meaning which I am trying to provoke here. The word "paradox" is compounded from the Greek words *para*, meaning both placement and besideness, and *doxa*, meaning among other things a consolidated body of opinion and convention (i.e., a world). "Paradox," then, means more literally the fact of being both within and without, both immanent and transcendent, to a world formed by the consolidation of convention.

21 Stanley Cavell, *In Quest of the Ordinary* (Chicago: University of Chicago Press, 1988), 5.

22 Nelson Goodman has famously articulated the term "indirection." See "The Sound of Pictures," chapter 2 in *The Languages of Art*, (Cambridge, Mass.: Hackett Publishing Co., 1976).

23 The terms "latent" and "manifest" are obviously terms which are drawn from Sigmund Freud's *Interpretation of Dreams*, tr. James Strachey (New York, Science Editions, 1961).

24 Sigmund Freud, *Jokes and Their Relation to the Unconscious*, tr. James Strachey (New York: W.W. Norton & Co. 1960).

Finally, as you can see, all these criteria are based upon a belief that the work of art is a culture of placements and deflections. The deflection away from a normalizing placement is presupposed in all the criteria I have just explained. In turn this reflects a belief of mine that culture itself, its process, is in part a sly system of modifications.

5

Unsettling architecture
By way of a conclusion

I sense a perpetual danger in architecture, and I seek an awareness of it. Architecture is a vessel in which authority is carried, the most profound authority in the sense that too often architecture is the attempt to secure directly the physical conditions of our subjectivity. Traditionally architecture is among the most menacing of authorities. Architecture speaks, if it speaks at all, not just of the joy and the possibilities of life; it does do this, speak joyfully, that is; but it also speaks of collapse and of death, of the passing of life, of its passing away. And speaking more diurnally, architecture speaks of a continual passing away, the death of life at every moment, of that passing away which makes it life.

Architecture always speaks with a corpse in its mouth: this is the contrast it strikes with life. Alongside philosophy, art, and religion, it is at once a culture's most aspirational but by that very token its most impoverished gesture.

I am interested in the impoverishment of architecture, the fact that it has been delivered as such, and is always delivered as such into the present. I am interested in impoverishment as a condition, and in redescribing this condition as somewhere and sometime that we might wish to inhabit or, rather, cannot but avoid inhabiting.

Two features bear on this impoverishment. First, we begin architecture in the inherited forms of some time past. We make buildings in the forms of fading worlds; we are always under their influence. In choosing not to stop but rather to start there, in feeling architecture as given in these used-up, unmoving forms, the architect denies that architecture orders from the first, in the first place, in an originary fashion. But still the illusion of an *arche* lingers, and the architect is always driven to disclaim or disinherit himself or herself from the forms which have been given, which have been inherited "in the first place"—by which I mean the forms that the architect finds within him/herself. An architect is driven to build a place of exception, and it is my contention that this is our vernacular, our ordinary.

Architecture's difficulty in this struggle is its unresponsiveness, its dead weight, its slow time by which the past lingers so heavily in the present. Architecture is the cruel embrace of the past upon the present. The architect more than most lives with a crippling awareness of what the economist J.M. Keynes once described as living a life in "dead men's shoes." What makes architecture architecture is not that, not just that it can respond to life, but that, like philosophy's or theory's response to inquisitiveness, it will be there when all other forms of interest have faded away. Unlike philosophy, and unlike theory, however, its commitment is to resist being called upon, to resist a simple sense making, and to persist in ways that other forms do not. There is, so I believe, current fashion and theory not withstanding, a radical value to permanence.

But the irony of the architectural gesture, the irony which it cannot escape, turns in that any form which I inherit, any form which my elders have bequeathed me, as they in their interests moved toward the objects of their desires, may come to chagrin me. Thus all my forms, especially those that I might most treasure as my own, as original to me, all my forms are somebody else's forms. While I am founded in them, I am also alienated from them. I take exception from what is given. This is the space of skepticism, the place which I seek, and which I wish one day to build.

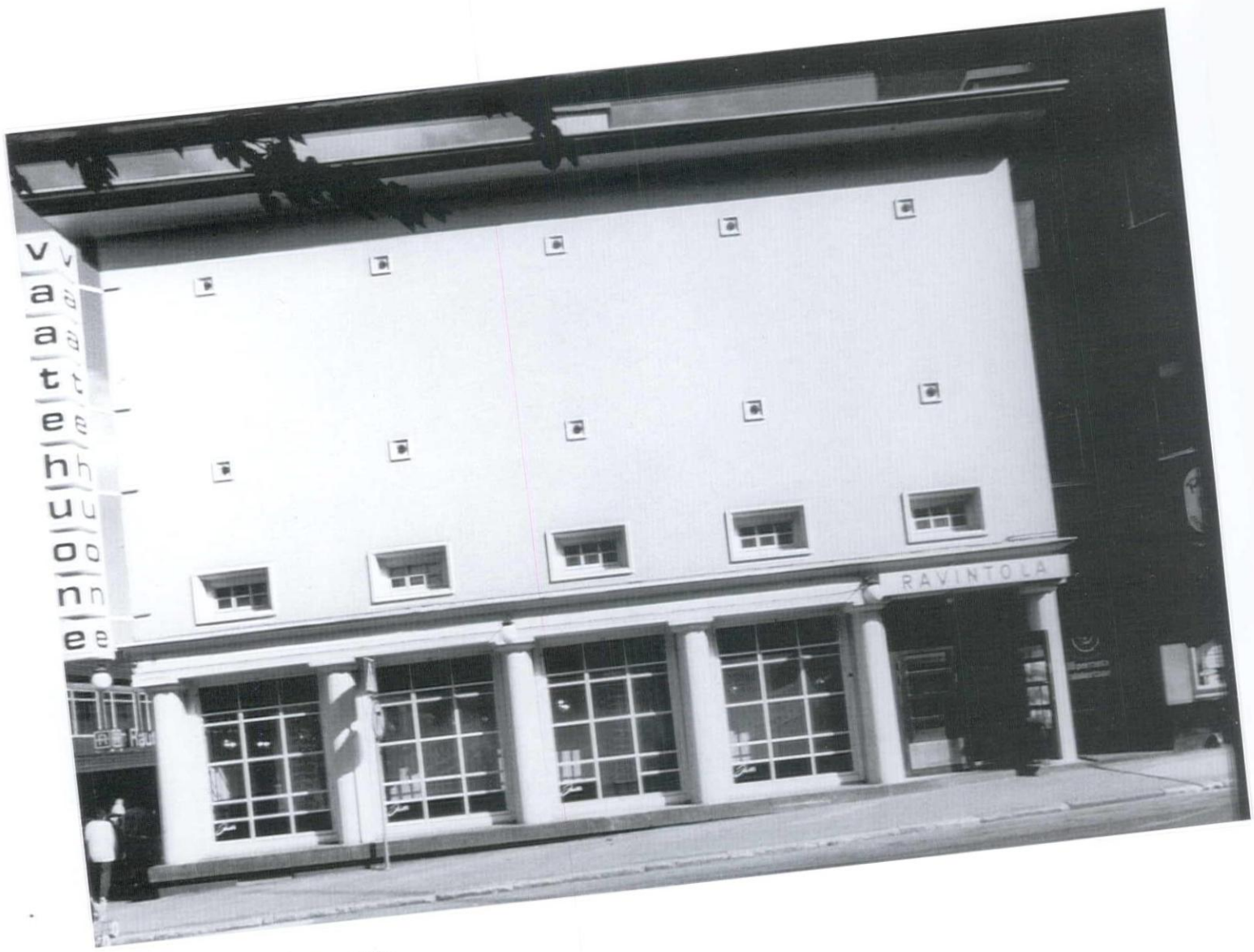
I see the task of architecture and especially the task of architectural theory as one of articulating the terms in which it is given to us to inherit the past and to take our exception from it. The issue of architectural form is not one of authenticity in a new or perpetuated world, nor one of the originality of the architect in the production of form, but rather one of the intelligibility, or perhaps merely the acceptability, of forms for a new generation. And I believe that this necessarily means taking exception to the past, all the while acknowledging its influence. Put otherwise, questioning the inheritance of architecture must be construed as architecture's only business.

The second feature of architecture bearing on the impoverishment of architecture, separate from the fact that all its forms are inherited forms, but following on from that fact, is that its construction, the making of a building, is not an event, the current economy of fascinations in the schools and magazines notwithstanding.

Nothing is actually happening in architecture, at least not all at once; there is no single story for it to tell. Indeed, architecture is the limit of narrative, at least when it is successful as architecture. If a story can be told of a building, there is, I think, a certain kind of architectural failure there.

What is happening in architecture is already happening before the building is built—*toujours-déjà,* as it is said these days. The event that is architecture is happening already, and it is happening slowly, repeatedly, and uneventfully. Thus I seek an architecture without melodrama, yet one which can be deft, sly, and capable with the serious and weighty aspirations which we continually place upon it. The quiet uncertainty which I seek for architectural thought would lead to the building of an ordinary place, the place in which our exceptions can be taken, the place of skepticism.

This uncertainty, this skeptical position, dare I say this skeptical place, gives us the license to build once again.



1 Jyväskylä Workers' Club, Alvar Aalto, 1924, Kauppakatu elevation.

The philosophy we want is one of fluxions and mobility....
We want a ship in these billows we inhabit. An angular, dogmatic house
would be rent to chips and splinters in this storm of many elements.
No, it must be tight, and fit to the form of man, to live at all;
as a shell is the architecture of a house founded on the sea....
We are golden averages, volitant stabilities, compensated or periodic errors,
houses founded on the sea.... EMERSON, *Montaigne; or The Skeptic*

The Workers' Club of 1924 by Alvar Aalto: The Importance of Beginnings

Nils C. Finne

The first substantial commission of Alvar Aalto's professional career was a rather peculiar little building called Työväentalo, or Workers' Club, in the city of Jyväskylä, in central Finland. Designed in the spring and constructed during the summer of 1924, while Aalto was 26 years old, the building has recently been partially renovated and deserves a closer examination than has been offered by the Aalto literature currently available.[1]

In his *Complete Work*, Aalto himself chose to represent the building with only a single small photograph. Clearly, he was attempting to downplay, if not actually suppress, his early classical buildings. This later attitude belies the intensity with which the young architect approached the Workers' Club. Aalto was obsessed with the building, not only as an object unto itself, but also as a critical element within his youthful vision of transforming Jyväskylä into a northern Florence. As part of a series of unsolicited urban design proposals[2] intended primarily to create more public squares in the city, the site sketches for the Workers' Club proposed to expand the building to the south with a grand, somewhat naive reflecting pool and flanking loggias (4). The building itself, as a fragment of Aalto's larger fantasy, compressed images that spanned history and geography.

But within the Workers' Club's specific and overt use of historical elements lie some important clues to Aalto's later designs. The Jyväskylä building presents, in embryonic form, many of the thematic oppositions that were to occupy Aalto throughout his career.[3] The poles of myth and reality, of the modern and the classical, and of the universal and the vernacular, operate here in an almost anarchic condition of coexistence, a foreshadowing of the narrative genius of Aalto's most important work.[4] It is this placement of traditional images, endowed with highly specific, localized meanings within an innovative compositional structure, that becomes evident in the Workers' Club and that gives such insight into the character of Aalto's modernity.

1 The building has been discussed, with varying degrees of completeness, by most of the standard Aalto texts. See G. Schildt, *Alvar Aalto, The Early Years* (New York: Rizzoli, 1984); P.D. Pearson, *Alvar Aalto and the International Style* (New York: Watson-Guptill, 1978); M. Quantrill, *Alvar Aalto: A Critical Study* (London: Secker and Warburg, 1983). See also a pamphlet entitled *Työväentalo 1923-1925* (Jyväskylä: Alvar Aalto Museum, 1980).

2 See Schildt, *Early Years*, 252-59.

3 His early paintings, when compared with later complex, abstract compositions, display a similar naive clarity.

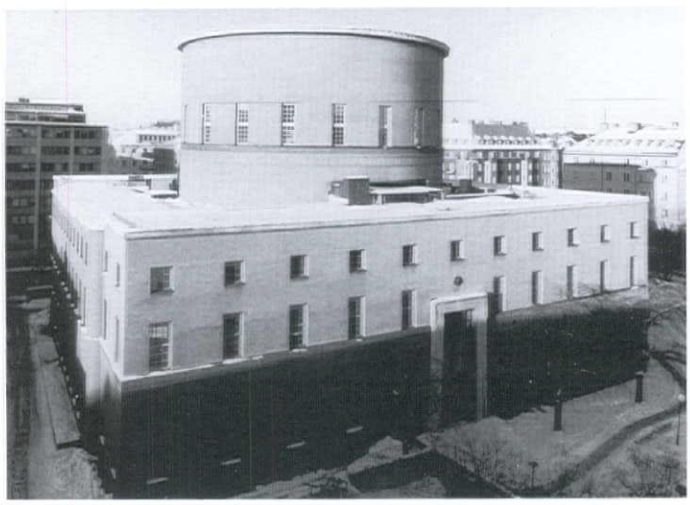
4 See D. Porphyrios, *Sources of Modern Eclecticism: Studies on Alvar Aalto* (London: Academy Editions, 1982), 10.

The Workers' Club in Context

The design of the Workers' Club falls within a period of Scandinavian architecture, roughly from 1910 to 1930, known as Nordic Classicism.[5] This terminology is not truly adequate for describing the confluence of historical developments that occurred during those years: the legacy of nineteenth-century neoclassicism from Schinkel (2), Engel, and Grosch; the continuing influence of Heinrich Tessenow's canonization of latent classicism within the vocabulary of vernacular building; and the more immediate heritage of "stripped classicism" from central Europe, as evident in the work of Perret, Garnier, Behrens, Hoffmann, and Loos.[6]

The years between 1910 and 1930 were characterized by economic prosperity in Scandinavia and, in Finland and Norway, by newly found political independence. The architects of all four Scandinavian countries exchanged ideas on a regular basis, fostering an intense professional camaraderie and cross-communication. For perhaps the first time, the Nordic countries emerged as an ensemble in which the unity of purpose and ideals was sufficient to outweigh any localized differences. That is not to deny that the quite radical severity of Danish architects such as Thomsen, Kampmann, and Petersen stood in contrast to the more lyrical work of the Swedes Asplund (3), Lewerentz, Tengbom, and Bergsten. It is simply to emphasize those architects' common desire to adapt an international vocabulary of classicism to a specific geographic region. The same unity of purpose is evident toward the end of the 1920s as the rhetoric of classicism is replaced by the rhetoric of functionalism.

As a young architect with limited means, Aalto traveled as much as he could afford: to Sweden, Denmark, Latvia, and Italy. (Significantly, his first trip to Venice was undertaken after the Workers' Club had been designed.[7]) In late 1923, just before beginning the Workers' Club, Aalto visited the Great Exposition in Göteburg and Asplund's Skandia Cinema,[8] and was quite enthusiastic about the possibilities of what would become known as "Swedish grace."



The Importance of Beginnings

5 See S. Paavilainen, ed., *Nordic Classicism 1910-1930* (Helsinki: Museum of Finnish Architecture, 1982). A fairly complete history of the period is included. See also D. Porphyrios, "Reversible Faces," in *Lotus 16* (Milan: Gruppo Editoriale Electa, 1977), 35–41.

The main characteristics of this architecture can be summarized as follows:
A Building composition based on austere, stereometric form, often employing smooth stucco surfaces, with only a few significant, classically inspired details. Much of the work appears to be atectonic, i.e., indifferent to the nature of materials or construction.
B Buildings can often be seen as assemblages of parts. In massing, the buildings can be broken down into primary stereometric solids. In terms of detail, the smooth wall surfaces of the buildings act as canvases for detail fragments that are in a tensional relationship to each other and to the building mass.
C An equal affinity for high-style and low-style classicism. Examples of the former include work by Schinkel and his followers in Scandinavia such as Grosch, Engel, and Hansen, while examples of the latter can be found in the primitive classicism of vernacular buildings (so-called *architettura minore*).
D A predilection for certain building typologies, especially that of the *cortile*, whether used as an actual exterior space or enclosed in some way as an aula.
E A sensitivity to issues of urbanism and traditional urban structure.

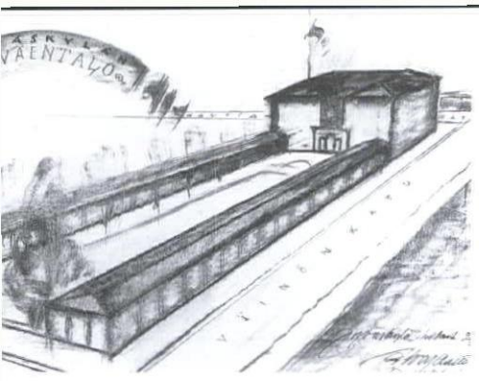
6 For a discussion of the migration of "stripped classicism" from Central Europe to Scandinavia, see K. Frampton, *Modern Architecture* (New York: Rizzoli, 1983).

7 Aalto was aware of Italy through articles such as "Italia la Bella," by Ekelund and Bryggman, in *Arkkitehti* 2 (1923).

8 Schildt, in *Early Years*, is not clear regarding the precise date of Aalto's first visit to the Skandia Cinema. It is reasonable to assume that Aalto saw the building when he passed through Stockholm en route from Göteborg to Jyväskylä in 1923.

2 St. Nicolai Church, Karl Friedrich Schinkel, Potsdam, 1829–35.

3 Stockholm Public Library, Eric Gunnar Asplund, 1918–27.



4 *Workers' Club, perspective sketch.*

Asplund's highly refined sense of esthetics had a crucial influence on Aalto's developing architectural sensibilities. Critical for both men was Scandinavia's distance from the sources of classicism in Italy and Greece, a distance that, ironically, proved an advantage. The resulting oversimplification and distortion in their interpretations of the classical generated the charged abstractions that came to characterize northern classicism. Remoteness and backwardness became a virtue. Aalto aptly described this simplicity and innocence as "stylistic forms from faraway, civilized countries seen through the child's eye of the Northerner."[9]

Just as Asplund's drawings for the Villa Snellman (1917) and for the Woodland Chapel (1918–20) evoke a mood of childlike classicism, Aalto's own fantasy of expanding the Workers' Club to the south resembles a child's crude, though powerful, sketch of an Italian villa (4). Aalto commented several years later that while designing the library at Viipuri he made "children's drawings" from which "sprang a combination of plans and sections."[10]

The classicizing impulse, childlike or otherwise, was a means for Aalto to distance himself from the National Romanticism of the older generation of architects such as Lindgren and Saarinen (5), known for their picturesque, Richardsonian form-making. Asplund had similarly distanced himself from the Swedish romantic Östberg following a 1913 trip to Italy. Classicism provided Aalto with a means of expressing a higher, more universal or international level of architectural authority that was inspired by antiquity, yet paradoxically termed "modern."[11]

In Finland, Aalto allied himself with critics such as Strengell and Frosterus, who urged an "iron and brain" architecture, opposing the mawkish sentimentality of the romanticists and their obsession with Karelia, the region between the Gulf of Finland and the White Sea and the mythic heart of Finnish artistic ethnicity. "Frosterus was," according to Aalto, "the intellectual injection of poison that Finland had to take at the moment when the development of arts was stuck in national ruts, i.e., 'folklorism' and 'Karelianism.'"[12]

5 *Pohjola Insurance Building, Eliel Saarinen, Helsinki, 1899, detail.*

9 As quoted in Schildt, *Early Years*, 177.

10 As quoted in G. Schildt, ed., *Sketches, Alvar Aalto* (Cambridge, Mass.: MIT Press, 1978), 97.

11 Aalto received little or no training in classicism from his teacher Armas Lindgren, who was a partner in the firm of Gesellius, Lindgren and Saarinen. Lindgren is often credited with the design of the Richardsonian-style National Museum in Helsinki. Aino Aalto, however, studied with one of the stronger classicists of the elder generation, Gustaf Nystrom, whose 1902 addition to Engel's University Library in Helsinki is an especially notable example of classicism.

12 As quoted in N. E. Wickberg, "Finnish Architecture in the Early 1900s and Alvar Aalto," in K. Mikkola, ed., *Aalto vs. the Modern Movement* (Jyväskylä: Alvar Aalto Symposium, 1981), 62.

There was a simultaneous interest in political nationalism and primitive folk culture in Finland and Norway during the late nineteenth and early twentieth centuries. Both countries' struggle for political independence (from Russia and Sweden, respectively) generated the concomitant desire to create an artistic expression with mythic national roots. Karelia, the eastern portion of central Finland, was considered to be the wellspring of ethnicity for literature (i.e., the *Kalevala*, the Finnish national ethnic poem reconstructed from oral traditions), architecture, music, and applied arts. Karelian folklorism resonated in the music of Sibelius, the paintings of Aksel Gallen-Kallela (whose interest in primitivism was shared by other painters such as van Gogh and Gauguin), and the architecture of Lars Sonck and Eliel Saarinen. See Ritva Tuomi, "On the Search for National Style," in *Abacus 1* (Helsinki: Museum of Finnish Architecture, 1979). See also *Lars Sonck, Architect* (Helsinki: Museum of Finnish Architecture, 1981) and D. Porphyrios, *Sources*, 70.

13 D. Porphyrios, *Sources*, 59–81.

However, an undercurrent of primitivism or Karelianism did persist in Aalto's work, a phenomenon described by the writer Demetri Porphyrios as *florilegia naturalis*, the creation of a myth from nature.[13] Although not immediately evident in the Workers' Club, the image of myth was sustained in Aalto's work by several ideas deriving from the vernacular. First, the idea of the primitive hut (recalling Karelian timber cabins as well as the neoclassical theorist Marc-Antoine Laugier's symbolic hut made of tree saplings) is evident in Asplund's Woodland Chapel (7), Aino Aalto's Villa Flora, and Alvar Aalto's celebrated sauna at Villa Mairea (1935) (6). Second, Aalto was influenced by the idea of a complete vernacular environment, as seen in the anonymous farmhouses of the Scandinavian countryside, and recalled by the English Arts and Crafts Movement and Tessenow's use of a vernacular building vocabulary. In this regard, the example of Eliel Saarinen is also important in terms of the *Gesamtkunstwerk* achieved at villas such as Hvittrask (1902) (8). By the late 1920s Aalto had already begun to show a concern for the design of hardware, furniture, and lamps, in the interest of achieving a total ambience in his buildings. Although it is uncertain to what extent Aalto designed furniture for the Workers' Club, he was quite involved in solving such details as door handles and light fixtures.

6 Villa Mairea, Alvar Aalto, 1935, sauna.

7 Woodland Chapel, Erik Gunnar Asplund, 1918-20, crypt.

8 Villa at Hvittrask, Eliel Saarinen (with Gesellius and Lindgren), Helsinki, 1902, watercolor.

Just as Nordic Classicism, particularly as it relates to Aalto, must be seen as overlapping and, to some extent, absorbing, the impulses from National Romanticism, so too should it not be too strictly separated from the European modernist avant-garde of Le Corbusier, Rietveld, or Mies. The Workers' Club was designed roughly contemporaneously with Mies's project for a brick country villa,[14] Rietveld's Schroeder House, Corbusier's Pavillon de l'Esprit Nouveau, and the publication of *Vers une architecture*. Perhaps even more relevant to the Finnish context is the Vesnin brothers' Pravda tower competition entry from 1924.[15] At first glance, the Workers' Club appears to be completely unrelated to such events of the European and Russian avant-garde. In fact, it is the building's evident backwardness that makes it so intriguing. However, the penumbra of classicism was never far removed from the "radical" work of Le Corbusier, Mies, and others.[16] Aalto himself wrote an article in 1926 that included a photograph of the terrace garden at the Pavillon de l'Esprit Nouveau with the caption "latter-day Classicism."

In the Scandinavian context, therefore, the clear separation between "classical" and "modern" becomes problematic. The architects of Nordic Classicism, and Aalto in particular, chose to use a historical vocabulary with a degree of abstraction and, in some cases, ironical commentary that was deliberately modern. The theme may have been classicism, but the mood was modernism. Innovation occurred in the realm of subtlety and nuance, not in the radical new vision of architecture presented by Rietveld or Van Doesburg.

In the field of painting, the Nordic countries also stood apart from mainstream European (primarily French) developments. And, as the art historian Kirk Varnedoe has pointed out, standard overviews of late nineteenth- and early twentieth-century art with an emphasis on the "chain of progress" of the French avant-garde do not seem to address or explicate Nordic art. That is to say, narrowly linear readings of history do not accommodate the hybrid nature of many Nordic paintings, which often combine realism and symbolism, appearing both descriptive and abstract. Varnedoe observes that "...in the oscillation between Paris and the North that characterized the travels of some Scandinavian artists of the 1880s, we can see the interaction of seeming opposites: metropolis and wilderness, progressive internationalism and resolute parochialism—each alternating with and depending upon the other."[17]

As with the paintings of Gallen-Kallela and Munch, the Scandinavian architecture of the 1920s was categorically removed from the avant-garde. Yet by 1930 it was Aalto, Lewerentz, and Asplund who suddenly stood at the vanguard of the new "functionalist" architecture with such buildings as the Paimio Tuberculosis Sanatorium (Aalto, 1929) and the Stockholm Exhibition (Asplund and Lewerentz, 1930) (9). Perhaps the real agenda was more sophisticated than concerns relating to the language of classicism or modernism. Aalto's lifelong distrust of attempts to create unified architectural theory is clear in his succinct comment on the advent of modernism: "It has suffered the same fate as other revolutions: it begins with enthusiasm and ends with some kind of dictatorship."[18]

14 See K. Frampton, "Notes on Classical and Modern Themes in the Architecture of Mies van der Rohe and Auguste Perret," in A. Salokorpi, ed., *Classical Tradition and the Modern Movement* (Helsinki: Museum of Finnish Architecture, 1985).

15 The architectural connection between Finland and Russia is historically strong, beginning perhaps with Engel's comprehensive design for central Helsinki, which was built largely by the Russian tsars Alexander I and Nicholas I. Eliel Saarinen was also profoundly influenced by childhood trips to St. Petersburg.

16 According to Frampton, "Le Corbusier seems to have been suspended in the early 20s between a nostalgia for the classical world and an unqualified enthusiasm for the imminent triumph of the machine." in *Modern Architecture*, 266.

9 Stockholm Exhibition, Erik Gunnar Asplund and Sigurd Lewerentz, 1930.

17 K. Varnedoe, *Northern Light* (New Haven: Yale University Press, 1988), 20.

18 As quoted in *Alvar Aalto 1898–1976*, A. Ruusuvuori, ed. (Helsinki: Museum of Finnish Architecture, 1978), 147.

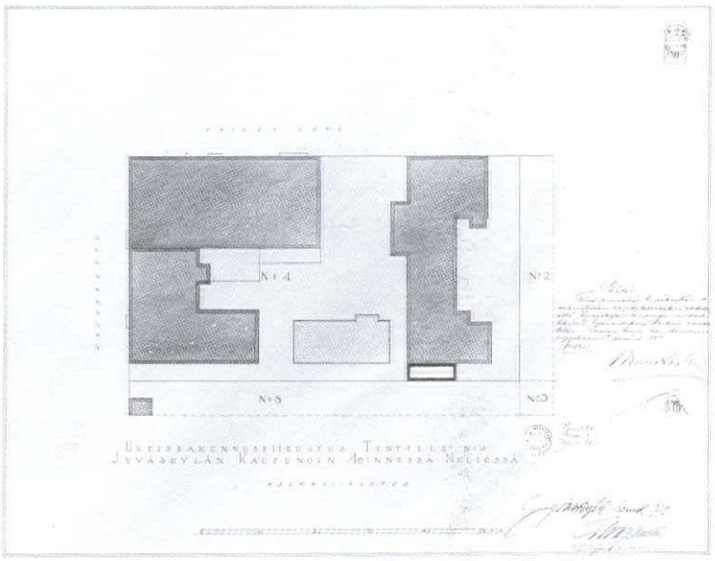
10 Workers' Club, corner view from Vainonkatu.

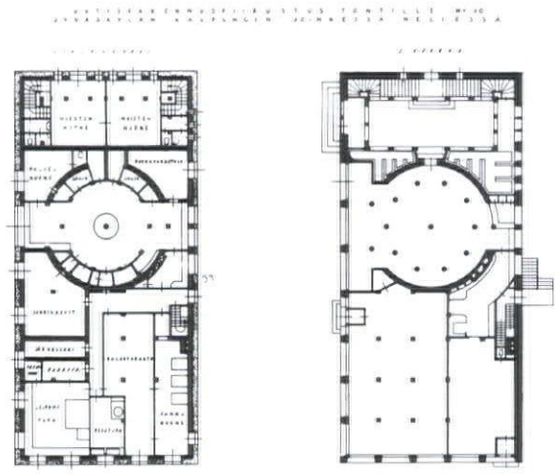
11 Workers' Club, corner veiw from Kauppakatu.

12 Workers' Club, view from Kauppakatu.

13 Workers' Club, view from Vainonkatu.

14 Workers' Club, site plan.





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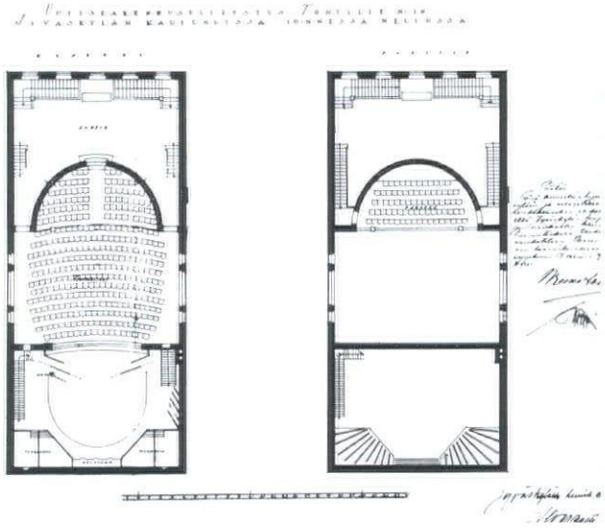

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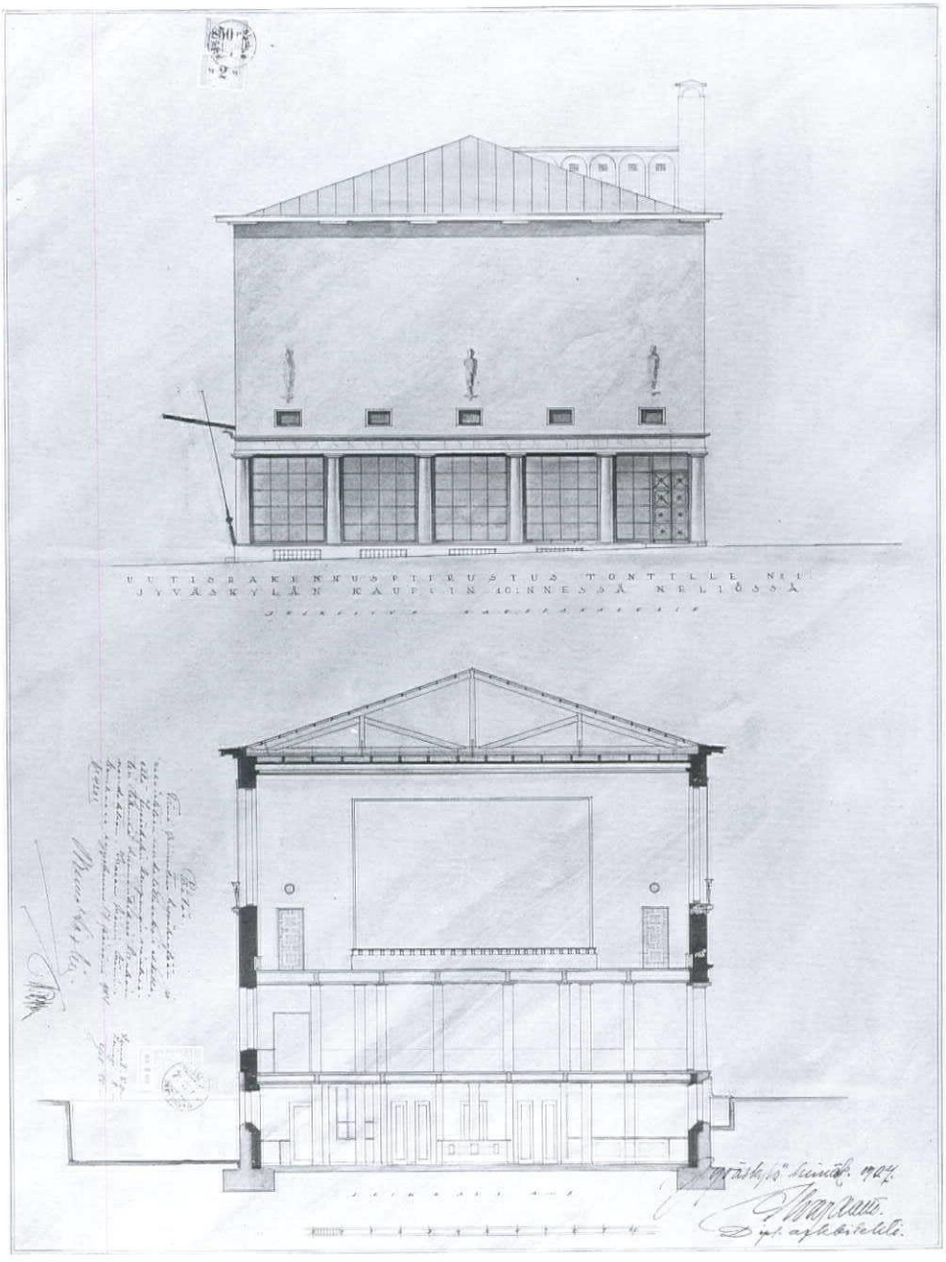
15 Workers' Club, basement and entry floor plans.

16 Workers' Club, auditorium floor and balcony floor plans.

17 Workers' Club, Kauppakatu elevation and section through auditorium.

18 Workers' Club, entry floor plan (dimensioned drawing).

19 Workers' Club, Vainonkatu elevation.



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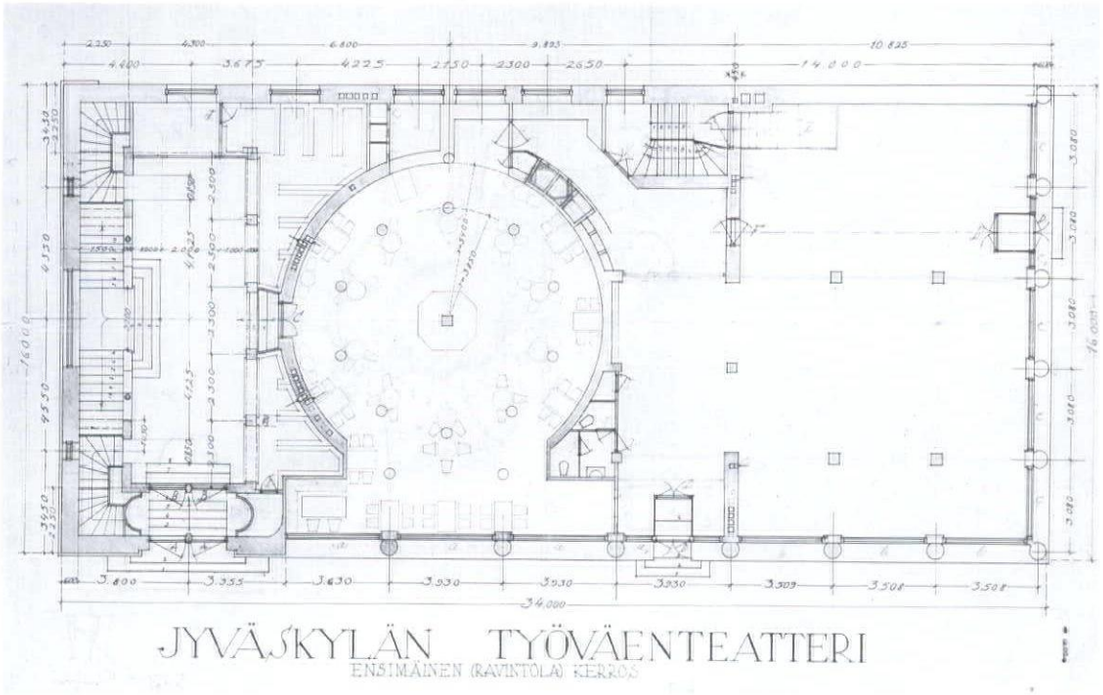
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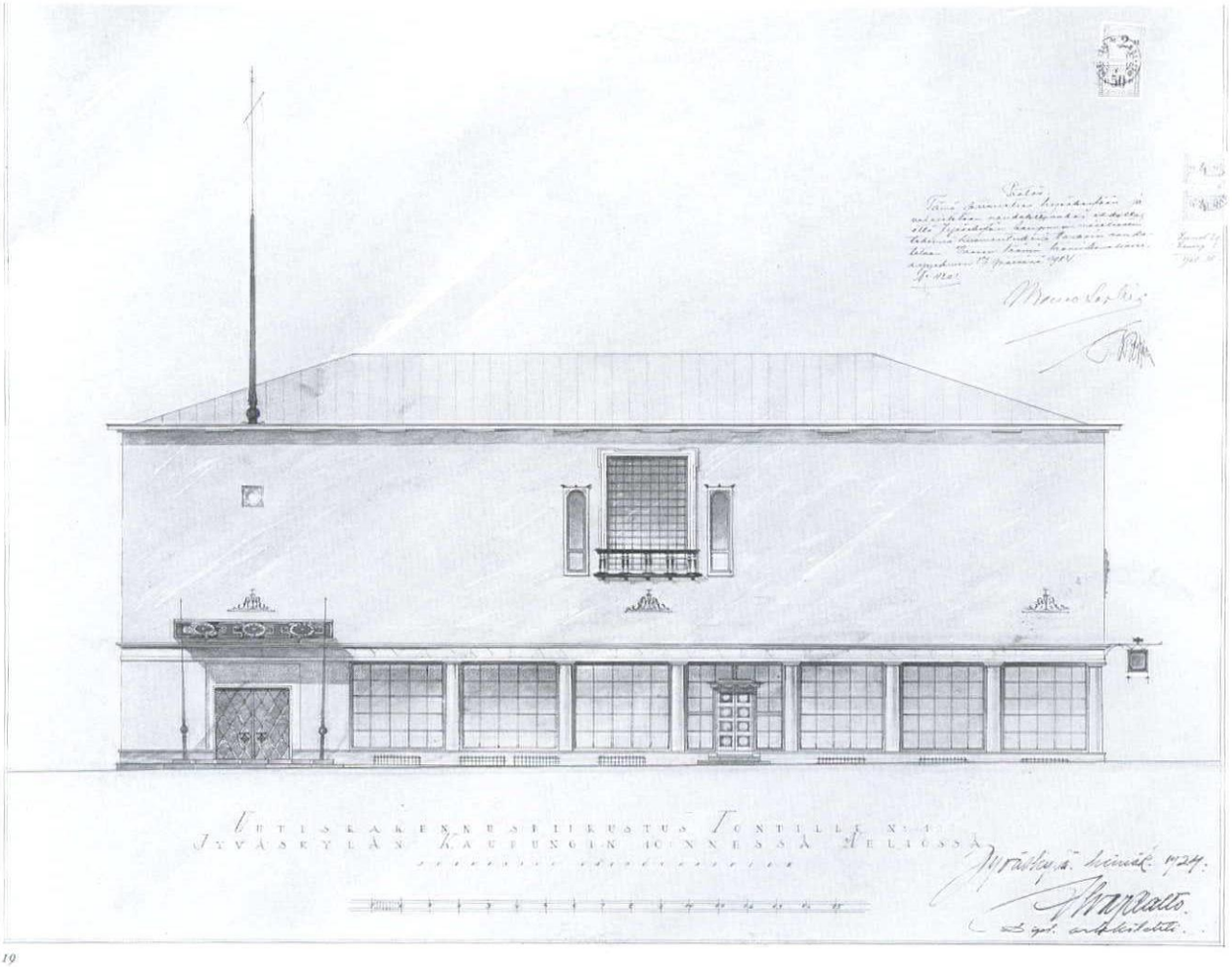

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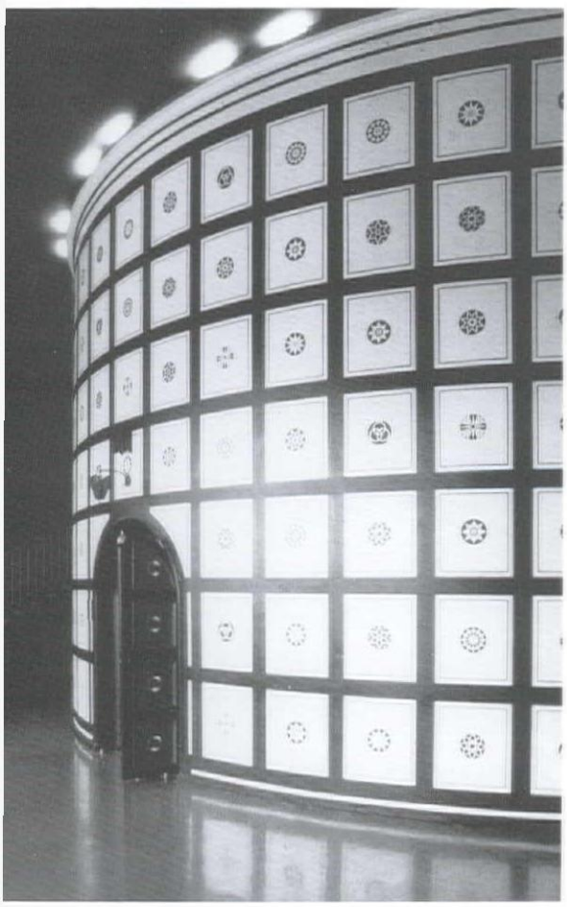
20 *Worker's Club, entrance to auditorium, upper lobby.*



The Workers' Club

The programmatic conception of the Workers' Club tended to pull the design in disparate directions right from the start. While the auditorium and its attendant spaces were obviously primary, the secondary functions of a café and restaurant were also quite important and suggested a more public, open architectural expression as opposed to the semiprivate, more closed nature of the auditorium (15, 16). Specifically, the volume of the auditorium is represented externally by smooth, solid wall surfaces punctuated only by a few significant openings, while the ground floor is identified as part of the public domain by the glazed Doric colonnade, continuous on the two street elevations. An early perspective drawing by Aalto shows an open colonnade with no glazing whatsoever (23). Aalto's wish to magnify the public aspect of the building is also seen in his perspective sketch with its reflecting pool and continuous loggias (4).

The Workers' Club bears an obvious relation to the Italian palazzo. The palazzo, although as a type quite diverse in its expression, often employed a ground-floor colonnade and large unbroken surfaces in a manner similar to the Workers' Club. The typical palazzo circulation sequence of entrance, vestibule, and honorific stair leading to piano nobile, is evident not only in the Workers' Club but also in virtually every auditorium building of Aalto's career.

The *cortile* in palazzo design was usually a space with exterior characteristics that had been internalized by the surrounding structure of the building. Aalto used a similar theme with his auditorium, but turned it inside out. The void of the *cortile* became the apparently solid volume of the auditorium, represented by the curving wall facing the second-floor lobby (20). The decorative pattern of that wall's surface resembles early Florentine church exteriors, notably San Miniato, the Baptistry, and the Duomo.

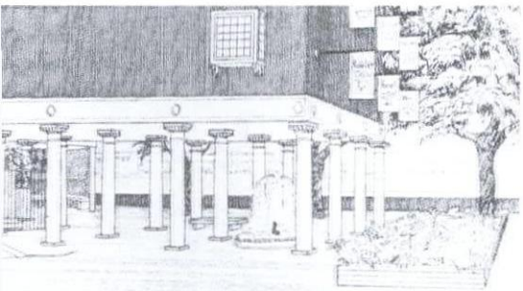
In contrast to the decorative treatment of the curving auditorium wall, the exterior of the Workers' Club is a simple stereometric volume.[19] The upper walls are primarily solid, with windows deployed in a seemingly undisciplined manner. The volumetric weight of the upper floors is underscored by the ground-level colonnade, creating a "hovering volume" that can be compared both to Asplund's contemporaneous design for the 1925 Paris Exhibition[20] (21) and to later Aalto work such as the Seinajoki Town Hall (22). In fact, the openness implied by the loggia beneath the simple volume of the building's bulk suggests a less abstract, but nonetheless similar, formal composition to that of Le Corbusier's Villa Savoye at Poissy (1929).

The reference to Le Corbusier takes on another dimension with Aalto's window placement. Although Aalto begins with the language of classicism (and what Porphyrios calls its "mimetic," or representational, characteristic), he then uses a dynamic, transformative process that stands in opposition to classical composition, symmetry, and correctness. The squared-off Palladian window (24), for instance, is deliberately crude both in form and proportion. In terms of compositional weight, it is almost equal to the entry door, yet there is no obvious relationship between this window and any other element on the façade (although the window is centered on the auditorium within). The window is adrift on the façade in a manner that not only recalls Asplund's Villa Snellman (1918), but also illustrates one of Le Corbusier's points from *Vers une architecture* (1923): the free façade.[21]

19 The original objectlike prominence of the Workers' Club has sadly been compromised by the recent addition of a building to the south on Kauppakatu.

20 The comparison with Asplund's 1925 Paris Exhibition competition entry was first suggested by S. Paavilainen in his article "Classicism of the 1920s in Finland," in *Abacus 1* (Helsinki: Museum of Finnish Architecture, 1979).

21 S. Wrede, "Asplund's Villa Snellman," in *Salokorpi*, 167. As Wrede has aptly noted, the use of strip windows, commonly associated with the free façade, was never a prescription, but rather, one of the many possible expressions of the technics of curtain wall construction.



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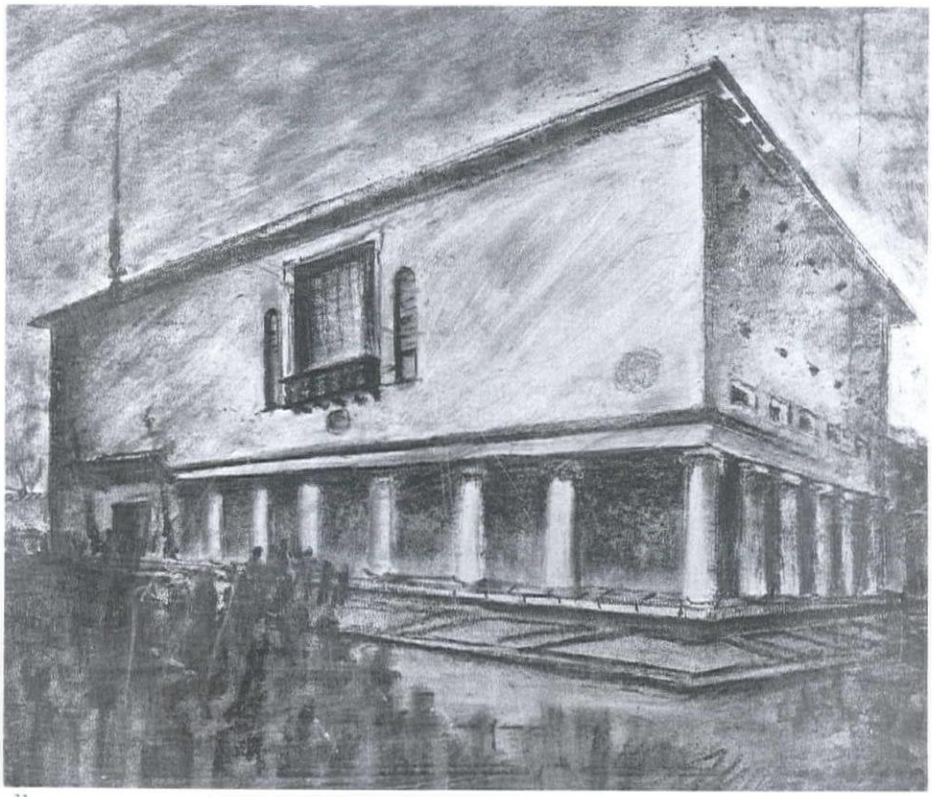

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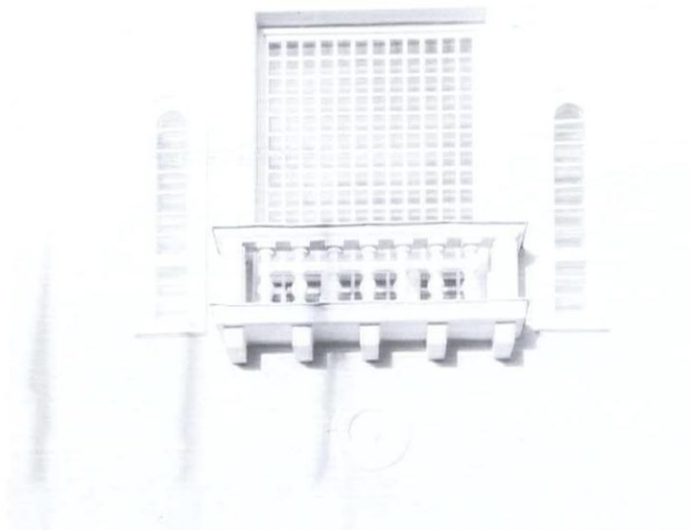

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21 Competition entry for Swedish Pavilion at Paris Exhibition of decorative arts, Erik Gunnar Asplund, 1924, perspective sketch.

22 Seinajoki Town Hall, Alvar Aalto, 1961–65.

23 Workers' Club, perspective sketch.

24 Workers' Club, exterior window detail.

In a very real sense, then, one can speak of the building's diagrammatic modernism coexisting with its diagrammatic classicism. A similar argument can be applied to the *Turun-Sanomat* newspaper building (1928), the first modernist building in Finland, and Aalto's clearest expression of Le Corbusier's five points. The taut, planar façade recalls the Workers' Club, as does the play of differently scaled elements, notably the supersized newspaper display window with its constructivist antecedents. In fact, there is a similar iconographic quality in the newspaper building's window and the Palladian window at the Workers' Club; both elements create a localized intensity on the building elevation. The Le Corbusier-influenced front elevation of the Turun-Sanomat building (26), with overtones of classical proportioning systems, is vigorously contradicted by the polyphony of form found on the rarely seen rear elevation [22] (25).

22 It should also be noted that Le Corbusier's simple "Domino" column grid was transformed within the Turun-Sanomat into five different column types, including the celebrated asymmetrical columns in the printing-press room.

At the Workers' Club as well, Aalto treated each façade as a distinct composition, with only minimal relationship to the other façades. The strategy of juxtaposing discrete façade elements in a tensional relationship is at work here; Aalto was to expand this painterly device on many later interior and exterior surfaces into a rich collage of textures.

The Workers' Club façade consists of a number of autonomous or semiautonomous elements that tend to assemble and disassemble simultaneously: the floating Palladian window, the entrance canopy, the irregular colonnade, the small, staccato openings on the end elevation, and the various classical fragments, some of which remained on paper only and did not appear on the building as finally realized. The idea of composition and decomposition is related to the strong interest in contrasts during the period of Nordic Classicism, especially as formulated by the Dane Carl Petersen.[23] The disassociation of various elements, such as the entrance canopy from the building wall at Jyväskylä, might be reinforced by the use of strongly saturated color—Pompeian red, cobalt blue, cadmium yellow. Petersen used such colors in the interior of his Fåborg Museum (1915) to reinforce the sense of each room being a separate event, most notably in the cobalt blue of the domed room commemorating the museum's founder. Throughout his career Aalto shared Petersen's interest in oppositions, both among colors and materials. However, there has been some difficulty in determining the precise colors Aalto used at Jyväskylä. The interior colors were strongly saturated, and the exterior appears to have been gray, not the current cadmium yellow.

23 For additional information on Carl Petersen, see article on the newly renovated Fåborg Museum in *Arkitektur DK*, 4, 1985. See also H. Stephenson, *Calle, Arkitekt Carl Petersen* (Copenhagen: Arkitektens Forlag, 1980).

A remarkable characteristic of the façade is the impression that the window openings are all squares or multiples thereof (18, 19). As far as the ground-floor colonnade is concerned, there are only three bays out of twelve that are in fact square;[24] the rest only appear so. This illusion of squareness is due to the fact that Aalto takes three different bay spacings, ties them together with a continuous entablature, and maintains the same five-module glazing division in each unequal bay. Thus, what appears to be a very regular colonnade, fixed by some Albertian rules of proportion and mathematics, turns out to be nothing of the sort. Aalto's perspective drawing of the building actually exaggerates the irregular spacing of the columns and is an intriguing precursor to his later ideas concerning irregular colonnades[25] (23). In the case of the Workers' Club, the cause for irregularity appears to have been a combination of the site dimensions (on the Kauppakatu elevation) and internal space allocations (on the Vainonkatu elevation). In any case, Aalto could have regularized the spacing much more than he did, showing instead an early inclination toward the individuality and particularization of architectural elements.

24 Only the last three bays of the Vainonkatu elevation are actually square.

25 See Aalto's article on the experimental house at Muuratsalo in Schildt, ed., *Sketches*, 116.

25 Turun-Sanomat, Alvar Aalto, 1928–30, rear elevation.

26 Turun-Sanomat, street elevation.

This inclination is evident in Aalto's design for the building entrance, where a festive and whimsical canopy stands in deliberate contrast to the solidity of the building's mass and the heavy ground-floor colonnade (30). Notably, the final version of the canopy was less exaggerated than in earlier designs, but still retained the theatricality of the lancelike supports. The immediate inspiration appears to have been the buildings of the Göteborg Fair in Sweden, which Aalto saw in 1923.[26] The ephemerality of the ultra-thin colonnettes and the delicacy of the metal canopy are related to Aalto's pavilions at the Tampere Fair in Finland (1923) (31), as well as to his contemporaneous furniture designs (28), inspired by sources as diverse as Pompeii and American Shaker furniture.

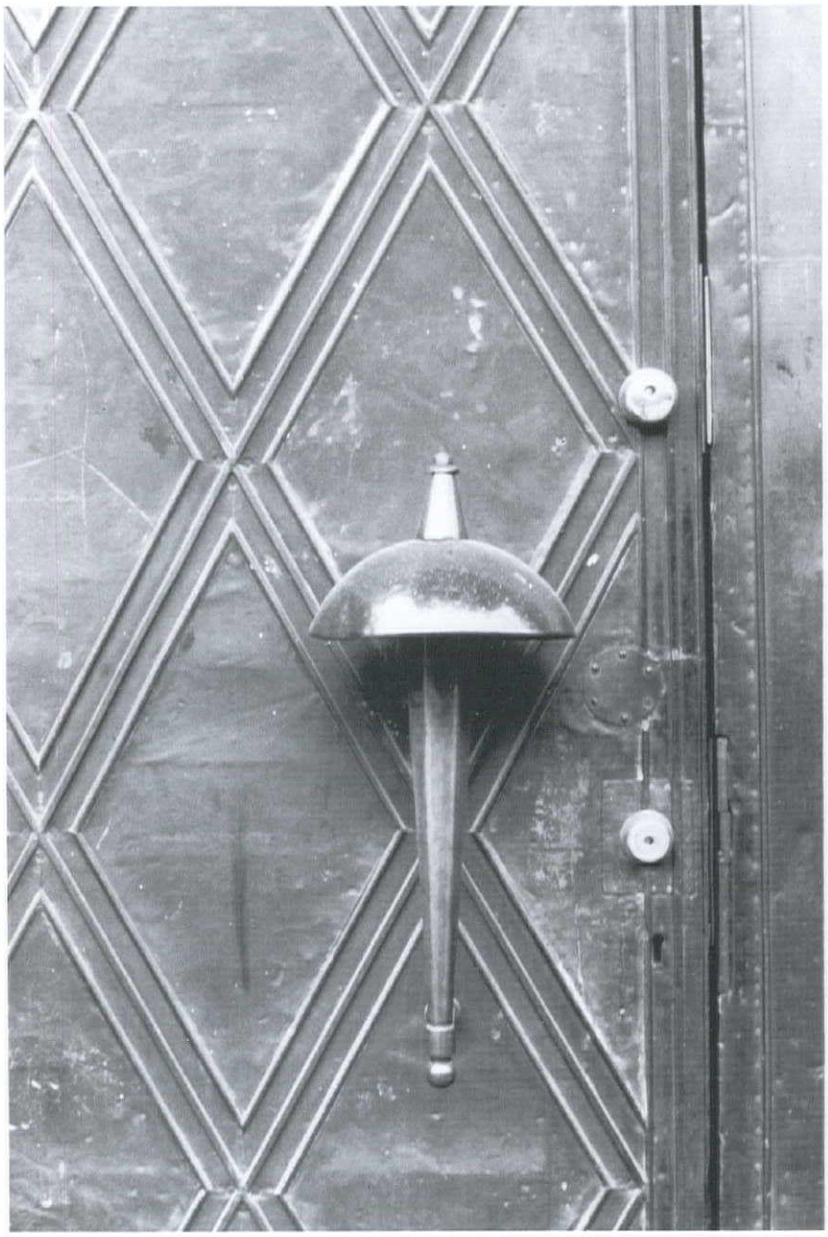
The images of the various details—the columns made from lances, the tent suggested by the canopy's initial design, and the unusual door handles that resemble the hilts of fencing swords (29)—evoke the trappings of a medieval jousting tournament. Aalto's references suggest the transposition of a twelfth-century entertainment form onto a twentieth-century theater. The overwhelming sentimentality of these symbols clearly recalls the romanticism of Östberg or Saarinen.

26 Aalto worked as a draftsman on the drawings for the Göteborg Fair during the summer of 1920, at the architectural office of Ares in Göteborg.

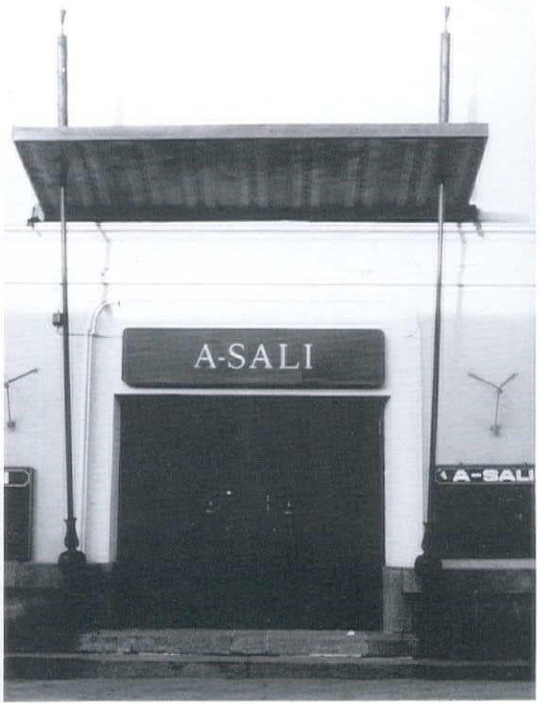
27 National Pensions Institute, Alvar Aalto, Helsinki, 1956, door handle.

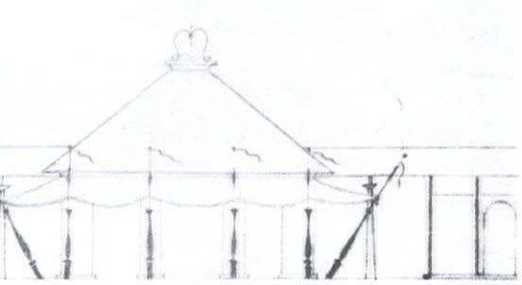
28 Table design, Alvar Aalto, 1924.

29 Workers' Club, door handle.

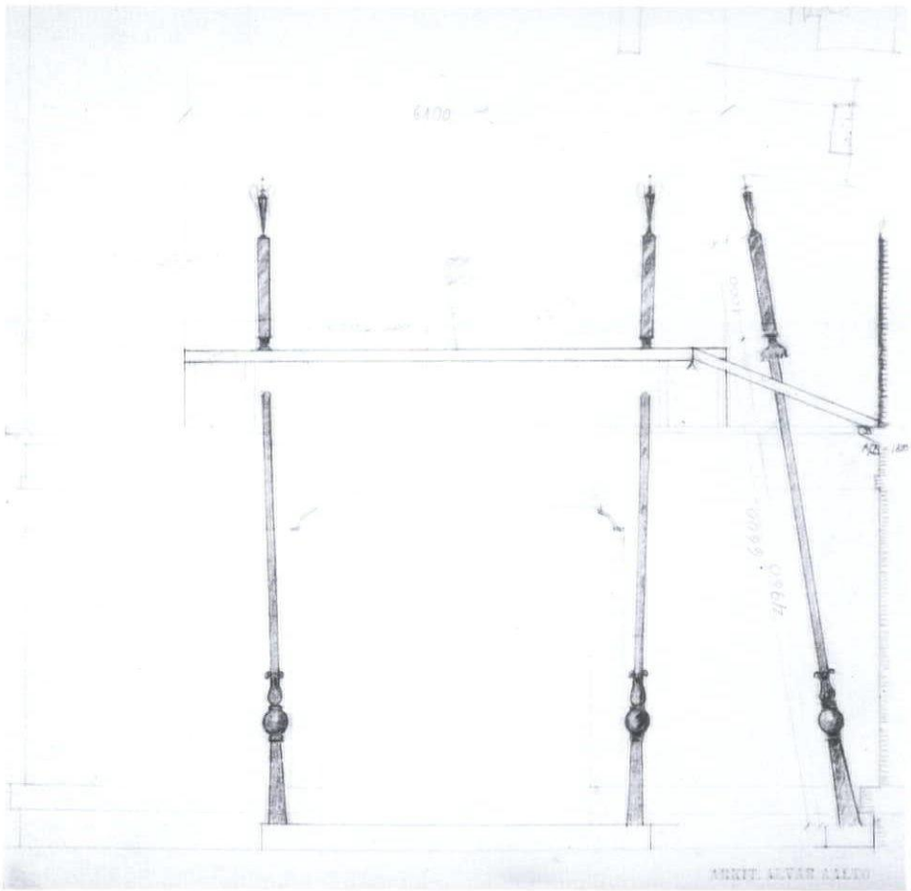


30 *Workers' Club, entrance canopy.*

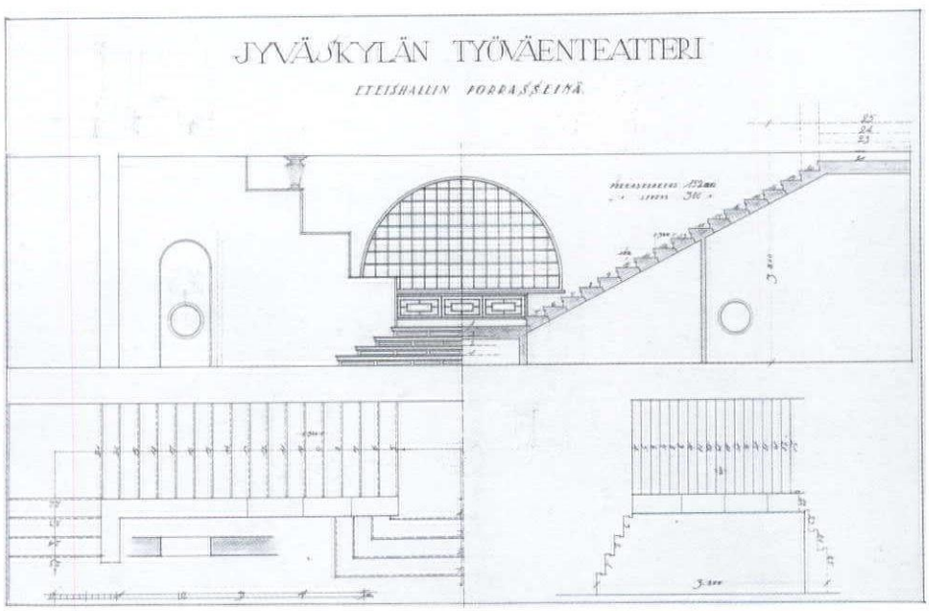




31 *Design for Tampere Fair, Alvar Aalto, 1922, detail.*



32 *Workers' Club, study for entrance canopy.*



33 Workers' Club, lower lobby.

34 Lister County Courthouse, Erik Gunnar Asplund, 1921, lobby.

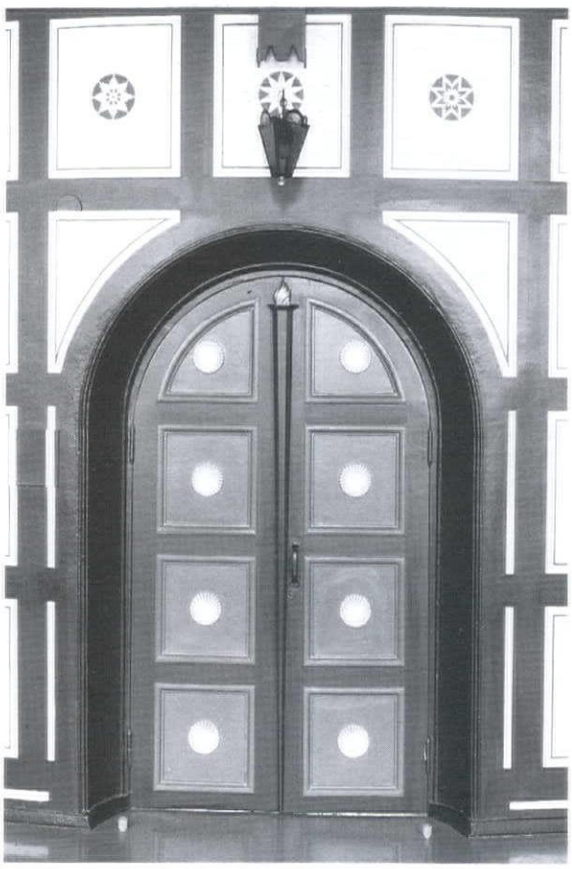
35 Worker's Club, drawing of main ceremonial stair.

This fantastic assemblage of elements initiates a path to the theater that begins at the building's lower lobby and coatroom (33, 35). The lobby is dominated by a grand ceremonial stair washed with light from a semicircular window, similar to the entrance window of Asplund's Lister Courthouse of 1918 (34). On axis with the stair and window is the entry to the café, a distinct circular space with a closely spaced ring of columns that carry the load of the auditorium above. This space, unfortunately now closed off to the lobby and not currently used as a café, originally gave the first inkling of the round "drum" set into a rectangular container that is the theme of the second-floor lobby. In fact, the curving back wall of the auditorium above is allowed to penetrate directly down to the café space (15, 16), creating a vertical continuity within the plan.

The honorific stair, a powerful element in the lower lobby, directly opposite the café, would become a central theme in Aalto's later work. At the Turun-Sanomat building, for example, the internal organization is dominated by a grand ceremonial stair beginning at street level. Aalto later spoke of stairs as the slopes of mountains within his interior landscape, and it is the atmospheric transposition of both landscape and urban space to the interior realm that is so overwhelming in the second-floor lobby. This tall, formal space is dominated by the curving wall of the auditorium (20). The top of this drum, or apse, as Schildt has called it (apropos of its likeness to the black and white decorative treatment of a Florentine church), is marked by a simple "cornice" that is pulled away from the ceiling and emphasized by lighting. It is clearly intended to be a building within a building. A specific source may have been *Um 1800* by Paul Mebes, a common reference book for the Nordic Classicists. Mebes included an exterior door from Karlsruhe with a decorative design virtually identical to that found on the interior wall at Jyväskylä [27] (36, 37).

27 P. Mebes, *Um 1800* (Munich: Verlag F. Bruckman A.G., 1918), 244. This page shows two photographs of ornamental doors. One door's decoration closely resembles the decoration of the curving auditorium wall. The second door is similar to the main entry door at the Workers' Club.

36 Door detail from Karlsruhe, from the reference book Um 1800 *by Paul Mebes.*



37 Workers' Club, auditorium entrance doors.

28 Schildt, *Early Years*, 214-30.

29 A. Aalto, "From Doorstep to Living Room," as cited by Schildt, *Early Years*, 215.

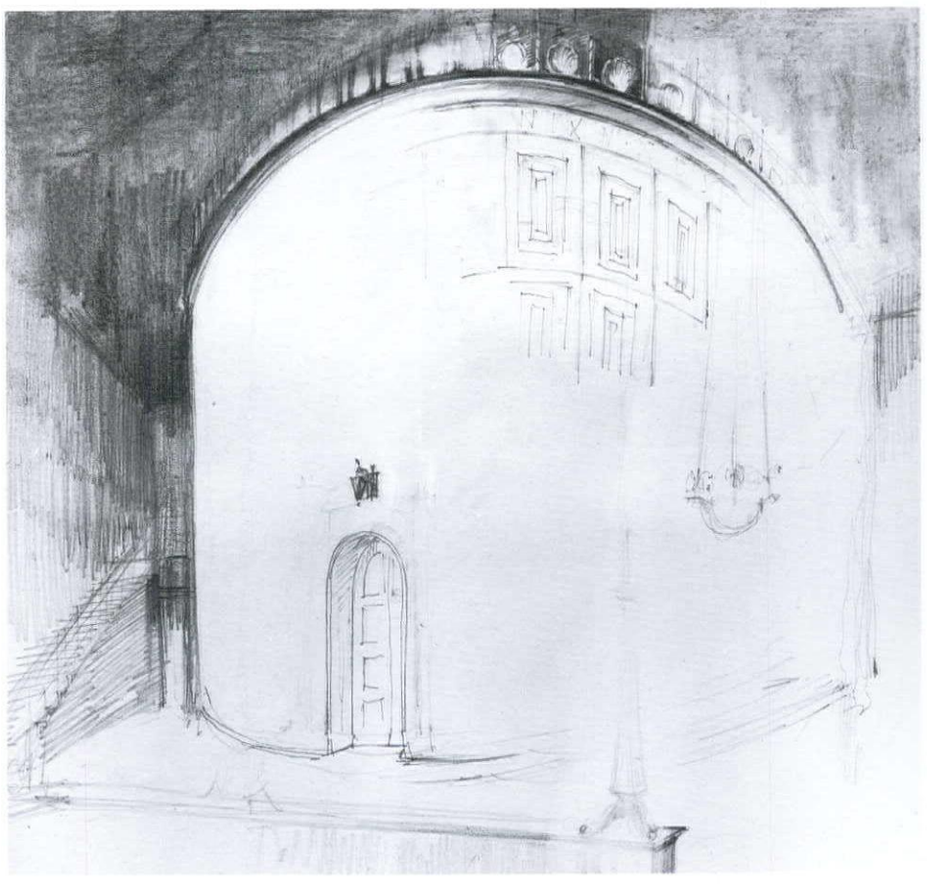
30 See Le Corbusier, *Oeuvre Complète 1929–1934* (Zurich: Les Editions D'Architecture, 1964), 54.

Aalto discussed the idea of treating internal surfaces as external in a 1926 article that, as Schildt has observed,[28] was pivotal for Aalto in that it marks the beginning of his lifelong investigation of the "unity of the room, the external wall and the garden."[29] Two illustrations from the article are worth mentioning: the painting *The Annunciation* by Fra Angelico (38) and a photograph from Pompeii (39). Both images reveal Aalto's intention to create an "inner landscape," a reversal of interior and exterior. Conversely, an illustration by Le Corbusier dating from 1930 shows a roof terrace inhabited by living room furniture and a mysterious fireplace (with the Arc de Triomphe placed wittily just behind).[30] Aalto internalized nature in his buildings, whereas Le Corbusier created an exterior roof garden populated by interior objects. Clearly, climatic differences between the Mediterranean (extroverted) and the Nordic (introverted) environments were critical in the development of these sensibilities. Aalto's inner landscape, characterized at the Workers' Club by the opposition of a specific curvilinear element set within a neutral frame, can be seen throughout later work such as the Finlandia Concert Hall. At both Finlandia and the Workers' Club, the auditorium is pushed into the lobby, and can be read as a somewhat enigmatic, autonomous object within the space. The contained space of the auditorium itself thus fluctuates between positive and negative readings.

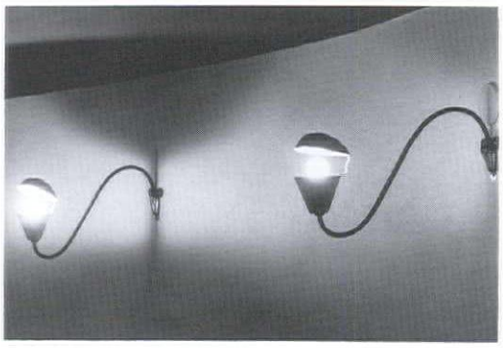
38 The Annunciation, *Fra Angelico.*

39 Illustration from Aalto's 1926 article in Aitta. *Aalto's caption:*
"View from Pompeii, the peristyle of a patrician's house with an unroofed colonnade forming a link between the inner rooms of the house."

Inside the auditorium at Jyväskylä a balcony over the rear one-third of the space creates a low-ceilinged area that leads to the tall volume of the auditorium itself. On the walls of this vestibule are reflector lamps that are subtle precursors of Aalto's later work; he would use reflectors again on his exterior light fixtures at Otanieni and many other buildings. More specifically, at the Worker's Club the reflectors are in the form of shells (41), which can be traced to his early ornamentation sketches that explore this marine motif (43). These first shells, though apparently ordinary in their similarity to contemporaneous design imagery, foreshadowed the fanning shape of the nautilus, which was to obsess Aalto in his later buildings and furniture, from the smallest detail to the contour of building plan and section.



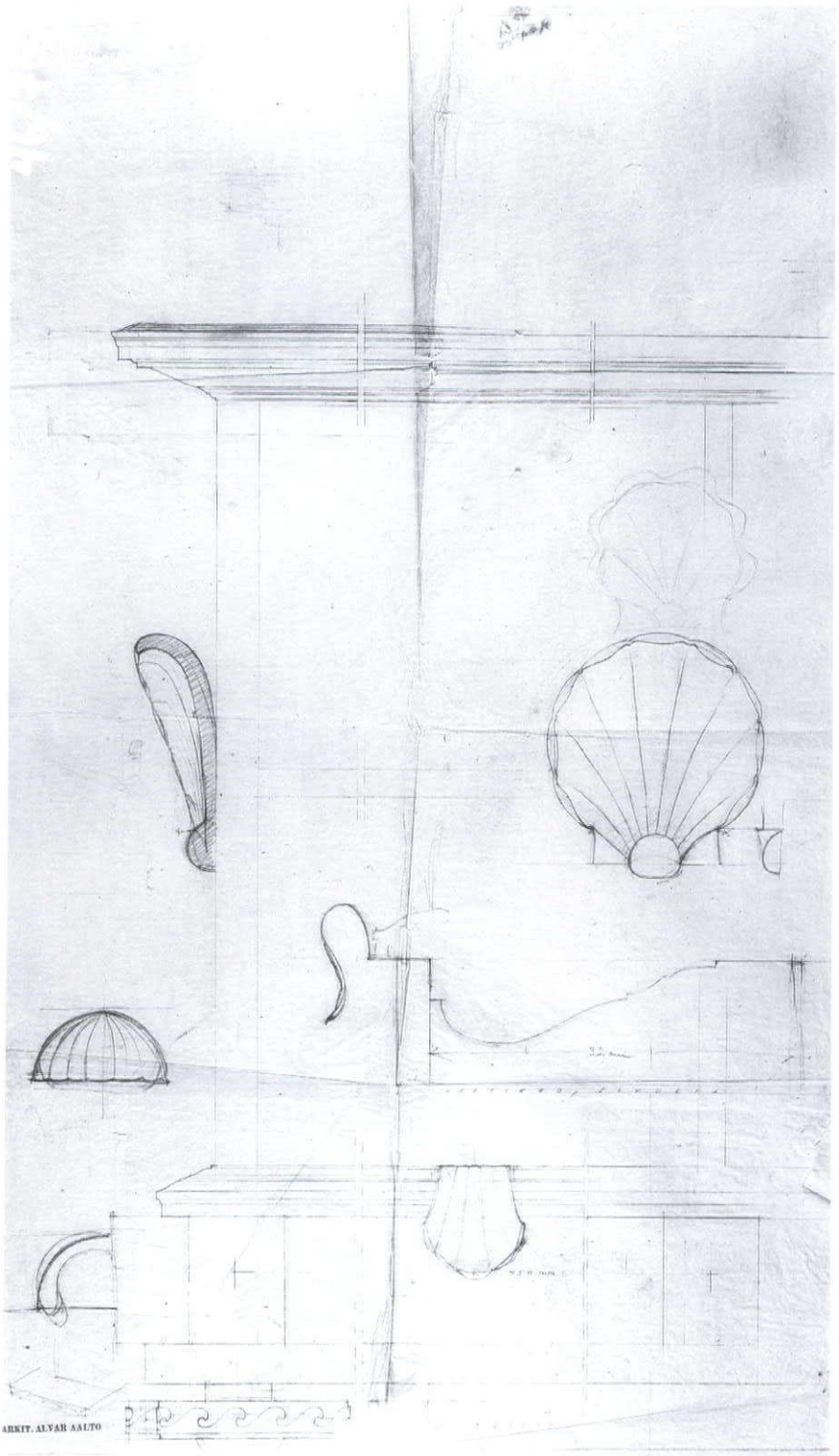
40 Workers' Club, sketch of auditorium lobby.



41 Workers' Club, light fixture in auditorium vestibule.

42 Alvar Aalto Museum, Alvar Aalto, 1973, exterior light fixture.

43 Workers' Club, ornamentation sketches.



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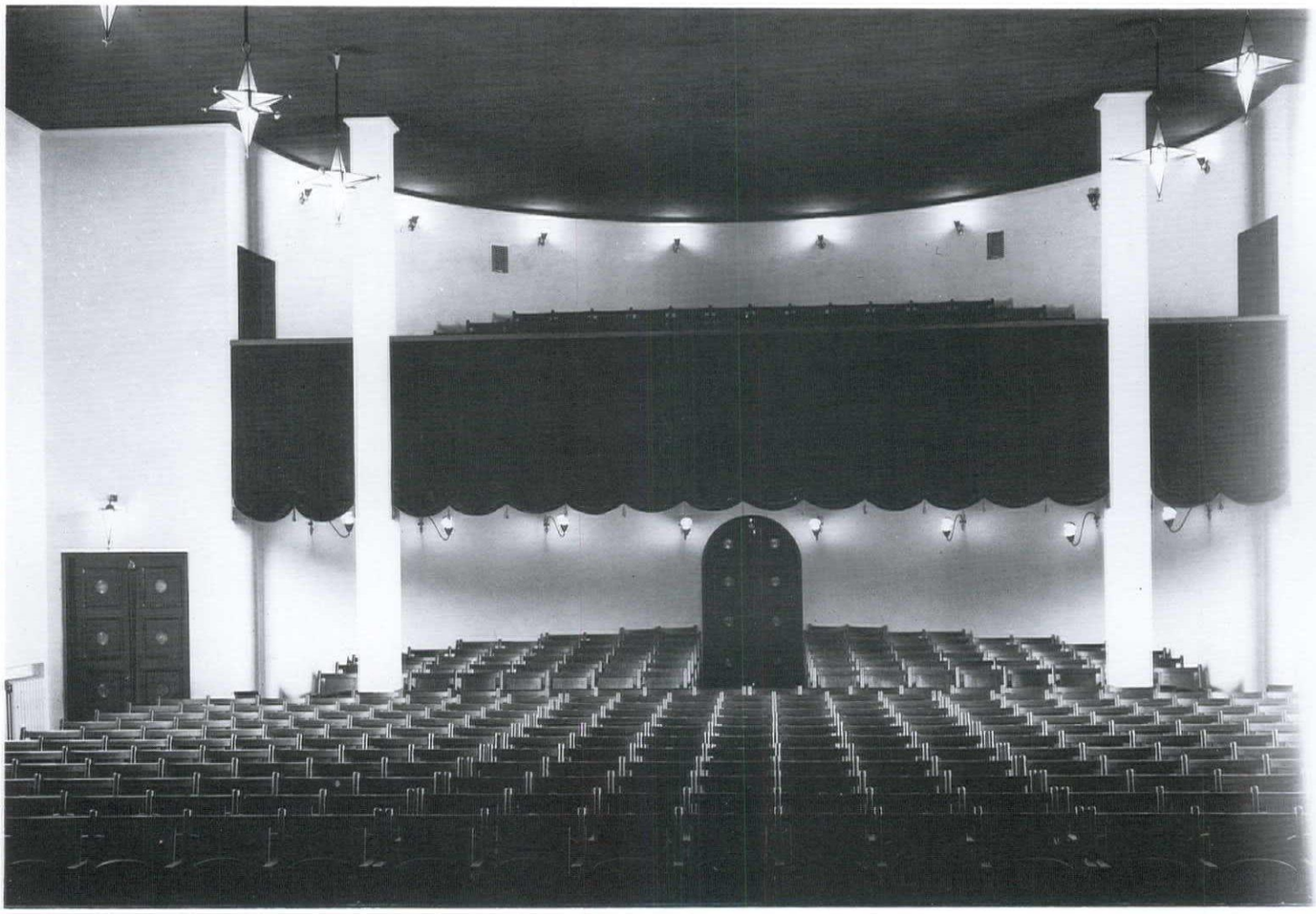
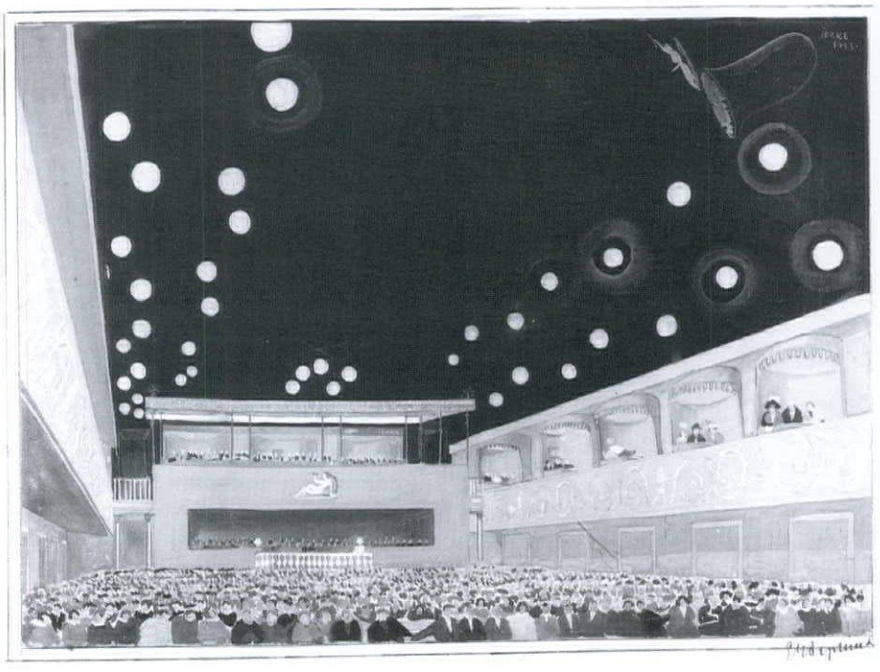
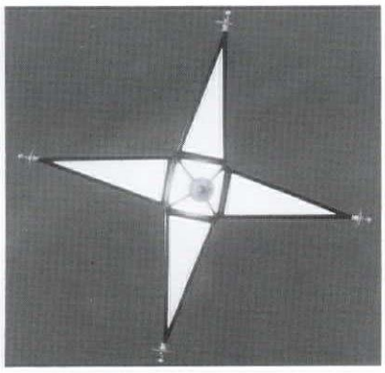


44 Workers' Club, auditorium interior.

45 Skandia Cinema, Erik Gunnar Asplund, 1924, perspective.

46 Workers' Club, light fixture in auditorium.





Within the main auditorium space, it becomes evident that the placement of the Palladian window, seemingly arbitrary on the exterior elevation, is in fact determined by the interior (a "functionalist" operation). The window is perfectly centered on the auditorium wall. Scattered above are the distinctive star-shaped light fixtures (46), suggesting a quite literal interpretation of the ceiling as a sky. Aalto praised Asplund's refined sense of atmospherics when he wrote of his first visit with Asplund to the Skandia Cinema (45): "We sat in Skandia's indigo-colored theater a few days before it was completed. 'While I was building this I thought of autumn evenings and yellow leaves,' said Asplund as he showed me the contourless auditorium with its yellow light fixtures. I had the impression that this was an architecture where ordinary systems hadn't served as parameters."[31]

31 A. Aalto, "E. G. Asplund in Memoriam," *Arkkitehti* (1940).

It is this same type of atmospheric interest, of extracting a more elusive meaning from an image of reality (beyond the parameters of ordinary systems), that forms a bridge to the work of de Chirico, whose idea of the metaphysical can be construed as analogous to the "frozen," or condensed, language of classicism developed by Asplund, Lewerentz, and Aalto. De Chirico spoke of representing a familiar object "as though there had been a slight and mysterious transformation of features." The evocation of a frozen moment, of quite powerful, enigmatic events, is clearly indicated by de Chirico's description of Paris from 1921:

> As you leave the station and enter the heart of the city, the scenery becomes increasingly magical; you have the feeling of being inside a huge jack-in-the-box.... [It is]the open stage of a wonderful theatre: the backdrop is the soft gray mist that joins the sky to the earth and to the constructions of men, constructions that are also gray, curious, and hospitable sources... from which spring forth, like figures of a magic lantern, hurrying throngs of men and vehicles.... In a shop window showing a group of ladies and gentlemen with their children on a Riviera beach, I thought of the *Odyssey* and of wandering Ulysses.... Modernity, that great mystery, dwells everywhere in Paris, you find it again at every street corner, coupled with what once was, pregnant with what will be.[32]

32 See M. F. dell'Arco, "De Chirico in Paris 1911-1915," in the exhibition catalogue *De Chirico* (New York: Museum of Modern Art, 1982), 12-13.

Just as de Chirico could look at the Piazza Santa Croce in Florence and yet see a Greek temple (in his first Metaphysical painting, *Enigma of an Autumn Evening*, 1910), so Asplund could see an autumn evening and yellow leaves in his Skandia theater. Aalto could see his theater lobby as a small Italian urban space, or Jyväskylä as a northern Florence. In each case, the source of inspiration has a magical overtone that prevents a strictly literal transfer of images.

Myths, present and past, of Florence and Jyväskylä are superimposed upon each other. Other images, such as the entrance canopy as a tent structure at a medieval festival, the honorific stair as the slope of a mountain, and the auditorium as a star-filled winter evening, all provide an emotive content that stands in opposition to the austerity of form and rigorous methodology encouraged by both Nordic Classicists and the early modernists.

47 Alvar Aalto Museum, Alvar Aalto, Jyväskylä , 1973.

Once a "mythical" image, whether pictorial or architectural, has been invested with a meaning that goes beyond its real associations and contexts—a metaphysical meaning, to use de Chirico's term—then it quite literally acquires a life of its own and can speak to other similarly invested objects. At the Workers' Club, building elements such as the auditorium (with its inlaid curved apse and starlit interior), the floating Palladian window, and the staircase acquire an autonomy that allows an internalized conversation to occur. It is possible to analyze virtually every later Aalto building in terms of this interaction among autonomous objects. In the Villa Mairea, for example, there is a strong sense of a populated interior space, even when no people are actually present. "This may seem to be a field," Aalto remarked, "in which the architect's authority ceases, but no architectural creation is complete without such a trait."[33]

33 Schildt, *Early Years*, 218.

Abstract Classicism

> *The threshold between classicism and modernity...had been definitely crossed when words ceased to intersect with representations and to provide a spontaneous grid for the knowledge of things.*
>
> MICHEL FOUCAULT, *The Order of Things*

The Workers' Club stands as a palimpsest of Aalto's early career: multiple writings, each with a particular significance for Aalto's later work, have been impressed on this "tablet" and then partially removed. The compression of both time and geography inherent in negotiating themes of myth and reality, the modern and the classical, or the universal and the parochial, is critical to the narrative of Aalto's work. Does the Workers' Club represent the language of classicism, or, conversely, does the Turun-Sanomat building, as an example, represent the language of modernism? In both

cases, the buildings exist more as commentary on the respective vocabularies than as cohesive representations. The urge to categorize, to classify, to establish hierarchical systems, is invariably undercut by the polysemy presented by Aalto's work.

Two ideas figure prominently in Aalto's transformation of classicism. One is atmospheric illusion, "a world impregnated with poetry and hallucinations."[34] The second idea is abstraction, which Aalto observed is ideally "the result of a kind of crystallization process."[35] Cursorily, it is possible to say that abstraction, and the corollary ideas of transformation and dynamism, are the basis for what we know as modernism. Classicism, on the other hand, is concerned with ideas of composition and stability, with hierarchies established by axes and symmetries. Aalto remained on the threshold between classicism and modernity, thus allowing both representation and abstraction, composition and transformation, to continue.

34 E. Persico, "Cooperativa Forbundet," *Casabella* (August 1935).

35 A. Aalto, "The Trout and the Mountain Stream," in Schildt, ed., *Sketches*, 98.

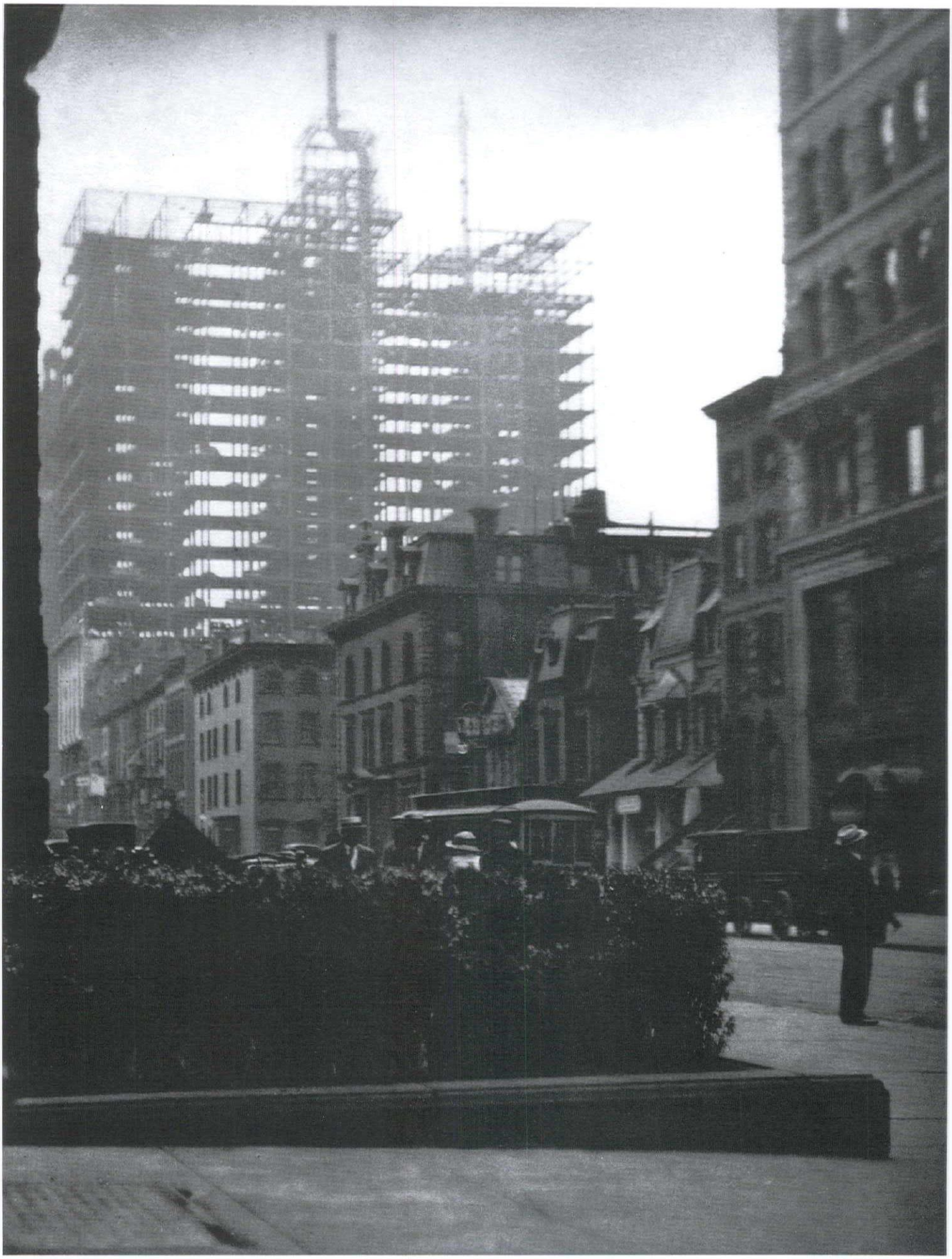
The Workers' Club, then, represents the first statement in Aalto's work of such themes as the anarchic ordering of autonomous objects, the reversal of external and internal, the concern for symbolic imagery and representation. The polarities and oppositions evident in the building show Aalto's commitment to multiplicity as a basic architectural methodology. But the sine qua non of Aalto's early architectural vision is unquestionably Erik Gunnar Asplund, with his sure sense of history and geometric abstraction, his light aristocratic, artistic touch, his interest in atmospherics and symbolism as well as formal sequences and oppositions.The dicta of neoclassicism and functionalism had only a limited resonance in the work of Asplund and Aalto; each had a more complex and sophisticated esthetic agenda. The Italian designer and art critic Persico wrote in 1935:

> The neoclassicism of the Swedish architects is not cold and formulaic, but is a spirited reinterpretation of a world both poetic and fantastic...a terrestrial paradise. In this sense, the Swedish neoclassicism is not an academy, but an art; it is a strict discipline and not a simple way of creating....
>
> For Swedes, Venice is not an example to be exploited, but a world of dreams.... In this Olympic milieu the rationalism, or *funkis*, as is said in Sweden, is not an indirect polemic or new dogma, but the constant aspiration of all people toward the most beautiful ideal.[36]

36 E. Persico, "Cooperativa Forbundet."

A critical misreading of academic classicism and modernism is central to the work of both Aalto and Asplund."To live," the literary critic Harold Bloom has noted, "the poet must *misinterpret* the father, by the crucial act of misprision, which is the rewriting of the father."[37] It is this misreading of historical models, Aalto's reinterpretation and reinvention of those various sources, not necessarily in a synthetic manner, that gives the Workers' Club such potency. This building presents a frame and reference for Aalto's later work, a benchmark subject to the inchoate ambiguities and confusion embodied in the notion of beginnings.

37 H. Bloom, *Map of Misreading* (New York: Oxford University Press, 1975), 19.



1 Old and New New York, *Alfred Stieglitz, 1910.*

Three Early Designs by Mies van der Rohe

Dietrich Neumann

Executed buildings almost always represent a compromise between the architect's vision and the constraints imposed by external forces, such as a client's expectations, local zoning ordinances, building laws, and the availability and cost of materials. An uncommissioned project, however, provides an opportunity for the architect to concentrate on a limited range of design issues and to express in a purer form his ideas, intentions, and abilities.

The contrast between such projects and executed structures is especially apparent in Mies van der Rohe's work of the early 1920s, when he built three rather conventional villas in Berlin[1] and created, during the same period, a set of five visionary designs: the entry for the Friedrichstrasse skyscraper competition, the curvilinear skyscraper, the concrete office building, and the two country houses in concrete and brick. Though idealized, the latter five designs were grounded in a complex set of preconditions that have made their analysis difficult and misleading. The regrettable loss of a considerable amount of recorded information (plans, models, and photographs), the brevity of Mies's accompanying texts, and finally, a general lack of thorough analysis of the projects themselves, have resulted in a mystification of the architect's intentions. The projects have been treated essentially as formal exercises,[2] despite Mies's clear statement of the year 1923, which seems to summarize his intentions: "We know no form problems, only building problems. The form is not the goal, but the result of our work. There is no form as such. The really formal is related, connected to the task, the most elementary expression of its solution. Form as a goal is formalism; and this we reject... "[3]

On June 14, 1923, Mies wrote in a letter to Walter Gropius about his participation in the Internationale Bauausstellung at the Bauhaus in the summer of 1923: "I would be delighted to be represented by the three projects [Mies refers to the second skyscraper design, the office building, and the concrete country house [4]], so that I could show how the same structural principle works out in three completely different assignments. Since I reject any and all formalism, and endeavor to develop the solution to an assignment out of its particular requirements, there will never be a formal relationship uniting the separate projects." [5]

The following essay represents an attempt to develop a better understanding of these three projects (which Mies obviously considered as a thematic entity) by exploring the degree to which, in each case, a combination of formal considerations and inherent constraints shaped the eventual result.

1 Kempner House, 1921–22; Feldmann House, 1921–22; Eichstaedt House, 1921–22; cf. Arthur Drexler, ed., *An Illustrated Catalogue of the Mies van der Rohe Drawings in the Museum of Modern Art, Part I* (New York, 1986), 54–61; 70–78.

2 Most recently by Wolf Tegethoff, "From Obscurity to Maturity: Mies van der Rohe's Breakthrough to Modernism," in Franz Schulze, ed., *Mies van der Rohe, Critical Essays* (New York 1989), 28 ff.

3 Mies van der Rohe, "Bauen," in *G* 2 (September 1923): 1.

4 The fact that Mies was referring to these projects is apparent in the first half of the letter: "Dear Herr Gropius, I received your letter and would like to say that I cannot remove the plaster model of the concrete residence [*Eisenbahnkragträgerkonstruktion*], so I can only place at your disposal a photograph of it and a charcoal drawing. The only models I could make available to you are the glass model of my tower and the wooden one of the large office building [concrete office building], and indeed I had thought of combining these two models, placing them next to each other so as to suggest a square. I tried it out, and the effect is wonderful; I believe that you too would understand then why the business building has only the horizontal articulation. I am sending you two photos of these two buildings, and ask that you return them to me sometime. I would be delighted to be

represented by the three projects, so that I could show how the same structural principle works out in three completely different assignments." Quoted from Wolf Tegethoff, *Mies van der Rohe, The Villas and Country Houses* (New York, Museum of Modern Art, 1985), 32.

5 Quoted from Tegethoff, *The Villas and Country Houses*, 16, footnote 3.

6 Cf. "Frühlicht" (1922), quoted from Franz Schulze, *Mies van der Rohe, A Critical Biography*, (Chicago, 1986): 100

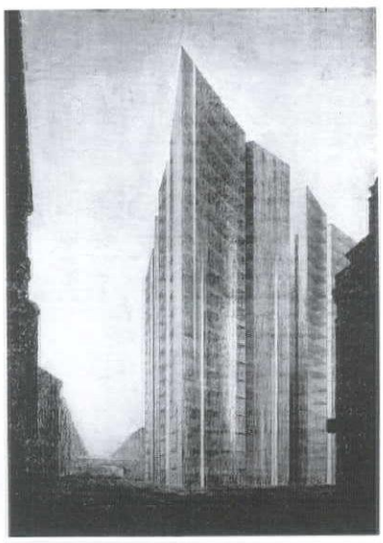
7 Cf., for instance, texts by two influential German art historians: Karl Scheffler, "Ein Weg zum Stil," *Berliner Architekturwelt* 5 (1903): 291–95; and Heinrich Pudor, "Gerüst-Architektur," *Bauwelt* 1, 36 (1910): 15.

The Curvilinear Skyscraper

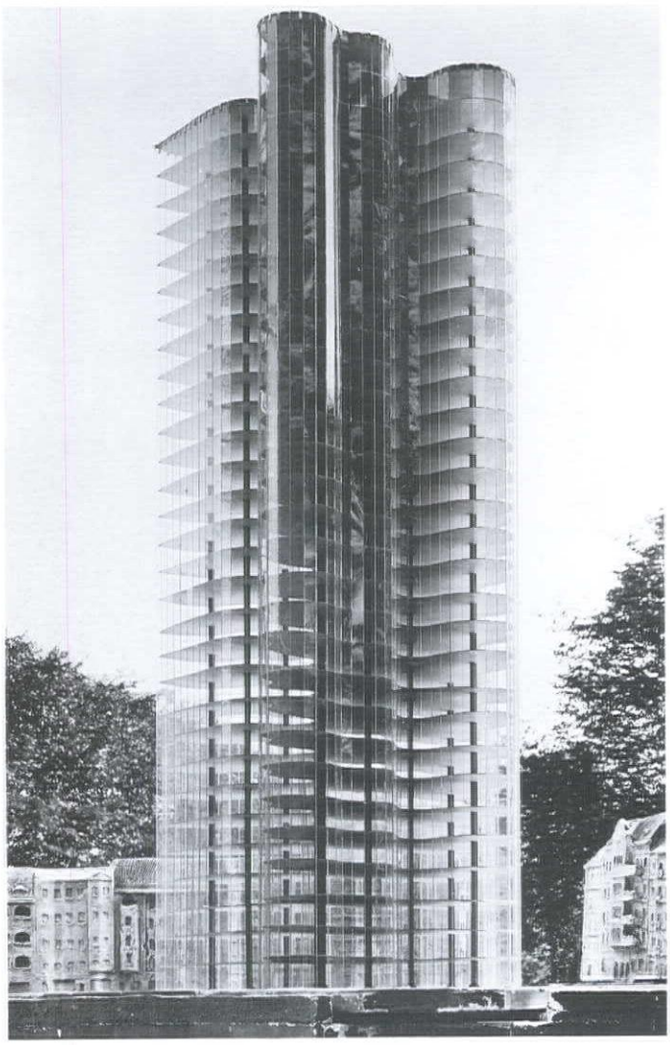
Mies's glass skyscraper of the year 1922 (3) was a development of his entry for the Friedrichstrasse Skyscraper competition in Berlin (2), which he had designed in the autumn of 1921. The two designs had several features in common: the buildings were completely sheathed in a homogeneous glass surface and lacked conventional building features, such as a base or cornice or an emphasized central axis. Their first publication in 1922 was accompanied by the following statement by Mies:

> Only in the course of their construction do skyscrapers show their bold, structural character, and then the impression made by their soaring skeletal frames is overwhelming. On the other hand, when the façades are later covered with masonry this impression is destroyed and the constructive character denied, along with the very principle fundamental to artistic conceptualization. These factors become overpowered by a senseless and trivial chaos of forms. The best that can be said for such buildings is that they have great size; yet they should be more than a manifestation of our technical ability. Above all we must try not to solve new problems with traditional forms; it is far better to derive new forms from the essence, the very nature of the new problem. The structural principle of these buildings becomes clear when one uses glass for the non-load-bearing walls. The use of glass forces us to new ways. [6]

In no way as original and innovative as Mies's skyscraper designs, the text repeats rather commonplace arguments among architects and critics of the time. His enthusiasm for the esthetic beauty of the visible steel skeleton and the scaffolding are ideas that can be traced to the turn of the century and further.[7] The photomontages of his projects



2 Friedrichstrasse Competition entry, Ludwig Mies van der Rohe, Berlin, 1921, photomontage.



3 Curvilinear glass skyscraper, Mies van der Rohe, 1922, model.

seem influenced by contemporary photographs of American skyscrapers under construction, such as Alfred Stieglitz' "Old and New New York" of 1910 [8] (1). Mies's suggestion to use glass for the non-load-bearing walls had already been executed at innumerable steel-frame structures for department stores, industrial buildings, and greenhouses in almost every major German city. And his critique of the historicist façades of American skyscrapers parroted the most common judgments by contemporary German critics of the skyscraper.

Although both designs were representative of a contemporary enthusiasm for the skyscraper in Germany,[9] they simultaneously denied the monumentality and nationalistic connotations that were evident in most projects of the period. The so-called skyscraper craze between 1920 and 1925 had triggered literally thousands of projects for almost every German city, designs that were widely published and enthusiastically discussed in the architectural periodicals of the day. The majority of these projects were developed by conservative architects who intended them as monuments to the German will to reemerge from the defeat of the war. However, because there was neither an actual need for office space nor the money to build any high-rise structures, most remained on paper. Although most architects criticized the American historicist skyscrapers and argued for a genuine German version, their formal language was clearly historicist and monumental, emphasizing central axiality and restrained neo-Gothic or neoclassical features (4, 5, 6, 7).

8 Published in *Camera Work* 36 (October 1911): 13.

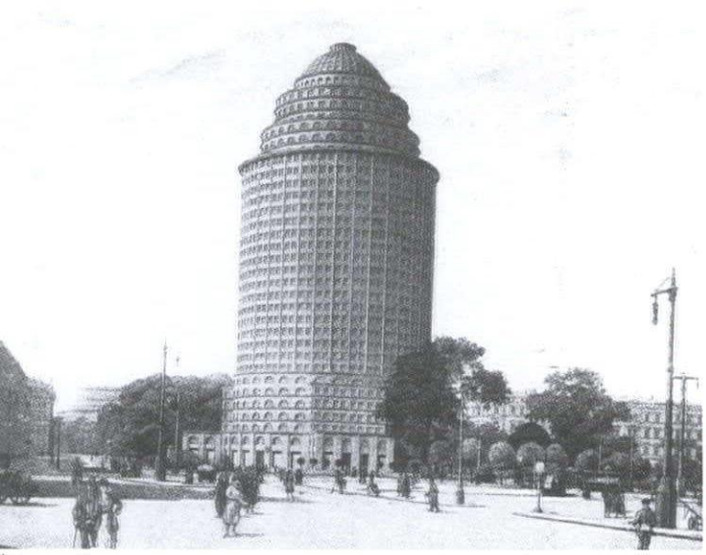
9 Cf. Dietrich Neumann, "Skyscraper Visions in Germany," *Arcade: The Northwest Journal for Architecture and Design* 10 (1990): 6–7, 12–14; Rainer Stommer, "Die Germanisierung des Wolkenkratzers," *Kritische Berichte* 10 (1982): 36–53; and for more detailed information about the German skyscraper movement see Dietrich Neumann, *Deutsche Hochhäuser der Zwanziger Jahre* (Berlin, 1989).

4 Skyscraper project for Leipzig, Tschammer, Caroli, Haimovici, 1920.

5 Skyscraper for Berlin, Otto Kohtz, 1920.

6 Skyscraper for Breslau, Max Berg, 1921.

7 Skyscraper for Munich, Otto Orlando Kurz, 1921.



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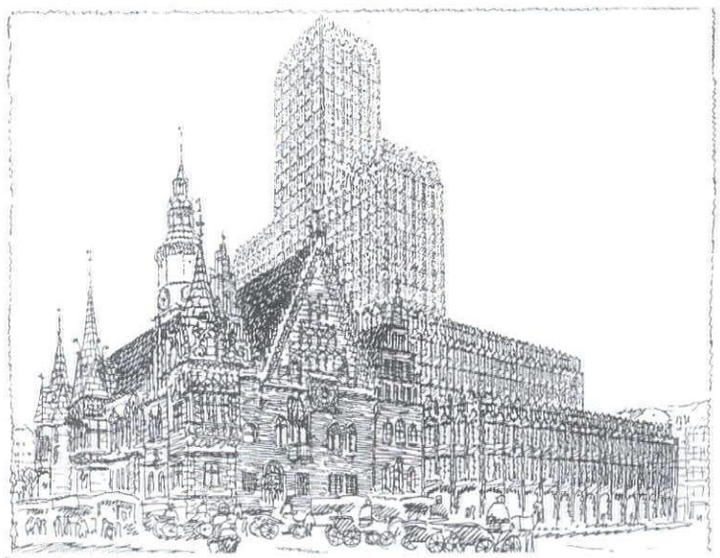

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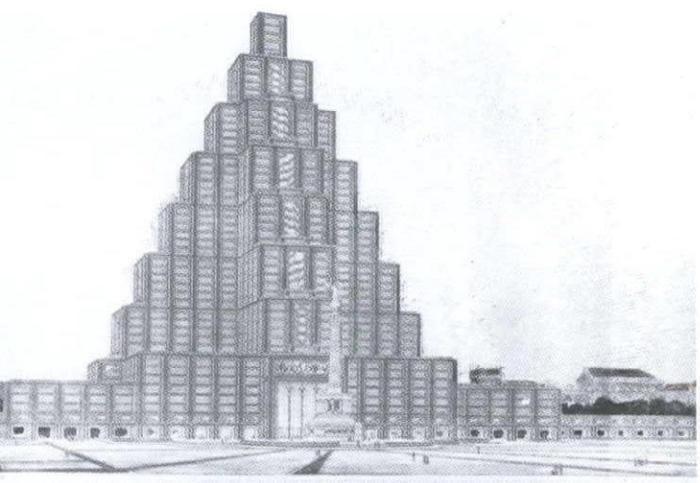

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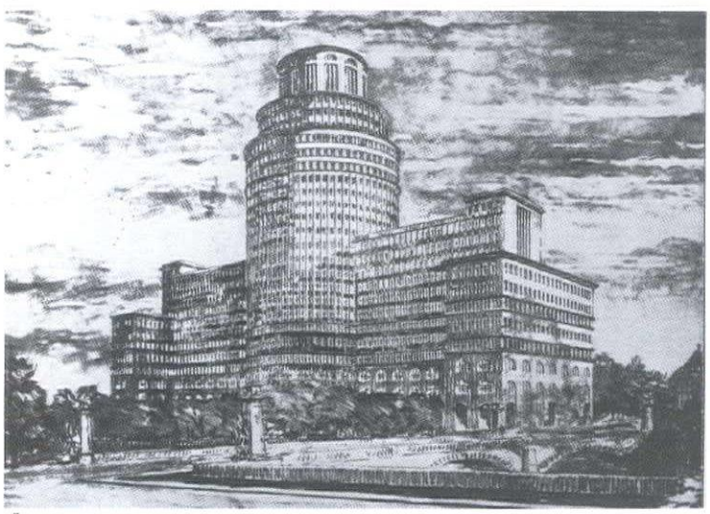

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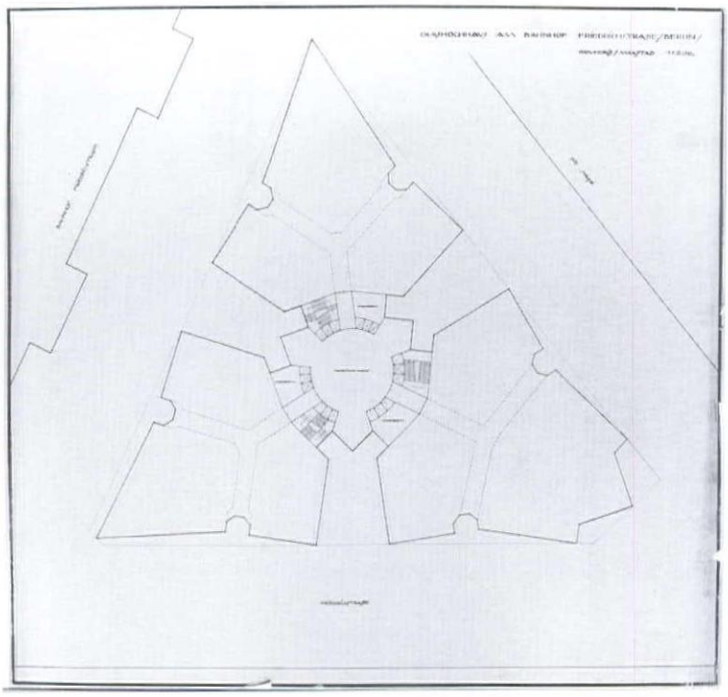
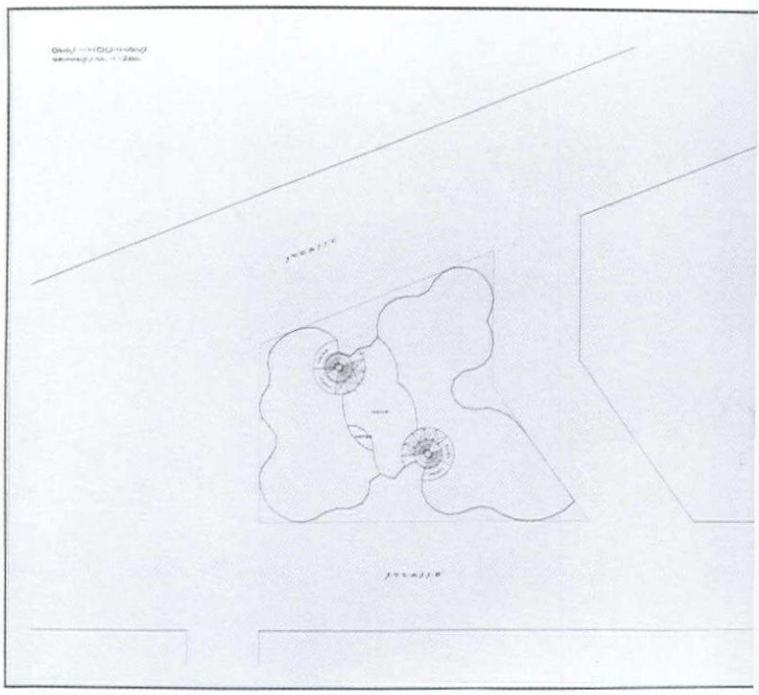
(Note: The two plans are printed here at the same scale.)

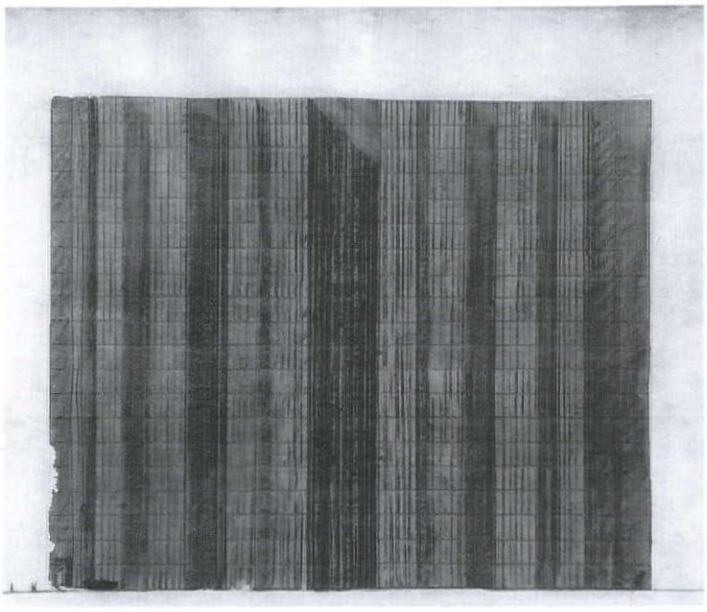


8 Friedrichstrasse competition entry, Mies van der Rohe, floor plan .

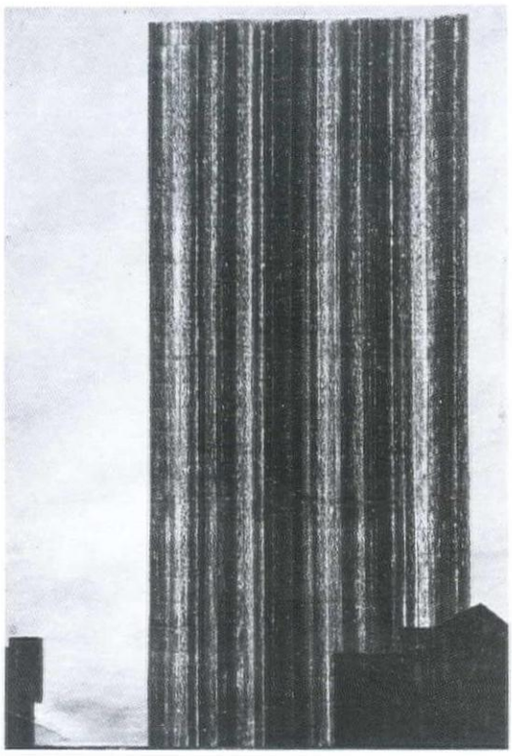


9 Curvilinear glass skyscraper, Mies van der Rohe, floor plan

10 Friedrichstrasse competition entry, Mies van der Rohe, elevation.



11 Curvilinear glass skyscraper, Mies van der Rohe, elevation



This "misunderstood monumentality" was rejected by the architects of the modern movement. Adolf Behne, the prominent critic, articulated this opinion: "It is really not a building that represents anything special in particular. To make it into a symbol with seriousness, rigor and dignity has to be rejected. It is a building for offices and businesses, an accumulation of shops, cafes, restaurants, a movie theater and an arcade, elevators, staircases and storage rooms—therefore there is no reason for any pathos." [10] The complete absence of elements of conventional monumentality in Mies's two skyscraper projects reflected this attitude. But his designs went even further: by covering the entire structure with glass and by taking both reflection and transparency into account, Mies aimed to overcome and negate the building as such.

In order to understand the curvilinear skyscraper, we must analyze the features that this design inherited from its predecessor as well as their obvious differences. Mies's famous contribution to the Friedrichstrasse competition has generally been considered "expressionistic," [11] a demonstration of the "materialized demateriality or a dematerialized materiality" [12] of glass, and "as a manifesto [rather] than as a practical piece of architecture." [13] There is, however, evidence that Mies's design was generated by more than formal concerns.

The competition for the Friedrichstrasse office building was announced at a time when work for architects was scarce due to the general economic hardship in postwar Germany.[14] One should therefore consider the possibility that while Mies did want to publish an architectural statement (for which there might have been better opportunities), he was also seriously trying to win one of the prizes of up to 33,000 Reichsmark, and therefore attempted to comply with the conditions of the competition. Required of all entries was a calculated list of the usable floor space of the proposed building. It was obvious that it was in this aspect of the program that the Berlin businessmen of the Turmhaus AG who sat on the jury would be most interested. In general, the competitors found two major ways to place their building on the triangular site in front of the Friedrichstrasse railroad station: either in a monumental triangular or round form with an internal courtyard, or as a star shape with three arms stretching toward the three corners of the site.

Clearly attempting to surpass every other participant in the amount of office space that he offered, Mies chose the latter solution, but the three arms of his star were so large that they nearly filled the site (8). He introduced only three small external light wells, providing daylight for the emergency staircases and the sanitary rooms, as required by the Prussian building code.[15] Mies himself wrote about this process in 1924: "The building site was triangular; I have tried to make full use of it. The depth of the site compelled me to split the fronts, so that the inner core received light." [16] As a result, the rooms were up to 15 meters deep, two times the depth of 7.5 meters, which was normally considered the maximum possible distance from a window for office work in daylight.[17]

Mies tried to compensate for this by introducing rather tall floor-to-ceiling dimensions (4 meters) and by opening up the entire façade and sheathing it with glass. He then stacked twenty of these floors on top of one another, thereby reaching the maximum height of 80 meters, a limit that had been set for this site by the building department as a response to the poor load-bearing capacity of the site's soil. The result was a floor area of roughly 70,000 square meters, almost twice the amount offered by any of the winning entries (W.G. Koch, third prize, 37,000 square meters).[18]

10 Cf. Adolf Behne, "Der Wettbewerb der Turmhaus-Gesellschaft," *Wasmuths Monatshefte für Baukunst* 7 (1922–23): 59.

11 Cf. Julius Posener, "Vorlesungen zur Geschichte der neuen Architektur II," *Arch+* 53 (September 1980): 75.

12 Cf. John Zukowsky, *Mies Reconsidered*, exhibition catalogue (Chicago, 1986), 37.

13 Cf. Schulze, *A Critical Biography*, 103.

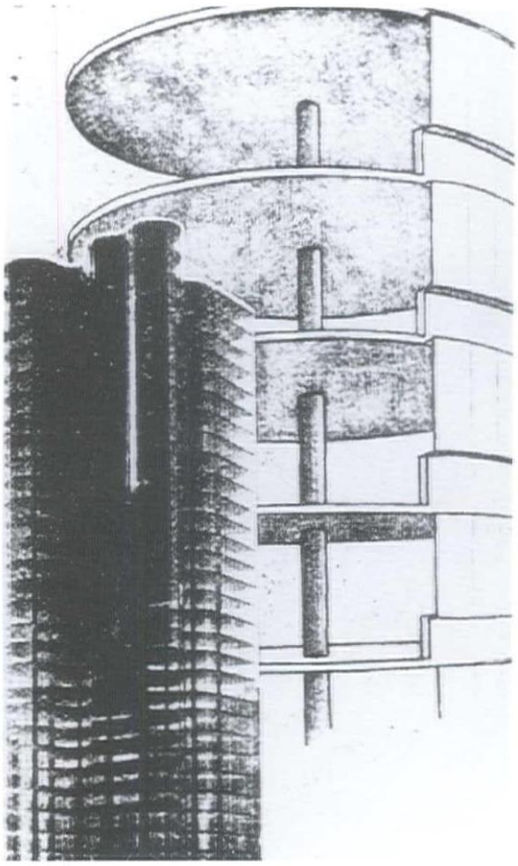
14 For information about the Friedrichstrasse competition, cf. Florian Zimmermann, *Der Schrei nach dem Turmhaus* (Berlin, 1988), and D. Neumann, *Deutsche Hochhäuser*, 61–112.

15 See Walter Koeppen, *Bauordnung für die Stadt Berlin vom 3. November 1925*, 2nd rev. ed. (Berlin, 1927), 29, 35.

16 From a lecture manuscript of the year 1924; cf. Fritz Neumeyer, *Mies van der Rohe, Das kunstlose Wort* (Berlin, 1986), 308.

17 Cf. H. Seeger, *Bürohäuser der privaten Wirtschaft* (Leipzig, 1933), 14.

18 This attempt to relate Mies van der Rohe's design more to the realities of the competition's conditions and the building regulations does not deny other possible intentions behind the project. The triangular site with its sharp edges offered, of course, a welcome opportunity for expressive forms and for a general demonstration of the purity and clarity of a future architecture in comparison with the "senseless and trivial chaos of forms" of the historicism around it. But these ideas were not necessarily the only force behind the design. If it had been Mies's main intention to produce an expressionist crystalline image, he could have done that much more successfully with an accentuated star-shaped plan and some sort of set-back design, instead of the unmodified, heavily proportioned mass that the building represented from most vantage points. Cf. Drexler, *Catalogue of Drawings, Part I*, 50.



12 Analysis of Mies van der Rohe's curvilinear glass skyscraper, Mart Stam, published in ABC Beiträge zum Bauen, *1925.*

The idea of sheathing the entire façade in glass, inherited by the curvilinear skyscraper, had thus originally been created as a response to the special conditions of the Friedrichstrasse competition. Mies, however, obviously realized that even a 4 meter high window could not sufficiently light a room 15 meters deep, and therefore drastically reduced the size of the floor space and the depth of the rooms in his new design (9). Accordingly, he was able to reduce the number of elevators from eighteen to nine and the number of emergency staircases from three to two. The height of the rooms remained 4 meters.[19] In both designs the staircases have twenty-six steps, with each riser a comfortable 15 centimeters in height. Without the limitations set by competition requirements, he was able to increase the building to thirty stories, which, coupled with the reduced floor plan, resulted in a much more soaring appearance.

The curving outline of this design is, at first, difficult to categorize. It seems to move arbitrarily within the borders of a trapezoidal plot of land. At one point it follows the straight edge of the borderline, but soon falls back into its smoothly swinging rhythm. Mies wrote about this design and the development from its predecessor in 1922:

> I placed the glass walls at slight angles to each other to avoid the monotony of over-large glass surfaces. I discovered by working with actual glass models that the important thing is the play of reflections and not the effect of light and shadow as in ordinary buildings... At first glance the curved outline of the plan seems arbitrary. These curves, however, were determined by three factors: sufficient illumination of the interior, the massing of the building viewed from the street, and lastly the play of reflections.[20]

Critics have never been satisfied with Mies's straightforward explanation. They have suggested possible influences from Hermann Finsterlin, Hans Arp,[21] and Hugo Haering, who at that time shared an office with Mies and had designed his Friedrichstrasse skyscraper with rounded corners.[22] The design has been compared to "a pool of spilled milk"[23] and has even been related to classical architecture.[24] Was it perhaps, as the drawings seem to suggest, a literal illustration of the concept of the curtain wall?

19 All of the surviving drawings in the Museum of Modern Art in New York were drawn to scale, the elevation in 1:100, the floor plans in 1:200. The plans are published here to the the same scale, to allow for a comparison of the buildings' relative sizes.

20 Quoted from Kenneth Frampton, "Modernism and Tradition in the Work of Mies van der Rohe, 1920-1968," in *Mies Reconsidered,* 37.

21 See, for example, Schulze, *A Critical Biography,* 107. But Mies later rejected this assumption.

22 Schulze, *A Critical Biography,* 103.

23 Schulze, *A Critical Biography,* 101.

24 Cf. Fritz Neumeyer's hint at the "dental friezelike upper edge of the building" in the model of the glass skyscraper in *Das Kunstlose Wort,* 199, footnote 29. (I believe that this is in fact the connection of the slender glass plates with the upper slab, entirely related to problems of model-making, and without any symbolic meaning. Notably, no such "dental frieze" appears in Mies's drawing.)

When American critics were confronted with the design in 1923, they reacted with utter amazement: "The plan... is so fantastic and impractical and so impossible to divide into any kind of usable or desirable offices or apartments that it is not likely that it would ever be executed," [25] wrote one critic, while another one characterized the design as: "a picture of a nude building falling down stairs,"[26] referring to Marcel Duchamp's famous painting.

Both Mies's text and the rather individual forms of the adjacent buildings in the model photograph (3) support the argument that Mies must have had a specific site in mind when he designed the building. The reference to the "sufficient illumination of the interior, the massing of the building viewed from the street, and lastly the play of reflections" makes sense only if there was a clearly defined site with a calculable direction of sunlight.[27]

Neither the published floor plan nor Mies's text gives a hint as to the intended method of construction. Thus far this question has been discussed only rarely,[28] and the building has been generally considered to be of steel-frame construction.[29] From the letter to Walter Gropius regarding the three projects (see note 4), however, one can assume that some sort of cantilevered reinforced concrete structure was intended, since such a construction is clearly visible in the drawings of the concrete office building and was also explicitly mentioned in Mies's text about the concrete country house.

Mies's friends and colleagues seem to have known more about the intended structure. Mart Stam, who knew Mies well, analyzed the design in 1925 in his magazine *ABC*, in an issue devoted entirely to concrete as a building material. There, he clearly described the central construction principle: "A circular plate, supported in its center, offers a maximum of floor area combined with a minimum of surface. Both—the stanchion as the vertical, the floor slab as the horizontal, produce an element that through addition creates a system." [30] In an explanatory illustration he showed the glass skyscraper together with a diagrammatic mushroom slab (12). Bruno Taut, in whose magazine the design had first been published, in 1927 declared Mies "the first one to use the mushroom construction architecturally."[31] The only building he could have referred to is, in fact, the curvilinear skyscraper.

In the years preceding Mies's design, architects' and engineers' magazines in Germany had enthusiastically praised the potential of this new method of reinforced concrete construction, the "mushroom column."[32] This technique employed a concrete column connected through reinforcement rods to the floor slab it carried in such a way that the shearing forces were absorbed by the capital like head of the column rather than by a downstand beam. The advantage of this new method was, according to the widely read *Deutsche Bauzeitung*, "that the abolition of the normally necessary groined slab makes a better dissemination of air and light possible." [33] Though the calculation, placement, and connection of the reinforcing rods was more complicated, the formwork became much simpler and could be assembled with a small number of prefabricated parts. All of this must have fascinated Mies.

The most efficient form of a floor slab to be carried by a central stanchion is a circle. The photographs of the skyscraper model show that the stanchions carrying the amorphous floor slabs were in fact placed mainly in the center of circles, the arcs of which constituted the undulating borderline. The necessary capitals of the columns, however, have been left out. The idea of a cluster of mushroom slabs of different sizes might well represent the structural underpinnings for Mies's work with the "play of reflections" during the design process. It would thus give at least some support to Mies's claim of the "structural concept as the essential foundation of the artist's design," an explanation of the architect's work that critics have always rejected, especially regarding this project.[34]

25 Cf. George C. Nimmons, "Skyscrapers in America," *Journal of the American Institute of Architects* (1923), 370–72.

26 Cf. William Stanley Parker, "Skyscrapers Anywhere," *ibid.*, 372.

27 This opinion seems to be confirmed by contemporary statements of Werner Graeff and Carl Gotfried; see W. Tegethoff, in Schulze, ed. *Critical Essays*, 42–43. A photomontage of unidentified origin in the drawings collection of the Technische Universität Berlin shows the model at the site of the Friedrichstrasse competition. This site, however, seemed to be unsuited for a building of thirty stories, since the buildings department allowed only about twenty storys there. Mies knew this fact from the conditions of the Friedrichstrasse competition. Mies published the design for the curvilinear skyscraper once, however, in a version with twenty-one storys. Drexler, *Catalogue of Drawings, Part I*, 62.

28 For a more recent hint, see K. H. Hüter, *Architektur in Berlin 1900–1933*, (Dresden,1988), 300.

29 See, for example, Walter C. Behrendt, "Skyscrapers in Germany," *Journal of the American Institute of Architects*, (1923), 368; most recently by W. Tegethoff, "From Obscurity to Maturity," 43, footnote 25.

30 Cf. *ABC-Beiträge zum Bauen* 3/4. (1925), 4.

31 Cf. Bruno Taut, *Die neue Baukunst in Europa und Amerika* (1927; 2nd ed. Stuttgart, 1979), 111.

32 The Swiss engineer Robert Maillart claimed responsibility for the development of this system as late as 1926, citing his experiments of 1908 and 1910. Until then only the American experiments were known. R. Maillart, "Zur Entwicklung der unterzugslosen Decke in der Schweiz und in Amerika," *Schweizerische Bauzeitung, 87.* (1926): 263–65, 19–21.

33 Cf. H. Marcus, "Die Tragfähigkeit und die Wirtschaftlichkeit trägerloser Pilzdecken," *Deutsche Bauzeitung 53.* (1919): 149–52, 155–59.

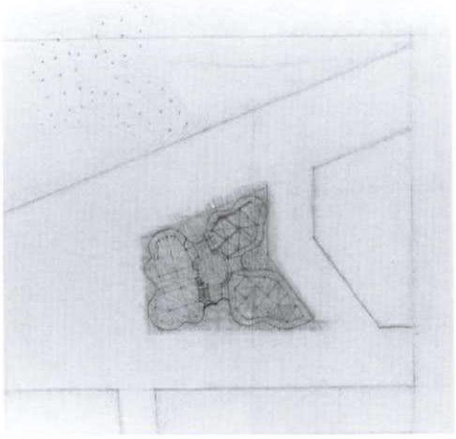
34 Cf. Tegethoff, in Schulze *Critical Essays*, 43.

35 Cf. J. Vischer L. Hilberseimer, *Beton als Gestalter,* (Stuttgart, 1928), 49–50.

36 Cf. O. Freud, "Die trägerlose Pilzdecke, eine neuartige Eisenbetondecke für Industriebauten," *Industriebau 17* (1926): 166– 270.

37 Cf. Reyner Banham, *Theory and Design in the First Machine Age,* (London, 1978), 295.

38 Schulze, *Mies van der Rohe, Biography,* 101.



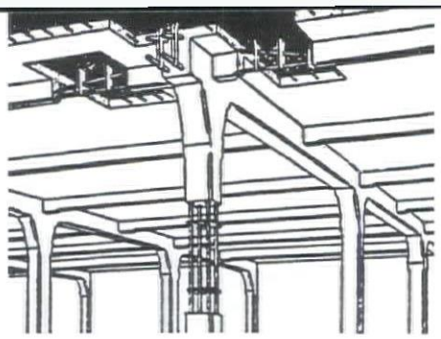
13 Curvilinear glass skyscraper, Mies van der Rohe, 1922, plan study.

Within a few years, the mushroom slab was accepted by the modern architects as "the most proper area of the reinforced concrete construction…The rooms that are covered with mushroom slabs are, if good proportions are applied, of such great beauty that eventually all embellishing additions can be shunned,"[35] wrote Ludwig Hilberseimer in 1928 comparing examples from America, Switzerland, and Germany to demonstrate the heaviness of the German solutions that had resulted from the country's strict building laws. (In September 1925 mushroom-column constructions had, with newly developed calculation methods, for the first time been included in the German building code.[36]) Hilberseimer's enthusiasm was largely caused by the building of the Van Nelle Tobacco Factory in Rotterdam (1926–30), in which, for the first time, the product of this construction method had been made visible from the outside through a glass screen. Mart Stam, who then worked with Brinkman and van der Vlugt, contributed extensively to its design.[37]

A second sketch by Mies for the floor plan of the curvilinear skyscraper shows an attempt at another structural solution (13), one that would have been possible in both steel and reinforced concrete, although the economic constraints of the time would only have allowed the latter. The structural grid consists of fifty-two columns, interconnected by downstand beams. The outermost line of columns stands well inside the outer surface of glass through the apparent use of a cantilevered floor slab.

This plan also shows an interesting internal division which stems from the layout of the earlier competition entry: a circular foyer serves four groups of elevators, two emergency staircases, and the entrances into the office areas. Such a scheme makes far better sense than the published floor plan, in which several features were unconvincing: the rather arbitrary form of the lobby, the accessibility of the lavatories and elevators from the office spaces, and the circular emergency stairs, which were prohibited by the building codes. The improvements in the sketched floor plan suggest that it was developed after the first plan had already been published. The fifty-two columns, however, clearly would have spoiled the envisioned transparency of the building. In any case, it is not just an unsuccessful attempt to match a structural grid with an amorphous floor plan,[38] as Franz Schulze has suggested in his biography of Mies.

Mies's early interest in the architectural potential of the mushroom column is akin to that of Le Corbusier, who, in the same year, 1922, developed his design for an artist's studio house, a building with an overall cubic appearance in which the ceiling was carried by one central stanchion. If the curvilinear skyscraper can be considered a reinforced concrete cantilever structure with mushroom columns, it then becomes part and, in fact, the starting point of a strand of tradition that leads to Frank Lloyd Wright's designs for several tall structures based on this system. Commencing in 1929 with the tower for St. Marks in the Bowery and culminating in 1943 with the tower for Johnson Wax, Wright provided more successful and convincing solutions for the technical problems encountered in Mies's earlier attempts.



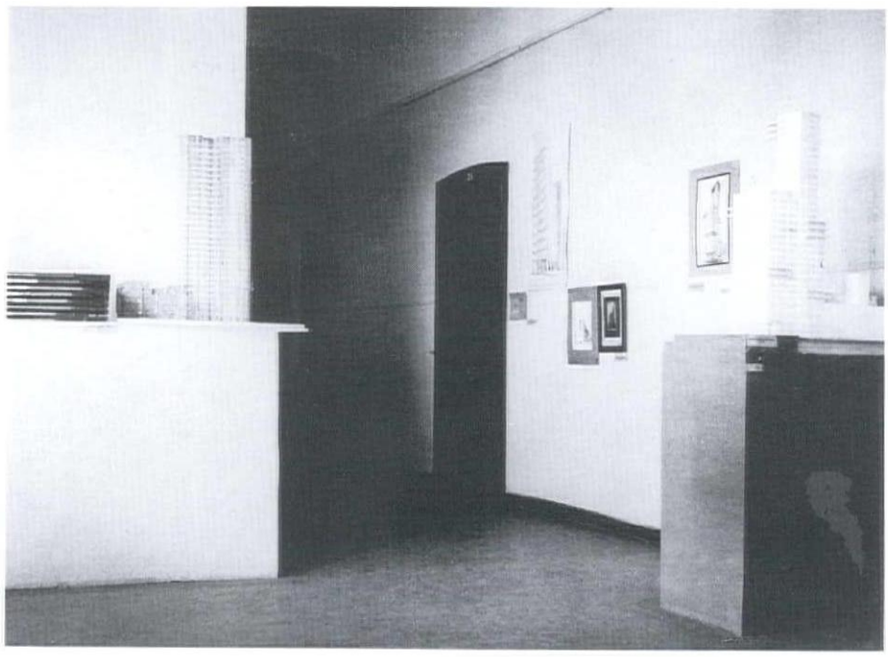
14 Schematic view of a reinforced concrete structure, François Hennebique, c. 1902.

The Concrete Office Building

Mies produced his project for an office building for the Grosse Berliner Kunstausstellung (Great Berlin Art Exhibition) in May 1923. Only his large perspective drawing (16) and one model photograph (15) have survived.

Again, the building cannot be fully understood without direct reference to the contemporary architectural debate in Germany, which was dominated by an enthusiasm for skyscrapers. As a clear counterproposal to innumerable conservative verticalist skyscraper designs, [39] Mies's design emphasized not only the horizontality of the façade through its succession of continuous ribbon windows and concrete parapets, but also suggested the potential for an endless horizontal continuation of the building.[40]

It appears that Mies wanted to gain as much floor area as possible without creating a skyscraper. Skyscrapers had just been defined in the Prussian building code as buildings having more than six stories.[41] Classification as a skyscraper would have meant that special permission would have to be obtained from the ministry of public welfare and many other official commissions, a procedure that would have been tedious and time-consuming.[42] Additional conditions concerning fire escapes, for example, had to be fulfilled. So there was a good reason to challenge the limits of how much office space could be gained without erecting a high-rise structure. Mies's proposed building has, in fact, eight stories, but one is sunken into the ground and the top floor is so low that it resembles an attic, since its small ribbon window would not have been sufficient to light the room. In the interior a groined slab with haunched beams is visible, a system that bears a striking resemblance to François Hennebique's well-known construction drawing for reinforced concrete of circa 1902 (14).



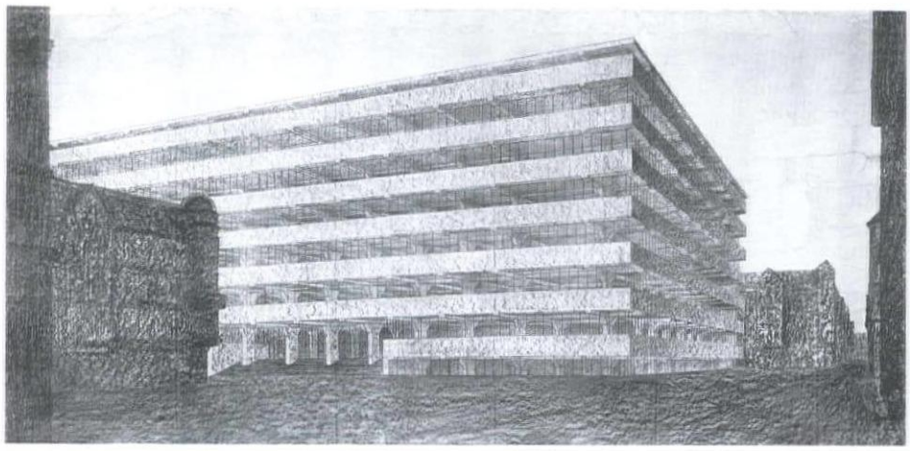
15 Installation view of the Internationale Architekturausstellung, Bauhaus Weimar, 1923. Models of Mies's concrete office building and the glass skyscraper, left; Walter Gropius's Chicago Tribune competition entry, right.

39 Le Corbusier was probably thinking not only of Messel's Wertheim department store but also of the typical contemporary German skyscraper designs when he wrote in *L'Esprit Nouveau 9* in 1921: "One simple fact condemns the lot; in a building one lives floor by floor horizontally, not vertically. The German palaces are just lift cages.... The Louvre and Bon Marché shops are in horizontals and they are right and the German architects are wrong. Quoted from Banham, *Theory and Design in the First Machine Age*, 255.

40 In the drawing the left end of the building is screened off by an adjacent building in the foreground. In the photograph showing the model in the 1923 Bauhaus exhibition, where it was placed as a counterpart to the curvilinear glass skyscraper (see note 4), the building is shown as extremely long, and the left end is again cut off and invisible.

41 Cf. "Vielgeschossige Häuser," in *Zentralblatt der Bauverwaltung 41* (1921): 48.

42 The still unusual high-rise building required a much greater number of consultations with and applications to different branches of the municipal government, since no sections regarding high-rise buildings had been introduced into the building code and each case had to be treated individually. (Neumann, *Deutsche Hochhäuser...*, 199.)



16 Concrete office building, Mies van der Rohe, 1922–23, perspective drawing.

The 1923 publication of this project in *G*, the magazine that was edited by Hans Richter, El Lissitzky, and Theo van Doesburg, was accompanied by Mies van der Rohe's famous text:

> We flatly reject all aesthetic speculation, all doctrine, and any kind of formalism. Architecture is the will of the time in its spatial manifestation—animated, changing, new.
>
> Not the past nor the future, only the present can be shaped. Only if this has been accepted, will there be creative building.
>
> Create the form out of the nature of the problem, with the means of our time: This is our task.
>
> The office building is a house of work, of organization, of clarity, of economy. Bright, wide workrooms, easy to oversee, undivided except as the organism of the undertaking is divided. The maximum effect with the minimum expenditure of means.
>
> The materials are concrete iron glass.
>
> Buildings of reinforced concrete are by their very nature skeletal structures; to be treated neither as "gingerbread" [*Teigwaren*] nor as armored turrets; load-bearing girder construction allows nonsupporting walls; skin-and-bone construction is the consequence.
>
> The most practical division of the working spaces provided the depth of the room, which is 16 meters. A two-stanchion frame of 8m width with a cantilever on both sides of 4m is the result of calculating the most economical structural system. The distance between the downstand beams is 5m. This system carries the floor slab, which at the end is bent upwards and becomes the outer skin and the wall behind the shelves, which were removed from the interior of the room and placed at the outer walls for the sake of openness. Above the 2 meter-high shelves there is an uninterrupted ribbon window up to the ceiling.[43]

In this dry explanation, as in his short text accompanying his design for the glass skyscraper, Mies does not explicitly mention the subtleties within the building. But the large perspective in combination with the numbers given by Mies contain all the clues one needs to understand the building in its entity. Thus far, however, these clues have been widely overlooked.

The ends of the cantilevered downstand beams are clearly visible in the façade. The distance between them is 5 meters. The second to the last bay is much wider than the others, the final field at the corner is shorter. This important fact is rarely noticed. Kenneth Frampton has called it "a subtle classical coda within an otherwise uninflected grid of supports."[44]

43 Tegethoff, "From Obscurity to Maturity," 48.

44 Cf. Kenneth Frampton, ed. *The Unknown Mies van der Rohe,* (Chicago: Art Institute of Chicago, 1986), 37.

In reality the reason for this is quite different. It is the precisely planned (and indeed the only possible) solution for the problem encountered at the building's corner. Mies had to turn the gridded system by 90 degrees in order to continue it along the shorter side of the building. As a result, the 8 meter distance between the two internal columns is expressed in the façade and, so the width of the last bays differs at the end (5, 8, and 4 meters).[45]

This turn of the grid becomes clearly readable not only through the different distances between support and beams, but also through the form of the haunched beams: the four stanchions in the corner, where the main beams of the two directions meet, are clearly cruciform, as is readily visible in Mies's precise drawing.

By counting the bays at the shorter façade of the building, the length of that side we can calculate to be 49 meters (5 x 5 meters + 2 x 8 meters + 2 x 4 meters). Since we know that the depth of the rooms is 16 meters (the distance between the columns plus the cantilevers on both sides: 8 + 2 x 4), we can also deduce that Mies had planned an interior courtyard that was 17 meters wide. We can thus reconstruct the entire floor plan for the visible part of the building (23).[46]

Another subtlety in this design is the consistent increase with each story in the length of the cantilevered floor slabs. It is almost invisible in the drawing, but recognizable from the growing width of the windowpanes closest to the corner. The few critics who have noticed it have either attributed it to some "secret classicism"[47] or called it an "expressionist gesture."[48]

There are two less formal and more rational explanations for this feature of Mies's design. The load for the vertical stanchions in a building decreases with each story. If these columns' diameter remains unchanged (which allows for an economical reuse of the formwork), they are increasingly oversized, which makes it possible to take on additional load in the higher stories. This could be easily achieved by simply enlarging the cantilevered floor at both sides, thereby providing a perfect exterior expression of the statical conditions within. The greater depth of the rooms in the upper stories could be justified with the additional sunlight that they would receive due to the lack of shadow from adjacent buildings.

An easier and equally probable rationale for the growing length of the cantilevers was given by Frank Lloyd Wright for the same feature in his project for the St. Marks tower in 1938: "The building increases substantially in area from floor to floor as the structure rises in order that the glass frontage of each story may drip clear of the one below, the building thus cleaning itself, and, also because areas become more valuable the higher (within limits) the structure goes."[49]

Using both the given numbers and the drawing we are able to deduce the average size of the windowpanes, which is 83.3 centimeters and 80 centimeters respectively,[50] as well as the average additional length of the cantilever, which is approximately 20 centimeters in each story. This of course calls into question the accuracy of some of the numbers that Mies gave in his accompanying text; they can only be correct for one story. The drawing suggests that the third story comes closest to Mies's description. Accordingly, the depth of the building varies from 15.2 meters on ground level to 18 meters at the roof slab. The size of the floor slab that each column has to carry, which is 40 square meters according to Mies's description, varies, in fact, from 38 square meters to 44 square meters.

The design of the top story of the building is rather enigmatic. The ribbon window above the 2 meters high windowsill is only about one-third as high as the ribbon windows below it. Normally, one would plan for natural light from an average office building window to reach 7 or 7.5 meters into the depth of a room. In the case of the narrow

45 Thanks to Dr. Ing. Bernhard Behringer, Munich.

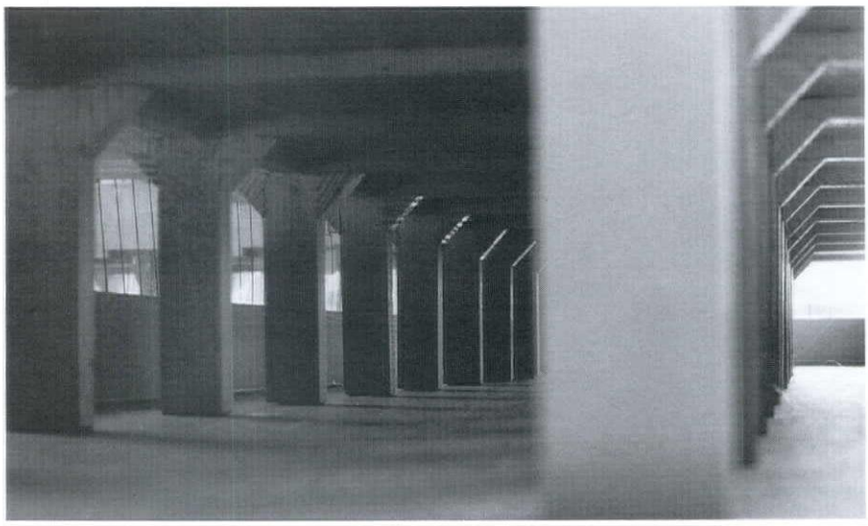
46 Ludwig Glaeser had already developed a very similar floor plan in 1969, which I discovered only after developing my own conclusions, and it thus served to confirm my results. He deserves credit for being the first to deduce a floor plan from the visible structure and thus discovering the necessary existence of a courtyard in the design. Cf. Ludwig Glaeser, *Mies van der Rohe. Drawings in the Collection of the Museum of Modern Art* (New York, 1969).

47 Fritz Neumeyer calls the steadily growing length of the cantilever a "slight curvature" and a "subversive classical gesture," *Das Kunstlose Wort*, 198, 199.

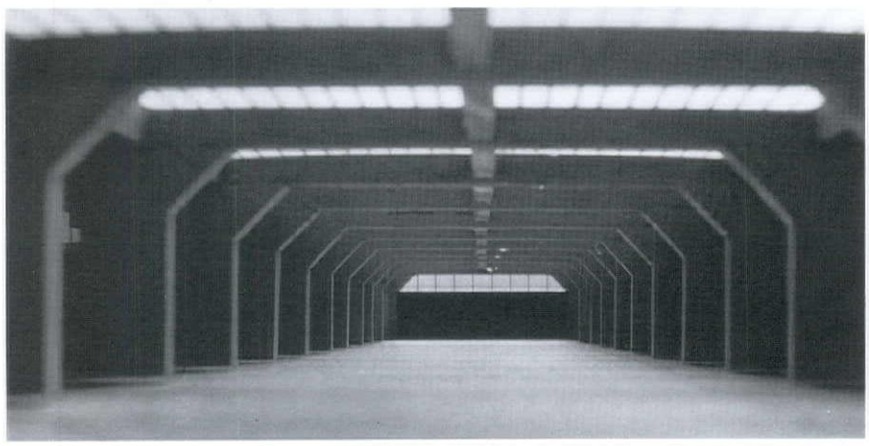
48 Banham, *Theory and Design in the First Machine Age*, 291.

49 *The Architectural Forum*, (January 1938): 54. (I would like to thank Peter Barkan, to whom I owe credit for suggesting this quote.) The seductive parallels to the work of Frank Lloyd Wright go further. The 2-meter-high shelves, the open office spaces in the interior, and the courtyard all seem to make reference to Wright's well-known Larkin Building. Wright, on the other hand, produced in several instances buildings that seemed to comment upon Mies's attempts to solve certain structural problems. The office building in glass and copper of 1924, for instance, deals with the problems of a glass curtain wall.

50 6 panes in the 5 m bay = 83.3 cm; 10 panes in the 8 m bay = 80 cm.

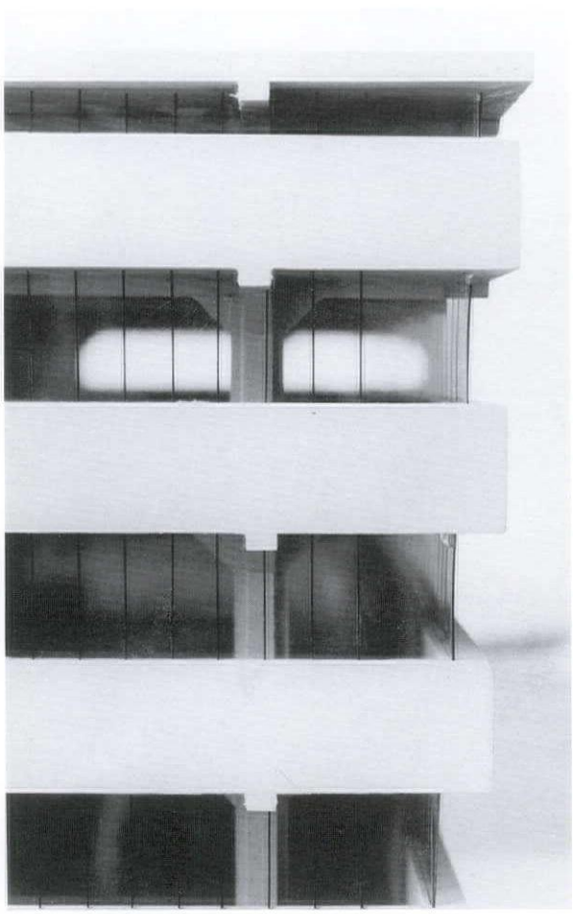


17 Concrete office building, Mies van der Rohe, 1922–23, model (reconstructed), interior.



18 Model, interior, top floor.

19 Model, exterior corner.



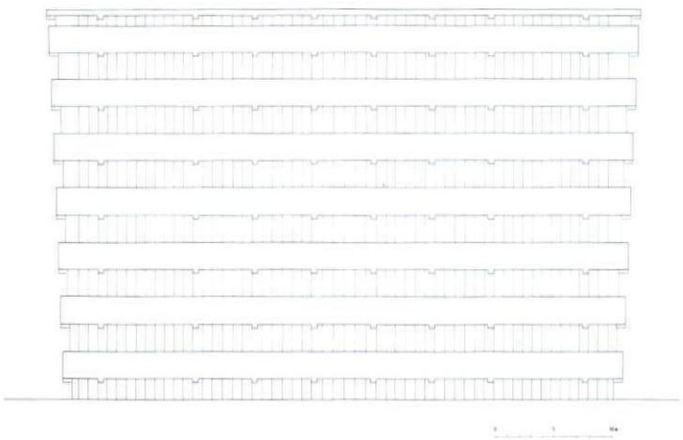
20 Model, courtyard.

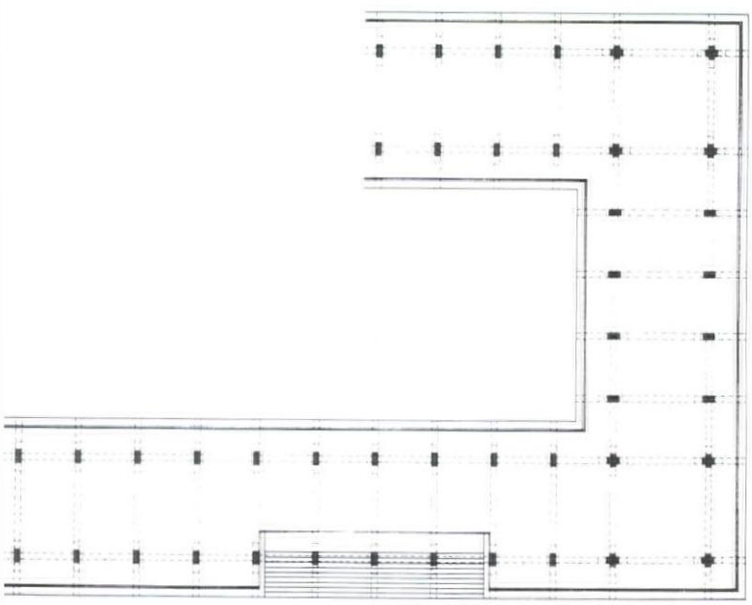
21 Concrete office building, drawings (reconstructed), entrance elevation.

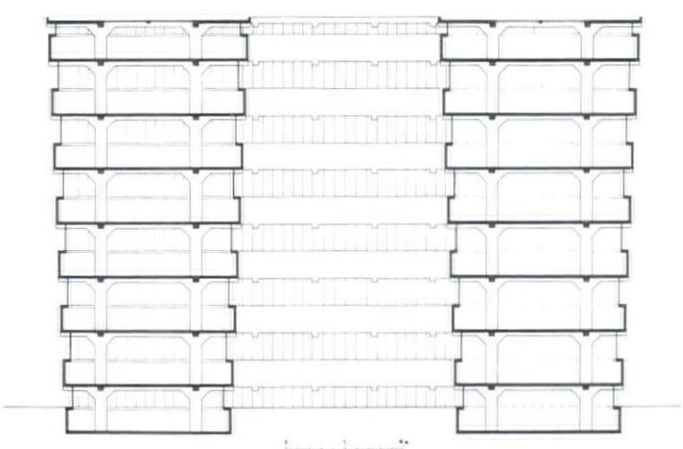
22 Side elevation.

23 Entrance floor plan.

24 Section.







windows of the uppermost story, Mies, who was obviously concerned about lighting the entire depth of the rooms, could only have expected to naturally illuminate the offices to a maximum depth of 2.5 meters. Apart from the obvious esthetic function of this rather narrow window slit as an upper termination to the façade, there are two different possible explanations for the particular form of the top story. Both, unfortunately for lack of evidence, must remain speculation. Either Mies had planned the top story as an attic for storage use only, or he wanted to indicate that the top story could be lighted by other means and therefore did not need a ribbon window as high as the other stories. For the intended illumination of this floor, there are two possible alternatives. The first is that the rooms at the top floor were shallower than those in the floors below and provided a roof garden or terrace on the side of the courtyard, similar to the solution at the Weissenhof Settlement Apartment Block in Stuttgart (1927).[51] This, however, seems to be a solution more suited to an apartment building, where it was common to use open roof spaces. The more likely possibility is that the rooms were illuminated from above, following a suggestion that Louis Sullivan had made in his well-known 1896 article "The Tall Office Building Artistically Reconsidered."[52] This could have been achieved easily with glass blocks set into a reinforced concrete grid, a system that had come into use at the turn of the century and had been frequently applied since.[53]

The result of this analysis is a series of dimensions that can provide sufficient information to generate not only elevation drawings and a section, but a model that offers for the first time views into the interior spaces Mies must have envisioned for his concrete office building (17, 18, 20).

51 This has been suggested by Wolf Tegethoff during conversations with this author in 1989.

52 Cf. Louis H. Sullivan, *Kindergarten Chats and Other Writings* (New York, Dover Publications, 1979), 205.

53 This type of construction was called *Glaseisenbeton* or ferrovitreous concrete, and was among many others distributed by the German-American Luxfer Prismen Syndicat. To use it in an office building would have seemed an obvious idea.

25 Concrete office building, model/photomontage (reconstructed).

The Concrete Country House

Mies exhibited this project for a country house for the first time at the Great Berlin Art Exhibition in May 1923, and had probably designed it shortly before.[54]

Two model photographs (27, 28) and two similar charcoal perspective drawings (26) are the only surviving sources of visual information. They show a one- to two-story building with wings extending in four directions and surrounding, on three sides, a raised courtyard. The most striking features of the house are the long ribbon windows that are cut into its façades, not only beneath the cantilevered, projecting roof above the entrance and living areas, but also in the basement, where the thin horizontal window slits wrap the corner and thereby subvert the conventional necessity for structural support. Historians have attributed the influences for Mies's design to a number of different sources: to El Lissitzky's abstract "Proun" compositions,[55] to Wright's Willits house,[56] and to the form of a swastika;[57] the project has even been interpreted as an echo of the spatial principles described in Spengler's *Decline of the West*.[58] Wolf Tegethoff has attempted to read it as a demonstration of intricately connected interior spaces.[59] There exists, however, in the September 1923 issue of *G* magazine, in an article entitled "Bauen" ("Building"), a rather detailed description in which Mies outlined his priorities in the design of the house: "The chief advantage in the use of reinforced concrete as I see it is the opportunity to save a great amount of material. In order to realize this in a dwelling it is necessary to concentrate the bearing and supporting forces on only a few points in the structure. "After discussing the way in which to avoid the disadvantages of reinforced concrete construction, namely poor insulation and sound conduct, Mies went on: "The main living area is supported by a four-post truss system. This structural system is enclosed in a thin skin of reinforced concrete, comprising both walls and roof. The roof slopes downward slightly from the exterior walls toward the center. The trough formed by the inclination of the two halves of the roof provides the simplest possible drainage for it. All sheet-metal work is thereby eliminated. I have cut openings in the walls wherever I required them for outside vistas and illumination of space." This description provides important clues to the building's structure.

In well-reproduced photographs of the model the inward pitches of the roof are clearly visible. Over the entrance and the main living area is an inwardly sloping roof with two parallel troughs on both sides of the centerline, where the roof planes rise again to a ridge. The roofs of the two bedroom wings each have only one central trough. The roof

54 Cf. Tegethoff, *The Villas and Country Houses*, 20.

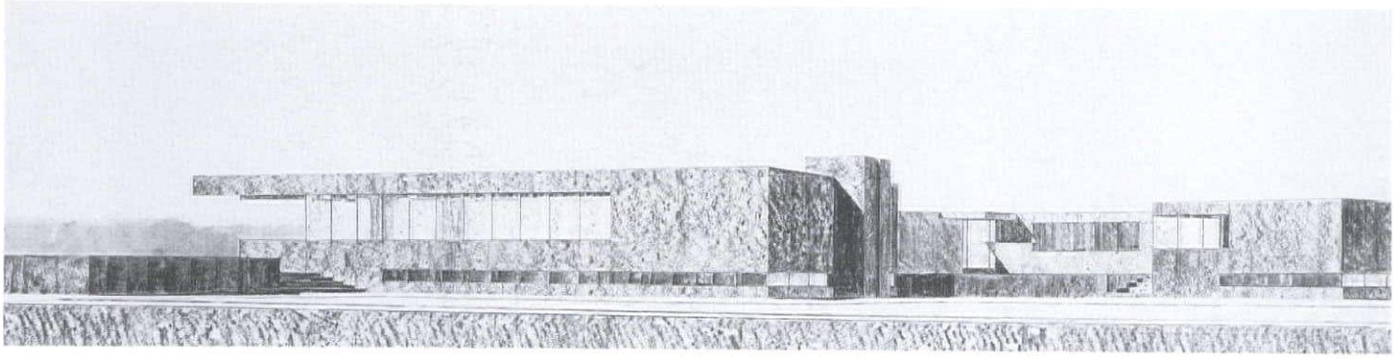
55 Schulze, *A Critical Biography*, 110.

56 Tegethoff, "From Obscurity to Maturity," 55.

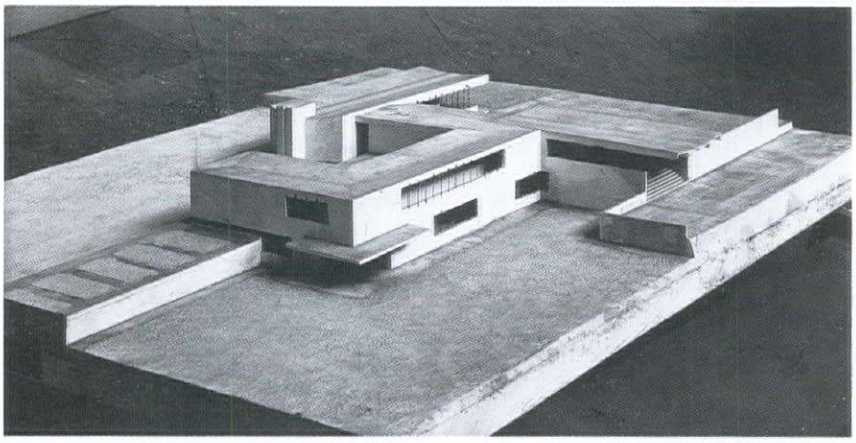
57 Philip Johnson, *Mies van der Rohe* (New York, 1947), 30.

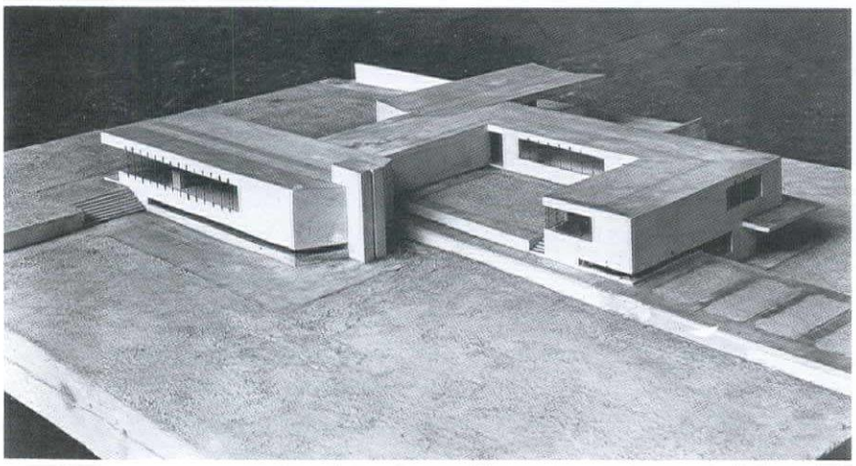
58 Schulze, *A Critical Biography*, 116.

59 Tegethoff, *The Villas and Country Houses*, 15-31.



26 Concrete country house (project), Mies van der Rohe, 1923, perspective.

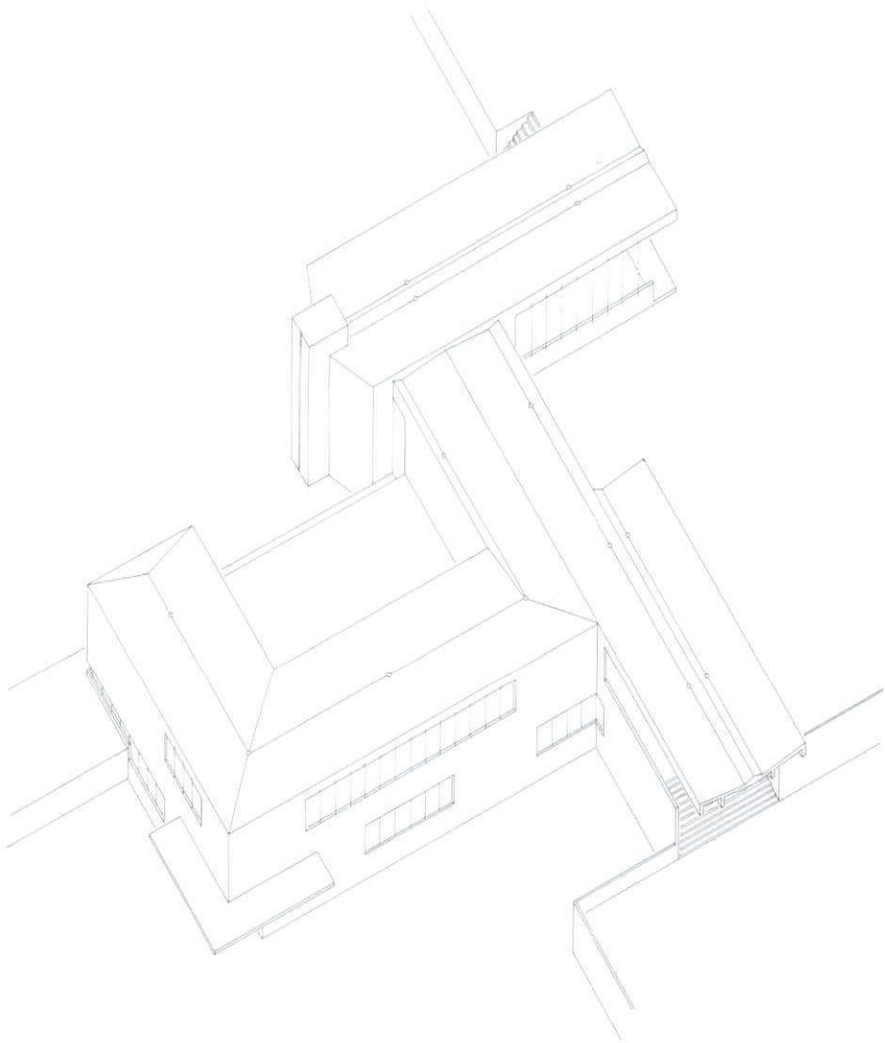




27, 28 Concrete country house, model photographs.

over the wing connecting the entrance area to the main living area has two troughs close to the outer walls and a ridge in the center. If one considers the necessity to configure the roof so that no area remained without drainage, it becomes clear that the arrangement of the pitches is one of the few possible solutions, and must have influenced the design itself (29). The most striking point is the continuation of the inwardly canted left half of the cantilevered roof above the entrance into the outwardly canted right half of the roof above the room connecting the entrance hall and main living area. Assuming the most likely solution, that the vertical drainage from these troughs was to be connected to the load-bearing posts, one can then determine their position with a high degree of probability (30).

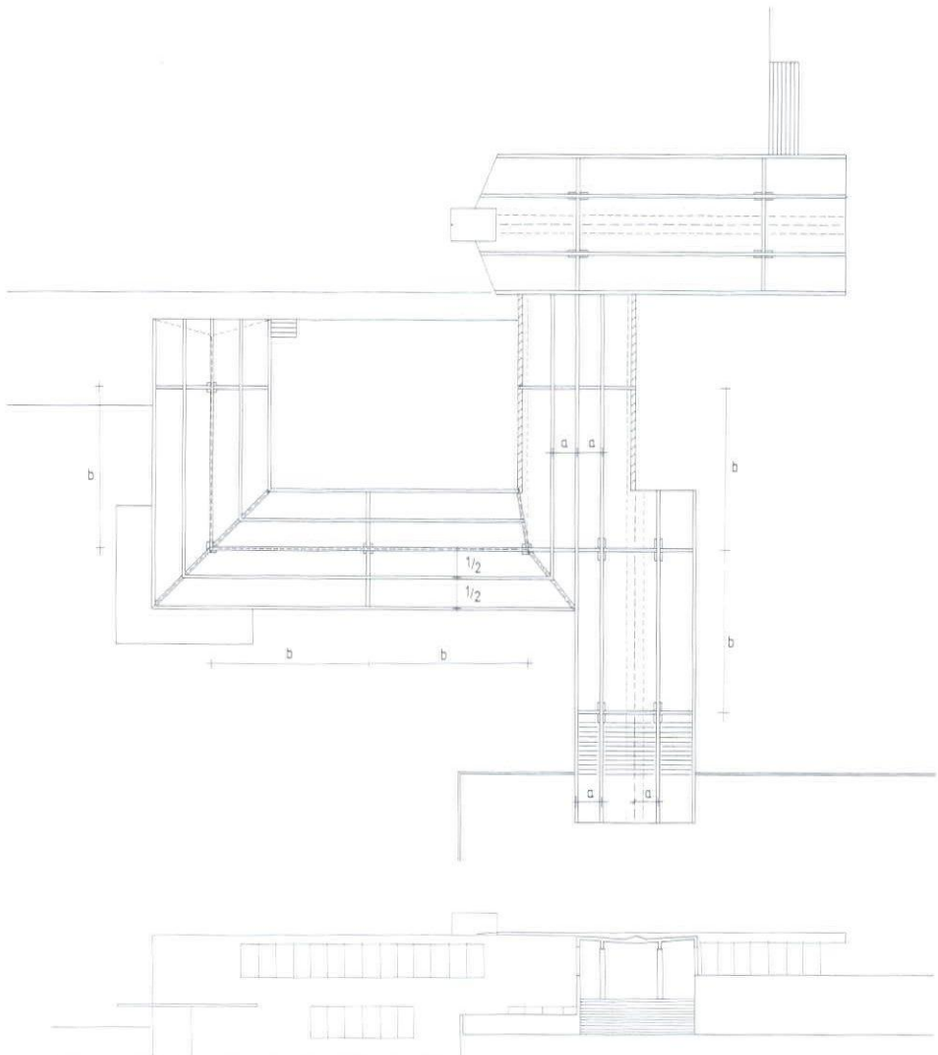
The pastel perspective drawings and the existing contemporary photographs give additional information regarding the positions of the columns in the entrance and main living room area. One can also clearly recognize the downstand beams that support the roof structure and the rectangular columns carrying it. As a result it appears that Mies demonstrated in this one building three different possibilities for a load-bearing reinforced concrete structure, all intimately connected to the solution of the drainage of the flat roof. In the similar structure of the entrance area and the main living room, one finds two pairs of columns, arranged longitudinally, and carrying transverse beams that give additional support to the roof slabs. The roof of each bedroom wing, with one central furrow, is supported by a single pair of columns. The transitional area between the entrance and the living room has a flat pitched roof, with its drainage furrows close to the outer walls, which suggests that there are no central columns in this room and that the two outer walls are load-bearing. This explains the fact that there are almost no windows in the visible western wall of this room and supposes a necessarily similar character in the eastern wall, which appears neither in photographs nor drawings. A ribbon window would not have been possible there.



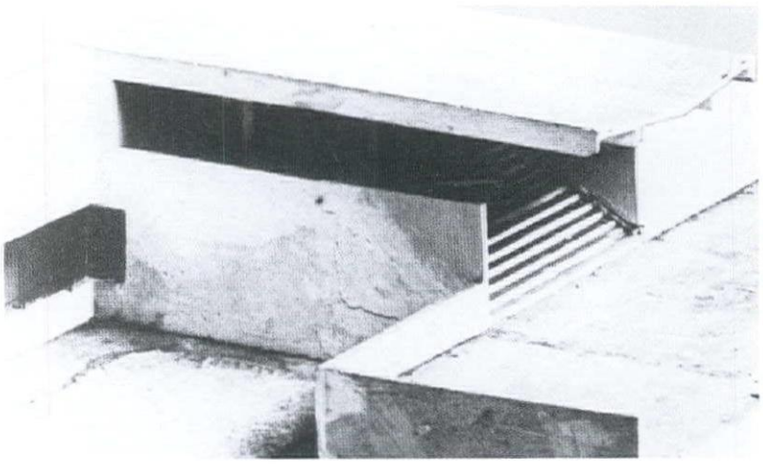
29 Concrete country house, drawings (reconstructed), axonometric drawing.

30 Structural plan.

31 Entrance elevation.



32 *Concrete country house, model, entrance detail.*

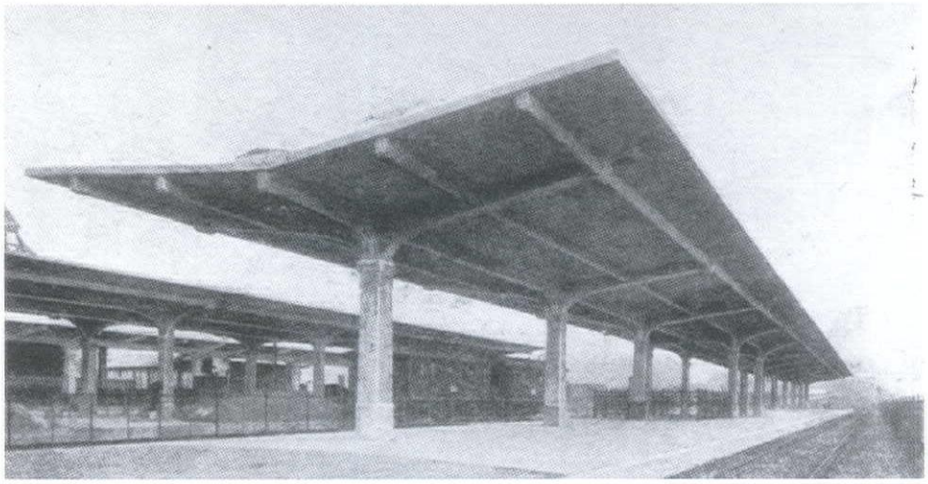


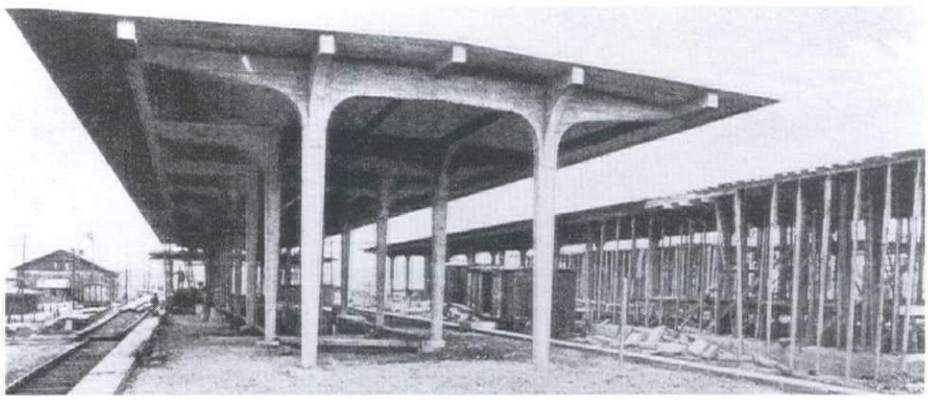
The degree to which Mies attempted to design as closely as possible to the structural demands of the building is clearly visible in the canopy over the entrance. The photographs of the model show that the visible ends of the supporting downstand beams are not placed symmetrically. (It is highly unlikely that this is due to bad modelmaking, since the piece is otherwise built with obvious care.) It seems possible that, to avoid complicated encounters between the different visible downstand beams, Mies might have developed a system of connecting beams that eventually resulted in the adoption of the distance "b" between the main columns and a distance "a" between the centerline of the projecting entrance canopy and the downstand beams to either side of it. The asymmetrical roof section above the entrance would thus display the interconnected nature of the whole structure (31).

In the year 1922 E. von Mecenseffy's book *Die künstlerische Gestaltung der Eisenbetonbauten (Artistic Design of Reinforced Concrete Buildings)* was reissued in Germany.[60] Mies must have been interested in this publication, as it became available at the moment at which he was experimenting with the potential of reinforced concrete. In the book, the author emphasized the beauty of the sturdier dimensions of concrete, comparing them favorably to the lighter proportions of the ironwork that was prevalent during the period. Included in the book were two illustrations of cantilevered roofs above the railroad platforms at Sonneberg and Langendreer of 1910 (33, 34, 35), which employed a system of central columns and longitudinal downstand beams that, in their section, are strikingly similar to the structure that appears in the model of Mies's concrete country house.[61] Mies used two off-center columns for the roofs above the entrance and the living room, probably to reduce the length of the cantilever, which in his building had to carry the additional weight of the concrete apron above the horizontal opening and ribbon window. Mies also appears to have solved the problem of drainage in those roofs in a manner similar to that of the platform roof with two parallel ridges along a central axis.

60 E. von Mecenseffy, *Die künstlerische Gestaltung der Eisenbetonbauten*, vol.10 of *Handbuch für Eisenbetonbau*, (1911; 2d ed., Berlin, 1922).

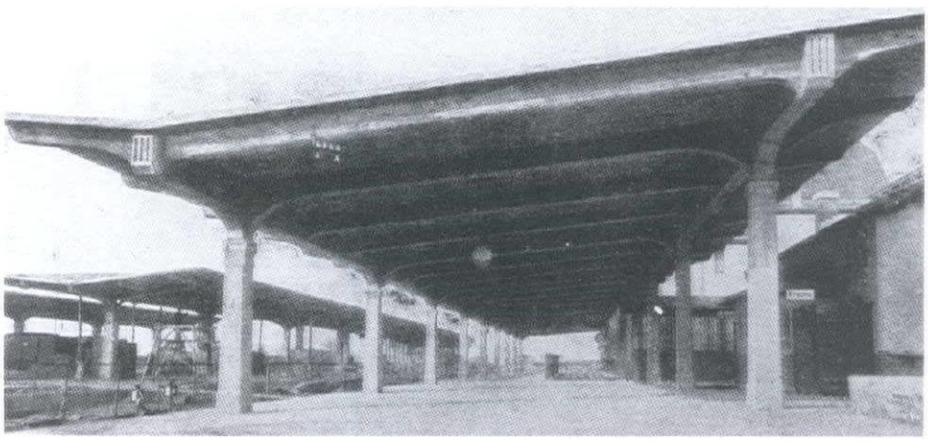
61 By introducing these roofs as possible models for Mies's design, we can also offer a possible explanation for the cryptic term *"Eisenbahnkragträgerkonstruktion"* ("railroad cantilever construction"), which Mies apparently used for the structural system, that Tegethoff discusses at length in his book. He attributes it either to a mistake in the reading of the word *Eisen*beton*kragträgerkonstruktion* meaning "reinforced concrete cantilever construction," which is, of course, possible, or to the interpretation of it as a beam in the form of a railroad track, or what modern usage would call an I-beam. (*The Villas and Country Houses*, 33, note 48).





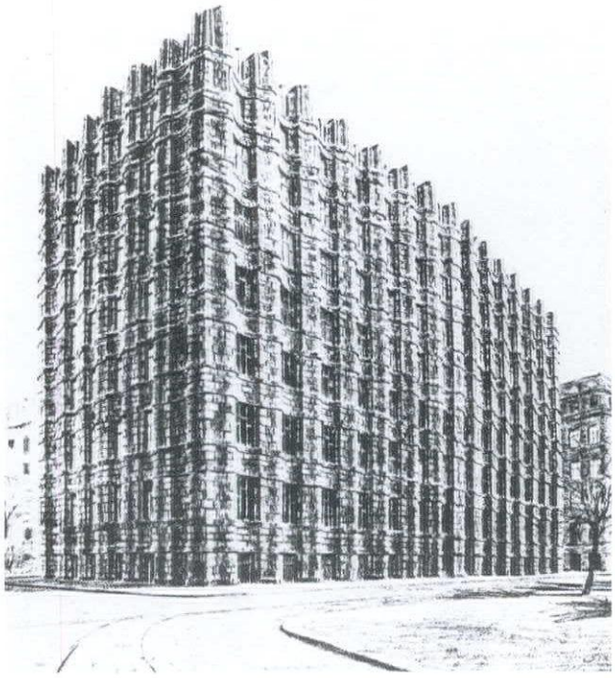
33, 34 Railroad platform roofs, Sonneberg, Germany, c. 1910.

35 Railroad platform roof, Langendreer, Germany, c. 1910.

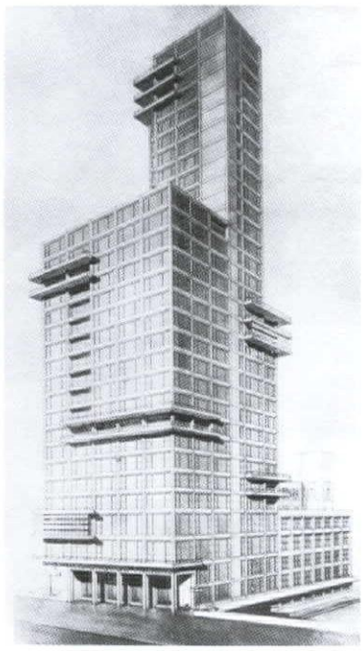


Poetry Beyond Structure

Mies van der Rohe's proclamations about structural expression often came closer to describing some contemporary projects by his colleagues than his own designs, which had moved beyond easy description: Walter Gropius's famous design for the Chicago Tribune competition of the year 1922 (37), which simply and clearly displayed the horizontal and vertical load-bearing components of the façade, appeared closer to what skyscrapers looked like "in the course of their construction" than the glass-sheathed structures that Mies created. Hans Poelzig's remarkable design of 1921 for a Dresden office building, which shared several features with Mies's design for the concrete office building (eight stories, one sunken into the ground, the top story lower than the others), emphasized the structural components behind its façade by expressing a kind of muscular swelling, an almost literal illustration of Mies's "skin and bone construction" (36). Those were images that Mies's own projects, with their columnar structure so distinctly dissociated from their exterior skin, failed to convey.



36 Office Building for Dresden, Hans Poelzig, 1921.



37 Chicago Tribune tower competition entry, Walter Gropius, 1922.

To understand the genesis of Mies's three projects and their strange incongruity with their accompanying texts, one must distinguish between two different steps in the process of their design. Whereas the details of the design were obviously the most rational possible responses (given Mies's knowledge) [62] to the conditions that he had established for the site, the program, the material, and the construction method, the initial decision to use the concrete cantilever lacked the justification of rationality. The use of reinforced concrete as a building material (not typical of Mies's later work) was undoubtedly well suited to the contemporary postwar economic crisis when steel and iron were in short supply. The decision to experiment with the cantilever, however, was made because of its potential for new formal solutions. And, in Mies's hands, those experiments and their resulting solutions transcended the established rational and functional dicta of contemporary architectural discourse. By placing the load-bearing stanchions well within the surface of the building, Mies made the structural components practically invisible from the outside: in the concrete country house, where the structure of the wall was subverted by the long horizontal ribbon windows; in the curvilinear skyscraper, where emphasis lay in transparency and reflection; even in the concrete office building where, although the structure was prominently displayed in the drawing, it is only visible due to an almost unreal gleaming from within the building.

62 Mies's attempts to design as closely as possible according to the structural conditions were based on a somewhat limited knowledge of reinforced concrete structures, due to a lack of personal experience. Neither the 4m cantilever in the office building, which he described as the most economical solution, nor the cluster of differently sized mushroom columns, which apparently represented the basic idea for his curvilinear skyscraper, would have received approval from a civil engineer. The acceptable length of a cantilever would normally not extend beyond one-third of the length of the beam behind it, or 2.30m, instead of 4m, and the assemblage of mushroom slabs with different diameters that Mies seems to suggest for the curvilinear skyscraper would have led to enormously complicated structural calculations and connections for the reinforcing rods. In the country house the connection between the cantilevered ceiling slabs and the walls that were supported from beneath would have posed severe problems.

Again, some of Mies's contemporaries were more precise in their descriptions and observations than Mies himself. In an article on the potential of reinforced concrete, J.J.P. Oud seemed to describe Mies's office building when he wrote in 1923:

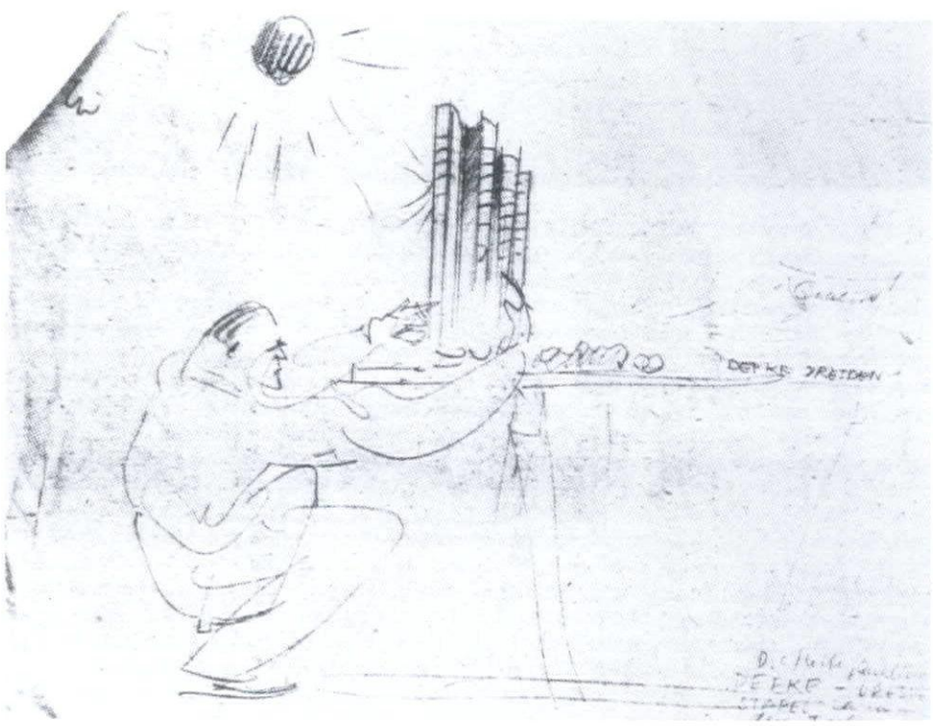
> Ferroconcrete, however, makes a homogeneous combination of load-bearing and carried parts possible, horizontal developments of enormous sizes and pure containment for space and mass. The old post-and-lintel system only allowed us to build from bottom to top with an inward slant; we can now go beyond that and build from the bottom to the top slanting outward. With the latter, a possibility for a new architectonical plasticity has been created, which can initiate through a collaboration with the esthetic potential of iron and mirrored glass the rise of an architecture of an optically immaterial, almost hovering character.[63]

Mies's friend Ludwig Hilberseimer described the office building in 1924 as follows: "Through the dominating horizontality combined with the lack of columns in the façade the structural character of the building is entirely changed, so that through the lack of supports a new architecture of hovering lightness arises."[64]

And that, in fact, was one of the pivotal modern moves away from nineteenth-century structural rationalism: to use the display of loadbearing structure for the creation of magical effects, optical illusions, and poetry.

63 Cf. J.J.P. Oud, "Über die zukünftige Baukunst und ihre architektonischen Möglichkeiten," in Frühlicht 1, (1921–22); quoted from Ulrich Conrads, ed., *Bruno Taut 1920–1922, Frühlicht, eine Folge für die Verwirklichung des neuen Baugedankens* (Berlin, 1963), 206.

64 Cf. Ludwig Hilberseimer, "Konstruktion und Form," *G Materialien zur elementaren Gestaltung 3* (1924): 24–25.



38 Mies at work in his office, sketch by his assistant, Sergius M. Ruegenberg, c. 1923.

1 Sketch, Giovanni Michelucci.

Giovanni Michelucci: A Life One Century Long

Francesco Dal Co

Giovanni Michelucci was born in Pistoia on January 2, 1891. As I present these pages, we enter the year that marks the threshold of his century-long life. He forms part of what Ernst Junger would call the generation of the patriarchs, but Michelucci is still active and involved in his practice daily, from the peaceful setting of his home in the Tuscan hills of Fiesole overlooking Florence, the city to which his oeuvre owes so much and to which he has tried to say so much. [1]

Untamable and sharp in character, Michelucci has had an energetic existence, rich in experiences that were not always linear in nature. He has lived through every phase of development in twentieth-century Italian architecture; an unquestionable protagonist in some cases, a controversial and isolated interpreter in others, and more often than not, an intransigent critic. His production has reached very high vertices; the lapses have been rare. And yet, in spite of the originality of his research since the 1920s, the criticism of his work has been neither extensive nor as unanimous as would be expected. Acclaimed in Italy, although with eloquent reservations, he is still virtually unknown beyond the national borders. [2]

Given this scarcity of material on Michelucci outside of Italy, the opportunity to provide a succinct profile of his life and work is both timely and valuable. But to gather the threads that weave this architect's work into the history of twentieth-century Italy would require a long chapter on the parallel developments of the architectural culture of our time. If we consider the extensive span of Michelucci's career, beginning before World War I and continuing today (with certain detachment, perhaps, but certainly with unchanged commitment), it becomes evident that these pages can render only a quick biographical sketch.

* * *

At the time of Michelucci's birth in Pistoia, his family owned an artistic metal workshop that was frequented by noted architects of the region, and it was in this milieu that Michelucci decided to pursue a career in architecture. In 1911 he graduated from the Instituto Superiore di Architettura di Firenze, where, three years later, he obtained the qualification to teach architectural design. At the Florentine Academy, Michelucci made the acquaintance of some of the most gifted interpreters of the

1 When I wrote these pages, it seemed obvious to note that Michelucci was about to turn 100 years of age. Unfortunately, my written salutation, as well as the best wishes that I offered him personally when we discussed this essay, have gone unheard. Even at the decisive moment of his existence, Michelucci, almost immodestly, confirmed his own idiosyncrasy in the face of prescribed events and fixed appointments. As friends, colleagues, and various officials prepared for the celebration of his 100th birthday, Giovanni Michelucci passed away. It was the 31st of December, only two days before that auspicious 2nd of January. As in many other chapters of his long life he has again proudly avoided the sensational celebration and all-too-predictable clamor and has silently abandoned the bandstand. A great void is left in the world of architecture.

2 In the past, the bibliography on Michelucci has been partial and seldom convincing; only recently has it been enriched by significant titles. Among these contributions, for those who would desire a more in-depth study, is the recent monograph *Giovanni Michelucci* (Milan: Electa, 1986) by Amadeo Belluzzi and Claudia Conforti, which is the best and most complete synthesis available today. I have included a more detailed bibliography at the end of the essay.

Liberty culture, the Italian version of Art Nouveau, Jugendstil, and the Secession, and had the opportunity to learn from masters such as Giovanni Fattori, one of the best Italian painters of the nineteenth century. Simultaneously, through his involvement with his family's workshop he met such noted architects as Gino and Adolfo Coppedè, and the Tuscan Michelozzi, among the finest talents of the Liberty movement. Also influenced by the painter Lorenzo Viani, the young Michelucci was actively involved in the cultural life of Pistoia and Florence.

In 1914 he collaborated on the idealistic journal *La Tempra*, indicating his fascination for the coeval futurist experience. And it was precisely this futurist fervor that incited Michelucci to participate in World War I. The bitter delusions of that painful experience were clearly reflected in the works he completed immediately upon his return from the front. During the war, however, he had managed to carry out a project of modest significance, a small oratory in Casale Ladra on the Isonzo River, which, although significantly altered, is still standing today.

In the 1920s Michelucci's cultural curiosity underwent a decisive change that was crucial to the development of his future work. Shortly after the war, he adopted a position that verged upon that of catholic idealism, revealing a religious inclination that would continue to develop throughout his entire career. During this decade that marked the birth of the fascist regime, Michelucci, encouraged by his friend the painter Giovanni Costetti and by the philosopher Guido Manacorda, collaborated on *Il Giornale di Poesia*, a magazine of which the stated aim was to "awaken our oppressed souls from this materialistic existence."[3] He also published some poems in *La Costa Azzurra*, a journal directed by Giuseppe Bottai, who was destined to become minister of education and one of the principal heralds of fascism in Italy. This controversial figure, an articulate and intelligent promoter of a cultural agenda for the Fascist regime in the decade of the 1930s, would not fail to guarantee Michelucci a continuous protection during this period.

3 As expressed by G. Michelucci in "Lettera prima al popolo" in *Il Popolo Pistoiese*, 14 July 1923.

Mystic tensions began to creep into the activities of the collaborators of the *Giornale di Poesia*, tensions that Michelucci translated during the 1920s into a progressive rejection of the remaining strains of futurism and, above all, a rejection of the decadent esthetics of the Liberty tradition. This position was confirmed by an article he published in the magazine *Fantastica* in 1923 in which, motivated by his own reaction to Liberty architecture, he rendered a tribute to the work of Marcello Piacentini. By praising the work of this Roman architect, Michelucci not only declared a precise poetic inclination, but also created the foundation for a personal and intellectual relationship with Piacentini that was to be of extreme importance in the development of his career. In fact, during the Fascist period, Piacentini was the judge of every architectural debate occurring in Italy. He was the most powerful and influential architect, the one to whom the government commissioned its most prestigious projects, those intended to express, in the most cohesive manner, the vision of Fascist ideology. In the mid-1920s Michelucci entered a series of competitions and built his first single-family houses, which, with their "dry Tuscan appearance," to use an expression of Claudia Conforti, reflected also his appreciation for the work of Piacentini.

2 *Oratory at Casale Ladra, G. Michelucci, Caporetto, 1916-17.*

In 1926 Michelucci moved to Rome. The move to the capital was the product of a logical decision, motivated in part by his good rapport with Bottai and Piacentini. It was not surprising, then, that his transfer to Rome was enthusiastically encouraged by Roberto Papini, the founder, with Gustavo Giovannoni and Piacentini, of *Architettura e Arti Decorative*, an official and influential journal of the Fascist period. A prominent critic and faithful admirer of the young Pistoian architect, Papini would write an article

on his work that would be published in *Domus* four years later. By 1929, well ensconced in the cultural environment of the capital, Michelucci began to teach in Rome at the school of the Regio Museo Artistico. There, he collaborated with Mario Ridolfi, who was destined to become one of the major and most interesting figures in Italian architecture after the late 1920s.

A series of private and public commissions followed in rapid succession as Michelucci strengthened his connections with the highest intellectual groups of the capital. Through his future wife, Eloisa Pacini, a disciple of the great composer Alfredo Casella, the young Pistoian architect entered the social circle of the master and designed a villa for him. The drawings of this project were exhibited at the Seconda Mostra Romana del Movimento Italiano per l'Architettura Razionale (MIAR). MIAR was at the head of a renewed architectural research in the country, under the leadership of the architects Adalberto Libera and Gaetano Minnucci. During this period Michelucci developed strong ties with the exponents of the measured rationalism of Rome, in its diverse interpretation by Minnucci, Ridolfi, and Libera, the latter also a member of the more radical Gruppo 7 of Milan. These were important years for Michelucci not only because of the works he completed, such as Casa del Balilla in Pistoia (1927-29), with Rafaello Fagnoni, but also because of the inspiration gleaned from his discovery and study of the baroque architecture of Rome.

3 Casa del Balilla, G. Michelucci, Pistoia, 1927-29, interior-stair hall.

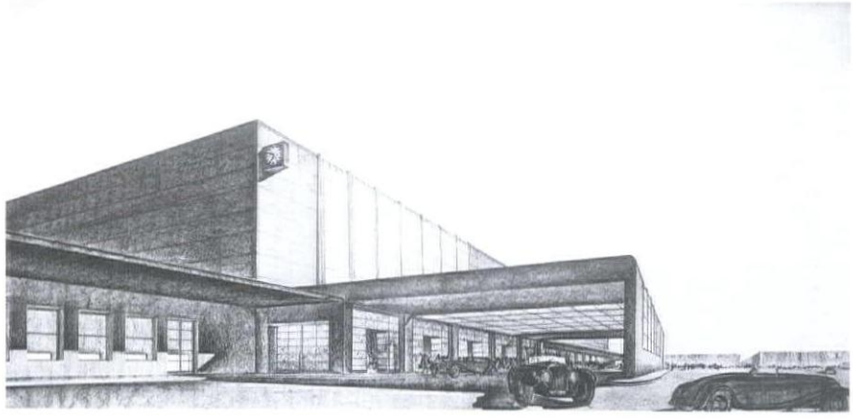
In the meantime, he had been invited to teach at the Scuola di Architettura di Firenze by the director, Rafaello Brizzi, for whom Michelucci had worked immediately after graduation. Accepting this teaching position was a decision destined to have important consequences in Michelucci's career. In Florence, as coordinator of MIAR with Adalberto Libera, Michelucci organized the third Mostra Nazionale di Architettura Razionale, in 1932. Giuseppe Bottai, minister of the *corporazioni* (the official trade unions of the Fascist corporate state in Italy), was present at the opening. In the same year, Marcello Piacentini was commissioned to design the new Città Universitaria di Roma, an undertaking of such importance that the architect, assisted by a technical team for the production of the project, reported directly to Mussolini. The objective was to complete the entire campus by 1935 and to have the inauguration ceremony coincide with the anniversary of the Natale di Roma, the day of Rome's founding. In order to accomplish this task, Piacentini recruited seven architects, who were officially selected by Mussolini. By offering this prestigious appointment to Pietro Aschieri, Giuseppe Capponi, and Arnaldo Foschini from Rome, Giovanni Michelucci from Florence, Giuseppe Pagano from Trieste, Gio Ponti from Milan, and Gaetano Rapisardi from Siracusa, Piacentini provided a tangible indication of the way in which he intended to exercise his power as guarantor, in the world of architecture, for the political and ideological goals of the regime. In fact, the seven architects selected were top representatives of the diverse stylistic and regional "trends" that animated the architectural debate of this period. By calling upon this group, Piacentini attempted to demonstrate the manner in which the regime could offer an opportunity of expression to each and every poetic and ideological artistic inclination, integrating them in one single enterprise, and effectively giving fascism credit as a promoter of cultural collaboration. Architecturally, the Città Universitaria clearly demonstrated the substantial superimposition of the concepts of "art of the regime" and "national art" during this period.

A rather important role was reserved for the forty-year-old Michelucci, in recognition of his achievements in the Roman milieu. Working within the master plan outlined by Piacentini, he was given the opportunity to design the Institute for Mineralogy, Geology, and Paleontology, and the Institute for Physiology, Psychology, and Anthropology. The two completed buildings have a rather ambiguous configuration, almost "tormented," in spite of their sober composure. Juxtapositions of large masses and voids with straightforward geometrical connections characterize the Institute of Mineralogy. The façades appear simplified, and the materials were used with strict "appropriateness,"

4 Institute of Mineralogy, Città Universitaria, G. Michelucci, Rome, 1932-35, front façade during construction.

following the rules dictated by Piacentini's desire to guarantee visual unity in buildings conceived by such diverse individuals within a single master plan.

This was a difficult test of Michelucci's maturity. But his torment was concealed and suppressed, and is evident only when we compare his projects for the Roman university to the architectural debate carried on by his colleagues, and to the events associated with the construction of the train station of Santa Maria Novella in Florence, a project destined to cast Michelucci into an absolutely primary role. With the buildings for the Città Universitaria, Michelucci manifested his detachment from the most radical rationalist experimentalism. To the purity of the rationalist language used by his Roman friends and by the youngest Milanese architects such as the members of Gruppo 7 (U. Castagnoli, G. Figini, G. Frette, S. Lario, G. Poplini, C.E. Ravai, and G. Terragni), Michelucci seemed to add other preoccupations deriving from his desire to achieve a formal complexity capable of enriching the compositional image of his buildings and to produce the "urban effect" that was demanded of the Città Universitaria. He seemed determined to find a "third path" somewhere between the radical positions of rationalism and the reductive monumentalism proposed, in this case, by Piacentini.



5 Santa Maria Novella Train Station, G. Michelucci, et. al., Florence, 1932–35, perspective sketch.

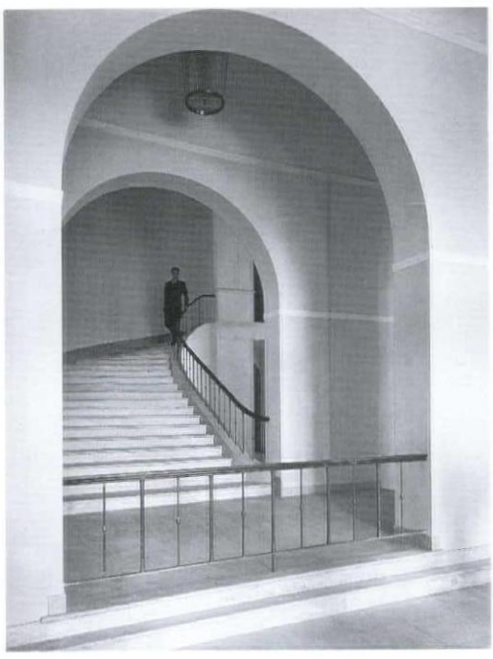
6 Santa Maria Novella Train Station, entrance.

In Florence, the events connected to the construction of the Santa Maria Novella railway station, one of the greatest contributions of the Italian culture to the architecture of the twentieth century, and perhaps the most celebrated work of Michelucci, confirm the above observations regarding the two buildings for the Città Universitaria in Rome.[4] In 1932 Angiolo Mazzoni, inspector of the railway's technical offices, was in charge of the new construction to be carried out at the old Florentine station. Though he was a gifted architect and the author of some good buildings, as recent studies have proven,[5] critics raised objections to his project for the station. The importance of the front façade of the building was such, given its unique location right next to the church of Santa Maria Novella, that to quiet the protests surrounding the Mazzoni project, the minister of communications, Constanzo Ciano, decided with Mussolini's approval to hold a national competition for the design of a new main terminal. In July 1932 Marcello Piacentini, Armando Brasini, and Tommaso Marinetti, among others, were appointed members of the jury that was to choose the winner of the competition. After the first round of selection, sixteen projects were chosen, including those of Giuseppe Pagano, Giuseppe Samonà, Angiolo Mazzoni, and the Gruppo Toscano, which included Nello Baroni, Niccolo Berardi, Italo Gamberini, Sarre Guarnieri, Leonardo Lusanna, and Michelucci. To the Gruppo Toscano went the winning prize and the commission to build the train station. The winners were received by Mussolini. Underestimating the key role of Piacentini in the jury's decision, the most fervid advocates of radical rationalist architecture celebrated the success of the Gruppo Toscano as a collective victory in an ongoing cultural battle, and welcomed the words used by Mussolini to salute the winners: "Tell the young architects graduating now from the schools of architecture to make my maxim their own: Do not be afraid to be courageous."

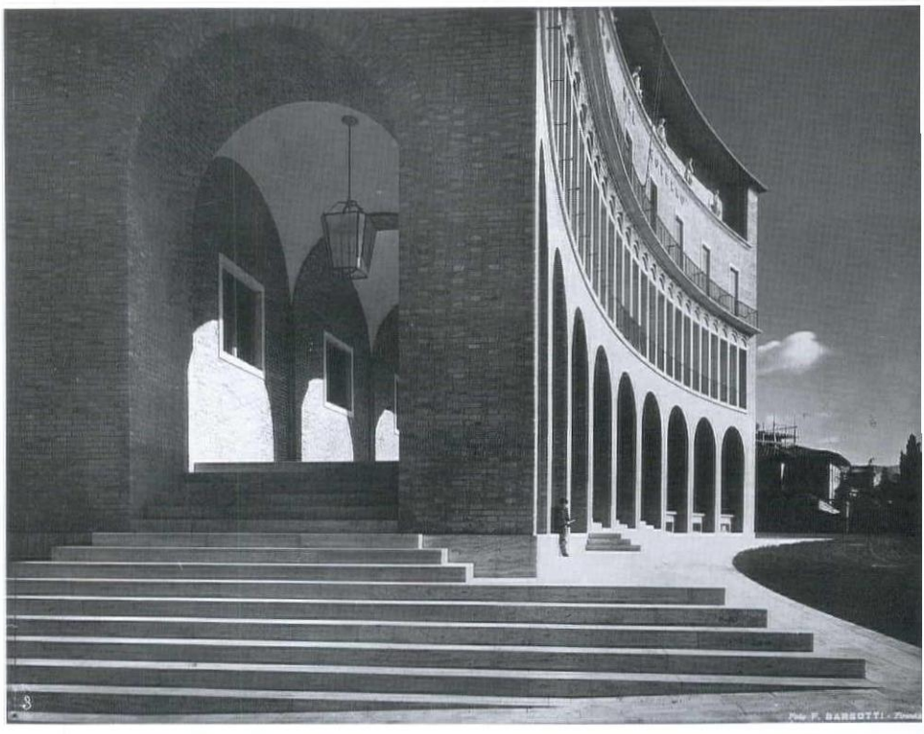
The construction of the new station was an event of national proportion. Public opinion was focused on the young Tuscan architects, who were required to complete the project within a constricted time frame. The new station was to be inaugurated on October 30, 1935, coinciding with the inauguration of the Città Universitaria in Rome scheduled for the following day. Initially, Michelucci was given sole credit for the design, but soon he was compelled to acknowledge his colleagues' request for an official declaration of the collective effort in the project. By this time, Michelucci had begun

4 It is inevitable to make reference to the brilliant book by V. Savi, *De Auctore* (Florence, 1985), which has clarified the role of Michelucci during the construction of the Florentine station.

5 See A. Mazzoni (1894-1979), *Architetto nell'Italia tra le due guerre* (Bologna: Grafis Edizioni, 1984).

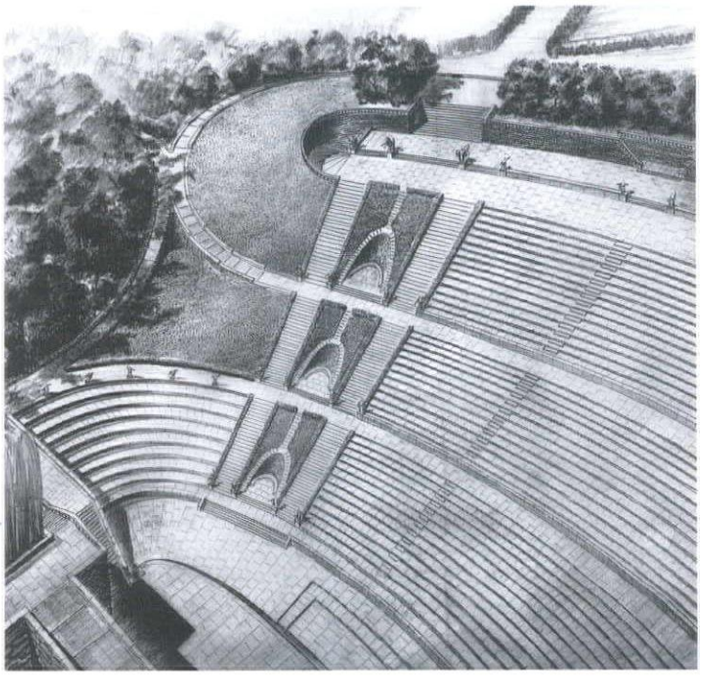


7 Government Palace of Arezzo, G. Michelucci, 1936–39, interior.



8 Government Palace of Arezzo, exterior.

9 *Open theater, E42, G. Michelucci, Rome, 1938–41, perspective study.*



to show a certain detachment from the construction phase of the station, which, despite its elegance, showed evidence of uncertainties and contradictions. This was also a sign of his hesitation to identify himself with a work that owed much to the younger members of the group. Two events confirm that Michelucci's involvement in the construction phase of the project was far from total. In a letter to his friend the critic Roberto Papini, published by Vittorio Savi,[6] Michelucci was explicit about his preference for the buildings in the Roman university, stating that the Florentine station "lacked the architectural discipline of the Città Universitaria." The second event regards the construction of the Royal Pavilion of the station, which represented an anomaly in the context of the building complex. Although it might be impossible to give Michelucci sole credit for the execution of this piece, which was part of the original competition entry, the attention he devoted to it was much greater than his involvement in the rest of the station. The Royal Pavilion, with its simplified monumentalism and its sumptuous coherence, was much closer in character to the buildings in the Città Universitaria than it was to the contradictory empiricism of the main body of the station. Michelucci's reservations were further confirmed, although indirectly, by the expression of his succeeding projects: the Government Palace of Arezzo (1936-39), lauded by Piacentini as "a mature new expression of the characteristic values of Italian architecture" (where "new" and "Italian" were synonymous with "Fascist"), the Government Palace of Savona (1938-39), and the Aurum Factory in Pescara (1940). All provided tangible proof of Michelucci's disconnection from radical rationalist experimentation, and verification of the fact that Santa Maria Novella station was an anomalous episode, the product of his collaboration with other designers.

6 V. Savi, *De Auctore.*

Before the beginning of World War II, Michelucci had the opportunity to participate in the most ambitious project promoted by the Fascist regime, the construction of a complex for L'Esposizione Universale di Roma, known as E42, the exhibition designed to celebrate the twentieth anniversary of Fascist power. While Piacentini held a primary role in the management of the program, Efisio Oppo, president of the trade union for Arti del Disegno in Tuscany, with whom Michelucci had collaborated during the early 1920s, was appointed vice-president of the agency created to manage the project. It was not by chance that one of the few pieces commissioned without a competition at E42, the open theater, went to Michelucci. The theater, interrupted during construction

by the war, was in keeping with the concepts for the exposition, which, according to the regime's expectations, was supposed to crown the construction of the third Rome. In 1939, also for E42, Michelucci, participating in an invited competition, designed one of his best projects of the decade, the Palazzo dell'Acqua e della Luce, which was to house the exhibits of modern energy production, and which appeared, with its classical accents, to conclude the explorations he had carried out during the 1930s.

Within the polemical climate of this decade, Michelucci had managed to maintain a rather unconstrained position. He had attempted a difficult synthesis between the principles advanced by the rationalist culture and the professional power that remained in the hands of academics headed by Piacentini, a group much closer to the decision makers of the regime. World War II put an end to this effort. During the early 1940s Michelucci sensed the need to make clear choices, abandoning the ambivalent experimentation that had accompanied his professional success in the preceding decade.

As the war ended, Michelucci was asked to head the Faculty of Architecture in Florence. The request was made by the Comitato di Liberazione Nazionale, the political organization that managed the transition from fascism to democracy. Michelucci accepted but remained for only a very short time at the school in Florence. Since 1947 he had contemplated the possibility of teaching at a school of engineering, and in the following year, when the position arose, he left Florence for the University of Bologna. His progressive detachment from the official and academic world of architecture was so decisive that he refused to enter any other competition after the one for the Amerigo Vespucci bridge in Florence (1953-54). Even in the 1946-47 competition for the reconstruction of the center of Florence, Michelucci was officially, and surprisingly, absent. It was in fact his accumulated meditations, in writing and drawing, about the problem of the reconstruction of "his" old city, so fiercely damaged by German troops, that provoked a definitive dissociation from all that he had theorized and done in the 1930s. Michelucci's proposals for the reconstruction of Florence had the tone of a manifesto. As noted by Belluzzi, this declaration of principles "[was] in confrontation with the prevailing tendencies [in reconstruction programs] in Italy and Europe, to the point of assuming a tone of provocation."[7]

As if imagining a melting pot that contained all of the surviving past, Michelucci, irreverent and unrestrained, "suggested, with a tangled network of lines, images of a mutating urban landscape,"[8] inside of which the new architecture wound itself with an

7 A. Belluzi has acutely noted all of this (note 2), using as a point of departure a text edited by F. Brunetti, *Giovanni Michelucci: Intervista sulla nuova città* (Rome-Bari, 1981).

8 A. Belluzzi and C. Conforti, *Giovanni Michelucci*, 1986.

10 Study for the reconstruction of Florence, G. Michelucci, 1945.

explosive force around the memories and remains of the past. His radical position against the proposals that favored a reconstruction of Florence based on the principle of "how it was, where it was" showed his contempt for the nostalgic. He denounced these solutions as dictated "by solitude and the void of despair," "a non-thought and a non-choice,"[9] an escape from time, a betrayal with respect to the responsibility of architecture.

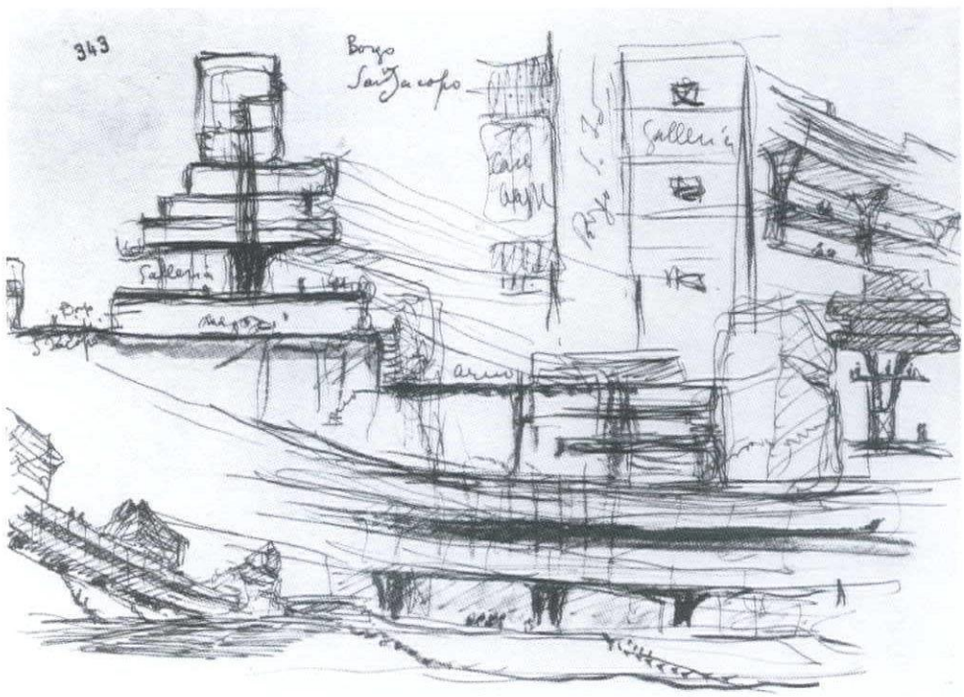
9 G. Michelucci, *La felicità dell'architetto, 1948-80* (Pistoia, 1980), 41.

Playing on the fine line between fantasy and capriciousness, Michelucci strove to maintain this difficult balance in his designs for the reconstruction of Florence, and in the rest of the major works of his interminable second youth. The central theme of all these works, always reappearing with greater clarity, is the concept of "freedom," the freedom of his design: how far could fantasy be pushed to force the limits of logic? To what point could research be taken before it crumbled into the arbitrary? Michelucci considered the compromises of professional practice unbearable and, as demonstrated by his choice to abandon the Faculty of Architecture for that of Engineering, preferred the concreteness of engineers to the vagaries of architects. Rigorous in confronting lamented regrets, Michelucci was no less intransigent with excessively optimistic expectations. To him, "nothing [was] more uncompassionate than time with its precursors."[10]

10 Ibid., 37.

Once again, the search for a difficult equilibrium was a theme with Michelucci. But after 1945, this search was no longer a precarious attempt at stylistic compositions or a pursuit of a "third path" between opposing languages. It was a much more radical confrontation between the freedom that architecture craves and the limitations of its nature. Michelucci's postwar architectural experimentation progressively acquired an ever clearer religious intent that, after a long digression, reappeared as the maturation of his youth's ideals.

Religiously speaking, the question of freedom coincides with a clear perception of limits, of boundaries that separate fantasy from arbitrariness; that in a true sense represent Michelucci's desire to free himself from the spell of form. Freedom is the light that illuminates the limits of making; it is the true design of that which is possible but unattainable. Freedom is opposed to the desire to retrace time, opposed to the escape from the constrictions of things and needs of mankind. Freedom, then, is contrary to nostalgia, even if it carries within itself the necessity to remember. Therefore, form for Michelucci must not be the object of freedom, since each form can only express a limitation of freedom. Form for Michelucci is, instead, the product of fantasy; it is the



11 Study for the reconstruction of Florence, G. Michelucci, 1945.

12 Church of Santi Pietro e Gerolamo, Collina di Pontelungo, G. Michelucci, Pistoia, 1946–53.

13 Church of Santa Maria, G. Michelucci, Lardarello, Pisa, 1956–58, interior of nave.

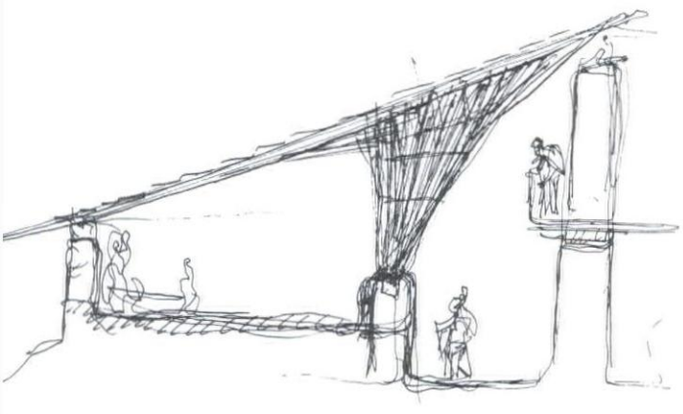
14 Church at Lagoni di Sasso Pisano, G. Michelucci, Pisa, 1956–58, under construction.

place where the art of design is exercised by remembering, where the project is stopped before it collapses into capriciousness. The pursuit of form for Michelucci precludes every utopia, as shown so strongly in his drawings for the reconstruction of Florence. Man is at the center of Michelucci's meditation, a real man besieged by life and by history. Michelucci has identified himself, even more strongly so in the past few years, with human apprehension, and his architecture has tried to express, with the disconcerting radicalness of its diversity, all of the substance that time has subtracted from his life.

A primitive religiosity pervades in the small church at Collina di Pontelungo, not far from Pistoia, which kept Michelucci busy from 1946 to 1953. The building exhibits a Franciscan poverty, almost as if to show Michelucci's desire to share the pain of indigence, of moderation, of the modesty that is characteristic of so much Italian architecture, and of the neo-realist culture in general, during the difficult years of the reconstruction after the war. Humble materials, traditional solutions, and a profound sense of place animate this apparently banal structure, which in its rich articulation of functions and interior spaces expresses so clearly a new typology. This character in the church at Collina, similar to that of the small church at Sasso Pisano (1955-57), explains the expressive content of the church of Lardarello (1956-59) and of the less successful church of Santa Maria e Tecla alla Vergine in Pistoia.

The structuralism exhibited in these works reminds us of the lessons of Perret, and provided the foundation for one of Michelucci's most important works of the 1960s, the Osteria del Gambero Rosso in Collodi (1962-80). The Osteria anticipates, with extraordinary freshness, the themes that Michelucci was to develop powerfully during the following years. From the beginning of the project, Michelucci designed a vast, single cover to enclose a space of unsuspected richness. The structure is freed from the envelope of the building, branching out with a spatial fluidity that allows one to perceive the plasticity of the volumes and a generous succession of construction solutions animated by a chromatic richness of great vitality.

From the same stock of ideas comes the Cuore Immacolato di Maria church in Pistoia (1959-61). Though the final product of this building does not include the full range of motifs Michelucci considered during the different phases of the project, it maintains that familiar severity inherent in the materials: the double-faced stone walls and the exposed reinforced concrete frame enhanced by the *chiaroscuri* of the interior.



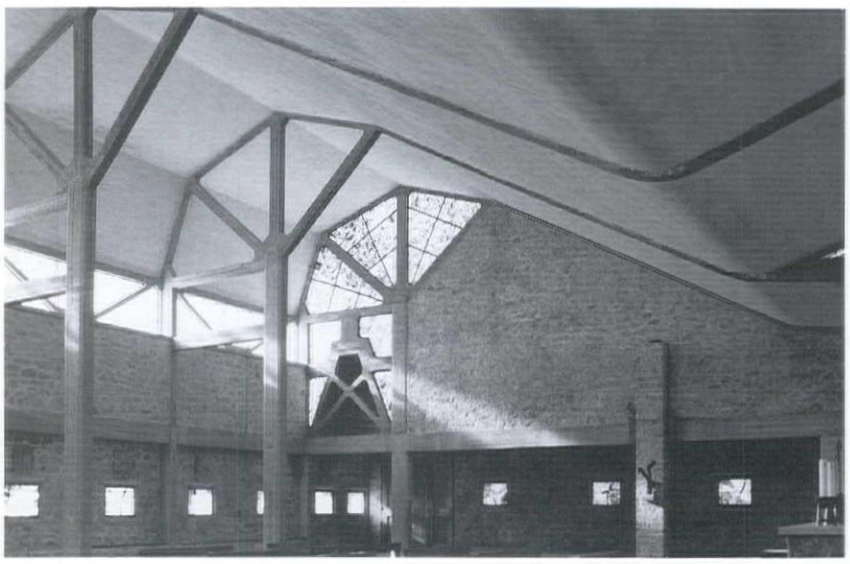
15 Osteria del Gambero Rosso, Collodi, G. Michelucci, Pistoia, 1958–63, section study.

16 Osteria del Gambero Rosso, interior of dining room.

Both the Osteria del Gambero Rosso and the church in Pistoia are spatial structures covered by large veils. As Ludovico Quaroni has rightly noted, "the innate religiosity of Michelucci" is constantly expressed by the recurring image of the tent and the mountain in the taut covers of these churches, supported by slender pilasters that multiply in space, often in the form of a cross.[11]

11 L. Quaroni, "Come sono belle le tue tende...," in B. Sacchi, ed., *Giovanni Michelucci: la pazienza delle stagioni* (Florence, 1980).

The church of San Giovanni Battista all'Autostrada del Sole (1960-64), seen from the plain surrounding Florence, also appears as a huge tent stretched over a mountain valley.

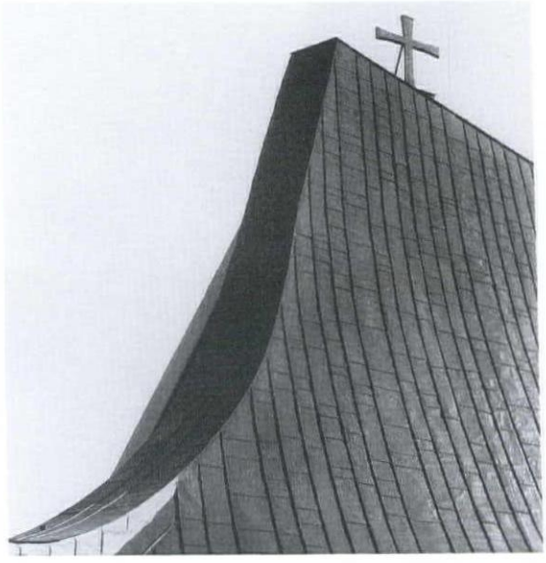


17 Church of Cuore Immacolato di Maria, Belvedere, G. Michelucci, Pistoia, 1959–61, interior.

To explain the meaning of this, his most famous work, Michelucci recalls, citing a letter by Saint Paul, how the life of man on Earth is similar to that which takes place under a tent: the whole world is a precarious shelter that hosts the hope of our final home in heaven. This motif animates the construction of San Giovanni Battista. The contrast between the tensile roof and the stone base of the enclosure is marked. With its extreme plasticity, the vast tent spans from volume to volume, covering the complex labyrinth of the interior, where circulation and level changes multiply and space flows among the branches of reinforced concrete pilasters that find their way to the ground in myriad ways. Under the light, the curved stone walls and the folded skeleton of the concrete structure acquire emotionally expressionistic accents and a vibrant dynamism. A sort of underground city, petrified in its own contortions, is represented under the vast cover, which is tied to the ground by an elegant connector as if to save it from the dangerous effects of the wind.

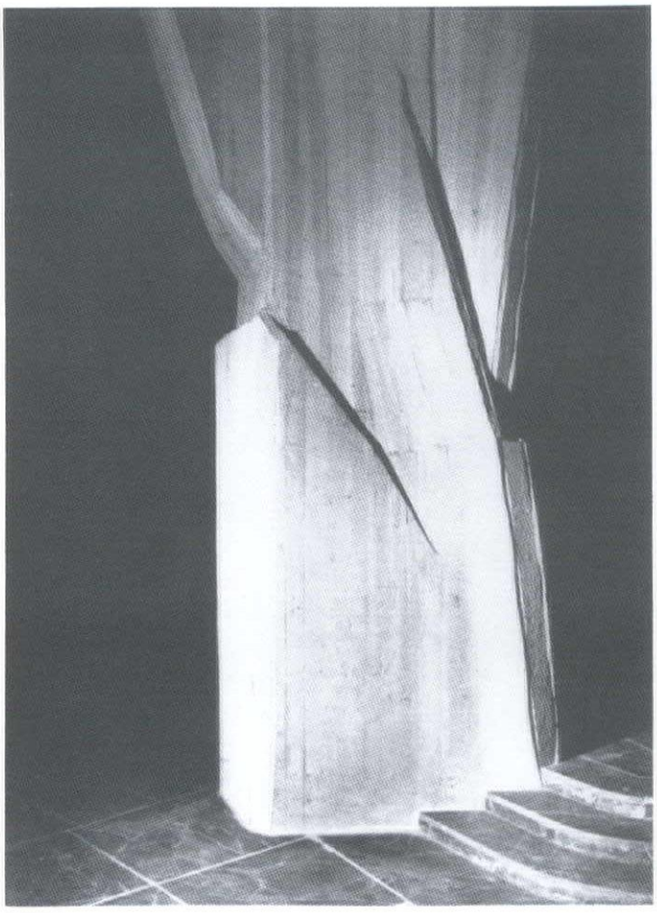
18 Church of San Giovanni Battista all'Autostrada del Sole, G. Michelucci, Florence, 1960–64, roof study.

19 Church of the Autostrada, roof detail.

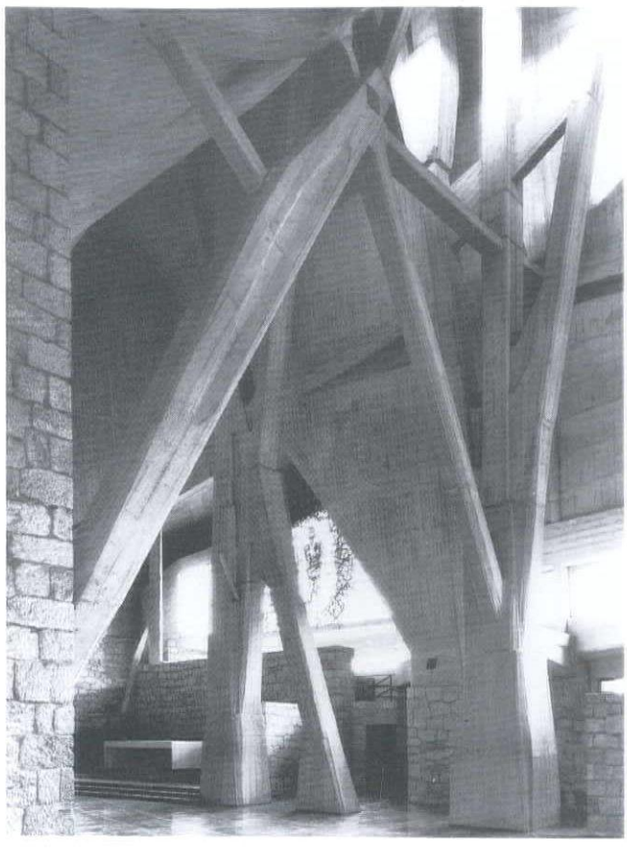


20 *Church of the Autostrada, column study.*

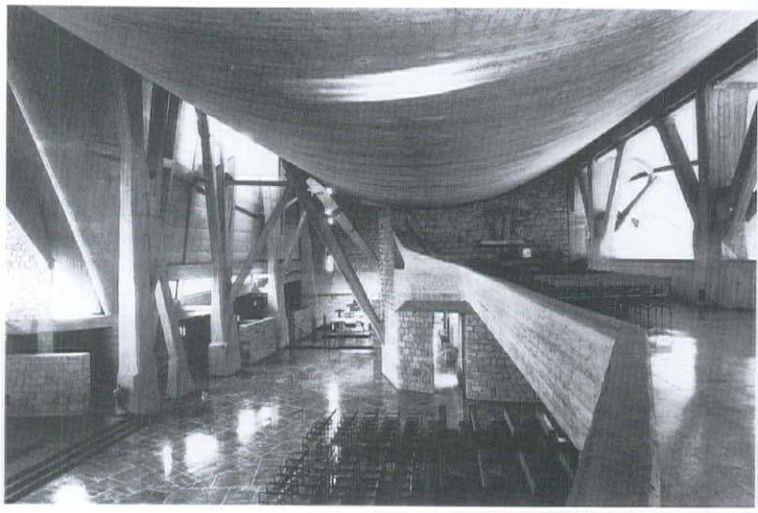
21 *Church of the Autostrada, column detail.*

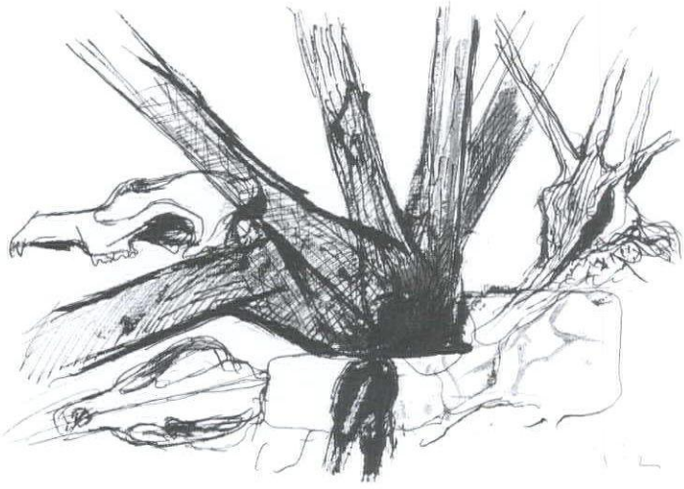


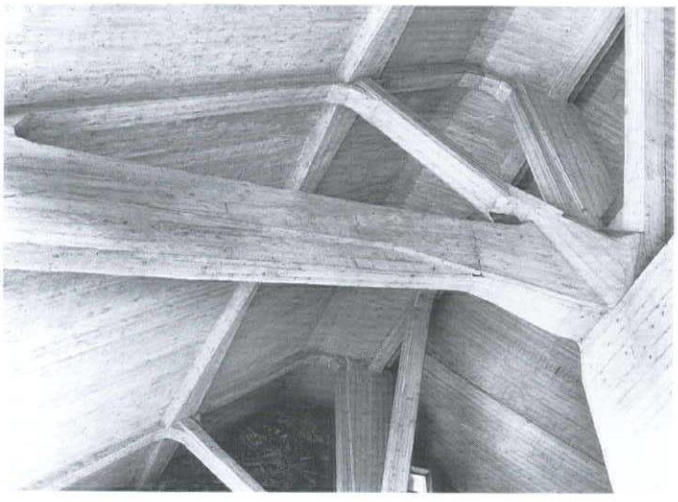
22 *Church of the Autostrada, interior study.*



23 *Church of the Autostrada, interior detail.*







24 *Church of the Autostrada, section study.*

25 *Church of the Autostrada, interior from balcony.*

26 *Church of the Autostrada, study of roof truss.*

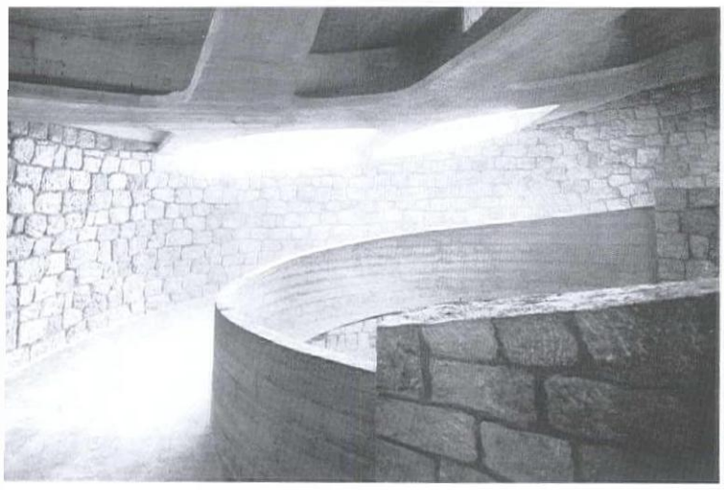
27 *Church of the Autostrada, roof truss.*

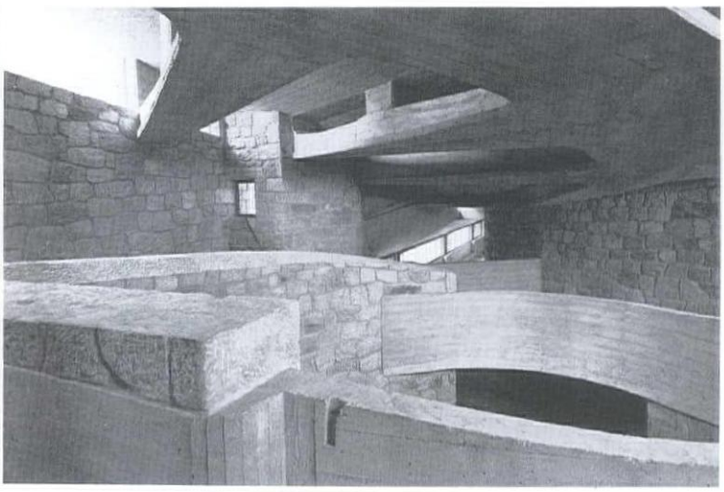
The temple of San Giovanni Battista is Michelucci's strongest expression of his refusal to use established typological configurations for his churches. Typology defines a use, codifies a function, embalms practices and values. Michelucci confronts all of this with the fluidity of his underground spaces, which are recomposed only by the vast sail of the cover, leaving the "use" unprescribed. In fact, the churches of Michelucci are places of free human assembly, as demonstrated by his designs for the Santuario della Beata Vergine in San Marino (1961-67) and the church of the Immacolata Concezione di Maria Vergine in Longarone (1966-78), which repeat the Florentine experience.

The churches of Michelucci are plazas and primitive temples that welcome the plurality of life, but are nevertheless imbued with a profound sense of precariousness and of death. A mysticism of death is present in the contorted sketches that Michelucci unwearily produces to describe the arboreal structures that traverse his spaces, often resolving themselves into cruciform figures. With his tentlike covers, a metaphor for the divine hand that protects man on Earth, Michelucci constantly reminds us, with compassionate solicitude, of our condition as travelers. Michelucci's "piety" is fully expressed in his obsessive remembrance of our errant condition and destiny, which from the precariousness of the tent can lead to the fulfillment of a definitive home. Therefore, evoking the figure of the cross is an explicit admonition, announcing an ending that bears the most extreme liberation. It is not by chance that these two metaphors, that of the journey and that of death, are explicitly evoked in Michelucci's design for the church of San Giovanni Battista, where "beyond the sense of journey and movement, there is the thought and presence of death: as if death were the objective reference of every space."[12]

12 Ibid., 34.

This explains the contorted forms of Michelucci's last designs, infinitely branching out, kept in tension as if by the action of invisible powerful forces. He has often denied the naturalistic origin of these forms, and as forced as this position might seem, there is substantial truth in it. In fact, these forms are not alluding so much to the exuberant growth of tree branches, or to the organic evolution of nature, as to the calcified bones of a skeleton, and to desiccated stems. They are an allusion not to the bloom of life but to the still, mutilated dryness of death. The necessity of freedom, so dramatically expressed in Michelucci's last works, is resolved by the representation and the reminder of this absolute limit: death. As fantasy is constrained to continuously retrace its own steps, architecture is arrested.





28, 29 Church of the Autostrada, interior of baptistry.

30 *Bank of Monte dei Paschi, G. Michelucci with B. Sacchi, Colle Val d'Elsa, 1975, exterior detail.*

These religious buildings by Michelucci, designed after World War II, appear as continuous returns to archetypes to be remembered and to fantasize about. This is also true even when the Pistoian architect works on buildings of a more profane character, as in the Monte dei Paschi bank in Colle Val d'Elsa (1973-83), an astonishing tour de force for a man well beyond his eightieth year. The very elegant building mimics, in its complexity, the urban intricacy, opening itself to the flow of all that lives in the city. The form unfolds in a series of volumes, paths, and skywalks that isolate, by virtue of a seemingly accidental quality, the dramatic power of its steel structure. It is a sort of buoyant labyrinth covered by a tent that protects its precariousness. There is no mimicry of the context, no assonance, but a determined dissonance, memories of an archetypal place, yet another place for people to gather designed with the awareness that if "the city is the architect's laboratory, then he can build in the city, but he cannot build the city. Cities are built by the lives of people."[13] No architecture can overcome life. But when architecture is endowed with the "piety" that Michelucci has been able to induce in his work, then it might be able to show us the meaning and purpose of life.

13 G. Michelucci, *La felicità*, 67.

Michelucci's lesson is not an easy one to learn, nor does his work provide us with linear examples. But considering in retrospect his enormously long career, he emerges as a solid figure very well rooted in our times. His lack of renown is apparent, but it is well known how very often history preserves its best energy in the unrenowned. Michelucci has said about himself: "I am attached to the roots of trees. Just like that: I am an olive tree, I am an oak, a chestnut."[14] These are the trees that Michelucci can contemplate every day from his home in Fiesole, the world that gives birth to his architecture, a world built with the solid materials of old Tuscan construction and animated by a Franciscan piety.

14 A. Brancolini and M. Biagi, *Giovanni Michelucci. Una materia viva* (Pistoia, 1981).

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Selected Bibliography

The first writing by Michelucci that is often mentioned is "Lettera prima al popolo" in *Il Popolo Pistoiese*, 14 July 1923. Beginning with this title, the bibliography on Michelucci is vast and covers a span of sixty-seven years. It is important to remember that Michelucci published most of his numerous writings in the leading Italian journals of this century. He was an author in *Fantastica* during the 1920s, in *Domus*, *Architettura*, and *Frontespazio* during the 1930s. In 1942 he published "Funzione sociale dell'architetto" in *Critica fascista* , and was also an author in *Primato* and *Stile* during the same decade. After World War II, Michelucci maintained his contacts with *Domus*, *Urbanistica*, *Il Ponte*, *L'Architettura: Cronache e storia*, and *La nuova città*, this last a journal directly connected with the Michelucci Foundation.

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Preface to A. Sartoris, *No. Posizione dell'architettura e delle arti in Italia*, Florence, 1947; *Felicità dell'architetto*, Florence, 1949; "La scuola e la città Appunti di un Architetto" in *Prospettive storiche e problemi attuali dell'educazione. Studi in onore di E. Codignola*, Florence, 1960; "Lo spazio e il luogo dove l'uomo costruisce la sua storia" in *Problemi della città*, F. Clemente, ed., Padua, 1967; "Lo spazio e il senso della nuova città" in *Firenze domani*, Florence, 1967; *Il quartiere di Santa Croce nel futuro di Firenze* (in collaboration with other authors), Rome, 1968; "A misura d'uomo" in *Città e anticittà*, Bologna, 1970; *Brunelleschi mago*, Pistoia, 1972; *La nuova città*, an anthology of Michelucci's writings, R. Risaliti, ed., Pistoia, 1975; *Non sono un maestro*, Sarzana, 1976; *La chiesa di Longarone dell'architetto Giovanni Michelucci*, Calenzano, 1978; *La felicità dell'architetto, 1948-80*, Pistoia, 1980.

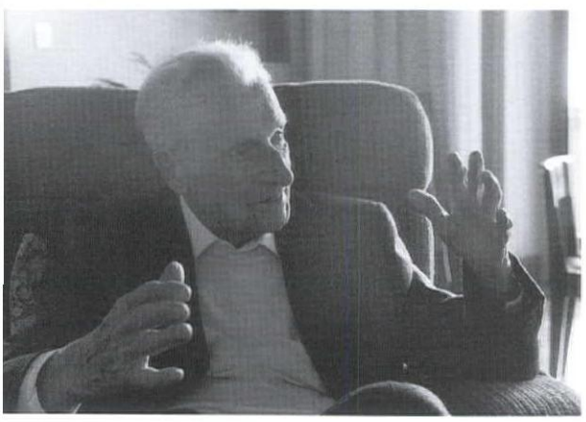
The published interviews with Michelucci are numerous and often stimulating. Among the most significant ones are: *Giovanni Michelucci*, interview edited by F. Borsi, Florence, 1966; "La chiesa: un diario progettuale," interview by F. Brunetti in *La città di Michelucci* (catalogue) Florence, 1976; F. Brunetti, *Giovanni Michelucci. Intervista sulla nuova città*, Rome-Bari, 1981.

The principal writings on the work of Michelucci, in chronological order of publication, are: R. Papini, "Giovanni Michelucci architetto," *Domus* 1-2 (1930); E. Detti, "Giovanni Michelucci," *Comunità* 23 (1954); L. Ricci, "L'uomo Michelucci," *L'Architettura. Cronache e storia* 76 (1962); M. Dezzi Bardeschi, "La vicenda fiorentina: il movimento moderno e l'opera di Michelucci," *Aspetti dell'arte contemporanea* (catalogue), E. Crispolti and P. Portoghesi, eds., Aquila, 1963; L. Lugli, *Giovanni Michelucci il pensiero e le opere*, Bologna, 1966; N. De Mayer, "L'architettura di Michelucci," *Problemi della città*, Padua, 1967; M. Cerasi, *Michelucci*, Rome, 1968; G. K. Koenig, *Architettura in Toscana, 1931-1968*, Turin, 1968; "Tavola rotonda sull'opera di G. Michelucci," *Quaderno 2*, Istituto di Elementi di Architettura e Rilievo dei Monumenti, Genoa, 1969; *La città di Michelucci* (catalogue of the exhibition in Fiesole), Florence, 1976; *Giovanni Michelucci* (catalogue of the exhibition at R.I.B.A., London), B. Sacchi, ed., Florence, 1978; *Il linguaggio dell'architettura*, M.C. Buscioni, ed., Rome, 1979 (with anthology of the writings by Michelucci); *Giovanni Michelucci. La pazienza delle stagioni*, B. Sacchi, ed., Florence, 1980; A. Brancolini and M. Biagi, *Giovanni Michelucci. Una materia viva*, Pistoia, 1981; *Giovanni Michelucci. Le architetture recenti 1974-1984* (catalogue of the exhibition in Macerata), Macerata, 1985; A. Belluzzi and C. Conforti, *Giovanni Michelucci. Catalogo delle opere*, Milan, 1986; A. Belluzzi and C. Conforti, *Lo spazio sacro di Michelucci*, Turin, 1987; *Giovanni Michelucci. Un viaggio lungo un secolo*, M. Dezzi Bardeschi, ed., Florence, 1988.

The following are excerpts from an interview with Giovanni Michelucci, conducted by the editors of PERSPECTA 27 *on September 23 and 24, 1989, at the architect's home and studio in Fiesole, Italy.*

A Conversation with Giovanni Michelucci

The Editors



2 *Giovanni Michelucci.*

Your work and career have spanned a number of historical periods and artistic movements. You have been a teacher of architects and engineers for over twenty years, but you have been critical of academicism and historicism in contemporary architecture. Still today, your buildings appear to resist any pedagogical categorization. So might we begin by asking what message would you convey to the young architect and architecture student?

Look, the important thing is to know nothing. There is a danger of applying a preconceived form to the object that we're studying, and this is already a problem, because we don't give ourselves the time to understand the demands or the needs of what we're studying. I cannot do today a medieval-looking thing as others do, because I immediately see the fake in it, and it annoys me greatly not to give birth to my own things that fulfill my own demands and those of my own time. A school cannot teach other than mistakes. In school we speak about books, not about the world. Of course culture is important, but in order to be able to create today, we must live in the world today. I go to the extreme of telling myself an entire story to be able to arrive at the heart of things. And when I find myself in this mode, in which a brick or a stone placed in one way or another gives me a sensation, then I feel the movement of that world inside of me. It is a discovery. It is freedom. Freedom is to liberate yourself from the slavery that is your education and the ideas of your professors. I have never believed in professors or in what professors say. I have been a professor for twenty years in the university, but I never had faith in that endeavor. Therefore, freedom is to feel completely liberated from that great lecture delivered by a brilliant professor. You can understand it and you can admire it, but don't believe it. It might have been true at the moment that it was delivered, but time changes our ideas of truth. That's freedom.

I admire Leopardi, but I'm wary of following his teachings. He was a great poet, but if I follow him with passion, I would have to abandon him. I would abandon even Virgil if that were the case. This is the freedom I ask of myself. Total freedom.

"[Aalto's Imatra church] represents a justifiable expressionism different from the willful picturesqueness of the haphazard structure and spaces of Giovanni Michelucci's recent church for the Autostrada."

Robert Venturi, *Complexity and Contradiction in Architecture, 1966*

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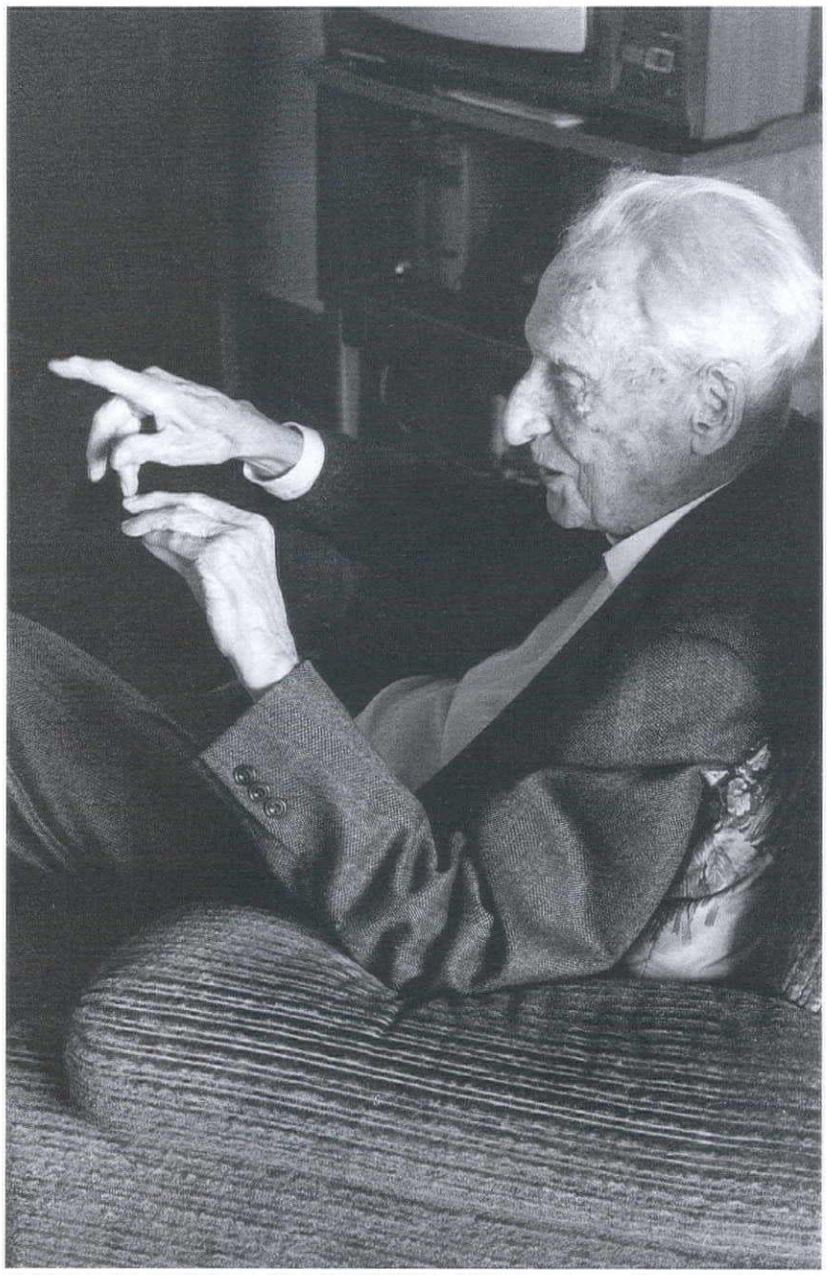
"I have visited Giovanni Michelucci's Church of the Autostrada since writing these words, and I now realize it is an extremely beautiful and effective building. I am therefore sorry I made this unsympathetic comparison."

Robert Venturi, note to the second edition of
Complexity and Contradiction in Architecture, 1977

You can never arrive at that state of freedom, you can only aspire to it and search for the path that leads to it. Freedom is something that you can only catch a glimpse of with the hope of rendering it material. It is a continuous search in continuous motion. Rather than seeking form itself, which you can find in a book, you must go and search the path that leads to form and its making. You must seek a sense of the city. Without a sense of the city, of life, of pain, of pleasure, you have nothing. Architecture must come from within if you want it to be alive. I know that this is nothing very profound, but if tomorrow there is a child crying, I must ask myself, Why is he crying?, and then make the city so that he can cry well. Talk with one another about life. Your endeavor should be, because mine is now finished, to observe very well so that you can discover. I no longer want to look at a building only for its beauty or at a medieval city with romanticism (that was the Renaissance esthetic); those things are left behind. We must move toward the new city, a richer city in search of the essence of things and a much more interesting world.



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4 Hut in the woods, 1988.

So when in your essay "Order and Disorder," you speak of "order" as a suppressive force in our society and as a potential limitation to the architect's creativity, are you renouncing the idea of order altogether?

Perhaps the word "order" is appropriate only to a certain degree. I mean "order" as an attempt to combine everything into a single concept, a path that will always take us to a precise destination. If we do this, what happens? By being so attentive to that precise point, to that single concept, we end up losing sight of the complexity and variety of the problem. We don't allow the element of the fantastic to come into play, and it's precisely this element that's so extremely important in architecture. Fantasy occasionally upsets the straight path to express entirely new and different worlds. It's from fantasy that architecture comes. We must not suppress any of the elements or facts, no matter how incongruous, that might manifest themselves in the process. Architecture is variety and surprise. It's the creation of spaces that otherwise would not appear or exist. I look at this room where we're sitting, and there, between the fireplace and the wall, I discover a small space that I'd never noticed until now, and I've lived in this house for more than thirty years. But right now, this discovery suggests to me a new architectonic possibility.

Now, *you* go and discover "something" that you had never noticed before.

We look at a thing now and it might not interest us. We look at it in another moment and it might ignite our creativity. I look at a tree and I notice for the first time that its roots go underground in many directions, and for the first time I realize the *total* space occupied by the tree. So from then on, the tree is no longer just a trunk with branches and leaves, but instead, it's a whole construction that starts many feet away and follows certain paths, rich in movement. I recreate the tree. A tree is not a trunk but a system of infinite ramifications that converge at the trunk. A tree is the sum of all of its constructive elements, and I must understand their connection and their relation to one another to really understand the tree.

So from now on, you will never see a tree as just a trunk and foliage, you will see the entire earth covered by the interlacement of all these roots and things that will later develop to give birth to an idea for a building, for an architecture.

5 *Man, tree, pylaster, 1962.*

Why is the tree a fantastic discovery?

I go into a forest. The forest offers me an infinite number of spaces. Some trees gather about themselves and create a void. Others bunch up and create a refuge. These to me are all constructive suggestions that are in the normal realm of a project. Every element in nature, with its structure, creates a space that is often used by man in a natural way or at least is contemplated for its beauty. So these live spaces of nature, with all their elements like the tree, are real and true constructions of their own that to me are like the structure of a building. If I take into consideration the form of a tree, it might suggest to me an architectural form, as long as I see it only as a formative element of an idea and not as the tree in and of itself. I look at it and I transform it into a wall. When I begin to associate myself with the formal elements of nature, then I feel how I might enrich an otherwise regular form. Even if that enrichment is only in a small detail that in some way expresses movement, I feel that that movement is more congenial to the way I live.

So, how do we know the limits between the "infinite suggestions of nature" and chaos, between fantasy and capriciousness?

To know this limit you must recognize the spaces and forms that you have created. That is, in reviewing the thing that you have conceived, you feel it is a true thing. You must feel certain that it is not so disordered as to render it chaotic. After putting away the idea for a while, you come back to it and recognize it as your own. Take for instance this little table, which is not in its usual place. When I come back into the room, I don't recognize its new location because it doesn't respond to my needs and my esthetic demands. Then, there is chaos in this room. By changing its place, I change the table itself; it is something else, with different space, under different lighting, responding to different demands.

6 *Church of the Autostrada, dark gallery.*

When we visited the Church of the Autostrada and the one in Longarone, we felt that these buildings had a very powerful spirituality. Their planning however, seemed somewhat irreverent toward the traditions of church planning. So, we wondered about your relations with the Catholic Church as your client and patron?

I have my idea of the sacred. They say: the church is sacred. But it is not the church that is sacred, it is the city that is sacred, and the church should fundamentally represent the spiritual values of the city. But the strange thing is that the church refuses to allow a presence of the "sacred" (that is, the city) in its temples. It closes its doors; it keeps the city from coming in. The baptistry is also closed off, always locked up. Therefore, there is this continuous conflict. So I find my inspiration in this conflict, knowing very well that I am moving against everyone else involved. I provoke the first clash when I insist in discussing the program of the church: why should you have "hours," why do you close your doors to the city and its citizens, why do you have all these reserves and secrets, prohibited places, et cetera? And so, it is in the heat of these discussions that I begin to form ideas within me that start to come out, little by little. For instance, for the church of the Autostrada I designed a very dark gallery, which I felt was of extreme importance, but the Church complained, telling me: why do you have to make such a dark gallery? My intention was to offer a space where man could find a refuge. In fact, I demand that man find a place of refuge! A refuge is man's isolation in space, a dark space that cannot be measured. And so these things come out of me, slowly, one by one. Another thing in the church of the Autostrada: I had initially felt that the space in front of the altar should be completely open to the congregation, but at one point I felt that it was too big, too grave an encounter with the spiritual. So I decided to make a secondary space, a molded space where the congregation could feel more protected, and I later saw how people could find refuge there. So I understood it had been a wise decision. When you go see the church in San Marino, you will see how crazy that one is. There is a panoramic gallery where people go to smoke, sit, and watch others pass by. There are several altars at different elevations and a public street that comes right into the church....

7 Chuch of San Marino, 1961–67, section study.

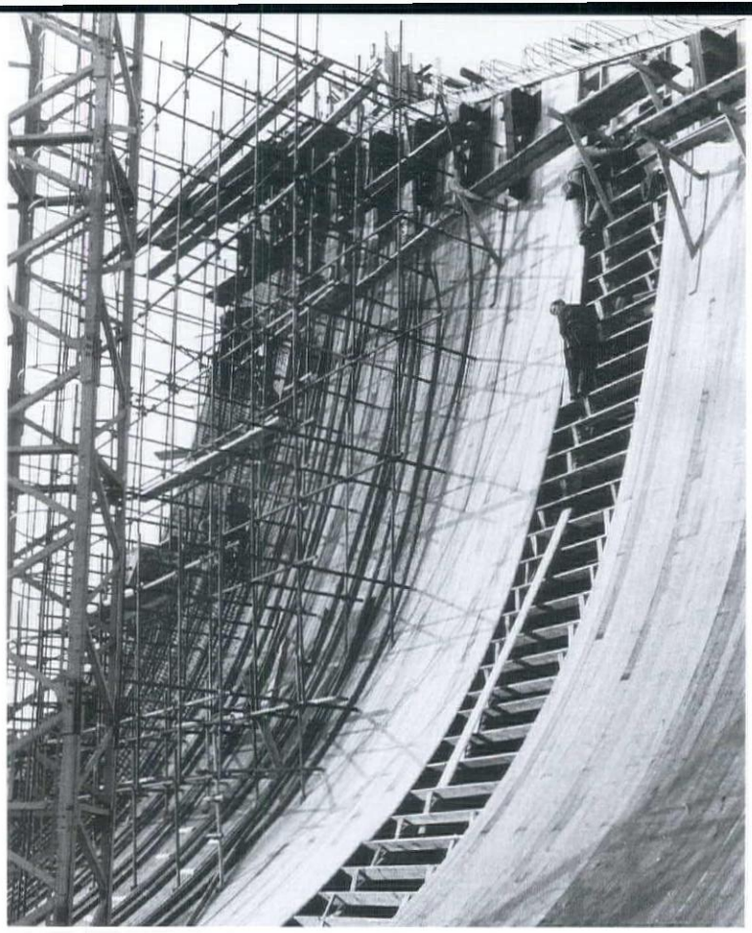
And at Longarone?

At Longarone they didn't understand why I wanted to put an amphitheater on top of the church. But this idea was the product of much thought and reflection. I thought it would be a great thing if the congregation went up to the amphitheater and had a view of nature as never before; in the divine presence, after all, nature is God's thought. It was something advantageous for both the church and the faithful. They contested this idea, but today they even celebrate an outdoor mass in that place.

I put everything into that project. Even to arrange a single step, I would consider doing it in such a way that one could experience something sacred.

We go up one step, but how do we do it? When I was younger I would take them three at a time. I began considering the stair at Palazzo Vecchio [in Florence]. I went up that main stair that takes you to the mayor's office. Then one day I took my students up those steps, and once we arrived the first floor, I asked them, "Tell me your impression of these stairs"—but they hadn't seen or understood anything. So I told them, "Go back down, come up the steps once again, and then tell me the story of this stair." Every stair has its own story, if each step was carefully conceived. A stair is a crescendo.

8 Church of Longarone, 1966–78, amphitheater.



9 *Church of the Autostrada, roof under construction.*

You have written of our apparent lack of a "historic ability to act." As architects, how should we take action in a historical sense? How do we justify our work in the society for which we build?

A building is born from an idea of the builder. The idea of the builder is surrounded by an aura of its own time. In fact, when we look at a medieval city, for instance, a city that moves us, it makes us aware of a particular way of life, from which the idea of that city was born. So to take action in a historical sense means to represent our life in the most honest and loving way possible. That is, to build loving the thing we are building not for its beauty, but for what it represents in the lives of people in that given moment in time. A city is born when we are many with a precise and unequivocal direction toward well-being that brings comfort to the newborn and to the old man. When we create for the good, in answer to the most profound needs of mankind, there is a sense of well-being, but when we create without this principle, only to satisfy our own private interests, the forms we create do not hold up, they are not respected by the user. When I think of building for the city, I think of building a house for my beloved one. Imagine, at my age! But at my age, I love much more deeply than when I was young. If we transfer our love into a brick wall, we make not only a brick wall but a melody, a poem. I've had bricklayers from Siena who would lay bricks in such a way that it would seem musical. Unlike in Florence, in Siena, brick is laid with thick mortar joints, two centimeters or more, so that the wall becomes a wall of warmth, of heat, beautiful. And all because of the love invested by the worker.

How can the architect, today, communicate such emotion to the builder?

Think of the drawings of the medieval builder, which represented the object to be built in such a way that one could read the character that the construction was to have. The soul of the material was represented in those drawings. It all corresponds to a profound indication of how medieval man lived his constructions, with a profound sense of community, of living together. They didn't need to draw all the brick joints or the stones, all that would come a little at a time, as the building progressed and acquired a certain vibration, so that the final product pre-

10 Chuch of Longarone, exterior spiral stair.

served in itself the spirit of that original freehand sketch. This implies such knowledge and insight that a straightedge and triangle would be useless. In spite of its apparent uncertainty, the sketch had such character that it was as if it represented the work as already completed.

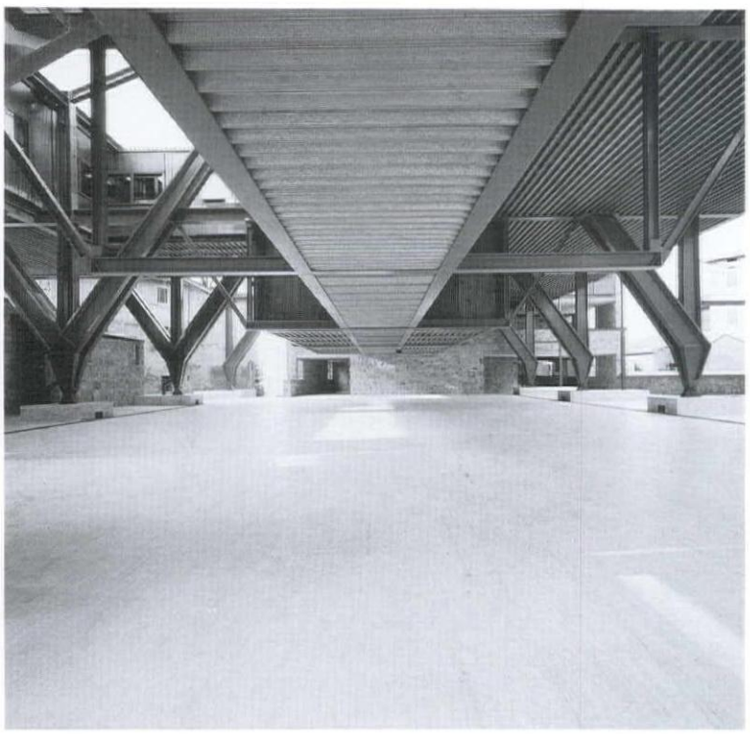
A graphic representation is valuable if the intensity of its conception is such that it is able to guide the workers in an apparently controlled direction, but in reality the construction is born bit by bit as a collective effort. For instance, during the construction of the church at Longarone, I had designed an exterior open spiral stair with a simple metal railing. However, when the time came to build it, we found that the codes had changed and required a full parapet to enclose the stair. The workers had no drawing and couldn't wait for us to produce them (my office was far away). None of the workers had any idea how to build the complex formwork required to produce the necessary curvature for this concrete rail. There was one, though, whose father had been a basket weaver in a nearby village, and he proposed to build the forms using the techniques of his father's work. The result was something that I never could have conceived. It was so beautiful and so much a part of the idea of the building as a whole that I found it very moving and gratifying. The many personal contributions are the rewards of these endeavors… and, if on that day the birds are singing, then the work comes out even more beautifully. So in those cases, the love for birds and for walls created some of those masterpieces like the beautiful small churches of the Middle Ages. And now, we are back to the beginning: architecture is a manifestation of love or it is nothing at all. If before laying a brick we kiss it, we then lay it well.

Have you always felt this way about architecture?

Always. I felt great happiness when I saw the walls of the church of the Autostrada signed by the workers. Every one of them signed the piece of the wall they worked on. It gave me great satisfaction. I went and spoke with all the workers, who were from Abruzzo, Romagna, Tuscany, Siena, about the character of the materials for the walls of the church. And so it happened that you could tell who had done each piece of the wall. These were men with such fantasy that they could represent themselves in the walls they built. The walls are all different because those men were all different from one another in the way they worked, in their conception of life, in their human relations. The wall of the Tuscan is cold as ice, indifferent. The Sienese, instead, seemed to have thrown himself inside the wall; it's all fire.

11 Chuch of Longarone, exterior spiral stair under construction.

12 Church of the Autostrada, exterior wall.



13 Bank Monte dei Paschi di Siena at Colle Val d'Elsa, 1973–83, lobby interior.

14 Bank Monte dei Paschi di Siena at Colle Val d'Elsa, exterior plaza.

You mentioned the role of the church in the city and your interaction with that institution as a client. Now, could you dicuss in the same terms your work on the bank at Colle Val d'Elsa?

First of all, I had considered the working condition of a bank clerk, which is some kind of a prison sentence. From that, I began with the idea of eliminating every barrier. Therefore, free the bank, and possibly liberate it from all the walls, away with all railings, away with all gratings and obstacles that keep the bank from the city. I spoke with the bankers and said to them, "You've put the bank against the city and this is a very grave thing. Let's do something different, let's not try to get rid of one wall, let's get rid of it all and try to make a space where people go dancing." And that's how the covered plaza was born. I know now that people don't use it that way but I'm not worried. Let's wait a few years. The same thing always happened with my churches. At first, people wouldn't go. Now they go even too much. Everything matures in a miraculous way, as if there were a need for change. There is always a need to create a space that has greater value than all previous spaces. All these things convince me that I have become a little religious, perhaps by analyzing the mistakes that I've made in my churches. Architecture is a continuous endeavor, not of the moment when I'm studying some detail, but all day and all night. Sometimes I've studied a project for two or three years, and after having reached my deepest conclusion, I've torn it apart, realizing how wrong it had been.

To what lengths would you go to show that an institution is at odds with itself?

Florence is now building a new courthouse. The first thing they told us was that it would be seventy-five meters high, as though that were a measure of its beauty. I thought a palace of justice should be made up of little houses, where the judges could find peace and the right frame of mind to have a colloquium with the accused. Although I had been invited to make a proposal, I simply withdrew from the project.

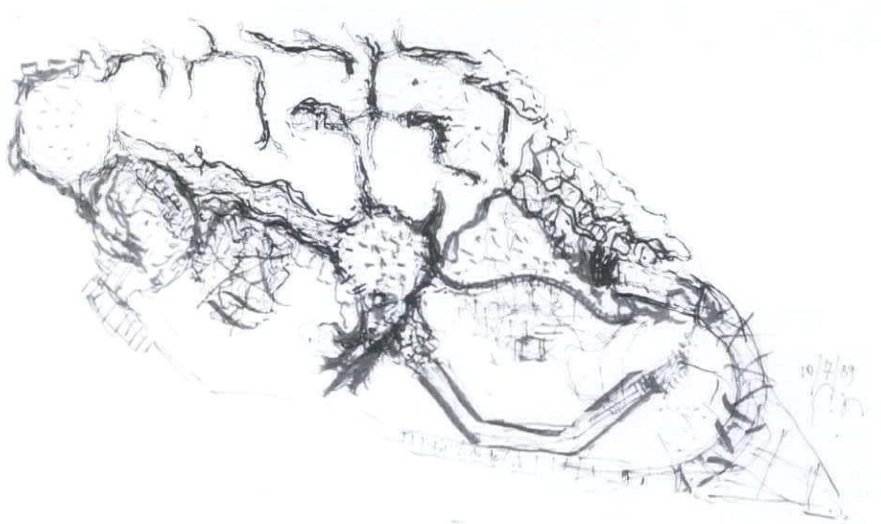
Then, I went to the prison in Florence and made some friends who are now working with me at the Fondazione… all great guys. So now we're designing a garden for the prison of Florence. It is a garden that begins inside the prison and then flows outside its walls into the city. It serves as a link between the free city and the city of punishment and pain. Let's hope it is a good thing for both cities.

You have said, "The architect can build in the city, but cannot build the city." Is this to say that you would never design or plan a city?

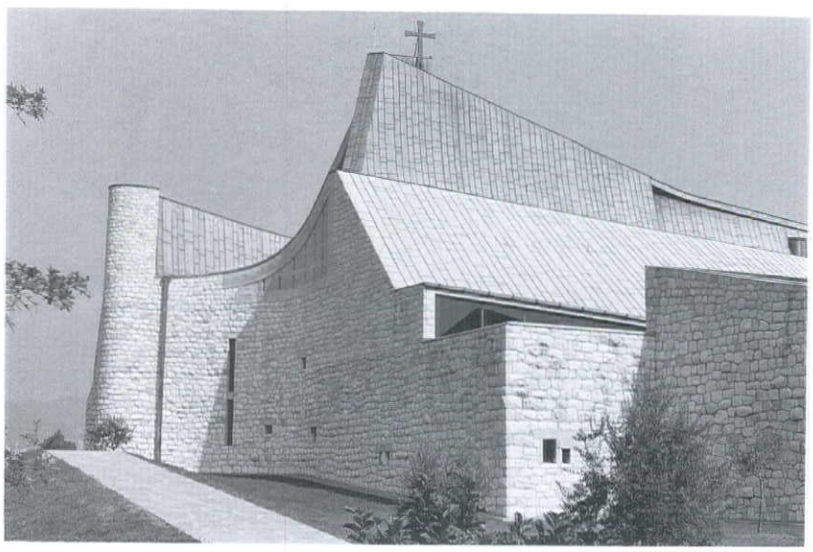
Well, this is the most difficult problem anyone could imagine: how to create a city. First, I must examine my conscience to determine whether I am qualified to create a new city. This is the first problem: to have a clear conscience. Not to fool yourself and others that you can create a city, but to truly create the necessary conditions to initiate a dialogue with its future citizens, because a city is made for its citizens. Then I must ask myself, What is this city's reason for being, what is it that this place needs to begin to be a city? Because it often happens today that we create things that, instead of responding to the needs of people, disturb people's lives. All the cities that are born today are just improvised by a group of so-called competent businessmen who have nothing to do with the people who will inhabit their new city. A new city, if we must create one, must have spaces that invite people to be together, it must offer the invitation to dwell, to have conversations, to be in constant pursuit of a better life, a sense of progress.

What is "progress" to you?

"Progress" is this: you and I here, discussing these things that concern the life of man, not for our own private interests, but to see how each new element is the fruit of a thought, a thought of giving that puts you at peace and makes you happy. And this is the gift of the architect to the citizen, this is how friendship is born, from the idea of living better in the world and always aspiring to a better life. This, of course, requires your complete predisposition and willingness. You create a city for them [the people] because you love them, not because they're your clients. They are people to whom you give the benefit of life. A vision of how we might live, together.

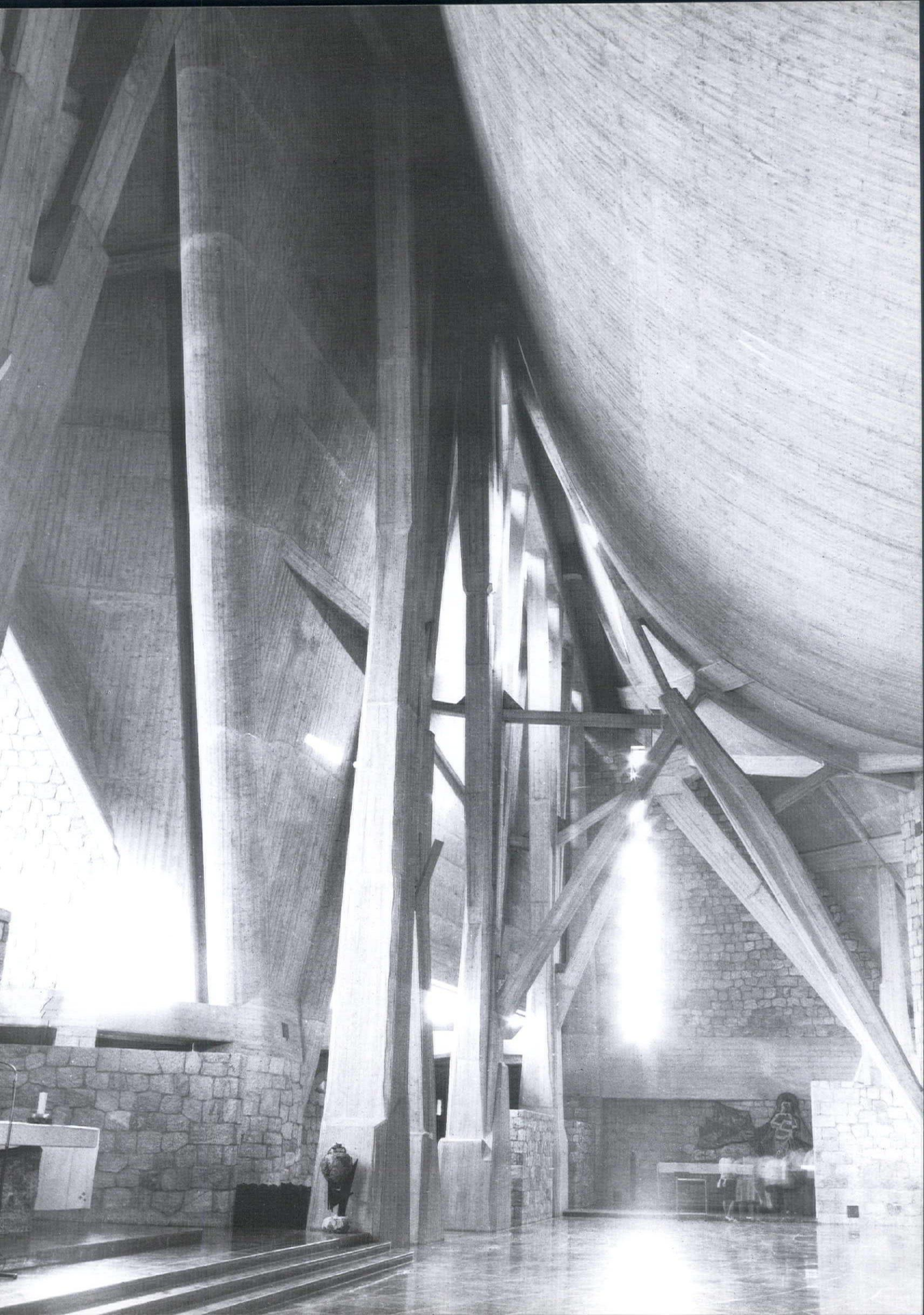


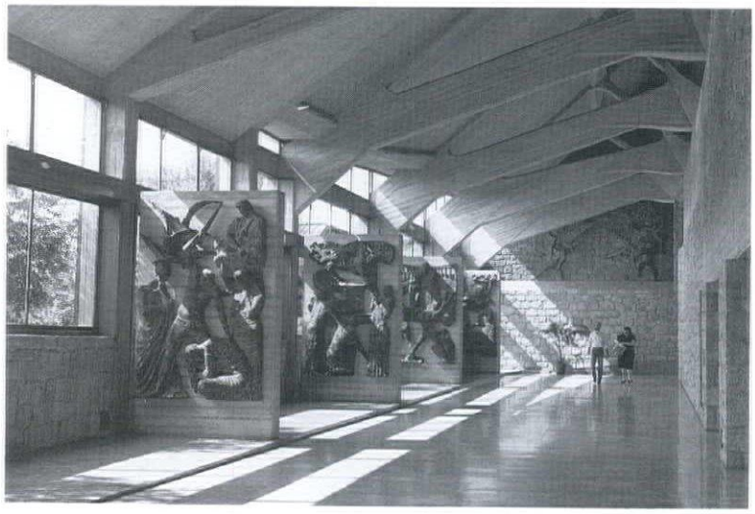
15 Garden of the Encounters, Prison of Sollicciano, Florence, 1989, preliminary sketch.



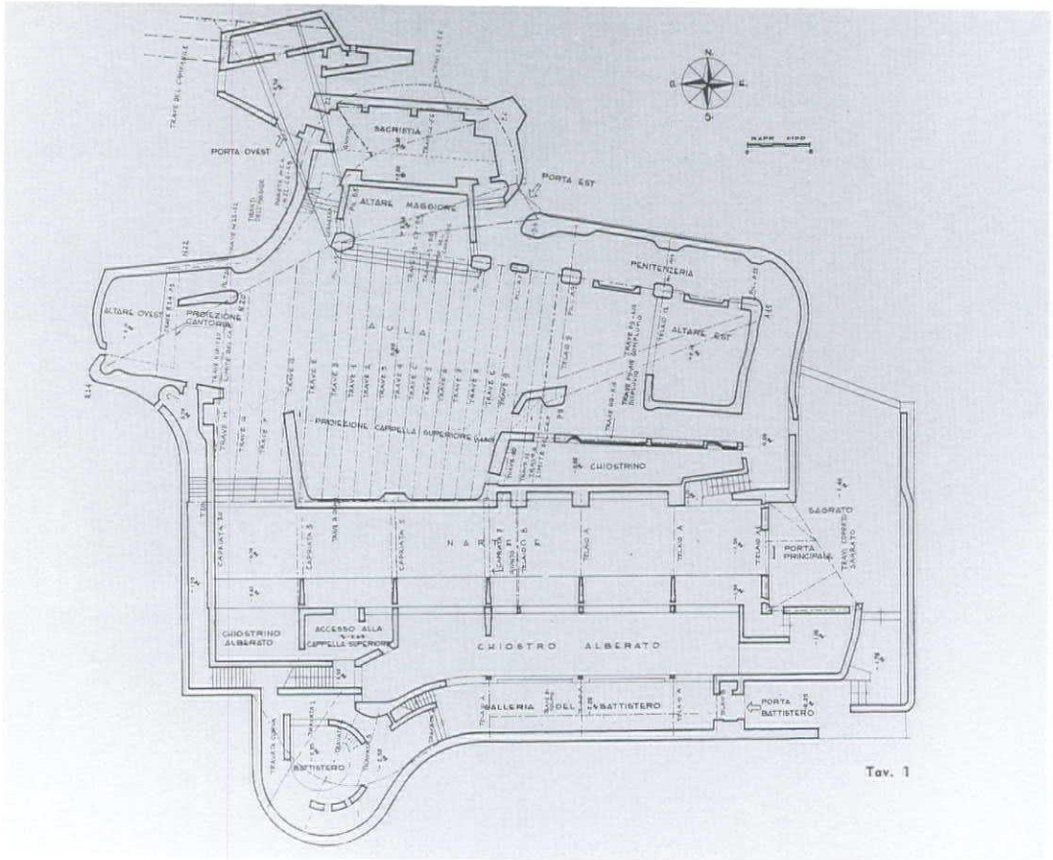
CHURCH OF THE AUTOSTRADA

Florence, Italy, 1960–64



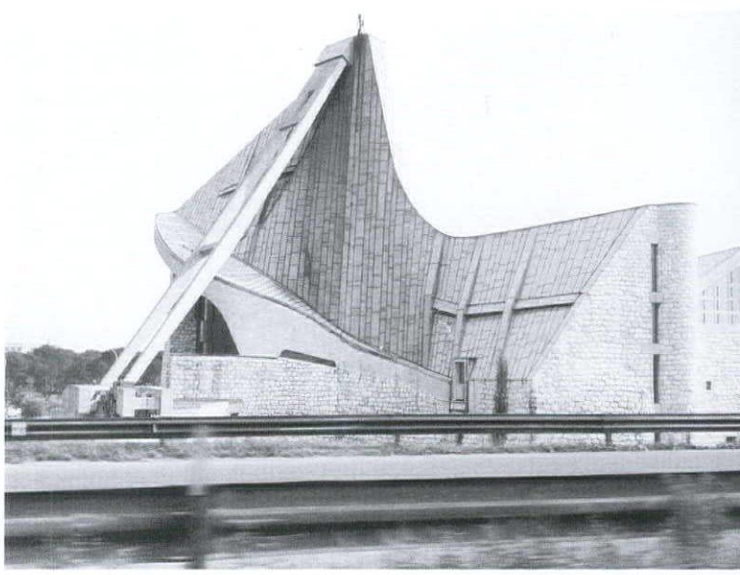


18 Entrance gallery.

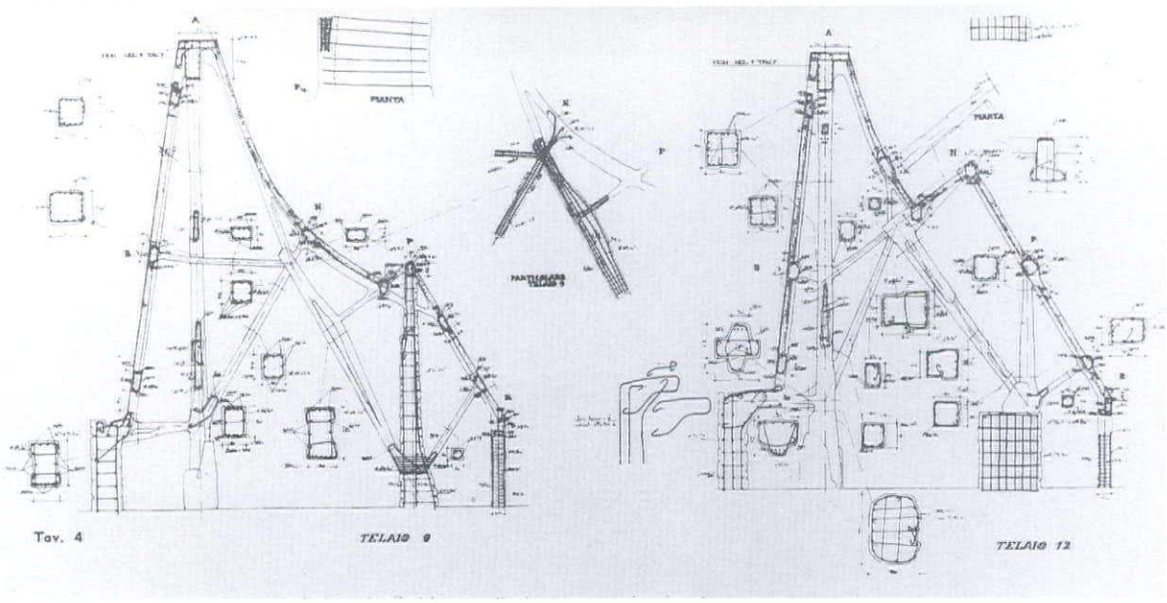


19 Floor plan.

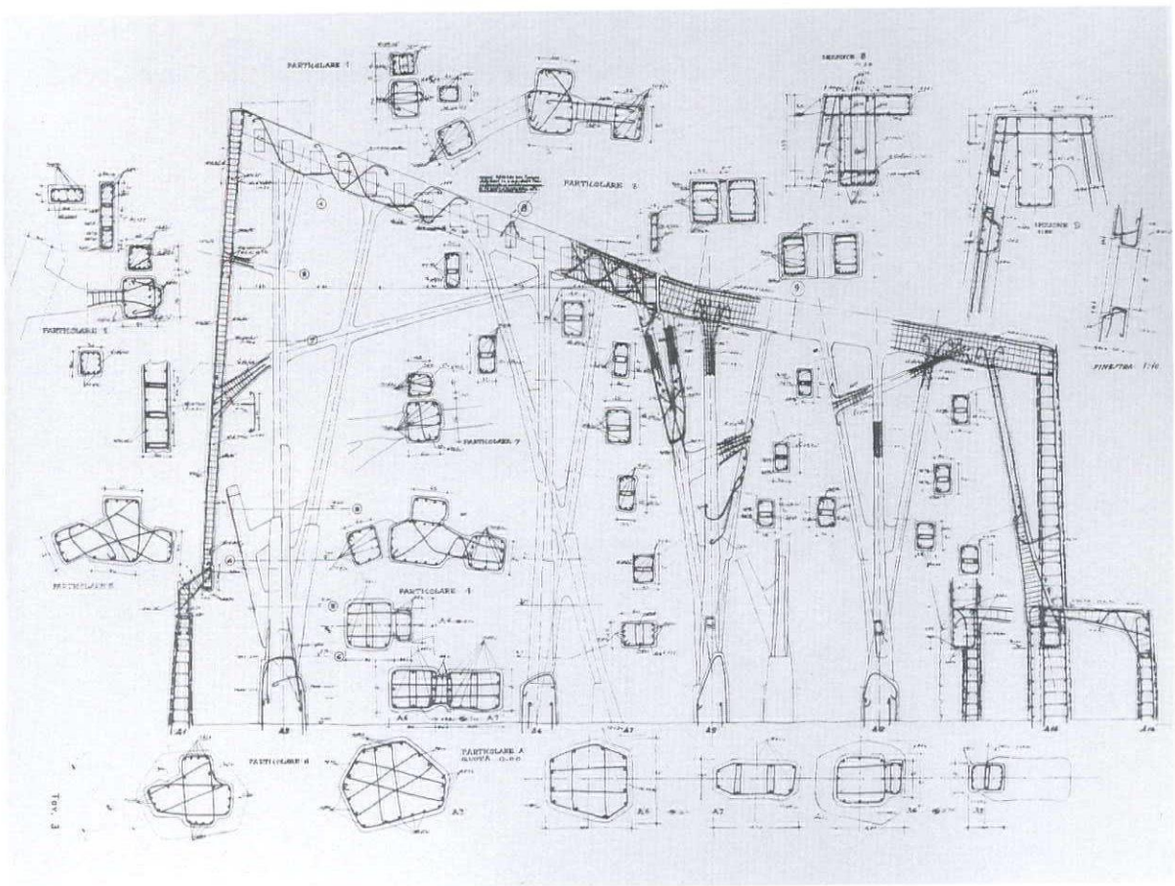
20, 21, 25, 26 Exterior sequence viewed from a speeding car.

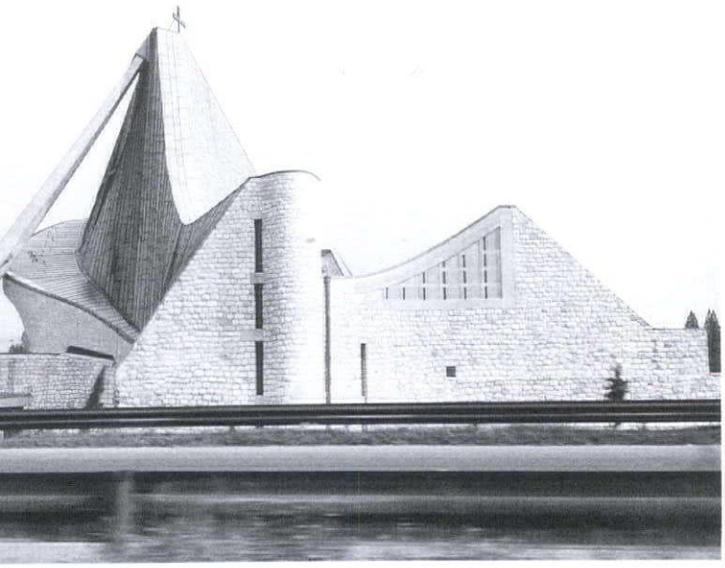


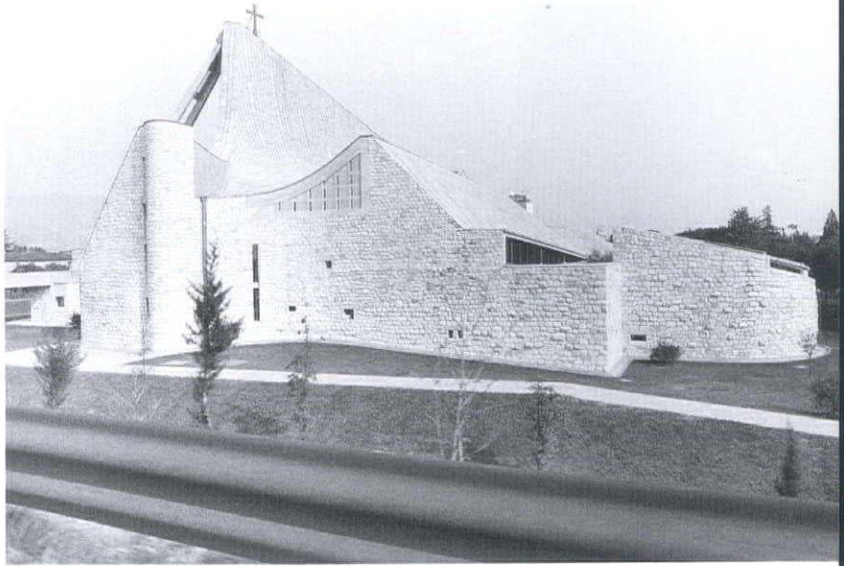
Transverse sections



Longitudinal section



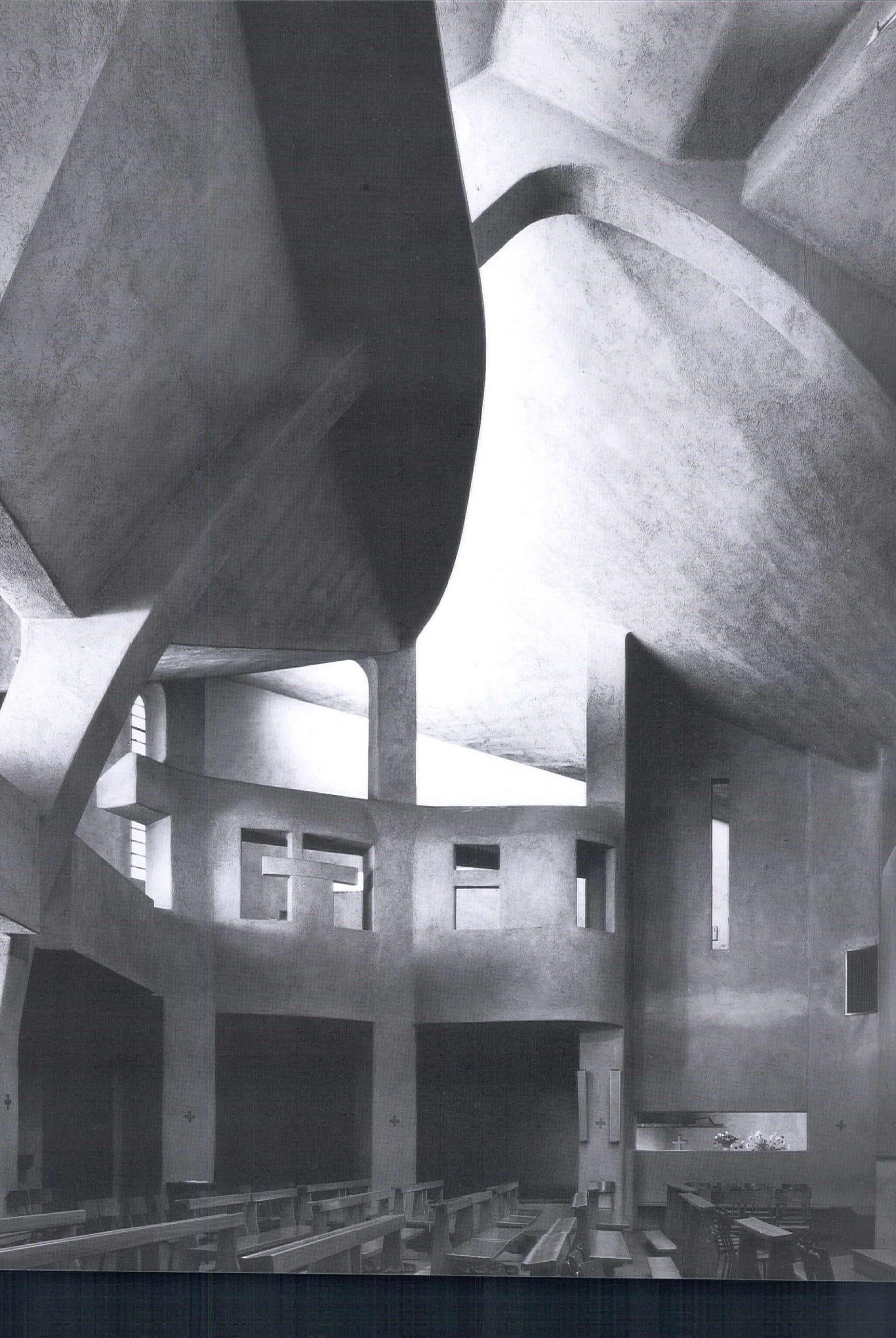


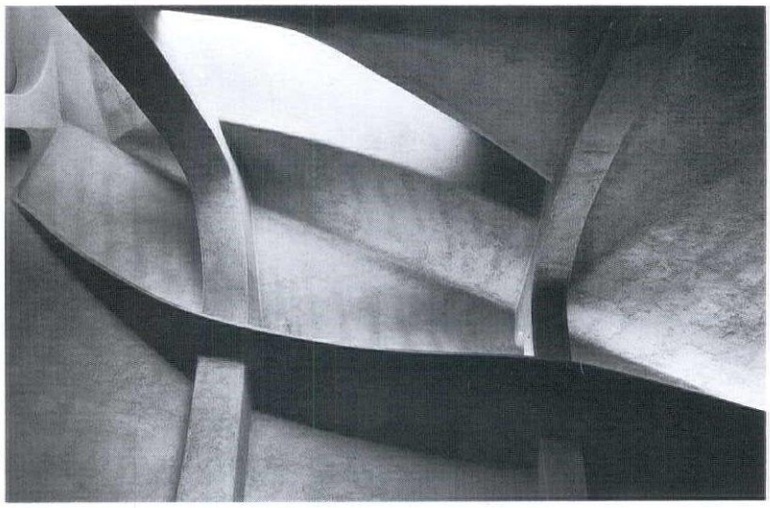


The Editors

CHURCH OF SAN MARINO

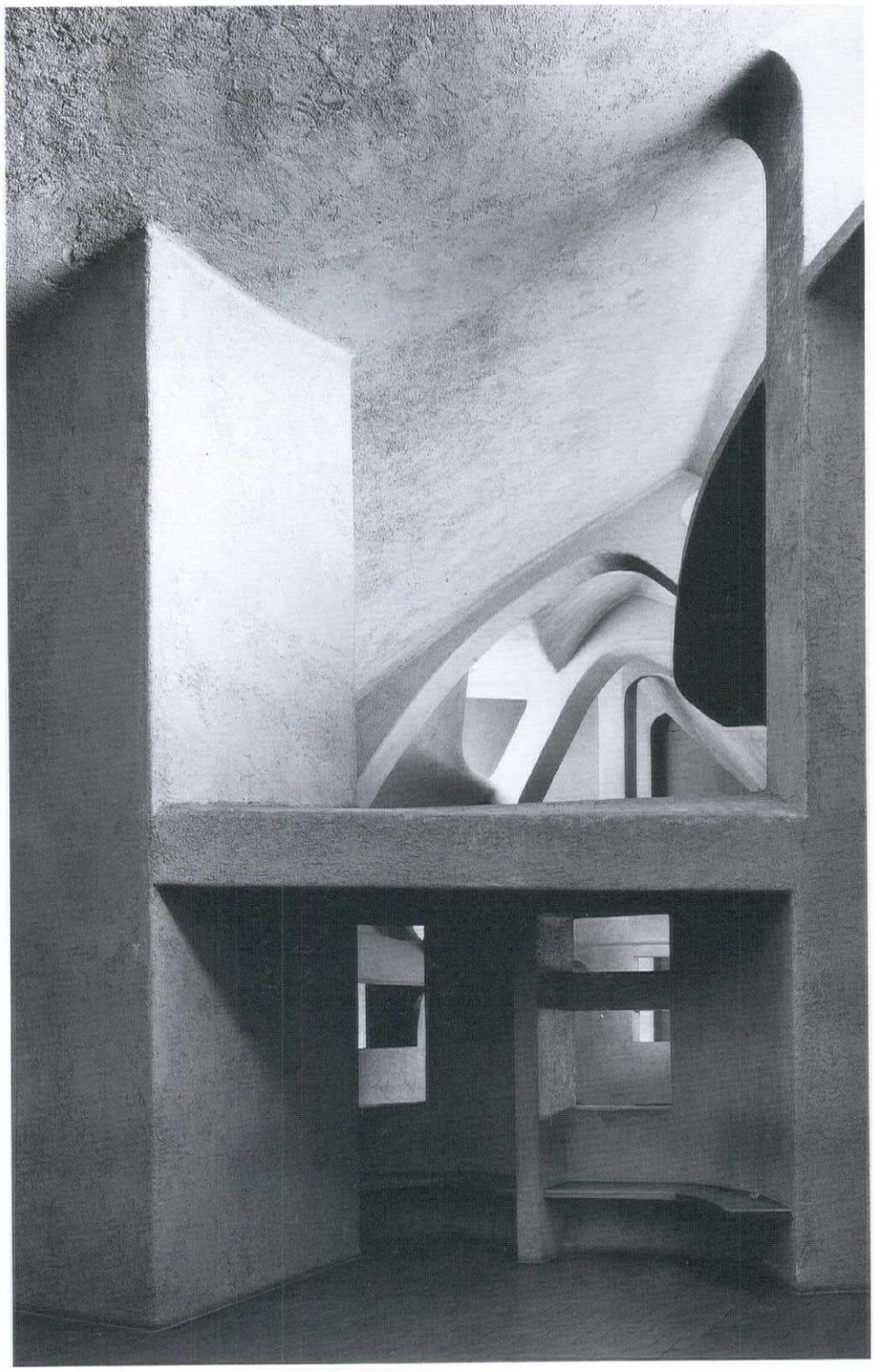
Borgo Maggiore, San Marino, 1961–67

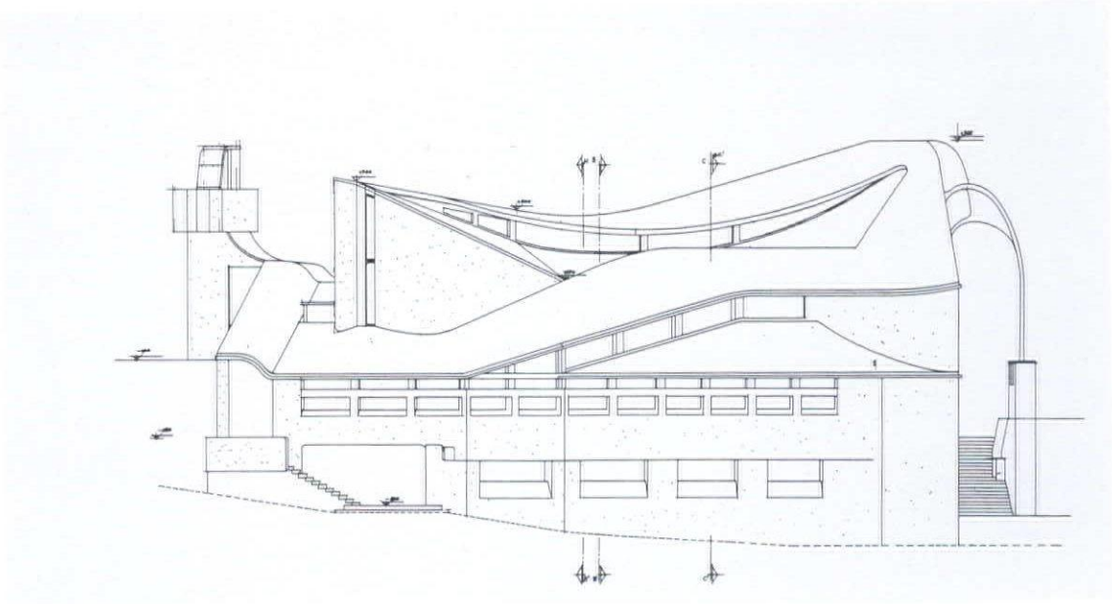




29 Ceiling detail.

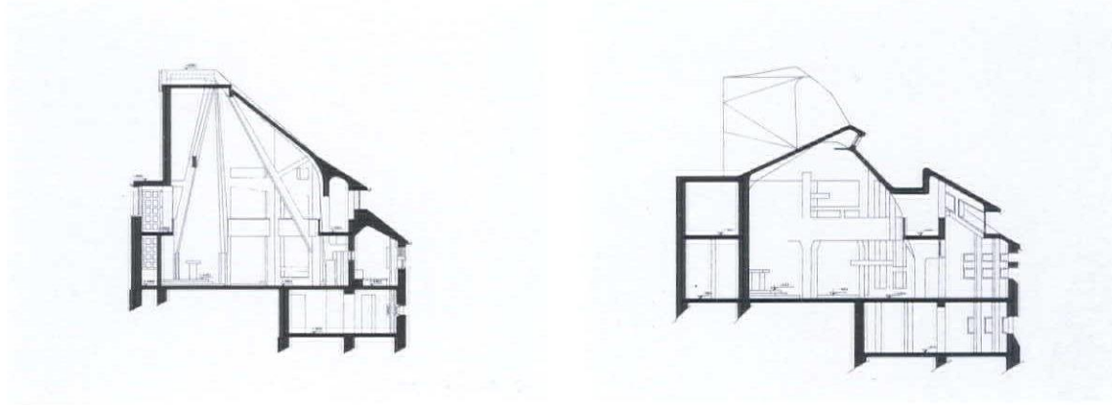
30 Balcony overlooking nave.





31

North elevation.

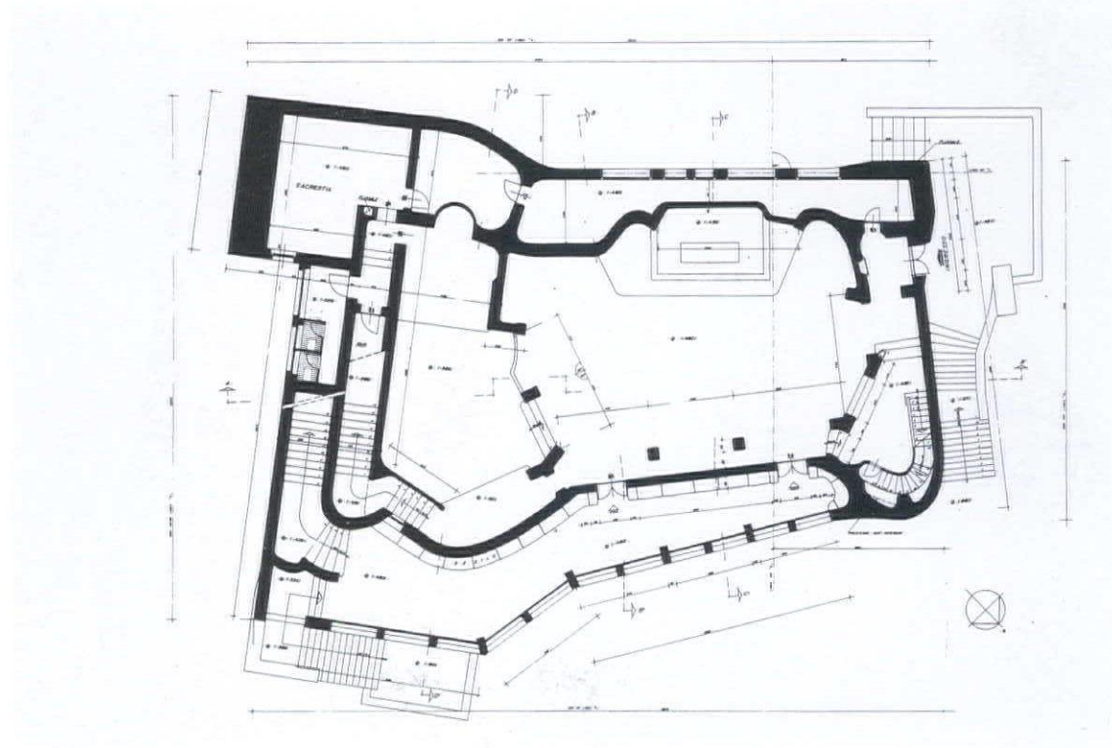


, 33 Transverse sections.

32

33

Floor plan.



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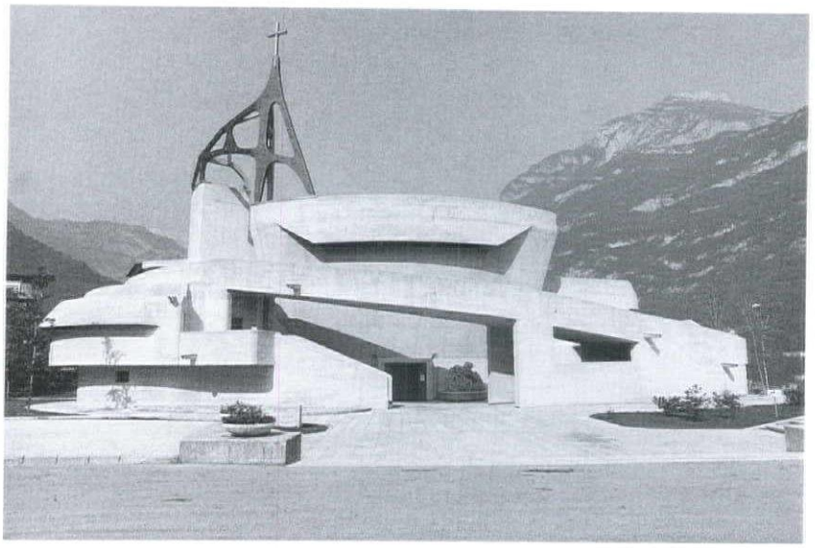
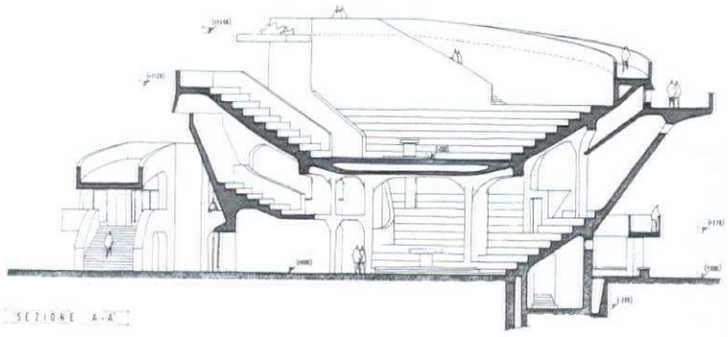
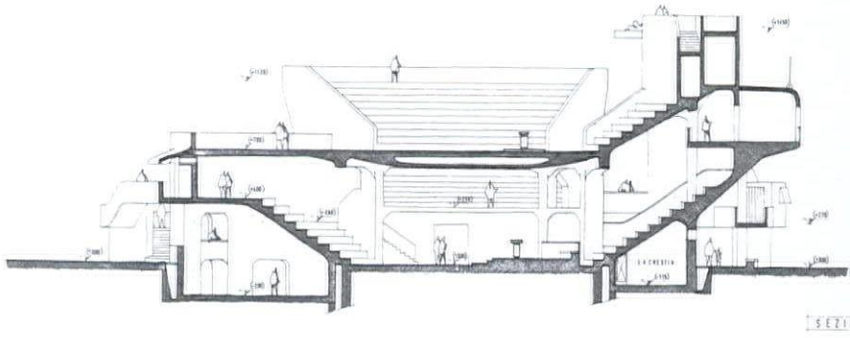
The Editors



CHURCH OF LONGARONE

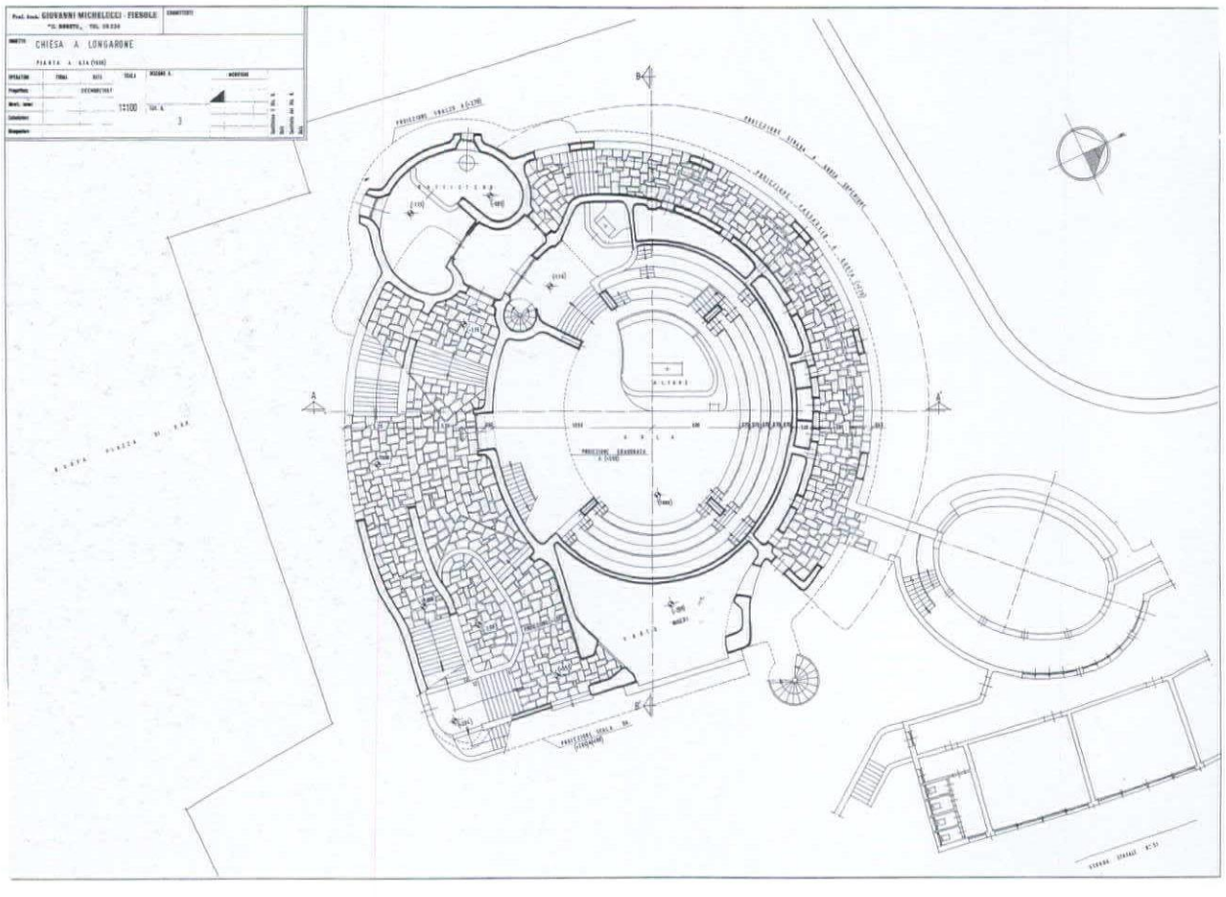
Longarone, Italy, 1966–78



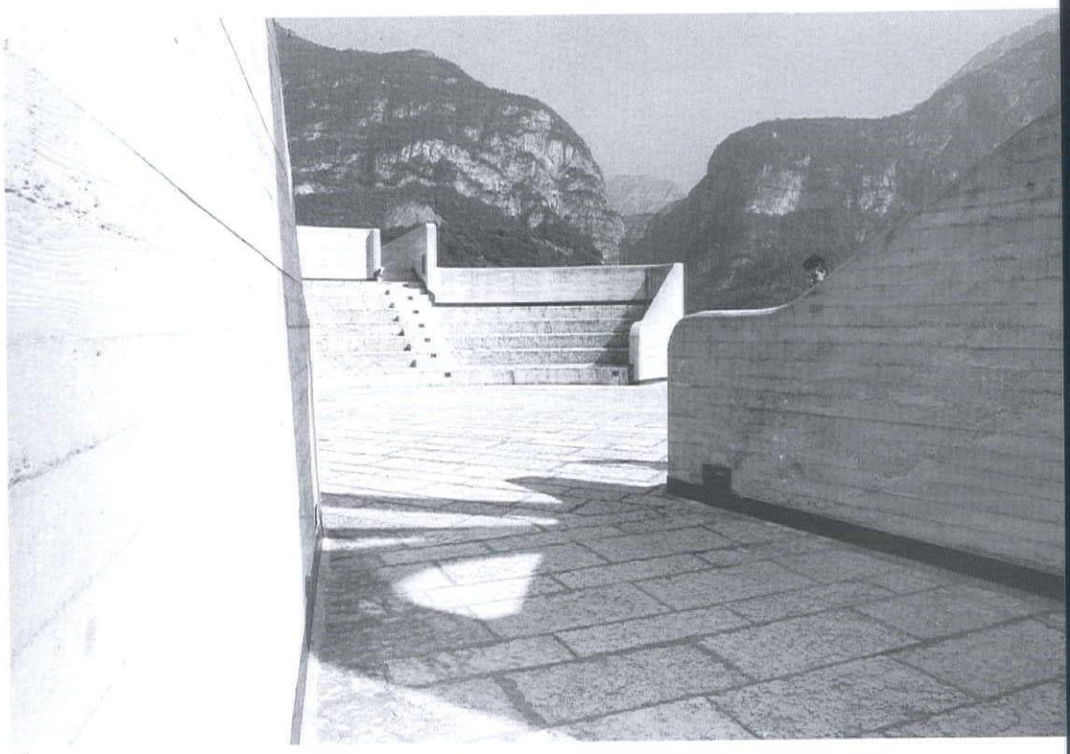


37, 38 Sections.

39 Floor plan.



The Church of Longarone



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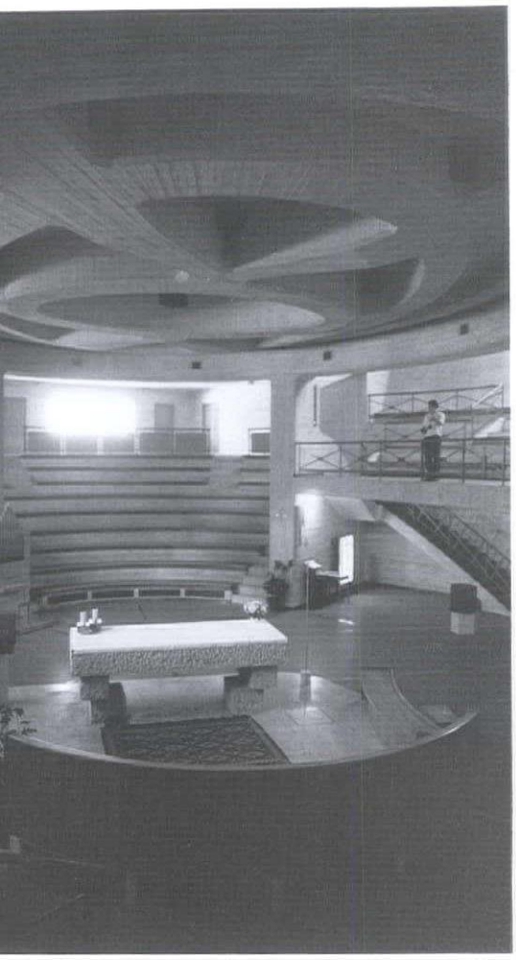
40 Amphitheater.

41, 42 Interior.



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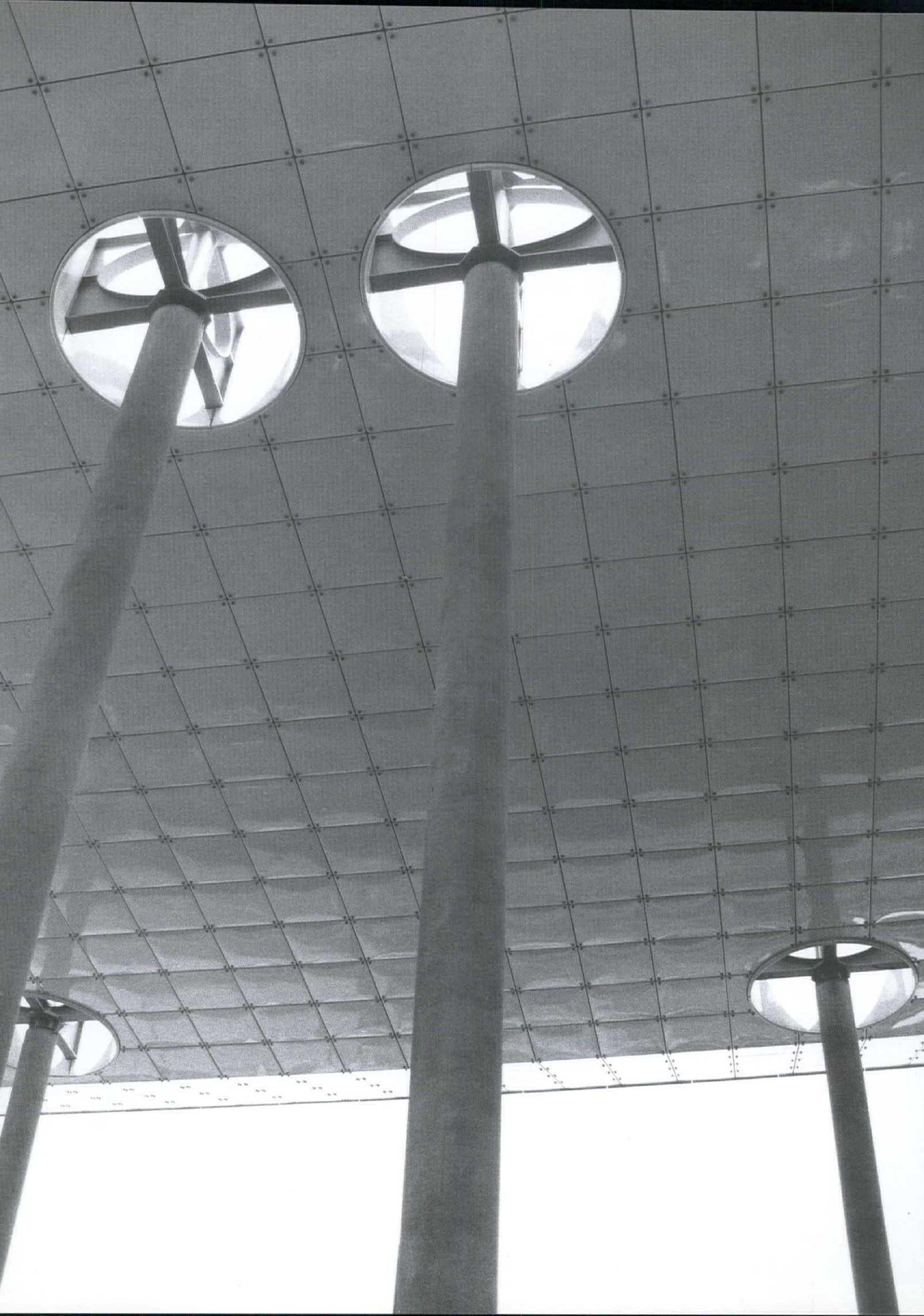
The Editors



The Train Station of Kassel

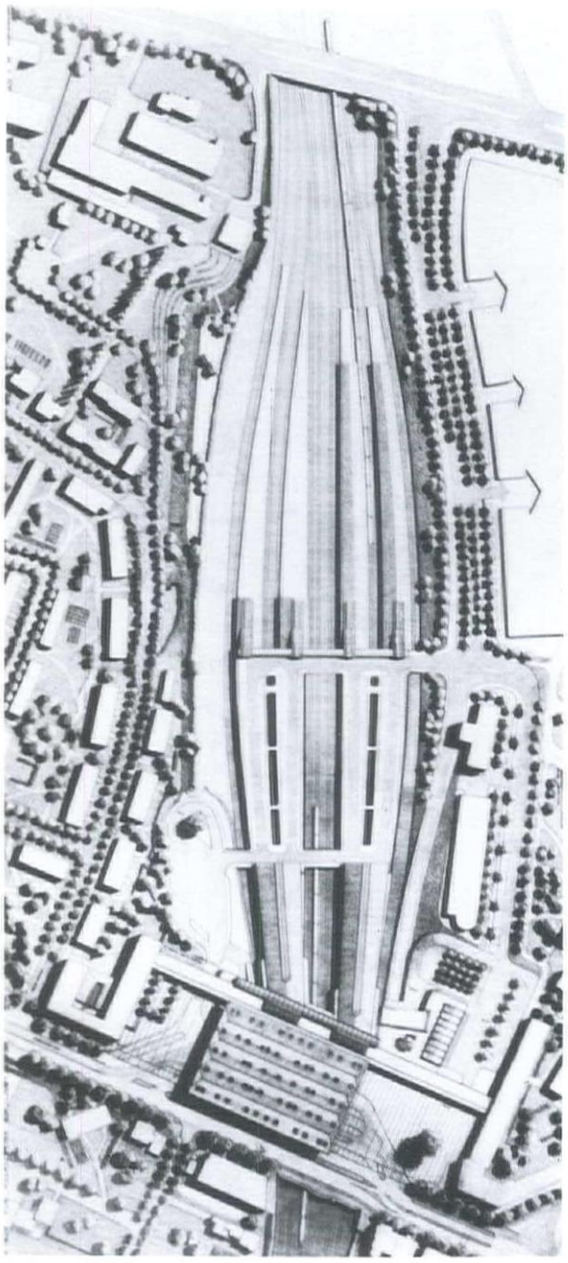
Andreas Brandt and Rudolph Böttcher

The Wilhelmshöher Allee, a long boulevard of the baroque period, connects the historical center of Kassel, Germany, with the gardens of the Wilhelmshöhe palace. The Hercules, a monument on a ridge in the Habicht Forest, marks the western endpoint of the axis of the street and the vista that it affords. It is a fantastic view, memorable for anyone who has visited the city.

New tracks currently being built for the high-speed trains that connect Hamburg and Munich have made the old terminus station at the edge of the historic town center obsolete. A new station, the design of which we began in 1986, is nearly completed. Our station is situated at the intersection of the Wilhemshöher Allee and the tracks for the high-speed trains. Its entrance plaza forms an elongated niche at the edge of the street and is covered by a large roof that is nearly the size and proportion of a soccer field and is held above the plaza by a field of columns. The roof is constructed as a kind of orthogonal space frame so that it acts structurally as a hollow plate. It is supported at 57 points by concrete columns 16.5 meters tall that were precast using a technique in which the forms were spun as the concrete was curing (*schleuderbeton*), ensuring an extremely high finish in the surface.

Half of the roof rests on solid ground, the other half on a wide bridge that is the full width of the plaza and spans the railroad tracks that lie beneath the Wilhelmshöher Allee. An expansion joint marking the connection between the bridge and the ground runs diagonally across the plaza; between summer and winter it may move as much as fifteen centimeters. Additional expansion gaps run parallel to the bridge's span and divide it into smaller, freely moving sections. As a result of these complicated preconditions, a regular placement of the pillars that carry the roof was impossible. The columns are therefore arranged, in one direction, at regular intervals of 13 meters, parallel to the boarding platforms for buses and trams, which are under the roof, and, in the other direction, irregularly on the basis of a 3.25-meter construction grid. The magnificent oak forests planted in past centuries on the high grounds around Kassel often follow this ordering principle. Therefore, we conceived of the numerous pillars that support the plaza roof as an extension of the line of trees along the boulevard. The first row follows the

1 Kassel Train Station, Andreas Brandt and Rudolph Böttcher, Kassel, Germany, 1991, columns.



2 *Site plan.*

axis of the boulevard's trees, and the irregular placement of the other four rows gives a person standing on the street the impression of looking through a forest.

Statically, as well as organizationally, the columns work as those mature oaks do, as tensed springs that are capable of responding to all of the horizontal forces of displacement that arise from wind and temperature and the resulting movements of the roof they carry and the bridge on which they stand. Because of their thinness, the columns have an elastic range of movement of up to 10 centimeters at their tops; together, the 57 columns work to counteract all of the displacements of the expansion gaps. Through the design of the steel connectors that join them to the frame of the roof, the columns that are under less stress absorb the torque loads of the more stressed columns, and the forces are distributed homogeneously throughout the system.

The plaza's roof towers above the Wilhelmshöher Allee. Two issues determined its height: the formal dimension of the building's immediate context, and the qualitative dimension of the train station's place in the city. The edge of the roof is ever so

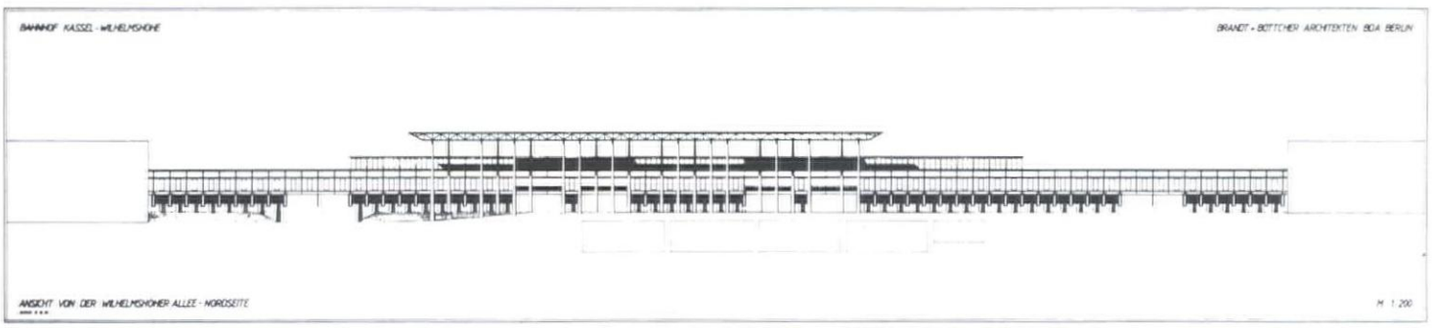
slightly higher than the line of the gutters of surrounding houses. We elevated it above that level only enough to allow a person standing in the plaza at the entry to the station, presumably someone arriving in Kassel for the first time by train, to see the silhouette of the ridge of forested hills to the west, the Hercules that overlooks the city, and a glimpse of sky above. The chosen shape of the roof's edge and the inverted form of the roof itself were intended as further gestures to a traveller's first perceptions of this city.

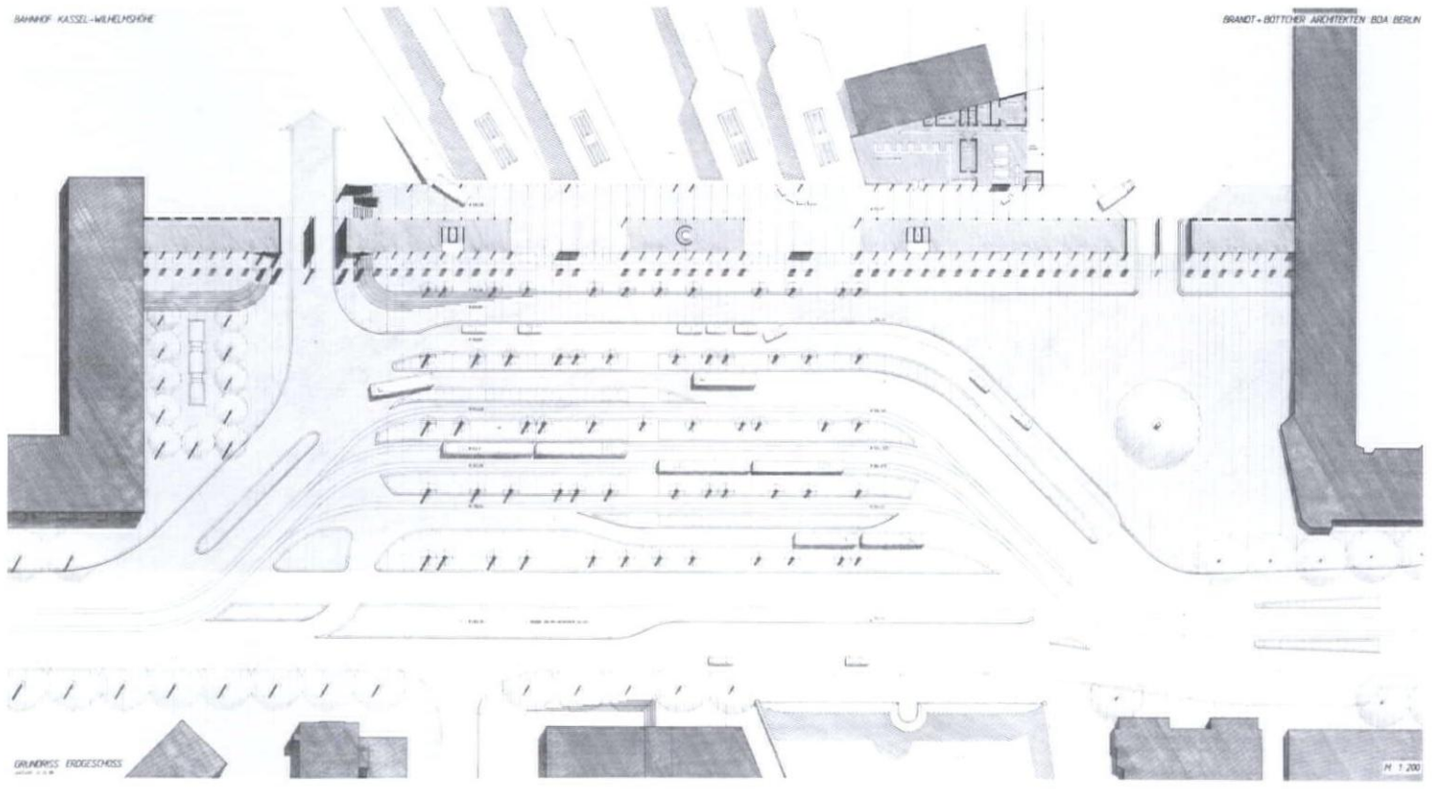
During the daylight hours, light falls through the openings at the tops of the columns, and at night the columns are illuminated in alternation through these openings from above. The roof, the underside of which is sheathed in white enameled metal panels, is like the sky, the roof above all of Kassel. In the winter, when the sun remains near the horizon, the light shines well past the middle of the underside of the roof, illuminating the ceiling panels with its reflection. From afar the light marks the roof as a place on Wilhelmshöher Allee where Kassel is connected with far-off cities.

* * *

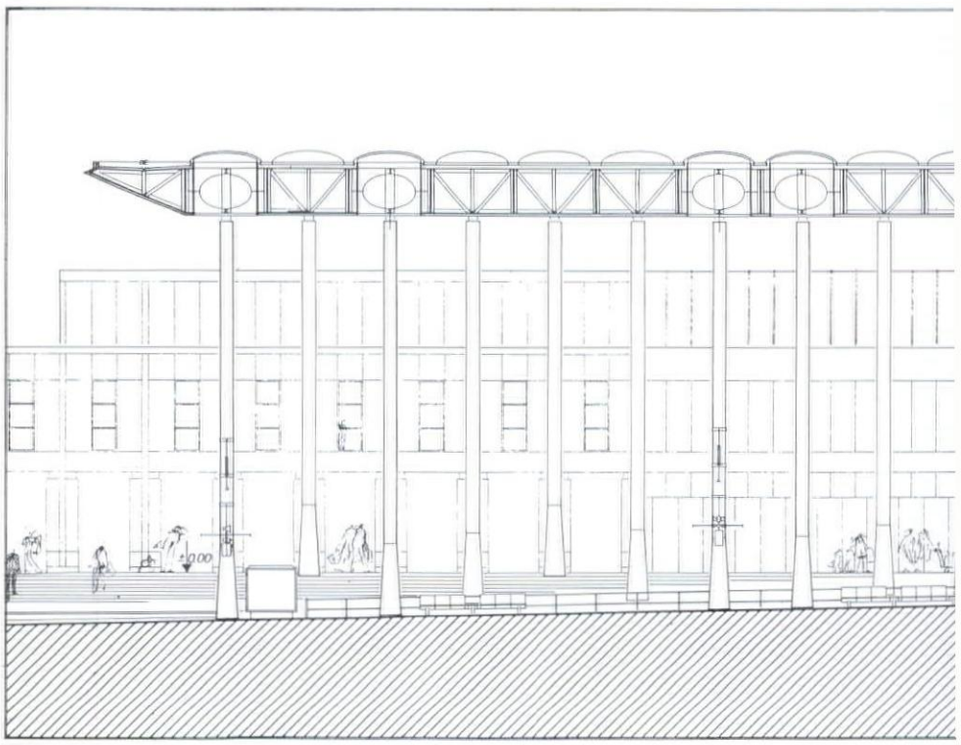
3 *North elevation.*

4 *Plan.*





5 *Longitudinal section.*



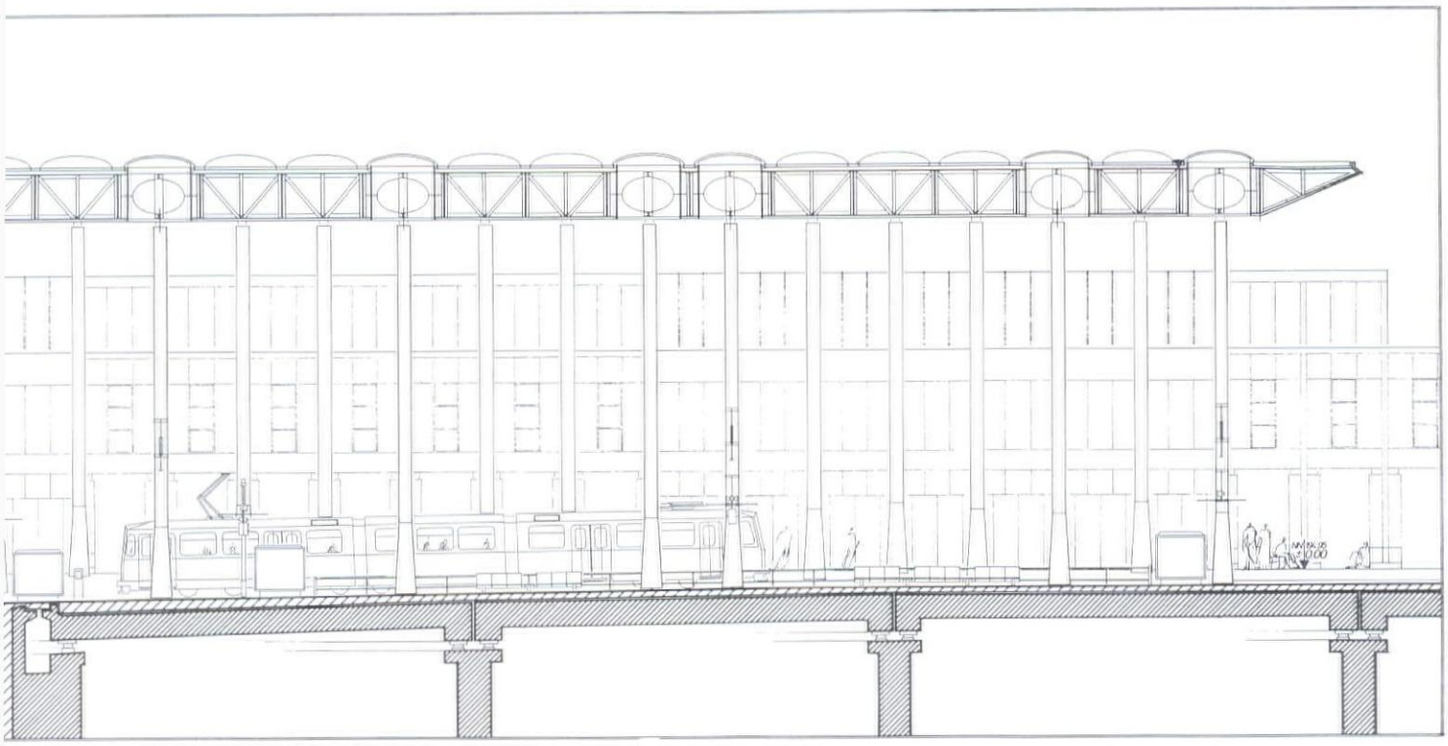
The following discussion between Andreas Brandt and the editors took place in New Haven in the spring of 1990.

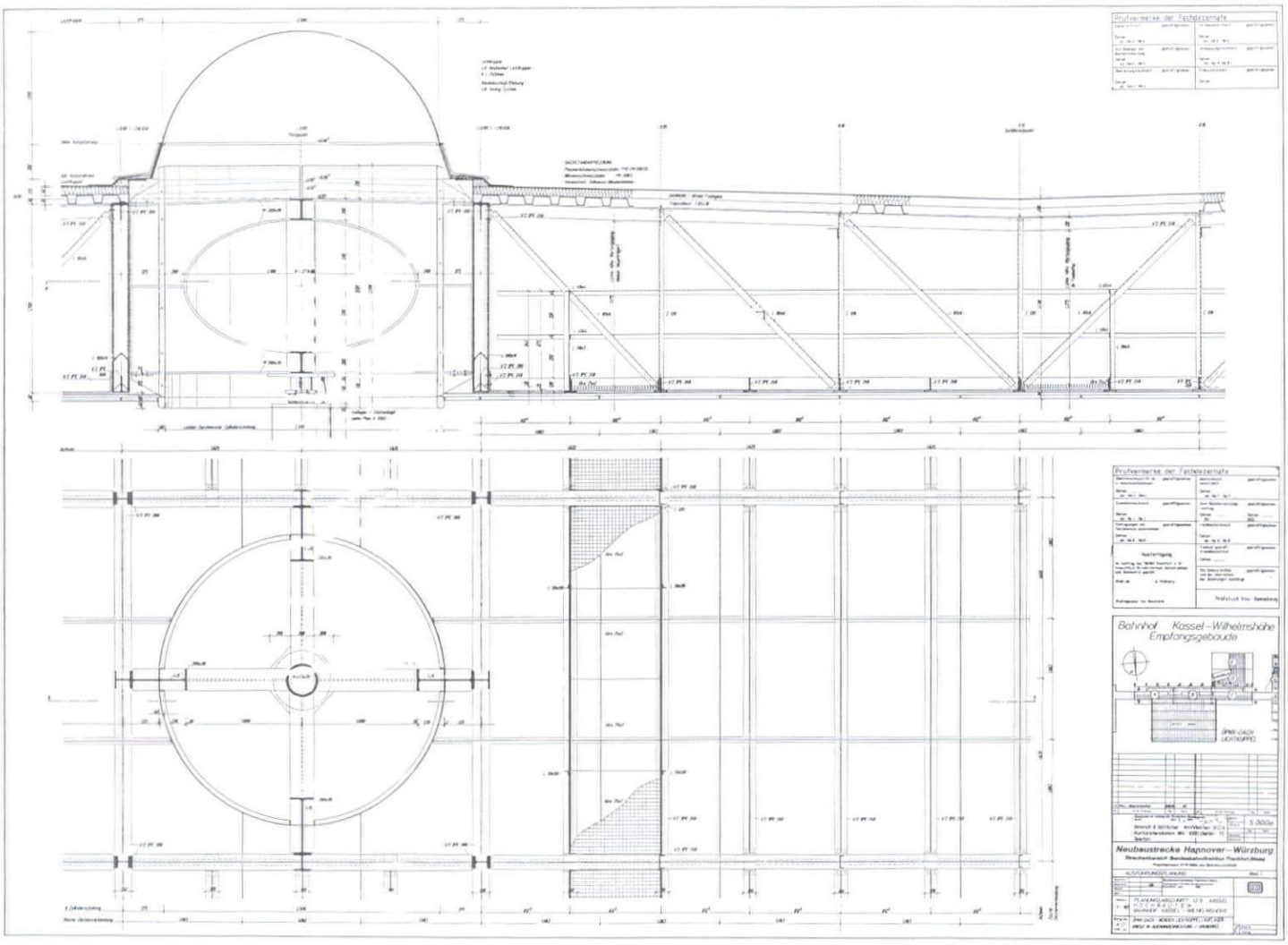
As you discuss the Kassel station, you seem to leap between two apparent extremes in the process of making architecture: on the one hand you offer the poetic images of the trees and sky, which you feel have determined your work on the site, and on the other, you describe the technical attributes of the building itself. Where is the convergence of poetic thought and technological production?

I think that this is the work of the architect, to bring the mythical and the poetic and the technological together as one into the building. This requires both a profound desire to understand the gestalt of a place and a deep understanding of how a building is put together. It is the architect's knowledge and sensitivity that is the vehicle by which a poetic idea is transformed into a building solution.

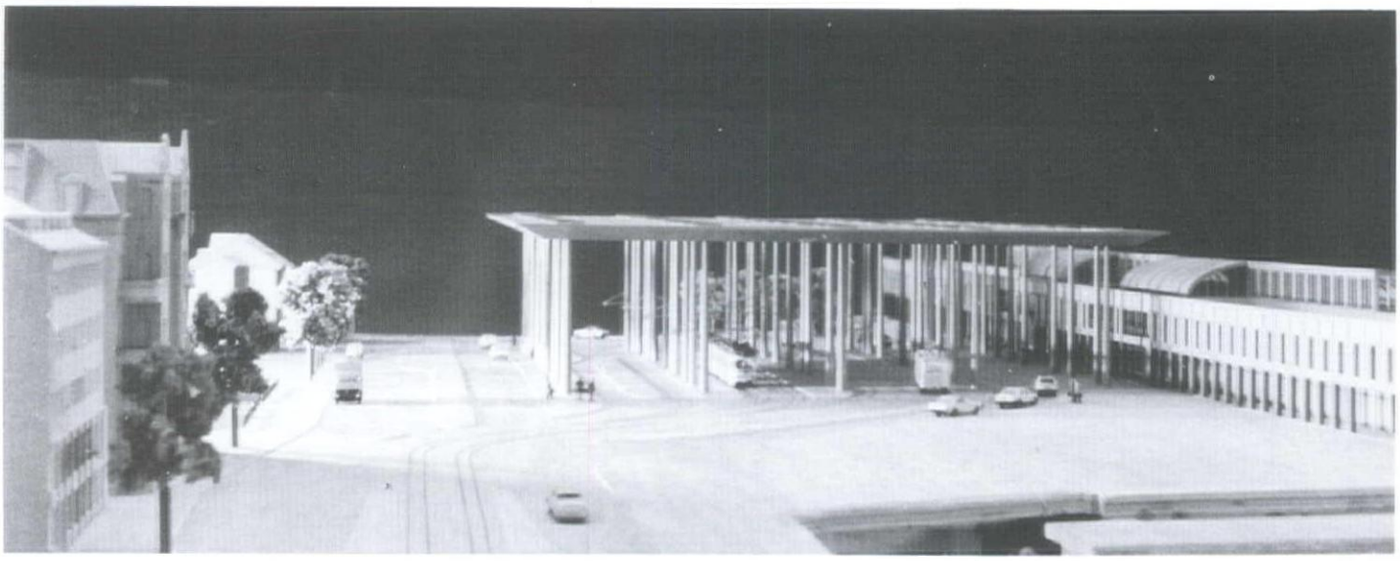
But there is a danger of simplifying the process that carries the architect from an initial idea to the fabrication of the object.

No, it is a simple process. Not simple to do, but certainly simple to discuss or to trace. For me, it's not worth slavishly untangling some theoretical rationale for the production of a design solution. The project at Kassel is based, as others on which I have worked were, on a single idea for building; that the site and task determine, more or less, the design on their own. I say "more or less" because there are obvious variables in that equation. In defining the site, one has to be open to ideas that may truly capture the essence of a place. I love projects that have developed over the course of a walk through the areas around a site. It is there that I've encountered those things that confront my preconceptions; I believe that it is always that which we don't recognize that raises our greatest curiosity, and that curiosity allows us to gain a little insight into what a place really is about. I believe that the city of the future is the essence of all unique experiences that can exist in the city we have inherited, and so because I am a maker of that future city, those experiences and that gestalt must be central to my thoughts. This is what will justify the buildings that we wish to produce.





6 Construction detail of column capital.



7 *Model.*

That seems to justify almost any form or building idea.

I suppose that's true if one approaches an architectural problem formalistically. Personally, I find it really exciting to experience built structures that evolved out of rational handiwork and that speak, in the clarity of the idea expressed in that rational construction, not of the formal preconceptions of an exalted person with monumental ambitions but of an anonymous maker. It is that anonymity of most of the world's buildings that I find particularly stimulating as a designer.

Do you believe that architects today can maintain enough control of the process of manufacture to ensure that the clarity of a construction idea can be maintained throughout the process?

What I truly regret is that the normal sense of how a thing is put together well seems to be disappearing. Nobody seems to really know how a building is put together. Nobody knows about the foundation—well, there is someone, an "expert," who knows about the foundation, but it is not the architect. And there is, of course, a specialist who understands stonework, but not the architect. There are others who know about how windows are sealed and their profiles designed, but few people know what the window really is, and the architect knows it less. As long as architects know and care too little about how things are put together and are therefore willing to relinquish the conceptualization of detail, I'm afraid that there isn't much hope. The quality of our work will not become better in the future, it will continue to decline.

Then the compartmentalization and specialization of the building industry has taken the conceptual control of technology away from the architect; in essence, the architect, as well as the building that he produces, is at the mercy of the industry standards. Is there a way to solve this apparent crisis?

We often lament that architects are slaves to the building industry, and that the buildings we produce are reductive because we are forced to work within the confines of a highly developed market system. And of course, when the industry is developing profiles for windows at an incredible rate and recording how many calories are saved by each particular profile, it seems impossible to compete.

8 and 9 Construction of roof canopy.

But I think that this isn't caused by the demands of the marketplace, but of our disinterest in the rudiments of building. You must really begin with students, and perhaps it's very old-fashioned, but I would think about it this way: I would run a school so that when you start as a student of architecture, you learn about a door, what a door is, what different kinds of doors might exist, and the same with windows and walls and roofs and staircases made of different materials, the primary elements of a building.

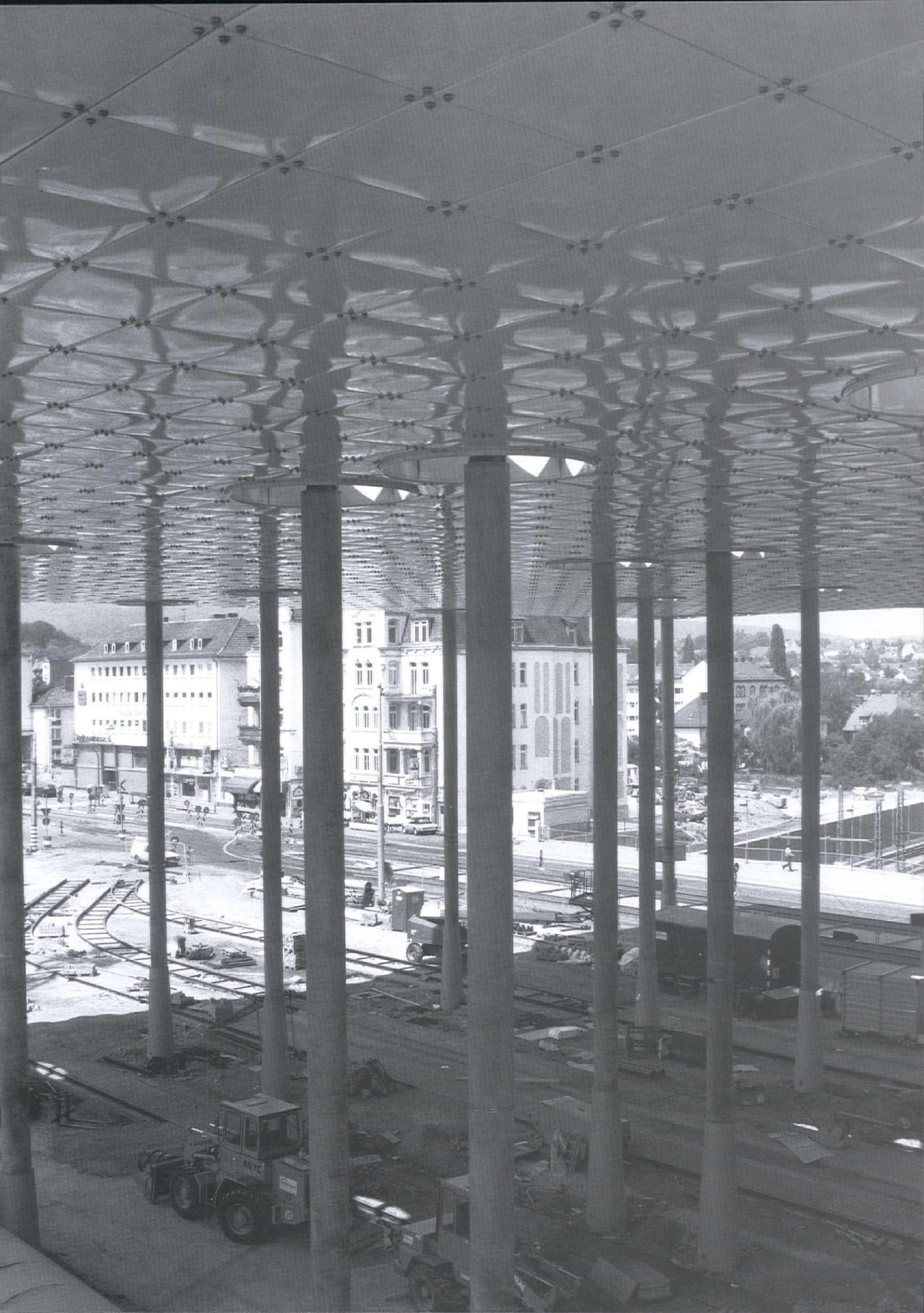
I was brought up so that I know how to calculate a beam and so that, when I see a structure, I understand which member is in tension and which is in compression, and I can thereby control the structure of the things I design. I realize this seems simple, but I have spoken with students and have seen the way they are educated today, and they are either unacquainted with or uninterested in these basic ideas. How can they be anything but slaves to the industry, shopping in catalogues for answers to very basic problems? It is not a crisis of anything but interest.

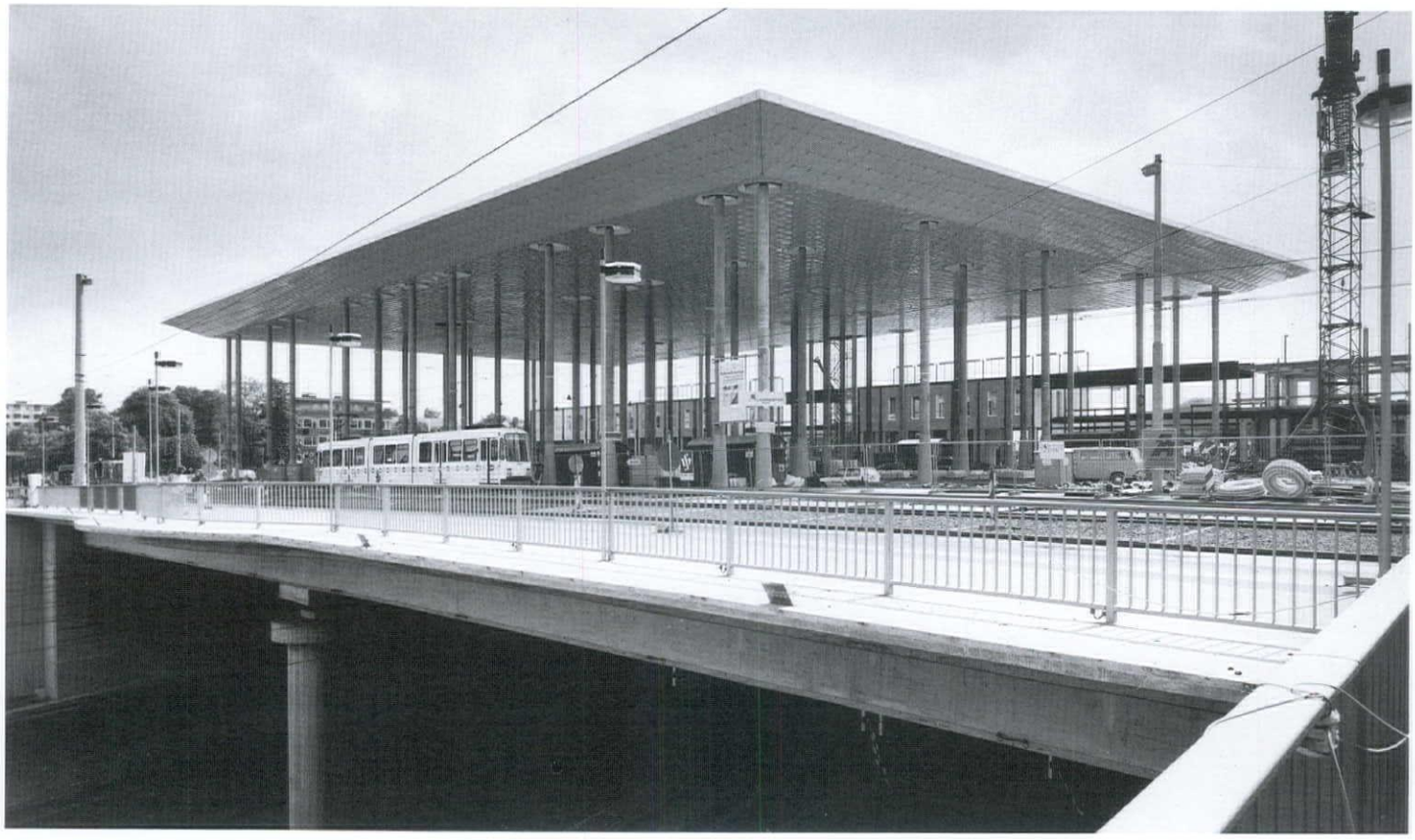
You have chosen metaphors from nature to describe the train station to us and, perhaps, to yourself. Yet your work in general seems entirely centered around the improvement of the city. You have in fact stated that you decided not to build in rural settings.

I really wouldn't know, in the event that someone asked me to build a museum or a big one-family house or a cluster of one-family houses somewhere out in the fields, that I would do it. The temptation would be very great, you know, with an exciting client with whom you really feel that you could develop something interesting. I don't know that I'm so strong as to say that I would never build in nature, but I have no opportunities to do so because I'm not searching for clients who might provide that chance.

This decision was driven by your sense of the fragility of the city, then, rather than a desire to preserve the remaining unbuilt countryside.

Really, I think that they're the same issue. The cities have so many problems, and as they've exploded they've diffused and left huge areas of unused, disregarded land. There should be some implosion, some increase in concentration and density. We need to condense the urban areas by utilizing that leftover wasted land that we have, so far, failed to associate with growth. Nature will become better when we concentrate on building a city in which people feel it's worthwhile to live. And the cities become better when you don't build in nature. For me, it's some kind of a moral necessity to think and work that way, to occupy my time thinking of ways in which nature can be kept free and urban spaces can be utilized in a much better way. I guess in that way I'm really very close to Leon Krier who, although I so dislike the eclecticism of his buildings, is someone who first understood the dissipation of our cities in a very clear and sharp way.





11 *Kassel Station, view from street level.*

You are a conservative, then.

I have a really simple idea about urbanism. It concerns a city in which one can lead a more relaxed life, that contains all the necessities required for daily living, all of which are easily reached on foot. Sure, I constantly ask myself whether, in that respect, I've become a dinosaur.

Do you feel that an architect can effectively arrest those trends in the development of cities that destroy the qualities you value?

Somehow I think our times are changing so rapidly that Leon Krier and I and who ever else can do whatever we want and it will be of no influence. Life in the city is changing from one day to another in directions that we may or may not like, but it is because there's a kind of automatism in urban development, not, I think, because architectural trends are of influence. I suppose this is what causes the business of a modern architectural practice to be so totally controlled by what one might call "automatous" forces of the modern world. When you look at the work of someone like Louis Kahn, who must have gone through a hell of a lot of deliberation and self-reflection, you realize that it would often be uncomfortable for a client, a business person, to work with an architect like that. So those people, about whom you would say, "Ah, there is a full-blooded architect," are less likely to have their work influence the way architecture in common is developed.

On the other hand, I look at these huge architecture firms, which produce huge projects, especially in America, and wonder about the architects who run them, those architects who are less and less in touch with the conception and making of the project and increasingly involved with the business of running an office and getting new work. I think architecture the way the public is understanding it is defined and produced by those business managers ensconced at the top of their large firms. And when those people speak of, say, the skyscraper as the totem of our time, it is, of course, impressive listening to someone like that.

Perhaps we should be suspicious of that. But then there's nothing wrong, now and then, with hoping to make an impression.

You seem to question the value of large-scale projects. Do you feel that the quality of a large-scale planning gesture must, necessarily, suffer for its size?

I would like to see succesful long-range plans, but I can't rely on that anymore. I thought, many years ago, that one could propose a long-term idea that was very precise, but in the realm of a guideline, for example, in a street pattern, or in a type of public space. And I proceeded to occupy myself with every possible theory of the city, using my experiences with the European city and its origins as a foundation. Today, I'm certainly less dogmatic; I empathize more with the specific place and don't force myself to follow any excessively rigid idea. I now turn myself toward all the problems that I've come to feel endanger the city. And I would say that small problems are as much of an interest to me as the all-encompassing, seemingly more serious deliberations that pertain to the city.

This is not to say that I believe one should try to prescribe the minutiae of a future development. For instance, if you were to attempt to ordain a style of a house, I really couldn't care less about that.

You have mentioned Krier. Over the past decade it has become evident that the extensions of his theoretical work have resulted in a strong association of a convivial organization and scale of the city with a nostalgic image and style of the individual buildings, at least in the many interpretations by his followers. But the language of the station at Kassel seems quite modern.

This is where I strongly disagree with Krier. Style is meaningless to me. Architects often pursue the issues of style in a building because at the moment they are able to sell that kind of architecture. It seems rather unscrupulous that architects think as market researchers and salesmen, but it probably makes them happier in terms of their success. And success is always a good impulse for going on with things you are doing. Unfortunately, it often happens that you lose your control of it, and after a while, you're forced to identify yourself with this product that you sell. And then your ability to deal evenhandedly with an architectural problem is compromised.

But isn't the character of Kassel at odds with the urbanism with which you claim to be sympathetic?

We must not ideologize the appearance of a building. Traditionally, modern architecture followed tendencies, particularly in America, that were more likely to produce objects in the city. My notion of urbanism is at odds with the endless production of those objects, but it doesn't mean that I must throw out all that's associated with modernism. Must we ignore an interest in an expression of a rational modern construction method, simply because we doubt the value of a planning idea that we have come to associate, at an imagistic level, with contemporary building technology?

If I could make a drawing of a Greek temple without thinking too much about it, as if it were a natural expression of my background and training, then maybe I might do it. I don't have an ideological stance against it. Well, perhaps I'm a moralist, because I distrust the collection and transformation of old shapes and forms in an eclectic manner, and I try to avoid it. But as for Krier, why he chooses the images and expression that he chooses is another issue, one that is a matter of personal preference. Why would you make a curved roof when I would make it straight?

You have spoken in the past of attempting to repair weak edges in the city.

The object buildings that modern architecture placed in the city resulted in an array of what I would call outwardly projecting, aggressive edges. I am inclined toward the use of passive, inward edges. As a city dweller, I have always found it quite natural to consider the space between buildings every bit as important as the object itself. When I work, I constantly vacillate between inside and outside, between considering the interior of a structure and the effect of its surface on the urban space around it. Architecturally formulated but unbuilt intermediate space is of as great an interest to me as a pleasingly conceived single building.

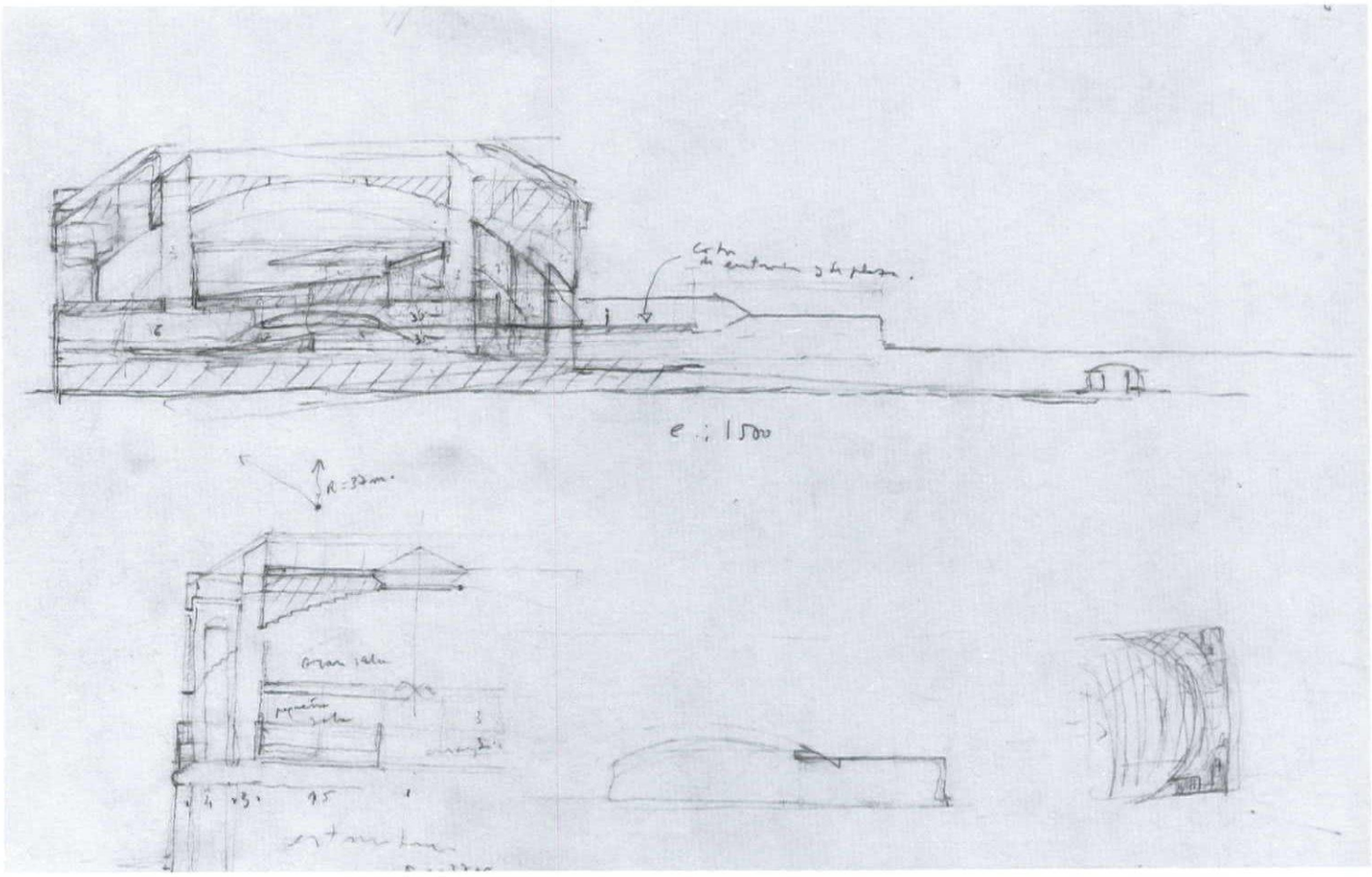
And yet the roof over the plaza at the Kassel station is very much an object.

How shall we read it? In a plan, it is a rectangle that stands free of surrounding buildings. But experientially it is an exterior room, one that reflects the complexity of the activity and program that will occur within it. I suppose I would speak of "repair," here, at two levels: in the formal sense, the building redefines the street edge and makes a place out of an otherwise difficult and underused intersection of train and automobile traffic; in the symbolic sense, we have attempted to take what was little more than an elevated footbridge over some railroad tracks and transform it into the threshold that a train station should be, to inject an important, but entirely unstructured, place in the city with some symbolic strength.

You have discussed the apparent automatism of both the development of the contemporary city and the dissemination of architectural trends. In light of your work at Kassel, you seem to maintain faith in the ability or, perhaps, necessity of an architectural action.

Those powers that have an influence on the city and that determine its development in reality create the opposite of what I consider the desired effect. They have plunged the world into a sad condition. And either you isolate yourself and close your eyes to the ever-present but always changing fashions in architecture, or you fall into a bit of depression. Somehow, though, I think that knowing that this difficulty exists is good. And, now and then, you can find an architect somewhere, I'm sure, who works and lives in isolation in a small city trying to do the best for that city. However, what one can accomplish as an architect confines itself to categories of an ordinary, daily nature. It is too presumptuous to believe that one could measurably influence the course of time through one's own efforts. From a moral point of view, I have to try to engage this problem at whatever level I can be active.

12 *Wilhelmshöher Allee, Kassel.*



1 The Convention and Exhibition Center, Juan Navarro Baldeweg, Salamanca, Spain, section sketches.

The Convention and Exhibition Center of Salamanca

Juan Navarro Baldeweg

An Object Is a Section

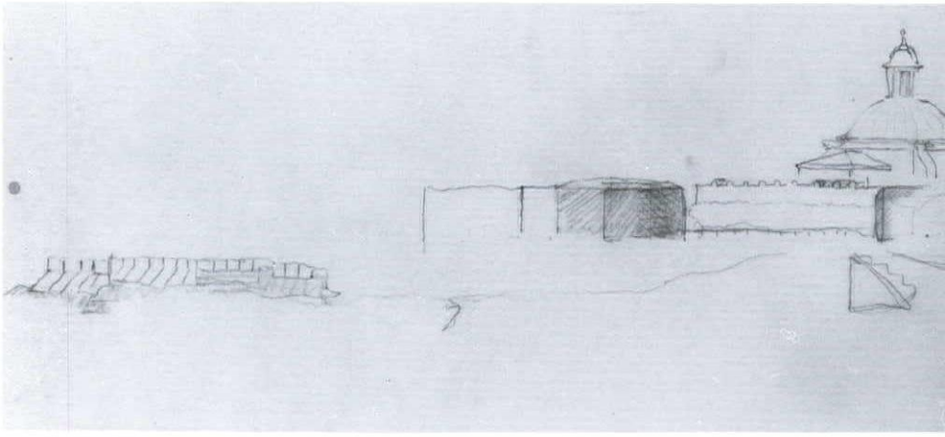
A constructed object is a portion of matter, a fragment of material substance that exists in an open space of unlimited physical coordinates. An object is built out of artificial or natural elements taken from the amorphous and universal mass of nature. I think of an object as a cross section of this undifferentiated heterogeneous matter, which I organize in my mind as energy and material strata.

Given this premise, it would be difficult to accept the conventional distinctions between an object's inherent structure and its context. It is difficult to associate forms with limits. A building stands on the ground. Is that ground part of the building's system of foundations? Are building and ground fused together? Or, for instance, when it rains, can the water be separated from the building? The roof, the gutters, the waterspouts, and the drainage system provide an unquestionable continuity between the realm of the rain and the realm of the building. The building is merely a curl in the otherwise uninterrupted coursing of the rain.

The elements of an architectonic object obey constructive and geometrical laws and respond to figurative impulses that endow them with complete autonomy and unconditional independence. Each individual element, in accordance with the will of the designer, will manifest itself fully while coexisting with other elements under a law of equity. As in the accumulative universe of Brancusi or the graphic multiplicity of Hiroshige, these elements will coexist loosely and freely.

There is a need to maintain a balance between the vitality of independent parts and the unifying concept that guides them to a common objective. The object manifests its equilibrium in the tension that exists between the parts and the whole, between the differentiated and the homogeneous, between excitement and calm. The object is a summation of equilibriums framed by the fortuitous and the necessary. It will appear stable and easy, and it will take possession of the space that surrounds it.

In our perception, a wavering ambiguity will occur between the apparent and the inapparent.



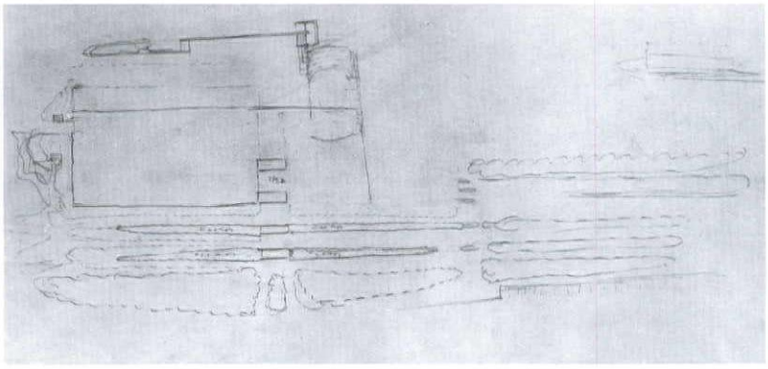
2 *Sketch from the Vaguada de la Palma, with the monuments of the old city in the background.*

The Project

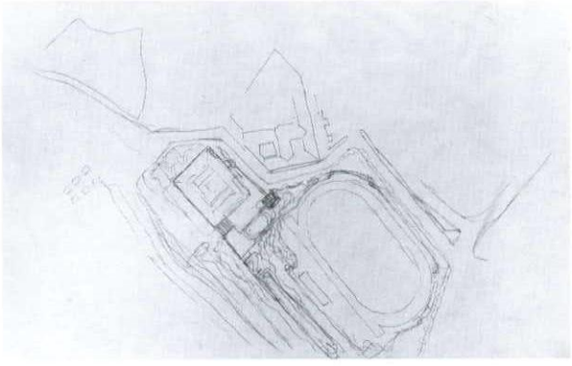
The Vaguada de la Palma, the bed of the Milagros River, is a natural topographic edge of the old city of Salamanca. At the site of the new convention center this natural edge is reasserted by a retaining wall constructed with the materials of the old Roman city walls. Located precisely at a point of rupture in the natural continuity of the Vaguada, the site occupies an important node where the streets from the Ronda, the road that rings Salamanca, are redirected to the urban center above it.

The new building benefits from its containment within this walled precinct and appears to be placed on a pedestal. We intended to sculpt our intervention so that it would reiterate the volumetric simplicity of the old city wall and allow it to maintain its character as a physical limit to the city. The new building thereby extends the mass of the old city and provides it with a new path and gate in the form of a propylaeum. On one side of this pedestrian path we placed the grand rooms of the convention center, which we counterbalanced on the other side with a small trabeated construction that caps a gallery. The path is thus animated by archetypes that unfold as one moves along it: the massive construction of the wall and box, the lighter architecture of the post and lintel, and finally, the powerful enveloping space of the baldachino, which hovers above the major auditorium. This last element is visible through the arched openings that are formed when the dome's section strikes the building's exterior wall.

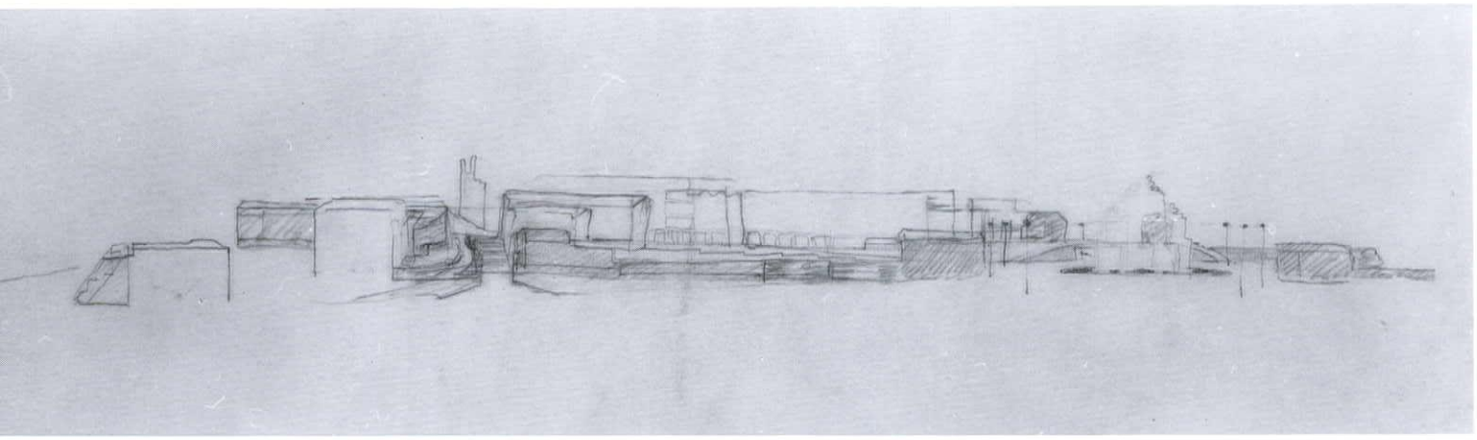
The convention center extends its influence into what will eventually be the park of the Vaguada de la Palma, with all paths and landscaping to be organized in relation to the new building. It was our goal to give the building an unobstructed presence in the future park, and so we planned to allow the surrounding trees to partially invade the adjacent Calle Oviedo, thereby blurring the distinction between park and building that the street would otherwise accentuate. Two large terraces parallel to the city wall



3 *Plan study showing access terraces.*

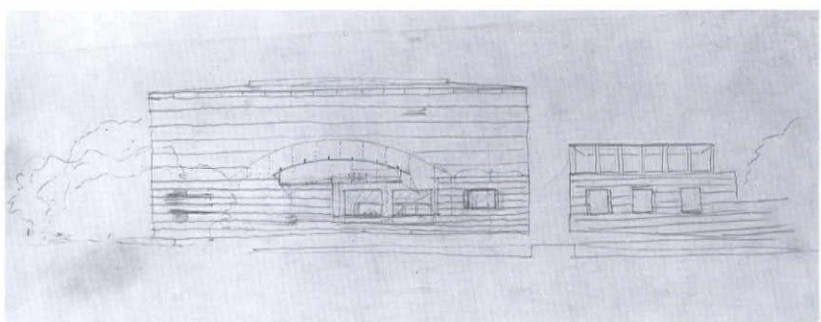


4 *Site plan study.*



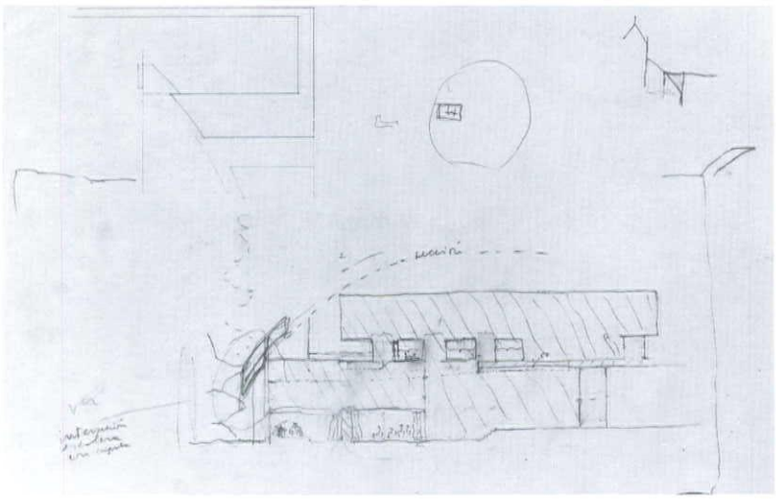
provide pedestrian access to the complex and accentuate the importance of the building's position on the site. The elevation of these terraces allowed us to raise the level of the ground floor of the new building, thereby reducing its prominent height and alleviating the need to excavate basements, a difficult proposition given the proximity of the Milagros River.

On this green frame of the park, the new terraces and steps rise to the plaza, where the entrances to the convention hall, the cultural center, and the open-air theater lie. We located this plaza at an intermediate grade in the natural slope of the site so as to suppress the possible interference of the new building's mass with the views to the existing urban monuments above it. Rather than giving the new work stature in the city by virtue of its sheer size or allowing its monumental profile to compete with the existing context of older buildings, we instead strove to endow the building with a presence that derives from the intrinsic power of its form. The urban character of the building is thus threefold: it is an integral part of the existing context, and thus provides a pedestal for the historic city above it; it is an important object within the city's lower perimeter, and thus accentuates the profile of the old wall; and it is a vestibule and path that connect the historic core of Salamanca above with the new park of the Vaguada below.



5 Elevation study from the Vaguada.

We resolved the program of the convention center by creating two visible bodies that are united at the ground level and that serve as a frame for the intermediate plaza. The large body houses the auditoriums, of which the smaller stands over the exhibition gallery and frames the sculpted mass of the outdoor theater. By giving each independent entrances, we have provided for the greatest flexibility of use: the seminar rooms and exhibition gallery can be used autonomously or in conjunction with the convention center and the grand exhibition hall. The latter, as required by the program, is linked to the auditorium vestibules, and a grand ramp connects the two exhibition spaces. This level of integration can accommodate the diverse cultural activities that are likely to take place in a city convention center.



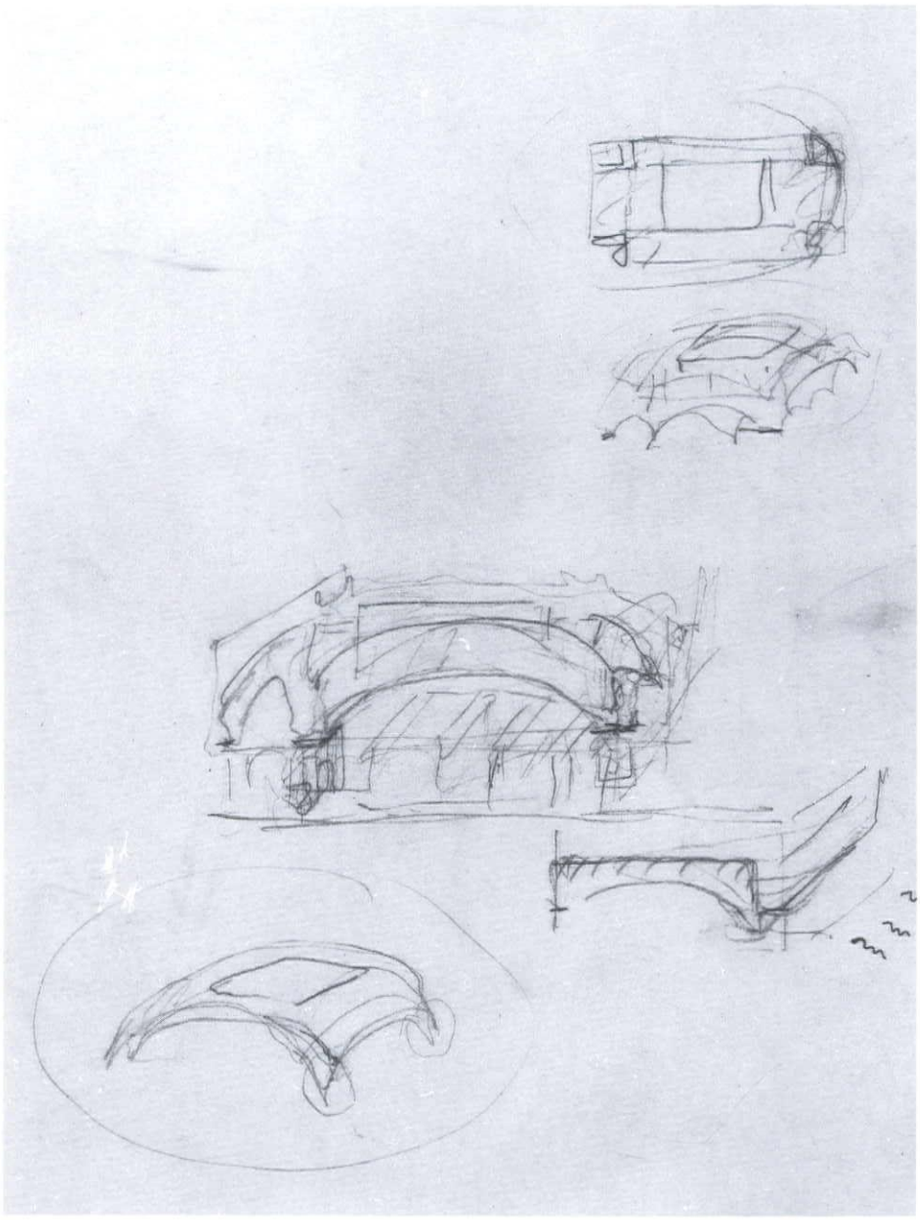
6 Section study, detail.

We conceived the interior space of the main body as an architecture within architecture. It was our intention to resolve the complex program with a single gesture by generating, simultaneously, an architecture of continuity and of disruption, placing differentiated spaces within a free plan. Although the large auditorium, which seats 1,300, and the small auditorum, which seats 460, operate independently, the double-height spaces of their lateral vestibules provide a unifying spatial identity. Thus the continuity between the two spaces is maintained in spite of their necessary physical separation.

We have attempted to carry this conceptual resolution into the design of each autonomous part. For instance, in the main auditorium, a seemingly detached baldachino hovers above the floor. Its interior surface is molded in such a way as to augment its acoustical performance. Its form is a portion of a spherical dome that extends throughout the building and is visible in the interior as well as in the design of the outer walls. The baldachino is supported by load-bearing walls, which act as beams and transfer the weight through their arched forms to the corner towers of the building. The concentration of loads in the corners allowed us to eliminate any supporting pillars in the interior space of the auditorium, the stage, and the vestibules, and thereby allowed us to heighten the embracing continuity of the ceiling.

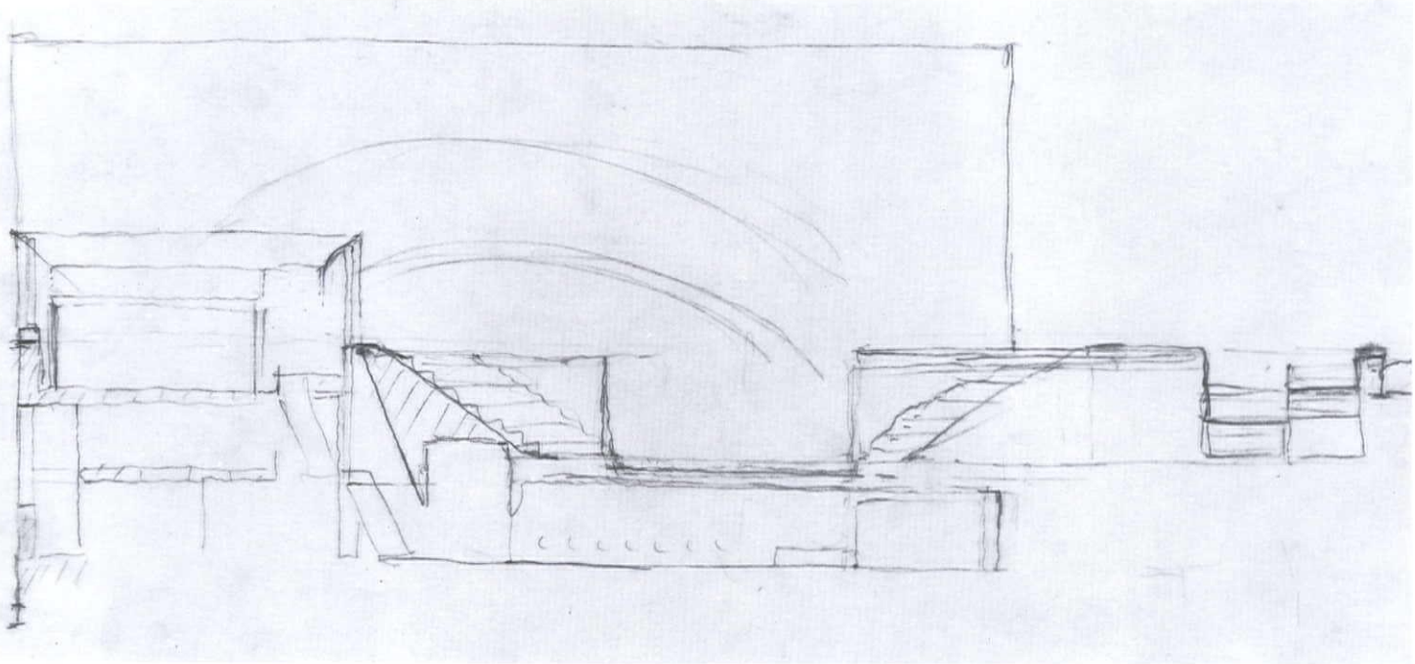
Our treatment of natural light plays a large role in the viewer's perception of the baldachino's structure. Light from the clerestory windows, which seal the connection between the dome and the building's envelope, washes down the walls, distinguishing the independence of the various elements of the interior and guiding the eye to the openings at the perimeter. These openings, arches carved in the walls of the building's exterior and derived from the dome's geometry, never actually touch the dome itself, thereby completing the desired spatial unity without sacrificing the ethereality of the dome's suspension. The planes that enclose the various rooms of the interior are dressed in naturally finished wood, marking them as distinct and discrete surfaces against the contrasting white background of the surrounding envelope. Silhouetted in light, and hovering above the main auditorium, the baldachino reveals an equilibrated tension between gravity and nongravity.

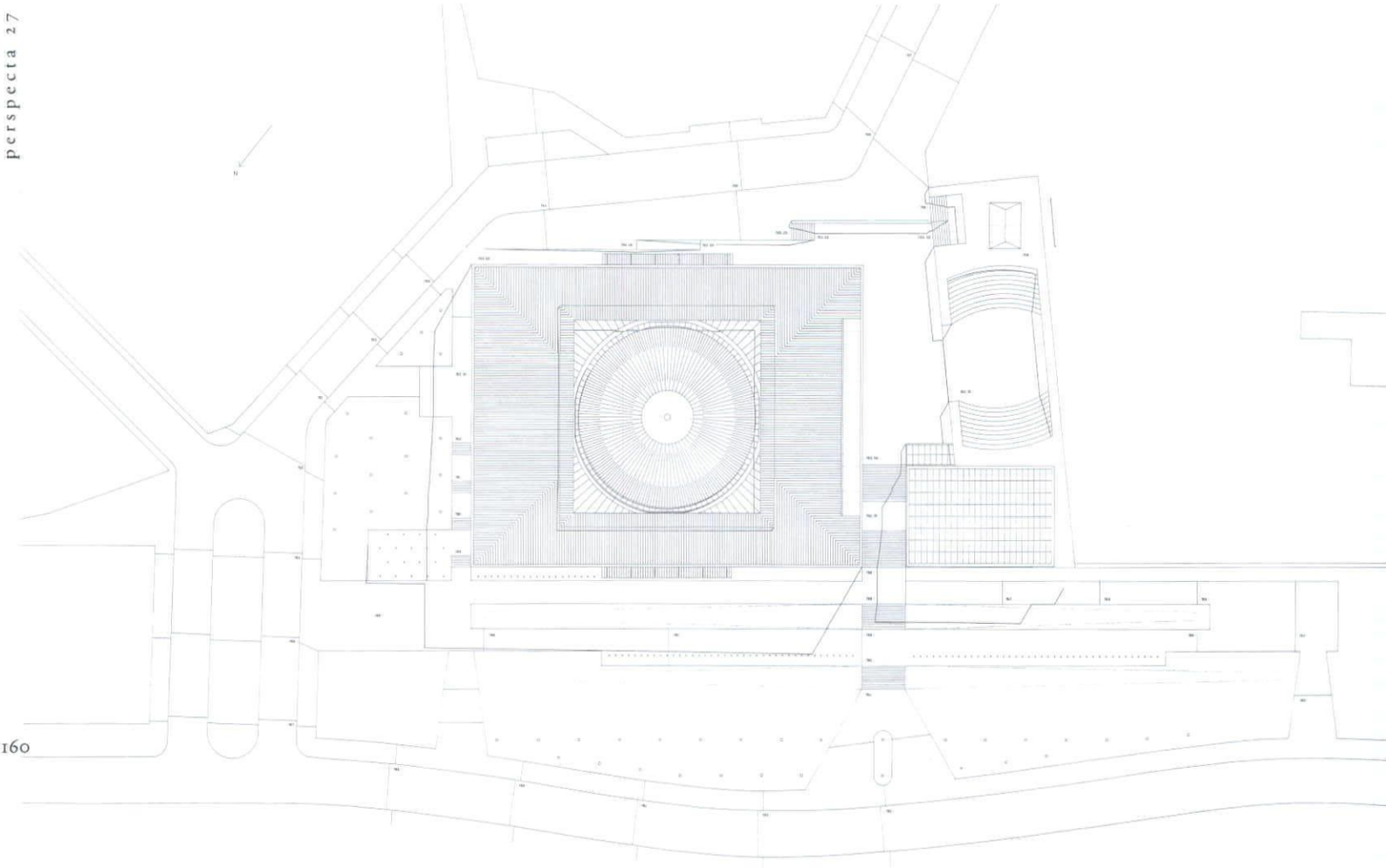
These contrasting effects are also manifested on the exterior of the building in the concave play of the arches and the adjacent amphitheater and in the alternating heaviness and lightness of the elements in the complex. In distinguishing between the closed prism of the main box and the openness of the small, temple-like body that crowns the exhibition gallery, we thinned the top lintel of the latter to free it from its load-bearing function, so that it appears only to delineate the volume that it encloses and thus augments the effect of lightness. The heavy, low arches of the entrance to the auditoriums contrapose the airiness of the open theater.



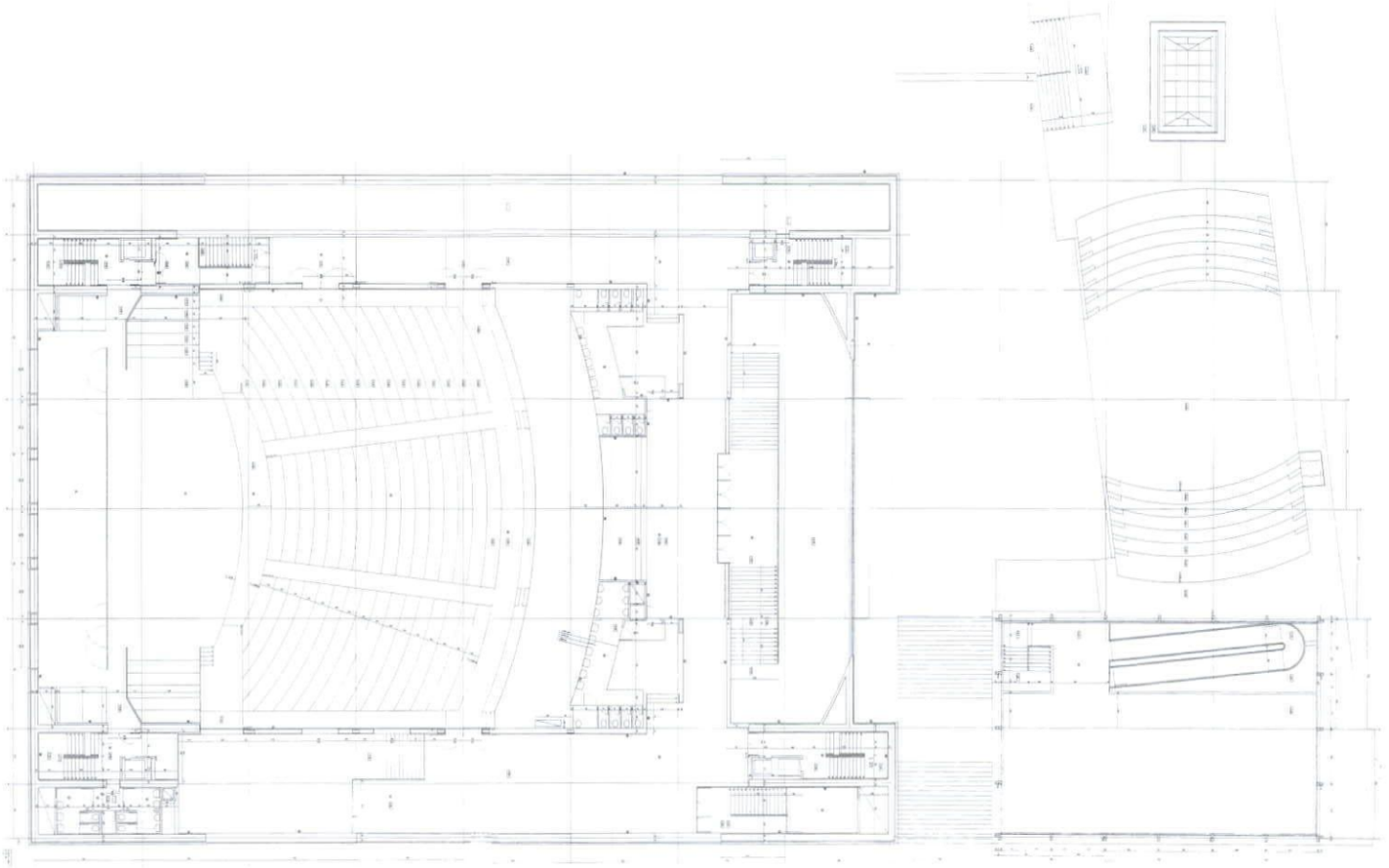
7 Studies of baldachino.

8 Section study through amphitheater and gallery.

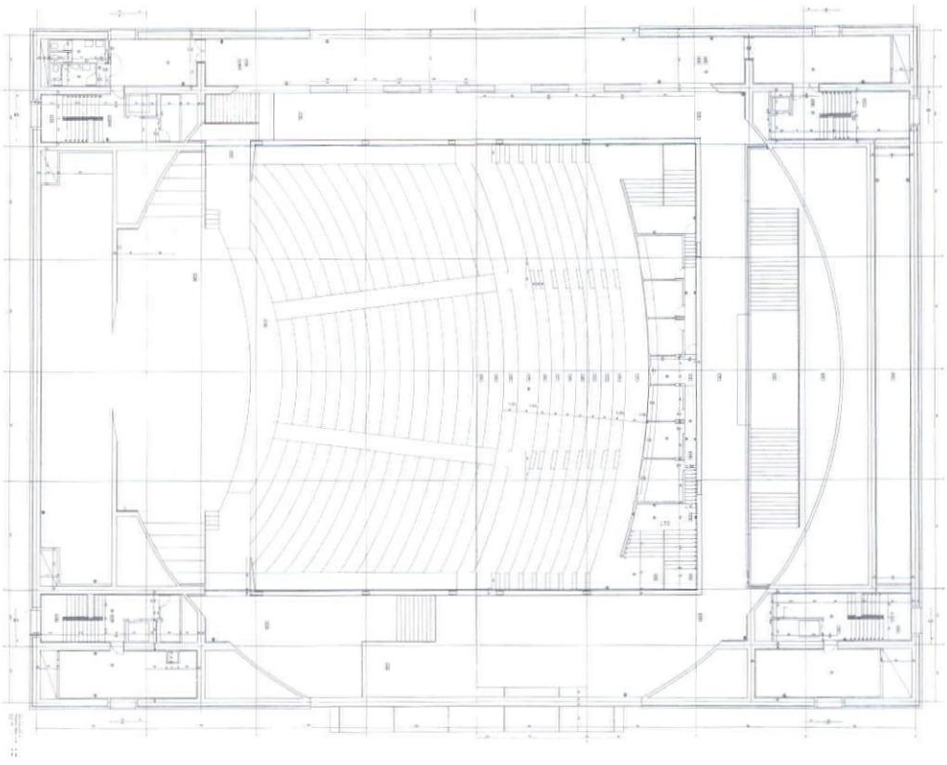




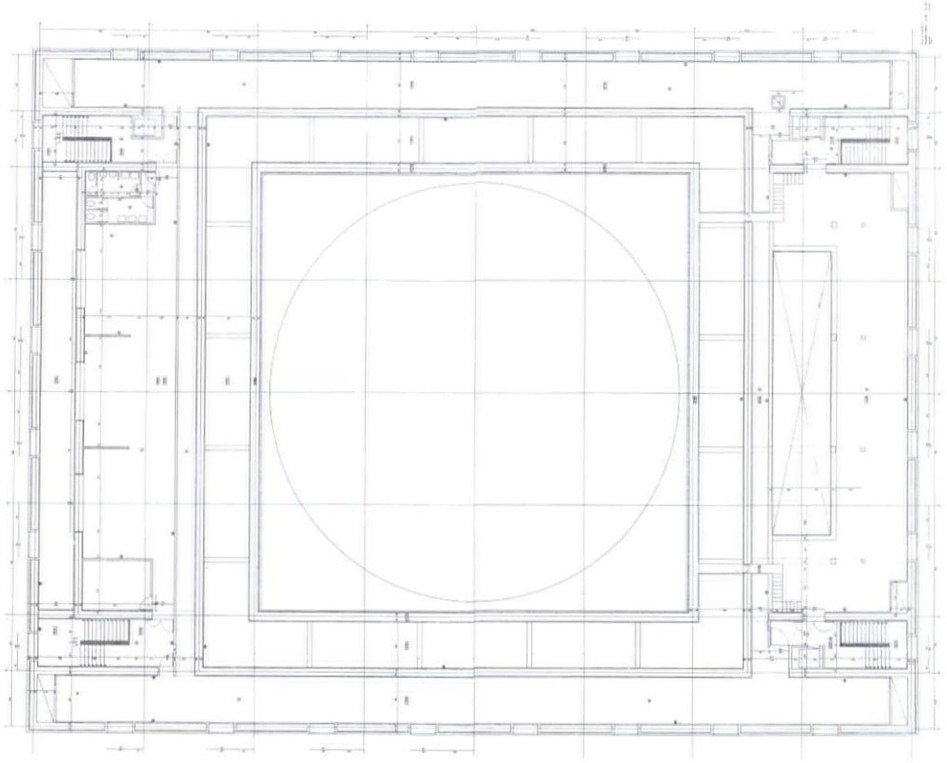
9 Site plan.



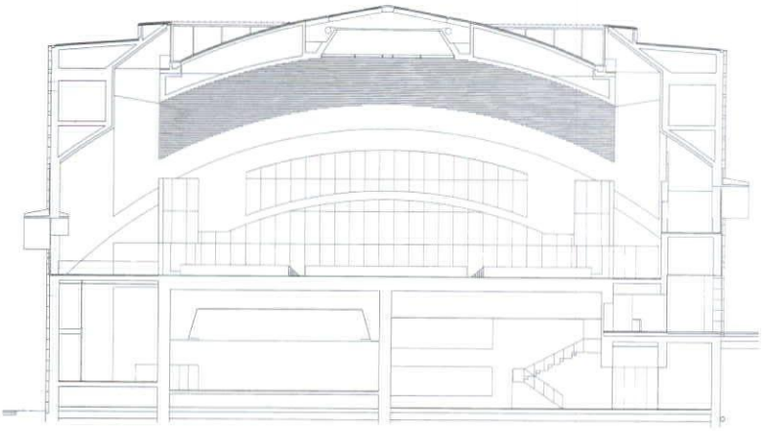
10 Plan: plaza level.



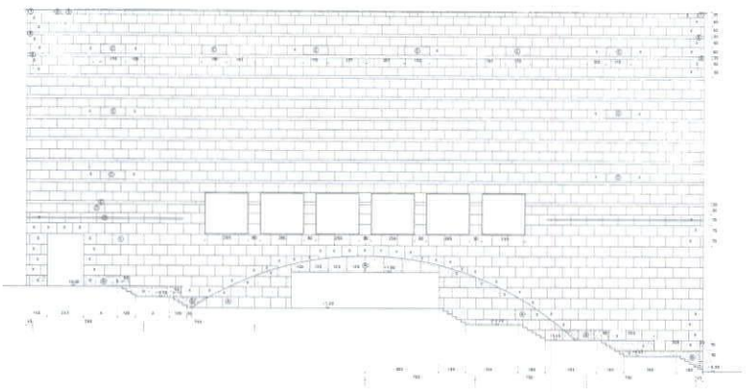
11 Plan: main auditorium level.



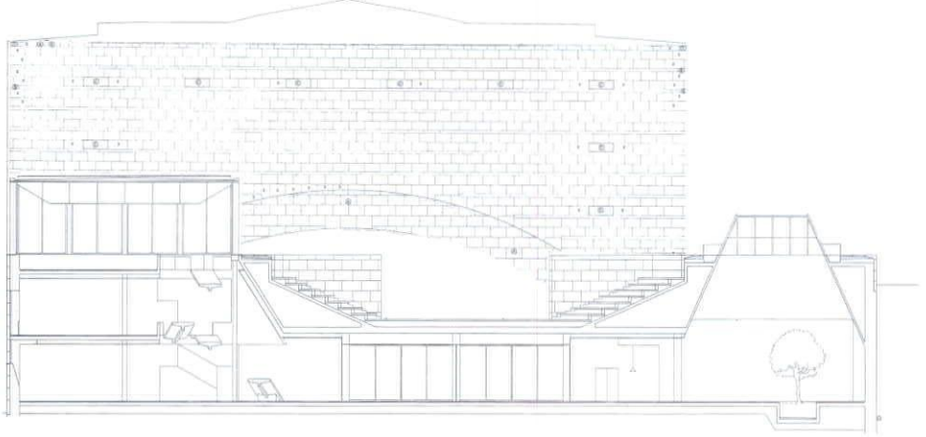
12 Plan: catwalk level.



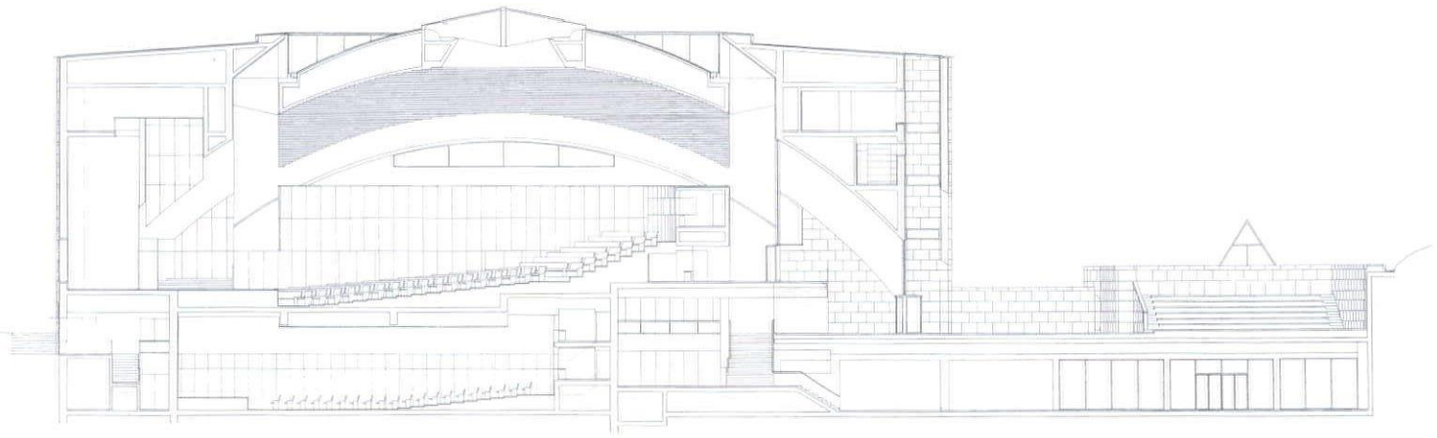
13 Cross section through auditorium.



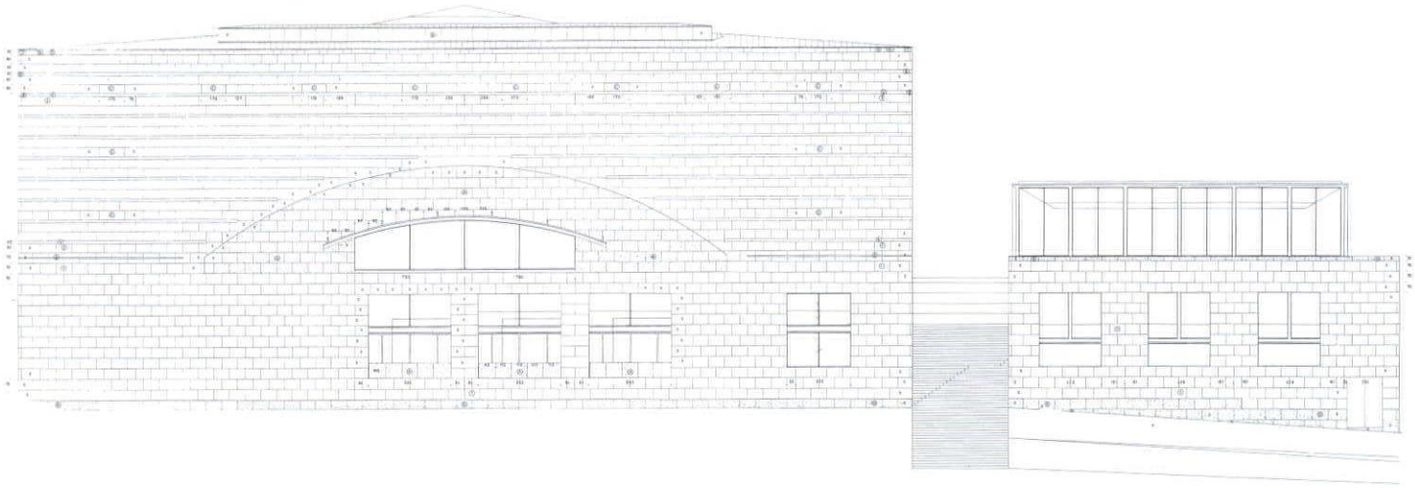
14 East elevation.



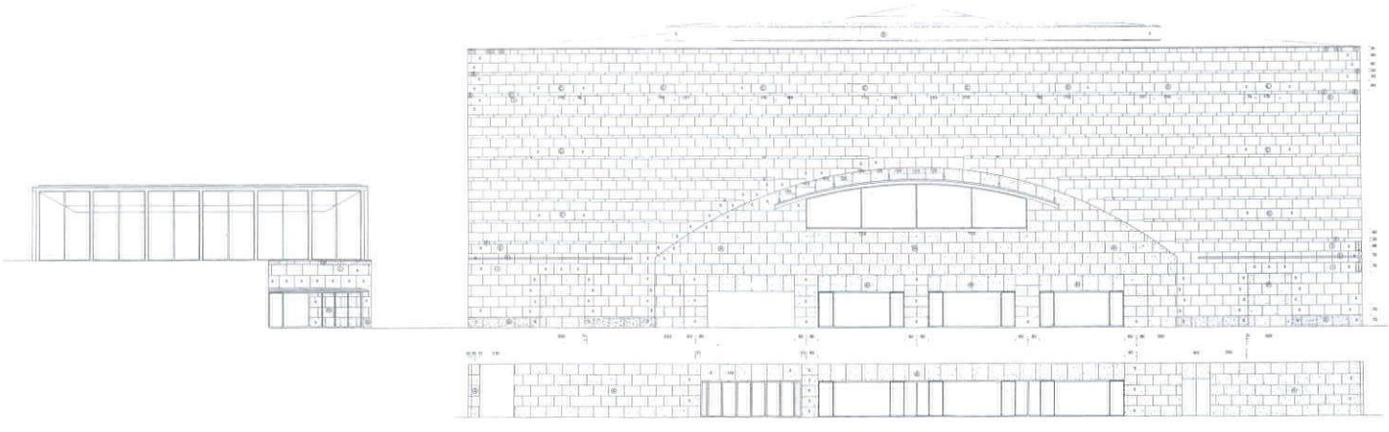
15 Section through amphitheater, and west elevation.



16 Longitudinal section through auditorium.



17 North elevation.



18 South elevation.

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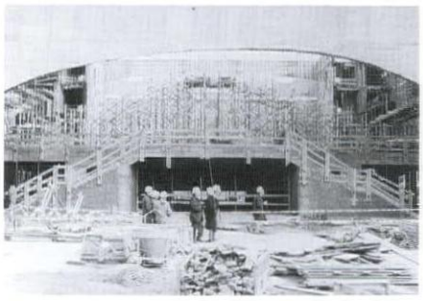

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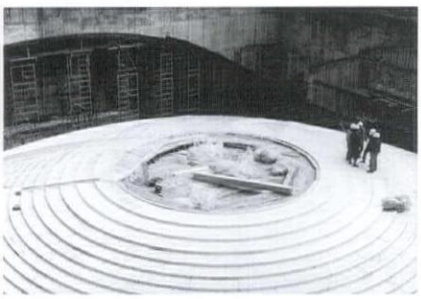

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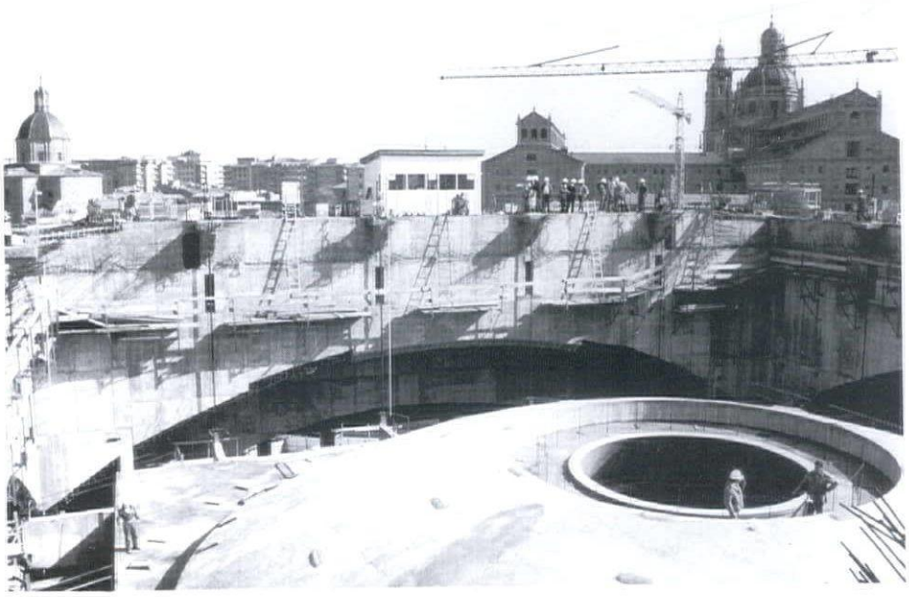
The process of construction of this reinforced-concrete building reiterated the shifting relationship between the autonomy of various structural and formal elements and their overall coordination in service of the final architectural objective. The site, at the city's perimeter and framed by the monuments of the historic center, first saw the erection of the four corner towers that would eventually carry both the structural load of the roof and the building's stairs and elevators (19). The four towers were then connected by the perimeter walls to complete the envelope (20). Inside this completed box, formwork for the domed baldachino was constructed on the ground (21). It is a squared segment of a sphere composed of three parts: a lower shell, which makes up the fluted interior ceiling of the auditorium (22); a layer of radiating concrete fins, which separates the upper shell from the lower, thereby lightening and stiffening the dome simultaneously (23); and an outer shell, which is the final roof over the main body of the building (24). Once completed, this assembly was raised to its final position by jacks precisely coordinated by computer (25, 26). Then in place, the dome was anchored to the perimeter walls with sixteen finlike concrete connectors (27), each received by a steel bracket that in turn was inserted into sockets cast into the walls (28).

23



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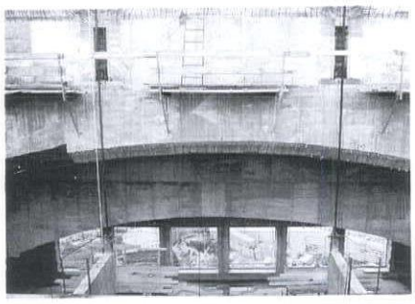

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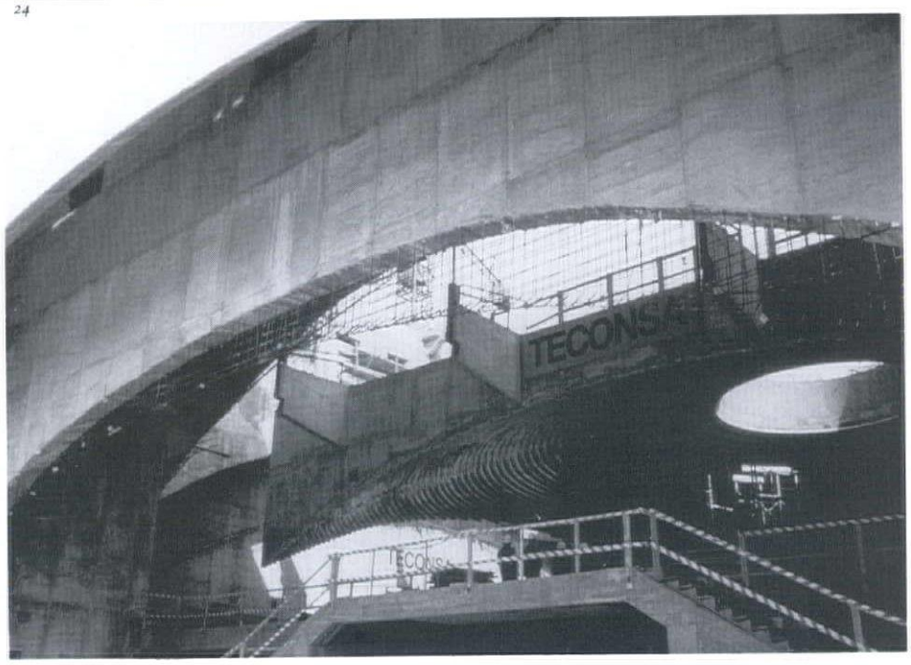

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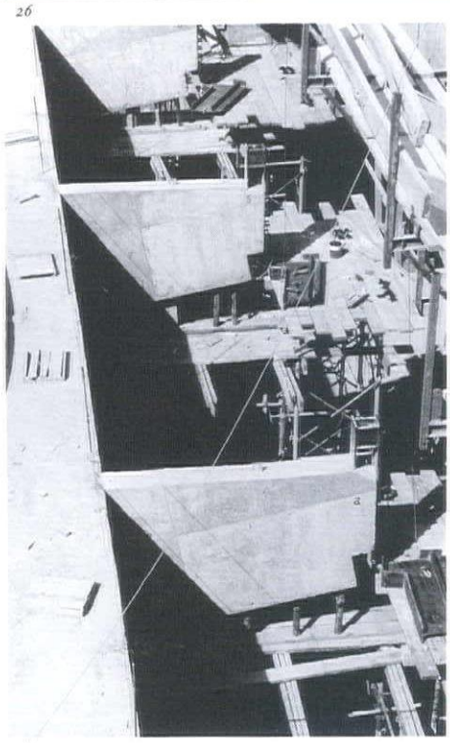

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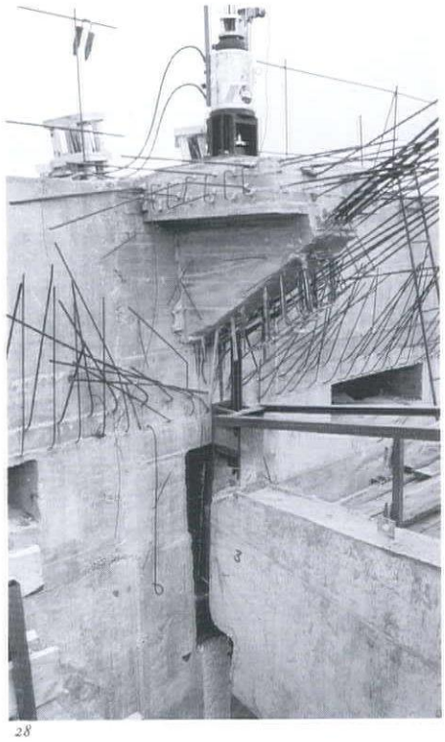

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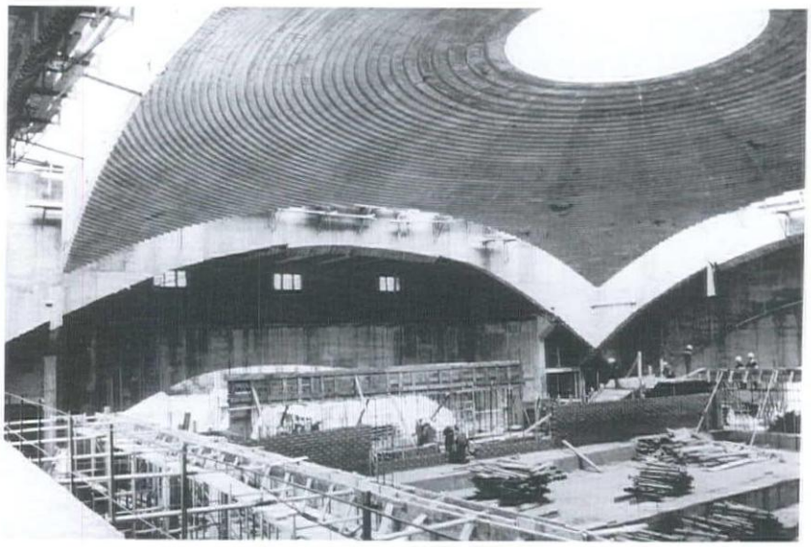

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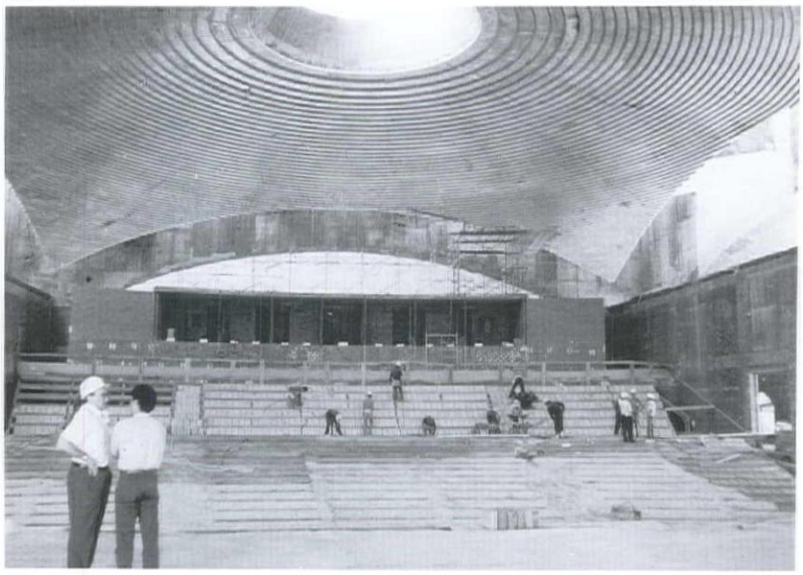


30b

The lifting of the dome into its final position accentuated the dome's seemingly ephemeral nature. The full volume of the auditorium was revealed not slowly and incrementally as with the great domes of the past, but suddenly, as if its production were as effortless as the dome's suspension (29). The abstracted elaborations of the design process were immediately and irreversibly visible in the quality of the light that fell from the beveled oculus at the dome's crown, and in the intensity of the light that was reflected off the inwardly focused ceilings of the lateral vestibules carrying the geometry of the dome (30).

From the Vaguada, the finished exterior surface of the building, sheathed in native Salamancan stone, works to recompose the existing wall of the old city and thereby allows its continuity. But from the historic center above, the copper-covered dome of the baldachino (31) asserts itself as the centerpiece of a new monument in the city.

31

1

The Mining Museum of Broken Hill

Glenn Murcutt

This article is based on conversations between Glenn Murcutt and the editors during 1989 and 1991.

In the middle of my final presentation of the design for the Mining and Minerals Museum at Broken Hill to the museum's board of directors, one of the board members got up and walked out of the room. After a while he returned with a copy of a late nineteenth-century photograph which showed some miners from the Broken Hill mines standing beside an opening to a mineshaft where they had rigged some canvas to catch the wind and scoop fresh air down into the tunnels. The degree to which their solution resembled the system of wind-aided evaporative cooling that I'd used in the museum struck us all. I'd never seen this image, or even heard of such a practice, but I was pleased to learn that there was such a direct precedent for my design and that the architecture of the museum would be closely tied to both the imagery and the processes of the mining industry that it would exhibit. I've never attempted to use local images in my design work, and I'm uninterested in pursuing historical forms toward a nostalgic end. But the coincidence has compelled me to reflect on the idea of building legibly and articulately in the twentieth century.

* * *

The landscape of Australia is remarkable. Through the course of my career I've attempted to develop a greater knowledge of that land and to discern the lessons that I can draw from it. Most importantly, I am learning of its economics in the very broadest possible sense. It is about survival, really, and the poetry and legibility in that survival is extraordinary.

There is an integrity that operates in the landscape. It presents warning and provides inspiration. On the one hand, if we do something to the land, the results of that intervention will show up, perhaps not immediately but over time, and the problem that we've created will define itself. But this legibility also provides an incredible array of solutions to difficulties we face when we attempt to occupy the land.

I'm not advocating the mimicry of some simplistic natural paradigm. When I began my practice, over twenty years ago, the architects of the so-called Sydney School in Australia were borrowing heavily from Frank Lloyd Wright's ideas about building and nature. We were building with a great esthetic respect for the land, choosing bricks of the very same color as rocks on the site, keeping the build-

2 Nicholas Farmhouse, Glenn Murcutt, Mount Irvine, NSW, Australia, 1972.

ing's scale as low as possible, sometimes bringing a tree through the roof or even placing it in the house, using rocks as part of the building's structure. I have come to believe over time that this is a dangerous simplification of environmental concern. Such romanticism, choosing a palette of materials to blend into nature, obscures an economical and realistic course of action for the builder.

The natural stresses on an environment and the responses of the land are the keys to the incredible emotional power of a place. I'm very interested in that emotion, and so I'm interested in the expression of those stresses on an object. In Australia the light is so intense, so clear and sharp that it separates and isolates elements in the landscape in harsh contour. The physical as well as the visual effect of that light on the land is extraordinary. In parts of the Australian desert, the leaves of the trees, unlike leaves in European and North American temperate zones, which curl and turn their faces toward the sun, instead face away from it, hanging down to reduce the evaporation of surface moisture. And the edge of the leaf picks up the track of the sun and follows it through the day. The light that penetrates the foliage creates a dappled shade so more sunlight strikes the tree trunk. In a particular desert species, the trunk during the summer is pure white, nearly silver in its reflectivity. As the summer tapers off into the winter, the white bark peels and reveals a new dark brown bark beneath it. It is a simple expression of the stresses of that climate. The extreme heat from the sunlight is reflected during the summer, while during the sub-freezing temperatures of the winter, the warmth of that light is absorbed and the tree can survive. The incredible delicacy of the leaf articulates the enormous strength of the tree in its survival. At once, one sees the expression of delicacy and strength. This is what I mean when I speak of a legible landscape.

One doesn't build buildings to look like trees. One doesn't build houses to be white and brown. But one can read the language of this environment, which speaks of extreme stresses in climate, in heat and in light. Understanding the climate, understanding the way in which the geometry of the earth and the sun work so that one knows where the sun is throughout the day and year, understanding where the winds come from and knowing which are hot and which are cool, is the beginning of an articulate response to the incredible power of the environment.

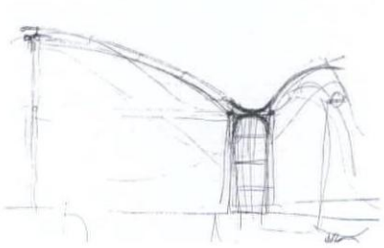
I have come to believe that there's no difference between absolutely clear thinking and poetry, between the logistics of a project and its expression. A wide dry creek bed in the desert tells me, for example, about rain gutters for a house I might build there. For most of the year, I can use a gutter that is 150 millimeters wide. But four times a year, the house will need a gutter that is half a meter wide. If I use a gutter that is half a meter wide, it's perfectly logical. Like the dry creek bed, the gutter throughout most of the year will be dry, and then, briefly and suddenly, it will be swollen with water.

I'm interested in an architecture that has a strength and at the same time a delicacy, and where the process that links and modulates them is evident. What materials should I use? I'm not building like an ant, I'm a human being building a twentieth-century object related to the landscape. I believe that one can produce a building

3 *Nicholas Farmhouse.*

4 Moruya House, Glenn Murcutt, Bingie Point, NSW, Australia, 1985, east elevation.

5 Moruya House, interior.



that clearly articulates the man-made, that is technologically of its time, with materials and products that are readily available and easily handled. I use a lot of industrialized components and run-of-the-mill iron. I use a lot of glass with standard metal louvres and shades to alter the light in the building as necessary. Dark metal louvres heat up beautifully during the winter mornings and radiate that heat into the building, and as the day warms, you can open them up so that the building breathes.
I often use wood, but I've also found that I can take a metallic material and make its color work beautifully in the landscape. I've used corrugated metal with the corrugations running horizontally and found that the top side of the corrugation takes on sky light, and the bottom side takes on ground light, and the resulting reflection of the site's light produces a luminescent absorption of the environment, a dialogue between the building and the color and the nature of the day.

I'm interested in an architecture that continually acknowledges the physical and climatic character of its site; that recognizes the sorts of changes in scale we experience when we move from the inside to the outside, whether in the suburbs, where scale is broken down incrementally, or in the country, where the relation of a person to his environment goes through an enormous reversal as one moves from the land into a building. I want my buildings to use natural light and ventilation to the greatest extent possible, and so I adjust their orientation to maximize the potential cross-ventilation from prevailing breezes, and I shift roof lines and pitches to gain maximum winter sun and minimize summer sun. My long narrow house plans act as verandahs,

7 Moruya House, view from north.

that architectural threshold Australians have inhabited so much more comfortably than the houses to which they're attached, and from which they've come to understand the land in which they live.

My clients are involved with these buildings, and I believe they understand and have a more immediate relationship with the outside world through them. One client who had lived for a number of years in a house that I'd designed told me that she operated the house as one would sail a boat. And so I like to think of my buildings as legible and functional in much the same way as a boat or a glider is. I want them to show what is structure, what is infill, and what is skin. If a building is put together in a legible and articulate way, where the process of its design and production is evident, then it can be used, pulled apart, and altered in that way. By keeping this in mind, I've been able to build many of my buildings for about three-quarters the price of most architect-designed buildings.

But aside from the immediate economies of building cost, I am looking for ways in which to control the deeper, embedded costs of building on the land. We must learn to understand the implications of our decisions as occupants. It is no longer enough to use a material because we like the way it looks or because it's cheaper. It's absolutely crucial to come to terms with the fact that our paints and coatings and adhesives may poison our water and air; that our choices of exotic and inaccessible materials may cause the destruction of a landscape in another part of the world; that our reliance on the long distance transportation of materials adds to the highways vehicles that consume energy and pollute the air. These are all factors that must affect our work especially at this time in history, when we can have almost anything we wish for.

People in my country have difficulty understanding this idea and tend to focus on the image of my buildings, making references to the supposed authentically "Australian" character of the forms and materials that I have used. This is a romantic response of a people who live in the most suburbanized country in the world but who cling to mythic images of the landscapes that have become so distant from their lives. With architecture, as with many other things, our eyes often misguide us. We are so tuned in to form that we frequently fail to find the thing that generates that form or the idea that develops a process. If we understand instead why a thing looks the way it does, or why it works in the way it does, then we understand the principle, and that principle, not the form it produces, is transferable.

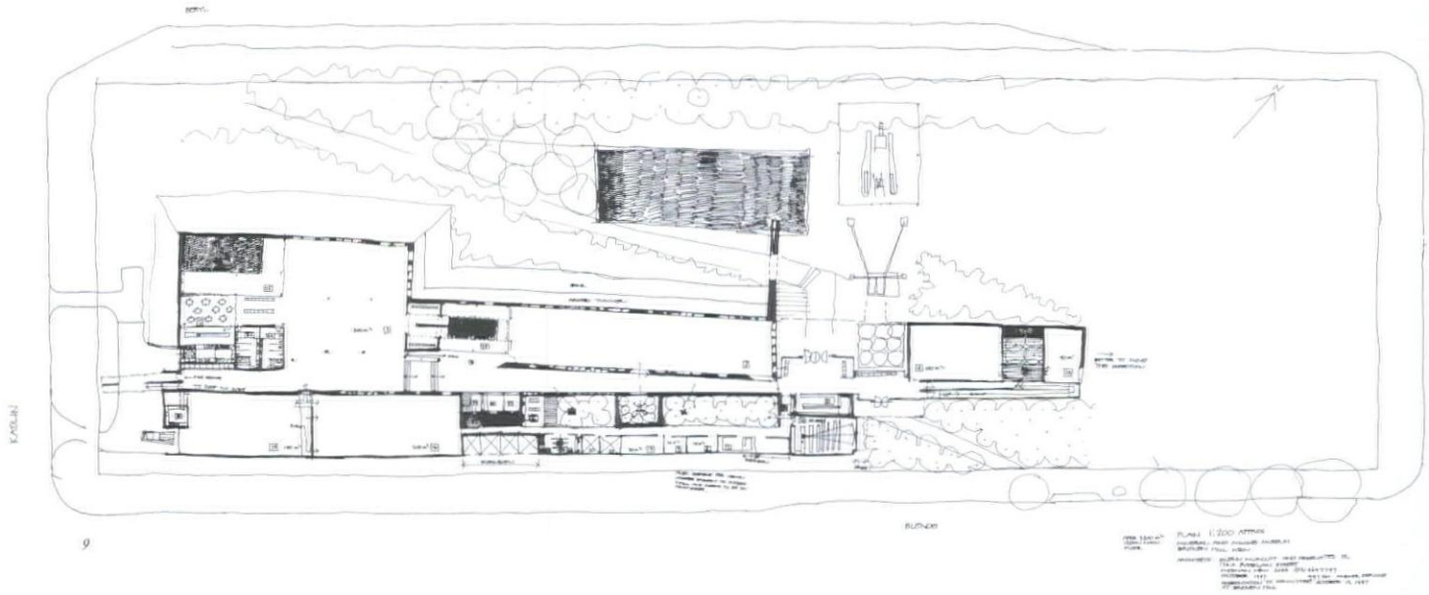
8 Moruya House, view from southeast.

Mining and Minerals Museum, Broken Hill, Australia

In the dry red earth of the desert outside Broken Hill I saw areas, in the plains and along the dry creekbeds, where I expected to find a high water table, but in fact the trees and plants were all stunted or dead. I found it especially intriguing because along the nearby hillsides, where there is little sign of water in the soil, the trees grow quite well. If you look closely at the situation, you discover the remarkable dynamic of the place. The dry creekbeds are not signs of a rising and falling water table beneath the surface, but rather, are the marks of brief bursts of intense rainfall that funnel off the dry land and inscribe huge gouges in the desert. And so, trees, at best, can survive only briefly in those conditions, where there is insufficient water to sustain any real growth. But on the hillsides there are large overhanging rocks. And the mass of those rocks collects heat during the day and holds it so that in the cooler evening air, water condenses and provides a small but consistent supply of water for the nearby trees. The landscape here tells us a lot about how life is sustained through the interplay of extremes of heat, light, and mass.

Broken Hill is a small, geographically isolated city located in the desert of far western New South Wales. It is sustained economically almost solely by a mining industry that has produced ore from the world's largest zinc, lead, and silver deposits for over a century. The city is dominated by the images of those mining operations and their residue. Huge mine tailings, the mountainous heaps of earth and stone pulled from the mines, and the giant headframes, which provide the mechanical lifelines to the mineshafts and tunnels that lie deep below the city, fill the horizon. But because these have become a mundane physical and economic presence in the city, and because the yields of the mines have begun to slow and the city and the industry have come to realize the limits of this economic and symbolic resource, the city is beginning to search for other ways to maintain itself. A museum devoted entirely to mining and mineralogy would provide an explanation to tourists and a reminder to inhabitants of the force of this industry in the development of Broken Hill.

The program provides for a single building that includes exhibition spaces, an auditorium, laboratories and workshops for conservation, private offices for museum officials, and a public cafeteria. The museum, to be placed on a long rectangular block at the edge of the city center, is to create a sort of diagonal connection between the high school and the main business area of the town. With the existing school, nearby railway museum, and town hall, it is to stand as one of Broken Hill's civic institutions, each placed as a freestanding monument on its own block. The future museum's site now stands empty except for some mining machinery, most notably an abandoned mine headframe, that will become part of the museum display. The budget is low, and its constraints are further compounded by Broken Hill's extreme distance from any large cities or industrial centers, over thirteen hours by truck, which will limit the range and availability of materials.



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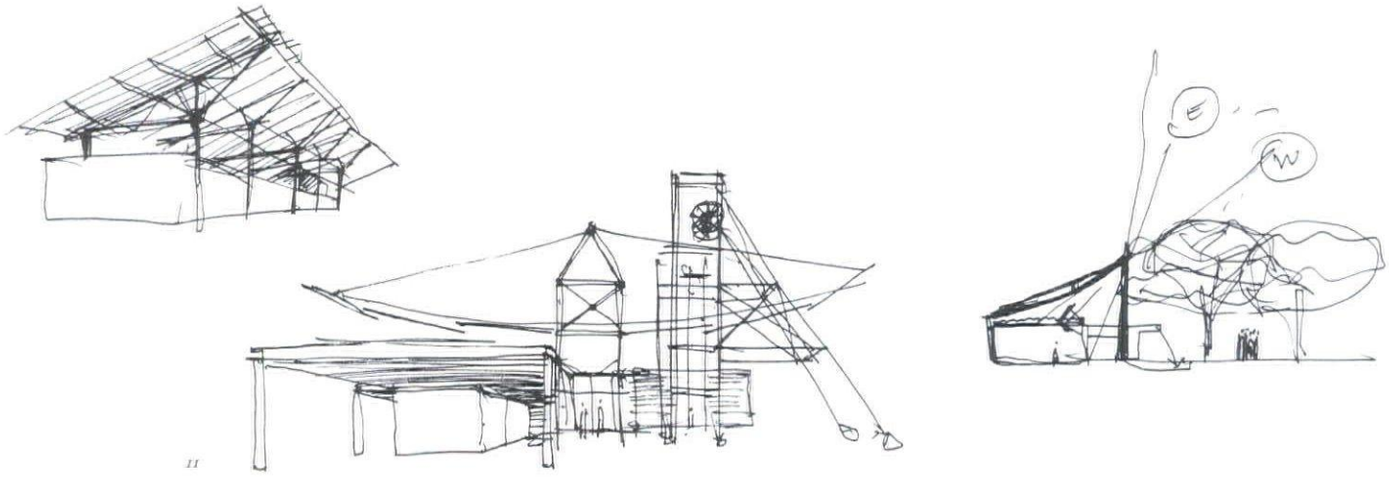
10

A series of early sketches show the development of the museum design.

9 An initial plan study of the museum, the first presented to its board of directors, shows a series of courtyards and pools of water in and around the building, organized in relation to a diagonal route across the site that was called for in the program. The path crosses through the building entry, which lies next to the existing position of the abandoned headframe. The building is split down its length into two halves separated by a narrow courtyard: the public spaces face pools to the northwest, and the administrative spaces are adjacent to the street, providing easy freight access. Unfortunately, the diagonal route and the existing placement of the headframe force the building into a corner of the site. The clients reviewed those constraints.

10 In a sketch of the view toward the entrance, the headframe and its machinery shed stand as a kind of iconic sculpture at the gate to the museum, marking the beginning of the exhibition. The building begins to take shape as a concrete container with a light skeletal roof.



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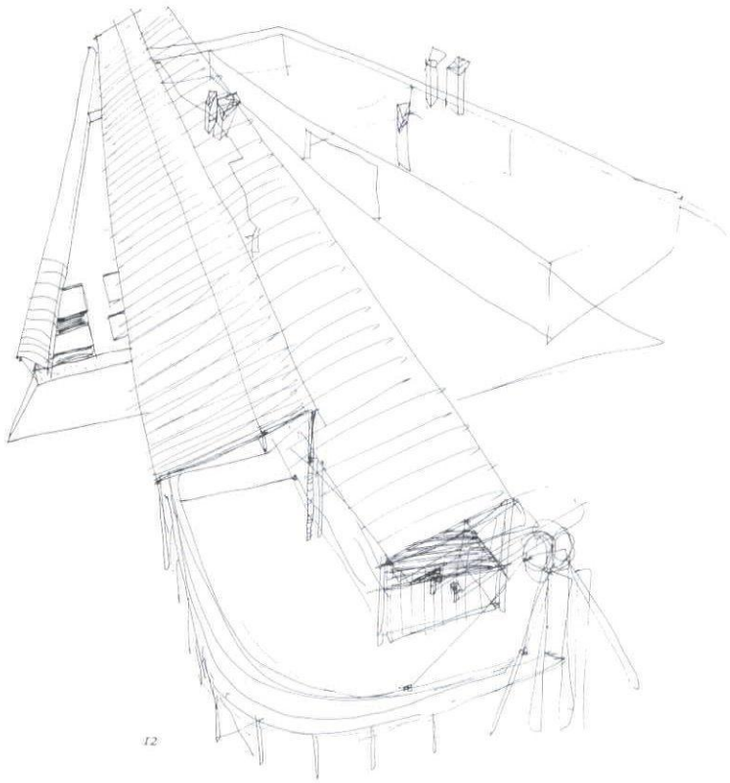

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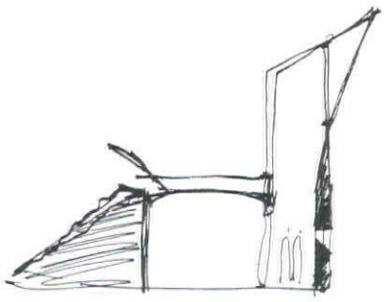
11 These early studies further demonstrate the idea of a heavy base providing a thermal mass, shaded from the desert sun by a parasol-like roof, which is distinct from the base and suspended above it. The headframe's trussed construction, pulleys, and cables suggest one possibility for the roof's structure, although a simplified shed roof presents a more obvious and expedient solution. The changing angles of the sun throughout the day and year suggest a way of zoning the section of the building so as to produce maximum light with minimum heat gain. The position of the pools at the edge of the exhibition spaces would allow for evaporative cooling, enriching their initial esthetic function.

12 A bird's-eye view of the museum shows the beginning of the transformation into the building's final form. The headframe and entry, relocated at the head of the public wing, allow the building to settle into the center of the block. A curving ramp passing beneath the headframe initiates the procession of exhibition spaces, which are enclosed by battered earth berms that act as heat sinks. Five windscoops, positioned over rooms without exterior access, provide additional airflow necessary for cooling.



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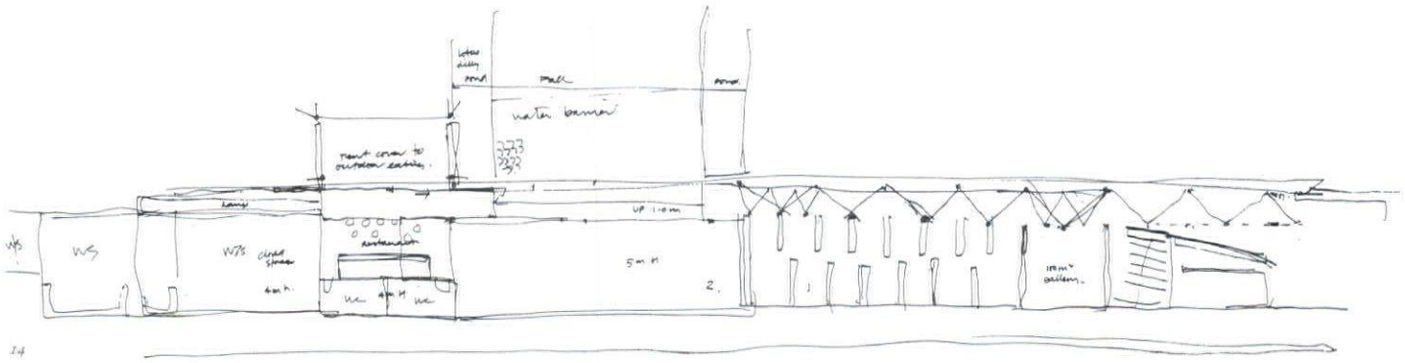

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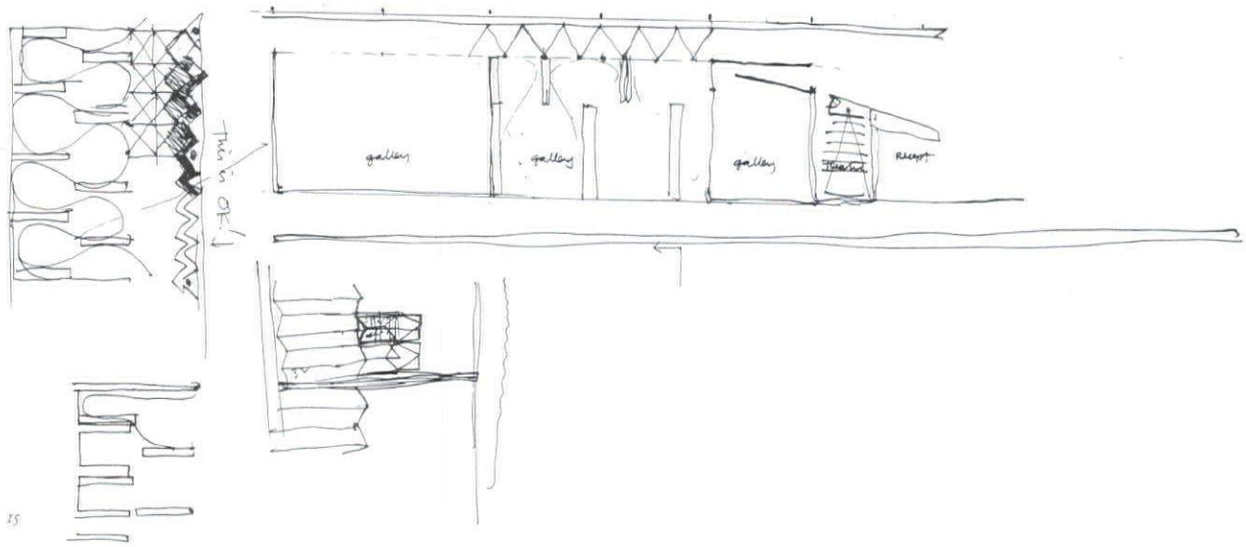

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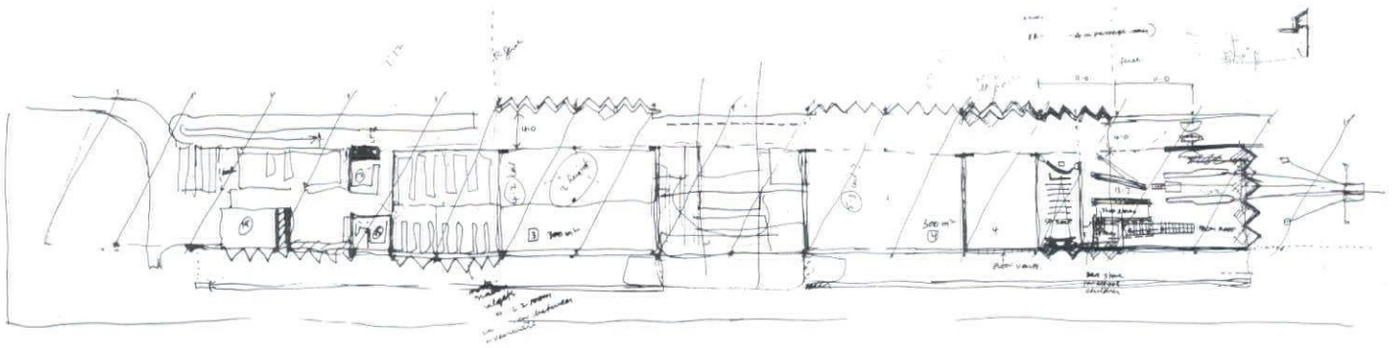
13 This section study shows a reevaluation of the plan, the width of which makes it nearly impossible for natural ventilation to work sufficiently. With the introduction of more windscoops and the reduction of the plan to a single-loaded corridor, prevailing breezes will pass across the width of the building. The tilted under-side of the shed roof produces sufficient negative pressure to augment the exhaust of those breezes at the back of the building. Earth berms buttress the winter side of the building.

14 A plan study presents the effects of these developments. An earth berm runs the length of the southern wall, and a pool of water on the northern, sunny side of the building aids evaporative cooling. The zigzagging lines along the corridor connect the points of support for the triangular windscoops that line the corridor along the exhibition spaces. Programmatically, the various spaces are now in their future positions, with exhibition spaces at the entry end of the museum. Administrative and maintenance spaces at the center and opposite end of the building sandwich a public cafeteria, which is connected to the display areas by a ramp.

15 A series of plan sketches of the first-floor exhibition areas shows the substitution of rammed earth walls for the earth berms, which allows the building's container to take on the triangular forms of the windscoops above. This suggests that the windscoops be integrated into the structure of the wall rather than punching through the plane of the roof. A small sketch of the elevation of the wall expresses this development on the building's exterior. The formal alteration of the windscoops is followed by a functional one, in which they are transformed into malqafs, *based on the Egyptian architect Hassan Fathy's interpretation of traditional design principles. Air is to be drawn down and over a bed of charcoal and water, ensuring a high degree of evaporative cooling.*



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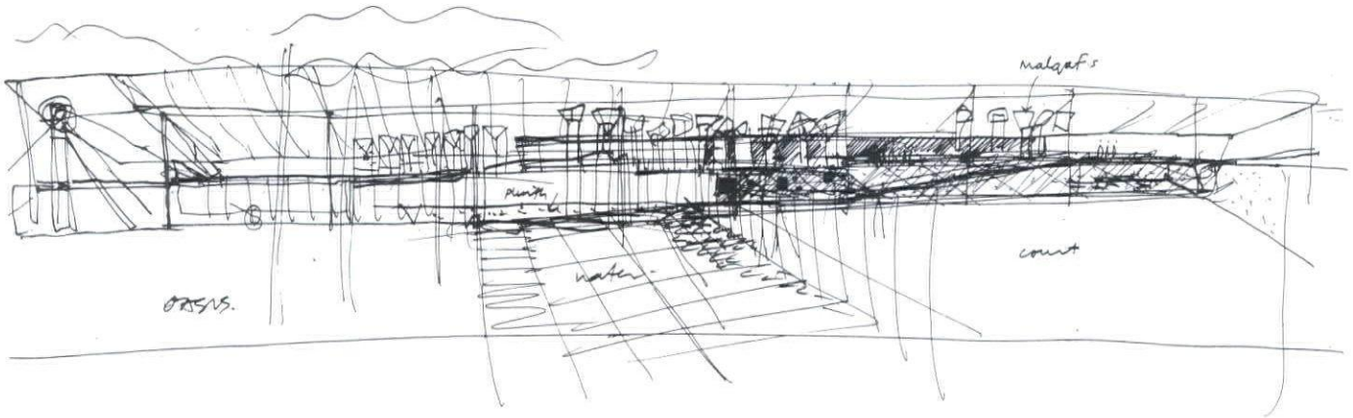
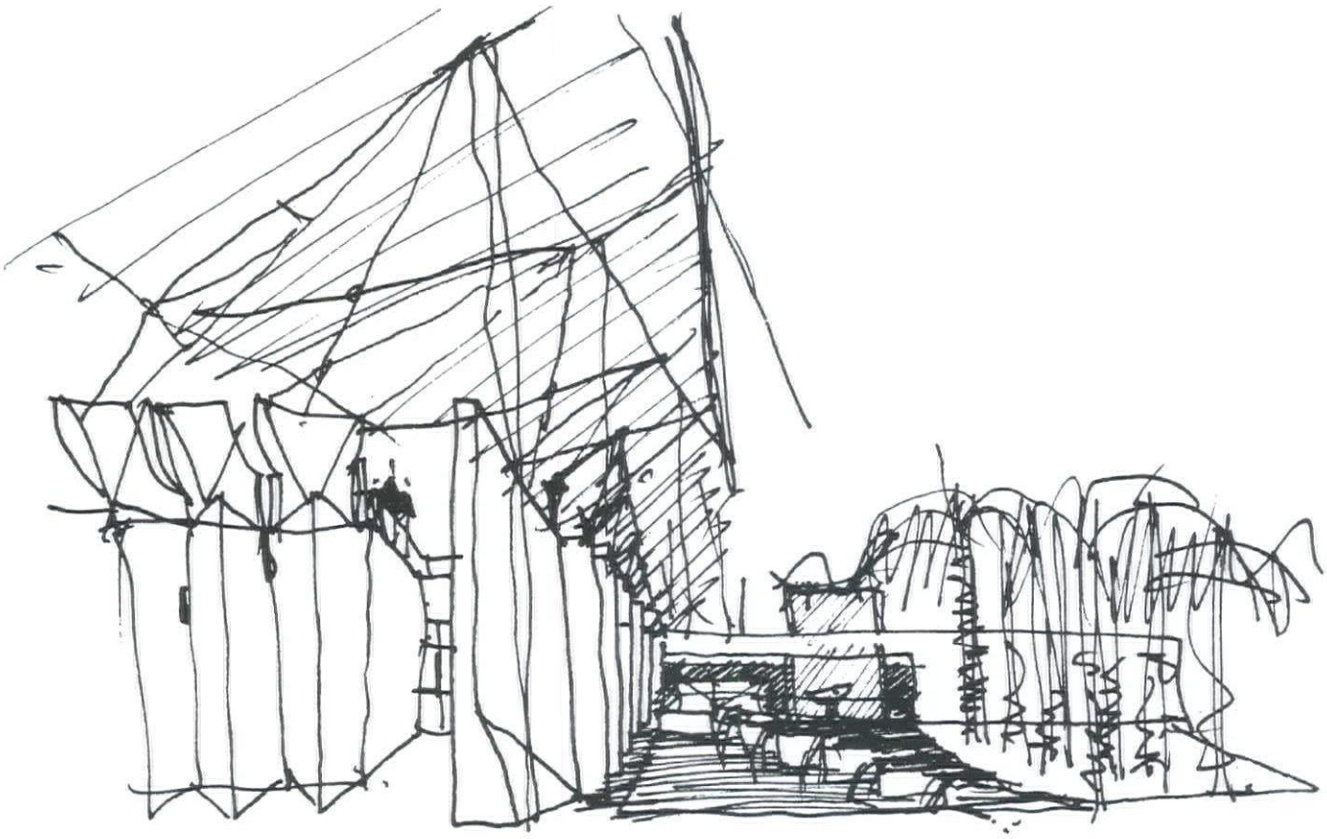


17 VIEW FROM NORTH.

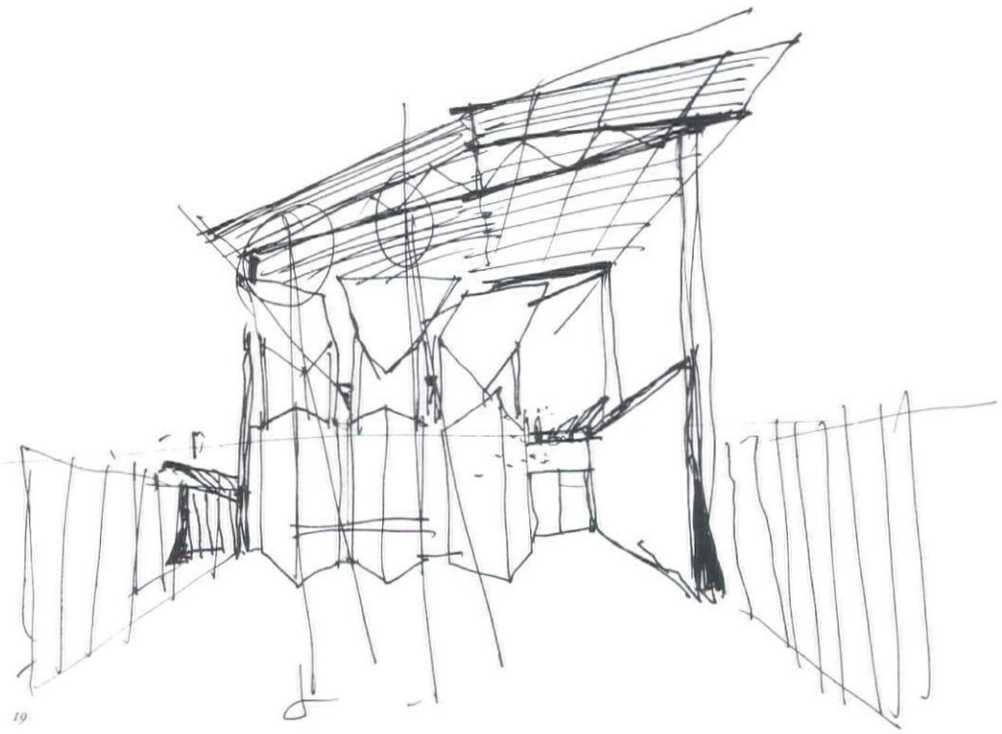
The drawings for the second presentation to the museum's board outline the proposed building.

16 A final plan shows the headframe and hoist as the first objects to be exhibited at the museum's entry. The grid of columns and the roof trusses above it are racked so that the roof will extend beyond the building, providing a cover for the loading dock at the private end of the museum and an awning at the entrance. This move also mitigates the bluntness of the building's end elevation. The thin elongated plan with its single-loaded corridor facilitates a two-stage building schedule by allowing the first built stage to appear as a completed composition, and optimizes exposure to Broken Hill's constant but light breezes.

17 View of north elevation.



18 View of courtyard and pool from entrance. Air, cooled and moistened by evaporation of the pool's water, will pass into the malqafs, *which stand at the water's edge.*



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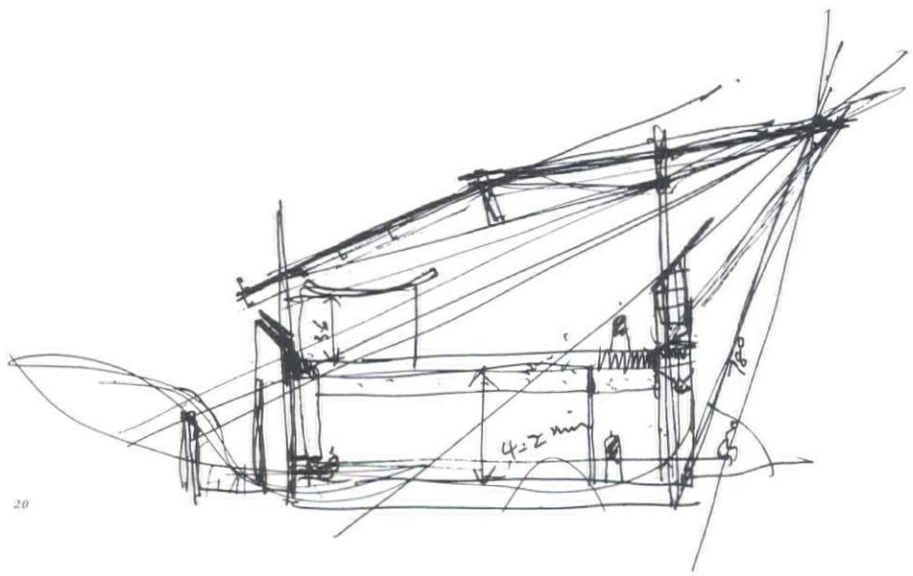

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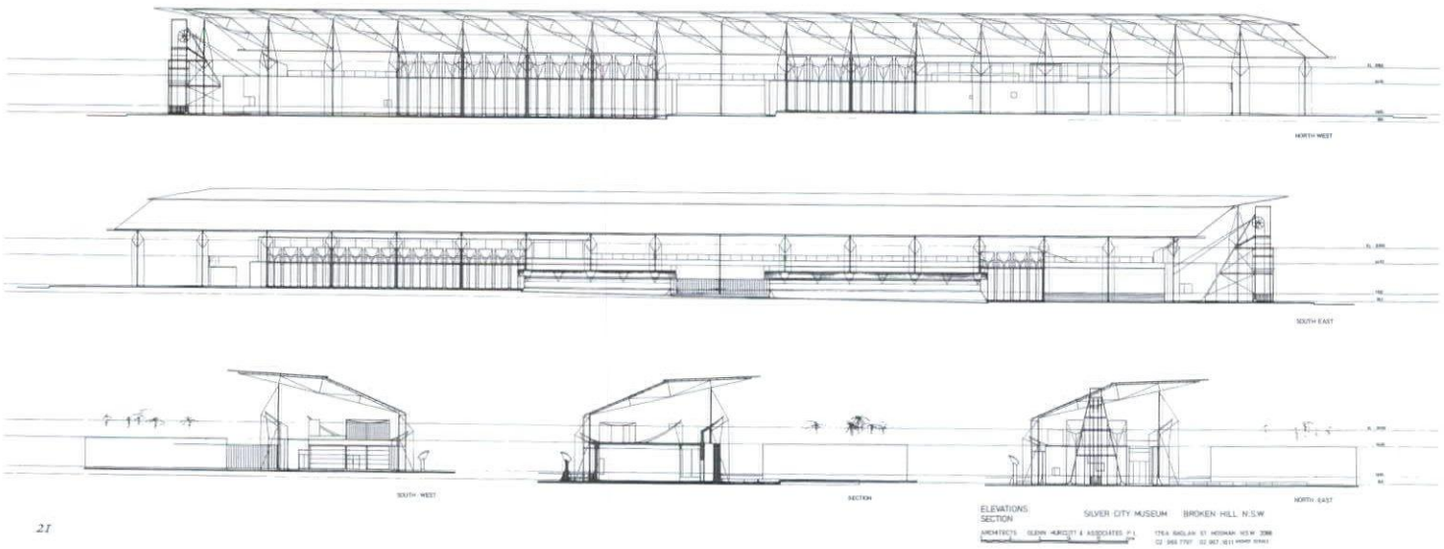
19 View of entrance. The shed canopy has become a shallow gable roof, tipped up to the north to capture the sunlight reflected from the pool. The resulting steepened pitch at the back of the roof's underside increases the negative pressure on the second-floor deck so that more air is drawn into the malqafs *and passes into the interior first-floor spaces.*

20 A final section study establishes the correct geometries for the building's optimal exploitation of natural light and ventilation.



ELEVATIONS
SECTION
SILVER CITY MUSEUM BROKEN HILL N.S.W.

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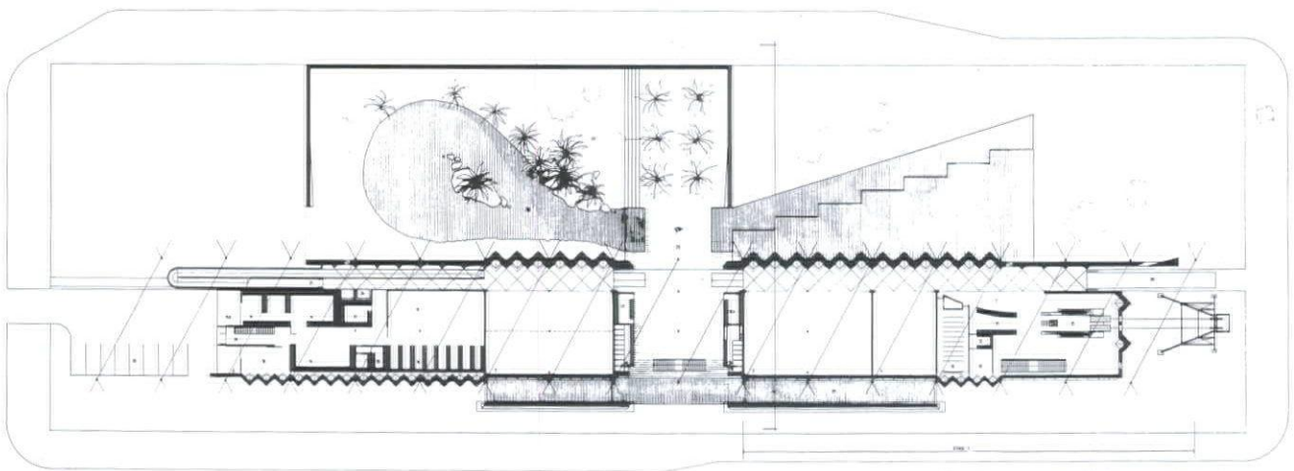
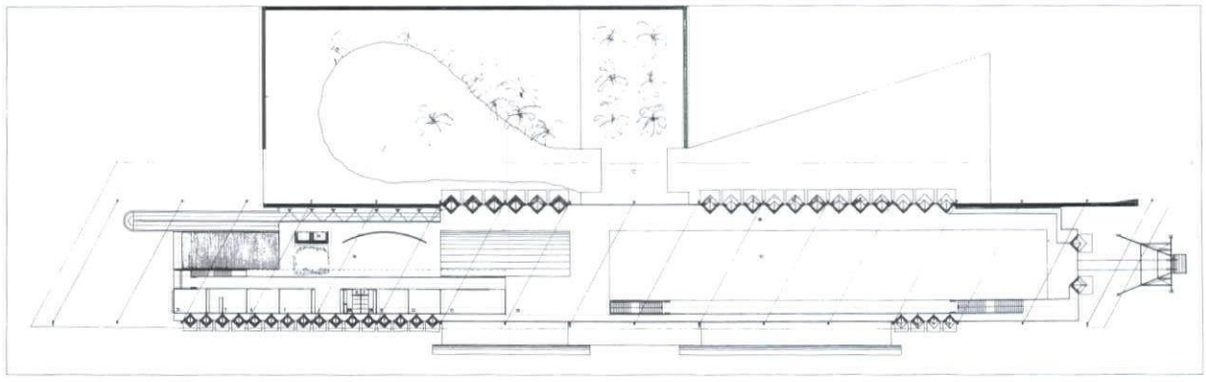


LEVEL 1 PLAN SILVER CITY MUSEUM BROKEN HILL N.S.W.

ARCHITECTS GLENN MURCUTT & ASSOCIATES P/L 176A RAGLAN ST MOSMAN N.S.W. 2088
02 969 7797 02 967 1611

22

1 ENTRANCE RECEPTION
2 GENERAL PURPOSE GALLERY
3 WORKING MACHINES MUSEUM GALLERY
4 TEMPORARY EXHIBIT GALLERY
5 PUBLIC WC
6 STAFF WC
7 STAFF ROOM
8 SECRETARY
9 DIRECTOR
10 CURATOR
11 THEATRE HALL
12 MUSEUM SHOP
13 RESTAURANT
14 KITCHEN SERVERY
15 RESOURCE CENTRE
16 GENERAL WORKSHOP
17 DELIVERY DOCK
18 PHOTOGRAPHIC STUDIO
19 CLOSED STORAGE
20 GENERAL STORAGE
21 WORKSHOP
22 CRAFT
23 CONSERVATOR future
24 WINDER HOUSE
25 PLANT ROOM below on/off entry
26 ROOFTRAM
27 WAITING ROOM
28 COURTYARD
29 OASIS OUTDOOR FUNCTIONS EXHIBITIONS
30 AIR CIRCULATION ZONES COURTS
31 ENTRANCE COURT
32 STAFF ENTRY plant rm. below
33 STAFF CAMPAIGNING
34 FIRE ESCAPE
35 BAG STORE
36 MUSEUM STORE
37 LIFT
38 ADMINISTRATION EXPANSION FUTURE
39 OUTDOOR FUNCTIONS ROOF GARDEN
40 ROOF EXHIBITION AREA
41 ACCESS WAY



LEVEL 2 PLAN SILVER CITY MUSEUM BROKEN HILL N.S.W.

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23

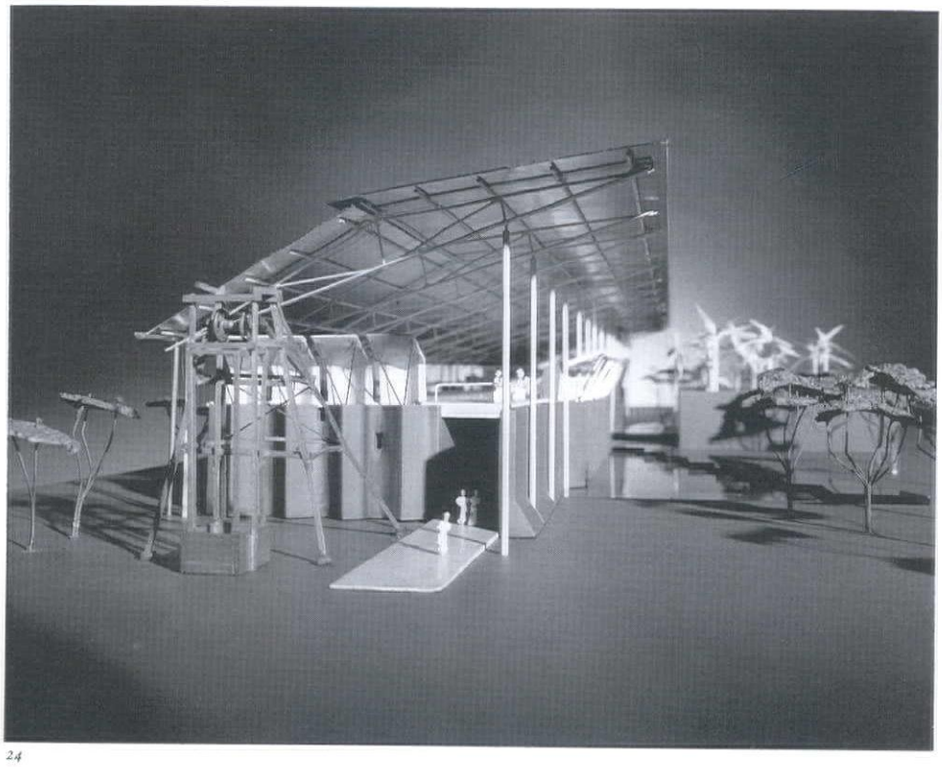
21 Mining and Minerals Museum, Glenn Murcutt, Broken Hill, New South Wales, Australia.
a. northwest elevation
b. southeast elevation
c. southwest elevation
d. section
e. northeast elevation

22 First-level plan.

23 Second-level plan.

24 Model

25 Section.



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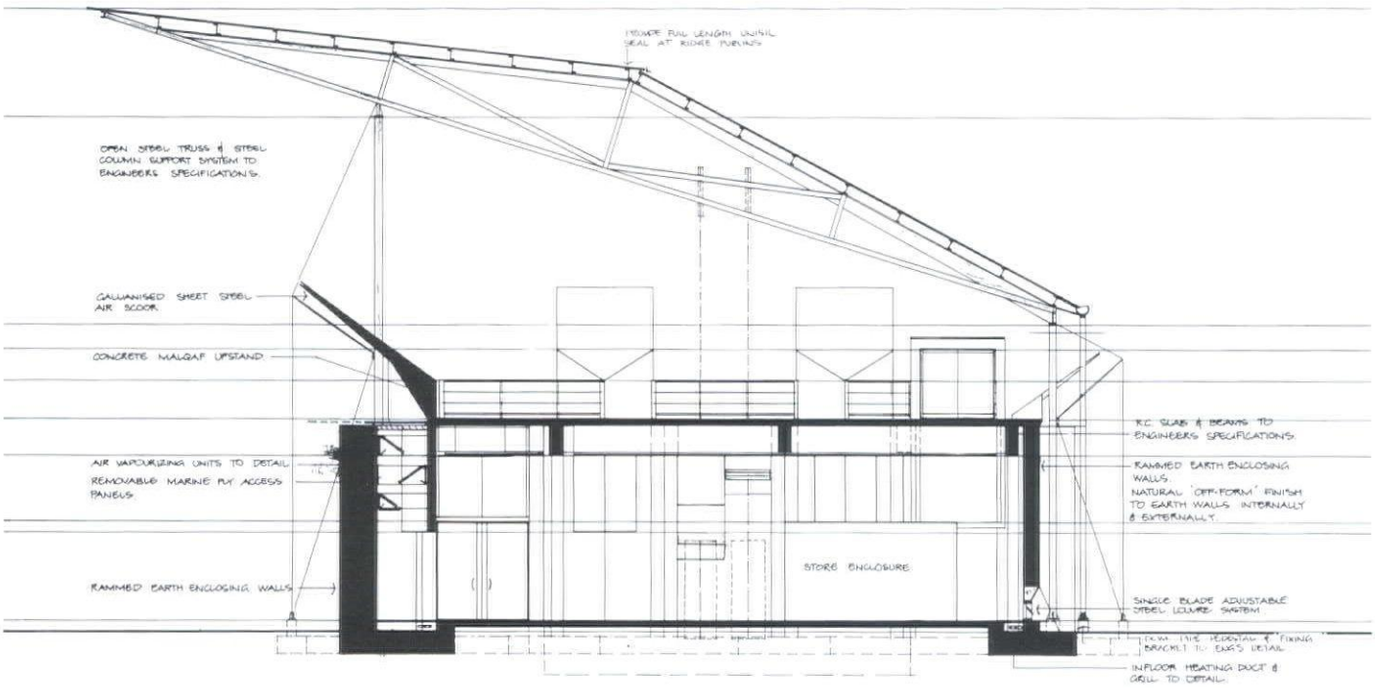

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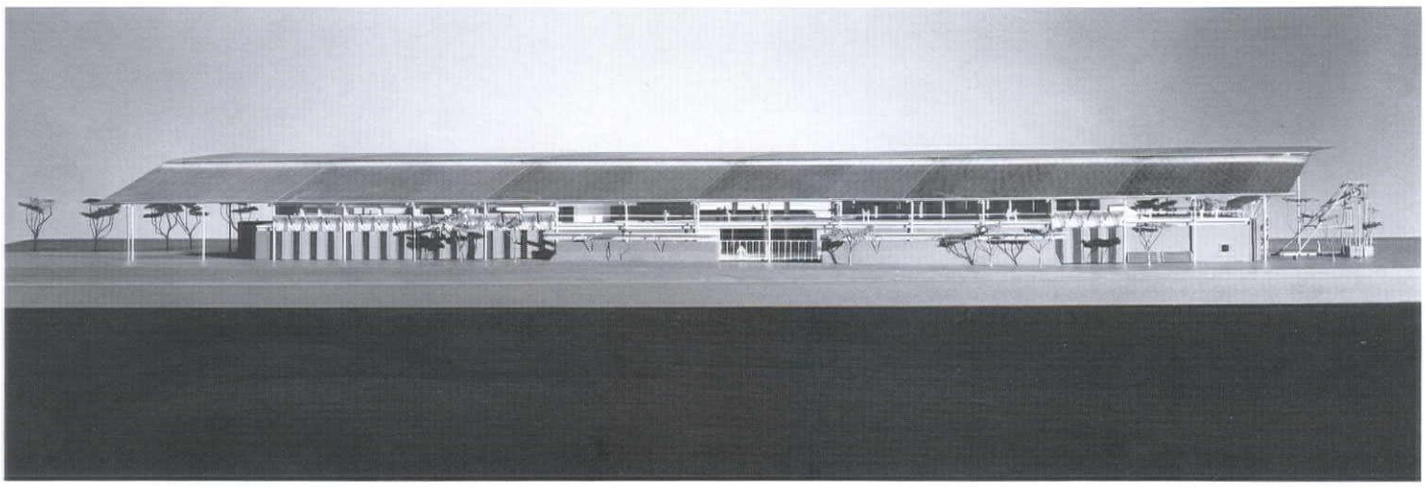
The proposed museum is more than 300 meters long and stands at the center of the city block, clearly a part of the monumental landscape, both man-made and natural, of Broken Hill. The site's high water table allows for native desert palm trees and pools of water. It is to be a reminder of the oasis in a desert environment, providing an analogy to the place of the mining industry in the life of this city.

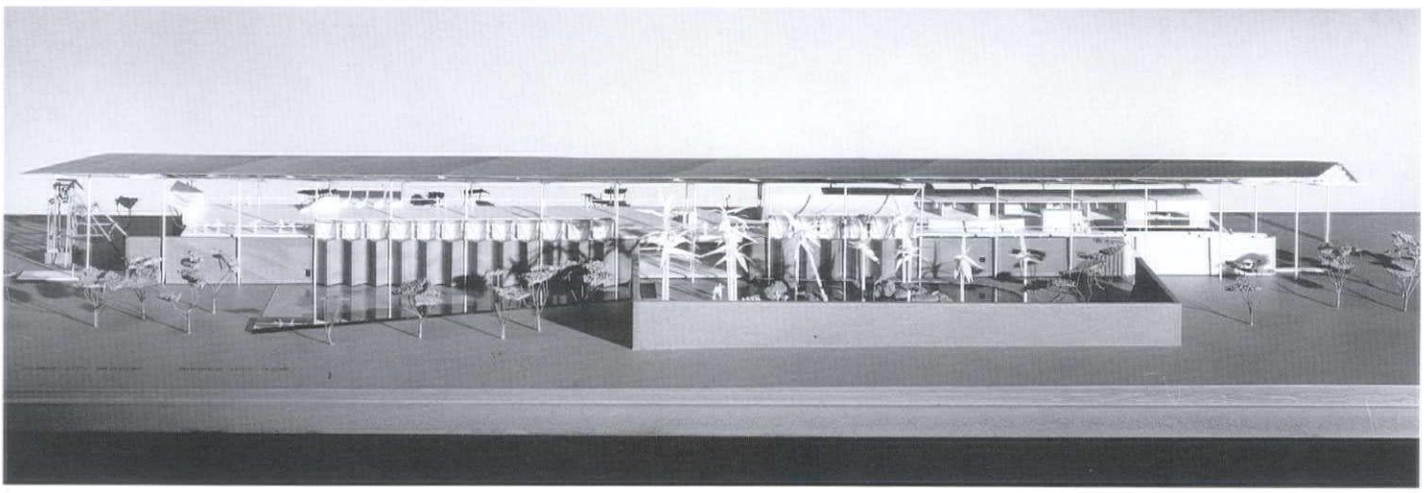
A visitor to the museum enters the building at its northeast end, continuing past the mining headframe and into the compressed earthen spaces of the first-floor exhibition spaces, which lie beneath the huge, heavy mining machines on display on the second floor, which is open to the air and visible from the street. I like to think that the sense of that weight above, the material quality of the rammed earth walls, the dimly lit spaces where the only illumination to supplement the incandescent light of each display falls, with cool air, in repeated punctuation along the narrow corridor from the *malqafs* above, might all work to give the museum-goer some sense of the experience of travel down a mineshaft, where the vertical descent is marked by the periodic rush of air and light as the lift passes each ever-deeper horizontal tunnel.

The building has three discrete components. The gabled truss roof, split at the ridge and expressed as two distinct sheets of corrugated metal, hovers on slender steel columns above and separate from the base of the building. The floor slabs of the building are in concrete, a material used minimally in order to reduce the freight costs of trucking it across the desert. The red earth for the rammed-up walls, which provide the building's thermal blanket and form the bases of the *malqafs*, is to be gathered directly on the site.

Only in the spaces of the museum where certain temperatures must be strictly maintained, such as in the private spaces designated for restoration of artifacts, is air-conditioning used. The rest of the museum is cooled entirely by the *malqaf*-aided cross-ventilation and evaporative cooling of pools to the north, the summer side in the Southern Hemisphere. Later wind-tunnel testing has entirely confirmed early calculations based on the velocity of Broken Hill's prevailing breezes. The aerofoil section of the museum provides a steady but light flow of fresh air through the building which is continually adjusted by anemometers which are connected to a computerized gate in the throat of each *malqaf*.

The building responds to constraints of a tight budget in both immediate and long-term costs, fulfills the demands and needs of the clients, and, I believe, captures the essence of Broken Hill. I didn't design a low gable roof because it resembled the roofs of the huge machinery sheds at the mines, but because it presented an economical solution in terms of cost, through its simplicity, and function, by creating the desired shapes for efficient air pressure and wind flow. If that form ties the building to a vernacular building type, it is because the construction of the museum and the construction of those industrial buildings must answer to the same principles of economy. I didn't propose *malqafs* after arcane historical research uncovered an isolated precedent, but because they provided a necessary function and an inexpensive alternative to costly mechanical systems. If they provide the museum with an expression of the harsh climatic conditions of the place, and link it to the historical activities of mining at Broken Hill, it is not because of a romantic desire to mimic past forms but to use form to a rational end. I believe that if we accept the responsibilities of living economically on the land, of building articulately and legibly using current construction technology but with an eye toward the profound renewability of both principles and materials, we will necessarily build with a link to both the land and the traditions of building on the land.





26 and 27 Mining and Minerals Museum, model.

1 Church of Atlantida, Eladio Dieste, Atlantida, Uruguay, 1961, view of south wall.

Some Reflections on Architecture and Construction

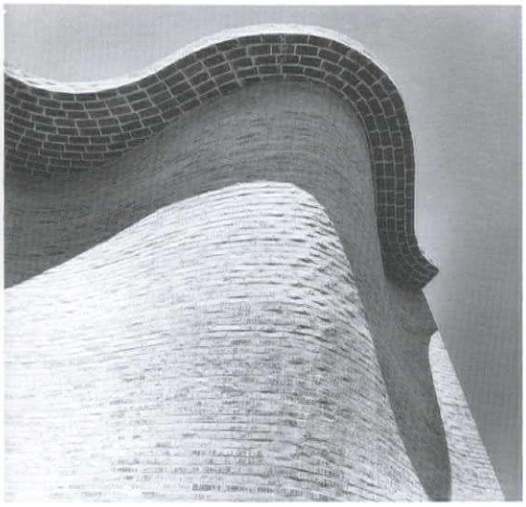
Eladio Dieste

The following is a somewhat free meditation on themes of importance to me, reflections with a certain provisional order. I began to work on structures in 1942. It was then that I began to reflect on the way we build, the origins of the methods we use, and the philosophy at the base of our activity.

To relate these reflections, I feel it necessary to outline the evolution of construction methods since the Industrial Revolution. In analyzing this evolution I have been struck by an apparent discontinuity, precisely at the time of the Industrial Revolution, of a millennial tradition. Until the end of the eighteenth-century construction was carried out with methods that evolved from those used in the High Middle Ages and the Renaissance. The expressive traditions of these periods conceived of the integration of construction and architecture in essentially the same way. But suddenly, between the eighteenth and nineteenth-centuries, it became possible to use iron as a construction material (first cast iron, then various types of steel), and very quickly this material began to be manufactured in pieces of prismatic wholes that were then assembled to form the structure of buildings. It is by now a commonplace to point out the importance of this conceptual shift, which allowed us to think of the structure of a building as a skeleton partially free of its walls, and which made architectural space independent from construction method in a way unknown until that time.

With great speed, iron invaded and revolutionized our methods of construction. This change, however, was not occasioned by economic considerations. Sometimes, and it was certainly the case here, it is initially more costly to utilize a new method or material. The change is brought about, though, because man fortunately possesses the generosity that enables him to embark upon projects for which he feels a solid and intimate suitability. Structures that could never have been attempted with the methods of the past, and that were quite suited to the typical programmatic concerns of the industrial era, i.e., warehouses, factories, and transportation terminals, became possible with iron. Indeed, such large-scale iron buildings are the most representative architecture of the last century.

But, although there is a wealth of scholarship on this period, there is an aspect of this revolution that I have not seen investigated, perhaps because it is a strictly structural issue, and that I believe is as important to the evolution of architecture as the so called "freeing" of the ground plan from the building structure.



2 *Church of Atlantida, detail of west wall at eave.*

Iron: The Technological and Theoretical Predominance of the Plane

The technical revolution was accompanied by great advances in the science of construction. The very process of assembly of iron components made it possible to decompose the building, without omitting anything essential, into trussed planes that were easy for engineers to calculate. Though lacking the subtleties of the theories of elasticity and superior stability, engineers could determine the stresses and sections of all parts of a structure by employing the great principles of statics, very simply applicable to any system of planes, and an only rudimentary understanding of material resistance. This theoretical clarity drove engineers to reduce everything to diagrammatic planes. When working with planes, they could move with agility.

The technological dominance of the plane had a tremendous influence on the evolution of construction and consequently of architecture. The rational mastery of construction problems created a self-confidence that prompted the most lucid and bold minds to enthusiastically explore the possibilities of iron. Prior to this revolution, traditional methods of construction were developed not through analysis but rather through secular adjustments, not calculated but intuited, tried, and sometimes corrected through spectacular failure. The perfection that was achieved is occasionally disconcerting. [1]

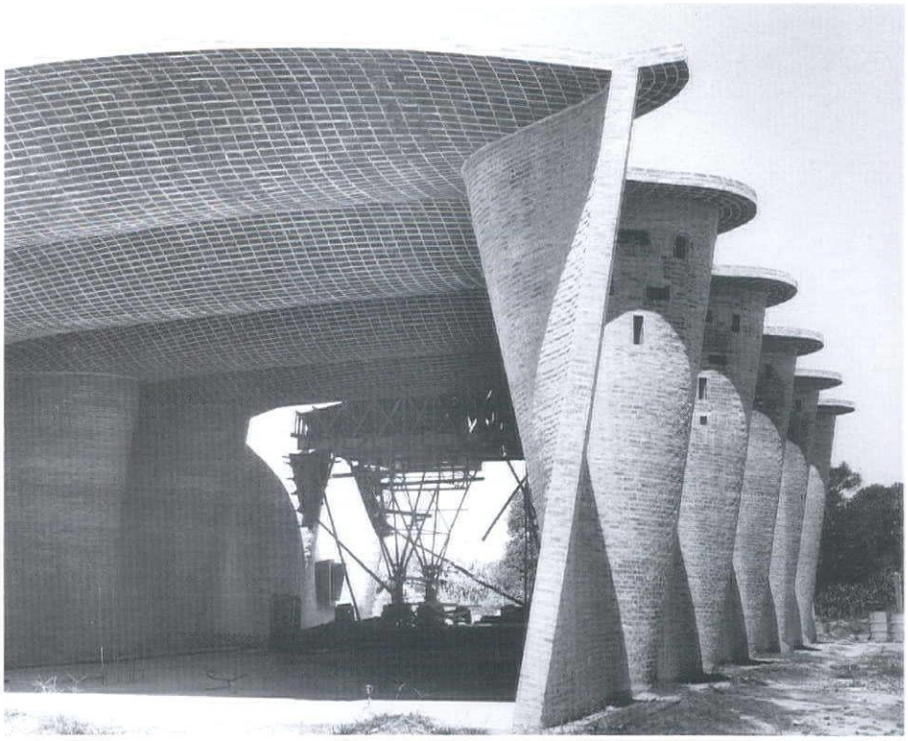
The technical revolution provided builders with methods that could be calculated and constructed with confidence, without guessing. Time-consuming, uncertain processes were replaced by efficient rapid analysis. Only an intoxication of certainty can explain the ensuing abandonment of such an enormous amount of accumulated knowledge of traditional construction. At the time of the Industrial Revolution, that tradition, though lacking the vitality of its great creative moments, remained intact as a reservoir of possibilities. Perhaps the apparent unwieldiness of those traditional methods in the face of the new "planning" mentality might explain why it was neglected by those minds capable of founding a whole new tradition, men like Eiffel, who were not only genial as engineers but also as artists who constructed buildings and bridges of great beauty.

As I've said, the structures derived from iron typical of the nineteenth-century were planar structures. Even today most construction is made with trussed planes. These are the structures analyzed by the science of construction and the only structures that we study with any depth in our schools of architecture and engineering. Ancient structures like Hagia Sofia or a Gothic cathedral are not planar. They are systems that must be understood three-dimensionally and are much more difficult to both conceptualize and analyze. Even for an experienced builder, it would be difficult to simply calculate the stresses on the different parts of such a structure.

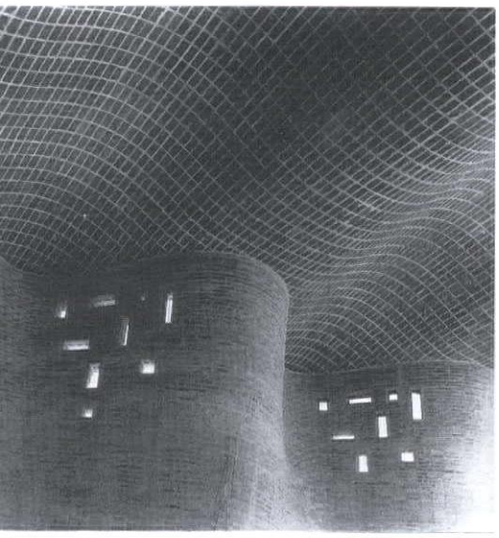
The rational clarity of the trussed plane also had a tremendous effect on the compositional aspects of architecture. The plane's crispness had a peculiar expressive charge that coincided with formal investigations at the root of the modern movement, and the plane vibrates with an almost religious tension in the works of many modern masters. Still today architects seem to work with more comfort when composing planes even when the plane's surface, limiting space in a preconceived way, is not the most appropriate solution. We all have seen those buildings in which the ceiling, for example, is structurally tortured to prevent it from leaving the flat surface of the plane. Undoubtedly, the fact that a planar building is easier to express graphically is influential.[2] But I believe that the essential thing is the work, not the plans. And if the plans prove unable to help us express something that we consider valid, this is no reason to abandon our idea.

1 I remember having seen an analysis of a flying buttress from Notre Dame in Paris that studied the lines of pressure corresponding to their own weight combined with the effects of wind, snow, and temperature. Those lines of forces, in every case, run through the central nucleus of the structure, so that the flying buttress is always entirely in compression with no extra mass in its section. Those medieval builders seemed to intuit the theories and work methods that were formulated seven or eight centuries later. I should mention, however, that this level of precision and correctness is not apparent everywhere. The vaults, for example, are much more massive than statically necessary. But the example of the flying buttress allows us to see the degree of refinement that could be achieved by the secular process of adjustment to which I allude.

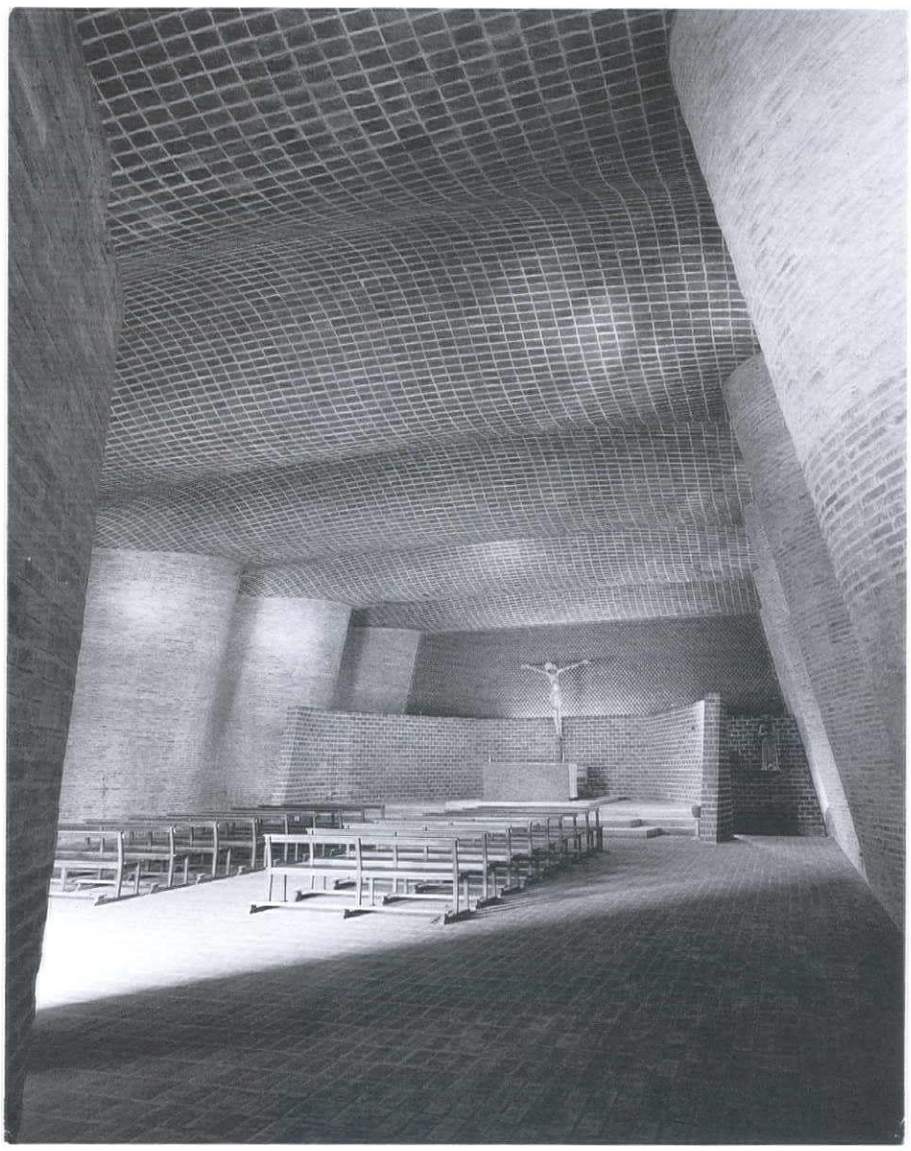
2 I remember once asking a friend what he thought of the work of Gaudí. His response was unequivocal: "All that has nothing to do with us. Besides, I wouldn't know how to draw one of Gaudí's buildings, and how would one, today, build a structure without plans, sections, and elevations?" My friend, though obviously not interested in Gaudí as an artist, also represented, I think, a certain mentality that places a disproportionate importance on the graphic representation that we require for our construction work today. (This was 25 years ago when Gaudí's work had not been properly evaluated. I did not know of his architecture but the painter Torres Garcia had spoken of him with enthusiasm.)



3 *Church of Atlantida, under construction.*



4 *Church of Atlantida, detail of interior fenestration at ceiling.*



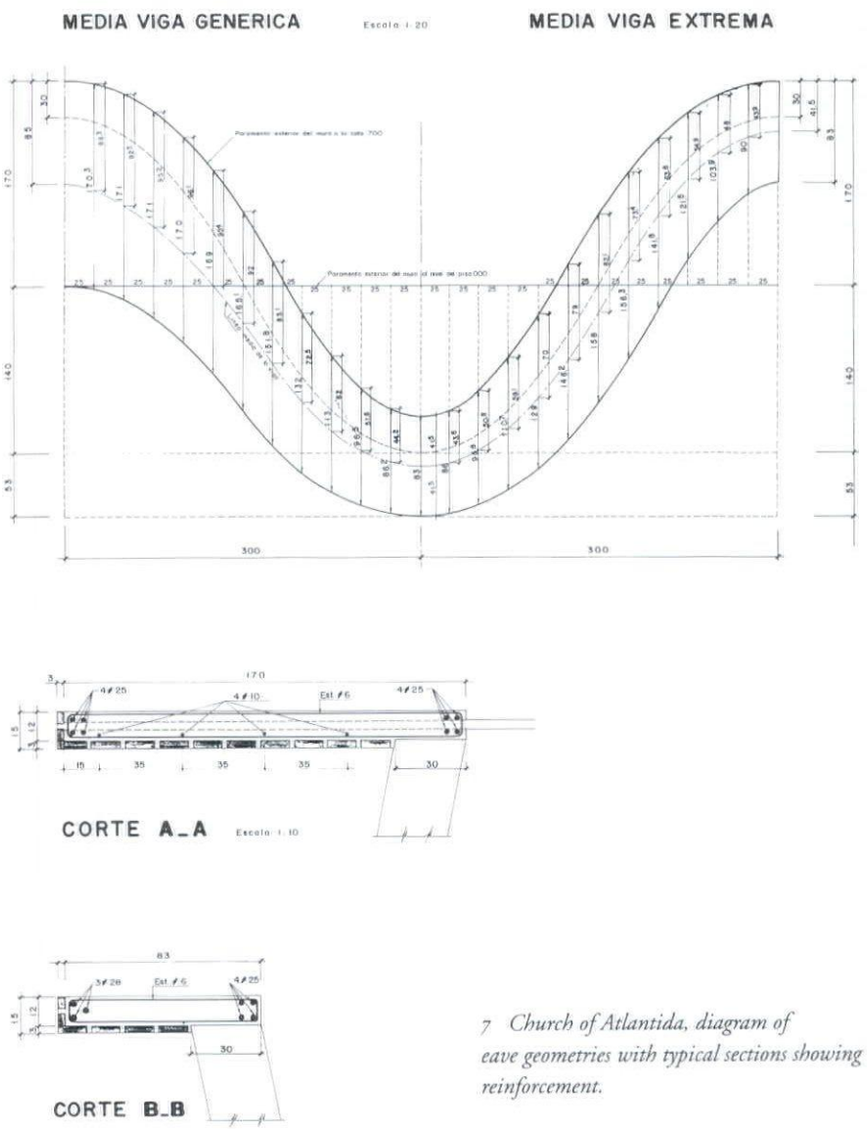
5 *Church of Atlantida, general view of nave.*

6 Church of Atlantida, wall under construction.

Today we seem to give more thought to the drawings than to the work itself, thinking of the work schematically, through its graphic representation. Current methods of construction and even our professional training teach us to build projects, not works. It is our natural tendency to do what we know best, and it is only through sustained effort that we can free ourselves from what Sert called the "tyranny of the drawing board." All of the great works of the past were built with extremely simple plans. The organization of labor was very different then, and I know from experience how difficult it is to execute conceptions that cannot be clearly rendered in graphic terms. But very frequently the results justify the extra work required even from the most utilitarian point of view. The laminary structures of double curvature that I will discuss later, for example, cannot be clearly rendered graphically but are very economical and very easily built.

If the great advantage of the trussed plane is its primary clarity and ease of analysis, its disadvantages are often preponderant. It is the most elemental kind of structure and often a simplistic solution that does not distribute loads in the most efficient way. All of the medieval art of stone vaults and cupolas is not only chronologically posterior to the conception of the plane but presupposes great refinements in the understanding of complex structures and in the techniques to build them. Above and beyond that, the clarity, rationality, and speed of the process of design and construction prevent the work from gradually acquiring a personality of its own. Surprise and discovery become less likely.[3]

3 In this as in everything else, there is no advance or increase that does not carry a risk. As a current example, few things today are as prodigious as computers. Many of the calculation problems to which I will refer have almost disappeared because there is no system of differential equations, no matter how complex, that can resist analysis by a powerful computer. But, as has been noted, the machine cannot answer for itself and will never give us anything more than what we put into it. The creation of form will continue to be the result of the mind's labor. The great risk of computation is that laziness and the mechanical work of programming the machine will distance us from the substance of the real. We will tend to simplify and impoverish our thought in order to adjust it to systems that function without our continuous input. For example, it is easy to program the calculation of the classical structural skeleton, but it requires much more effort to substitute that system with one that might prove more convenient, such as diaphragms. All of this admonishment is not meant to support the reactionary and unintelligent rejection of the astounding media that progress has put at our disposal. I am not advocating "Luddism" for architects and engineers. I simply point out the dangers of an attitude that uses progress to sterilize the force of progress, diminishing rather than enlarging man. We may again face the danger that what we build, rather than being richer and more truly rational, will ultimately be an impoverishing simplification of what we had already done better with more primitive methods.



7 Church of Atlantida, diagram of eave geometries with typical sections showing reinforcement.

Concrete Laminary Structures: Calculations, Models, Imaginations

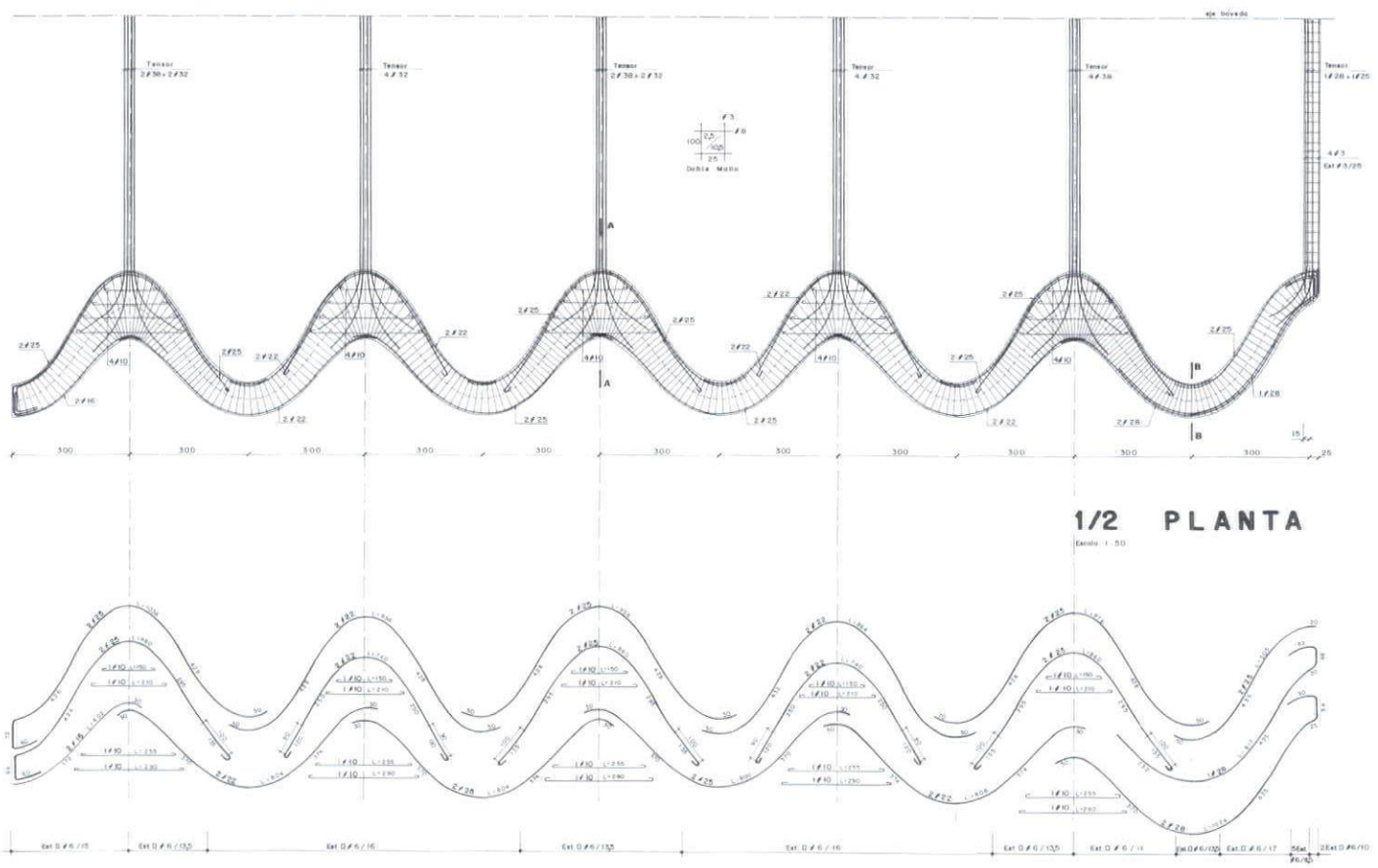
In the second half of the ninteenth-century, as the technological revolution continued, the discovery of reinforced concrete developed very quickly from its humble beginnings into one of the most vital methods of construction.[4] Initially, reinforced concrete was also utilized in planar systems of slabs, beams, and pillars not only in those instances in which it was an appropriate solution, but also in situations in which it was clearly an absurd choice. Slowly, it became obvious that this was not the most rational use of the material, but it was difficult to change our ways of conceptualizing structures because of our previous training. As soon as new uses and solutions were imagined, their execution sank into a sea of doubts. We were always faced with the limits of what we could calculate; and for an engineer, to conceive of something meant to be able to calculate it.[5]

4 What I say about reinforced concrete is equally applicable to reinforced ceramics, the techniques of which I will describe later.

5 Sometimes when I am speaking about laminary structures to students of architecture or engineering, I realize how difficult it is to do it without falling into recipes. Still, today, the time we devote to the study of structural surfaces is insufficient. It is true that there is no structure that cannot be analyzed, but the more complex a form is the more analysis and hard work it requires.

Almost all that is written about laminary structures is the work of builders who first conceived of a solution and only after the whole process was completed, with testing in situ, began systematizing their analytical and constructive experience into theories that were valid only for specific structures. Work and studies through models are always possible, but in general they don't yield more than a qualitative orientation. To specify quantitative stresses requires a continuing survey of the problem in order to arrive at the necessary precision. Besides, models are more expensive and time-consuming than computation, and are useful only at a final stage in the design of very complex structures. In my own practice I have used models very seldom. But I can say that I have proceeded gradually in my work and that the smaller structures have served as models for the larger ones.

Even with the most modern tools, the ideation and fabrication of structures that are both rational and expressive will always be very time-consuming and will require an enormous amount of work. I have come to think that the most sensible thing to do would be to create repertories of studied forms that could be used to compose in many



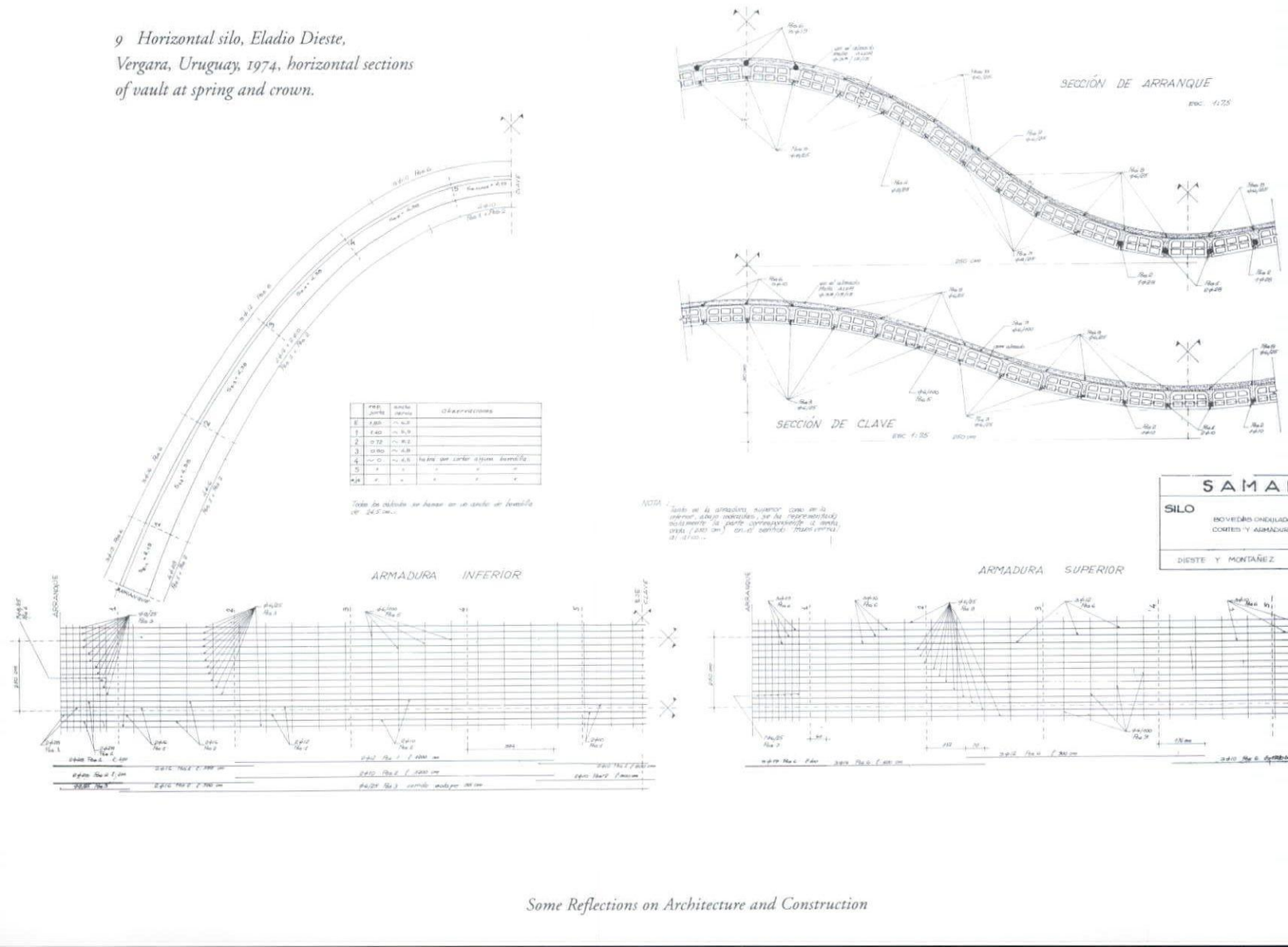
8 Church of Atlantida, diagram of reinforcement at connection of roof vault and wall.

different ways. Is this not a perfectly rational justification for what we call "style"? The creation of styles, in antiquity, referred to a process of study and refinement that included both proportional dimensioning and constructive techniques.

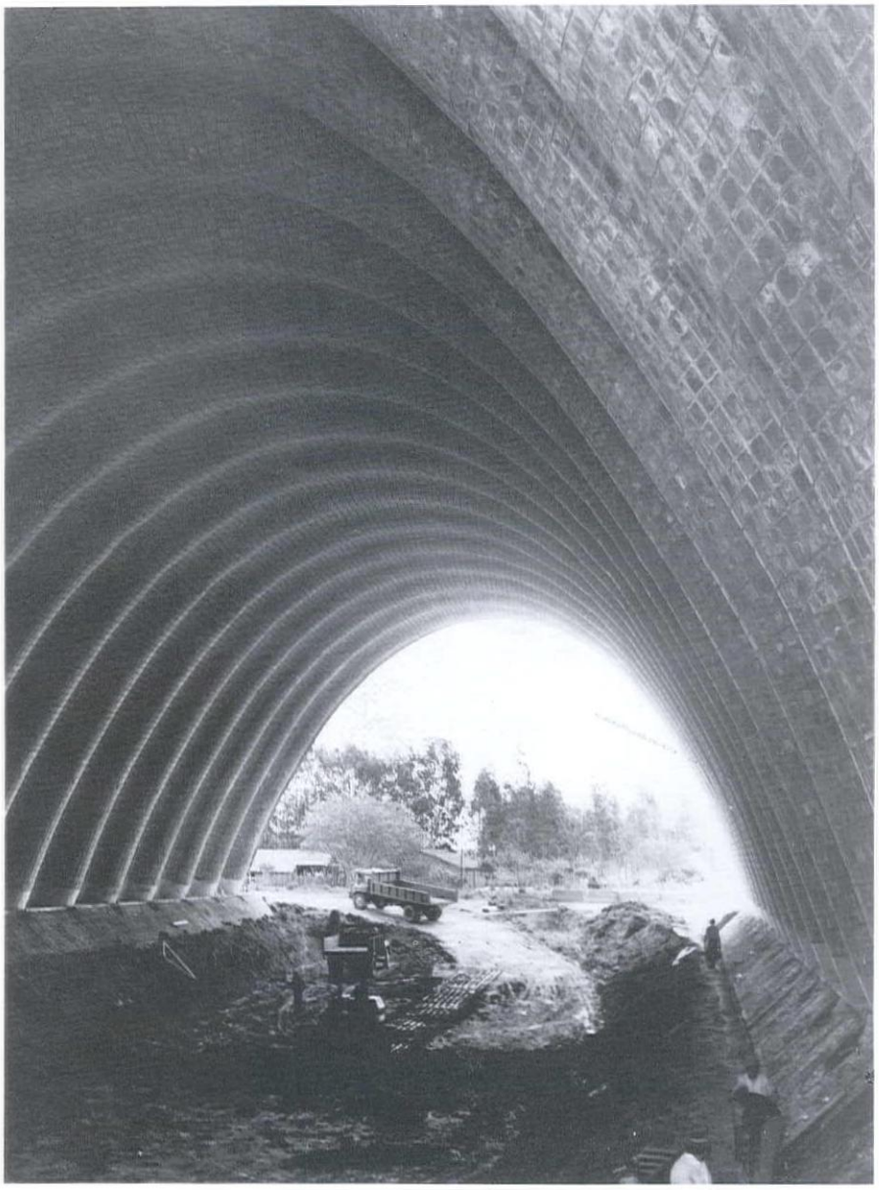
The construction of rich and complex forms, however, cannot be the product of a routine. They require a love for quality in work and an attention to detail that is not common among businessmen. And anyone with enough experience in the field knows that generally the designer and the technician have little direct intervention in the work once construction begins. They limit themselves to administrative control, demanding financial performance and scheduled completion. It can be said without exaggeration that in many cases the work is built by the foreman. But the complex structures of which I speak require not only conception and calculation, they also require our input at the site during execution, and a greater personal commitment on the part of the contractor. They force him to be a builder, not merely a businessman.

It is well known that the economic imperative can be an obstacle. As soon as an innovative building solution is proposed, the associated cost estimates begin to climb. But we must keep in mind that the only costs that are known with certainty are the costs of what has already been mastered and repeated many times; one must not trust cost estimates to establish the projected economies of a truly new solution. In this case, the most reliable thing to do is to visualize the process of execution and break it down into smaller units, the difficulty and cost of which are clearer. But ultimately, when the proposed methods are very new, it will be only the power of the imagination, the ability to "see" the work through its various stages, that will be our guarantee of viability and efficiency.

9 Horizontal silo, Eladio Dieste, Vergara, Uruguay, 1974, horizontal sections of vault at spring and crown.



10 Horizontal silo, view of interior under construction.

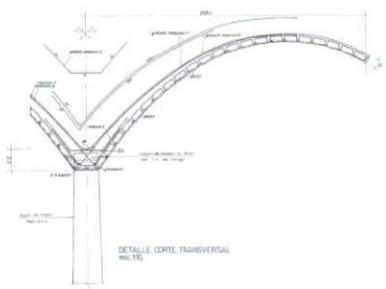


Rationality and Expressiveness

After this first glance at the problems we have posed, it seems natural to return to think them through in the light of something that seems evident to me. In many cases structures have the ability to move us and attract us because they are mysteriously expressive. Our excitement is primarily due to the fact that we perceive these structures not only with our eyes but with our spirit, and they display a more exact adaptation to the laws that control matter in equilibrium. This adjustment is not only rational in the sense that we usually assign to this word. We limit the meaning of this word because we do not have a complete and perfect knowledge of the materials or the methods of calculation that would allow us to determine the stresses in these structures. Giving form to a work, consciously or unconsciously, is like leaping into a void, and we want that jump to be more a flight than a fall. This is why it is more accurate to speak of an art of building than of a science of building. But we must remember that there is no art without science, and that it will take much rational effort to acquire the ability to take that jump.

The need to clarify other primary aspects of architecture seems to have made us forget an elemental thing: architecture is also construction. A work has not been well-conceived unless thought has been given to how it will be constructed. The methods of construction have in themselves extraordinary inspirational and expressive value. Every type of structure is intimately linked to certain building methods, and these methods can be read in the finished product. It is not enough to resolve functional problems and give them spatial form. We must also *build* those spaces so that their expression will be conditioned by the methods and materials that we use to construct them. Spatial conception, form, and materials must constitute a whole; they must be unified in the creative process after having dwelled in the architect's mind. Construction will always be indiscernible from architecture. It is its flesh and bones.

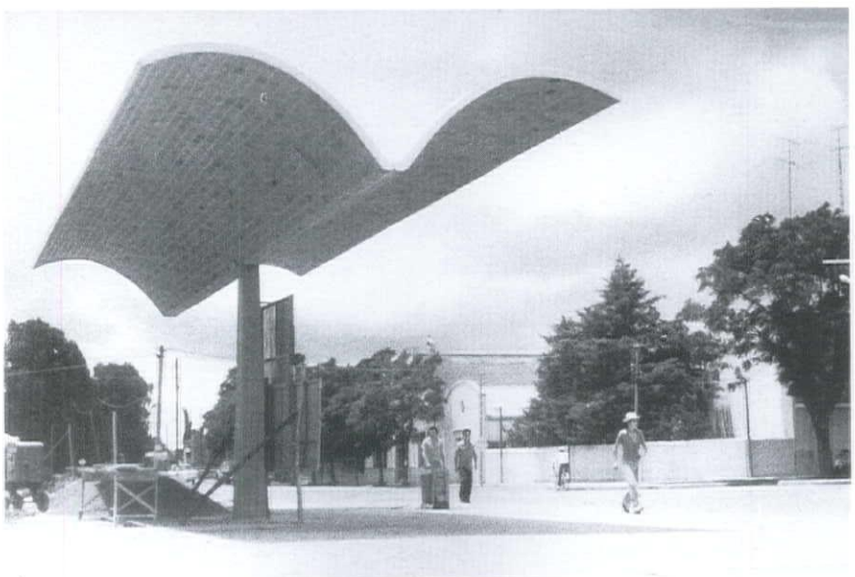
For our architecture to be truly *built* we must understand our materials and their possibilities. It is not enough to use brick because we like its texture or because it is a material full of reminiscences. Because, although these qualities are not worthy of our rejection, the material possesses many more qualities, and the risks of these kinds of reductions are greater today than ever before. Modern technology has apparently given us the possibility of doing anything, and we can use any building material as a stage designer uses cardboard. The economic risks that this practice entails are not immediately visible, but the long-term consequences could be disastrous. Before elaborating upon this I should provide a brief description of the main techniques we have developed.

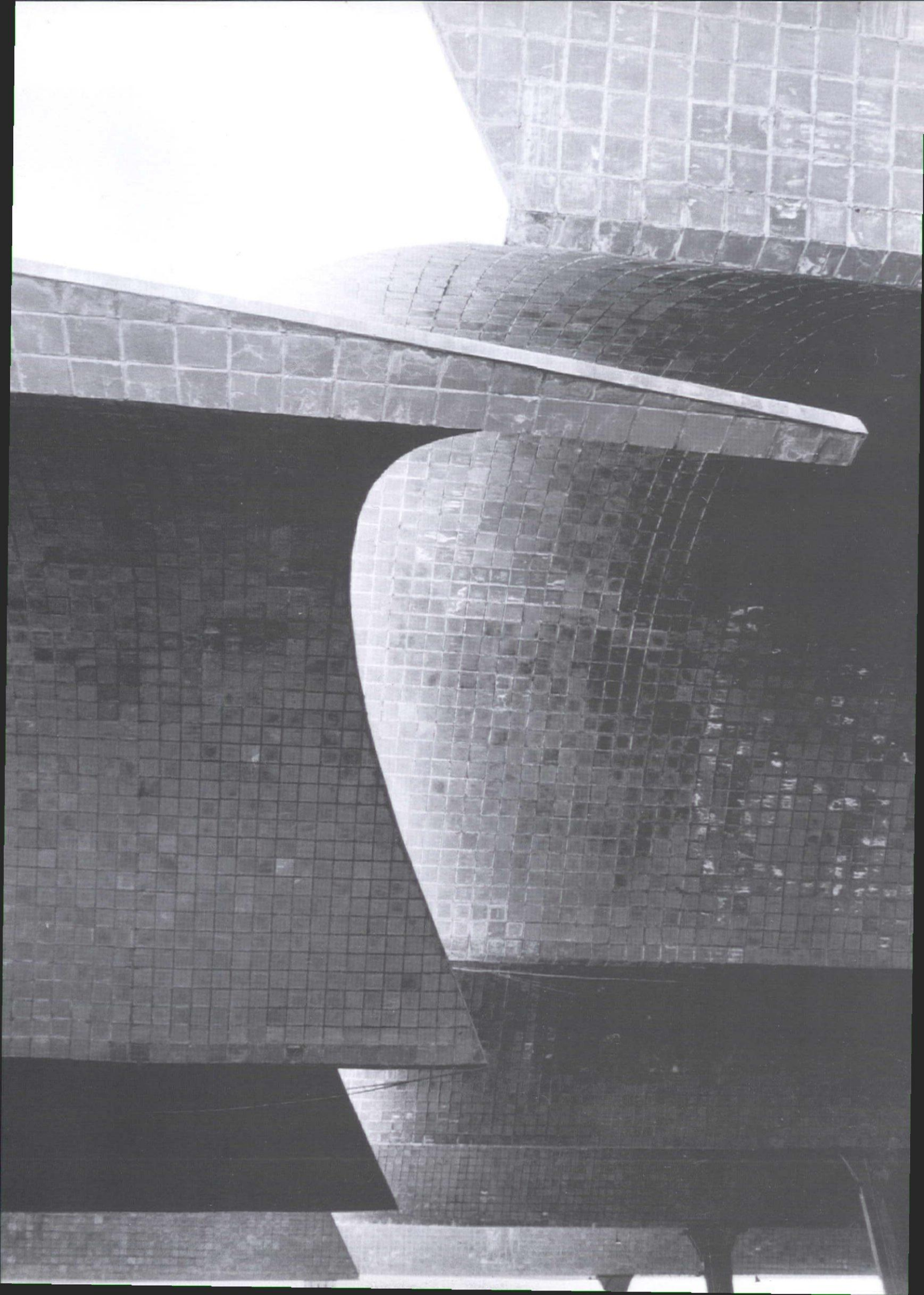


11 Section of a cantilevered shell.

12 Cantilevered shell under construction.

13 Massaro industrial complex, Eladio Dieste, Uruguay, detail of vaulting.





Brick and Ceramic Structures: Double Curvature and Self-Carrying Vaults

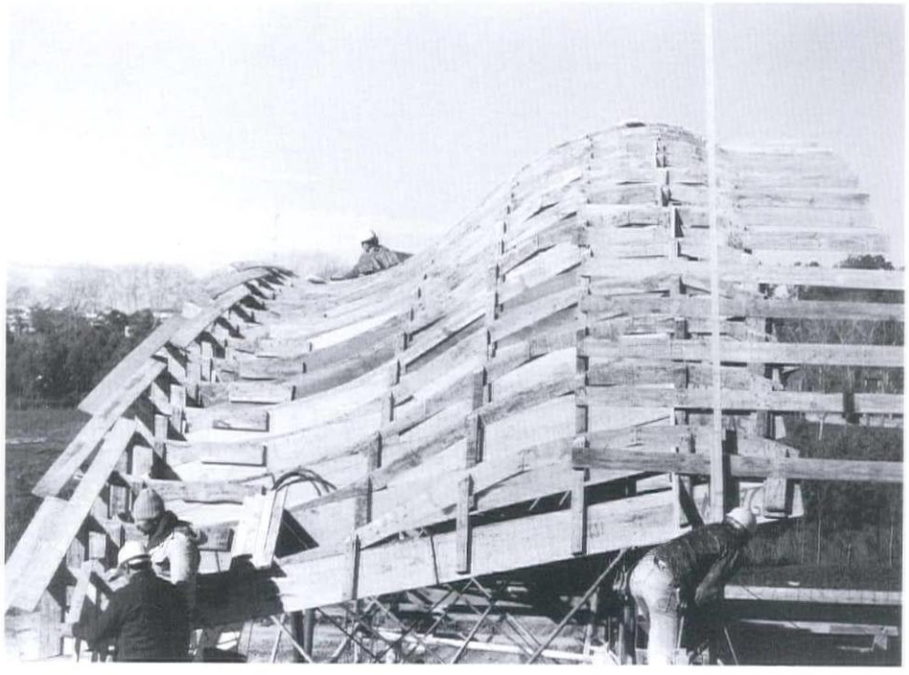
It is now more than forty years since my colleagues and I began to build brick structures. As is often the case, the process of using ceramic pieces as filler in cement and plaster was not a clear or rational one. More was intuited than was consciously understood. But little by little we pinned down our intuitions until we were able to master the techniques we use currently. This required us to design and build the necessary equipment to make those techniques economically viable, and to develop methods of calculation derived from the systems we were attempting to conceptualize, even though these models of calculation often forced us to veer from the paths of the structural theories we had been taught.

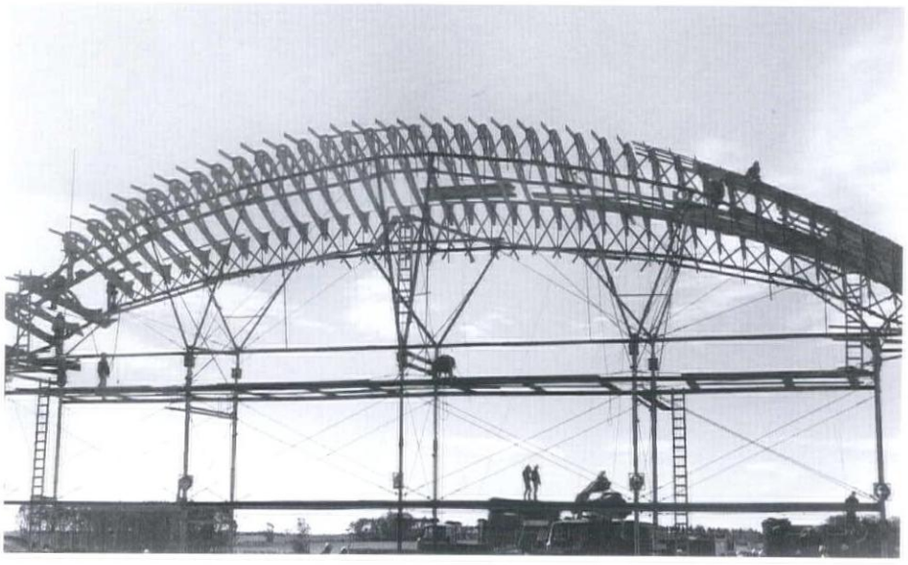
After working on these methods for these decades, we are convinced that we have come upon rational and economical techniques for construction in brick, offering a final product of high esthetic quality. What is less widely known is that brick can resist some stresses better than some of the best concrete, and that concrete and mortar cannot equal baked earth in lightness. We have been able to produce structures that because of their light weight would be impossible in reinforced concrete.

The building methods that I am describing and that can be seen in the accompanying photographs and drawings allow a building speed similar to that of prefabrication, requiring less equipment and a similar workforce. The simplicity of the necessary equipment and the fact that we are using the smallest and oldest of prefabricated elements often leads people to believe that we are employing arts and crafts methods, associated with a vague connotation of underdevelopment and failure to apply what science has put within the reach of technology. This is not true.

Using simple molds with a basic part of steel, and mechanical devices for moving them easily horizontally and vertically, we have produced shells of double curvature to which the variable longitudinal undulations give the necessary rigidity to face flexion and elastic instability. All of the cross sections are catenary curves, and, given its light weight, the shell is under very small stresses. The molds are first lined with hollow ceramic tiles with reinforcing bars placed in the joints between each block, and bonded with a mortar of sand and portland cement. It is finished with a polish coat of mortar and a light reinforcing mesh. When the form is filled with the pieces of ceramic, the joints of which have shrunken, the result is a shell that is hardened in 95 percent of its area. The joints have also acquired a consistency that is greater than that achieved by simply pouring the mortar into a mold, because the bricks remove part of the humidity of the system, producing a sort of "void mortar." Thus, we were able to guess that it is not necessary to wait for the mortar to harden before stripping the vaults of their forms. In having its reinforcing prepared properly, the shell gains the consistency and capacity to resist bending forces of any consequence because of the cohesion provided by the gravity-generated compression. Our experience has confirmed this prediction: we have successfully unmolded vaults of 50-meter spans only fourteen hours after completing them. If well designed, the vaults can resist, even as their forms are stripped, flexions produced by the equivalent of a 200 kph crosswind. The transverse sections of our self-carrying vaults are also catenaries, so that they do not require the heavy tympani of classical self-carrying vaults. Instead, the thrusts are absorbed along the vaults' edges by horizontal tile beams and, where convenient, prestressed cables. This allows us to quickly form and unform a single vault, reusing the "mobile" molds for the next shell.

Through the course of the last four decades it has been our experience that these techniques have proved an economical and rational substitute for prefabricated concrete and steel systems. We have produced large spans with a high building speed and a relatively small workforce. I should probably mention that we have built such works for crudely economic reasons, because they were either cheaper for the client or because for a similar price the only alternative was a far inferior product. Even in the most "artistic" applications, like the churches that we have built, the costs have been absurdly low.



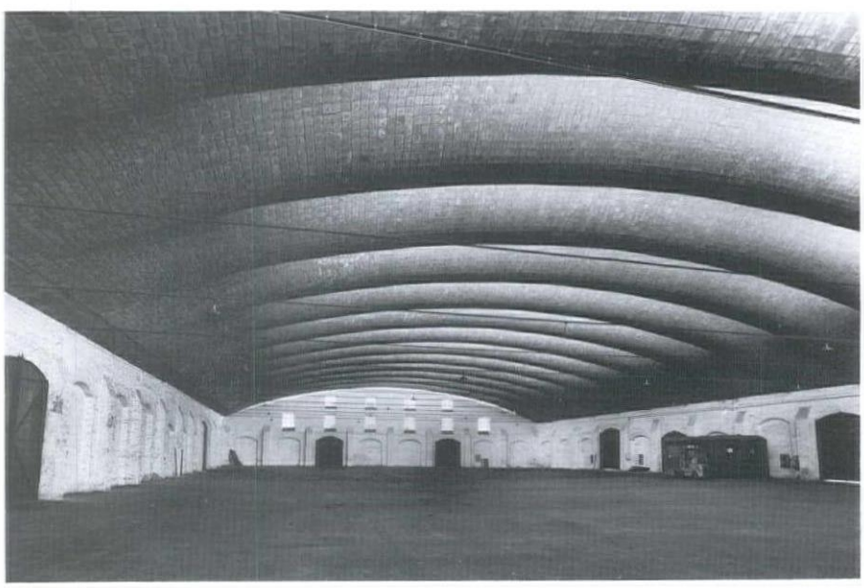


14 and 15 Formwork for vaults.

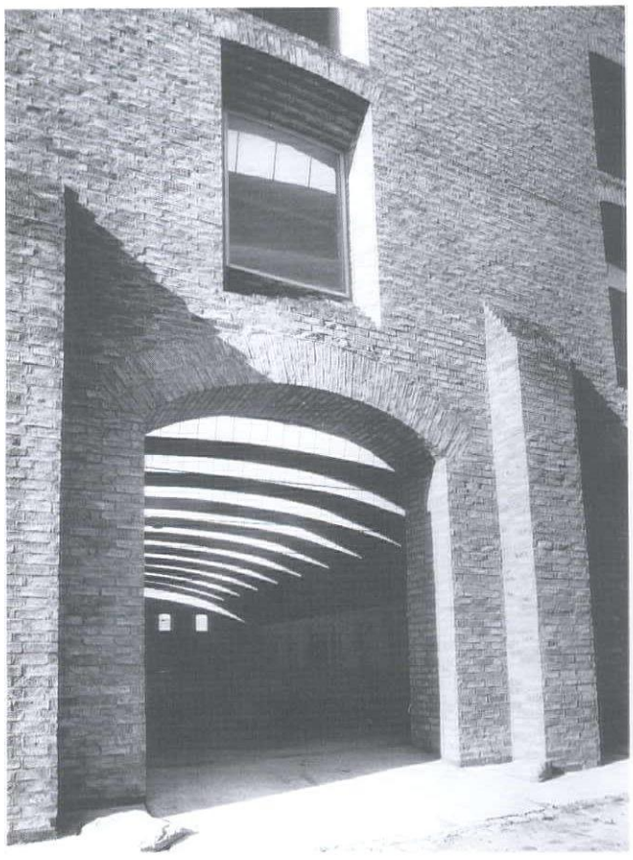
Industrial Society and the Paths of Man

Once I was told that the structures I designed would not be viable in a mechanized society of the future in which everything would be mass-produced by giant industrial complexes. In this light, to study forms that require high skills from the workers and close attention from the technician would betray a sentimental attitude that is opposed to progress. Of course, one would first have to define progress and, therefore, define the goals of a society and of individuals. If we do not clarify these goals we cannot know whether we are progressing toward them. It is very likely that we will have a future civilization in which almost everything will be made by large organizations and the use of the machine will be even more extensive than it is today. But organizations and machines need to be nourished. Someone will have to think through the prototypes and processes. Beyond that, it seems risky to me to assume that the paths of today will be those of the future. The errors of our present civilization are becoming so evident that we might now be on the verge of changes as fundamental as those brought by the Industrial Revolution. The type of person who romanticizes the mechanized civilization of the future tends not to be a doer; his attitude is the product of a somewhat infantile bewilderment in the face of the strength and efficiency of today's most powerful nations.

If the goal of progress is the production of a convivial environment for man, then the results have thus far not been very satisfactory. The industrialized nations of today are those that produced the revolution of the scientific interpretation of reality, and then applied that interpretation to different techniques. The so-called Industrial Revolution has, without a doubt, been very positive in many respects. It has shown man a way to use his own power to transform the world and make it his home. But the inequity of the ensuing processes has produced an imbalance and a resulting destructive furor that has spread throughout the world. To know this inequity, one doesn't need to study history or read Dickens, one only need eyes with which to look around. I worked for a month in a small industrial city in the northeast of France and will never forget the sadness of these so-called modern cities, lines of "economical" stalls that provide the unfortunate many with only animal comfort, and that give no sign of having been constructed with human dignity in mind. The countryside in spring is beautiful, but that sky crossed by tattered clouds, the cherry and lilac blossoms, were nowhere to be found

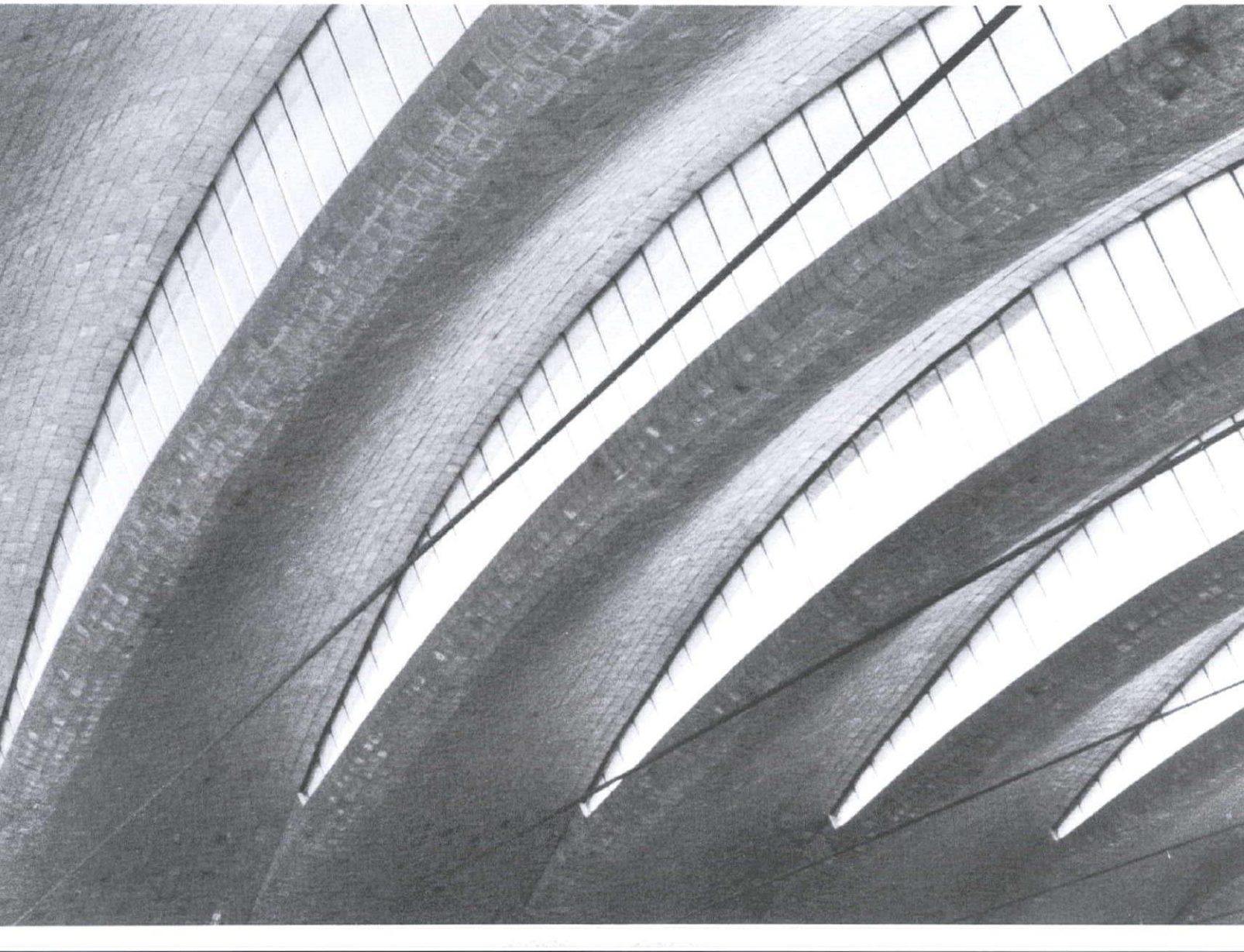


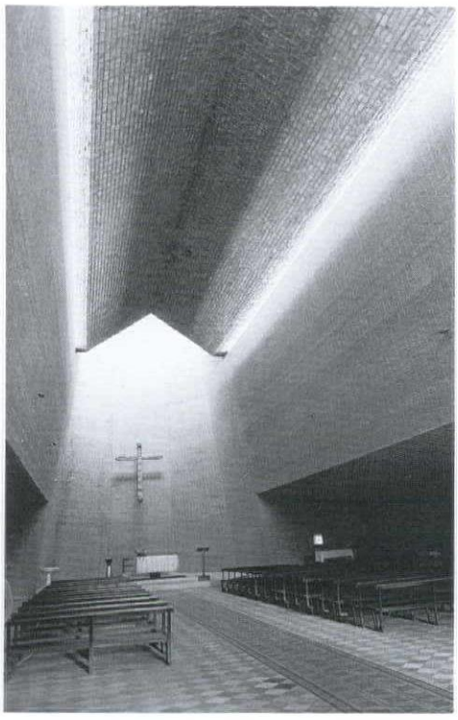
16 Warehouse renovation, Eladio Dieste, Montevideo, Uruguay, original façade with new vaulted ceiling beyond.



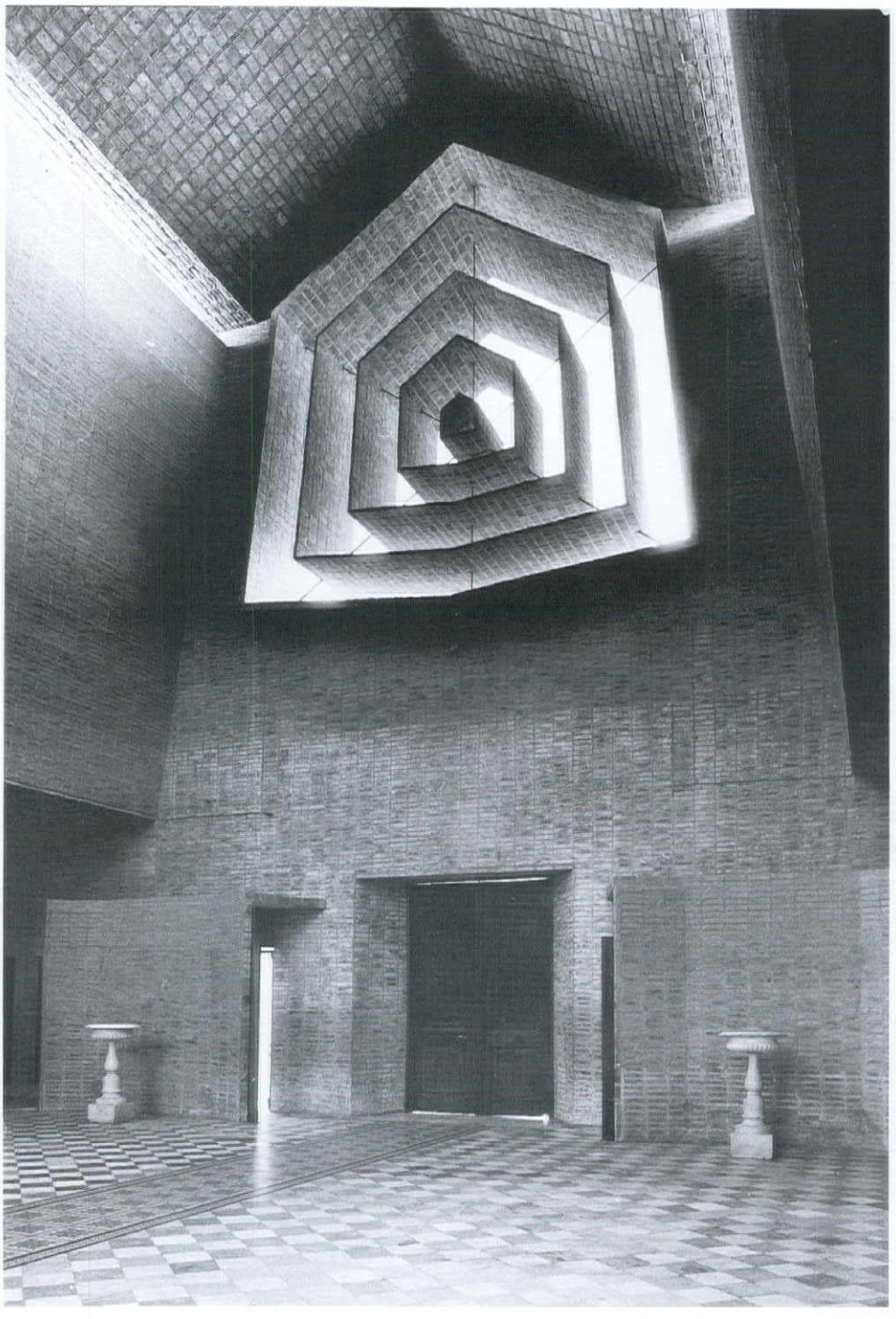
17 Warehouse, interior with new ceiling.

18 Warehouse, detail of clerestory lights.



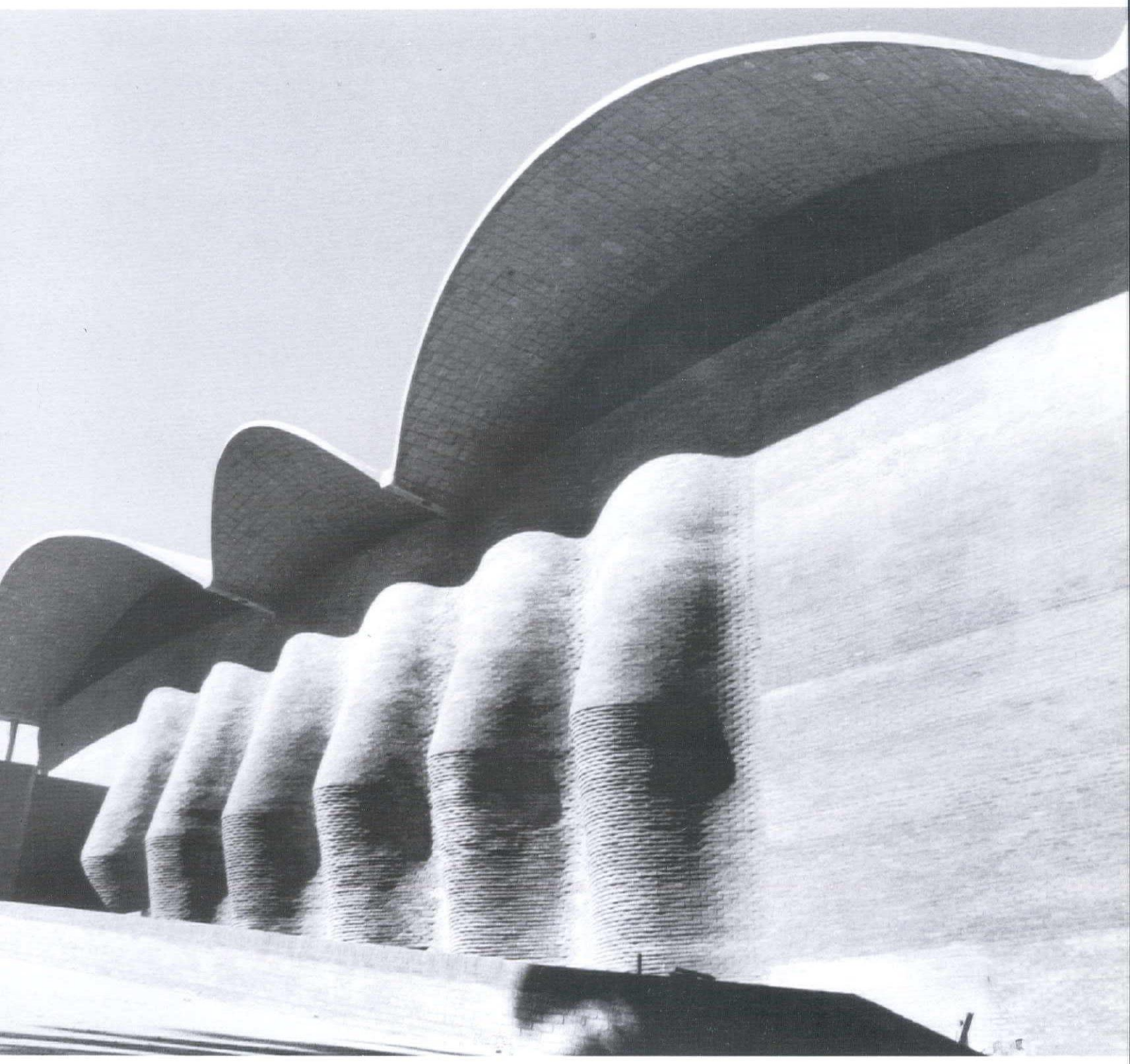


19 Church of Durazno, Eladio Dieste, Durazno, Uruguay, general view of nave.



20 Church of Durazno, detail of rosette window.

21 Market building, Eladio Dieste, Montevideo, Uruguay, exterior wall.



22 *Market building, interior.*

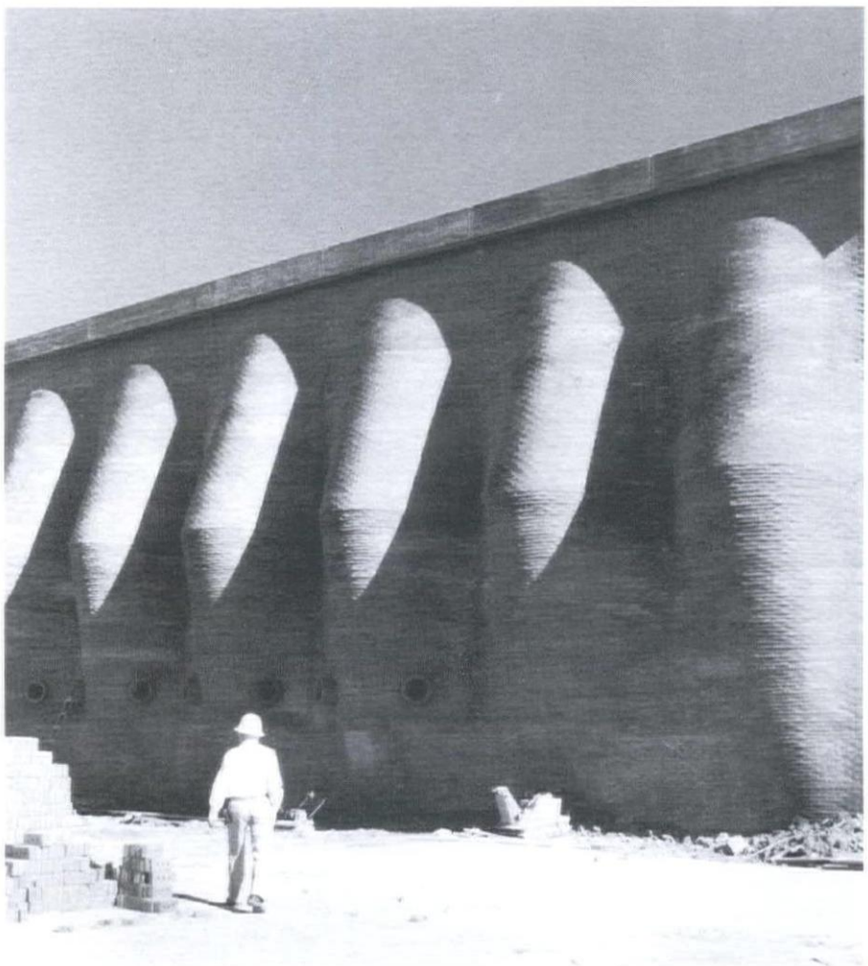
among the houses of the urban poor. Once I saw from the train the cathedral of Amiens. It hit me with enormous intensity. It seemed like a spider of astronomical proportions, something from another world, a mute but eloquent witness from a world in which man expressed himself in space. Around it, everything else seemed made for ants.

I find few things as depressing as the building boom in Europe. The cities reconstructed after two wars are hideous. They reveal just how much our civilization has forgotten our architecture. The reconstruction was meant not to correct the shortcomings of the previous centuries but simply and brutally to make money. The reconstructed zones are boring, mechanical monstrosities without imagination or grace, produced at a time in which the available technology would have permitted the construction of a city with spatial richness not even dreamed of in the Middle Ages. Those who built the old cities, the builders and also the inhabitants, must have thought of man when they made them. Those who reconstructed the destroyed cities, in the best instances, thought of circulation, building codes, orientation, ventilation, and other admirable abstractions that omitted the essential protagonist of the space: man. The new city is not a city but, rather, a place where cars may circulate with greater ease, where the inhabitants sleep and bathe but still feel uncomfortable because their city lacks anything that relates to their emotions. The result is eye-shattering.

Architecture is perhaps the most important of all arts because it is inescapable; we must live with it. Like all other forms of art, architecture helps us contemplate our infinite and rationally ungraspable universe. But there must be prose *and* poetry, popular dances *and* Bach cantatas. Not all of the architecture that we build must aspire to the role of art. But the buildings in which we attain such lofty goals will have an exemplary virtue in the city. Such architecture is poetry. Not everyone is capable of building it but everyone needs it. And so we now see the economic risks of simplification and reduction. One might very well question the validity of a search for a true and rational expression of the laws of matter in equilibrium. And if asked whether it is not enough to produce simple, "economical" constructions, I would not hesitate to answer, "No, it is not enough." Unnecessary simplification is the work of the financial economy of money and its management. If we want our buildings to have the power of the great architectural inventions of the past, then we must strive for a greater economy than the financial, an economy long forgotten by the practical gentlemen who manage us and squander things of real worth with careless financial speculation.

I recall a brief story that takes place at an aristocratic spa in the north of Norway. The supplies for the spa arrive daily from the south by train. One day the establishment finds itself without its supply of meat. The manager, hearing that a peasant in the area has a calf, attempts to buy it from him. But the peasant explains that he cannot sell the calf because it is not yet ready for slaughter. So the manager offers to pay as if it were. Still the peasant refuses to move from his position, suggesting that the manager return in the spring, at which time he can buy the calf at a fair price. "It would be different," the peasant concludes the discussion by saying, "if you had nothing else to eat."

The clash of these two disparate views, that of the apparently practical and that of the deeply practical, provide the moral reasons for our work. The resistant virtues of the structures we seek depend on their form; it is through the structures' form that they are stable, not because of an awkward accumulation of material. There is nothing more noble and elegant from an intellectual viewpoint than this: to resist through form.



23 Market building, exterior wall.


Gli spazi del teatro-
28/2/90 C.M.

Inhabiting Nature

Giovanni Michelucci

The sketches in this essay were drawn by Giovanni Michelucci during the spring and summer of 1990. They are studies for a theater in Olbia, Sardinia.

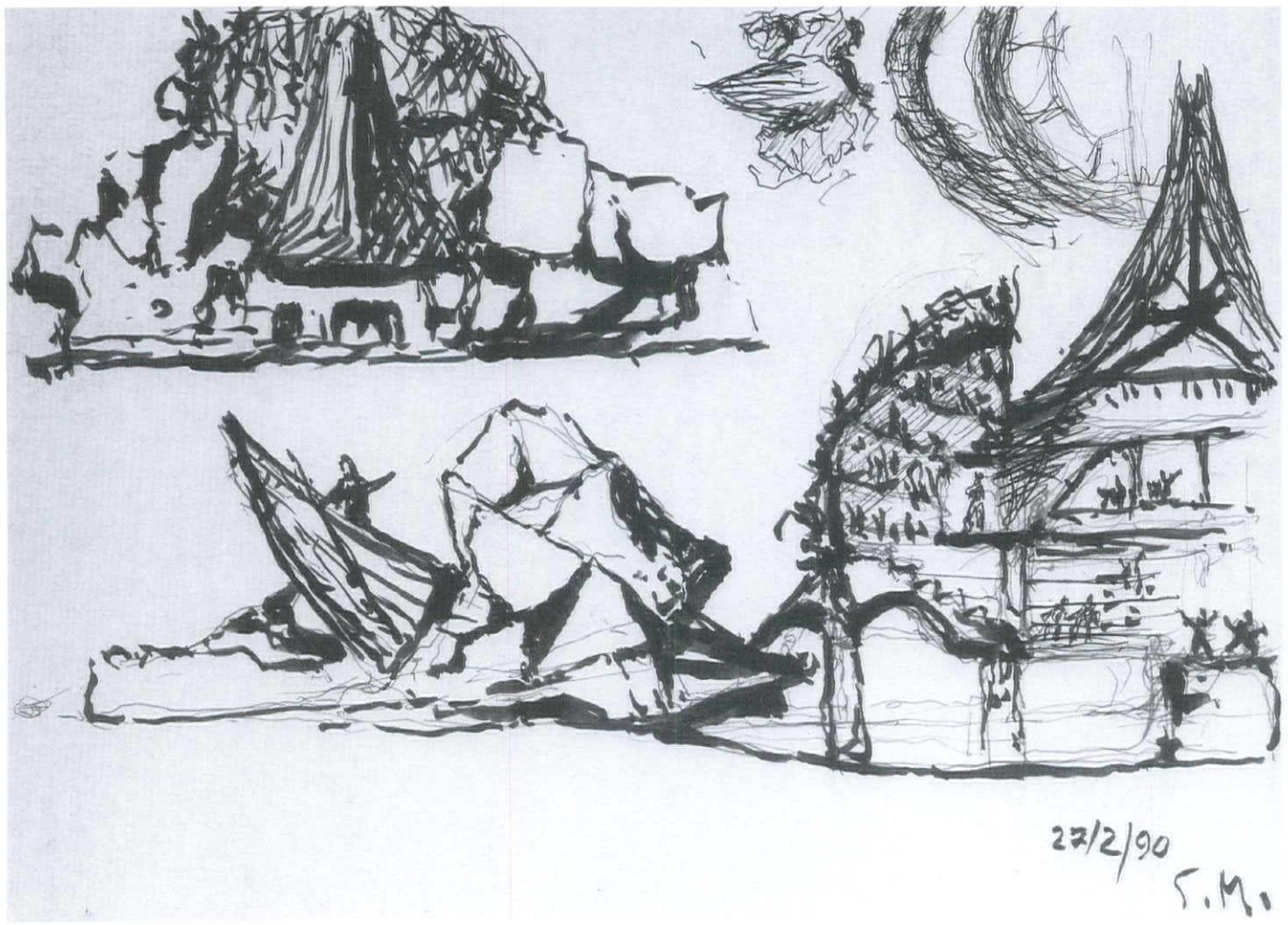
I don't know what dreams mean or what influence they exert upon reality, because I have always considered them a part of reality. I am, I think, a dreamer of possible cities, a "deviant," it might have been said in another time, a symptom of maladjustment in the midst of the inexorable rhythms of progress and the development of metropolitan civilization. But now this "development" seems more a catastrophic collapse than a vital growth, so to appropriate the suggestiveness of dreams may be one of the few hopes for retrieving a different type of rapport, not only from the past, but, above all, with the future.

I have dreamt of the simplest thing that a man can dream of. I have dreamt of a hut in the woods, not a beautiful house, but a poor hut with a door recessed deep into its stone wall, a provisional dwelling whose image evoked childhood, ancestral memories, the smells and temper of moss, of freshly baked bread, of cheese. Memories are a reality recuperable only in dreams.

As I approached, the hut started to shrink rather than grow. It became so small that it seemed uninhabitable. But the care with which its garden was kept, the freshness of its painted surfaces, and the tidiness of its appearance were signs of a life within. When I reached the hut, I discovered a tiny window, almost too small to light any room. Suddenly, I glimpsed something inside. I saw a wing, a huge wing that must have filled the tiny room. It was an angel's wing. There was an angelic presence.

I think I understand a simple truth: it is not places that must change but their inhabitants. Giotto understood this well when he made the space surrounding his figures too narrow for the action. The wing in the hut was like the angel's wing that crosses the small window in the kiosk of the *Annunciation*. I think a space is only "poor" when it is an unfit arena for interaction; and it is always "beautiful" when it generates encounters and previously unexplored possibilities.

Maybe this is the architect's happiness: not in having built one's masterpiece but rather, in having given a sense of unity to that which we have built, which is not a wall but a thought, a thought that is not born from our individual will but from what nature has deposited in our spirit, slowly, in time. It is not the kind of


22/2/90
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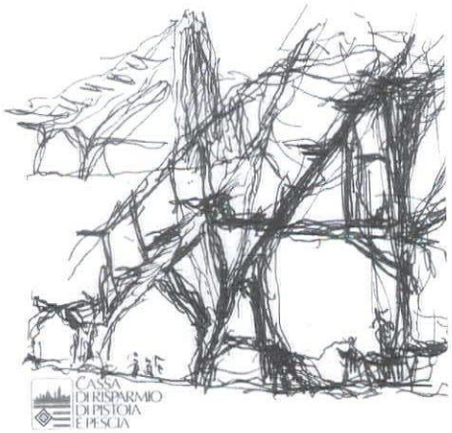


pleasure that arises from a vague state of self-satisfaction, but the happiness that matures through trials of discouragement and moments of doubt in one's abilities. It is a state of mind in which the project and the architecture are less important than the discovery in ourselves of a light that can illuminate everything, from tree to animal, so intensely that we are sure of having discovered another dimension.

For me this discovery is a process that is not a stylistic exercise but a voyage that marks its trail in time, a fable whose moral becomes broader and clearer as the years pass. It does not require an immediate validation, but rather a rapport between a place and its inhabitant. This is a fable in which the inhabitant, the natural protagonist of the space, comes between the architect and the architecture.

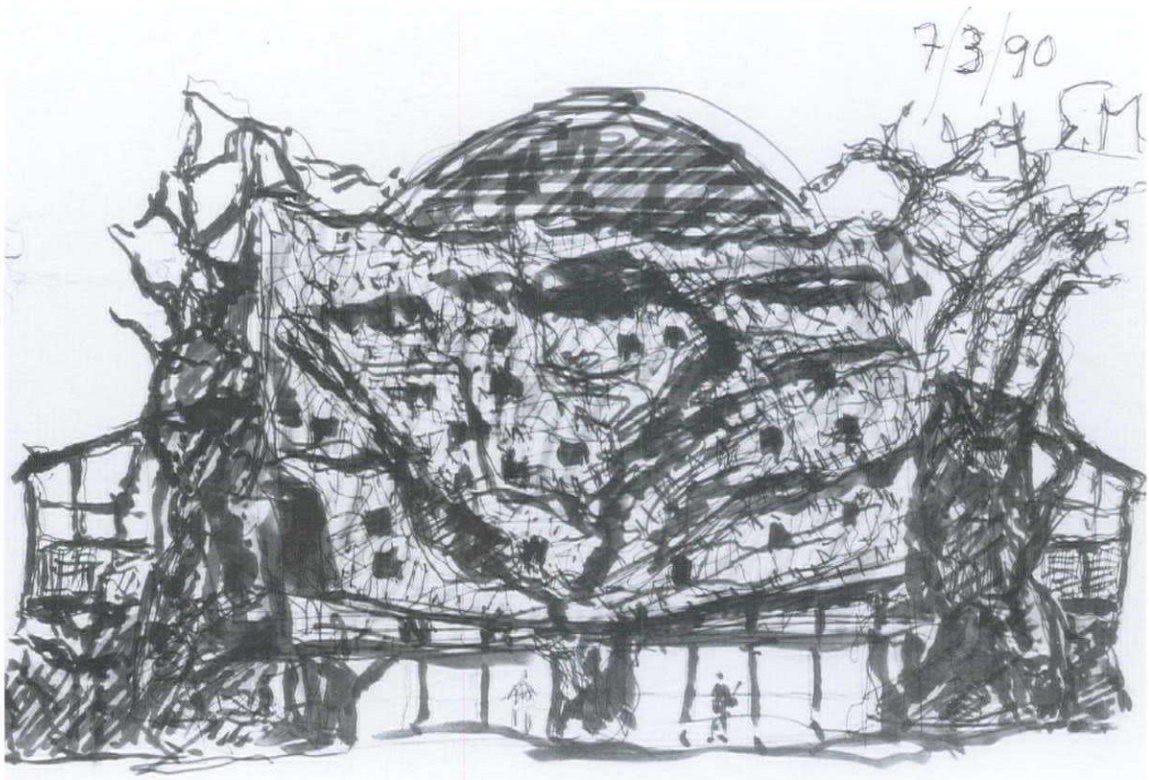
This situation is obviously not a new one for architecture. It is a situation that has always characterized the ways and rhythms with which cities have been constructed. But it is a new situation for the architect as a technician and professional, the architect in our time. If an idea precedes the reality of building, and if the city is the place where that idea is to be enacted, then the architect's task is to give form not to his own personal preferences, but to the ideals and needs of the others, the inhabitants. This is a responsibility that dismays because it touches on one of the most difficult problems, the relation between oneself and others.

It is also a new responsibility for whoever wants to recognize, in the spaces of nature, the first roots of the city. Each one of us carries nature inside; before it exists "outside," it exists "inside," as an indispensable means of orientation. This marks the true city limits, which are not limits of material extension but of the intensity of relations. This is the dimension that makes a great city of a small place, while a so-called metropolis can be infinitely peripheral.

Retrieving nature through architecture is not a matter of returning to nature through its most superficial and picturesque aspects, nor through a process of forced mimesis, but with an intention to discover a capacity, which is also within us, for creating reciprocal relations among the most apparently disparate situations. Only then will what we build have a meaning, an ability to express not a form but the form that at that given moment represents the nexus of objects, persons, and situations that, until then, had led separate lives, sometimes separated by time and place, and sometimes coexisting without communication. In the continuous, live process by which nature becomes city, an inhabited place filled with the memories of many generations, the paradox of a return to nature through architecture brings happiness to the architect.

If nature presents itself as incomprehensible fact, then it approaches man indirectly, through its most congenial means: myth and architecture. But myth and architecture acquire a meaning only when their forms begin to take shape in a space inhabited by more beings and situations than those foreseen. They acquire meaning when the needs and dreams (or nightmares) of individuals are overcome in favor of a space to be shared by many presences. It is then that the unforeseeable occurs: a multitude becomes a community and overcomes the individual, not in order to submit to some exterior and external power, but to find its own form and styles of life in an articulated, civil society.

Giovanni Michelucci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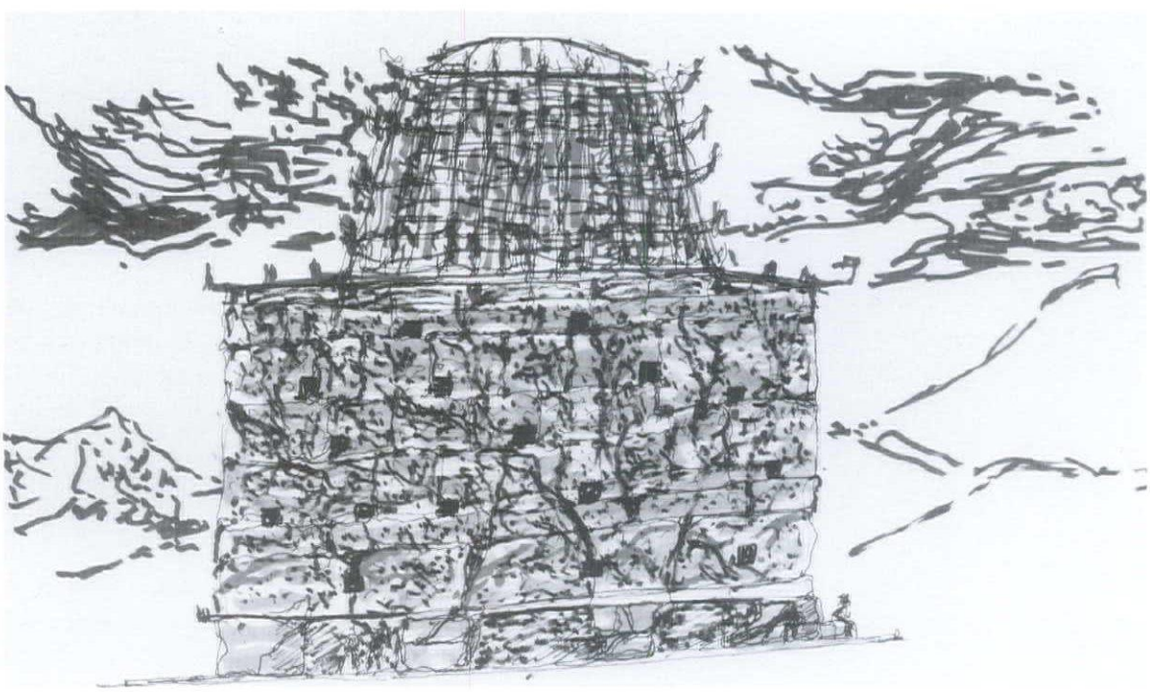
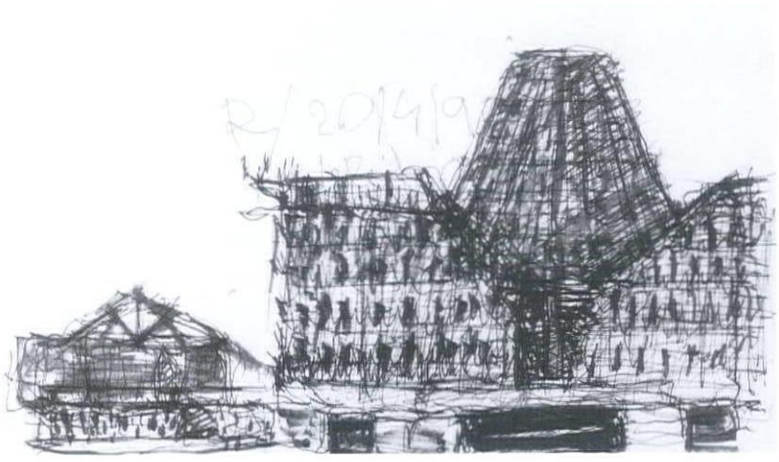




Nature, through the metaphors of myth and architecture, can be transferred into the mind of man and thereby into the city. But today, when architects speak of nature, they speak of "greenery," almost as a coloristic element, rather than of method. This is a symptom of submission to the rules and conditions of the peripheral city and suggests more a squalid sense of decoration than a desire for regeneration. This is what makes me say that the architect who would like to rediscover the city must, paradoxically, retreat to the woods in search of a creative equilibrium that has been lost, thereby "rediscovering nature through architecture," though I could just as easily say "through the crisis of architecture and the urban model in which we live."

We must then create situations, in the city or between the city and the periphery, by which nature can enter the city and become a protagonist. It will initially be an uncomfortable and demanding protagonist, presenting itself in the first instance more as a series of prohibitions than as a positive proposal for a freer and more creative method of living.

Now, if it is true, as the most common interpretation has it, that nature is to be seen as an extremely fragile and almost agonizing organism that is in continual danger of being broken by the city, then we will not have a new model but a continuation of the old one and, at the same time, the nightmare of a final collapse that must be delayed as long as possible. In this scenario, nature has no suggestions to give the city. This approach only increases the distance between the urban model and nature.

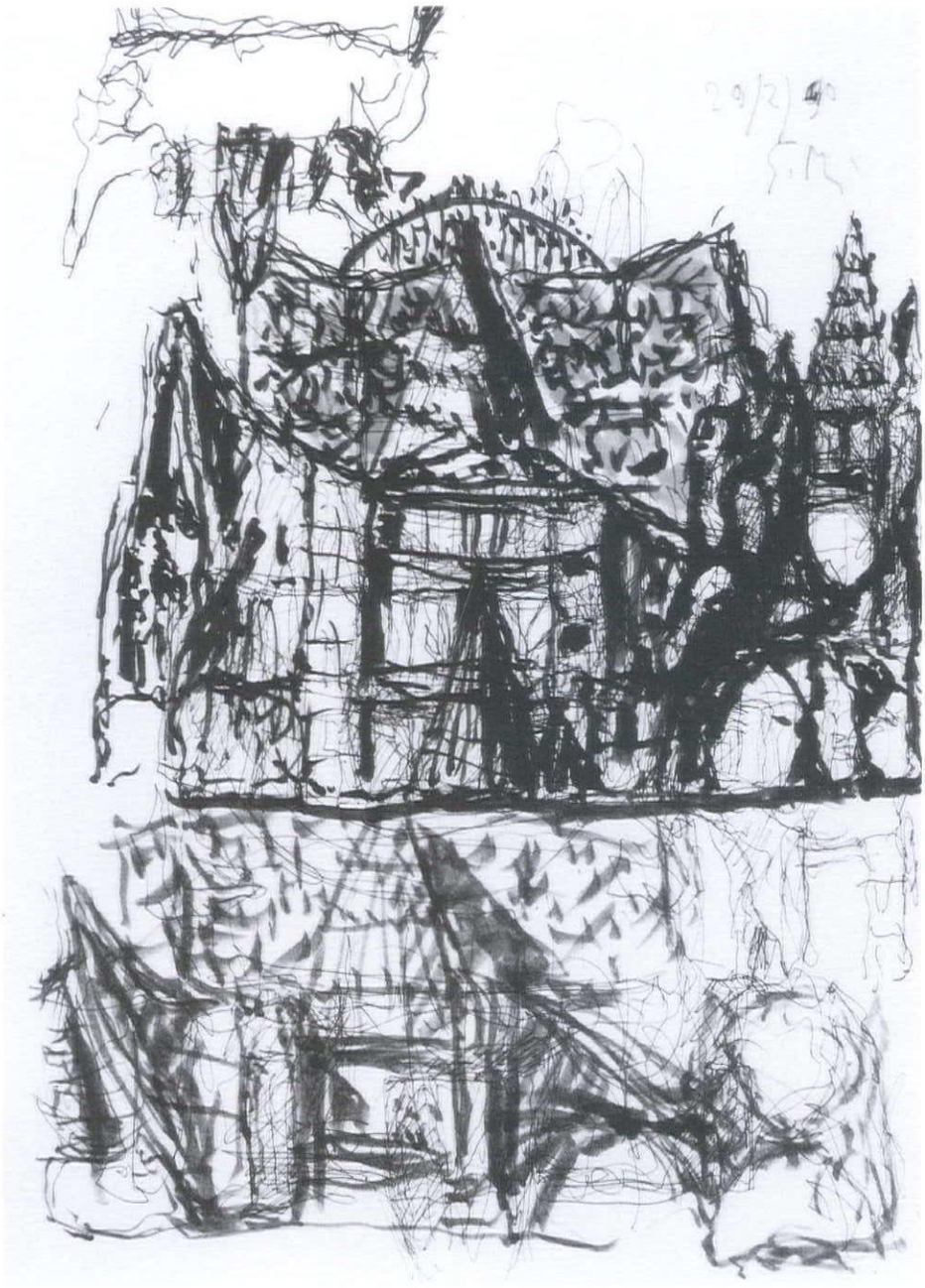
What I propose, instead, is in some ways more complex but richer in suggestions; richer because it sees, in nature and in the architectural project, two inseparable elements. The project reveals nature and serves as its point of reference in the city, and is the continuous elaborator of further proposals and situations that in the city are lived as discrete moments. It is in this way, I believe, that living in nature today need not necessarily mean abandoning the city as much as inhabiting and modeling the city in a certain direction.

Often, the architect feels impotent because he realizes that he cannot singlehandedly, or with a small group of collaborators, model the city. The construction of today's city entails an enormous exchange of technologies and expertise that frequently frustrates the citizen's initiative to take action, and posits the city not as a place in which communities can develop, but rather as a machine that constricts the evolution of communal life, impoverishing itself and all that it consumes or even touches. To counter this crisis, the architect or the urban planner must understand the city as an element of nature, one that grows and dies and continually renews itself. Then he will recognize that his work cannot only be the fruit of technical and professional competence, but of an incremental search for new ways of being, of living, of behaving toward man and thing. This is the only research that continues to give meaning

to the construction of the city. The angel's wing in the hut in the woods embodies the continuity and durability of our thoughts and actions through time, not the inexorable annulment of the technologies and civilizations that have preceded us.

Dear young friends, I have perhaps told you only a fable. But, as you know, fables always contain a kernel of truth. They are voices that frequently come from our most deeply felt experiences, frequently from nature, from an oak, a fir, from a wood or a nocturnal owl; voices that construct in us something magical that pulls us toward the discovery of a world in which our smallness of spirit is denounced. This is a boldness we need not to win but to understand.

Here is the secret: every form in nature can elicit our imaginative powers, not merely our desire to copy or photograph it. Every form in nature can give infinite suggestions of method, more than of form. There is a profound relation between the weave of medieval architecture and the woods, between a Gothic cathedral and a field of wheat, between a coral reef and the sedimentation of generations that should produce a city. But to understand, one must love not only nature but everything that is not yet a part of nature, in order to insert it into nature's prodigious organism, in the scale of nature's dynamic equilibrium. This is the only hope for a future consisting of more than mere survival.



Giovanni Michelucci

Contributors

GIOVANNI MICHELUCCI

Giovanni Michelucci founded the Fondazione Giovanni Michelucci in 1982 in Fiesole, Italy. Established expressly for the study of architecture and urbanism in Italy and around the world, the Foundation publishes the journals *La Nuova Città* and *I Confini della Città,* and provides a continuing and open forum for the discussion of the efficacy of architectural production in the modern city.

Michelucci died at his home in Fiesole on December 31, 1990.

KARSTEN HARRIES

Karsten Harries is the Mellon Professor of Philosophy at Yale University and has been an inspirational force for students at the Yale School of Architecture through his course "The Philosophy of Architecture." In addition to his influential writings on the philosophy of art and architecture, a number of which have been published in previous issues of PERSPECTA, he is the author of *The Meaning of Modern Art, The Bavarian Rococo Church,* and *The Broken Frame.* He is currently working on a new book tentatively entitled *The Ethical Function of Architecture.*

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Alberto Pérez Gómez was appointed Saidye Rosner Bronfman Professor of the History of Architecture at McGill University in 1987 where he currently heads the Master's program in the History and Theory of Architecture. He has taught at universities in Mexico City, Houston, Syracuse, and Toronto, and at the Architectural Association in London. From 1983 to 1986 he was director of the Carleton University School of Architecture. His writings have been published in a number of journals and his book *Architecture and the Crisis of Modern Science,* won the Alice Davis Hitchcock Award in 1984.

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John Whiteman has held directorships at The Chicago Institute of Architecture and Urbanism, SOM Foundation and The Glasgow School of Art and has been Assistant Professor of Urban Design and Planning at Harvard University, Graduate School of Design and a William Henry Bishop Visiting Professor at the Yale School of Architecture. He is the author of numerous essays on the philosophy of art and esthetics and architectural theory and criticism, and has lectured widely on these subjects. Mr. Whiteman is a registered architect and planner in England and the United States.

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Nils Finne has an active architectural practice in Los Angeles, California. He was project architect for the new Getty Museum at the Getty Center complex in Los Angeles, with Richard Meier and Partners. He has been a guest lecturer and critic at various schools of architecture in Europe and the United States. A Fulbright Scholar in Helsinki, Finland in 1985, he has written several articles on Scandinavian architecture.

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Andreas Brandt is an architect and urban planner in Berlin and Professor of Urban Design at the Technical University in Darmstadt. In 1989, he held the William Henry Bishop Visiting Professorship at the Yale School of Architecture. With his partner, Rudolph Böttcher, he has won a number of prizes and international competitions for both individual buildings and urban designs. Mr. Brandt and Mr. Böttcher are currently working on the redesign and reconstruction of Berlin-Hellersdorf, a more than twenty block area in eastern Berlin.

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Glenn Murcutt works alone in his small but active architectural practice outside of Sydney, Australia. He has attained international renown for his contributions to residential and landscape architecture and is recognized as a leading proponent of environmentally conscious building. As well as teaching and lecturing in architecture schools in Australia, Mr. Murcutt is currently a Adjunct Professor of Landscape Architecture and Urban Planning at the University of Pennsylvania.

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Eladio Dieste was professor of engineering at the University of Montevideo, Uruguay from 1943 to 1973, where he headed the Department of Civil Engineering and conducted research seminars on bridges and megastructures. Frequent author of publications in his field, he has lectured internationally on the topics of engineering and architecture. Mr. Dieste has worked for UNESCO on special architectural projects in several South American countries. He has an active engineering practice in Montevideo.

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2, 8–11, 13, 16, 26 Collection, Mies van der Rohe Archive, The Museum of Modern Art, New York:
2: Friedstrichstrasse Skyscraper Competition Project, Berlin. 1921. Presentation perspective (north and east sides). Charcoal, pencil on brown paper, 68 1/4 x 48."
8: Friedstrichstrasse Skyscraper Competition Project, Berlin. 1921. Typical floor plan. Ink on tracing, 23 3/4 X 25."
9: Glass Skyscraper Project. 1922. Typical floor plan. Ink on tracing, 20 3/4 x 24."
10: Friedstrichstrasse Skyscraper Competition Project, Berlin. 1921. Elevation (east side). Charcoal, pencil on brown paper, 21 3/4 x 34 1/2."
11: Glass Skyscraper Project. 1922. Elevation (schematic view). Charcoal, brown chalk, crayon on brown paper, 54 1/2 x 32 3/4."
13: Glass Skyscraper Project. 1922. Typical floor plan (structural) sketch. Pencil on tracing, 30 1/2 x 37 3/4."
16: Concrete Office Building Project. 1922. Perspective. Charcoal, crayon on tan paper, 54 1/2 x 113 3/4".
26: Concrete Country House Project. 1923. Perspective, garden side. Charcoal, pencil on cream colored paper, 22 3/4 x 86 1/2."

3, 27, 28, 32: Photographs courtesy, Mies van der Rohe Archive, The Museum of Modern Art, New York:
3: Glass Skyscraper Project. 1922. Model (no longer extant).
27, 28: Two different views. Concrete Country House Project. 1923. Model (no longer extant).
32: Detail.Concrete Country House Project. 1923. Model (no longer extant).

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17–20, 25: Model constructed by Andrea Hartmann and Pierre Wurmbauer.
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INHABITING NATURE

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Colophon

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The typeface used throughout is Garamond.

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