'Contextual Variations'

by

Peter Teicher

Thesis submitted to the Faculty of the Virginia Polytechnic Institute and State University in partial fulfillment to the requirements for the degree of

MASTER OF ARCHITECTURE

approved:

Michael O'Brien, Chairman

William W. Brown

Heiner Schnoedt

August 1991

Blacksburg, Virginia

ABSTRACT

'CONTEXTUAL VARIATIONS'

by

Peter Teicher

It is the intention of this thesis to present not only a visual exploration of a design problem, but also to discuss the obviously dialectic relation of the two for me essential basic elements of architecture: type and topos.
My architecture education has been shaped in different countries, through different educational systems, and with different teachers and students. This thesis stands as a record of my accumulated experiences and as a description of a personal approach to working with architectural problems. I believe the most important part of an architecture 1education is the development of one's own design process. This exposition represents a beginning.

ACKNOWLEDGEMENTS

I thank

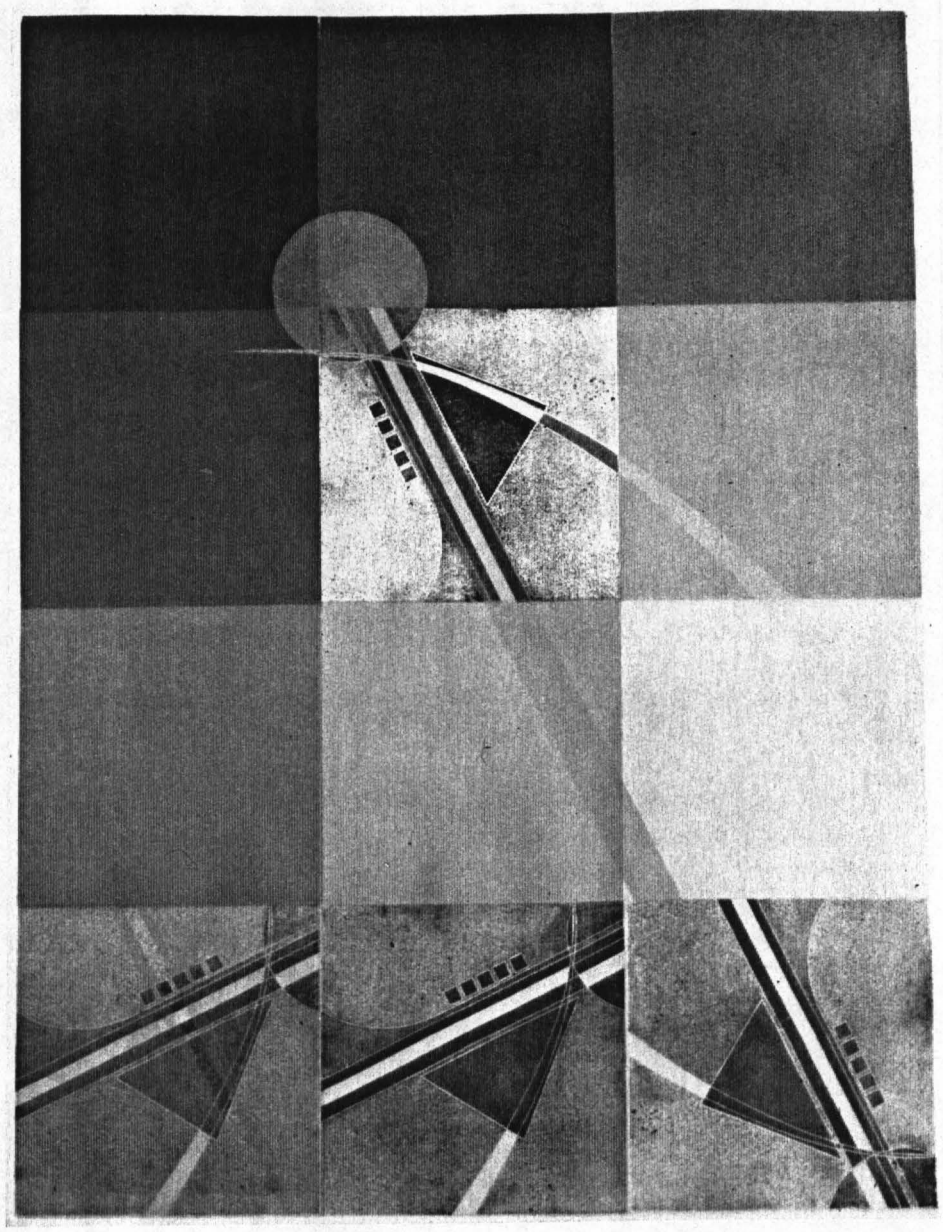
for their support and guidance

JOY

I felt first of all joyous. I felt that which Joy is made of, and I realized that Joy itself must have been the impelling force, that which was there, and that somehow Joy was in every ingredient of our making. When the world was an ooze without any shape or direction, there must have been this force of Joy that prevailed everywhere and that was reaching out to express. And somehow the word Joy became the most unmeasurable word. It was the essence of creativity, the force of creativity. I realized that if I were a painter about to paint a great catastrophe, I could not put the first stroke on canvas without thinking of Joy in doing it. You cannot make a building unless you are joyously engaged.
I would like to feel that I have not forgotten, nor have you as I speak to you, about the stream of Joy which must be felt. Otherwise, you really don't feel anything. If what I say somehow activates that feeling, I would, of course, be terribly pleased and honored.

Louis I. Kahn / Between Silence and Light

TABLE OF CONTENTS



'CONTEXTUAL VARIATIONS'

The main focus in my architectural development is to work out architectural criteria about the value of architecture and to find a vocabulary in which to express and define my thoughts.
This perception contradicts the common opinion that beauty and value of architecture are subjective phenomena, totally dependent on the respective taste of the viewer. But if one could agree about the grade of order, whether architecture has more or less value, one would definitely have an objective phenomenon.
To get this agreement I work on and acquire a basic knowledge, the simple multiplication of architecture, to reduce a certain arbitrariness. I try to develop a vocabulary and an architectural 'grammar', which is common valid, objective and transferable. This knowledge, this commitment is a precondition for a new freedom and for innovative developments in my own architectural language.

In my opinion, architectonic form, respectively architectonic vocabulary, can be finally derived from two sources: First from the reaction out of the context (topos) in which it arises, and second, from a personal particularly autonomous architectural language (type), whose grammar exists in architectonic archetypes (conception ideas), types of buildings, elements of architecture, the variety of styles, concepts of order and space, human scale and purposes, material, light, methods of structure, and even poetry. These two factors - *topos and type* - the special and the universal, are the only two innate and immanent sources of form in architecture. Immanent, certainly within a mentality in which architecture serves to put man in relation to his environment.
All other factors in architecture, if they can not be reduced to topos and type, are foreign

influences. If they prevail architecture loses its autonomy, which is established in the dialogue, isn't anymore a communicating subject and runs the risk of becoming an arbitrary manipulated object.

Obviously, the relationship of these two essential basic elements of architecture, type and topos, is a dialectic one: what one lacks the other contains.

Topos

We have passed the culmination point of universal tendencies. We begin to recognize our integration into larger coherences of the existing and living, and we turn once more to the particular, the individual and the local.
Tendencies towards the particular you can increasingly observe in almost all conditions of life, logically also in architecture. The architecture out of the context - or contextual architecture - is worldwide discussed.

As long as architecture is tied to the earth, that means as long as it stands on a concrete place and therefore in a certain relation to it, topos (locus) will remain the immanent basic element of architecture.
Intentionally I use the unusual greek word 'topos' as a notion for all the local forces which have an effect on the architecture of a concrete place. Words like 'place', 'physical context' or 'genius loci' are also quite appropriate.

If type is of the general, then topos is of the individual, the special and unique. If type makes generally understandable structures and an ideal order, then the context destroys and changes them. The contextual particularities are only valid and relevant at a concrete place: If the type tends to be ideal, topos confronts us with the reality.

At least at the level of the city the quanitative relationship of the two elements is important. The unique requires a neutral surrounding, a certain scale to be seen. A town with nothing but monuments and particularities would be a panopticum, not suitable as living space like Disneyland. On the other hand urban districts, exclusively dertermined by the type, would be from a certain scale on without the breakings and discontinuities of the local, unbearable because of its monotony.
Different attitudes toward architecture consider this contextual setting:

- Reading the context:
  site and environment
  climate: sun, temperature, precipitation
  geography: soils, topography, vegetation, water
  sensory: character of the place, views, sound

- Balancing the spatial and cultural conditions,accepting what exists
The New as a continuum of the Old
Building in the tradition of anonymous and regional architecture
Repairing, reconstructing, closing 'wounds', but also: simple adaptation to the status quo

- Getting to the bottom of the place
Conjuring the genius loci:
Reading the context, interpreting it, converting it consciously into an architectonic answer, and superelevating the context

It depends on the complexity, but contextual architecture can also be:

- Conserving or re-using buildings or parts of architecture again

- Completing within given structures and pretences

- Duplicate - Repetition, duplication, reflection

- Cloth on the body - wrapping, enveloping, drawing a copy of the existing contours

- Contrast - making the latent shape visible in the context through isolation or complementary contrast

- Making it the theme - working out existing characteristics, for example in relation to material, scale, order, geometry, local atmosphere, etc.

- New interpretation - making the accidential, the secondary into the new leading idea

- Interweaving - glamping with the existing part through visible references, axes, and (or) contexts of meanings.

Certainly contextual does not mean something revolutionary and fashionably new. The designation is not a certificate for purity, it says nothing at all about the quality of the architecture. It is not a matter of style or of the language of architecture, it is only a question of the attitude toward the immediately effective environment and a question of the method to answer it.

The Type

What I call, summarizingly, 'type' has to do with the notion of an architectural language. This architectural language is a bundle of conventions which has reached such a common validity, that it is obligatory, teachable and re-applicable. What I characterize with 'type' is a chance to get objective criteria of evaluation for architecture and again a vocabulary and material to work with. This perception contradicts the common opinion that beauty and value of architecture are subjective phenomena, totally dependant on the respective taste of the viewer. But if one could get an agreement about the grade of order, if architecture has more or less value, one would definitely have an objective phenomenon.
There exists a 'grammar' for architecture as compared to the language, which is common valid, objective and transferable.
There are the critical means of architecture: the elements of form and space and those principles that control their organization in our built environment. You have to get an overview of the basic elements, systems, and orders that constitute a physical work of architecture.

In approaching the first elements of design, Paul Klee says,

"I begin where all pictural form begins; with the point that sets himself into motion. The point (as agent) moves off and the line comes into being - the first dimension. If the line shifts to form a plane, we obtain a two-dimensional element.
In the movement from plane to spaces, the clash of planes gives rise to a body (three-dimensional).
Summary of the kinetic energies which move the point into a line, the line into a plane, and the plane into a spatial dimension."

Architectural Elements.....

The Architecture of space, structure, enclosure:
- Organizational pattern, relationships and hierarchies
- Spatial definition and image
- Qualities of
  Form, scale and proportion
  Surface, shape, edges and openings
  Light, view, focus and acoustics

Experienced through movement in space and time:
- approach and entry
- path configuration and access
- sequence of spaces

Achieved by the means of technology

Accomodating a program

Compatible with its context

.....and Orders

Physical - form and space, solids and voids, interior and exterior: Systems and organizations of space, structure, enclosure and technology

Perceptual - Sensory perception and recognition of the physical elements by experiencing them sequentially in time:
Systems and organizations of: approach and departure, entry and egress, movement through the order of spaces, functioning of, and activities within spaces, qualities of light, color, texture, view and acoustics

Conceptual - Comprehension of the ordered or disordered relationships among a building's elements and systems, and responding to the meanings they evoke: images, patterns, signs and symbols.

These primary elements of form and space comprise the timeless and fundamental vocabulary of the architectural designer. The study of the elements of form is the primary tool of the architectural designer. It serves to layout and classify for analysis and discussion basic forms and organizations of space and their generic transformations in a typological manner.
An architect who deals with the objective evaluation of architecture, and goes beyond that, is Christopher Alexander. The statement that the value respectively the beauty of a building, a work of art or of each other object, can be evaluated by certain criteria is a essential prerequisite of his theory. It also deals with the fact that you can describe very well an order consisting of a small amount of geometrical characteristics. You can find them everywhere in nature as well as in man-made objects. When you look at different things like plants, old prayer-carpets, paintings and buildings you can find these geometrical properties again and again. You can also see gradations in the scale, edges, alternate repetitions, contrast, echoes, local symmetry, vibrations, disarrangements, and mutations, which become a rule again. It's obvious that Alexander's order has to do with geometry, a geometry however which is much more complex than the notions of 'symmetry', 'hierarchy' and 'addition' may express. It has to do with beauty, feeling, sense and even spirituality, which is difficult to conceive, but these are qualities our contemporary architecture is lacking.

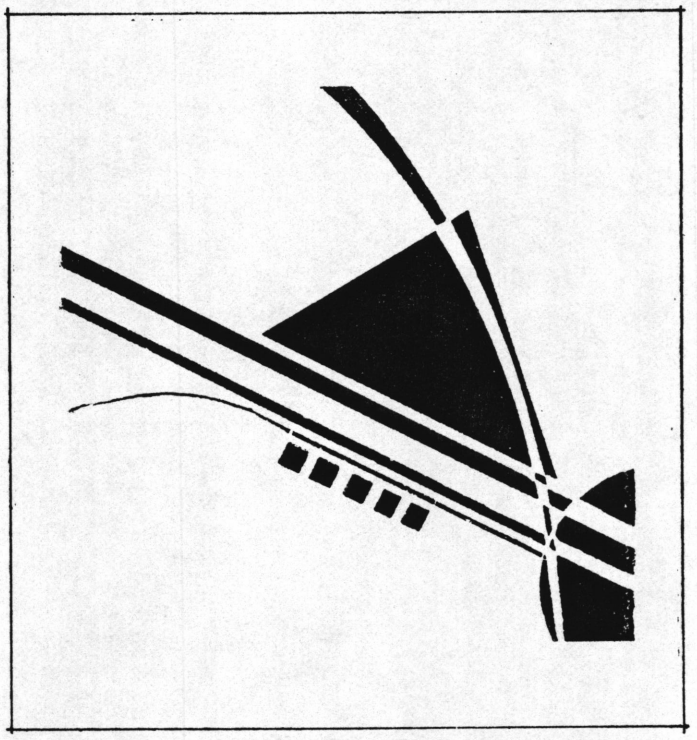
Although the type is autonomous because of its own regulations and its universal presence, the type underlies a development and changes. Functional and structural compulsions gain an ascendancy over the development as well as the ideas and the wishes of a permanently changing society. In this dialectic process the type tends to the optimum, to the universal. It is the part of architecture which allows order and lets arise structure. The type is suitable for reproduction - certainly also for mass- and industrial production. It is accessible always and

everywhere (for as an idea it is active and transferable), and that's why it is applicable in any situation. However, with the attribute of being universal, the type is also the principle in architecture which establishes the main urban structure (texture) and with it also space for individual figures.

In all cases, however, the elements and systems should be interrelated, interdependant, and mutually reinforcing to form a integrated whole. Architectural order is created when the elements and systems make visible the relationships among themselves and the building as a whole. When their relationships are perceived as contributing to the singular nature of the whole, then a conceptual order exists - an order that is perhaps more enduring than the inspiration of the fantasy.

A philosophical reflection

This way of thinking proceed from the fundamental relation of the whole to its parts: as historical human beings we are born into an already existing world and we have to conform to it permanently in order to survive. After a short span of a smaller or bigger influence on this world we die, and we must leave it to its own dynamic, respectively to the influence of the coming generation. So only the fact of our limited finiteness in view of a relative permanence of the world should be enough to make us think about our solidarity with the existing and the past (that means with history), about the character of this relationship, about the reverence, modesty and responsibility to the things. Then we could reach an understanding that we put only modest and simple parts to an already existing bigger part with our architectonic spatial interventions. This understanding leads us directly to the studies, to the attention, and to the inclusion of the context.
Already in the Fifties - long before the actuality of the context - Martin Heidegger defined these thoughts in a convincing way.
We live with the things, in houses and landscapes, coming from the past, loaded with historical reminiscences. I think we have to give more attention to these levels of the physical environment as a representation of historical information and remembrance. The physical context is not renouncable, if the human ability to communicate is to be developed. Because without remembrance there is no continuity, which is an essential quality of the conversing communication. The remembrance - the ancient Greeks already knew it before - is the mother of poetry and art in general. What is valid for poetry and art must also have validity for architecture. When we look at the development of architecture as a continuum, as a dialectic of the coming into being of the new in the old, as the passing on of remembrance, then contextual architecture is the only appropriate personal (and the only personality respecting) architectural answer to space.



PROJECTS

THE THRESHOLD BETWEEN TOWN AND UNIVERSITY

The Program

Man has fundamental desire to be able to orient himself in the environment; he has to know where he is. But he also has to identify himself with the environment; he wants to know how he is in a certain place and time. Thus the purpose of architecture is to gather the properties of a place and present them in a way that makes human existence meaningful.

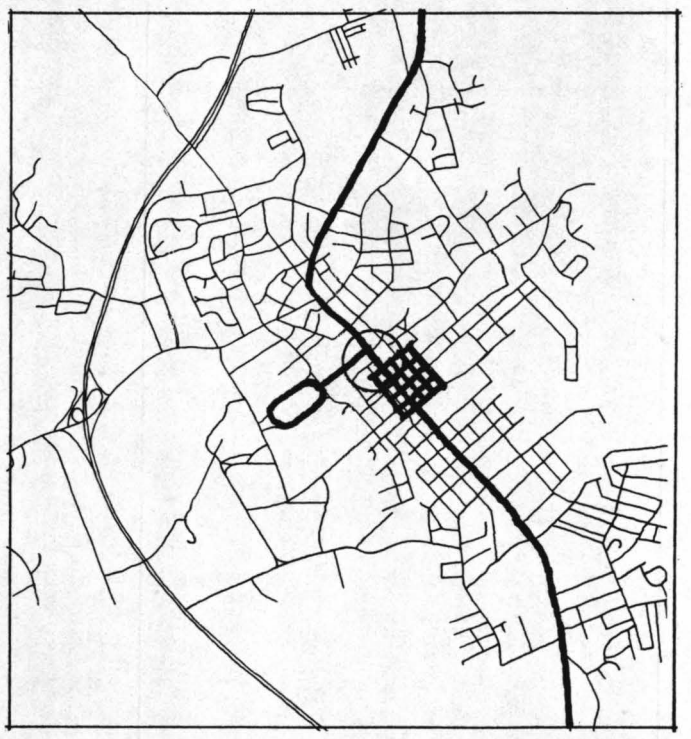
The natural and and built environment is divided into separate realms with distinctions between various territories. The boundaries between "inside" and "outside", the "threshold" and the "in-between" become special places. Understanding the nature of these special places, making connections between them and ordering them for presentation to Man is the basic act of architecture.

The specific site chosen for this project lies in the realm between the Town and University. It is bounded on the north by the Mall, the east by Main Street, the south by College Avenue, and the west by Squires Student Center. Henderson Hall will remain.

Historically, certain kinds of Institutions have been housed in buildings which convey information, knowledge and cultural enrichment to their inhabitants. Schools, Libraries, Theaters and Museums are all buildings of this type. Perhaps more than in many other kinds of buildings, the success of the architecture makes the fullfillment of their function possible. Certainly architecture has a tremendous power to amplify the learning experience. When it is successful, these buildings might be thought of as buildings that "teach".

We live in a University Community of 23,000 students housed daily in school buildings. The activities contained therin represent a great unrealized potential to convey knowledge and information beyond the walls of the University. At present, there is no effective means of making the content of the University available to the surrounding community or the thousands of people from the public at large who visit Blacksburg each year. The subject of this program is to suggest a building that teaches people about the history, culture and resources present at Virginia Tech.

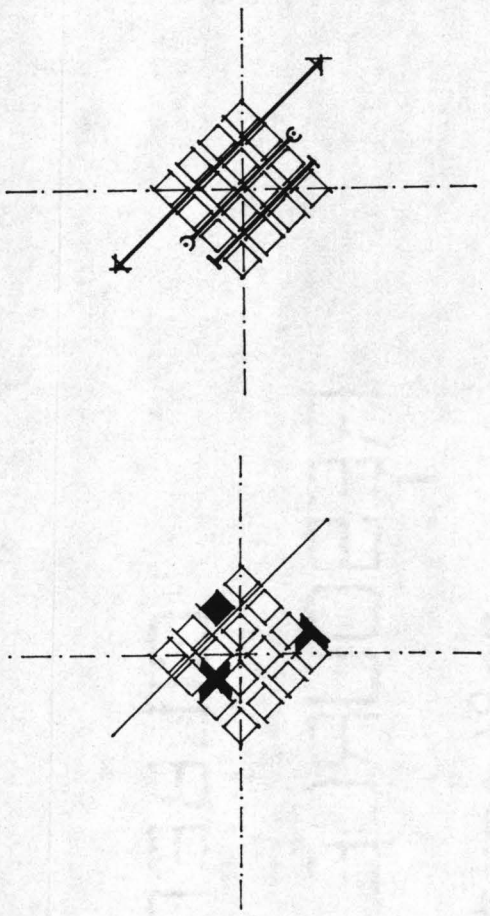
A centrally located information center will serve as a facility to introduce the University and Town to the visitor as well as to act as a focal point for the resident.. It will house exhibit / gallery space which will focus on the history and culture of Blacksburg and Virginia Tech. It will house a gallery of art, science and technology for the products of academic study and research of Virginia Tech students and faculty. It will provide lecture / meeting facilities which will serve the exchange of information between the University and the public.

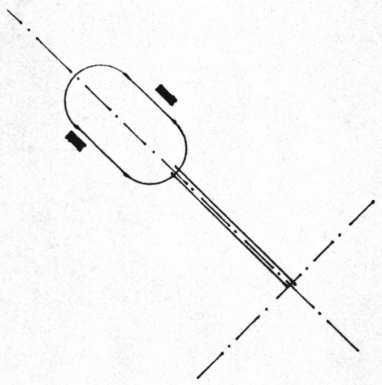


The Context

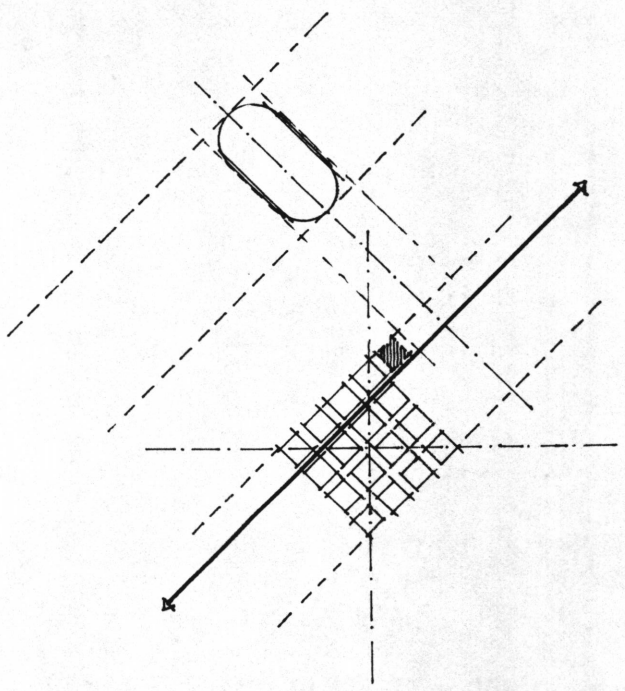
To know the whole, one must first understand its parts. The parts and their relationship are often obscured by the complexity and the amount of information confronted. Blacksburg has its tenacious elements, including parts of the city that still reveal aspects of the original settlement: the sixteen blocks of the original town and the fundamental trace of Main Street from the oroginal grid out through the surrounding lands. We have to open our eyes to the features of Blacksburg that can be observed today. These features have their history and their potentials, but the emphasis is first on making us to see them.

Blacksburg was platted in 1798 as a four (sixteen square) grid of 38 acres. The Main Street passed through the grid. Blacksburg is contained by the land: visually by the mountains to the north and southwest, and physically by a ridge to the east . These landmarks immediately give the town a context, linking it to the larger scale of the region. Within the sixteen squares several older buildings pay homage to their respective intersections. For example at the intersection of Roanoke Street and Main Street two buildings on opposite corners have entrances that face the diagonals of the intersection. Four distinctively different kinds of streets pass through the sixteen square grid along the south-east / north-west axis. Main Street, a commercial street, is the only street to pass completely through the grid in this direction. Church Street, a civic street, bounded by six institutions, has the most community precence. Penn Street, a very quiet street, is like a backyard alley. Draper Road, a transitional street, makes the change from Campus to commercial to residential places. The sixteen square grid gives a certain identity and has its own order: The blocks, the intersections, the streets, the T-streets, the Main Street, which passes through the grid. Main Street has a



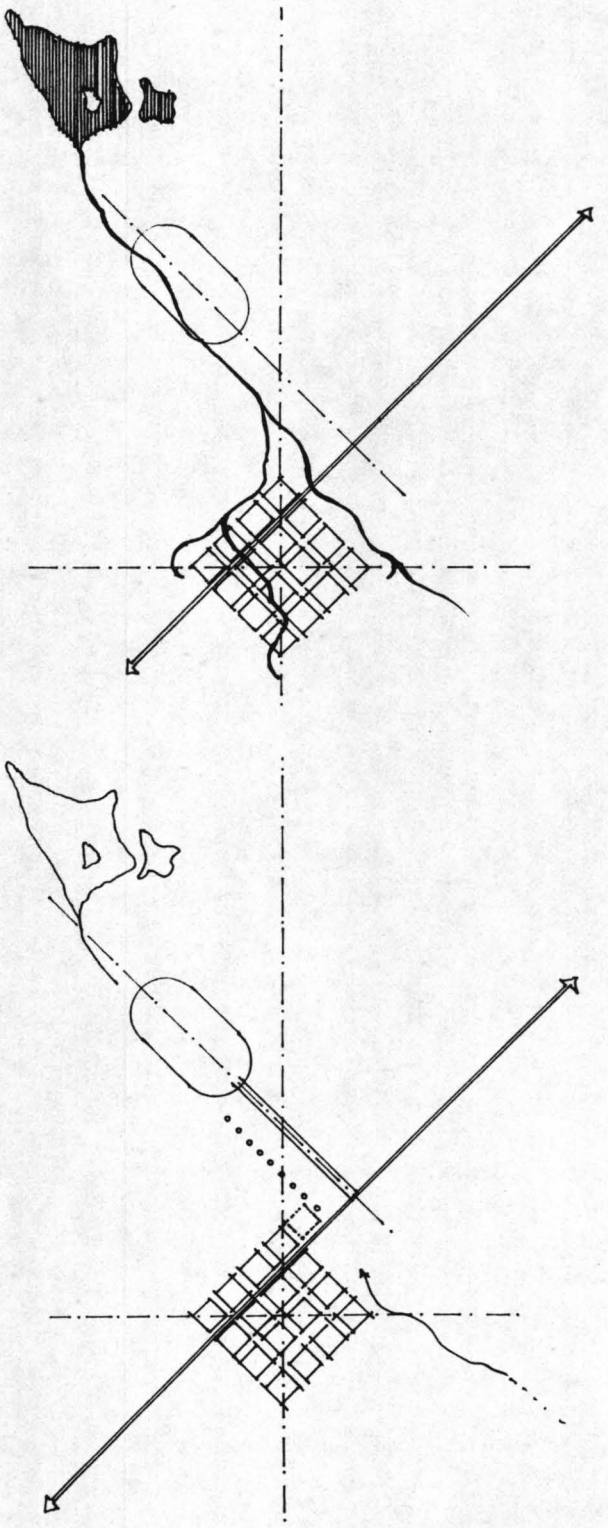


rectilinear order, crossing the grid.There is the oval of the Drill Field, which gives orientation and identity to the Campus. The buildings are situated around the oval. The field is a single cleared space, whereas the squares are filled with built subdivisions.
There is also the Mall, connecting the Drill Field with Main Street. The Mall is dominated by the Monument opening a view into the landscape respectively to the town.
The sixteen squares are not a true jeffersonian grid, because the diagonals of the grid rather than the streets are of the north / south - east / west axis. This orientation has the benefit of offering to a building positioned within the grid access to the sun on all building faces.
The University and the original sixteen sqares are held apart by a block that has traditionally been the most densely developed block in Blacksburg. This block is also the site of the fourth Lyric Theatre - the oldest theatre in town. Its entrance is very important for the new Museum and Visitor Center. There, College Avenue extends from its origin at Main Street until it concludes tangentially touching one side of the Drill Field. As the street axis moves from the bustle and commerce of downtown to the quiet of an academic street, it passes a university building, the Newman Library addition (architect: Robert Venturi), that recognizes this transition by its built volume. College Street will also pass the new Museum and Visitor Center.

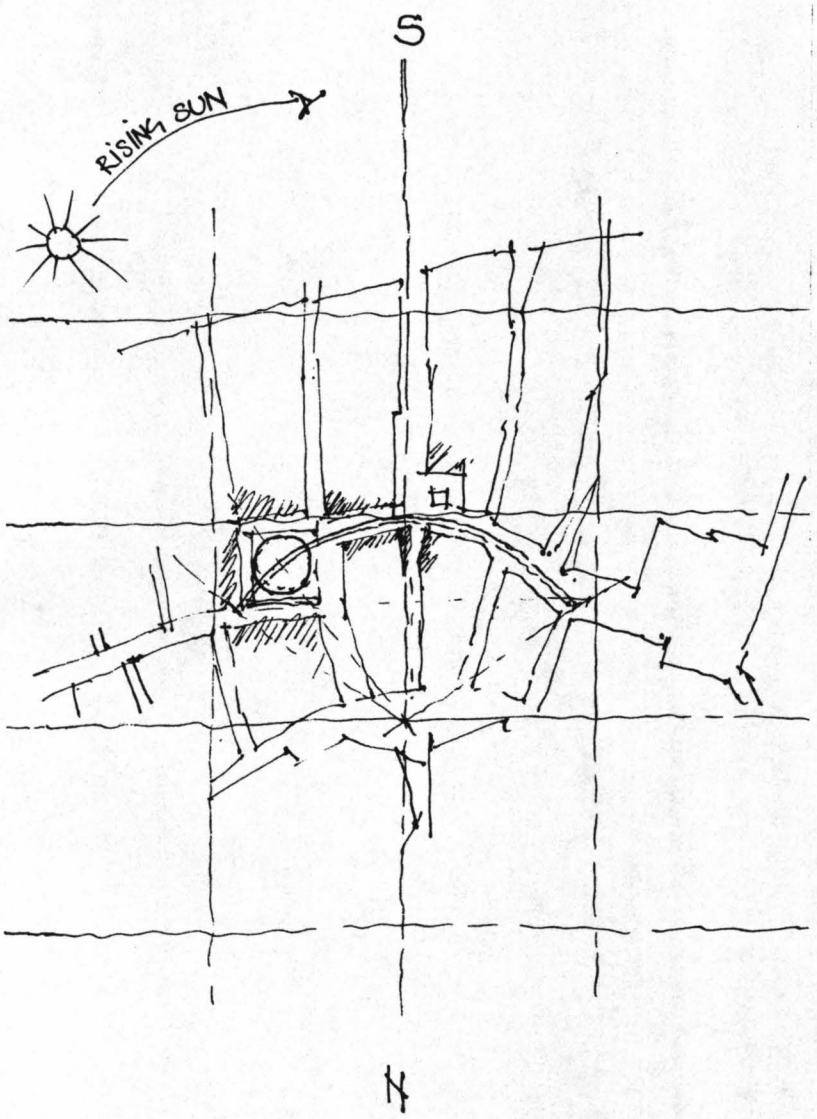


The sixteen squares are the geometric equivalent within the town. The original sixteen squares are twice the area of the field with the same primary order on the map. Yet the field is a single cleared space and the squares are filled with built subdivisions. There is the north-south / east-west axis and a clear orientation of the grid and the oval: This also has the advantage that the sun reaches all four facades of a building positioned within the grid.

There is water flowing in south/east-direction: Stroubles Creek and Duck Pond. The sixteen square grid is distinguished by forces which mark its four corners. These intersections are marked by the presence of town springs and streams, by distinct changes in the surrounding ground elevation.
With radiaesthetic examinations on buildings (especially on cultural objects of the Occident from the early history to the Baroque) they could prove in numerous cases that the building concerning their position and alignment, refer precisely to the structure of energy of the surface of the earth and its centers of energy. Obviously this geomantic attitude was one of the most spreaded reactions to an invisible but nevertheless real dimension of the physical context.
The complete diagram gives a sense of the unique qualities present in the squares.



The Approach

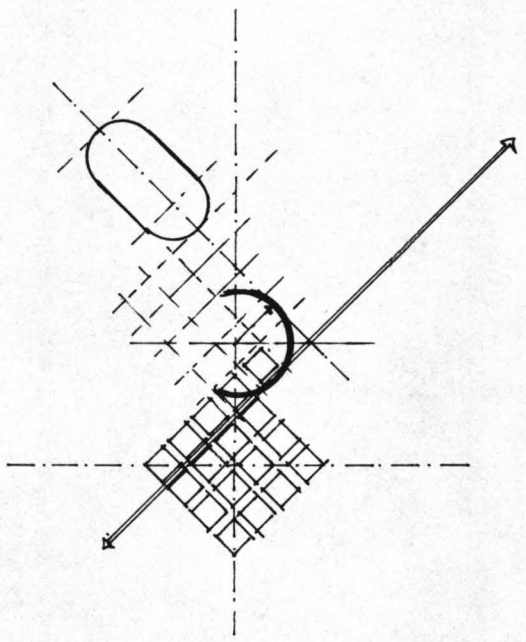


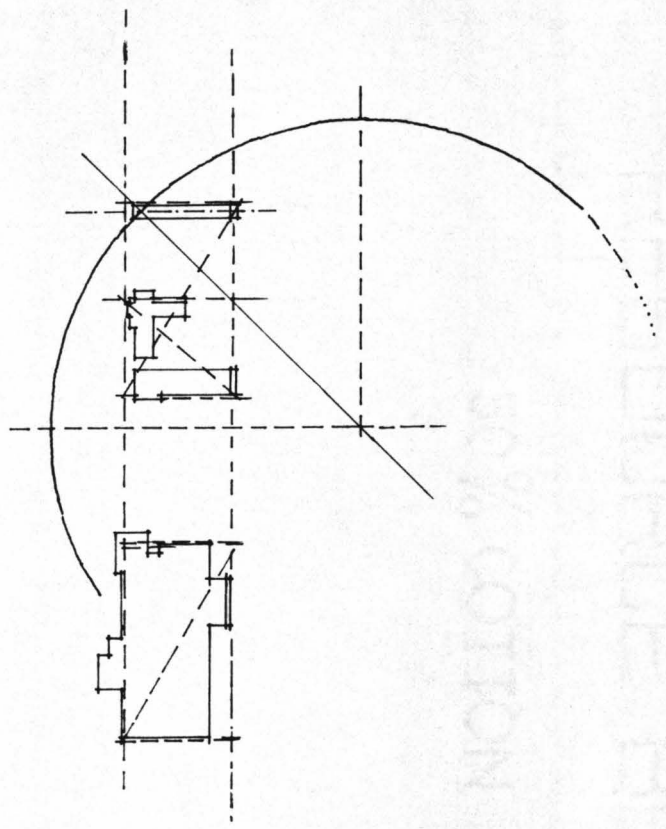
In Fall quarter 1987 I worked on the 'Venice' project. There, the collision between the medieval streets, the irregular pattern of the medieval town and the regular geometric plan of the Piazza is dramatically expressed. The monumental Renaissance Piazza was carved into the irregular pattern of the medieval town. That makes it distinguishable from the world around. I was fascinated by the idea of the collision of scale, history and geometry: A new geometrical trace of architecture that expresses the spirit of time, the Renaissance.
Charles Moore says, that "rooms must be distinguishable from the world around them. This generally limits them to objects in a void or a void in a solid. The cheography of the trip to the room should intensify its importance for us. The path to it should send out messages and induce experiences which heighten its importance as a place".
Therefore for me it is important to choreograph the sequence of entering a place or a site, like it happens in Venice by ship (sea), by vaporetto (Canale Grande), or you walk through the medieval town and you arrive at the Piazza (Aha-effect !). A similar effect you can find at the Drill Field in Blacksburg, even on Main Street and within the grid of Downtown.
These aspects had a great influence on the project.

My approach to the project 'Museum and Visitor Center' is subdivided into three steps.
Mostly I worked with models in their different scales, but always one step after the other in relation to the scale.

Primary Step

A geometrically curved form, which covers nine squares, connects the Town (grid) with the University (axis). The symbolic connection



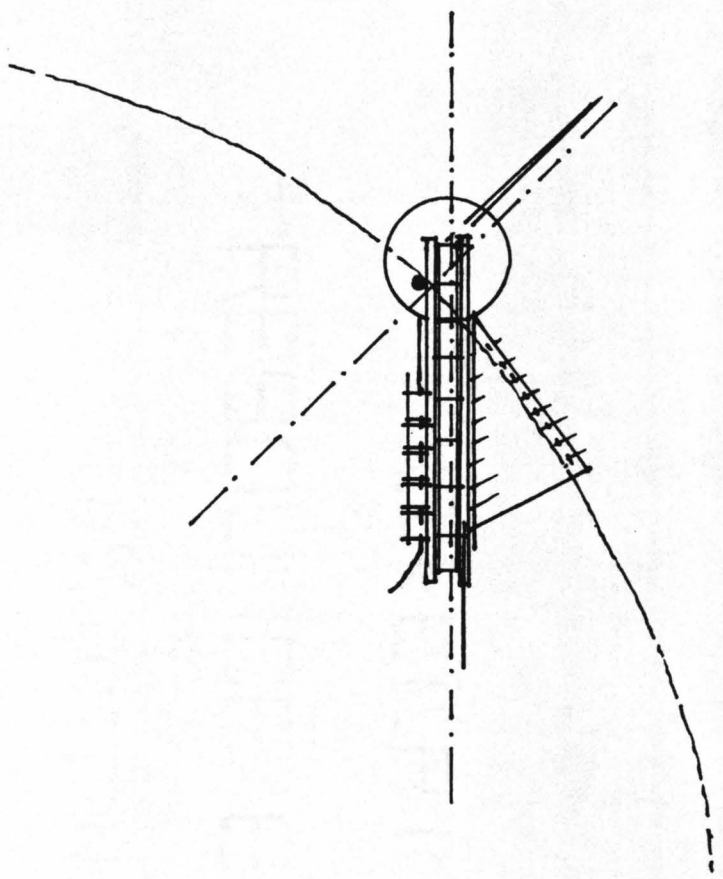


gives orientation, it's a sign. The big scale gives order.
It's a new trace of history, geometry and scale.The curved form is a path expressed in marks, signs in the pavement, and a wall crossing the Information Center. The choreographed way touches tangentially one side of the Mall. The sequence of entering the building and the University respectiverly the Town is my primary order, shown in my first model: scale 1 / 200 = 1' = 0'.
I try to agree the spatial and cultural conditions. I accept what exists. I conjure the genius loci, read the context, interpretate it and convert it consciously in the architectonic answer. With the curved form I make the latent shape visible in the context. I try to interweave the Town with the University. I glamp it through the curved form and through the sequence of entering the building and the University respectively the Town. I try to visualize the settlement (grid-axis-oval-nature) as a place.

Secondary step

I develop the order from the types of houses: big, small, smallest. It's a new trace in a rectangular order coming from the urban context, shown in my second model: 1 / 64 = 1' = 0'.
The new type I've found is a linear structure, with a similar length like the adjoining houses, and a certain geometrical order which puts it in a special relation to the adjoining houses. The curved wall crosses the linear structure thus forming the center of the building. The type of the linear structure is a principle in architecture, which makes the urban structure, it allows order, lets arise structure, that means new fields for individual figures. The type of the linear structure generally has an ideal order and understandable structures, but the context distroys and changes it. The curved wall crosses the building and forms the center.

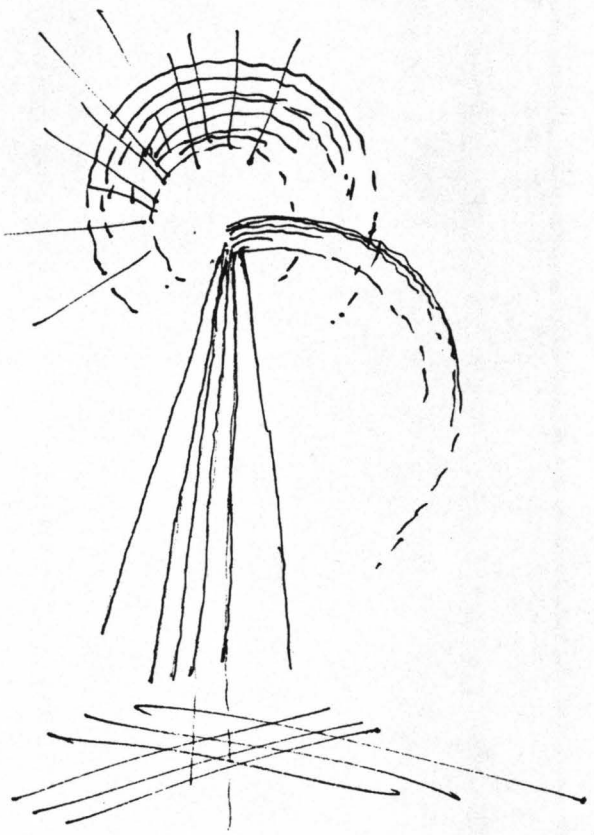
The linear structure is carved into the slope thus superelevating the context.
With this new configuration I form a new urban place for commun living and a building as a meaning for sub-place where Man simultaneously experiences individuality and belonging. With the linear structure I also agree the spatial and cultural traditions: The new as a continuum of the old and I built in the tradition of an anonymous and regional architecture. I read the context again, interpretate it and convert it in the architectonic answer.



Third step

Within the rectangular order and the type of house (linear structure) coming from the grid I play with the concept of the addition of elements.
To the small element of the wall I add other elements, a parallel series of different functional and structural layers. I carve the building into the earth. The concrete wall and the corrugated steel wall hold the earth back. The curved wall is crossing the building and thus forming the exhibition area and the center with the entrance. The round open court shows the relation of the building to the street level.
All is shown in my third model: scale 1/ 16 = 1' = 0".
I work out the existing characteristics of the linear structure, for example in relation to material, scale, order, geometry, sequence of entering the building, local atmosphere, light, the slope, the trees, and so on.
Again I read the context, interpretate and convert it consciously into the architectonic answer, with an obligation to the principles of modern architecture: New structural means, new materials, leading to new forms of presentation. The structure is covered with reprimands which divert the spectator from the

structural principles. And thus the form can be explained not only structurally but with regards to its contents and context as well.



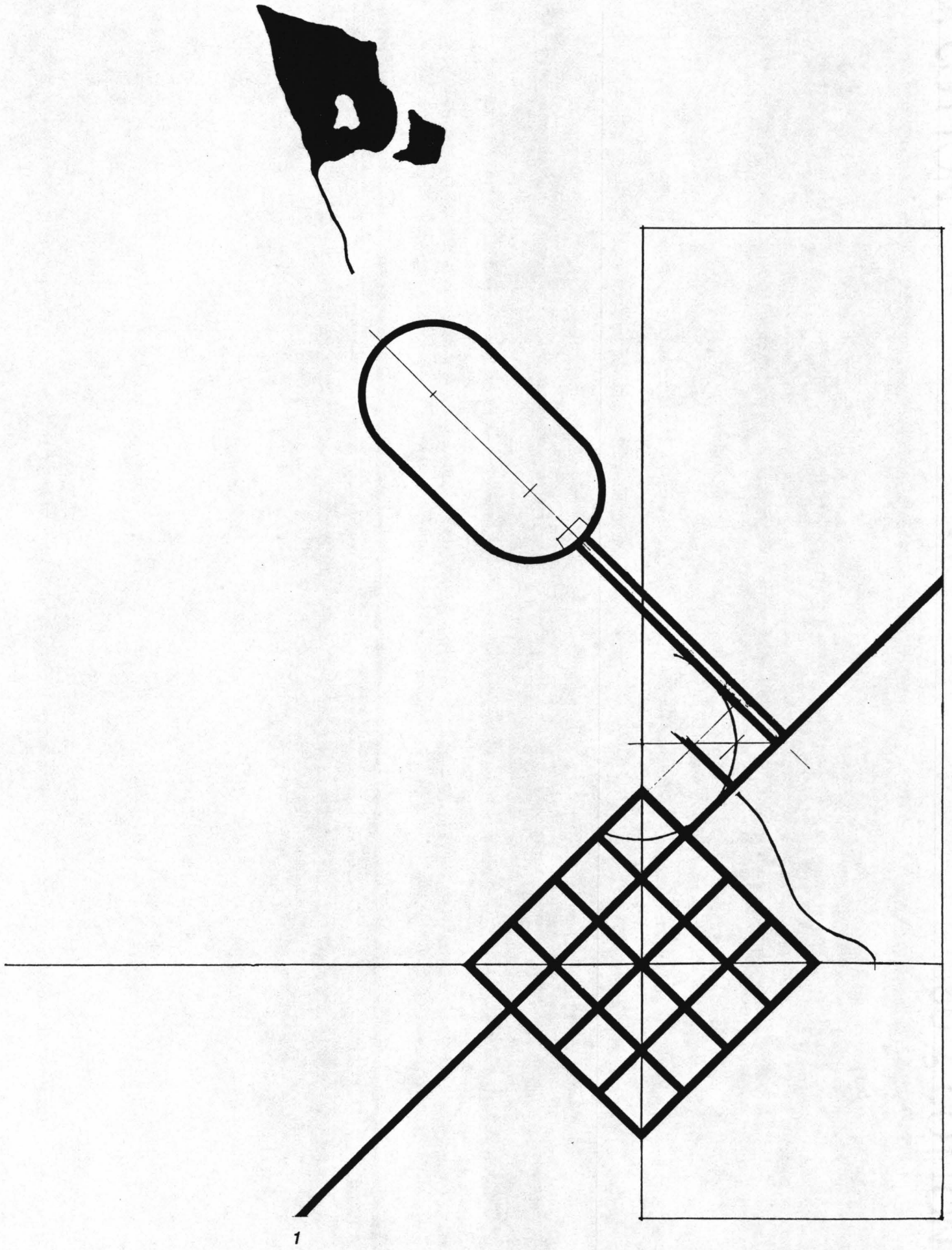
Concerning this project I was influenced and fascinated by a drawing I found of Alexandre Rodtschenko, a Russian Constructivist (1918).

This architectural drawing expresses : notion
dynamism
power
tension
explosion
implosion
speed

It's just one more influence to the shape of the building, which refers to the spirit of time ('Zeitgeist'), the Russian Constructivism.

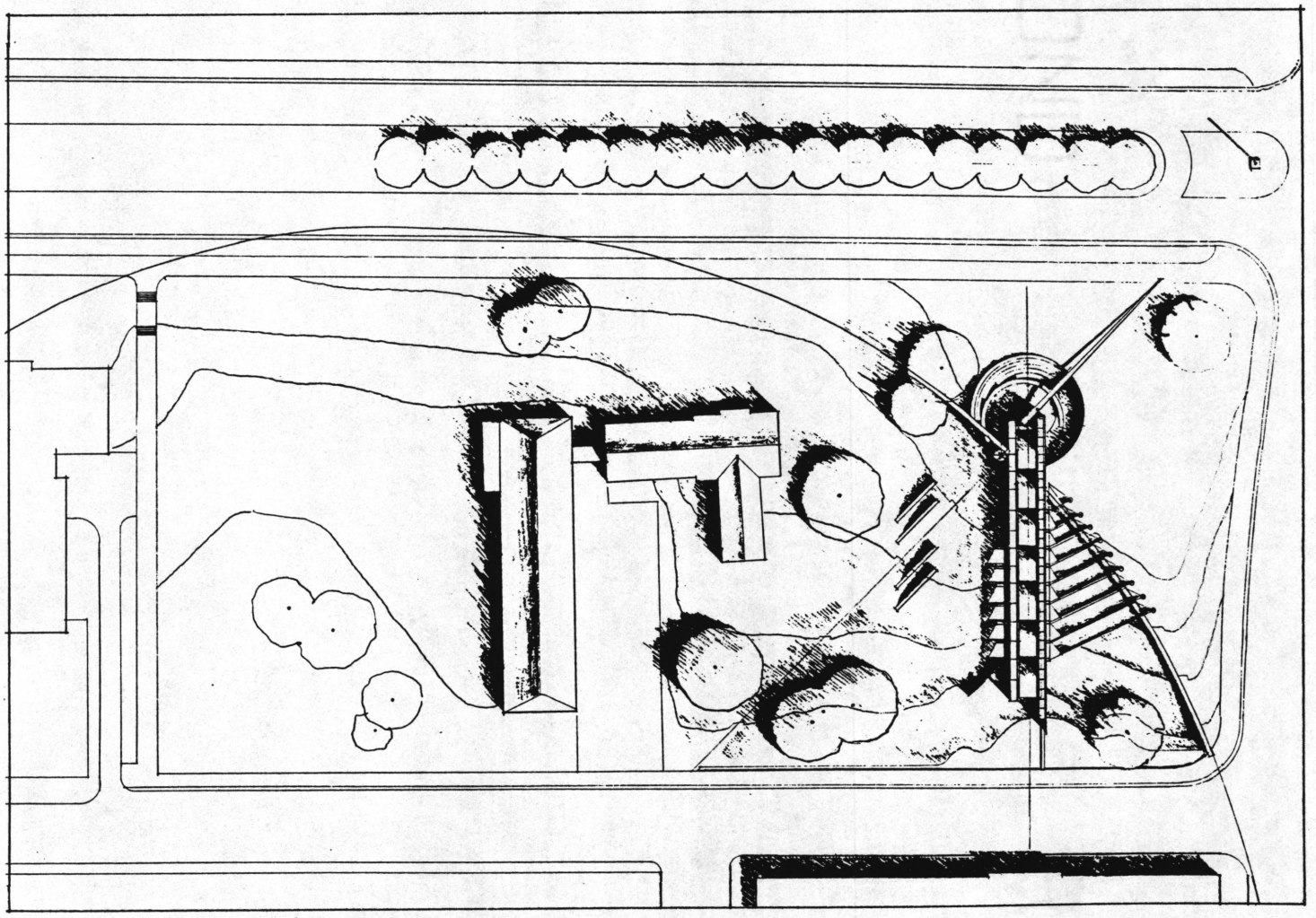
But at the end it is much more important to attract people, to bring people into the building, to get interaction, to destroy the boundaries, and to get a treshold between Town and University, and even the landscape.

1 Siteplan



1

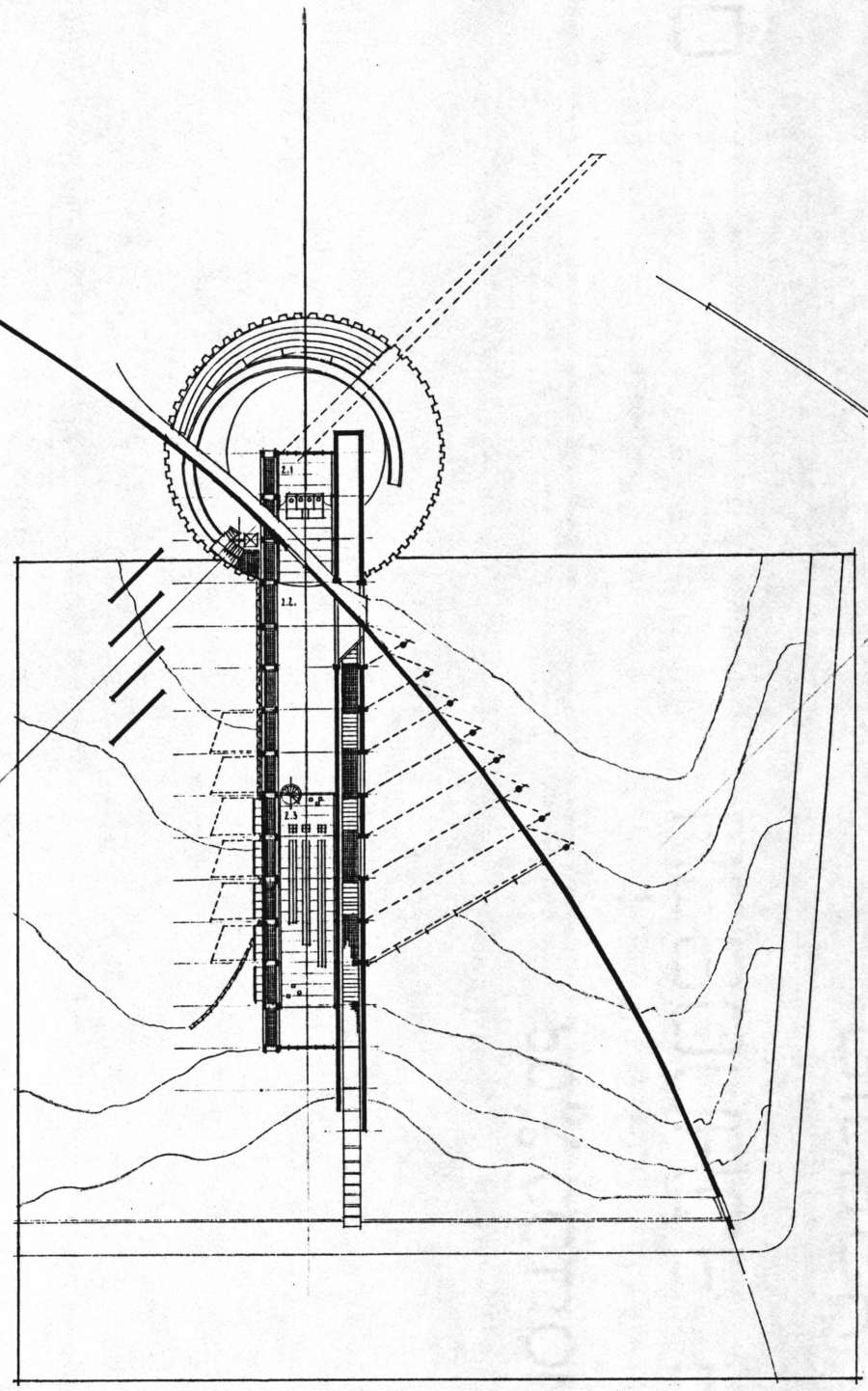
1 Siteplan



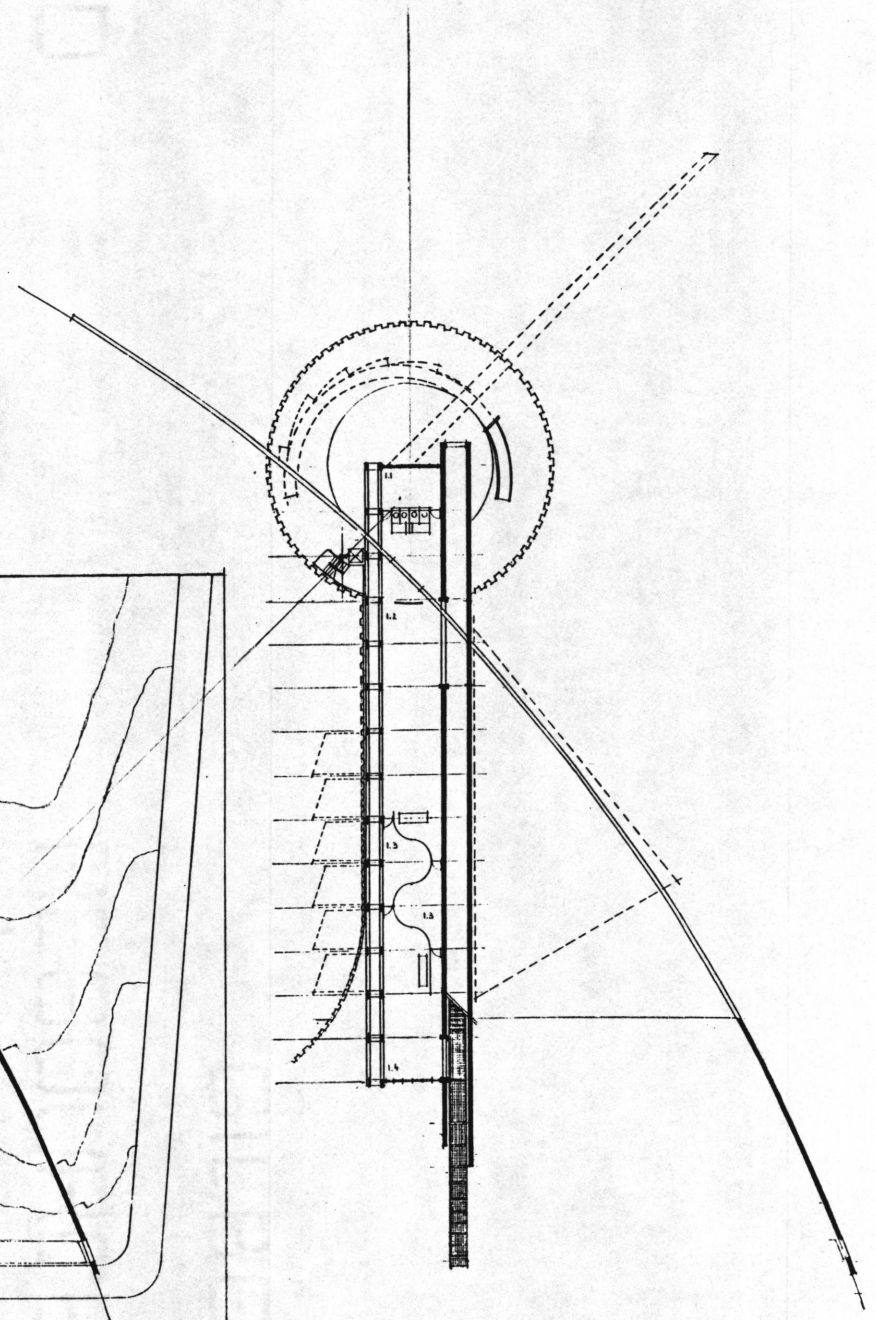
1

1st Floor
1.1 Lecture
1.2 Meetingroom
1.3 Store
1.4 Cafe 'chez tech'

2nd Floor
2.1 Lecture
2.2 Meetingroom Void
2.3 Library
2.4 Exhibition Area



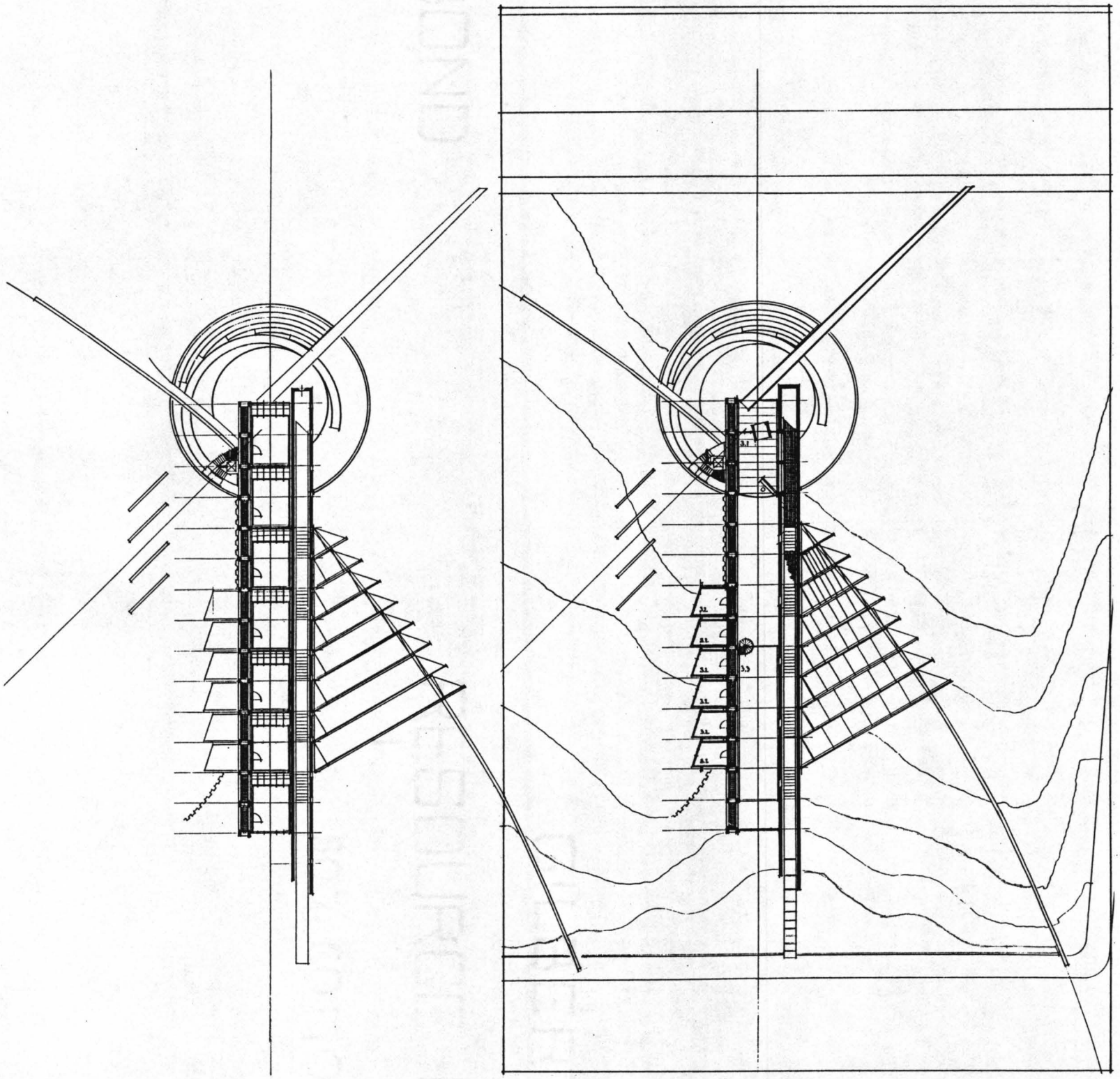
2



1

3rd Floor
3.1 Entrance, Reception
3.2 Administration, Housing Office
3.3 Void Library

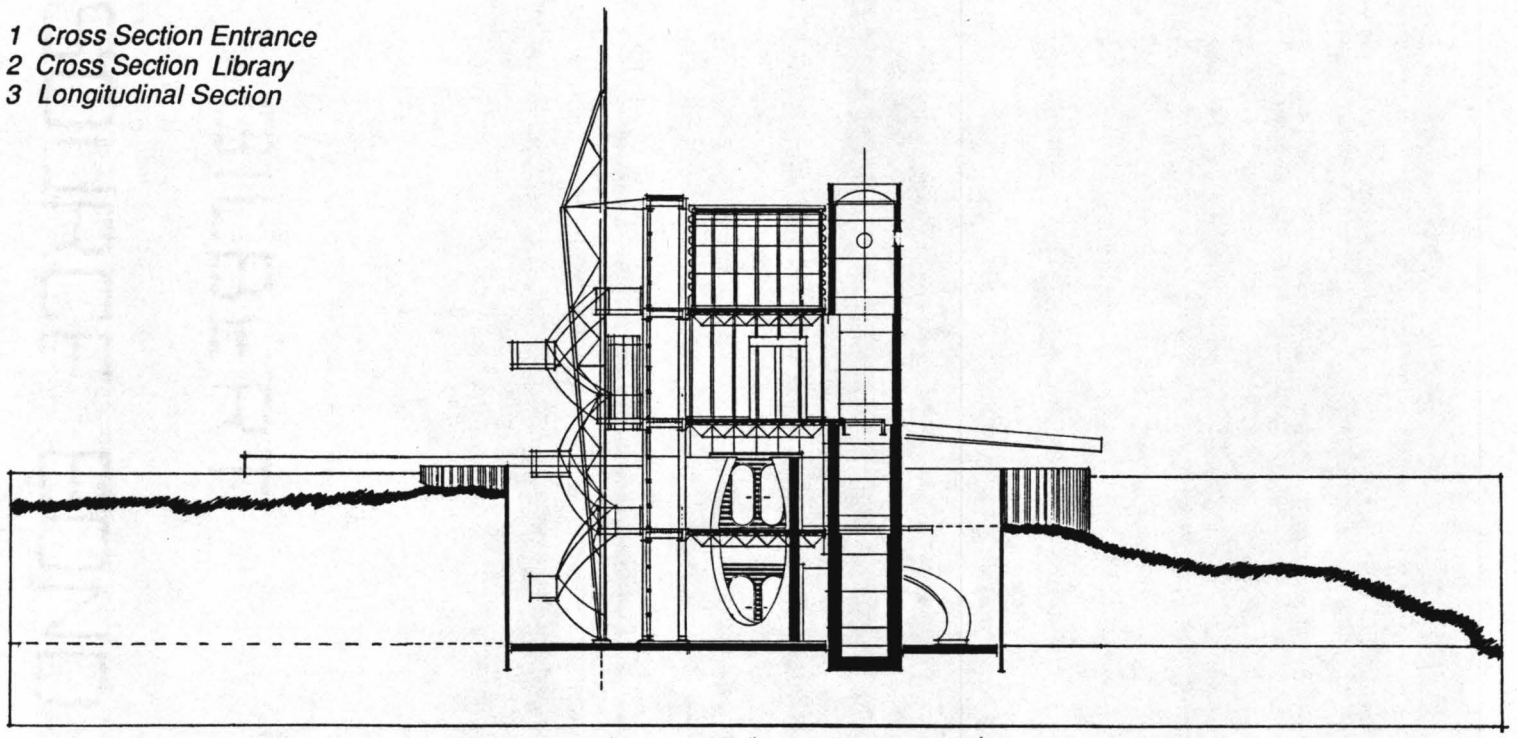
4th Floor
4.1 Lecture
Workshop



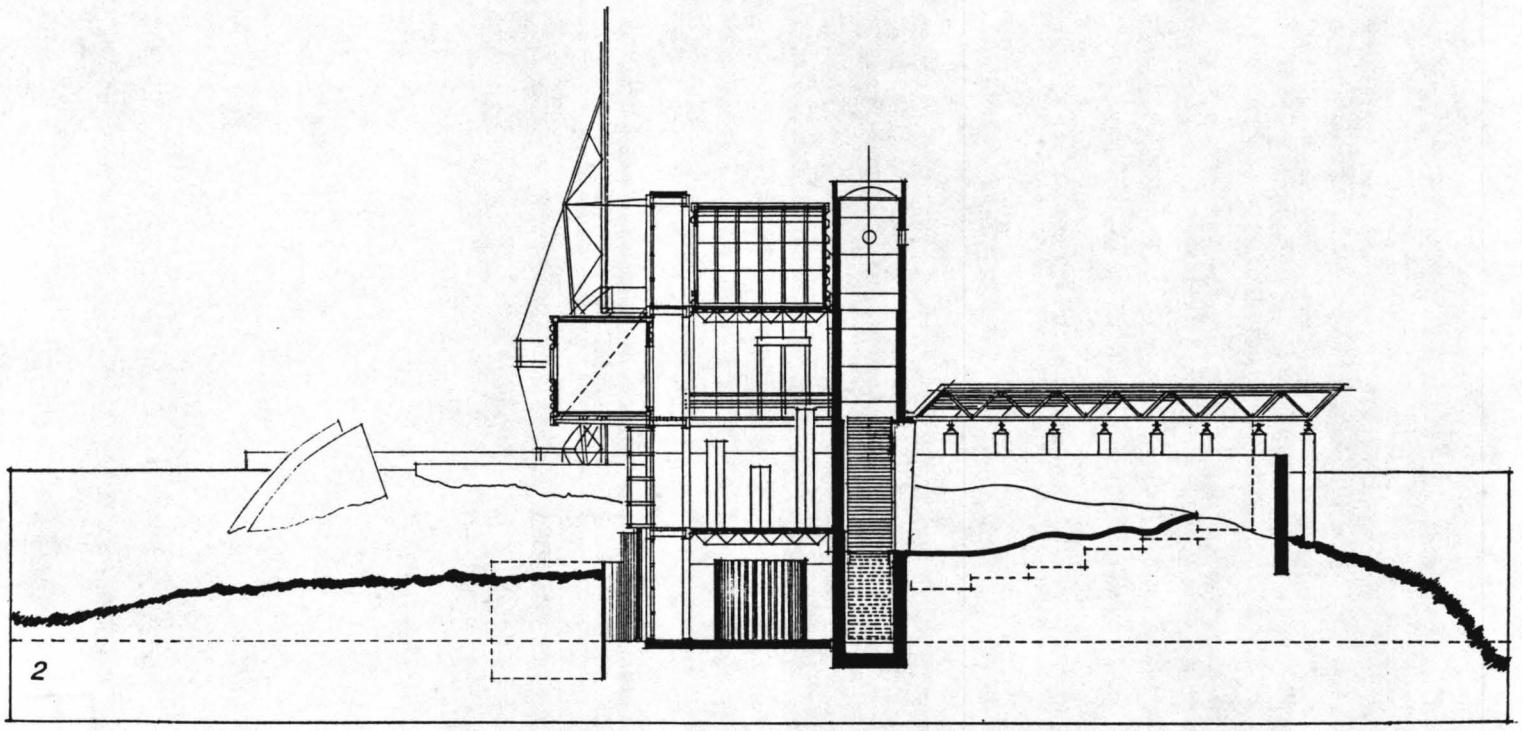
4

3

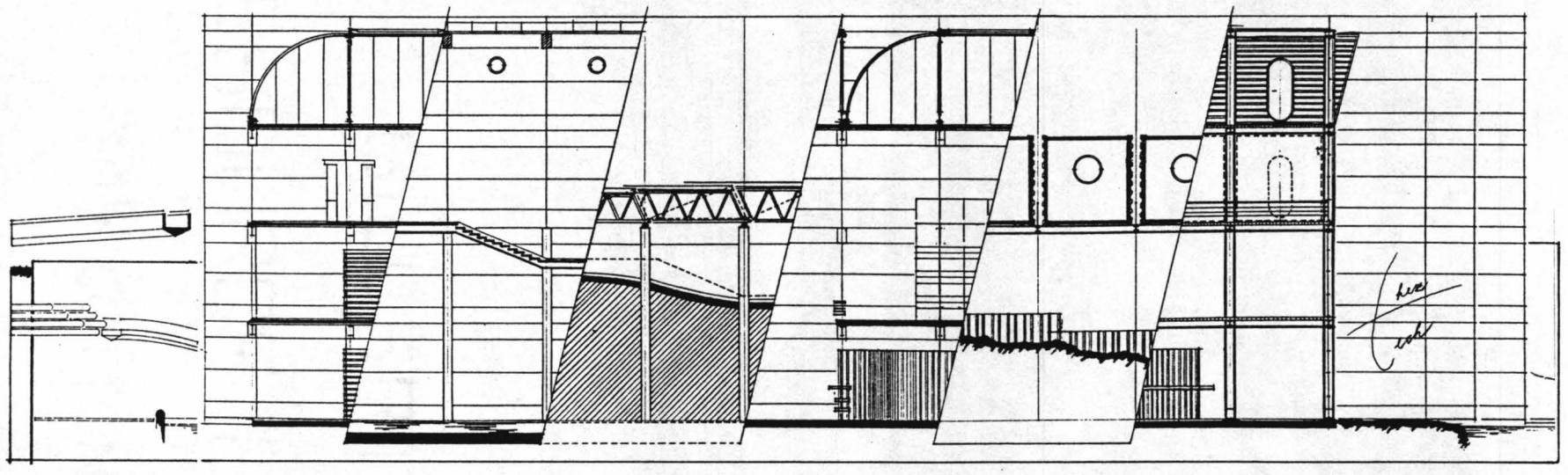
1 Cross Section Entrance
2 Cross Section Library
3 Longitudinal Section



1

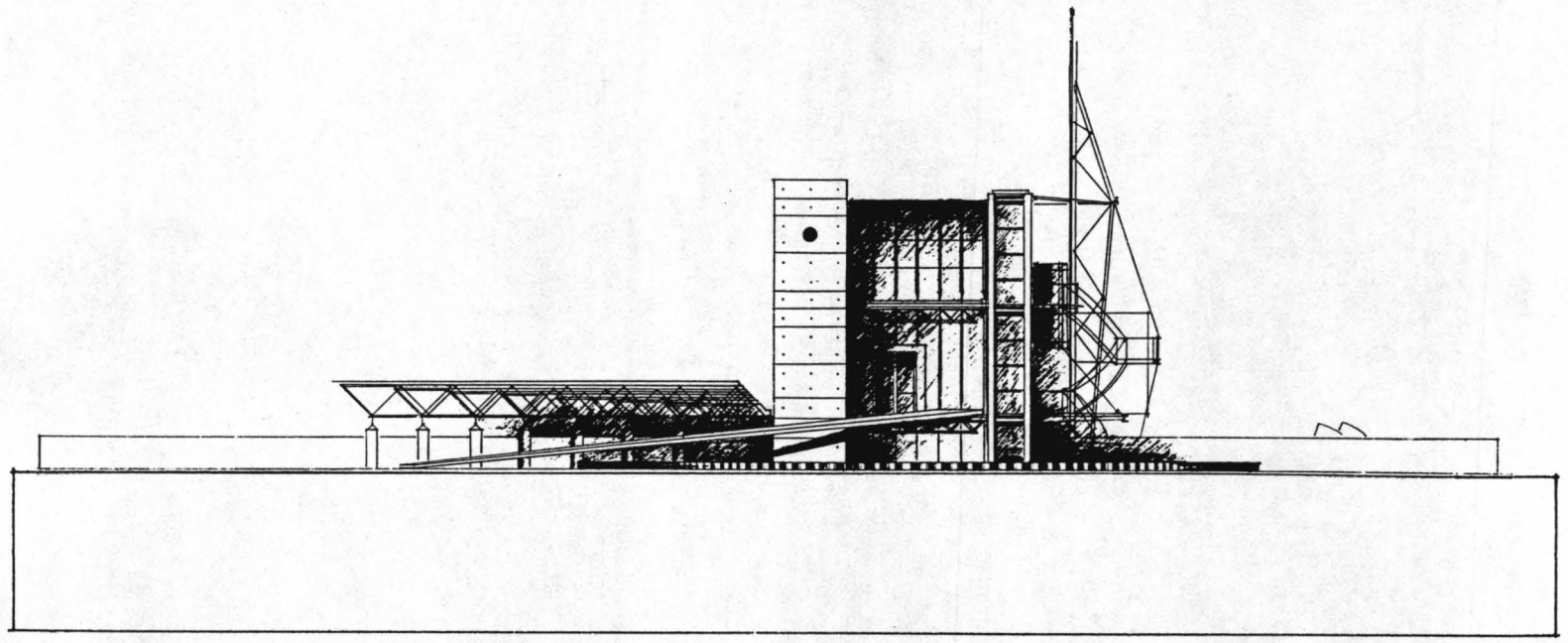


2

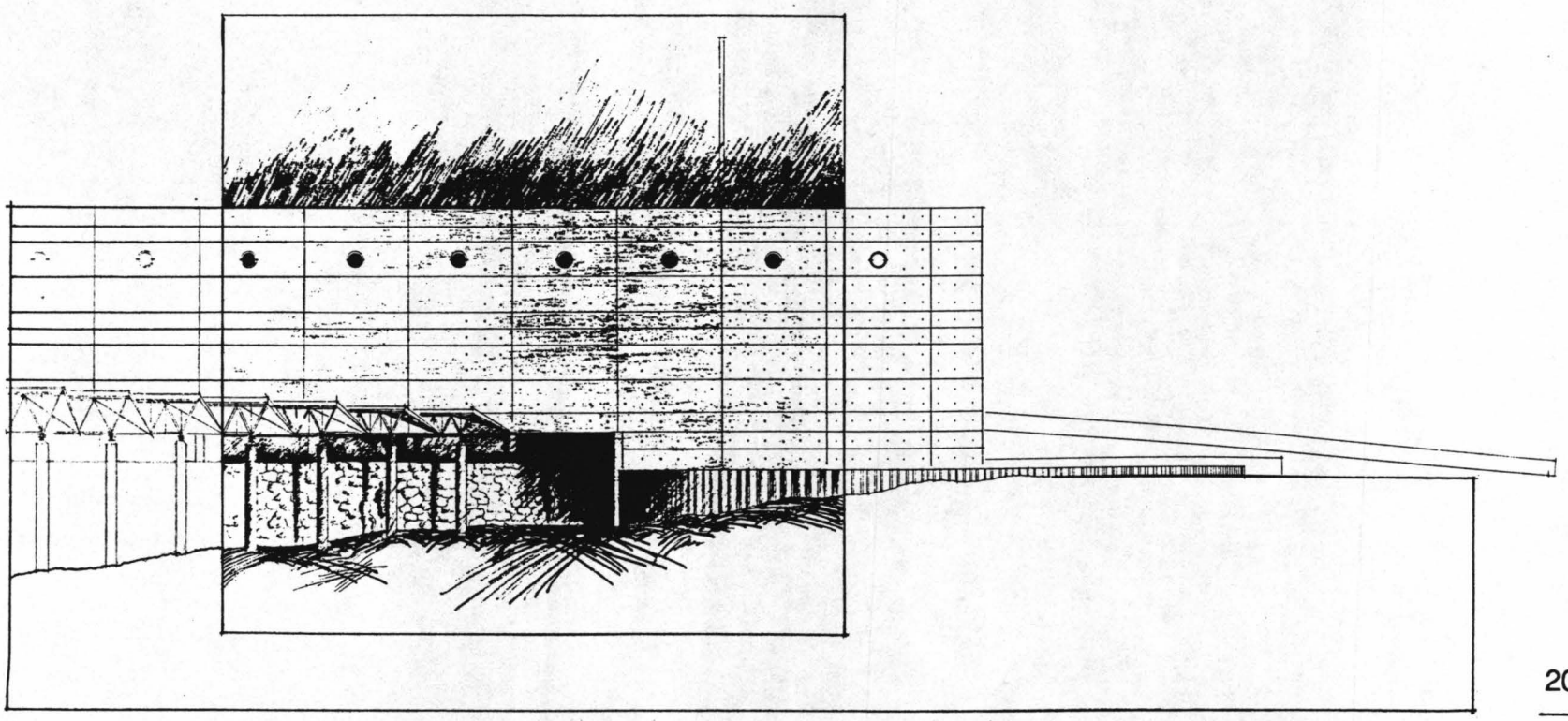


3

1 Elevation of The Mall
2 Elevation MainStreet

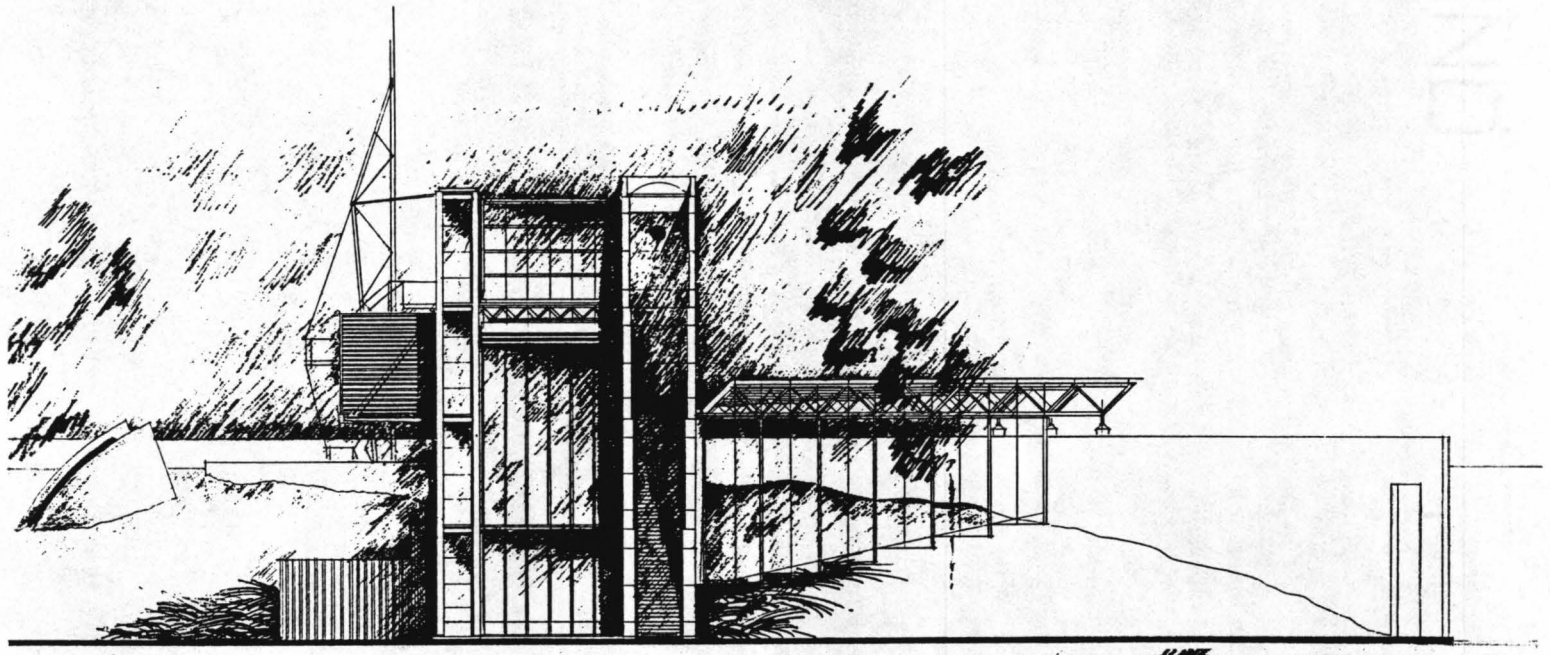


1

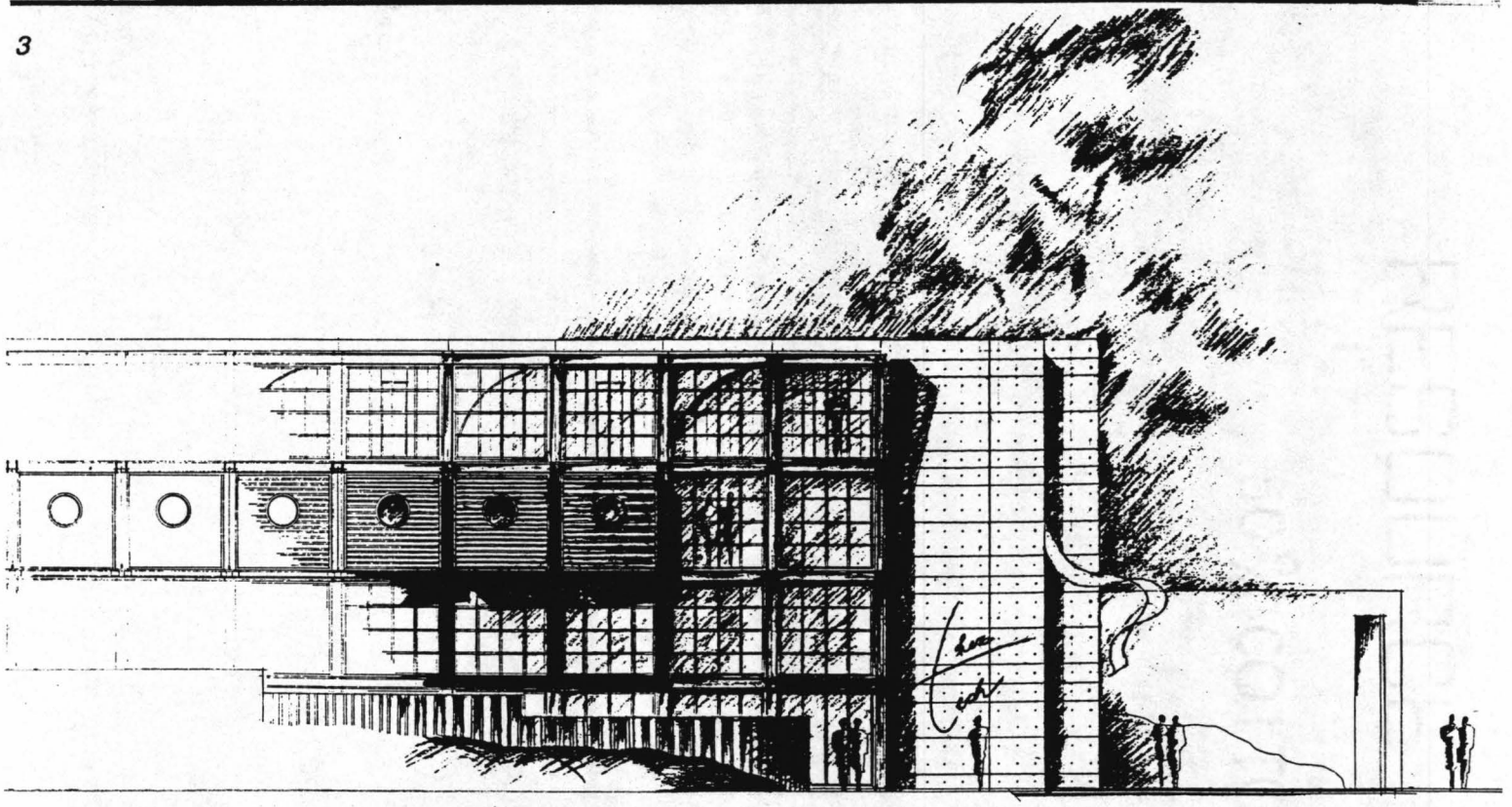


2

3 Elevation College Street
4 Elevation Henderson Hall

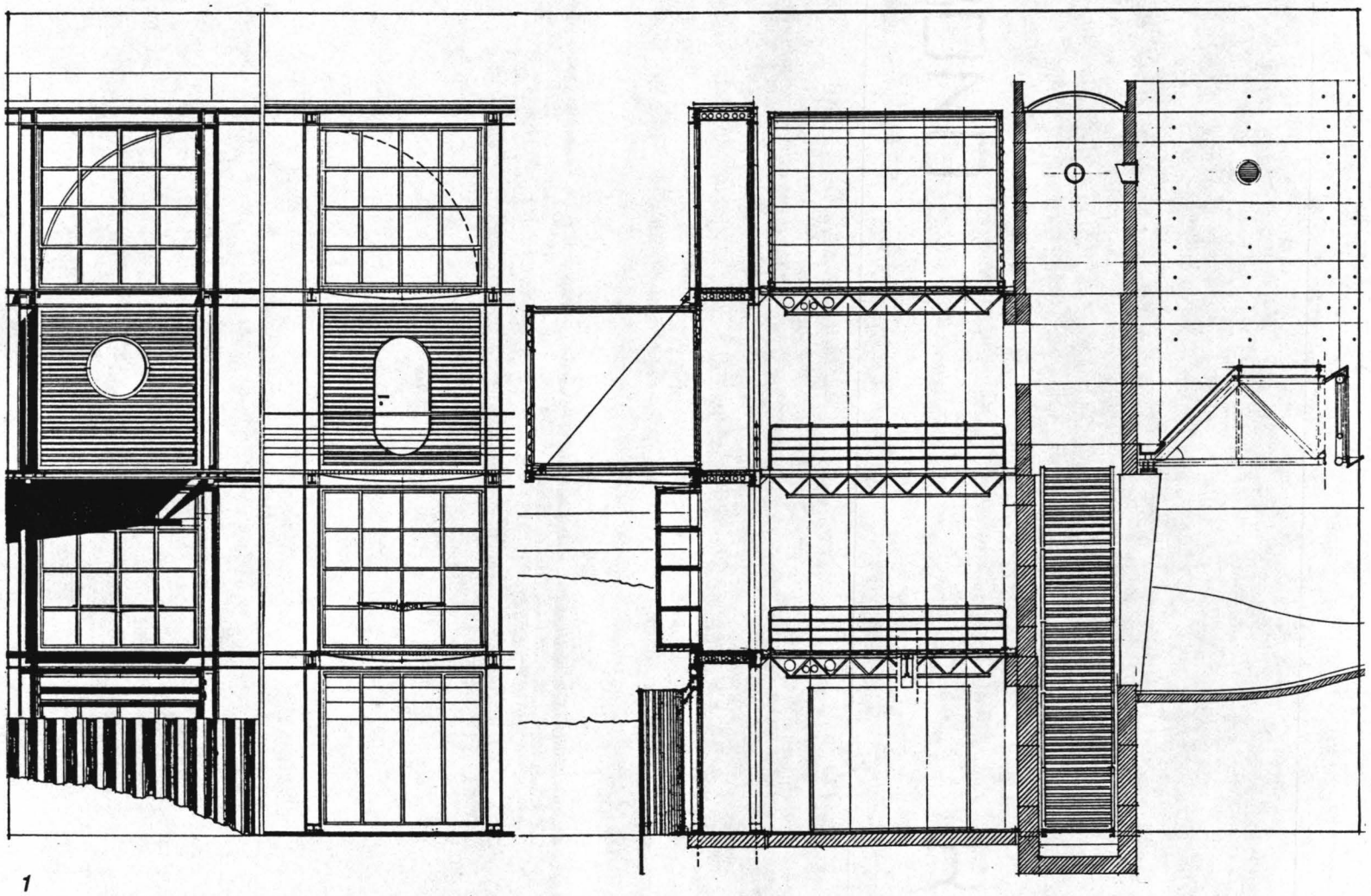


3



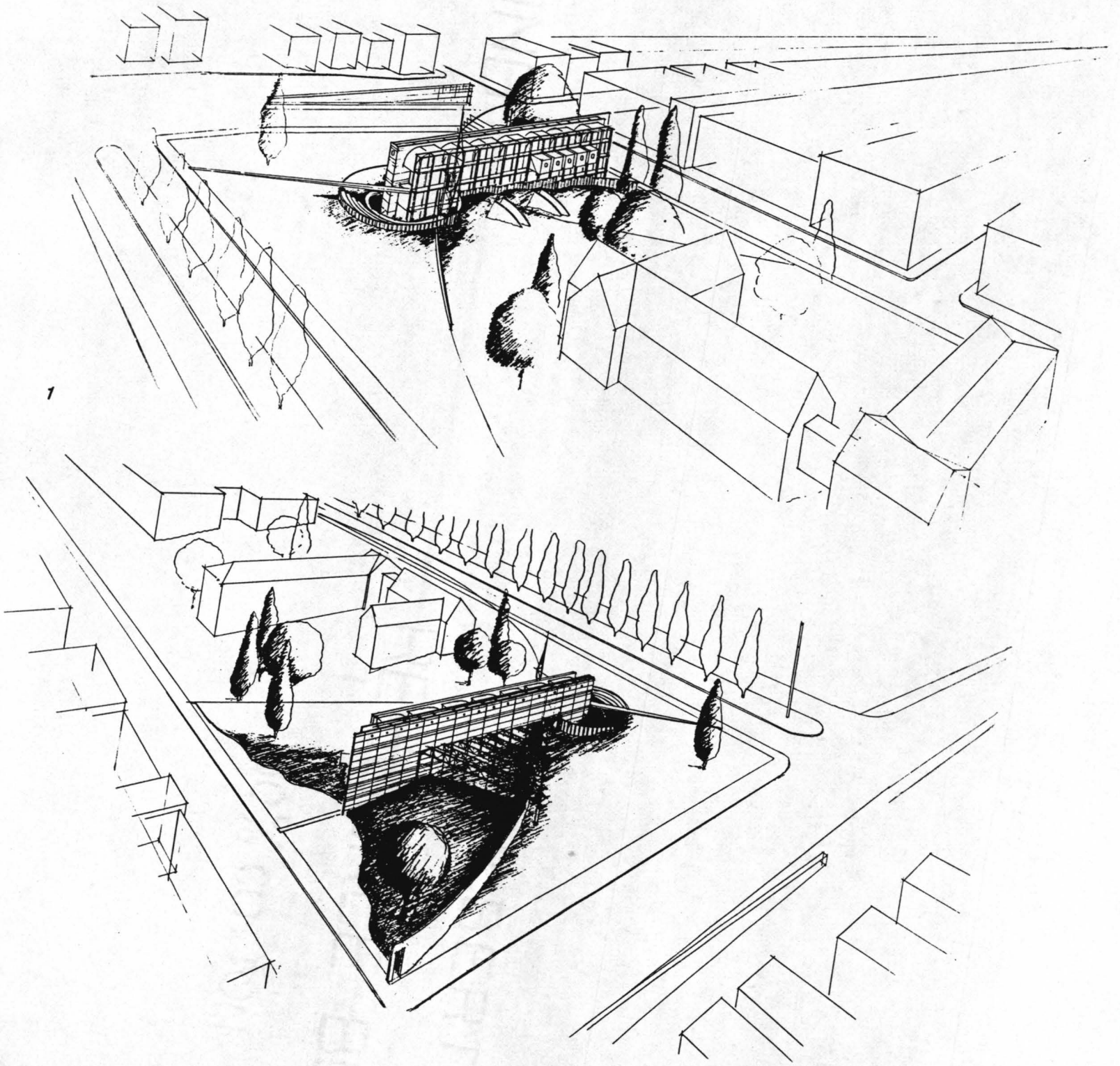
4

1 Detail



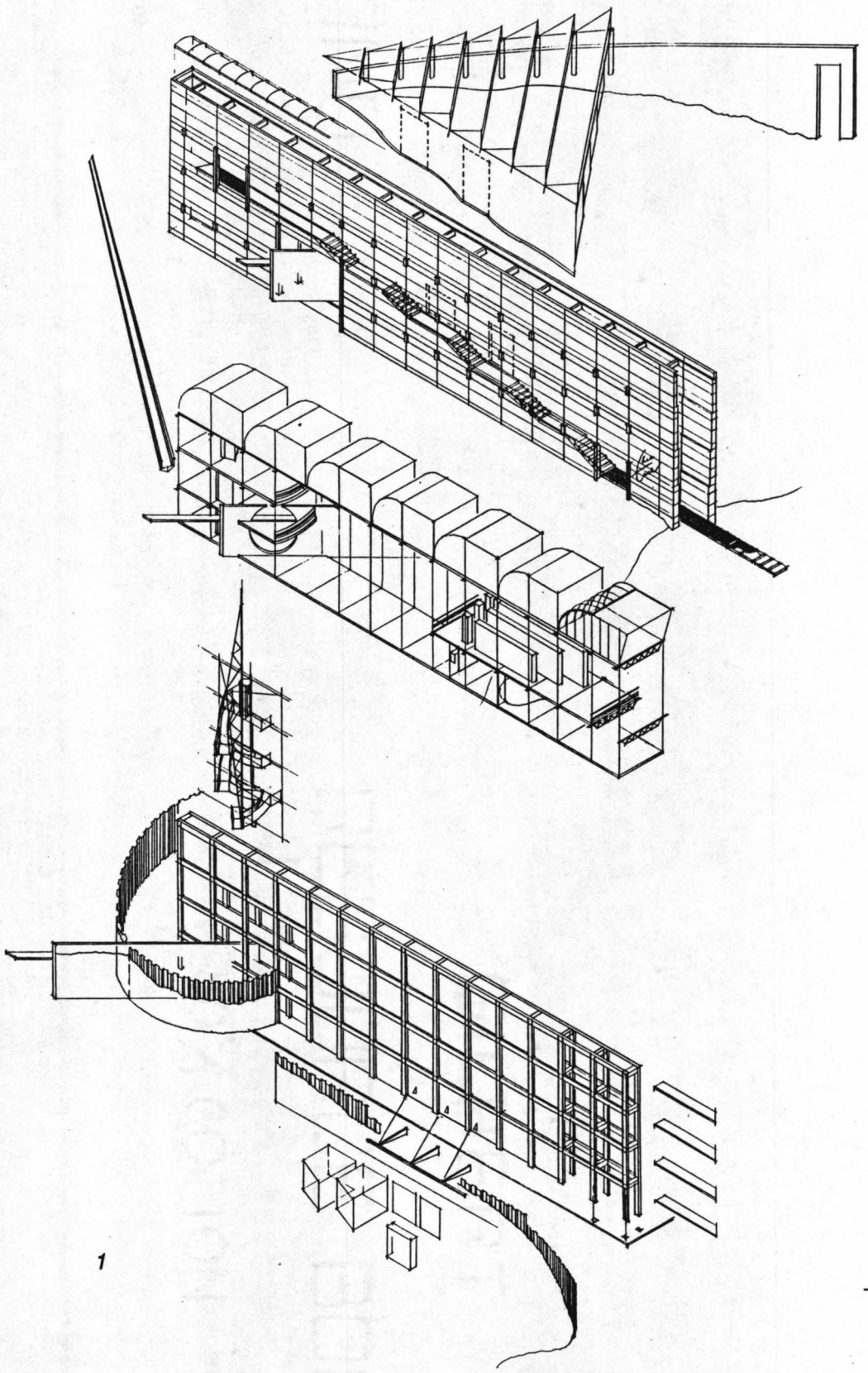
1

1 Perspective View
2 Perspective View



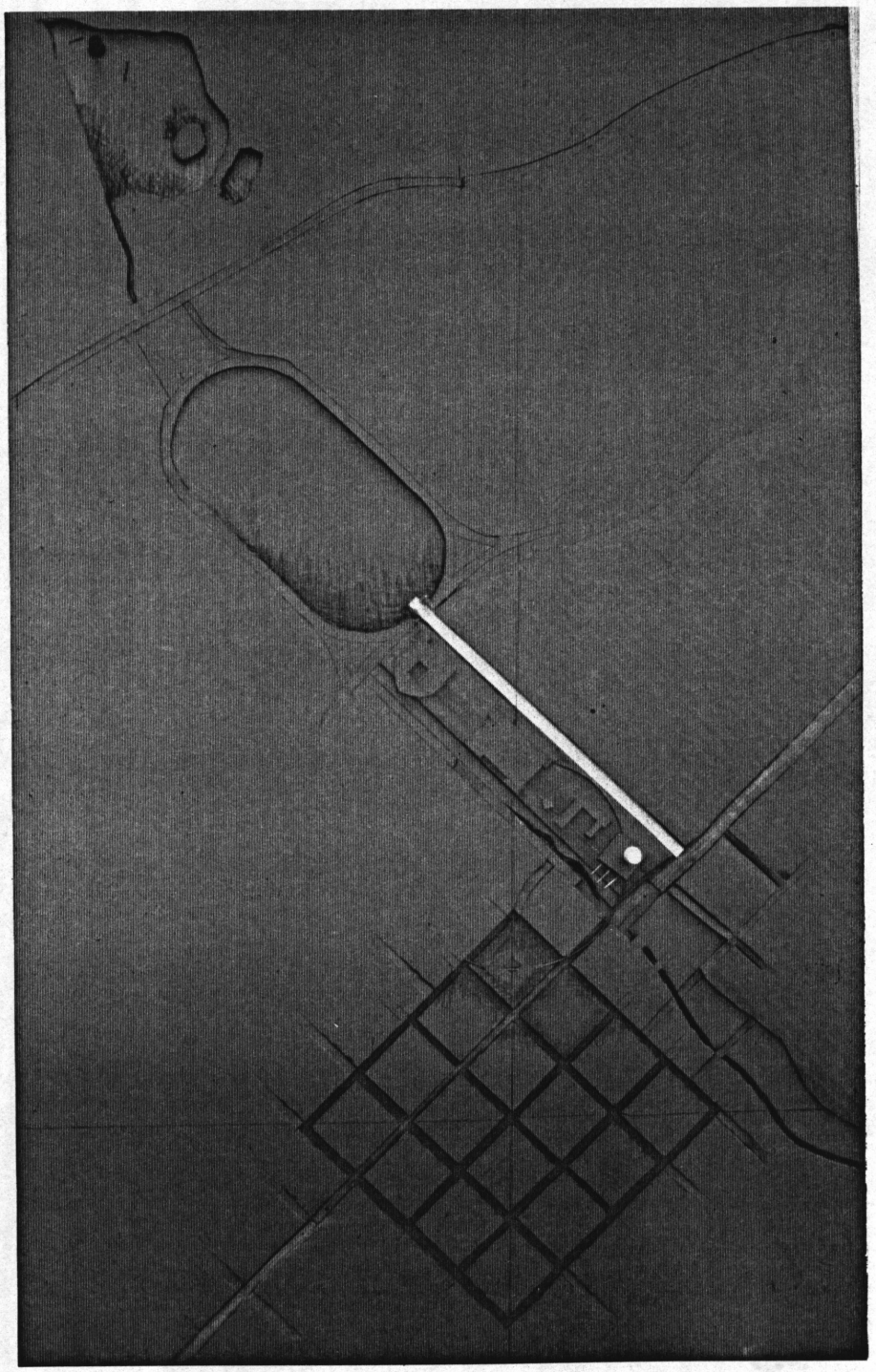
1

2



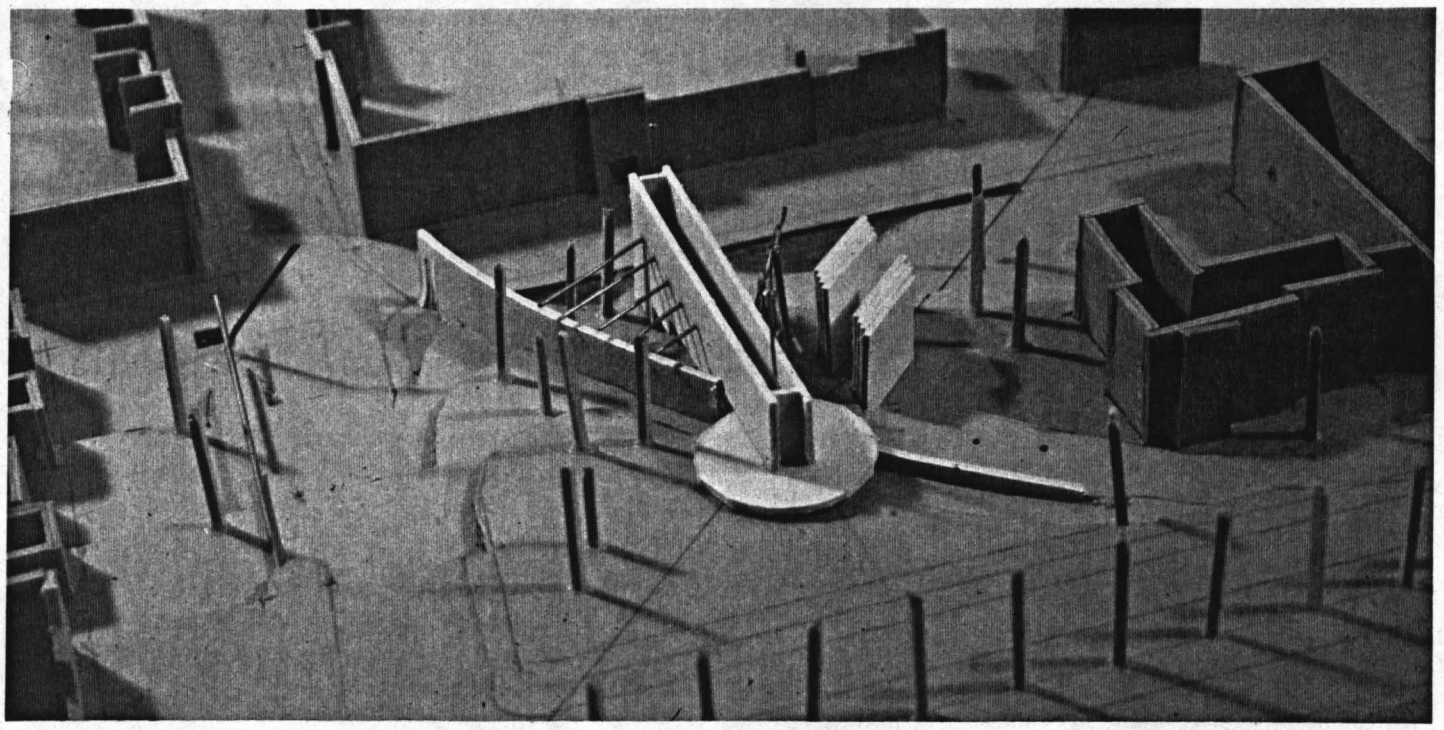
1

1 1st Model 1/200 =1' = 0"

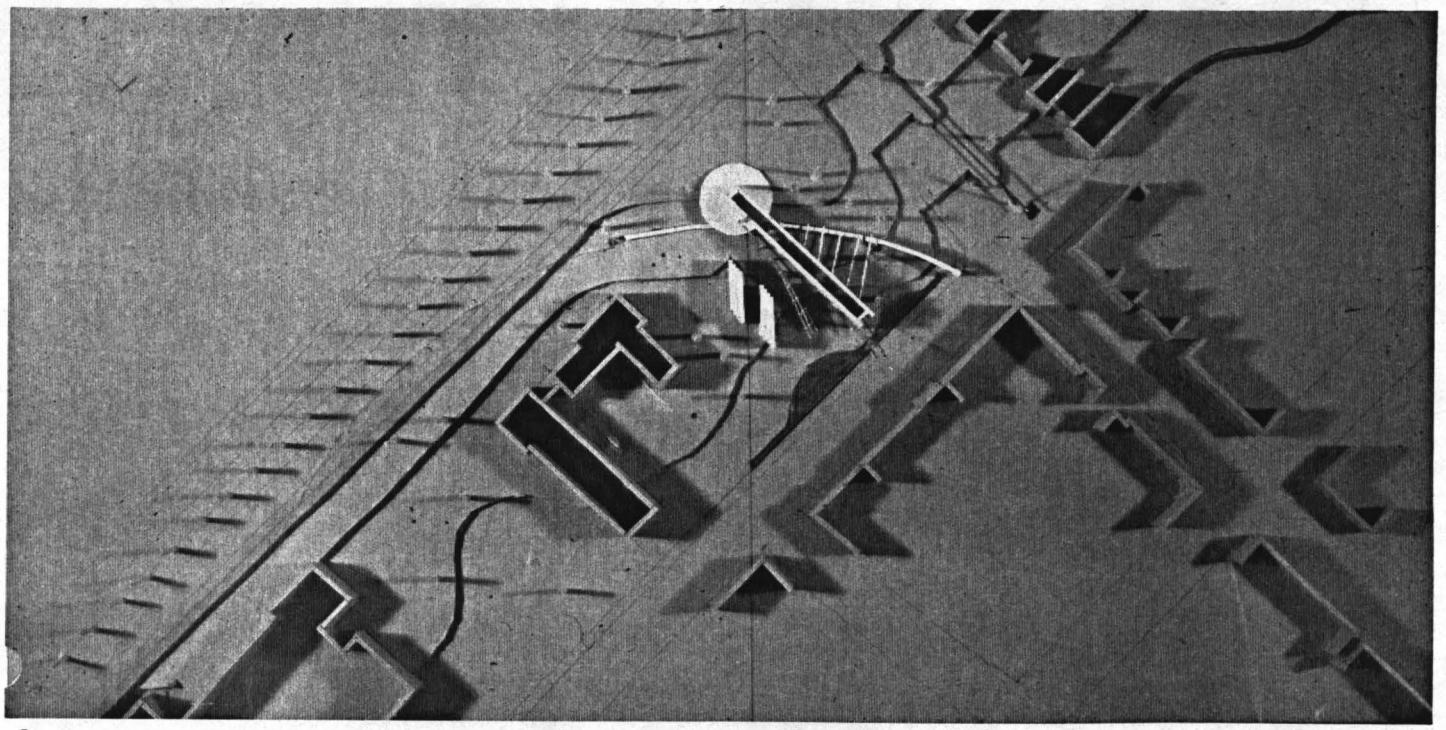


1

1 2nd Model 1/64 = 1' = 0"
2 2nd Model 1/64 = 1' = 0"

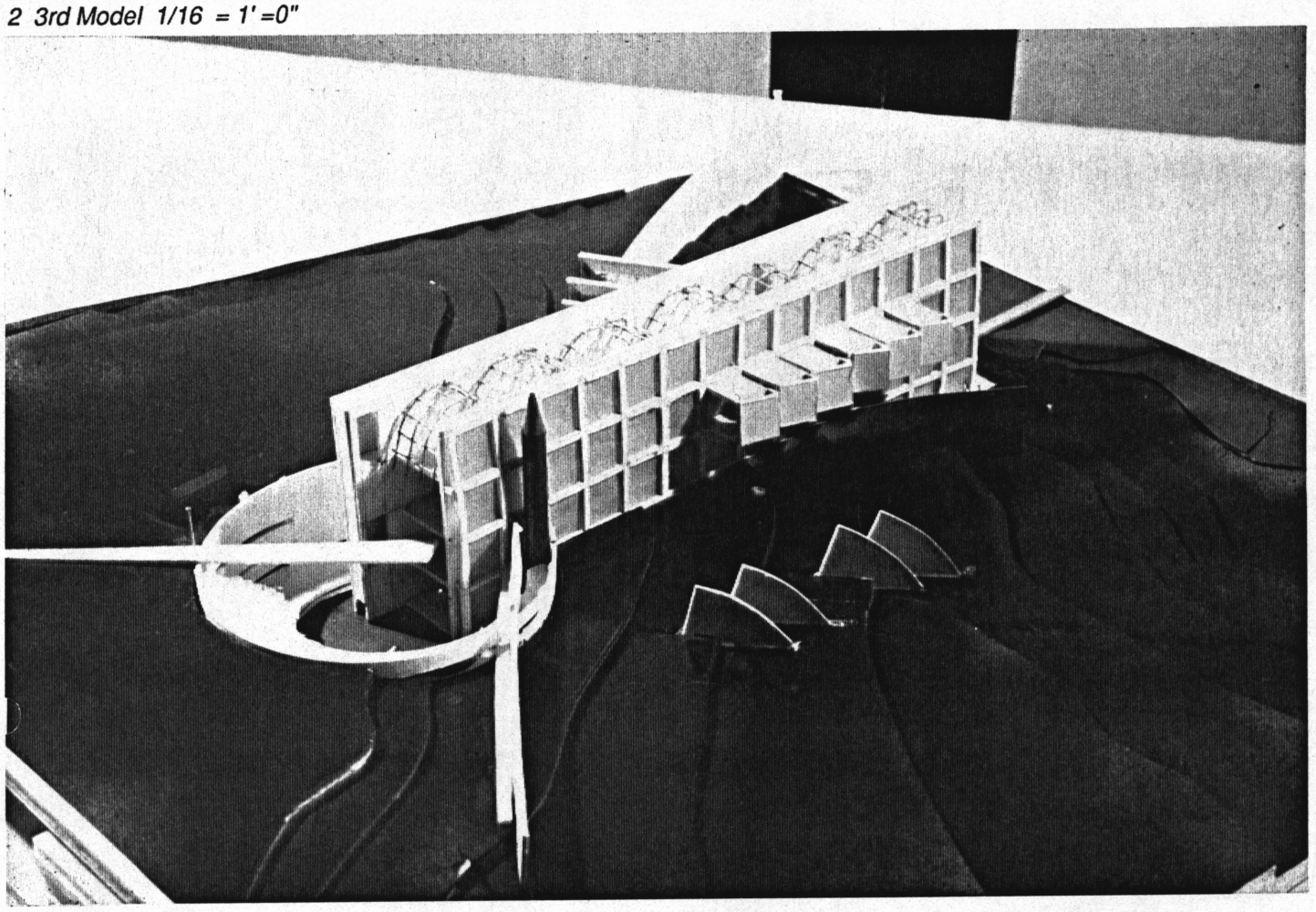


1

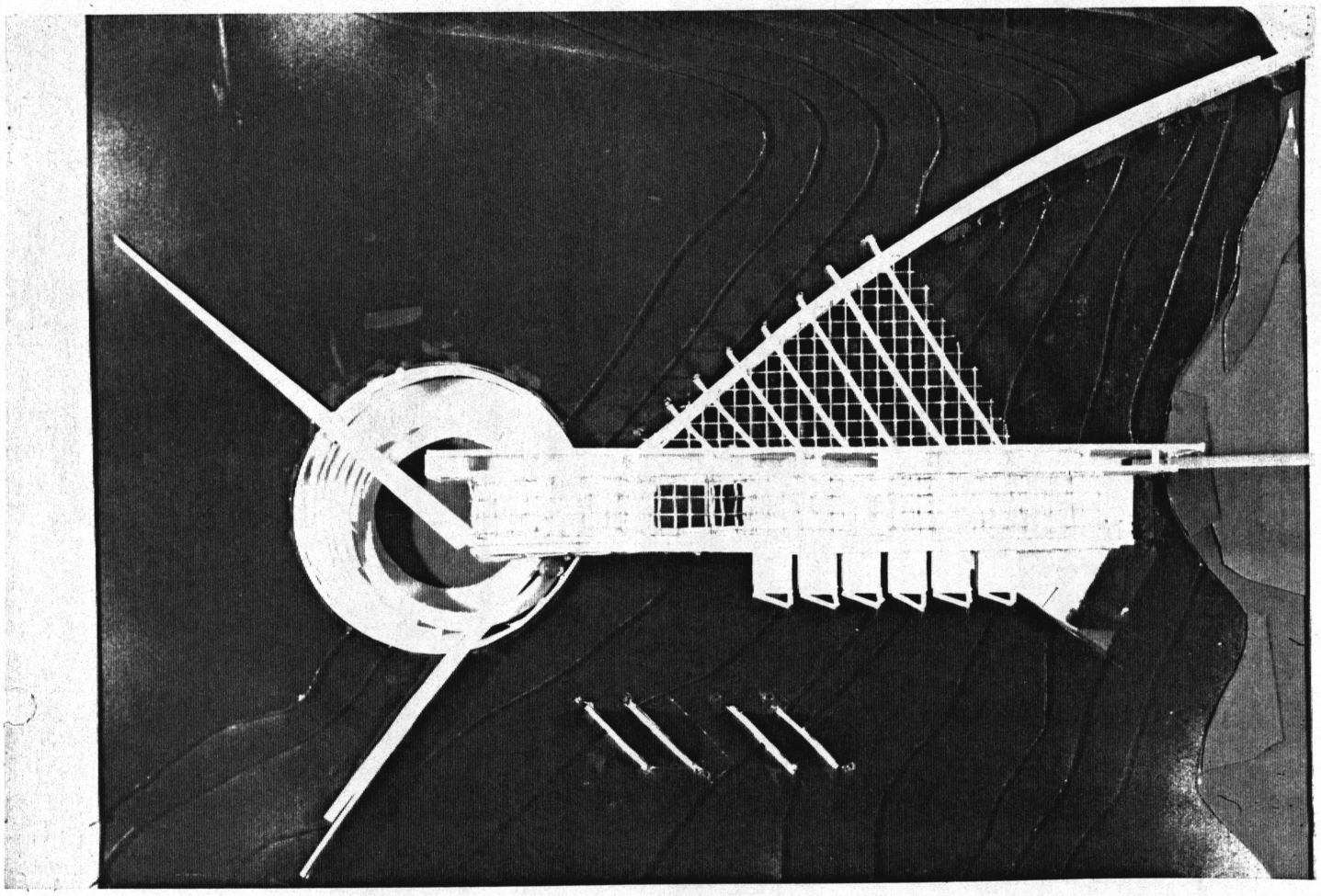


2

1 3rd Model 1/16 = 1'= 0"
2 3rd Model 1/16 = 1' =0"

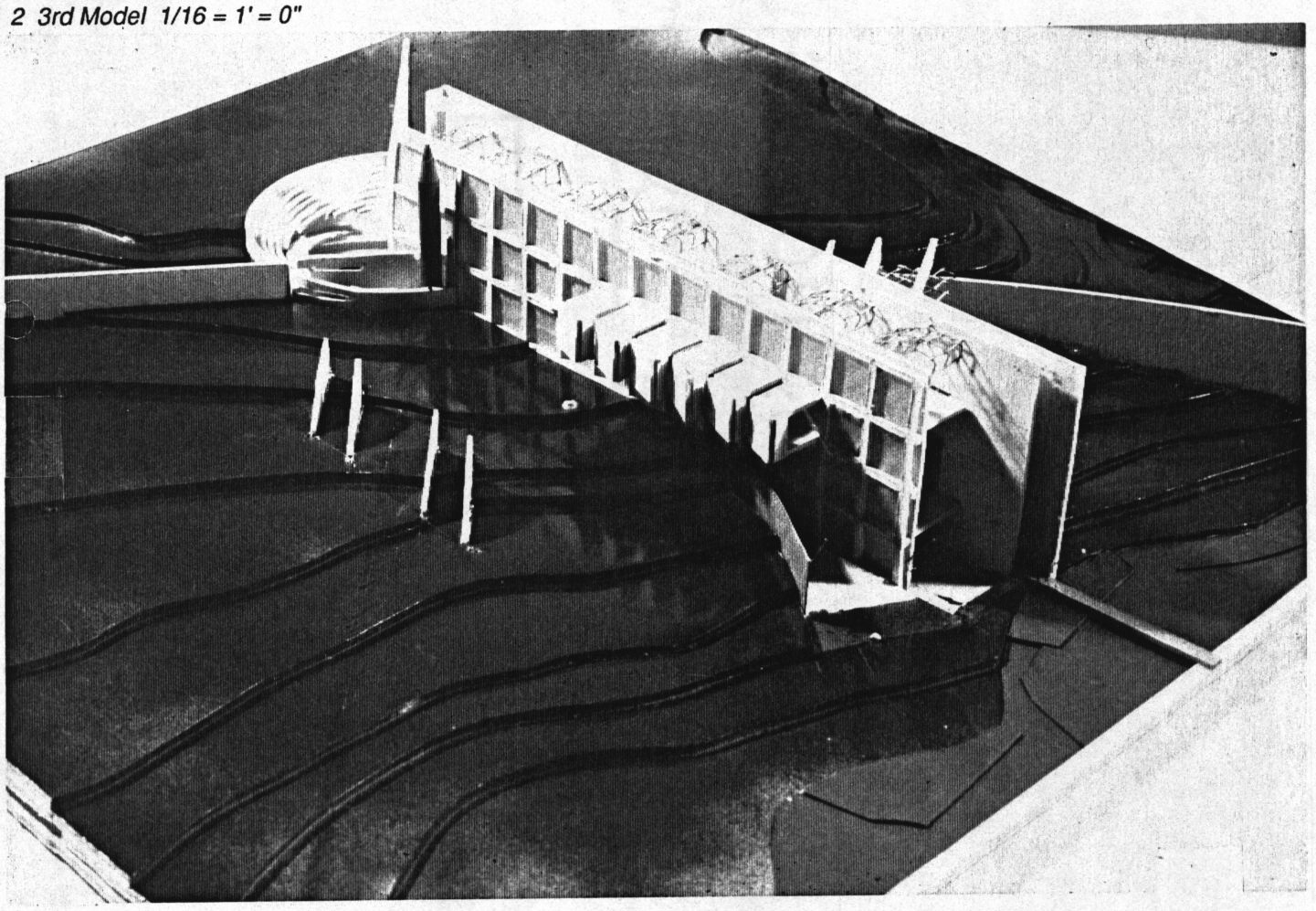


1

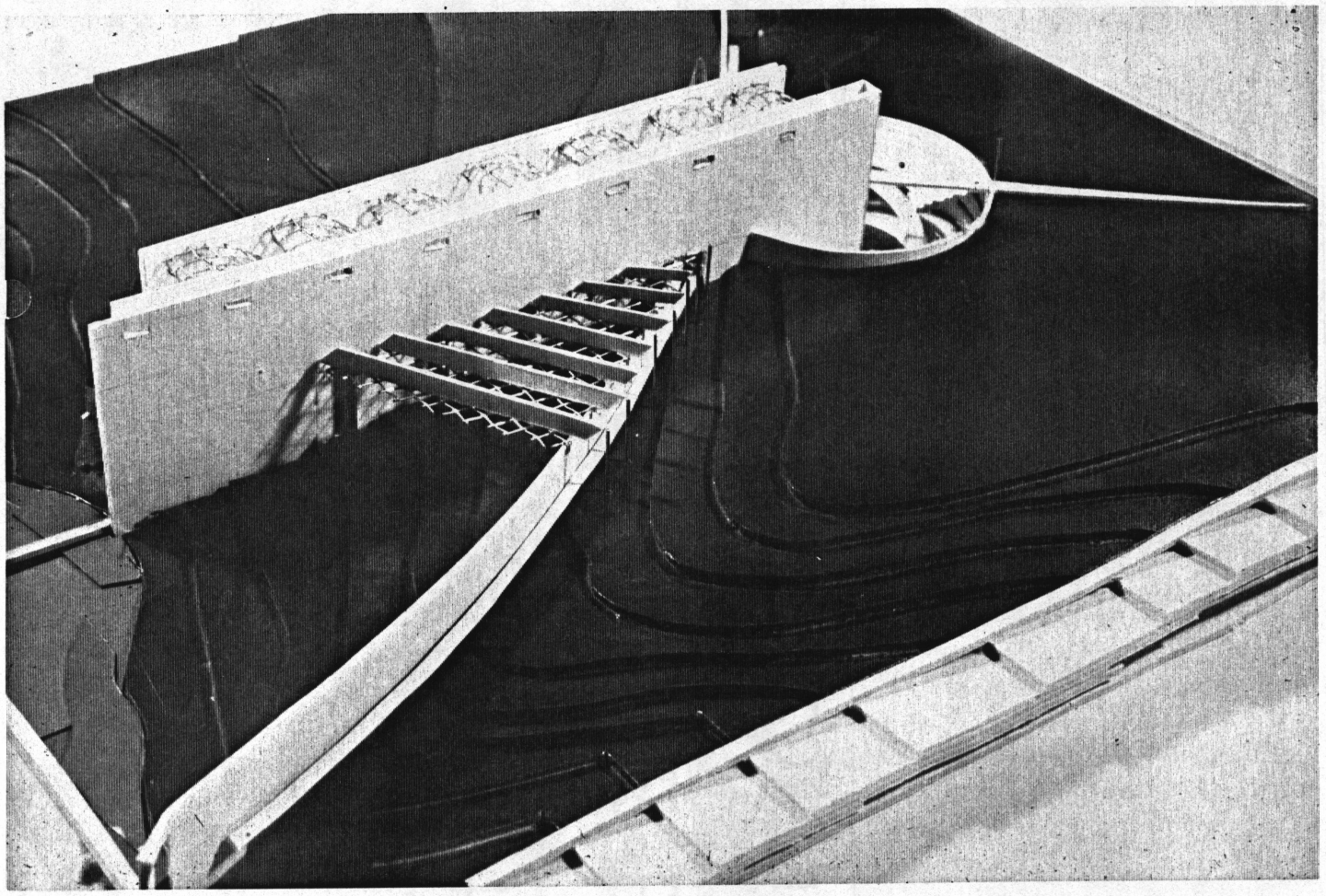


2

1 3rd Model 1/16 = 1' = 0"
2 3rd Model 1/16 = 1' = 0"

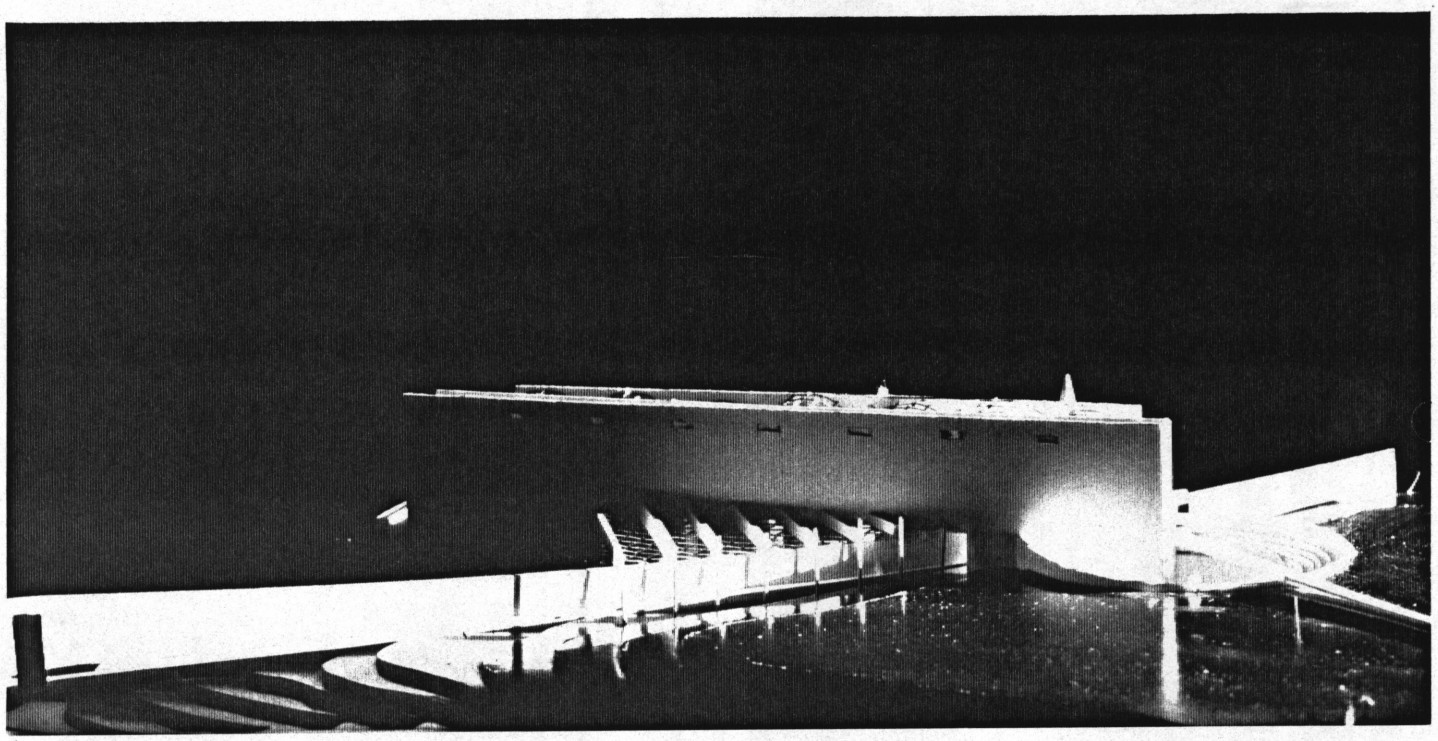


1

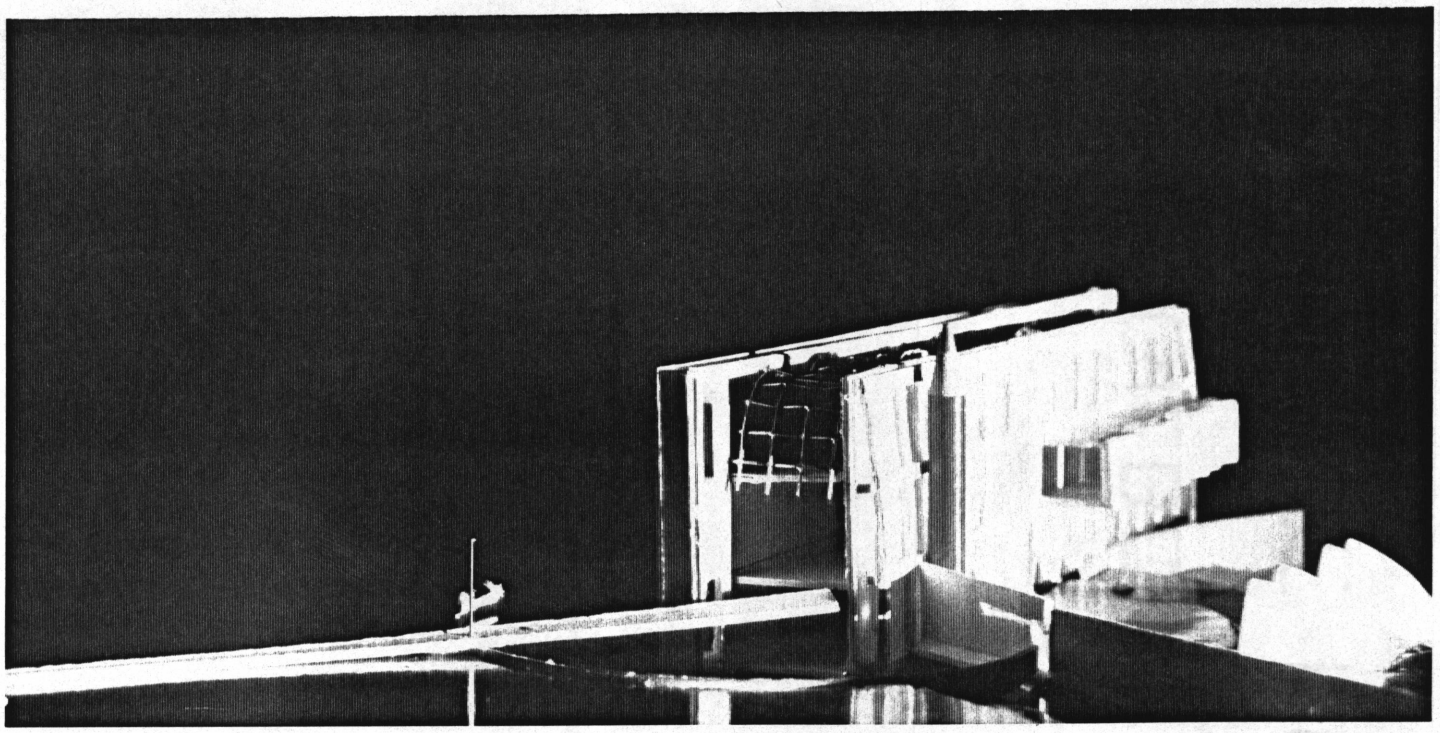


2

1 3rd Model 1/16 = 1'= 0"
2 3rd Model 1/16 = 1' =0"

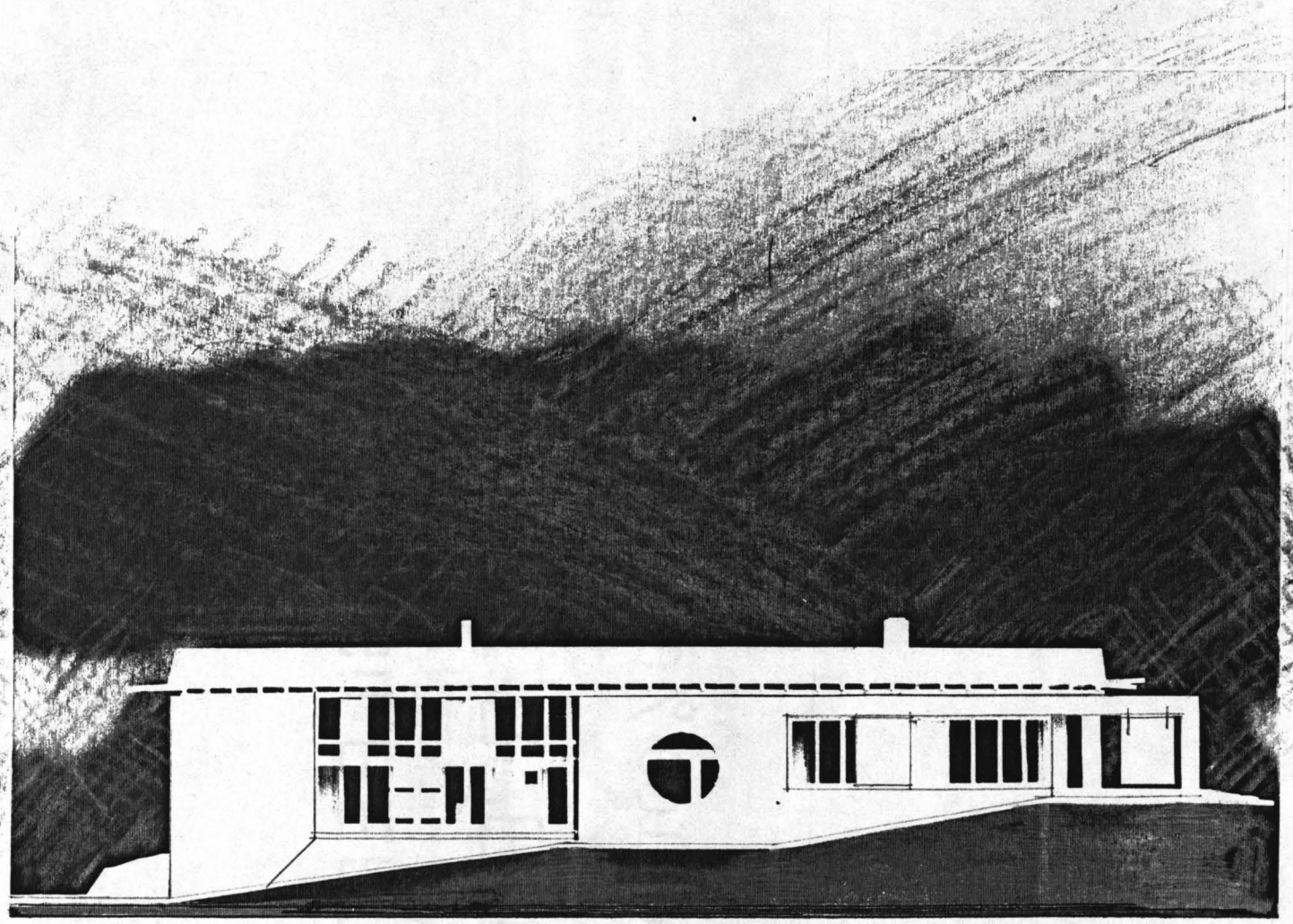


1

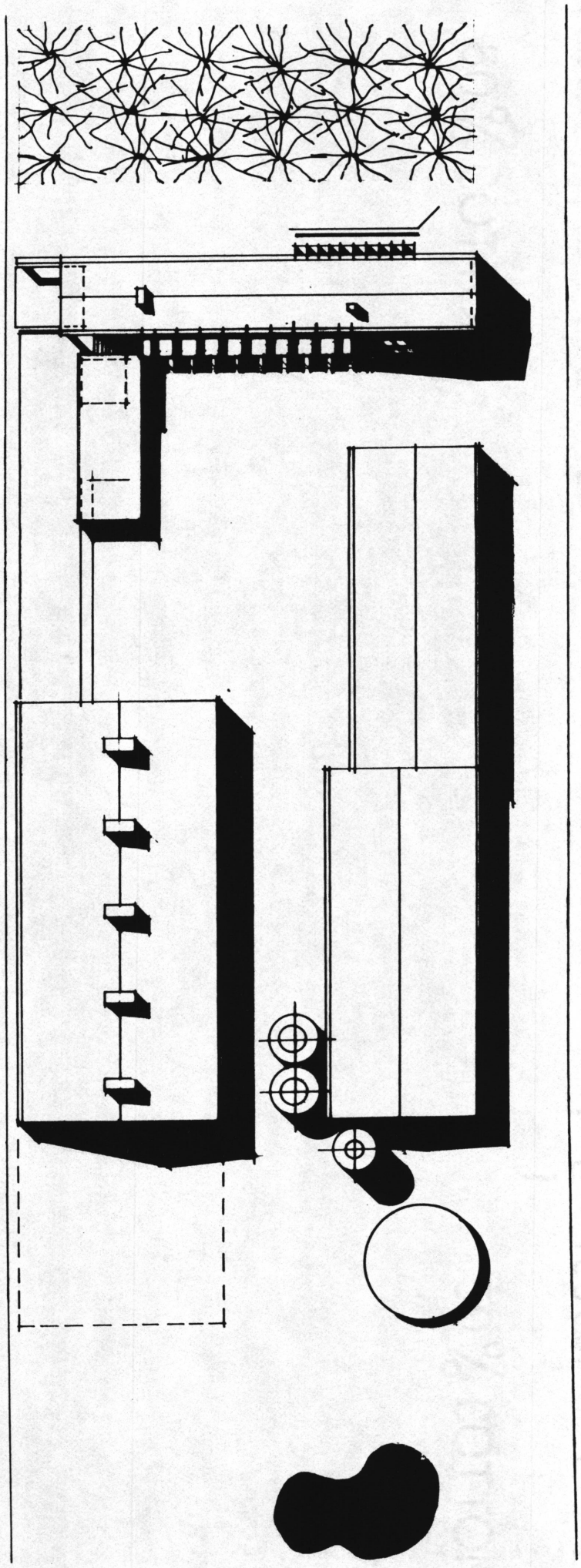


2

THE FARMHOUSE

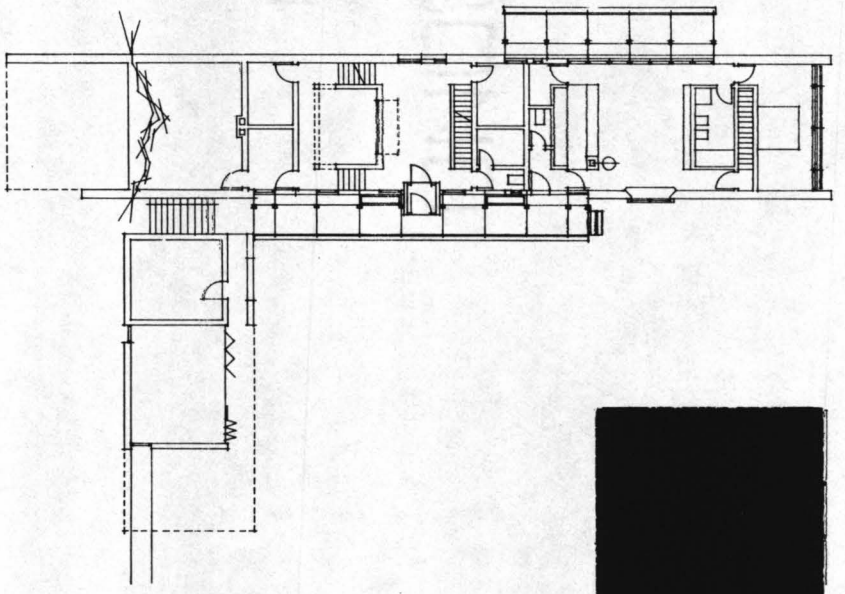


1 Siteplan

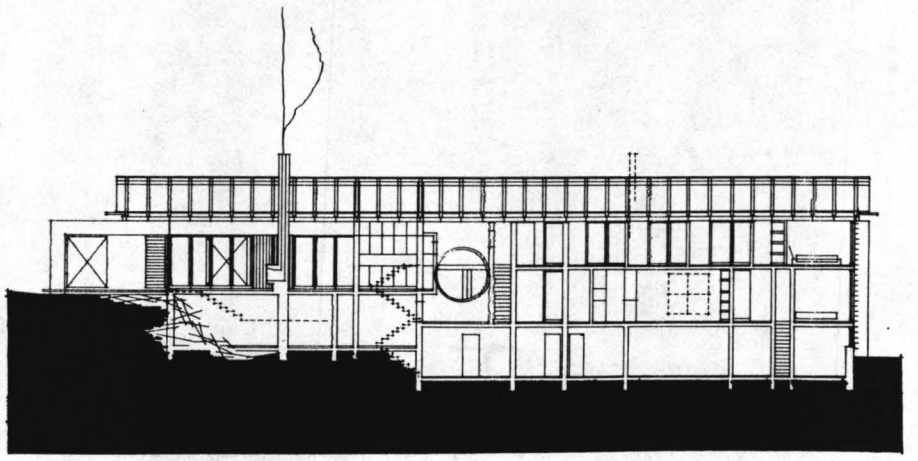


1

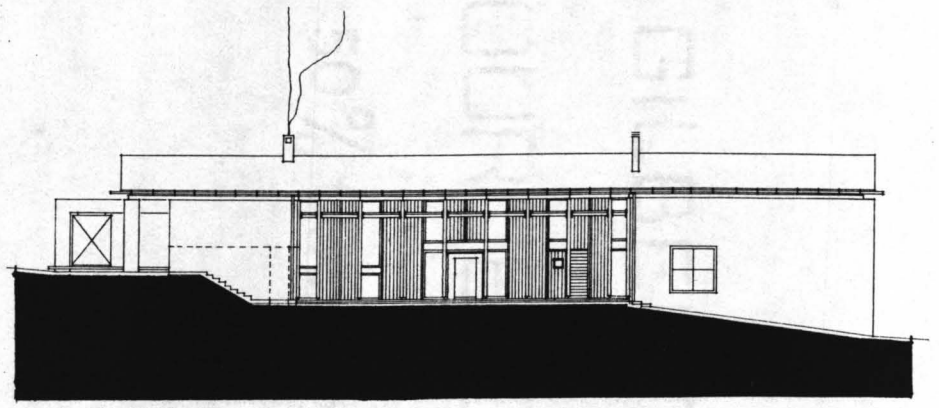
1 1st Floor Entrance
2 Longitudinal Section
3 Elevation East



1

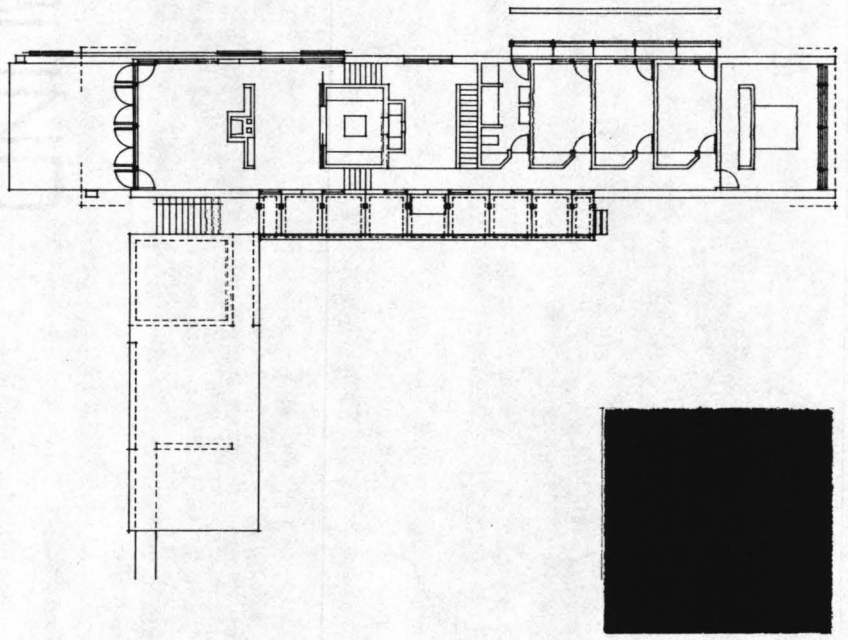


2

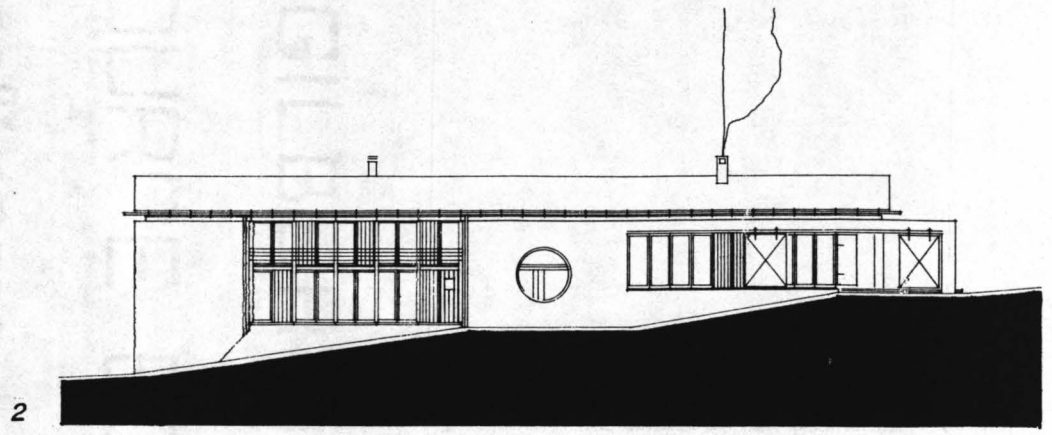


3

1 2nd Floor Living Area
2 Elevation West

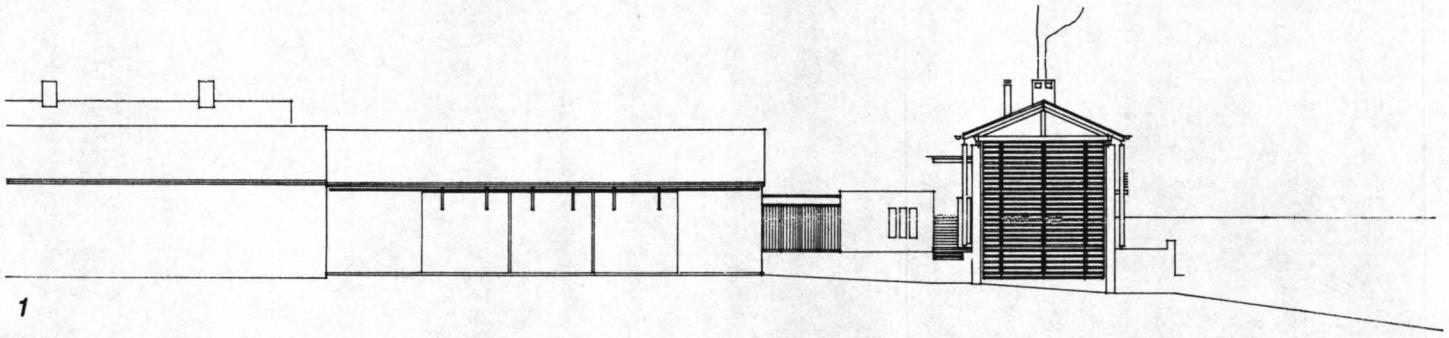


1

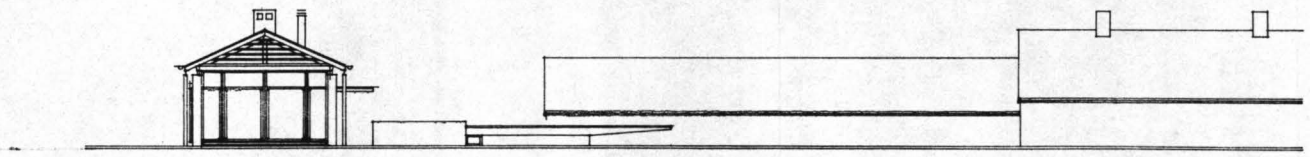


2

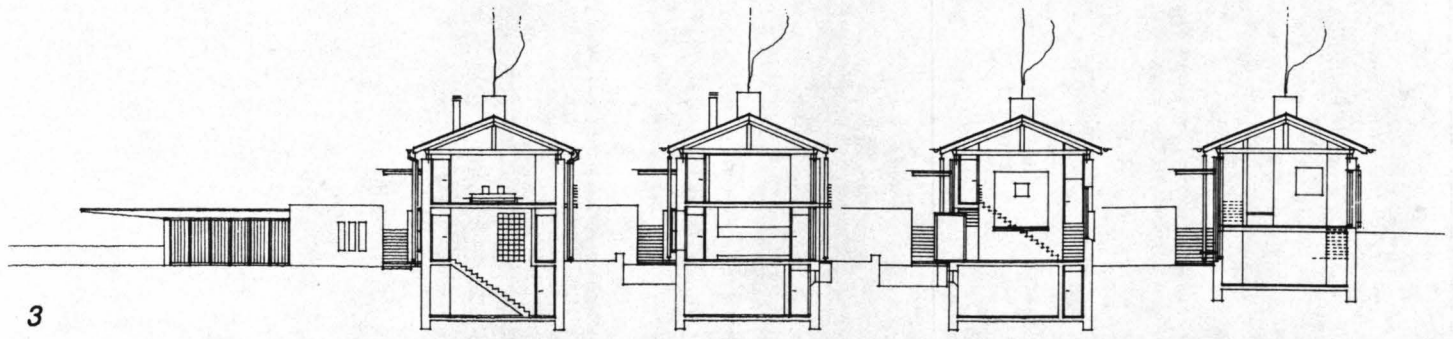
1 Elevation North
2 Elevation South
3 Cross Sections



1

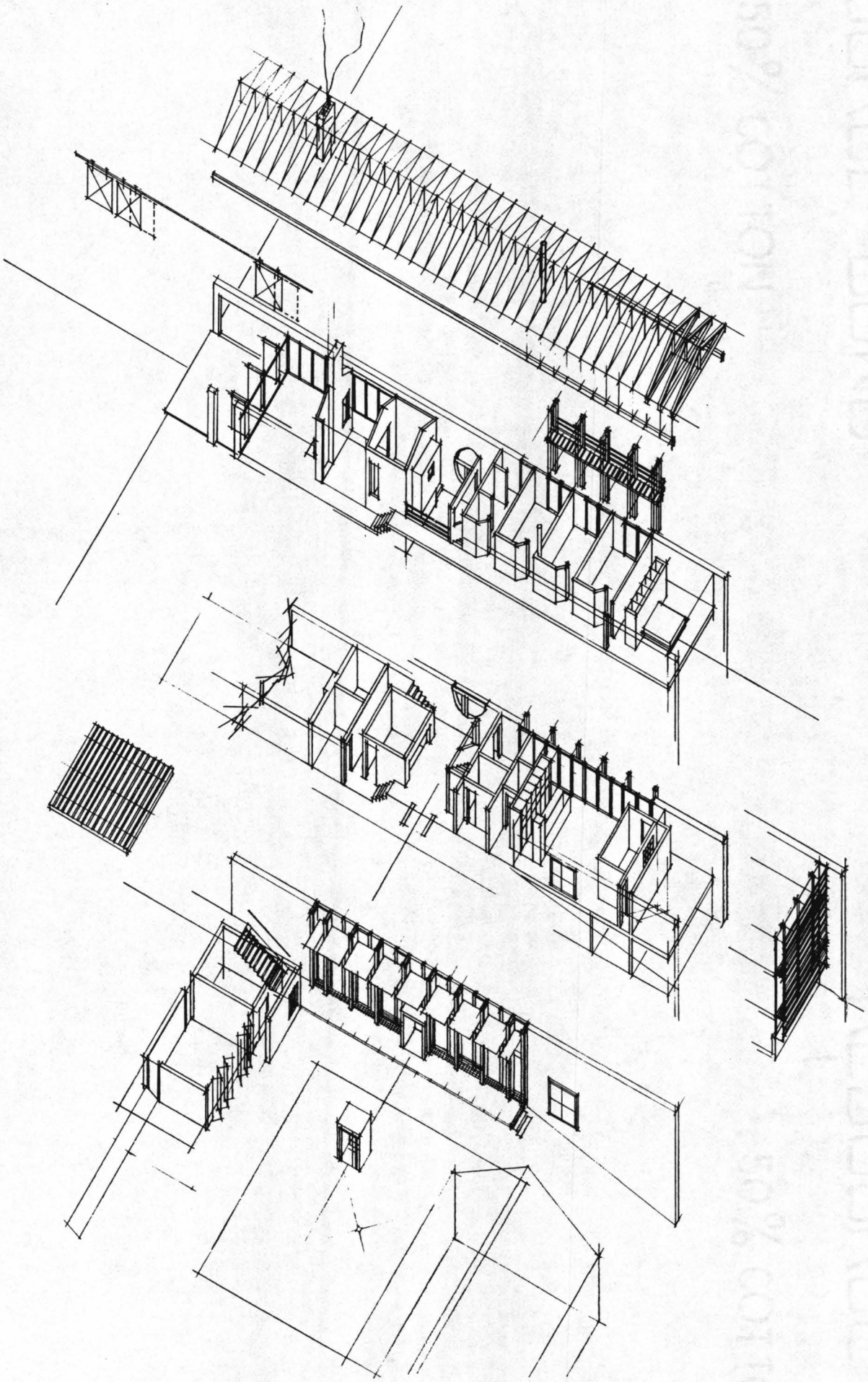


2



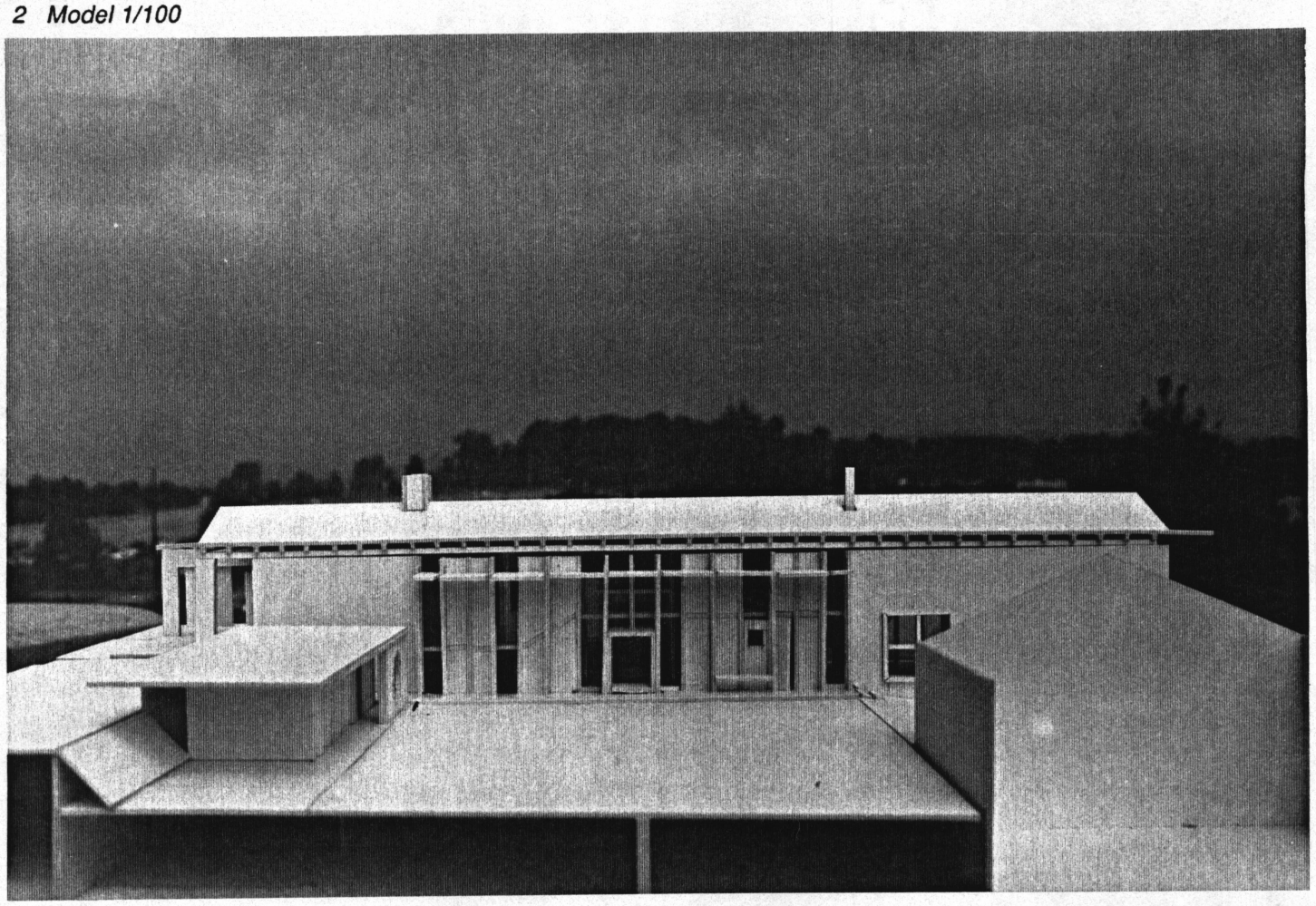
3

1 Isometric Explosion

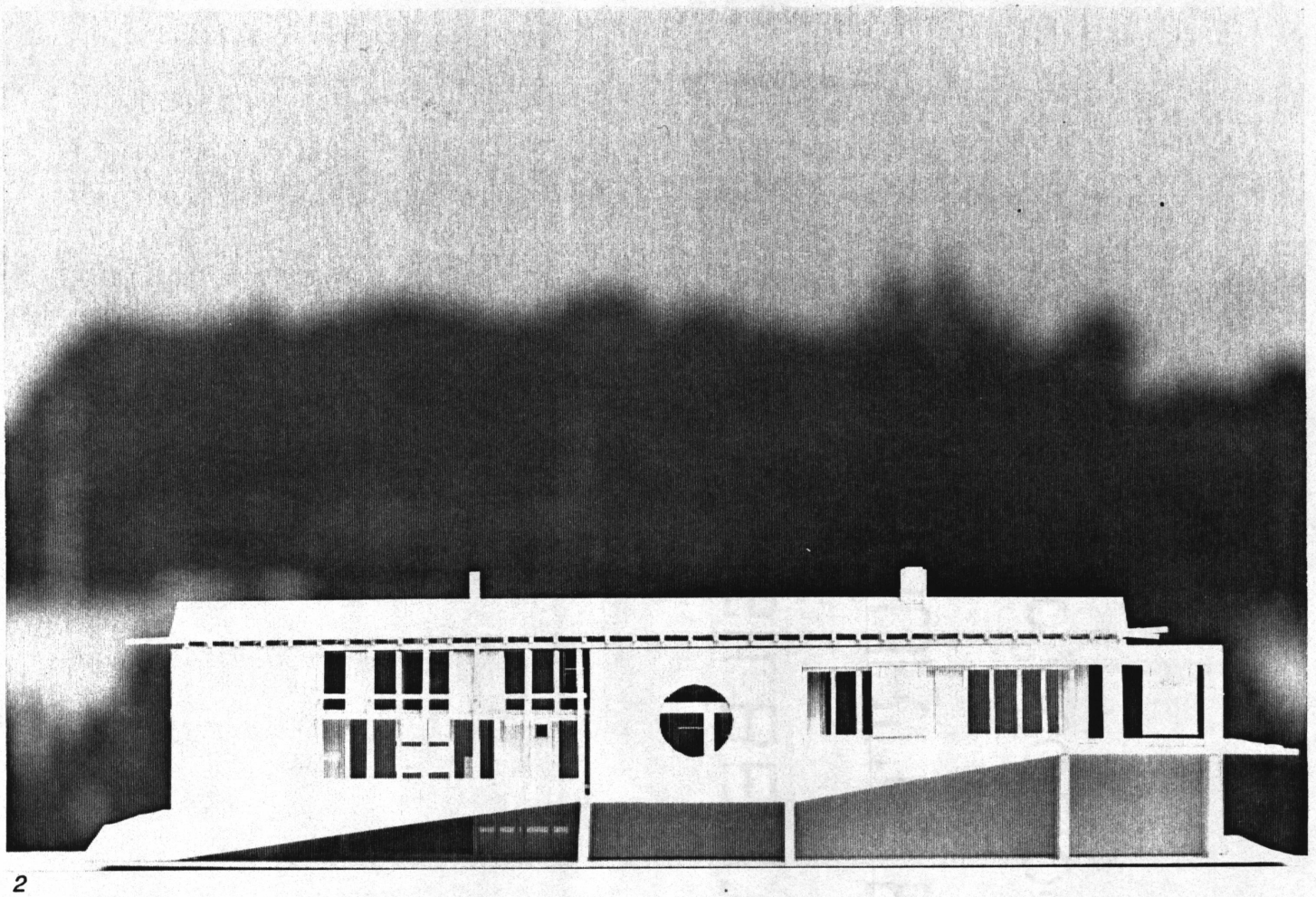


1

1 Model 1/100
2 Model 1/100

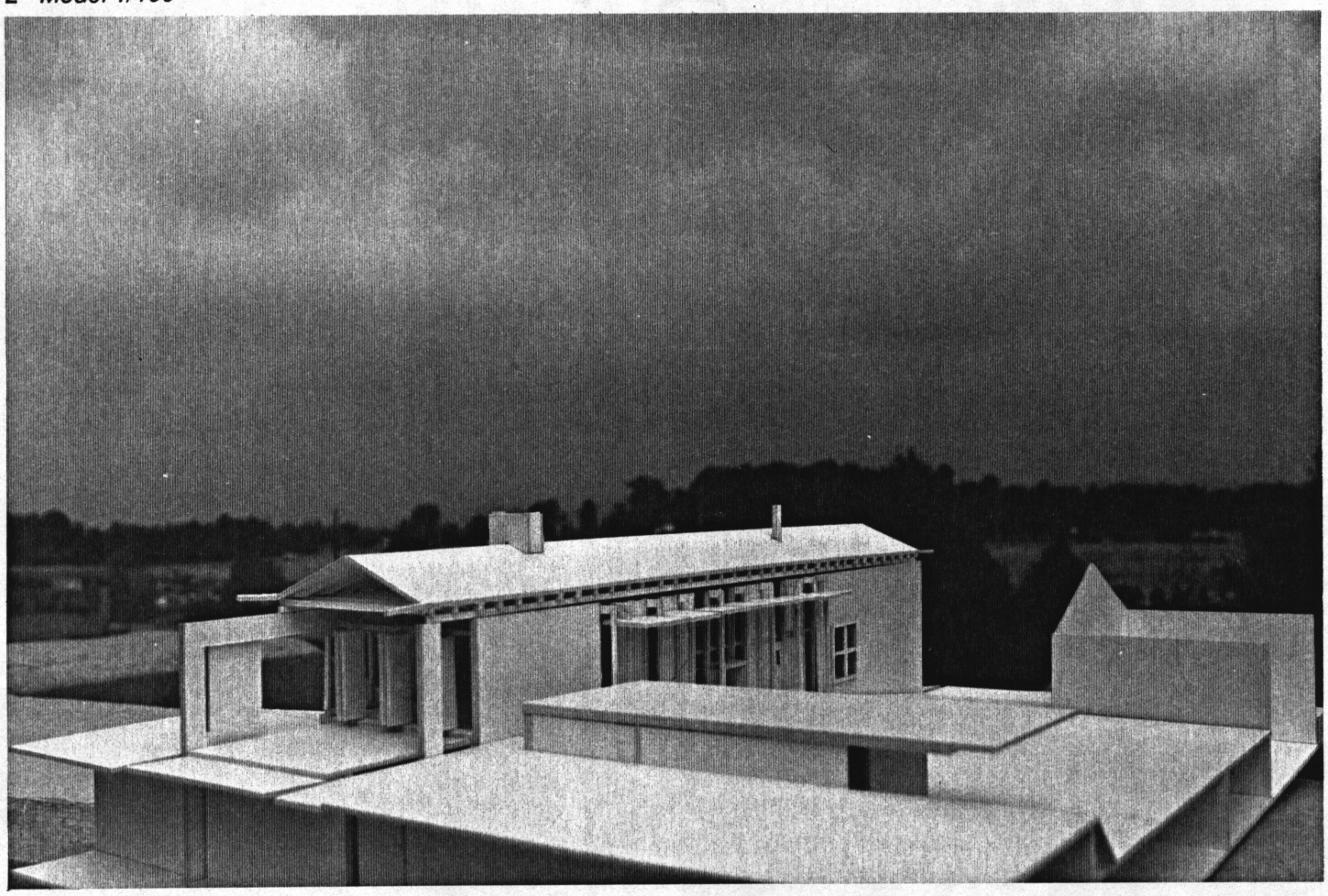


1

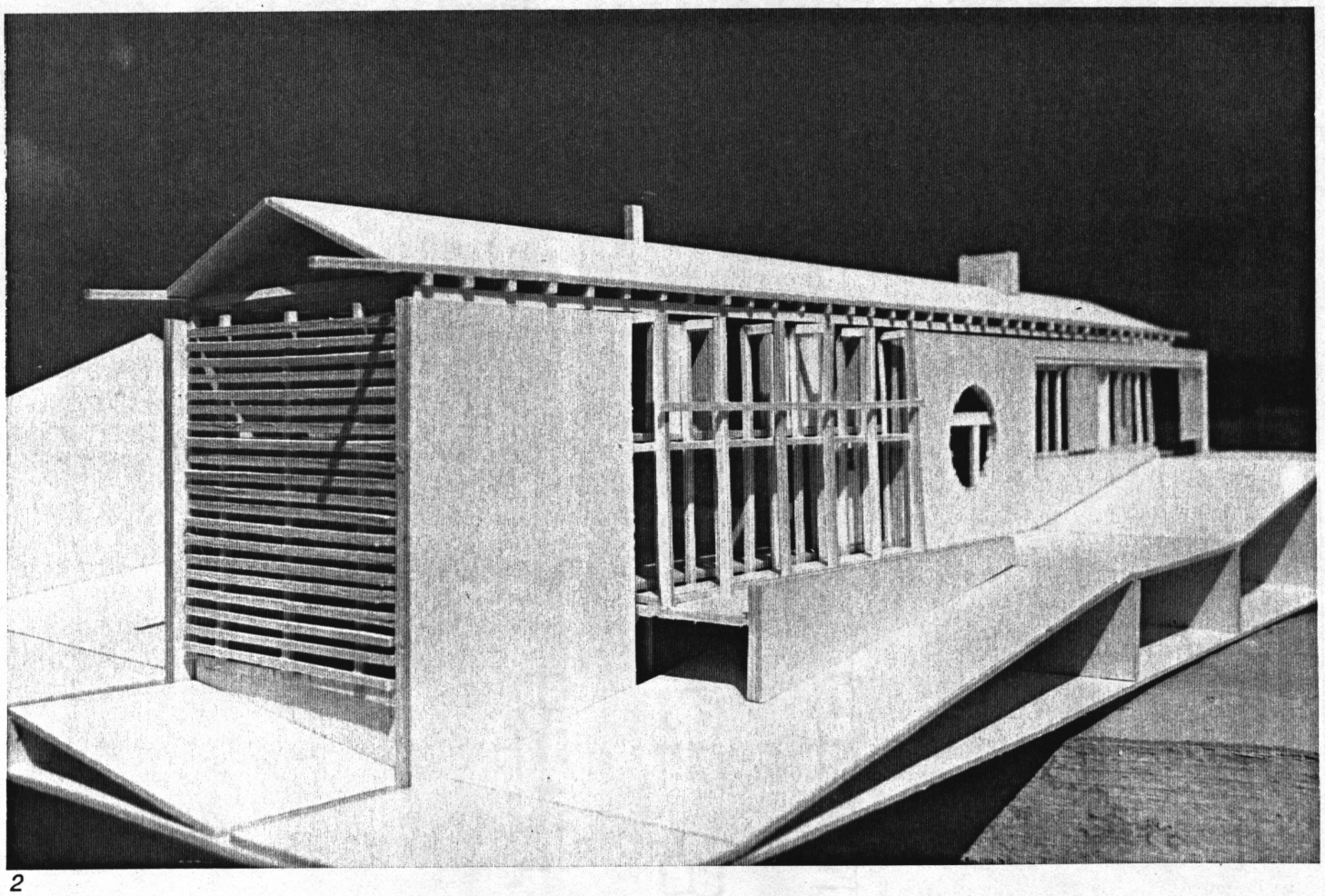


2

1 Model 1/100
2 Model 1/100

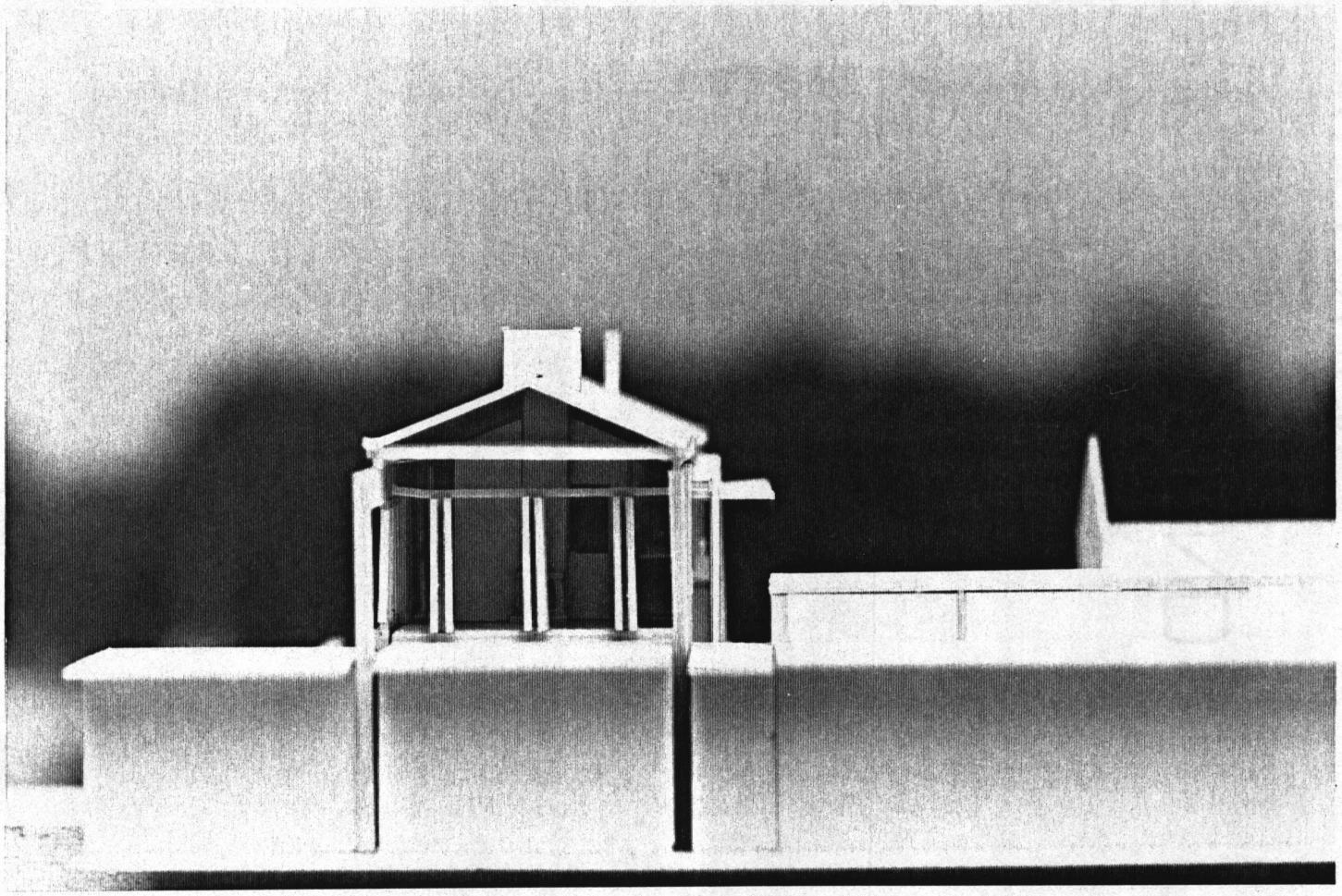


1

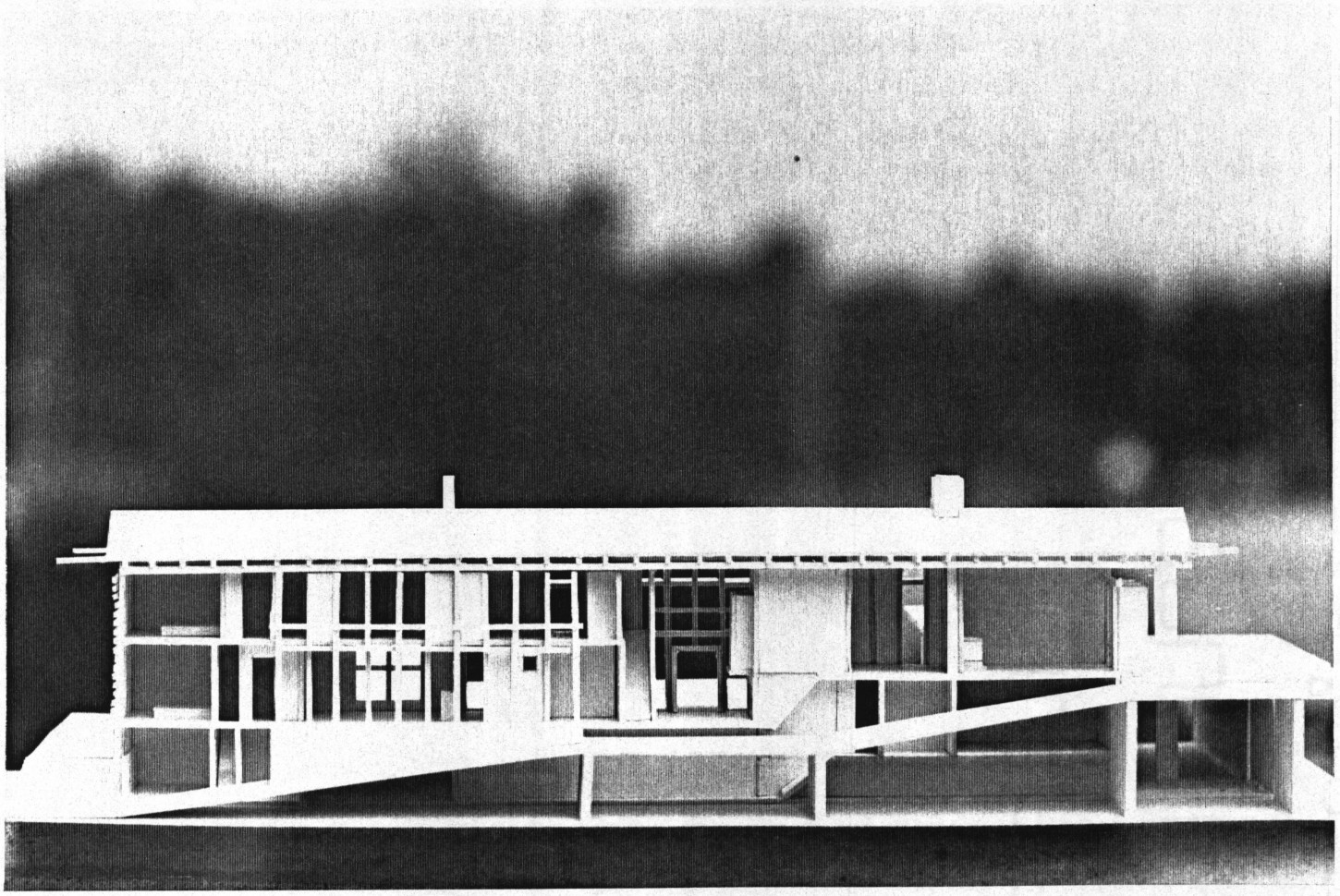


2

1 Model 1/100
2 Model 1/100



1



2

AMERICA AND THE MODERN MOVEMENT (1918-1941)

Seminar: Roots of Modern Architecture
Professor Milka Bliznakov

Historical Retrospect

Adobe, stone and earth cliff dwellings and other structures were the first settlements of the ancestors of the present-day Indians. In the earliest settlements by Europeans, the colonists built structures much like those they had known in their homelands, later adapting them to the demands of the frontier, climate and so on. There is no single 'Colonial Style', but several, including that of the English, French and Spanish. Although also popular in England, the classical revival architecture believed to be the first attempt to establish an American style: based on the rational principles of the classic Greece and Rome, the buildings usually have columns, forms and details derived from. Especially the buildings of Thomas Jefferson based on Roman examples.

Beginning about 1820 and extending well into the 20th century, architects designed buildings in many styles other than Classic or Gothic Revival , a state of affairs collectively known as eclecticism. Some architects chose a given style for each building while other took elements from a number of styles combining them in sometimes unfortunate ways. One of the most important styles were Beaux Arts, based on the historical classic training of American architects at the famous school of Paris.

Beginning in the late 19th century, architects attempted to discard the forms of traditional styles, used the latest structural systems such as iron and steel skeleton framing, eliminated or subdued ornament and produced functional buildings that expressed their functions and engineering. The Modern Movement began about the same time in Europe and in the United States, especially in the early work of the so-called Chicago School - William LeBaron Jenny, Holabird and Roche, Burnham and Root and Louis Sullivan. Their work paved the way for future developments.

America 1918 - 1941

Between World War I and World War II America witnessed the prosperity and prohibition of the 1920s and the Depression of the 1930s. It was a period of contradictions and ironies, of hopes and fears. Although the initial advances in American technology took place during the Industrial Revolution in the nineteenth century, it was not until after World War I, that the rapid growth of technology with the sophisticated machinery became diffused throughout American life. New sources of power, new communications, new forms of transportation, a new technologies in the home created what seemed to some an age dominated by the machine. Avant-garde painters and sculptors grasped the possibilities of the machine in the first decades of the century. In succeeding years furniture designers and architects began to recognize the machine as a source of beauty. The machine encompassed not simply the traditional arts - painting, sculpture, and architecture - but design as well: radios, plumbing fixtures and streamlined cars and trains. It refered to actual machines such as giant turbines as well as to new materials such as plastic an rayon. It also refered to mass production and to huge new corporations. And perhaps most importantly it evoked a modern sensibility: glossy Hollywood films, futuristic design schemes, superhighways, high-speed-transportation, and vast urban landscapes littered with stepped-back scyscrapers. The machine in all its manifestations - as an object, a process, a form-giver, and ultimately a symbol, - became a central force in American culture.

America and Europe

The relation of America and Europe at this time is a complex one. Although the American achievment is indebted to European ideas and examples, there were profound differences in the way the two cultures responded to and used the machine.
Whereas European artists and intellectuals were engrossed with the philosophical questions raised by the relationship of man and the machine, Americans tended to be more enthralled by the machine's practical applications. In Europe it remained essentially accesible only to the elite. By contrast, with mass-production techniques in place, Americans were making artist designed products on a tremendous scale.
European influence on American artists, architects, and designers came from many sources - Italian Futurism, French Cubism and Purism, German Bauhaus, The Viennese Secession, The Dutch de Stijl School and Russian Constructivism. In 1925 the Paris 'Exoposition Internationale des Arts Decoratifs et Industriel Modernes' showed the connection between art and industry and popularized modern French design in America. Of equal importance were the many European artists who immigrated to the United States throughout this period. Many Europeans saw in America the possibility of a truly modern culture, completely freed from the past, and rhapsodized about American technology, grain elevators, scyscrapers, and Henry Ford.

America and the International Style

A purified style of machine aesthetics began to replace Decorative Geometry in the late 1920s, and by the mid-1930s the setback modernist approach began to give way to a new image, perceptibly lighter and more volumetric in form and purified of excessive decoration. The essence of this deign approach was a simplification of geometrical forms, the reduction of all elements to a few simple shapes, and the avoidance of applied ornamentation. 'Form follows function' and 'less is more' are phrases associated with what most people consider the only true modern style. This approach had its American adherents, but in many ways it was a product of the European Avant-garde, particularly the artists and designers associated with the German Bauhaus.
The International Exhibition of Modern Architecture shown at the Museum of Modern Art in New York, 1932, and then on the road in various forms to more than thirty american cities in the next six years, assisted in this reorientation.
The feeling at the Museum of Modern Art in those years was that European architecture, design, and art were the most modern and sophisticated and should be the model for Americans. Hence the emphasis of the International Style Exhibition was upon the four Europeans: Le Corbusier, Gropious, Mies van der Rohe, and J.J.P. Oud. But the work of Americans was also shown, including Richard Neutra's Lovell House and George Howe and William Lescaze's PSFS Building in Philadelphia. Ironically both were immigrants with a European education. Frank Lloyd Wright, therefore the only American, was also included, because he was an acknowledged leader of Modern Architecture - especially by the Europeans - even though he didn't fit stylistically: the Europeans were classicists and Wright was a Romantique.
The International Style succeeded in a cultural atmosphere where in the tradition of landscape romanticism and the Jeffersonian

town-hostility the open space conception of the Modern has been taken up.
Ironically American architecture of the machine age which sought to escape from the embrace of the old world found itself caught in a stylistic term and attitude primarily old world in origin.

George Howe and William Lescaze, with their PSFS Building, 1932, a thirty-two-storey scyscraper nearing completion, approached most closely the strict stylistic requirements of the International Style. Asymmetrically in the off-centered 'T'-shape of the tower, lacking in unfunctional setbacks and applied ornament, dynamic with its slightly cantilevered tower face, and dramatic with its vast, glazed banking floor, the PSFS's different functional elements were clearly stated. The enormous red neon sign on the roof was approvingly noted.

Richard Neutra was the most sophisticated American working in the International Style. His Lovell House easily ranks with the best European works, and went far beyond them in the utilization of the machine age technology. The prefabricated steel onto was erected in fewer than forty hours. The planar white walls were of gunite, a concrete mixture shot from hoses onto steel panels. Yet the Lovell House had a rambling quality of composition, a kicket-up parapet, volumetric setbacks, and projections that betray the influence of Frank Lloyd Wright, for whom Neutra had worked in 1924. On the interior certain machine age motifs dominated: a long polished-aluminum lighting trough streched through the living room and the library.

As noted Le Corbusier, Gropius and other architects of the International Style had been known to some American architects since the mid-1920s. That the syle was interpretated as a machine expression is evident in Lawrence Kocher and Albert Frey's Aluminaire House of 1931. The Aluminaire House, built in ten days, was a demonstration building for the New York Architectural League Exhibit of 1931. Kocher and Frey's Aluminaire House was loosely based upon Le Corbusier's Domino and Citrohan house projects, and built of a light steel-and aluminum frame over which were placed insulation board, tarpaper, and thin, corrugated, polished aluminum sheets. Kocher and Frey claimed that in mass production the Aluminaire would cost $ 3,200, but the only one was built.

Housing was an area in which architects concentrated their efforts to produce an economical alternative to the hand-built and individually designed house. Houses of the future littered the late 1920s and 1930s, as architects and critics tried to adapt the principles of mass production and standardized machine-produced parts to the American House. For the second year of the century of Progress Exposition George Fred Keck built the Crystal House. Especially dramatic when viewed at night with lighted glazing and the streamlined shape of Fuller's Dymaxion automobile visible in the basement, the Crystal House refined some of the technological promise of the House of Tomorrow. Except for a poured-concrete slab, the entire house was prefabricated. A narrow central core contained the utility conduits and steel supporting columns; otherwise all vertical supports were pushed to the outside, beyond the glazed perimeter, and expressed as narrow and elegant lattice trusses that carried the steel floor and roof plates. The interior was seen as a liquid expance of space: furniture units provided the major divisions on the main living floor; only the kitchen was enclosed. All exterior wall were of glass, either of clear plate or one of two types

of translucent glass, depending on the degree of privacy required. The furnishings were designed by Leland Atwood, who had contributed to the interior of the House of Tomorrow.

Frank Lloyd Wright's relationship to the machine age is ambigious. Although he appeared at times a prophet of the machine as servant and form-giver, fe was unwilling to accept any interpretation of the machine but his own. In 1936 - 37 he designed his answer to the low-cost, single-family house: the first Usonian House for Herbert Jacobs in Madison, Wisconsin. The house, which cost $ 5,500, including the architect's fee, incorporated several advanced technologies. Wright composed a pavillion form of preassembled wood walls on a slab containing radiant heat and electrical conduits; a flat roof; and only a minimal amount of hand-built brick walls for the fire-place, kitchen core, and one end of the living room. Everything was standardized: Extraneous interior trim was eliminated to the point of bare bulbs dangling from electrical conduits. The house was closed to the street; the main entrance was through a carport - one of the first - and the combined living and dining areas and the bedrooms opened onto the garden. To Wright the Usonian house utilized the machine in an organic manner and was far more American than the 'sterilized' and 'pernicious' International Style pronoted by the Museum of Modern Art.

In contrast to the prototypical and demonstrative character of most Midwestern and few Eastern examples of machine housing of the period, the architects of Southern California found they could actually built for clients houses that partook of the machine. The difference undoubtedly lay with the more liberal, experimental and (sometimes) hedonistic society that tended to congregate in the Los Angeles area. Los Angeles in the 1920s and 1930s appears the only area in the United States where a true architectural avant-garde existed similar to that of Paris, Utrecht, and Berlin in the 1920s. Iŋ the mid-1930s Neutra, while retaining certain vertiges of the now codified International Style idiom, investigated more thoroughly the machine as both image and form-giver. The Beard House, Altadena, California, 1934-35, used hollow steel channels for the walls, open-web steel trusses for the roof, and steel web beams as a base for the concrete floor. A plenum thus resulted from the steel shell through which hot or cold air be circulated. The machine image was further emphasized by painting the exterior a glossy silver-grey and using large areas of clear glazing, some of which could be pulled open to the lush landscape. The interior was carefully detailed, with the main living space containing chromium steel columns, battleship gray linoleum floor covering, brown masonite on the walls, and exposed steel trim.

While the process did make an impact, the overall effect of the machine was more in the rhythm of design and the quest for a new image. The machine liberated architectural imagery in the 1920s and 1930s; however, the real impact of the machine as a process would not be felt until the post-war years, when housing was mass produced by builders across the United States. Machine processes were applicable to any style of houses.

America and the Streamlined

The other major factor in the changed visual appearance of American architecture in the 1930s was the emergence of the sleek,

streamlined body, the machine in motion. Rounded forms had appeared in buildings that became identified as the International Style. Americans found a unique expression in the aerodynamic form of transportation machines - automobiles, trains, and airplanes. Streamlining became a metapher for speed, an image industrial designers relied on to reflect confidence and control in the face of economic and social difficulty. Horizontal lines, curved corners, smoth surfaces, and frictionless parts all contributed to a feeling of speed, efficiency, and reliability. Streamlining also became popular for its elegance and refinement of forms. To the general public of the 1930s it was the ultimate statement of American design.

However, the major impetus for architectural streamlining came in the early 1930s when Norman Bel Geddes published his House # 3. Bel Geddes stressed the machine-like and modern aspects. Features such as strip windows, roof terraces, the color white, and the pipe railings reflected his knowledge of the European International Style; the rounded form used for the garage, the entrance canopy, and the front of the main block were examples of streamlining. The crank plan and the elevated area over the living room were more American. Technolgically, Bel Geddes claimed with built-in lighting, dimmer switches, air conditioning, and a turntable in the garage. Overall it imparted an air of nautical efficiency, of a large liner with sheer hulls, and a superstructure, a self-contained unit for the American family.

Even more nautical was the extraordinary E.E. Butler House in Des Moines, 1935-36, designed by the owner and George Kraetsch. A poured-in-place concrete structure with seven levels bisected by an interior ramp, the Butler House is integrated vertically. Designed to be technologically up to date, it was filled with integrated lighting in each room and advanced appliances such as a garbage disposal, dishwasher, and towel dryer in the kitchen.

Streamlining in American architecture was generally restrained, a curving wall or two, a little pipe-railing; however, in Southern California, it became a more aggressive and overall expression. The Pan Pacific Auditorium, Hollywood, 1935, by Wurdman and Becket, is a vast, cavernous structure, and the major architectural interest is the entrance and offices. Tall finned pylons that appear to have been shaped in a wind tunnel contrast with the more horizontal offices to the sides, with curved corners, strip windows, and pipi-railings. The degree of abstraction obtained in the Pan Pacific Auditorium, where the forms are streamlined, but the specific machine reference is hidden.

Robert Derrah's Coca Cola Bottling Plant and Office, Los Angeles, 1936, is actually a remodeling of four separate buildings on the site. Derrah wrapped a wall around the four, added a bridge, and used portholes, watertight bulkhead doors, and ship's ladders on the exterior. On the interior Derrah recrated the promenade deck of an ocean liner with simulated steel columns, wooden ceiling beams, rivets (of wood), louvered doors, a pair of davits for life boats, and large ventilators.

Naturally streamlining was applied to buildings concerned with transportation, such as bus terminals, a new building type. W.S. Arrasmith designed a number of terminals for Greyhound. The facade is symmetrical, its focal point the raised tower crowned with a chrome raising greyhound. The entrance is exuberant, with a cantelevered marquee in polished aluminum and curved walls and

corners. The building was a conscious effort to reflect an image of speed, efficiency, and modernity; it implied adventure in traveling.

Streamlining became the image for new resort architecture that sprung up in the late 1930s in places such as Miami Beach. The totality of the overall ensembles of gaily painted facades with long fins, ribbon windows, towers, portholes, and rounded corners adds up for more the frequently banal individual unit. Henry Hohauser, the leading Miami Beach architect, produced some threehundred designs for small hotels and apartment buildings. His formula was a frontal, axial building, with an tower or an explosion of ornament at the entrance. Round-ended strip windows were wrapped around the corners, emphasizing a horizontal orientation. His imagery was generally abstract, though a few references to nautical themes or tropical flora and fauna appear.

Streamlining in American architecture varied between the whole-sale usage of the image of speed as in the Pan Pacific Auditorium to the more superficial application of rounded corners, trim, and pipe railings at Miami Beach. Since buildings do not move, streamlining was in many ways an arbitrary application of form and details, yet it provided an image embodying efficiency and the - susposedly - clean lines of machinery.

All my work leads me to the conclusion: Classical modern American architecture was more sensitive as compared to the stubborn functionalism, which finally remained. The unbiased as well as the carefree manner of American architects of the International Style impressed me the more I observed the application of such an attitude. This led me to the development of a distinct view of American Modern Architecture, and last but not least it explained to me more the differences in the European development of Modern Architecture.

Summary: The Machine Age in America, 1918 - 1941
Wilson , Richard Guy, 1940 - Exhibition Catalogue

BIBLIOGRAPHY

Heidegger, Martin, Poetry, Language, Thought. New York: Harper & Row, 1971

Moore, Charles; Allen, Gerald; and Donlyn, Lyndon. The Place of Houses. New York: Holt, Rinehart and Winston, 1974

Norberg-Schulz, Christian. Genius Loci, Towards a Phenomenology of Architecture. New York: Rizzoli, 1980

Lobell, John. Between Silence and Light, Spirit in the Architecture of Louis I. Kahn. Boulder: Shambhala, 1979

Zukowsky, John. Mies Reconsidered: His Career, Legacy, and Disciples. The Art Institute of Chicago: Rizzoli, 1986

Klotz, Heinrich, Vision der Moderne: Das Prinzip Konstruktion. Deutsches Architekturmuseum, Prestel Verlag, 1986

Dunnay, Donna. Town Architecture, Understanding a Virginia Town. Blacksburg, 1987

Valena, Thomas. Typus Versus Topos, Fuer eine kontextuelle Architektur, Bauwelt 1989, Heft 5, pp 156 - 178

Wilson, Richard Guy. The Machine Age inAmerica, 1918 - 1941. Exhibition Catalogue, Museum of Modern Art, 1987

Ching, Francis D.K., Architecture: Form, Space and Order. VNR, New York

Porphyrios, Demetri, Heterotopia: A study of the Ordering Sensibility of the Work of Aalto, Architectural Monographs 4, Rizzoli, New York

Alexander, Christopher, Pattern Language: Towns, Buildings, Construction

The vita has been removed from the scanned document