

LANDSCAPES AS REFERENCES FOR DESIGN

by

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Submitted in Partial Fulfillment of the requirements for the Degree of

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## Landscapes as References for Design

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Submitted to the Department of Architecture on May 15, 1981, in partial fulfillment of the requirements for the degree of Master of Architecture.

### ABSTRACT

This is a study of the ways in which the forms in landscapes - natural terrain adapted and inhabited - can serve as references in architectural design. As references for design, landscapes provide a richness of responses to local and evolutionary factors and a richness of associations which are central to our own identity and the identity of places or regions.

In this thesis several perspectives on ways in which landscapes serve as references are analyzed. The landscape and surrounding context of each particular site importantly define its character and offer significant references for forms to be extended or generated. More broadly, landscapes can be viewed as sources for forms which can be transposed in multiple ways; the ultimate test of their value being whether they provide habitable, usable spaces. Landscapes can also be studied for the associations which they bring. These associations may explain feelings which we have about the quality and character of places.

A series of principles for design are proposed. These principles reflect convergence amongst the several perspectives on how landscapes can serve as references and constitute a collection of suggestions for design. The principles are organized along a continuum of "forms", "processes of addition and change", and "associative qualities".

Design studies for a site along the Neponset River at the south edge of Boston have been undertaken to aid in the development of the principles and illustrate their application. A mix of uses and building methods have been studied. The site for the studies is near the village center known as Lower Mills. The natural topography, the river's transition from narrow rapids to open estuary, and the historic collection of industrial buildings form a landscape rich in references and associations.

Thesis Supervisor: Maurice Smith, Professor of Architecture

### Acknowledgements

This thesis is a collection and interpretation of ideas about architectural design generated in the course of study at MIT. Maurice Smith deserves credit for initiating many of these ideas, Jack Myer credit for many others. This work is an attempt to investigate, explore, and in small ways extend these ideas and this approach to design. It is also an attempt, aided in particular by Barry Zevin, to record and illustrate the material in a way that will enable others as well as myself to be more explicit about and more capable in developing a sharable basis for design.

I would like to thank all those who provided encouragement to me over the years in deciding to return to school, sustaining a family as well as job and school, and making it all as rewarding as it has been. Dick Krauss, Jack Myer, Bob Slattery, and other friends at Arrowstreet, have my special thanks. I also thank my parents and parents-in-law, John and Elinor Couric, for their encouragement. But my deepest gratitude goes to my wife, Clara, and son, Sam.

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## Introduction

This is a study of ways in which the forms in landscapes - natural terrain adapted and inhabited - can be interpreted as references in architectural design.

Though many building sites are heavily urbanized there are significant reasons for studying landscapes as references.

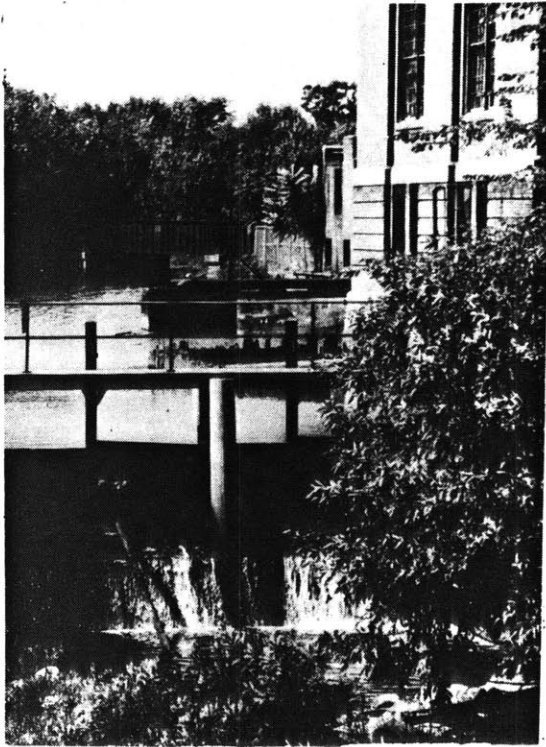
One reason is certainly to support and extend what natural topography and forms there may be; as the need for places to live and work continue to diminish the amount of natural landscape around us, increased value will be placed upon what

natural landscape remains. Increased value will also accrue to those built places which have associations with the natural environment, that is, built places which have the sense and qualities of natural places. "Far more of our time and energy are spent in the unconscious pursuit of these sensory experiences than we realize... the contemporary city frustrates those desires." (J.B. Jackson)

Places of particular value as references are those landscapes which are inhabited in a way which has added to or intensified the natural landscape form. These examples are needed at least as much as the natural landscape forms themselves. The goal here is not preservation or duplication of natural landscapes. It

is to design built places which reinforce or in valued ways transform the existing character of a place and enable those who live in the place to draw as full and deep a set of positive associations as seem accessible in natural landscapes.

The range of interest in landscapes as a reference for design has been quite broad. Some philosophers have concluded that the natural landscape of a region is a more basic determinant of culture than economic or political circumstances. At another end of the scale, microscopic analysis of leaf structure has been a useful referent for design of natural lighting and heating in buildings (Miller). The range included in this study is intermediate to those examples: this study draws on habitable scale to regional scale landscape refer-



Two views of the Neponset River: (left) the dam for the early industries just above the rapids, and (above) the head of the estuary just below the rapids.

ences.

The approach taken here derives from the work of Maurice Smith, Jack Myer, Barry Zevin and others at MIT. As architects and teachers their work has generated much of the material collected and explored here. The approach taken here also draws on the work of Christian Norberg-Schulz, particularly his book Genius Loci: Toward a Phenomenology of Architecture. Further connections are made with psychological and perceptual studies of landscapes and urban environments.

This thesis consists of three sections.

Section I: Four Perspectives on Landscapes as Reference for Design.

The first section of this thesis is a col-

lection and comparison of several sources for this study of landscape as a reference for design. Four sources or perspectives are covered:

1. Landscapes as a Source for Habitable Forms: the work of Maurice Smith and others.
2. Landscapes in Cultural and Architectural Anthropology: the work of Christian Norberg-Schulz and others.
3. Associations between Landscapes and Life Processes: the work of Jack Myer and others.
4. Perceptual Studies of Landscapes: the work of Kevin Lynch and others.

Section II: Forms, Processes and Associative Qualities.



The second section is a synthesis of the general perspectives into a set of principles. The principles are organized under the three headings, "forms", "processes of addition and change", and "associative qualities". A certain number of the principles are explored in more detail: their substance, their sources, and some examples of use including a design study carried on simultaneously as part of this project.

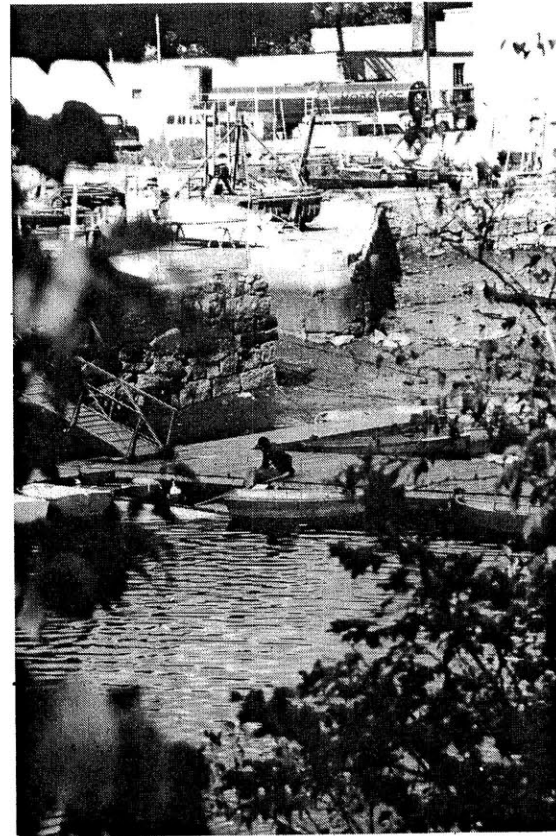


Cave near Sivergues, France (above right from M. Smith slide). Rain forest in Puerto Rico (above)

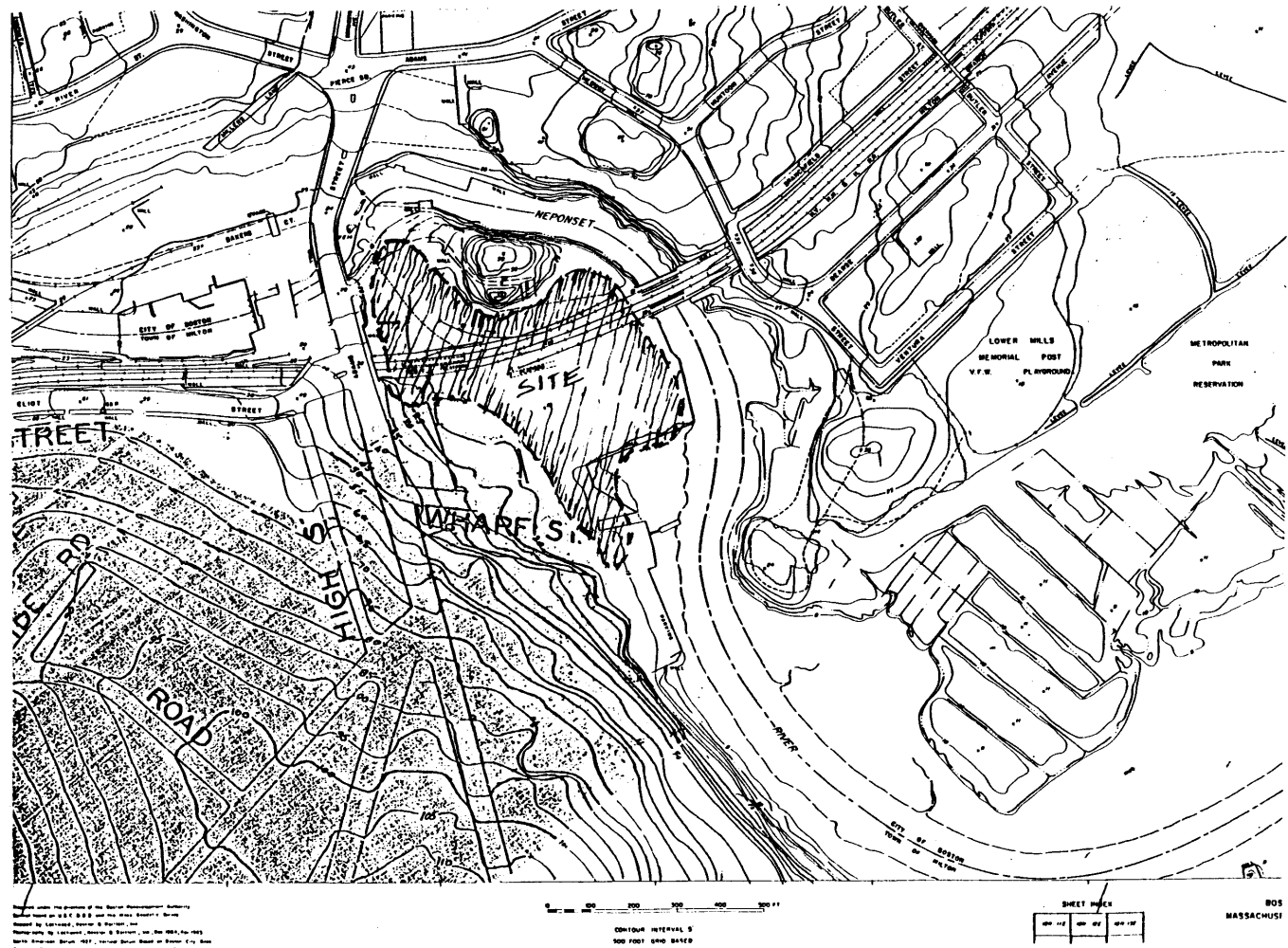
Section III: A Design Study: Lower Mills

The site chosen to further explore the principles described in Section II is along the Neponset River at the southern edge of the City of Boston near the neighborhood center Lower Mills. The site is at a significant point in the river's course. Just above the site is the last of the river's rapids. The site is at the head of the estuary, the upper reach of tidal flow. The site is formed by a bend in the river - a piece of level ground surrounded by rising river banks and punctuated by a small but steep outcropping hill.

The site is presently occupied by an ice cream warehouse, which is assumed to have been relocated.



Looking across the Neponset River to the marina below the study site. Ice cream warehouse is visible in upper right.



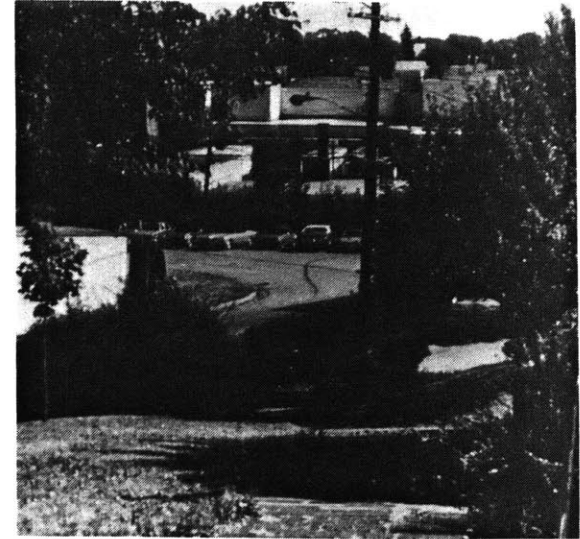
Topographic Map of Lower Mills area. Site of design studies is indicated. Note small, steep hill in riverbend.

The adjacent neighborhood center of Lower Mills was for many years the home of the Baker Chocolate factory. Its clusters of industrial buildings - now only partially used but likely to be rehabilitated - give the area significant associations with the historical workplaces, uses, and patterns of life.

The program for the study is mixed use, with some exploration of alternatives including workplace, housing, theater or music stage, and parking. The site is directly on an extension of the Boston subway system (Red Line), giving accessibility by public transportation and also creating a demand for parking for commuters.

The primary purpose of the design studies is to illustrate and further develop the

potential of landscape as a reference for design and the principles by which that potential can be used.



View from Adams St. down to Wharf St. with ice cream factory in background.

## **Section I**

# **Four Perspectives on Landscapes as References for Design**

The four perspectives on landscape as a reference for design which are studied here share a concern for how people understand their built and natural environment. The perspectives vary in their initial assumptions, but they provide converging, or at least overlapping, suggestions for the value of landscape as a reference for design.

The four perspectives and their initial assumptions might be summarized as follows:

### Landscape as a Source for Habitable Form

(Maurice Smith and others): The Physical forms provide information about what forms of life or activity could take place. Part of the information which forms carry is independent of size, position, and cultural context. Landscapes are particularly rich sources of forms which can be transposed and used in different contexts. The determination of the appropriateness of the form as transposed is based on its suitability for the required uses.

### Landscapes in Cultural and Architectural

Anthropology (Christian Norberg-Schulz and others): The sense of identity of an individual (or a culture) is fundamental to one's well-being. Further-

more, one's identity is very substantially determined by the identity of the place where one lives. The purpose here is to understand how the identity of a place is formed by its natural landscape and transformed over time by human settlement.

### Associations between Landscapes and Life

Processes (Jack & Marty Myer, also others): Psychoanalytic and philosophical constructs for understanding how people feel about and respond to other people also suggest a way to understand how people relate to built environments. The significance of natural landscapes in our understanding of the built environment is potentially comparable to the significance of a parent in a child's understanding of inter-

personal environments.

Perceptual Studies of Landscapes (Lynch,

others): Perception of built and natural environments is based upon certain identifiable types of forms or relationships among forms. This has been used as a basis for describing recognizable elements in urban or landscape form (Lynch and Higuchi for example) and as a basis for describing patterns in forms such as rhythm and balance which affect perception (Humphrey).

On the following pages there is a brief description and illustration of these four perspectives. In the process of comparing and integrating these four perspectives three kinds of references for design came to the surface:

1. References for forms.
2. References for processes of addition and change.
3. References for associative qualities.

Some perspectives generate more useful references of one kind or another, but most have some of each, and the three-part differentiation facilitates synthesis of the four perspectives. That synthesis is the substance of Section II.

## **Landscapes as Habitable Form**

The rich admixture of forms and qualities to be found in many natural landscapes can be used as references for design by starting from the position that forms can be investigated for their space-defining characteristics and transferred from one place or scale to another.

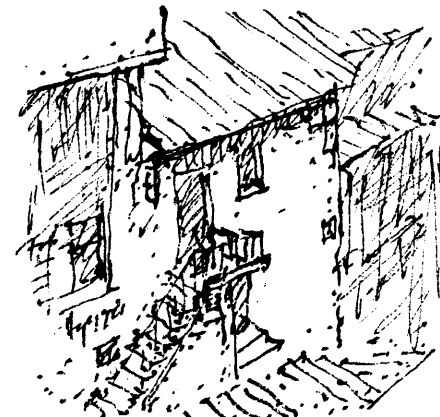
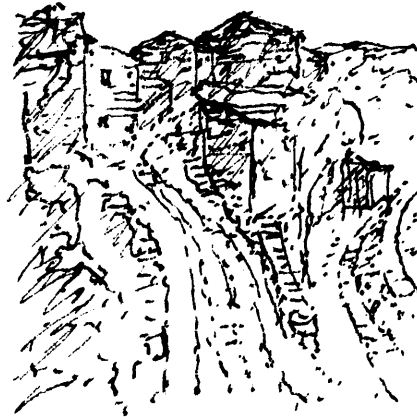
The transfer could be immediate - as from trees and branches to heavy and light timber framing. Or it could be quite removed - as from crystalline formation to

siting of buildings. From this position the origin of a reference is of less consequence than its suitability for use in the context at hand. In effect, the range of potential references is not limited, though the resulting application would have to meet multiple criteria for use.

In this perspective, valuable landscape references come from at least two sources. The first is the forms in natural landscapes which result from and reflect a history and complex of forms immeasurably richer than man-built, or particularly, machine-built forms. This intricacy of responses to evolutionary and local factors is important in an attitude towards design that values both sense of response to the surrounding context and the opportunity for individual



Directional Fields:  
Canyon near  
Sivergues;  
Sivergues, France;  
S. Vito Romano  
(from M. Smith  
slides)



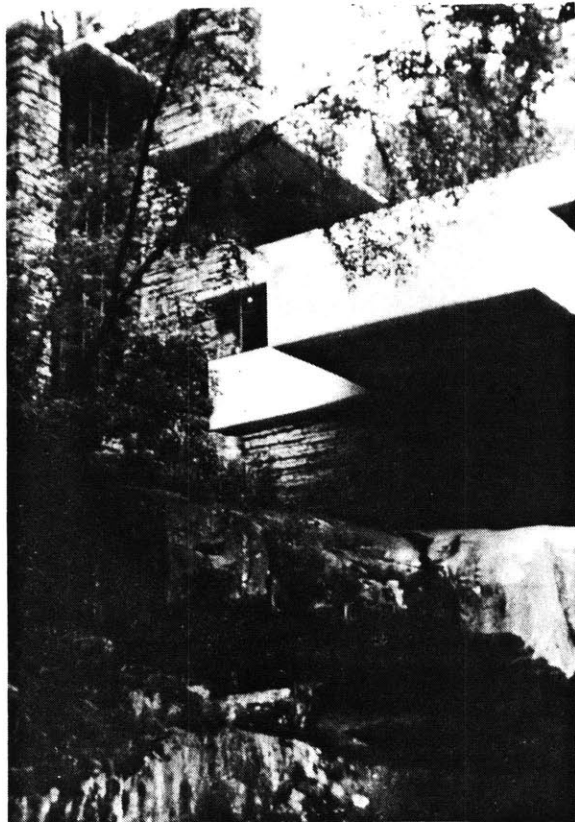
or local differences within that context.

A second source of valued landscape references are many early inhabitations of landscapes. The adaptation of naturally existing shelter, the use of local material, the human scale, and the individuality of hand-wrought construction often seem habitable in significant ways. These ways have been lost in much contemporary work and are not substituted by the conveniences associated with higher standards of living.

This particular perspective on landscapes as references is one largely formulated by Maurice Smith. It is akin in important ways to Frank Lloyd Wright's organic architecture. "...Planes parallel to the earth in buildings identify themselves with the ground, do most to make the buildings belong to the ground." Also, "let walls, ceilings, floors now become not only party to each other but part of each other, reacting upon and within one another; continuity in all...." (The Natural House).



Intensifying  
Natural Land-  
scapes: Canyon  
near Sivergues;  
detail; Ithaca.  
(from M. Smith  
slides)



Extension of  
natural form  
into building  
form. F.L.  
Wright, Fall-  
ing Water.

R. Slattery

Wright's use of natural materials, the extension of natural forms into building form, and the reference to natural form in structural design are clear precedent's for such use of landscape references.

The tradition is also one identified by Lewis Mumford who saw in the European settlement of America an extension of the values and practices of indigenous and medieval cultures (and buildings) at a point when these values and practices were being lost in Europe (Sticks and Stones).

Thoreau and other nineteenth century writers did much to affirm this tradition.

Francis Ponge's writing is particularly useful here. A short piece of writing in "The Pebble" draws a world of associations from the simple form. In fact, it quickly illustrates the potential range in use of landscape references for forms, processes of change, and associative qualities. Three excerpts follow:

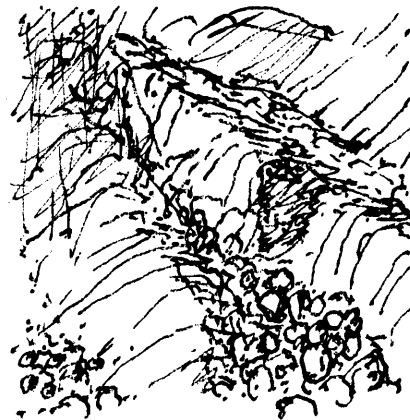
"All rocks are offspring through fission of the same enormous forebear....

"The largest fragments - slabs almost invisible under the entwining plants that cling... - make up the global skeleton....

"Compared to the rocky ledge from which it is directly descended, [the pebble]

is a stone already fragmented and polished into many nearly similar individuals."

The fission, the entwining, the polishing suggest processes of change. The skeleton, ledge, and pebbles are suggestive of forms. And the forebearing rock and many similar individuals suggest qualities of continuity and community.



Rock and pebbles:  
Schoodic Peninsula,  
Maine (from M.  
Smith slide)

## **Landscapes in Cultural and Architectural Anthropology**

The link between a landscape and its people has been an interest for historians, architects, and others. In contrast to the preceding perspective, in this case the origin of the landscape used as reference is significant. Specifically, the natural landscape of a place is held to be an important referent for the further physical form and culture of the place.

Christian Norberg-Schulz in his recent work Genius Loci analyzes and promotes

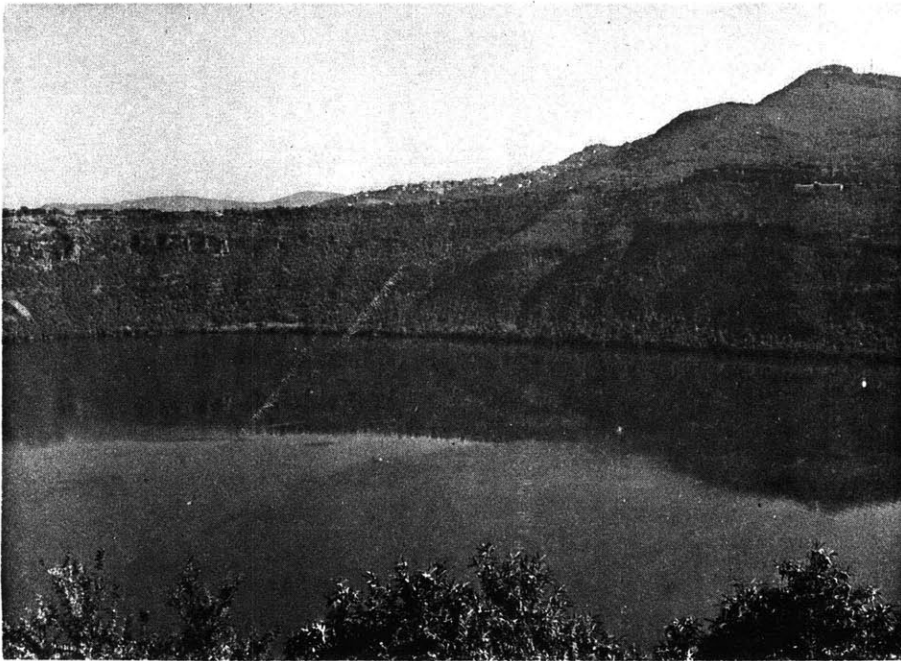
this viewpoint. His premise is that the identity of an individual or a culture is rooted in the identity of a place (genius loci). Utilizing a basic distinction between built and unbuilt, between man-made and landscape, his look at the ways in which the natural landscape can contribute to the genius loci is particularly relevant here. His thesis is in part that the natural landscape of a place has a genius loci (spirit of the place) and that the most appropriate settlements or man-made developments are those which extend and enhance that genius loci.

Norberg-Schulz goes on to propose three archetypical genius loci and suggests that different places might represent different mixes of the three basic types. His three basic types are:

- 1) Romantic, epitomized by Norway.
- 2) Cosmic, epitomized by desert settlements.
- 3) Classical, epitomized by Greece.

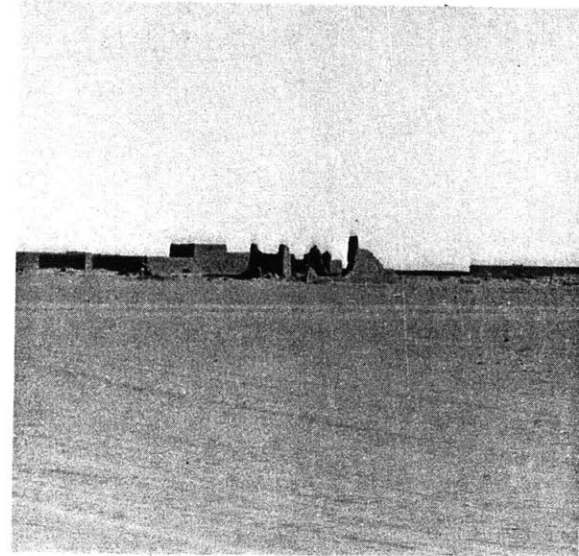
His analysis of the genius loci of Rome is illustrative. Searching for a description of the essential character of that city he focuses on three aspects: the life along its urban streets, the particularly

photos from C. Norberg Schulz, Genius Loci

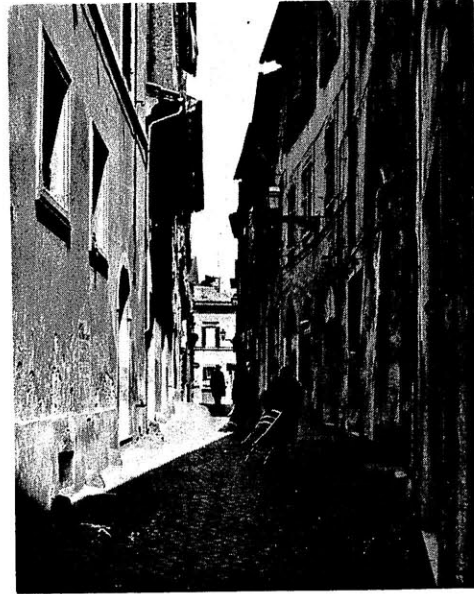
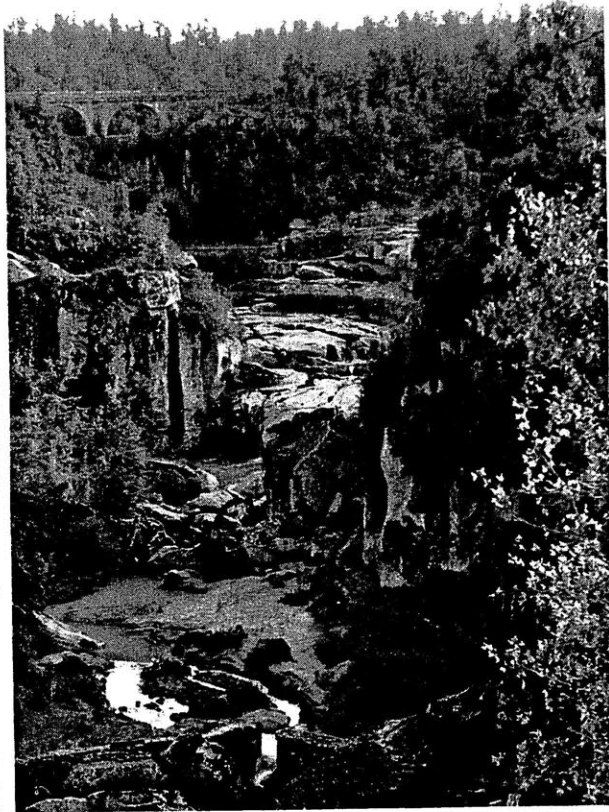


Archetypal Genius Loci:

- 1) Cosmic: Khartoum periphery
- 2) Romantic: Norwegian forest
- 3) Classical: Lago di Albano



photos from C. Norberg-Schulz, Genius Loci



Genius Loci of Rome:  
Forre at Chia, Ghetto  
street in Rome.

dominant public places, and the overlaid order imposed by major avenues. He finds references in the early inhabited landscape for each of these qualities:

life along the streets	Inhabitation of the outlying gorges or "forre"
the particularly dominant public places	The autonomous hills that formed the immediate landscape
the ordering avenues	the "Cardo-decumanus" (North-south, east-west axes) of certain early settlements on the hills (Palestrina)

In his study Norberg-Schulz utilizes many concepts which are of interest here in terms of forms, processes of addition, and associative qualities. The principle of genius loci and the principle that good development of a place enhances the genius loci seem to be particularly useful associative qualities. He also looks at "proc-

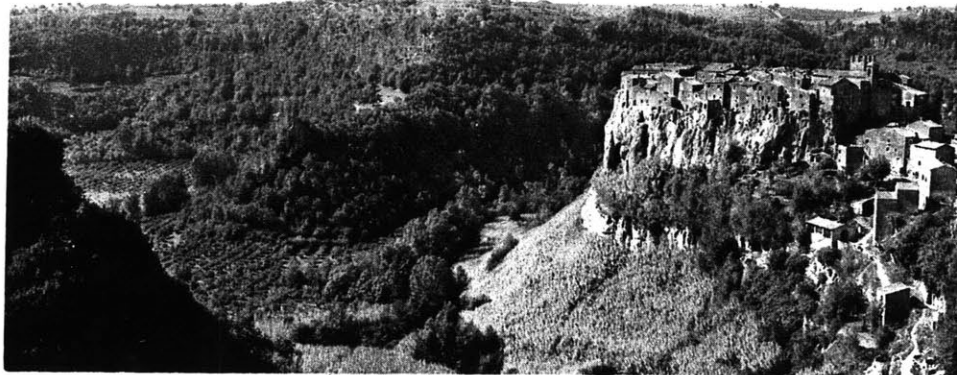
esses of making", "degree of extension and enclosure", "path, center, domain, and field", and "direction and rhythm (continuity)". These will be compared with concepts developed in other perspectives in Section III.

Another person to take a similar look at the place of landscape in architecture and culture is Vincent Scully. In his work The Earth, the Temple, and the Gods he argues that the distinctive identity of different Greek landscapes was important to that civilization's understanding of individual and collective identity. Different landscapes became locations for different dieties' temples reflecting a perception of the character of a landscape and the ability of man to shape that character through design of the temple: the sacred points, the patterns of access, and the

views.

An additional example, rich with its images of indigenous settlements, is Norman Carver's Italian Hilltowns.

After assessing the practical advantages and disadvantages of hilltown settlements, Carver concludes that "There was something innate in the... Mediterranean character that directed the building of towns on elevated sites whenever possible.



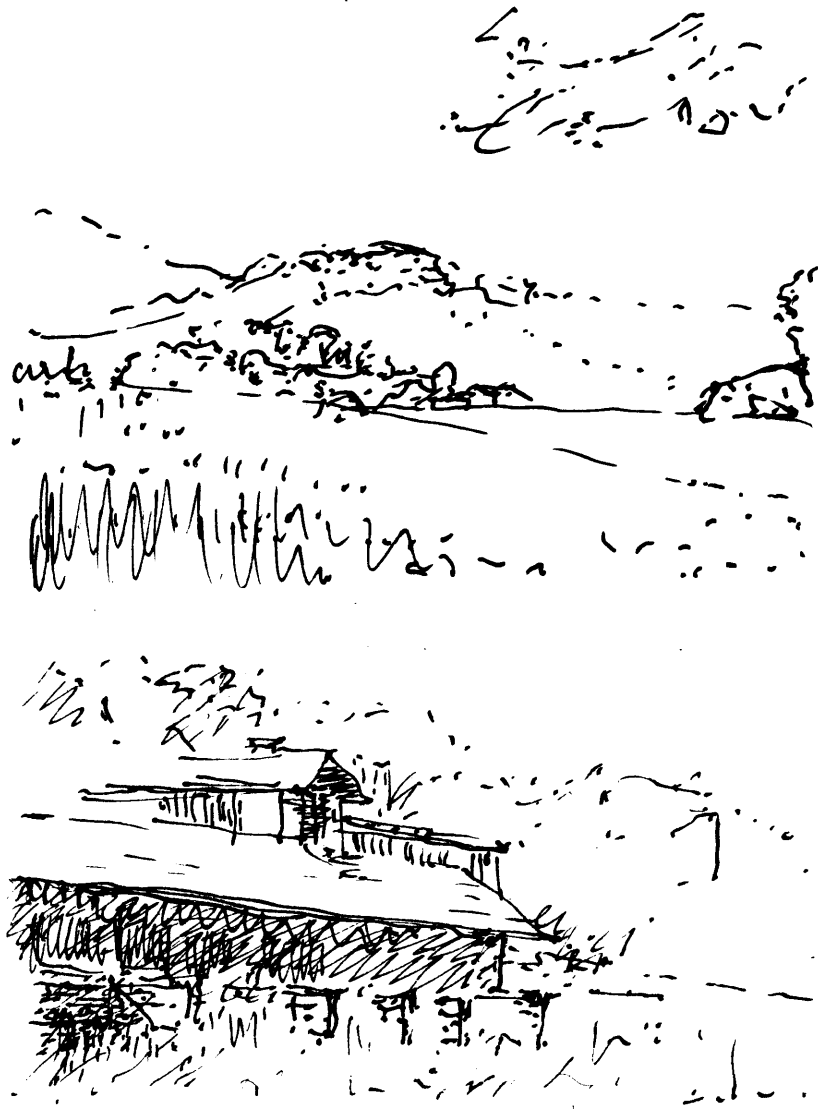
C. Norberg-Schulz, Genus Loci



## **Associations between Landscapes and Life Processes**

Amidst the search for how it is that some places seem rich to the senses, potent with meaningful associations, or in other ways wonderful a psychoanalytic interpretation by Jack and Marty Myer is particularly relevant here. Their suggestion is that there lie associations between certain kinds of places and certain life processes. Several of the places they look at in their work "Patterns of Association: Connections between the Inner and Outer Landscape" include significant land-

Taliesin fields and barn.



(from slides by R. Slattery)

scapes and the landscapes play a significant role in the analogy to meaningful life processes.

Some of the moments and relationships which seem most central to life are birth, family and child relationships, physical work, aging, and death. The Myers' suggestion is that those landscapes (built and natural) which can evoke association with these life processes will be most meaningful to us and, in effect, contribute to those life processes.

In Jack and Marty Myer's examples one of the most central issues is how it is that we relate to people (or things) much bigger than us and on whom we are dependent. The relationship to parent and authority figures is, of course, central to psychoanalytic theory. It is of interest to see

that in the Myers' examples the natural landscape often takes on the association with that larger figure.

One focus of their study is the farm landscape at Taliesin, Wisconsin: the rolling hills, the farmland, and the now abandoned farms and workshops of Frank Lloyd Wright's homestead.

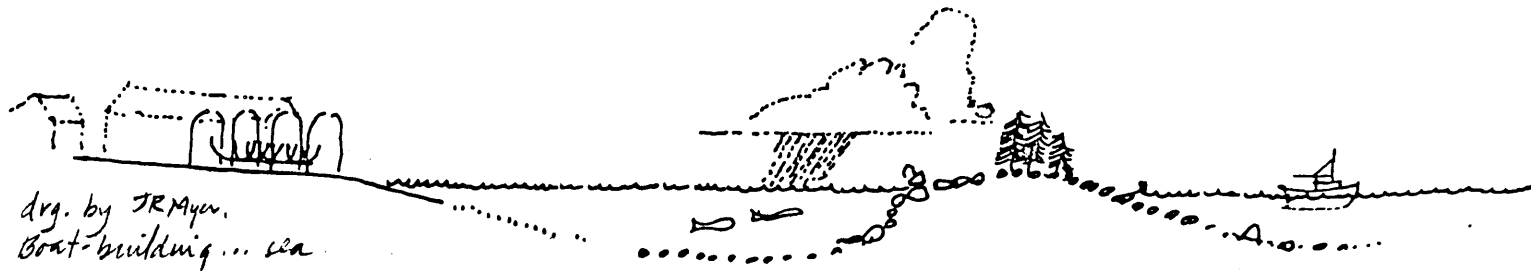
"The connections between barn and land are like the connections between mother and child. There is a sense of profound continuity akin to the continuity of mothering and the sense of being in the universe of a strong being."

Another landscape is that of a small boat-building yard on the coast of Nova Scotia. Associations come out between the sea (beginnings of life, provider, danger of death) and the lives of those who work along it. Analogies among the forms in place strengthen the associations: boat shed framing, boat ribs and hull, our own skeletal form and that of fish from the sea.

In the synthesis to follow, this approach generates interesting forms, processes of change and obviously associative qualities. Among processes of change suggested in the Myers' work is a description of the opera-

tion, maintenance, and repair of a small Nova Scotia sawmill. The mill, temporarily quiet for a period of repair reflects the life cycle of growing up, mastering, and aging that is also very much in the character of the family that operates the mill.

The perspectives on the significance of landscapes for their associations with life processes has precedents. The imagery of Ponge cited earlier has similarities with this approach. Perhaps most notable among similar studies is Gaston Bachelard's The Poetics of Space, Bachelard collects from literature, poetry, and psychoanalysis sets



of associations between places and significant moments in life - particularly between aspects of house and moments of imagination. Bachelard's quote from Henri Bosco describing an encounter with murky water deep in an unfamiliar cellar illustrates Bachelard's contribution to this approach"

"Water! ... Immense ... Black, stagnant... No spring, no source. It had been there for thousands of years.... It had become the densest fluid element of the underground mountain. Its capacity and unwonted consistency made an unknown substance of it...."

Bachelard relates the experience to the "fear that echoes the great legend of man cast back into primitive situations."

## Perceptual Analysis of Landscapes

More scientific approaches have also contributed to an understanding of the potential value of landscapes as a reference for habitable form. Psychologists and others have performed studies about how the environment is perceived and how the constructs of perception can be applied in design.

Probably the most notable study and application is Kevin Lynch's Image of the City.

Though his study was of urban environments, the concepts are readily extended to natural landscapes. This has been done by

Tadahiko Higuchi. Higuchi undertook a study of significant Japanese landscapes to describe their form. He identified seven types of landscape form sacred to the traditional Japanese culture and four elements by which each of those landscapes could be described:

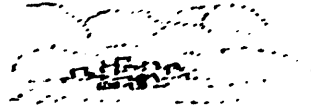
- boundary
- focus/goal/center
- direction
- domain

Higuchi's point in The Visual and Spatial Structure of Landscapes is that awareness of such landscape forms and the elements which contribute to them could help to reestablish the intimate and significant feelings once attached to landscapes but often lost in contemporary development.

The elements of landscape form used by Higuchi would fall under the headings



*water distributing  
shrine: hills, stream,  
shrine, rice fields.*



*peaceful plain,  
surrounding green  
mountains, principal  
settlement.*



*sacred  
places, surrounded  
by steep mountains.  
"calyx flower"*

(developed here) of "forms", or possibly "processes of addition and change". Missing from Higuchi's analysis unfortunately is more sense of the associative quality of these sacred places - specifically those attributes which may originally have been important in the designation of these places as sacred: something in the way of Scully's analysis of Greek temple sites or perhaps something derived from the methods of the Chinese Feng Shui, whose principles of siting derived from a sense of energies

inherent in the earth's form.

Returning to contemporary perceptual studies, another approach has been to try to identify in nature certain patterns which are typically interpreted as "aesthetic" in origin but which may have been important to survival and evolution. Nicholas Humphrey, in looking at rhythm and rhyme traces the perceptual processes of classification of like elements and the pursuit of "stimulus novelty" in animal behavior as well as human studies. The concept has parallels

with others developed from other perspectives: continuity and the retention of some constants as one or another thing changes.

Peter Smith's companion article in Architecture for People includes a similar analysis of, among other concepts, that of "balance". With some interesting differences it is like the concept of "stability" (as proposed by Maurice Smith). "Balance" as interpreted by Peter Smith and others (Arnheim) is based upon a tendency to remain at a standstill - balanced with respect to a center of gravity in a field of forces.



## Section II

### **Forms, Processes of Addition and Change, and Associative Qualities.**

The process of collecting, sifting, drawing from the diverse perspectives on landscapes as reference for design began with short lists, became longer lists, and has come at this point to be a continuum across three major headings. The headings attempt to provide a handle for understanding the whole. The continuum reflects some of the inextricable interrelationships among the points.

The points which make up the substance of the continuum are drawn from the four per-

spectives described in the preceding section and to some extent from other perspectives which might be added. The points, if carefully enough stated and illustrated might become principles. To warrant the label principles they would need clarity, a broad set of references in use, and other bases for claiming to be generic.

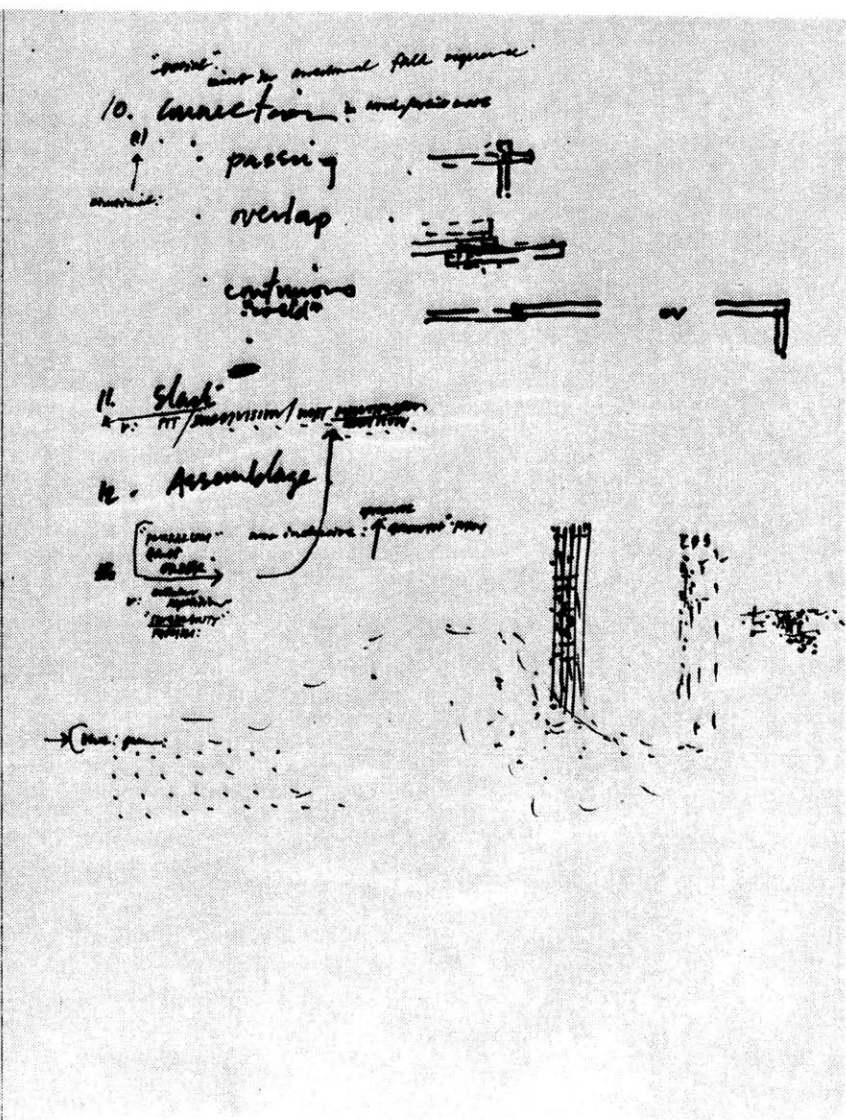
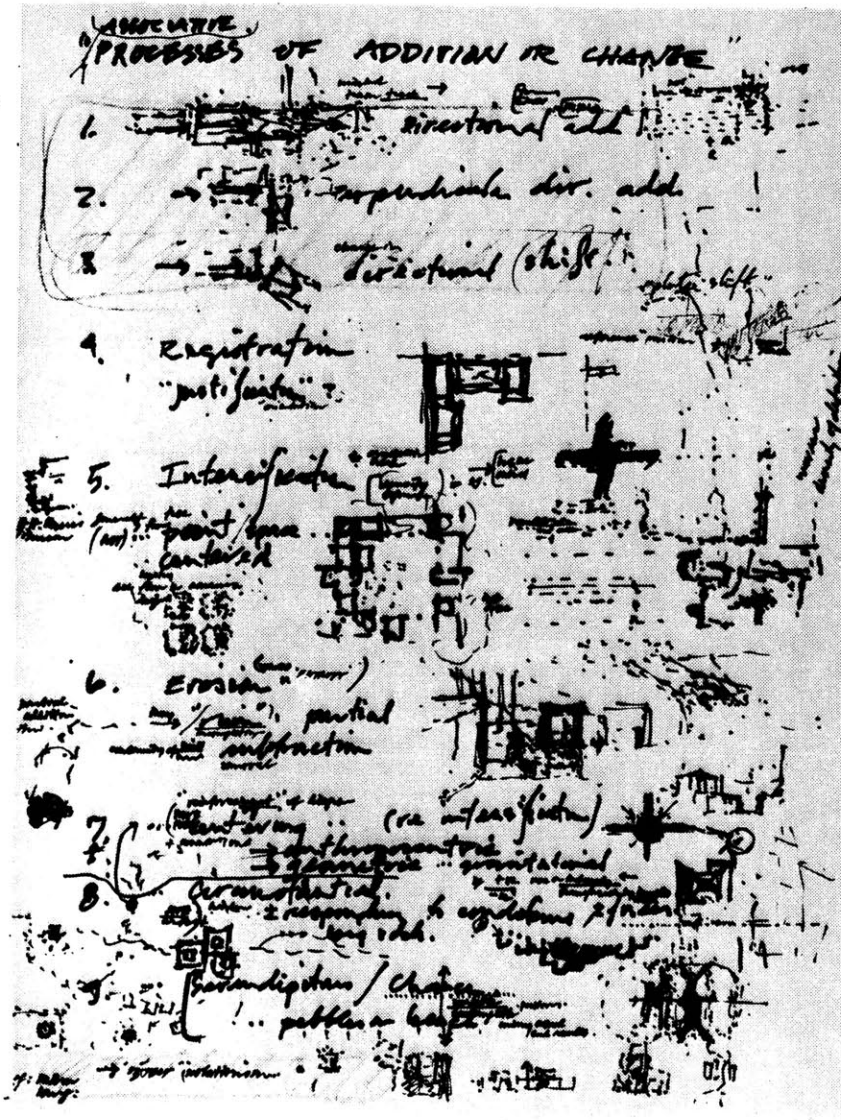
In this section a more extensive collection of points is first identified. Then a number of those points are developed in more detail, exploring them as principles. This later exploration includes an analysis of the basis for the principle drawing on the four perspectives of Section I, a collection of references showing the principle in use, and also an analysis of the the principle as applied in design studies for Lower Mills.

Because the process of formulating the framework first condenses and later precipitates the evolution of new kinds of information, it is useful to review briefly some of the early stages of the organization of these points/principles. The initial organization utilized the following headings:

- . Direction of built and landscape form
- . Reciprocity of built and landscape form
- . Continuity between built and natural places
- . Processes of Addition and Change

The second pass used the following categories:

- . Family of Associative Forms
- . Associative Processes of Addition or Change (see illustration of notes)



Early set of "Processes of Addition and Change".

- . Associative Qualities
- . Associative Materials

The framework presented here is very similar to the second pass, though a continuum has replaced the categories and the last category (materials) was dropped to concentrate on the first three.

The major headings presented here can be described as follows:

Forms. Those shapes which by their associations with land forms, by their fundamental value in constructing habitable spaces, or by other meaningful associations with life on the land recur so significantly as to be valuable references in this study. The shape itself carries associations with habitable landscape. The shapes may be simple or compound and involve relationships among shapes. At some point

where the compound relationships seem more like processes of addition, the continuum comes under the next heading.

Processes of Addition and Change. Those methods of designing and building (including methods of combining and transforming the "forms" described above) which have associations with natural processes and, particularly, processes of inhabiting landscapes which extend or enhance characteristics of the landscape. As these processes of change shift from geometric processes to processes which transform or provide particular qualities of a space, the continuum shifts to the next heading.

Associative Qualities. Those qualities which provide the essential character and sense of a particular landscape or example of habitable landscapes. Perhaps least

susceptible to measure or even description,  
their effect, when sensed, is perhaps  
greatest.

#### Integrating the Four Perspectives

The four perspectives described in Section  
I start from different initial assumptions  
and generate diverse kinds of conclusions,  
but the process of comparing and over-  
laying show there is much in common and re-  
inforces many of the central principles.

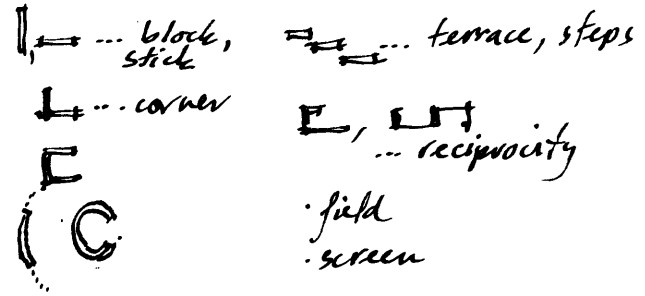
The following table highlights some of the  
points generated by each of the four per-  
spectives placed along the continuum of  
forms, processes and associative qualities.

FOUR PERSPECTIVES

FORMS (simple ... compound)

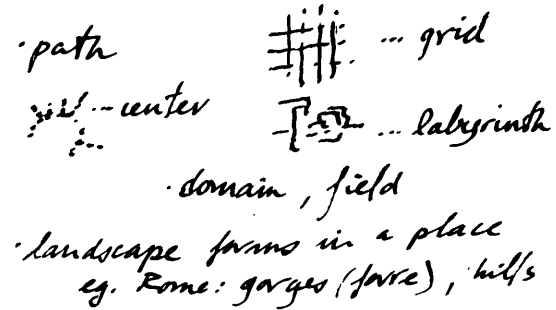
Landscapes as Habitable Form

- M. Smith, others



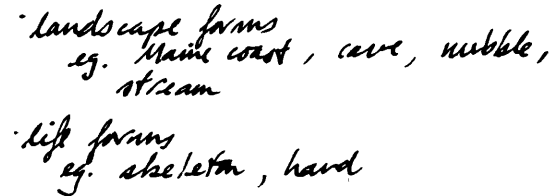
Landscapes in Cultural & Architectural Anthropology

- C. Norberg-Schulz, others



Associations between Landscapes and Life Processes

- J. M. Myer, others

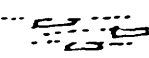

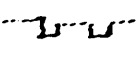


Perception of Landscapes

- K. Lynch, others



ADDITION & CHANGE

- additive growth
- directional growth: 
- regeneration 
- infusification
- erosion
- stability 

- rhythm, rhyme
- balance

ASSOCIATIVE QUALITIES

- continuity
- habitable environment
- partial completion
- variable dimensions

- cosmic ordering
- cardo - adriaticum
- clustering of units
- directed to organism -- directional growth
- centralization
- rhythm (continuity) enclosure
- extension

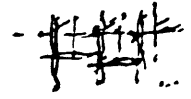
- birth, death, reformation
- geological process, landscape, change process ... fissure, erosion ...

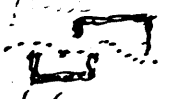
- genius loci (spirit of place)
- romantic
- classical
- cosmic
- continuity, extension of genius loci


- association with life process, relationships
- and unity
- relation to larger, dominant things
- individual autonomy, unitive
- novel energy

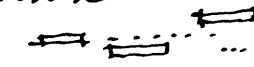
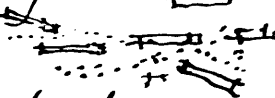
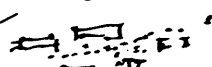

- likewise compare with difference
- learning rather than symmetry
- little avoid

... some constant ... one thing at a time


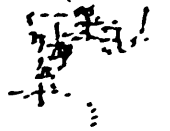
e  
-  ... screen  
... field ... domain  
(... grid)

-  partial  
atal  
outcropping  
ve, steps.

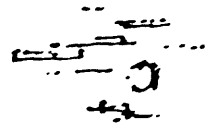
-  ... reciprocity  
... clustering

directional growth  
- extending   
- shifting   
- perpendicular   
- stopping  ... private

- enclosure  
- containment  
- completion ... partial

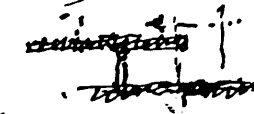
- registration   
- intensification 

- stability -- balance

- recognizable object  
in field. 

use  
- material  
- virtual continuity

relation to larger thing  
... dominance  
... subordination  
usable dimensions  
optional, partial  
opportunity for indiv.  
initiative, auton

renewable  
- partially permanent  
  
- sites of renewal

association with life  
... alive  
... birth ...  
... visceral



The table on the opposite page provides a composite organization. The points from each of the perspectives are organized in a way that groups like concepts.

## PRINCIPLES

Some of the points on the continuum seem generic enough to be considered principles. They are consistently enough supported by the various perspectives, and there are multiple examples of use over the years in different contexts. As principles they should be frequently useful in the process of design (at least in which landscape is valued as a reference).

On the following pages a number of these principles are described in a little more detail and references of the use are provided. Ideally, the set of references should include natural landscapes, indigenous settlements, and other historical and contemporary architectural examples. Also the range in scale from site, to access, to building, to detail should be repre-

sented. Included here is only a partial set. As further illustration and an application of the principles, examples of use in the case study design for Lower Mills are also included.

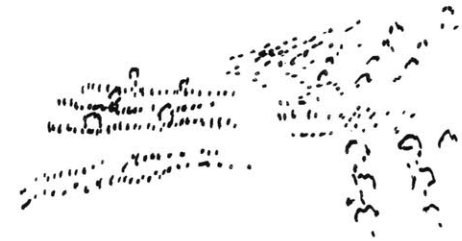
## Field

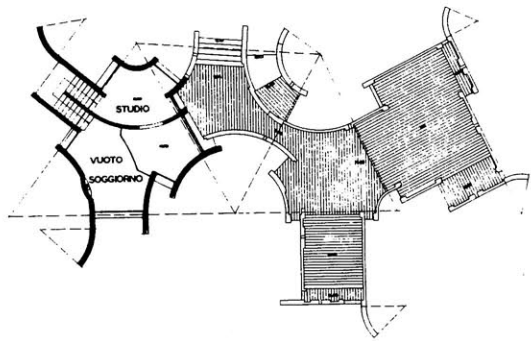
Fields - in themselves so valuable for food that human settlement has taken a secondary position - provide associations valued in the patterns of building: predominantly horizontal, following the contour of the land, providing a texture or "grain".

Individual elements adding up into continuous, not necessarily repetitive wholes.

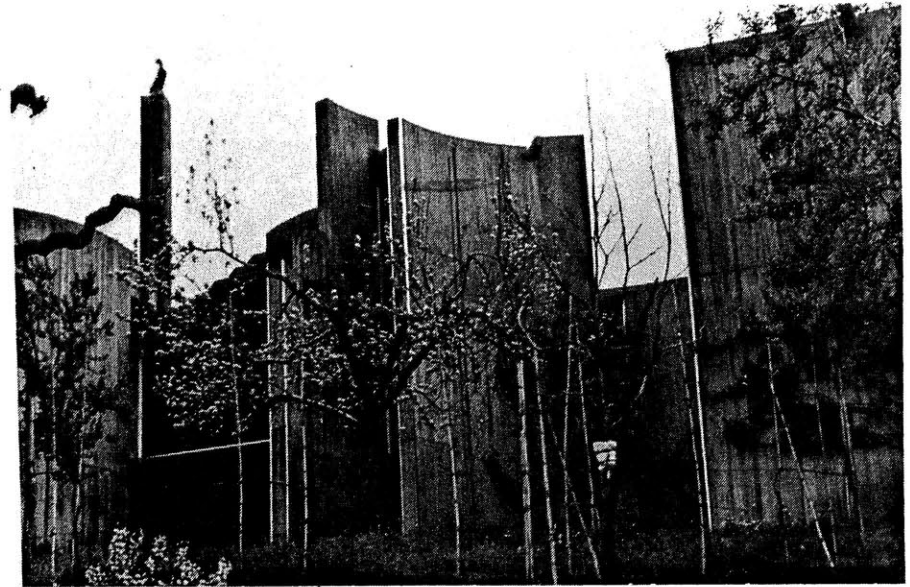


Patterns of adding in fields: similar size units, directional rows, shifts to follow the land and boundaries.





Rocks and masonry (in the Casa Andreis by P. Portoghese) taking the form of fields.



P. Portoghese (photo and drawing)

Materials other than plants assume relationships understood as fields: rocks, for example. Perceptual studies and anthropological studies have used the term or similar terms, such as texture, grain, domain, and district to describe areas which are made up of similarly-scaled buildings arranged in a consistent pattern.

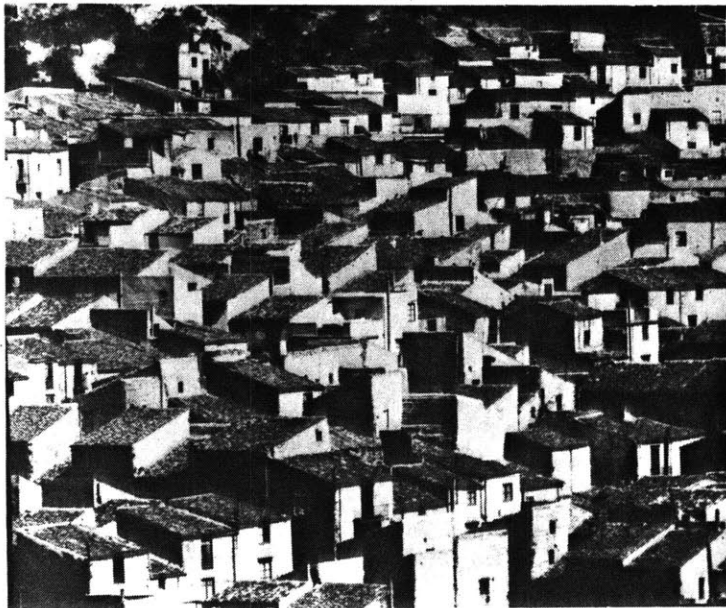
Independent of any agrarian connotations, fields are distribution of elements in space. The distribution should follow patterns which provide for some uniformity but also allow for indifferences.

Important to the understandability of a field (or domain) is some enclosure or boundary which differentiates one field

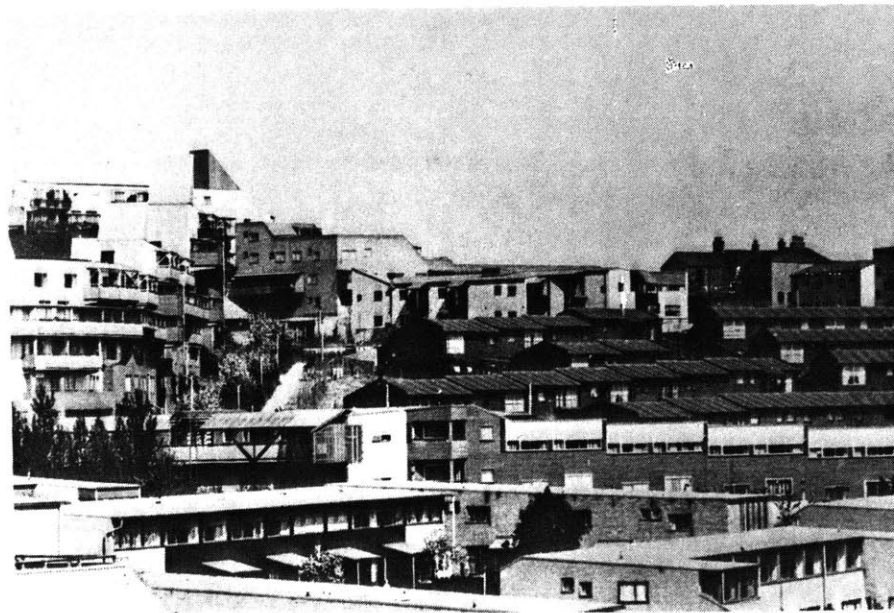
from another and provides needed orientation.

Sustaining individual differences and identities in similarly scaled, similarly detailed buildings is central to sense of fields rather than grids or cells.

Urban neighborhoods with sense of fields.



N. Carver



Y. Futagawa, Byker Redevelopment (Erskine)

The associations with life processes are strong: The field as a source of food, livelihood, and life. It is something on which we are very dependent and invest with great significance. "... Waiting, soft, fecund; the swales rich and wet." (Jack & Marty Myer, Patterns of Association).

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Shaped by the gentle curves of hill and stream, extended and/or enclosed by stone, trees and barn.

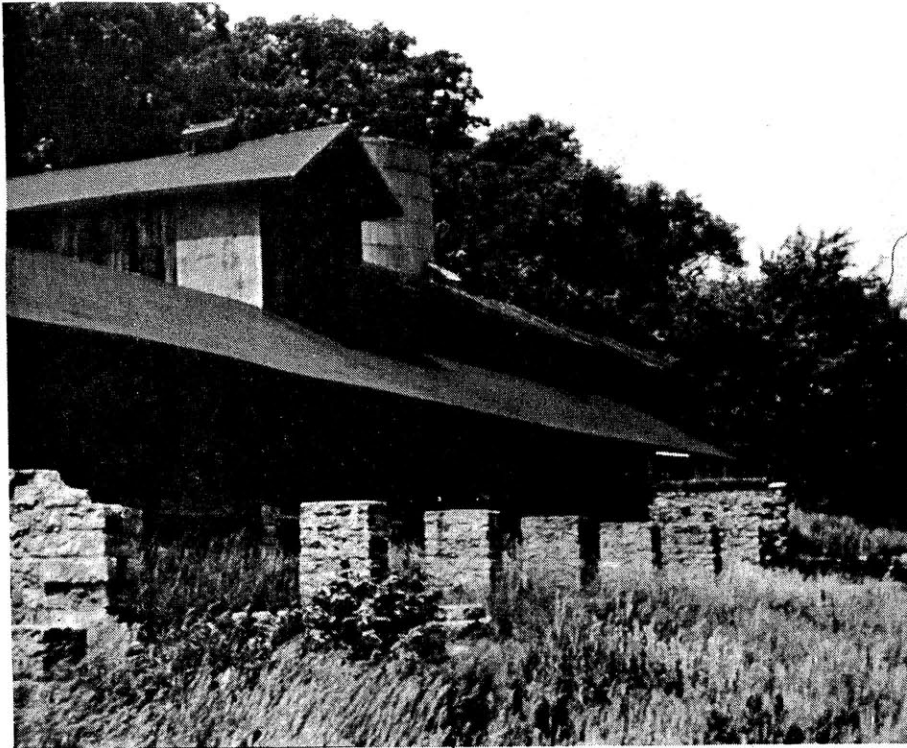
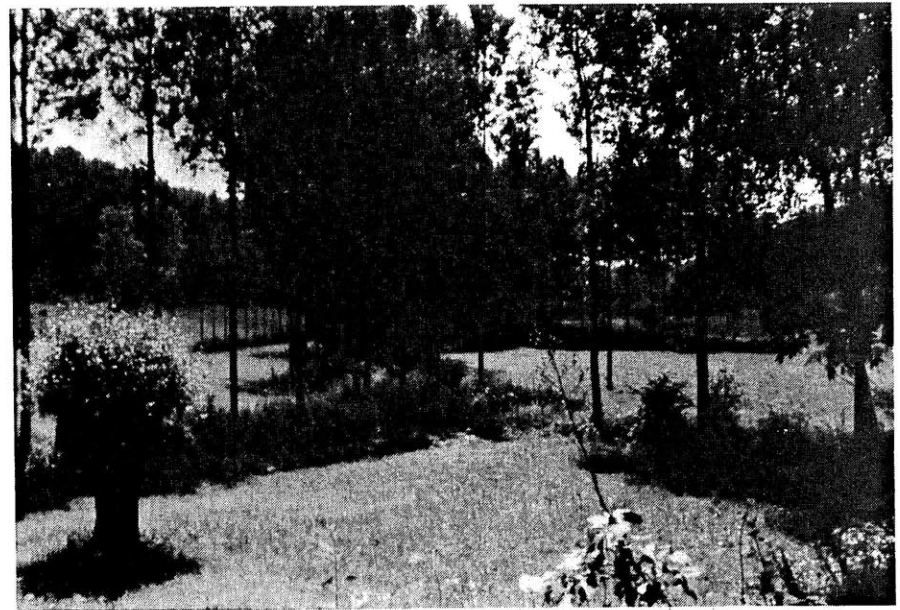


photo by R. Slattery

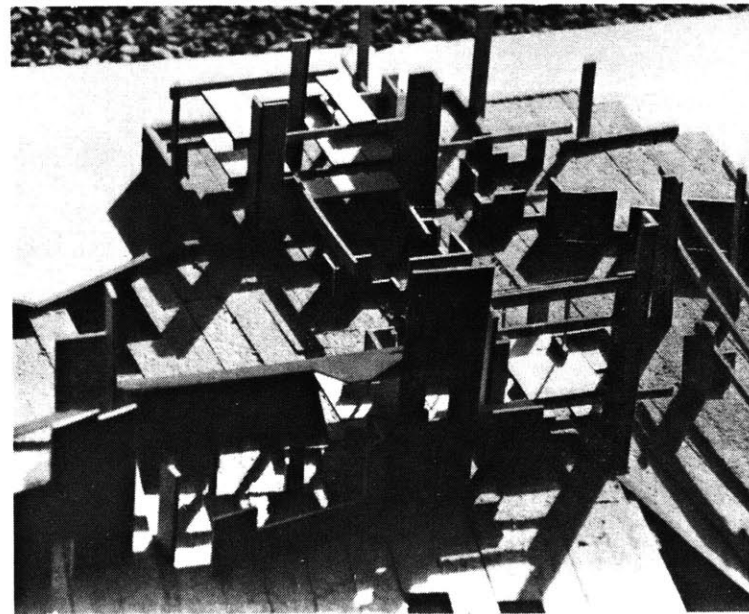
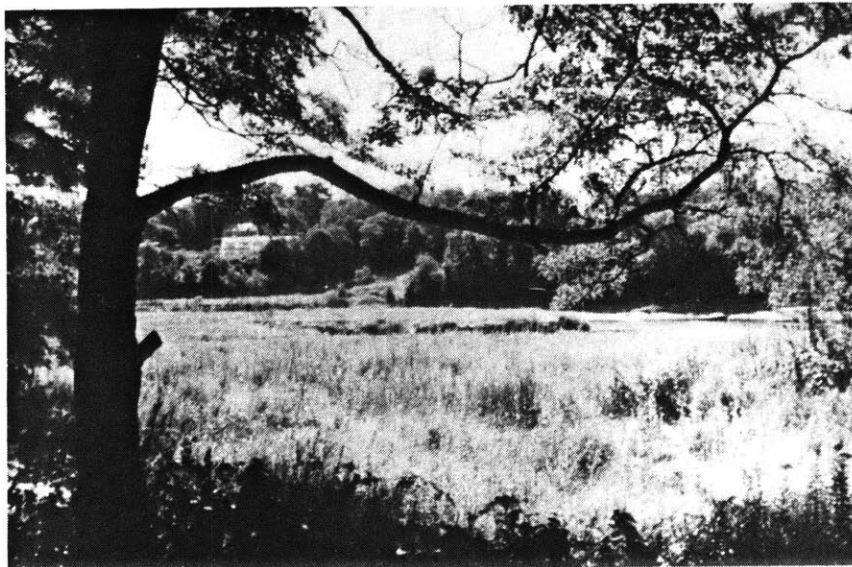


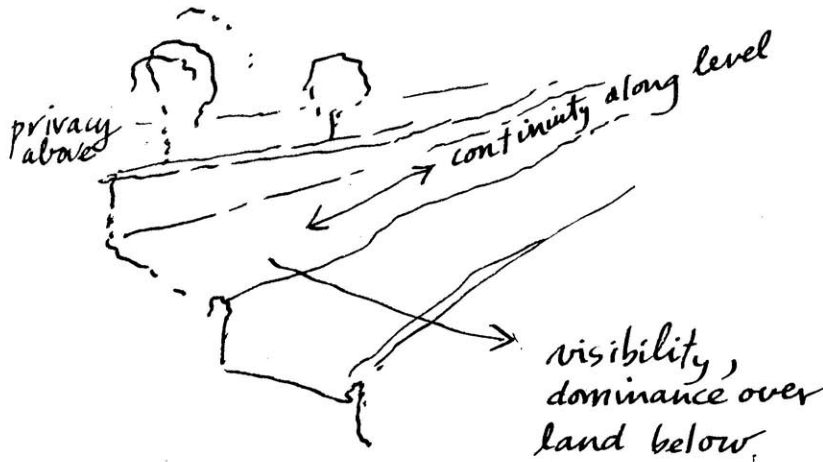


Lower Mills: (below)  
fields of marsh grass  
seen from rock out-  
cropping below site,  
(right) grain of area  
and proposed additions,  
(lower right) model of  
primary structural  
systems.



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## Terrace

The hillside made arable and habitable forms the terrace; it is the field adapted to the hill.

The differentiation of a continuous level and direction (with the contour of the land) from adjacent higher and lower levels provides definition for movement and use.

Movement along the level is continuous, an extension of the space, and public in nature. Movement perpendicular to the level is a change in position to another use and zone.

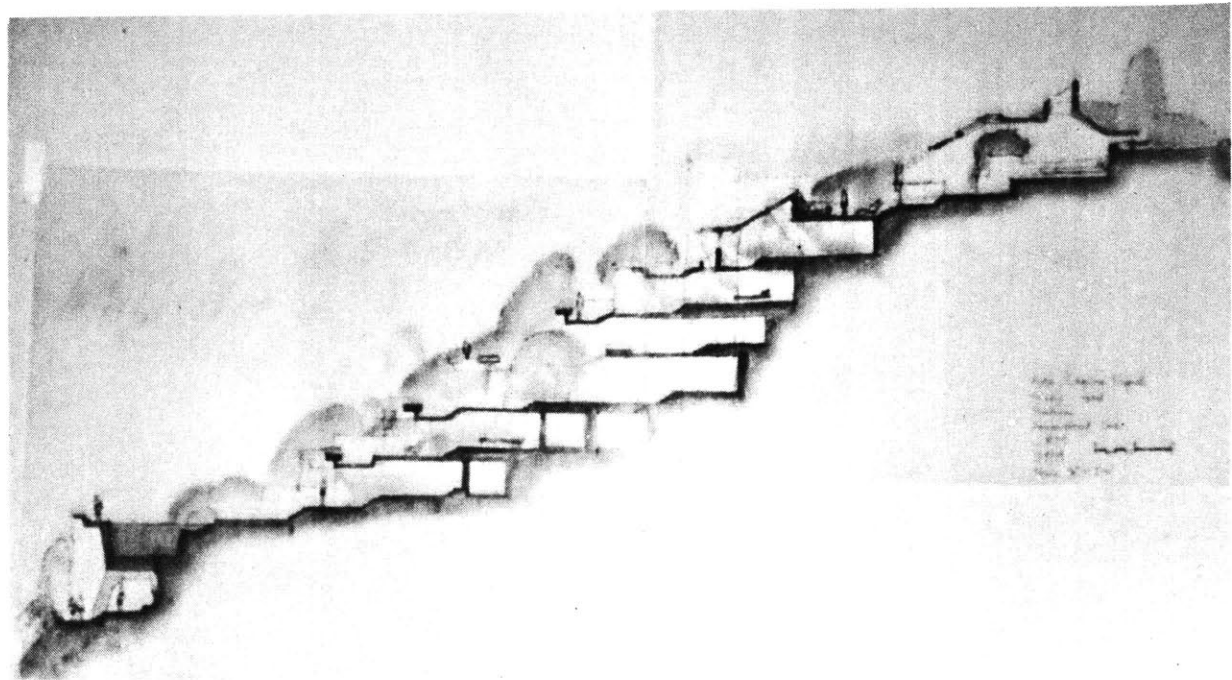
The higher position has a dominance over and privacy from the lower position. Land above a house recognizes the dominance of land; land below is in the dominion of the house.





Y. Futagawa, Terrace Houses (Atelier 5)

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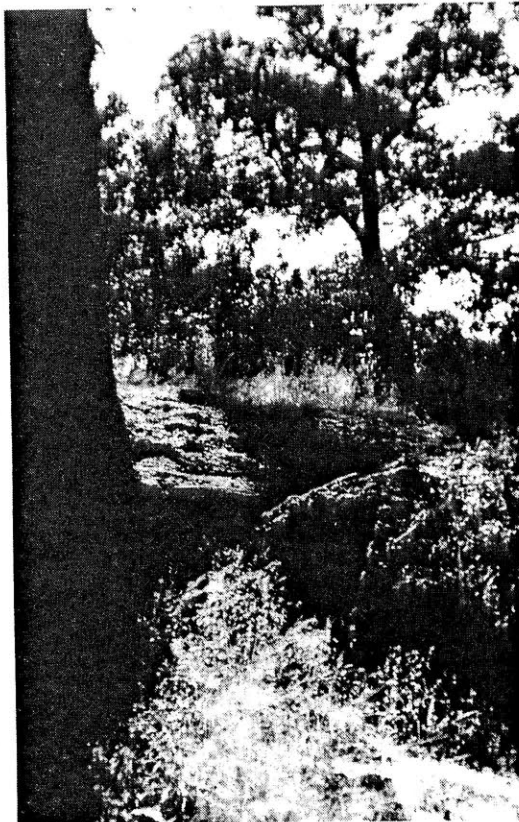
Terraced hotel, Laguna Niguel, Calif. Drawing by J. Myer, Arrowstreet, Inc.

## Outcropping

From field or terrace arise locally significant places or outcroppings. They may be the tip of a larger but buried form or an added form. Their relative size is small, but their position is prominent.



*Lower Mills  
- outcroppings.*



Outcropping as tip of larger, buried rock.

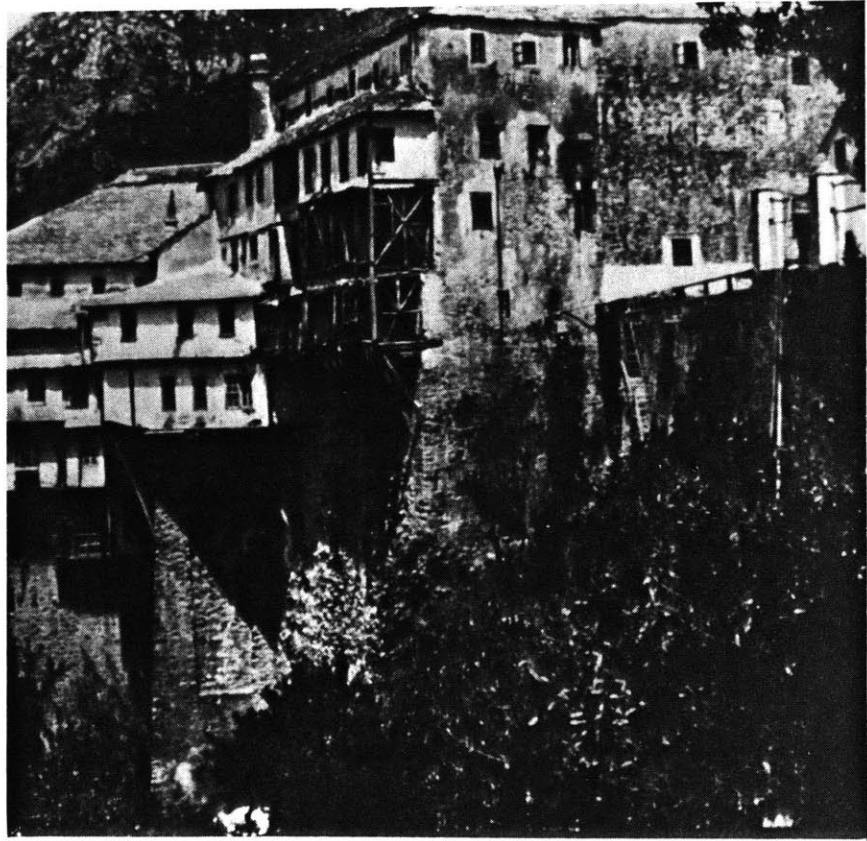
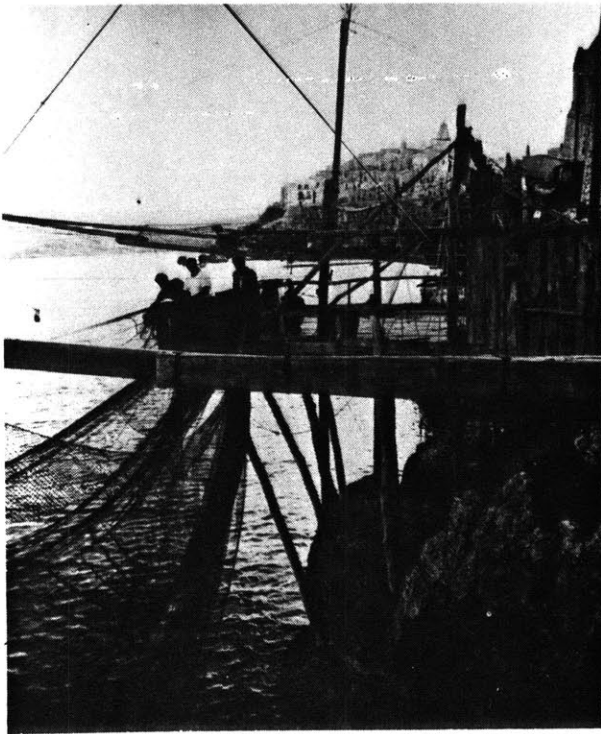


*HAR/19.*

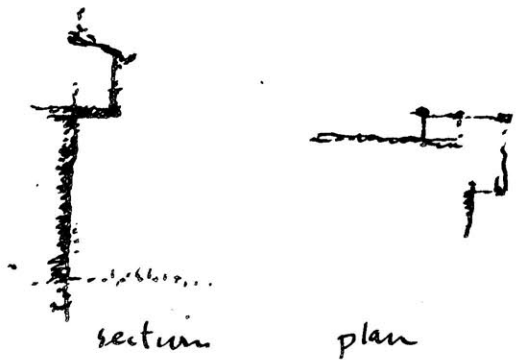
Outcropping as added  
form.

53

N. Carver

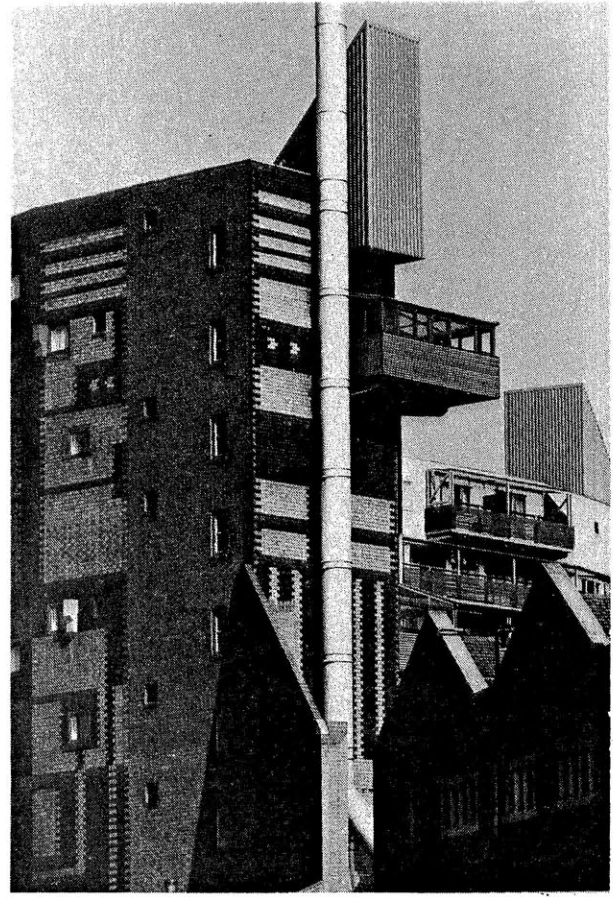


F. Miller, M.I.T. slide library, Mt. Athos, Greece

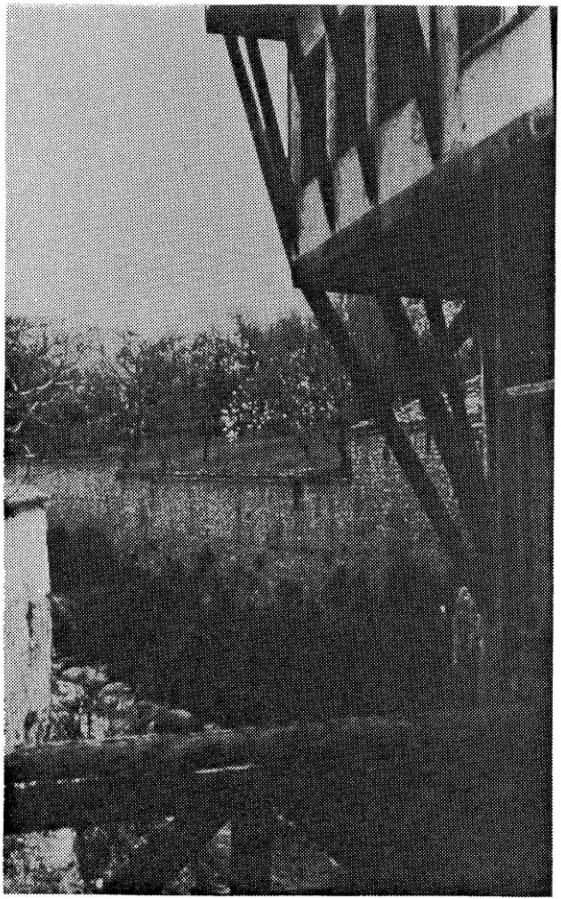


54

Y. Futagawa. Byker Redevelopment (Erskine)



Outcroppings have associations with points of vantage from which to watch or even protect. They are like Bachelard's "garret".

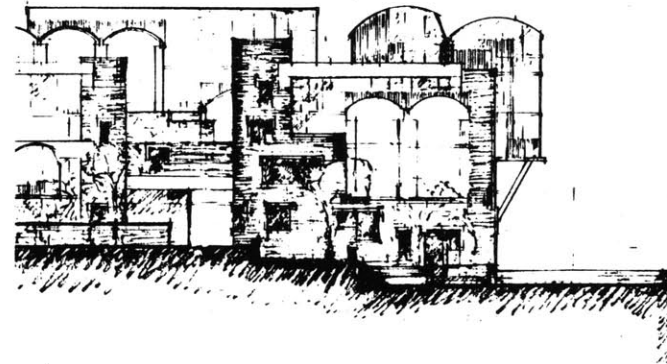
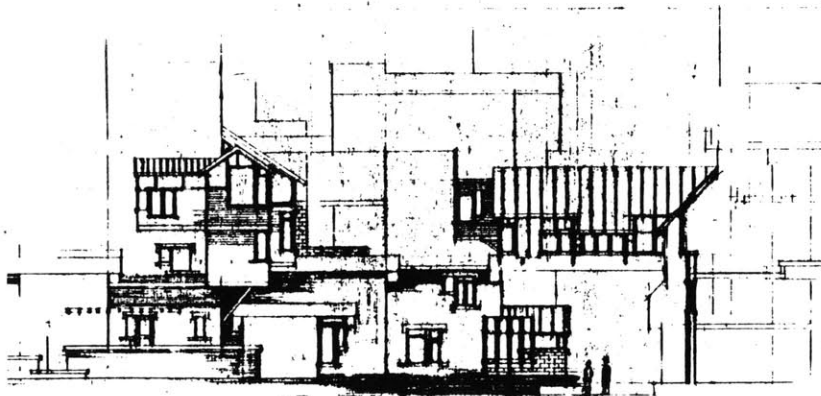


Kuban, M.I.T. slide library, Safranbolu, Turkey

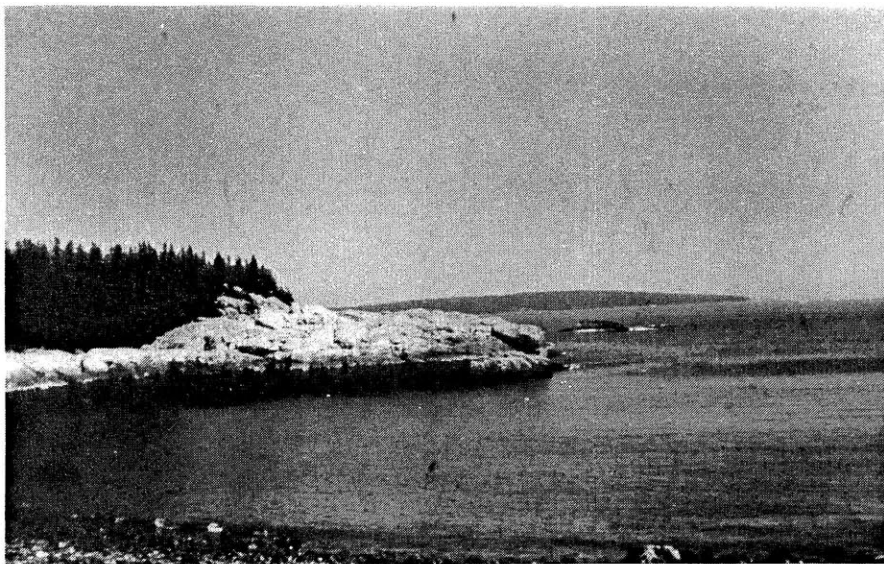
Lower Mills: Site  
development as exten-  
sion of pattern of  
outcroppings forming  
the river.



Outcropping form in two elevation studies.







Reciprocity in plan.

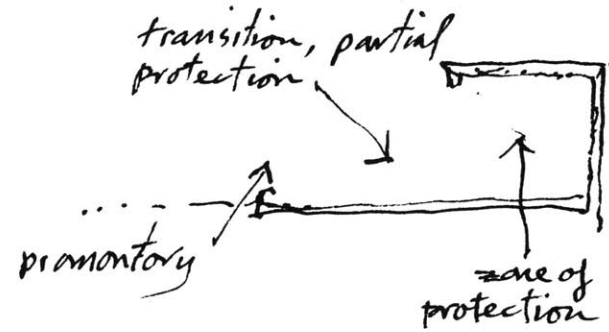


## Reciprocity

In relationships between different land forms (land and water, forest and field, hill and plain) one which is particularly habitable is a reciprocity. It is one form extending into another, exchanging prominent and protected forms. The protected form (concave) is the natural harbor. It offers both shelter and ready access. The prominent form might be a peninsula or promontory.

The edge zone is maximized by the reciprocal relationship, and accordingly the possibilities for association and access between the two sides.

The J-shape abstracted from the reciprocity provides the range of protection and exposure that reciprocity creates: (1) sheltered on three sides, (2) some definition or protection while moving outwards, and (3) a promontory.



Reciprocity in Section.

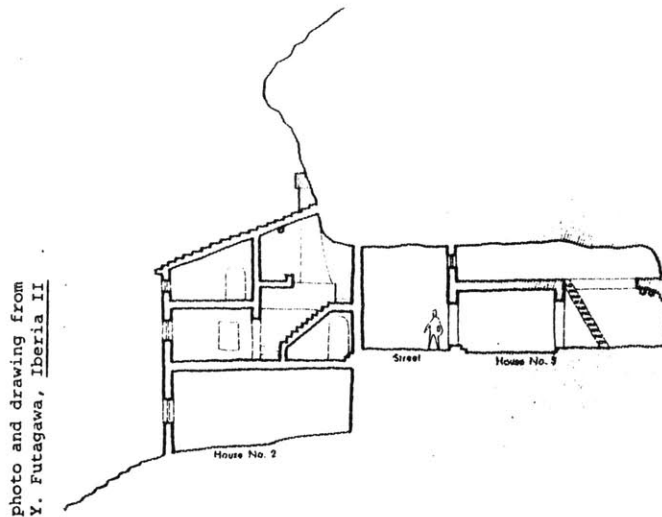
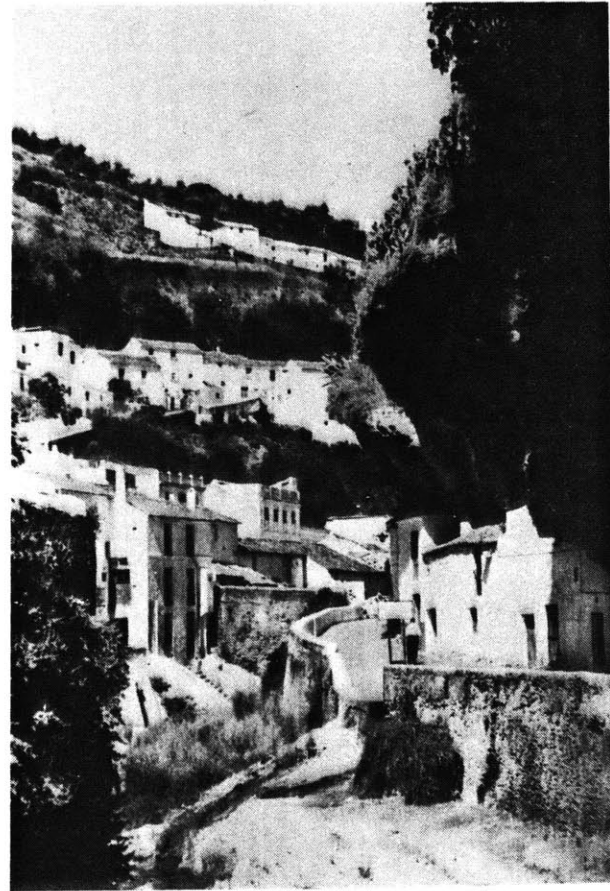


photo and drawing from  
Y. Futagawa, Iberia II

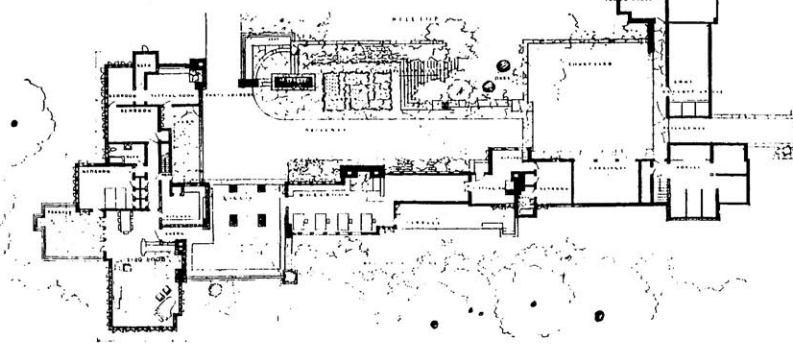


Reciprocity along the river - Baker House,  
A. Aalto.

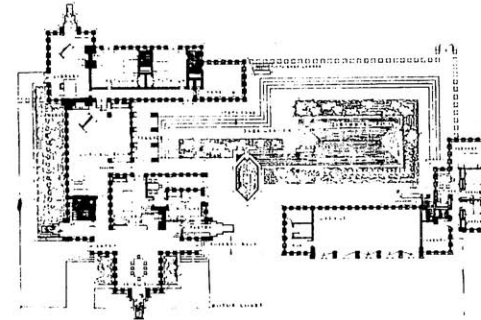


*Photo from Gutheim*

174. TALIESIN I, SPRING GREEN, WIS. 1911.



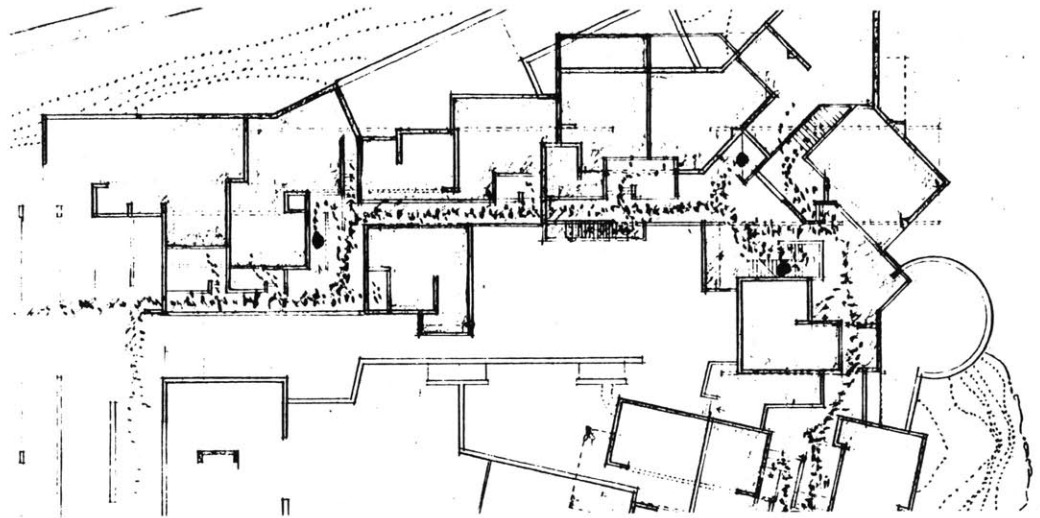
175. PLAN.



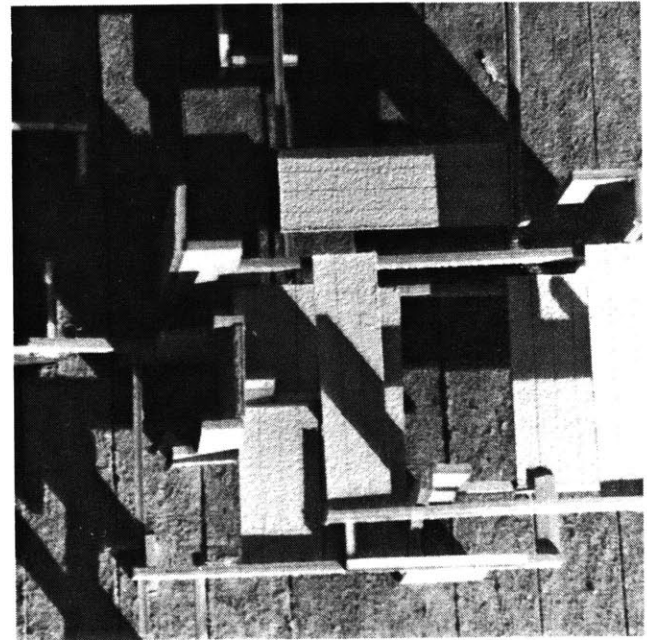
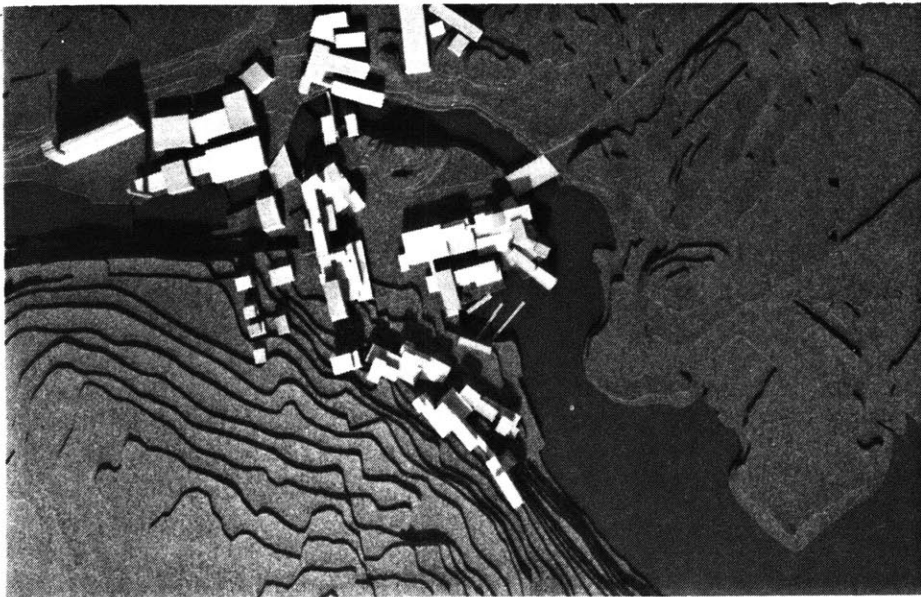
*F.L. Wright drawings from H-R. Hitchcock*



Lower Mills: (below)  
Reciprocity along the  
river edge to maximize  
access and extension of  
the river zone; (lower  
right) The primary  
structural system in-  
cludes J-shaped walls  
to support beams and  
planks, (right) Recip-  
rocal form in the  
building massing and  
access.



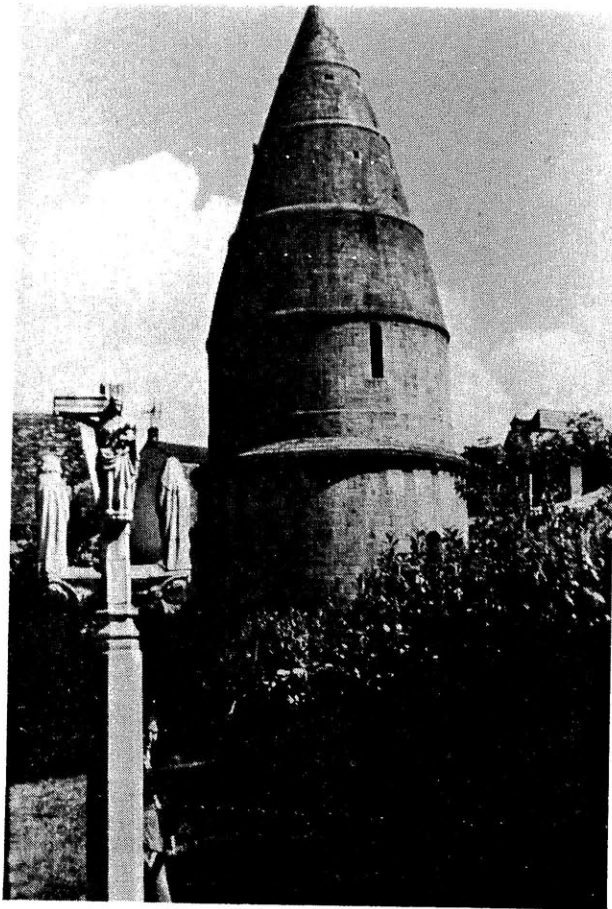
59



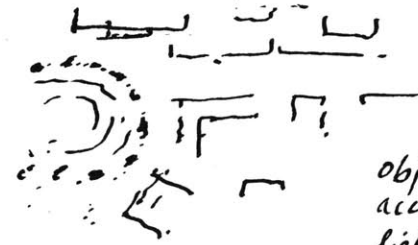
## Object in Field

Recognizable objects within fields have been important in the pattern of settlements. Villages with a "field" of houses and places of work have established recognizably different places and buildings for collective government, worship or unique functions.

The form of objects is often circular or square, usually not strongly directional. Their organization is often central or axial in comparison with the field that encourages multiple or optional relationships among parts.



Incorporated accessibly within a field they provide necessary orientation, especially when the directions in a field shift. Set apart by transitional zones these objects have sacred or forbidding associations.

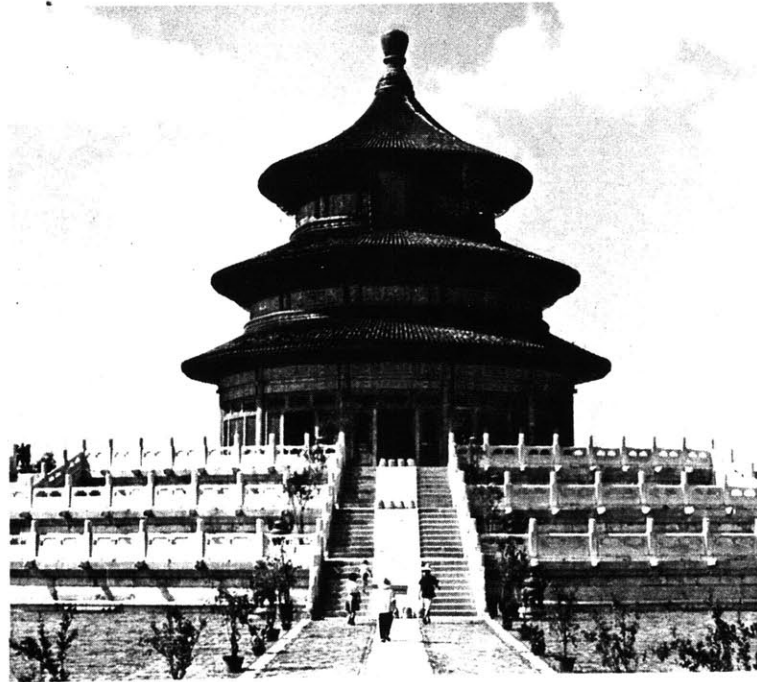
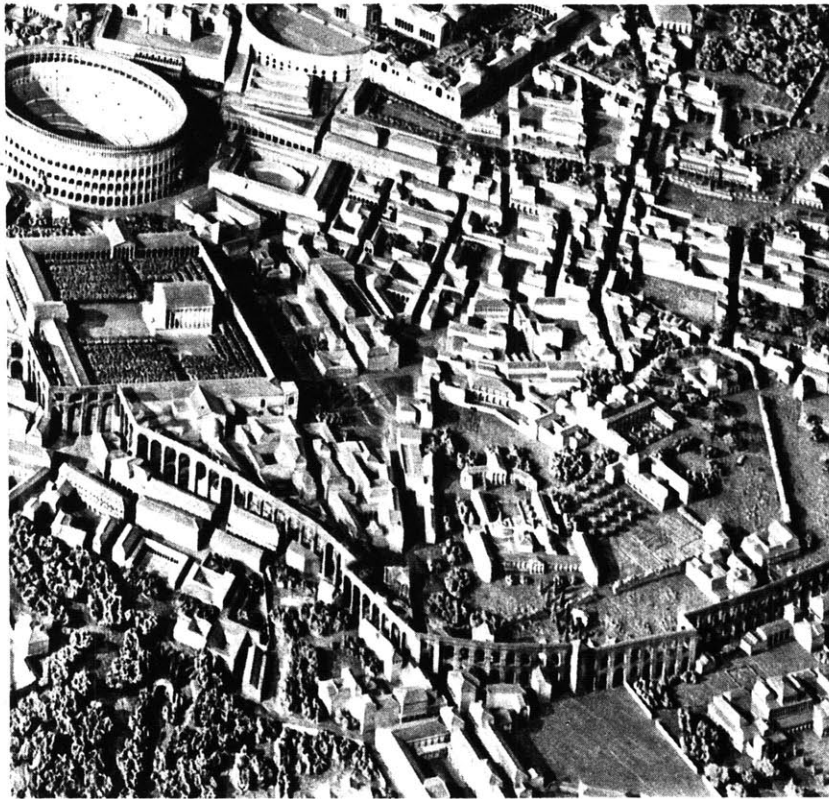


*object accessible in field.*



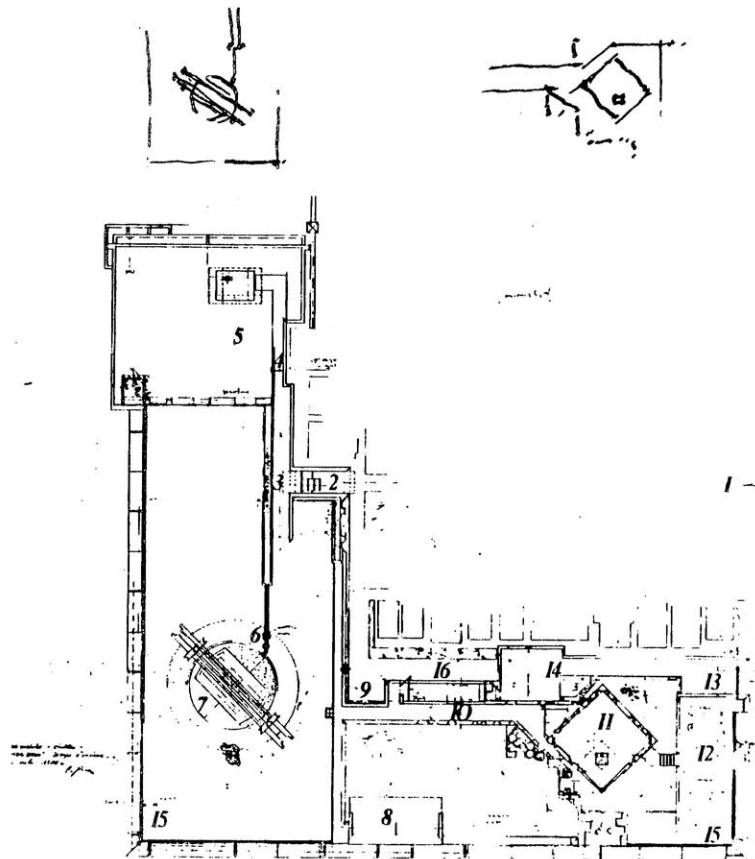
*object made separate from field.*

Photos from C. Norberg-Schulz, Genius Loci

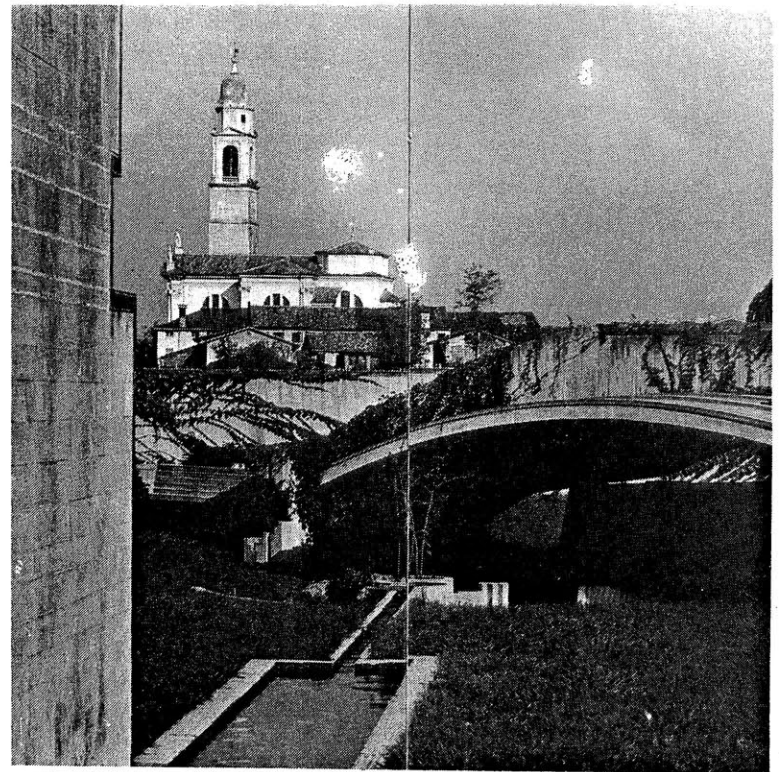


Scarpa: Brion-Vega  
Cemetery: Scared  
tomb: object form,  
separate except for  
water course.

Chapel: object form  
separated by water.



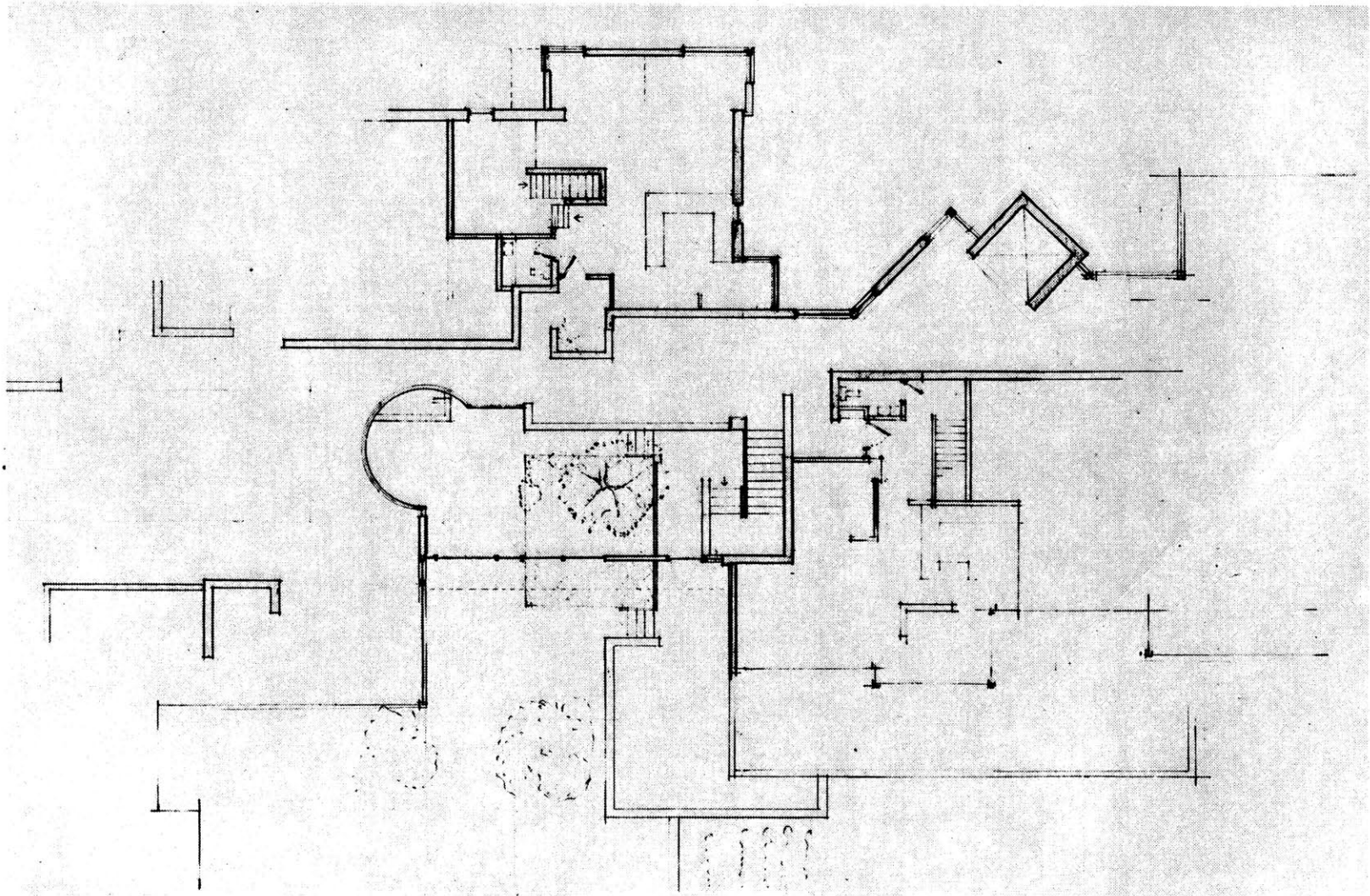
Water course to tomb.





Objects in field: Lower Mills Studies.  
Elevator and common space.

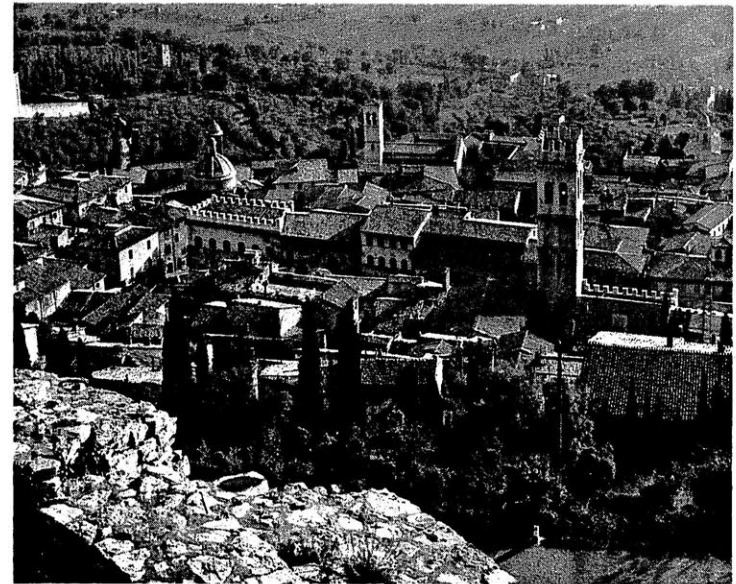
63



## Directional Growth

Landscapes were frequently formed by directional forces (folds, cracks, erosion) and directionality remains a prominent attribute. The sun provides significant directional orientation, also the winds.

Directional growth or the directional addition of built places is a fundamental way of extending and responding to the initial forms in the land. In many sites there will be multiple directions inherent in the site. Siting of buildings can strengthen or diminish particular directions. In more built-up sites, roads and existing buildings also define directions to which new interventions should relate.



C. Norberg-Schulz, *Genius Loci*

Assisi (left) from above and Blackman House  
(M. Smith) directional with the contour of the  
land.



Locoronotondo's streets moving up stairs.  
Public stairs are in direction of movement.  
Perpendicular stairs are to privacies.

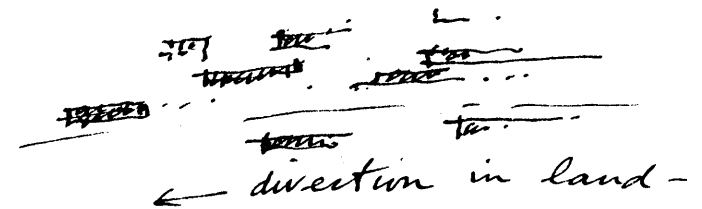


N. Carver

Three types of directional additions or change can be described:

1. reinforcement & extension of direction, which strengthens the form in the land and which provides maximum continuity, ie. direction of both movement and use is similar. Given the general need to create habitable space, directional growth as a field is more usable than linear directional growth.
2. complementary (perpendicular) direction which encloses spaces. This results in discontinuity in movement along primary direction. The square form signals a stop in directional movement.

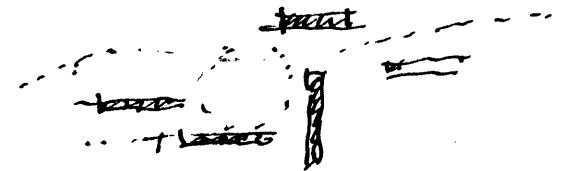
### Extension



not:



### Enclosure

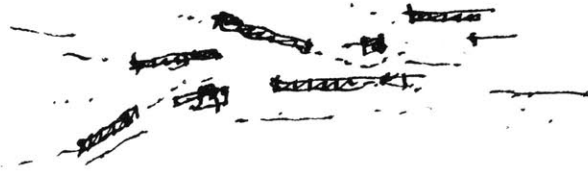




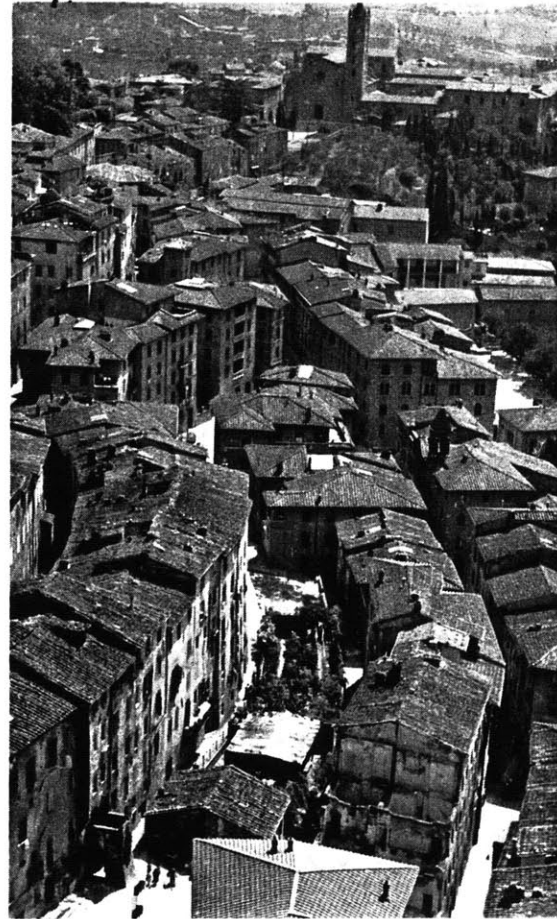
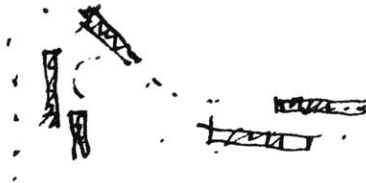
3. variation or shift in direction, which  
(a) may respond to conditions in landscape or (b) creates space of varying dimension and a gradation in continuity.

A small variation ( $<20^\circ$ ) will read as extension of the primary direction. A greater shift ( $>20^\circ$ ) will strengthen the complementary direction.

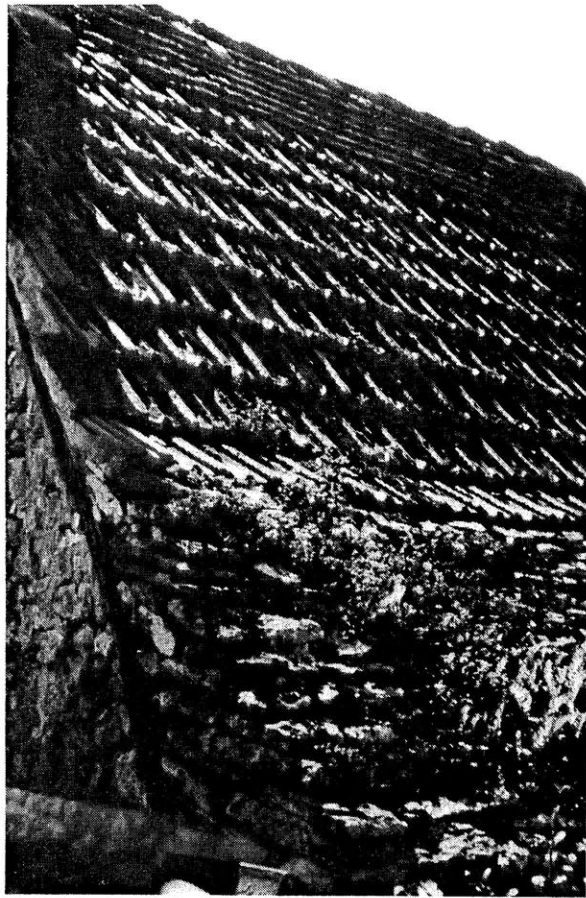
Variation ( $<20^\circ$ )



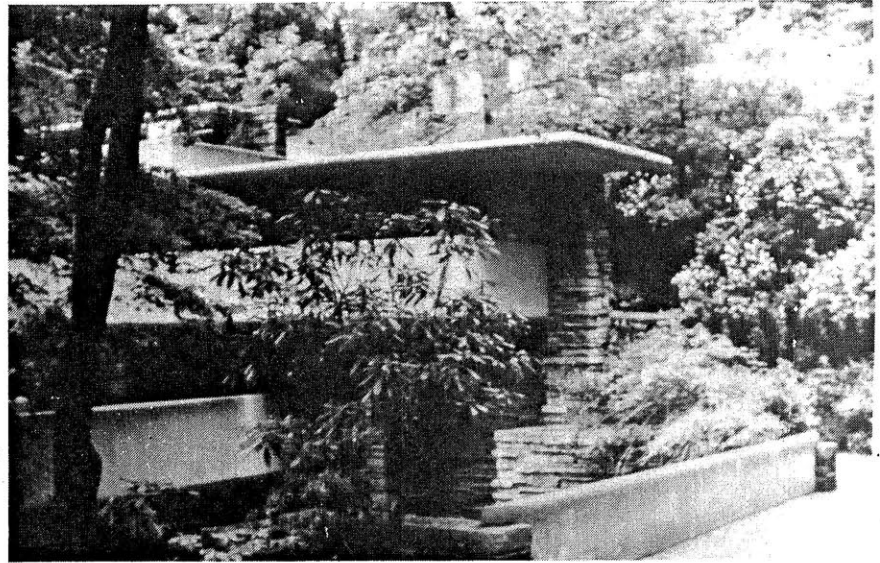
Shift: ( $>20^\circ$ )



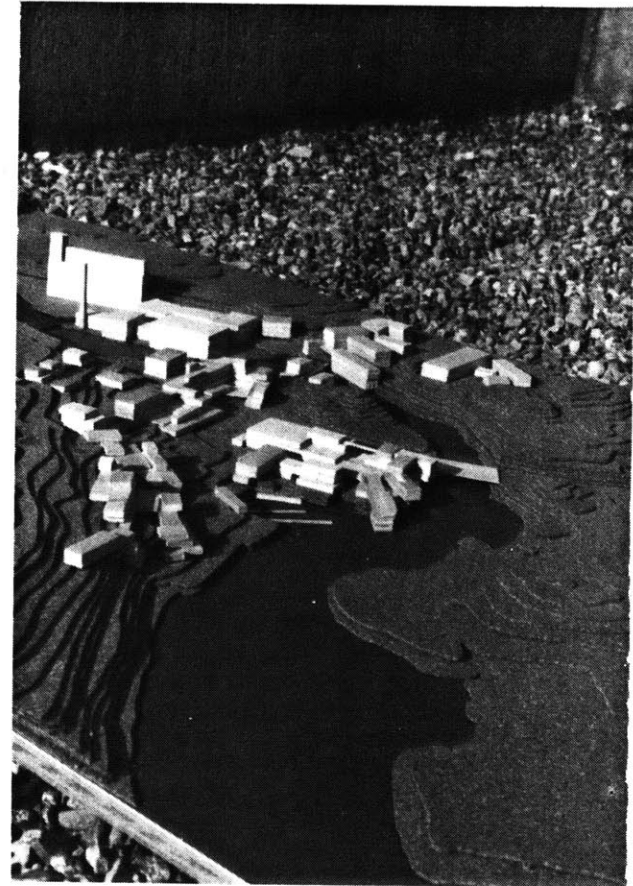
C. Norberg-Schulz, Genius Loci



R. Slattery



Strong horizontal directions in concrete and stone work.



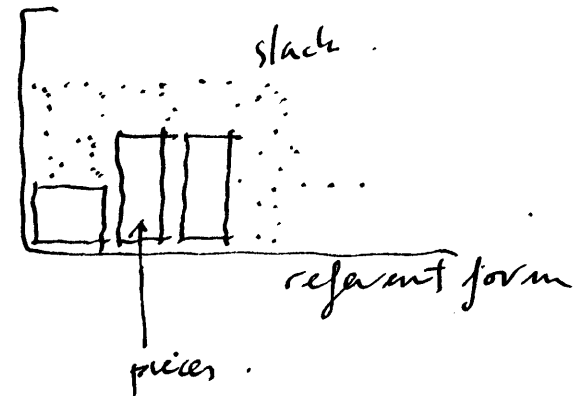
Lower Mills: directions  
 in the site studies

## Registration

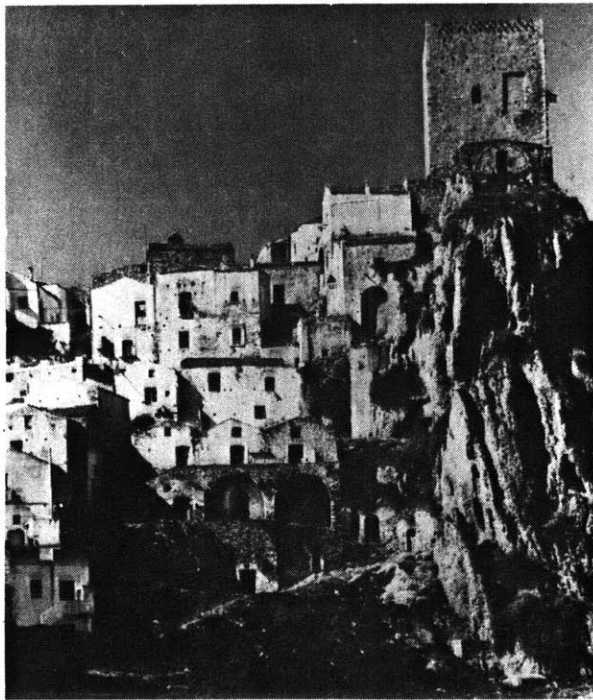
Registration is directional growth which starts from a position of reference and adds incrementally in one or more directions. It is evident in landscapes where there is a strong referent form, such as a cliff, which provides shelter and protection.

It has several elements:

- 1) the referent form, the point of registration
- 2) the added pieces, added in a continuous, adjacent manner
- 3) the slack or open area in which additional growth could occur

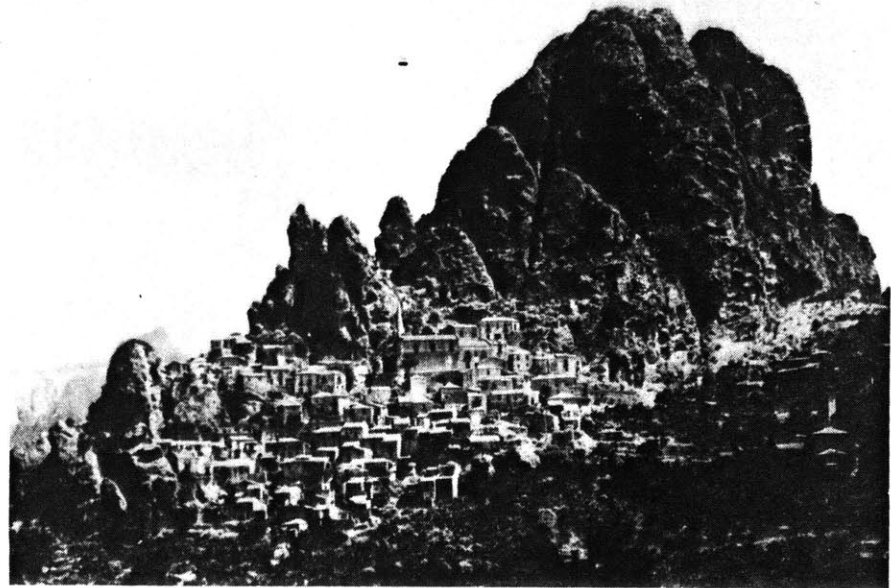


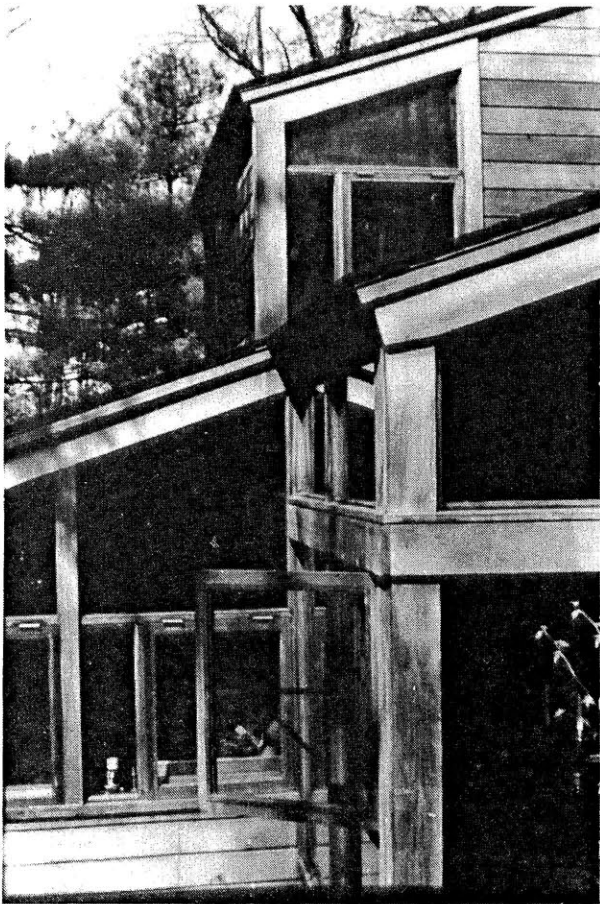
photos by N. Carver



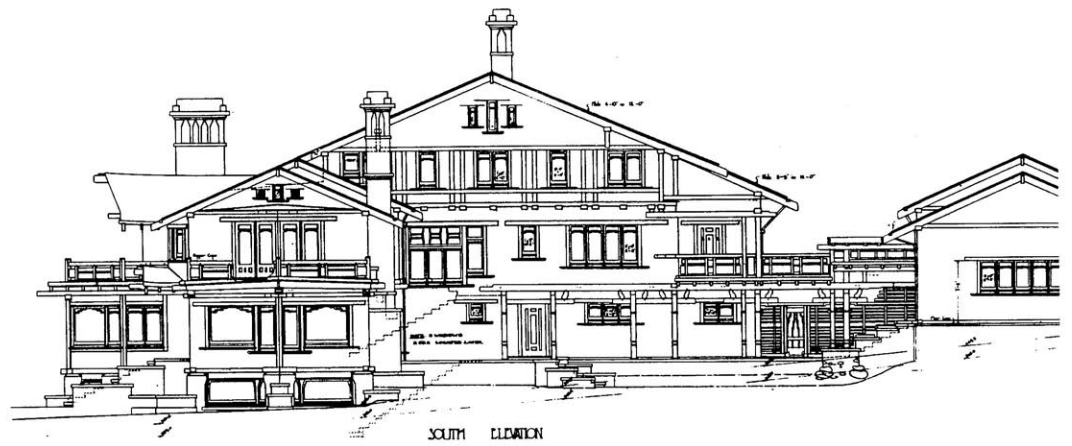
71

Buildings registered to rock.



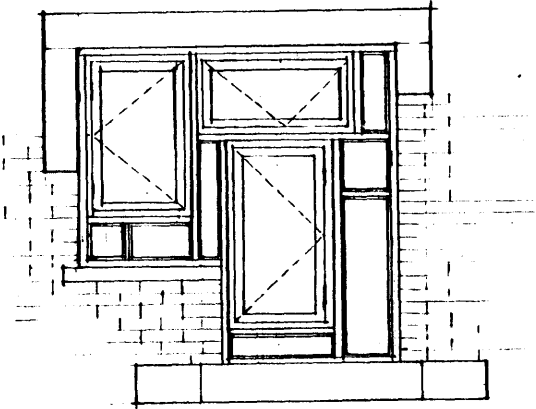


Registration of windows. M. Smith, Strimling house; Greene and Greene, Thorsen house.

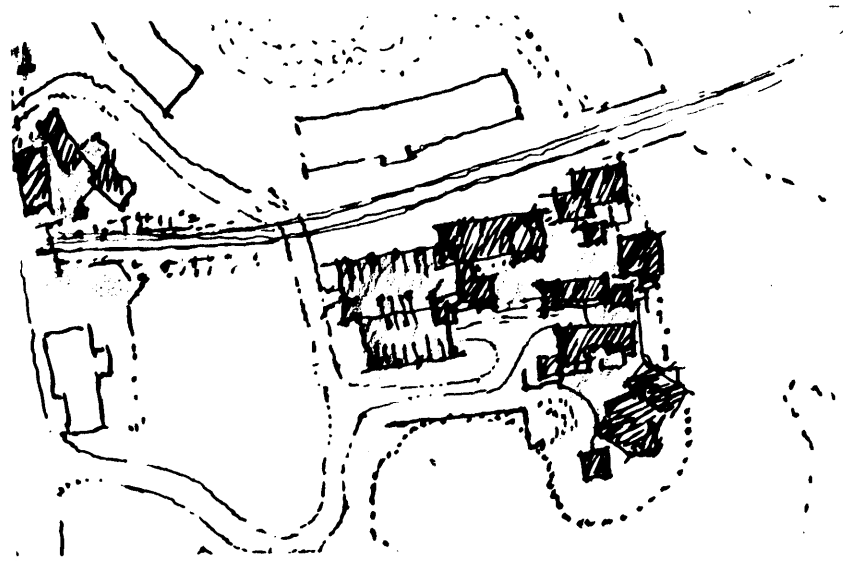


SOUTH ELEVATION

Lower Mills:  
Registration in  
window opening.



Buildings registered  
from garage.

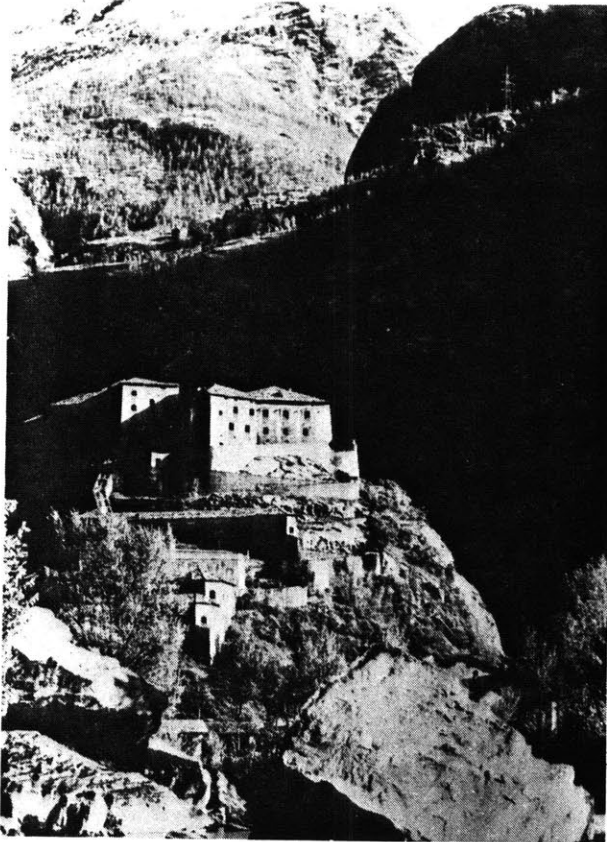




## Intensification

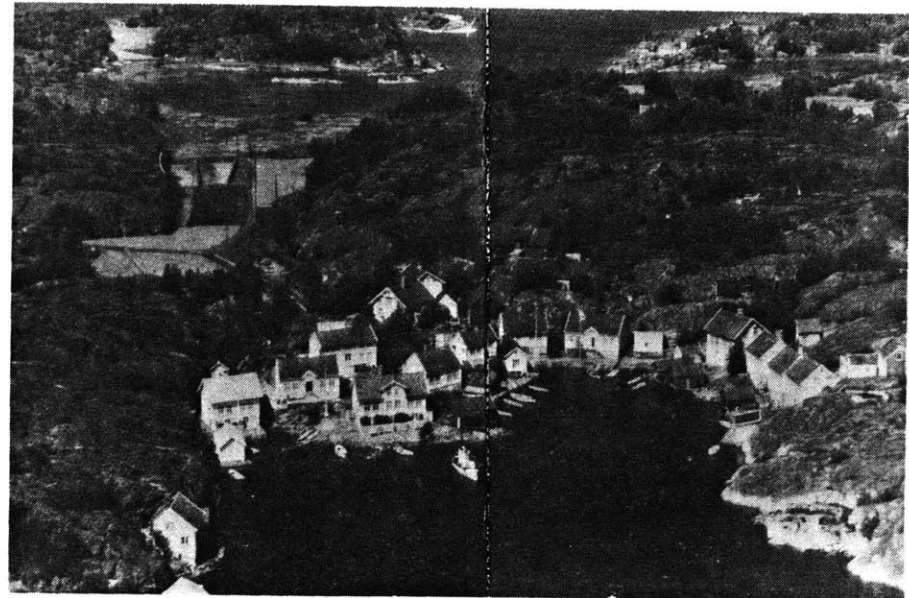
Intensification is a process of addition and change in which the original form is retained but given increased definition providing more opportunities and options for use. The original form may be a harbor, a path, or a point.

Intensification of point.



N. Carver

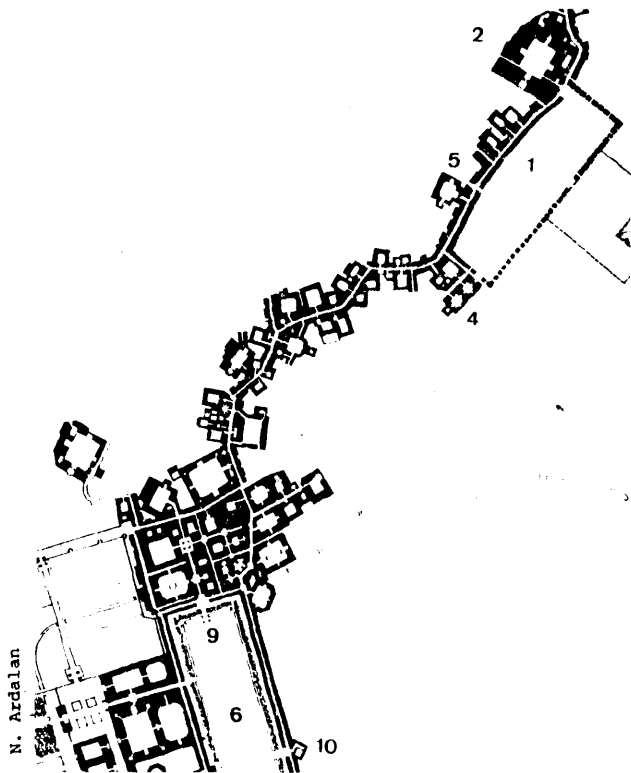
Intensification of harbor.



C. Norberg-Schulz, Existence, Space, and Architecture



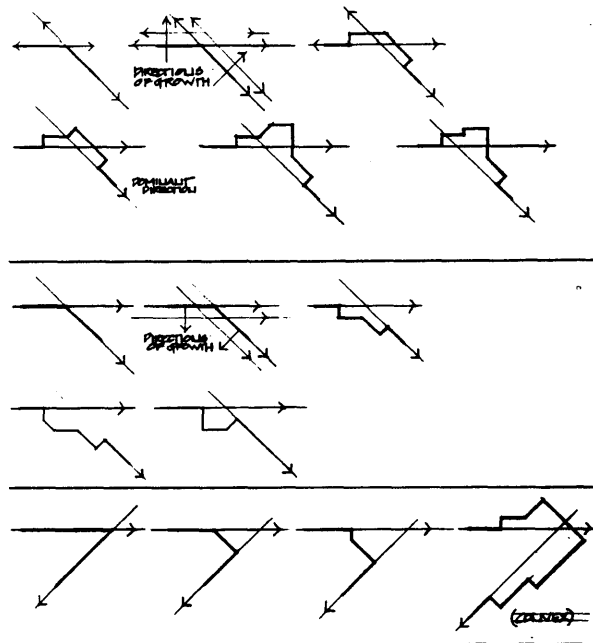
Intensification of path. (Bazaar at Isfahan)



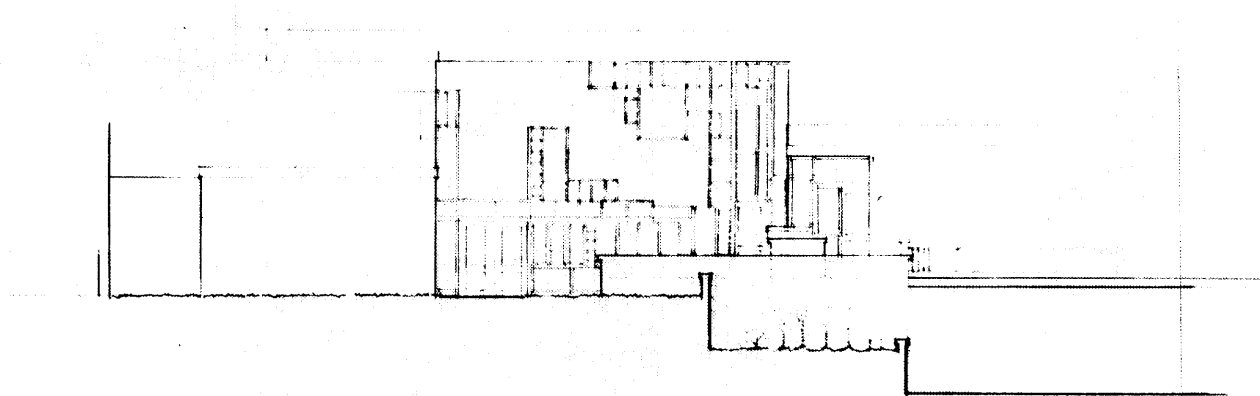
Intensification of corner. (Taylor Dueker, MIT Thesis)

### CORNER

25

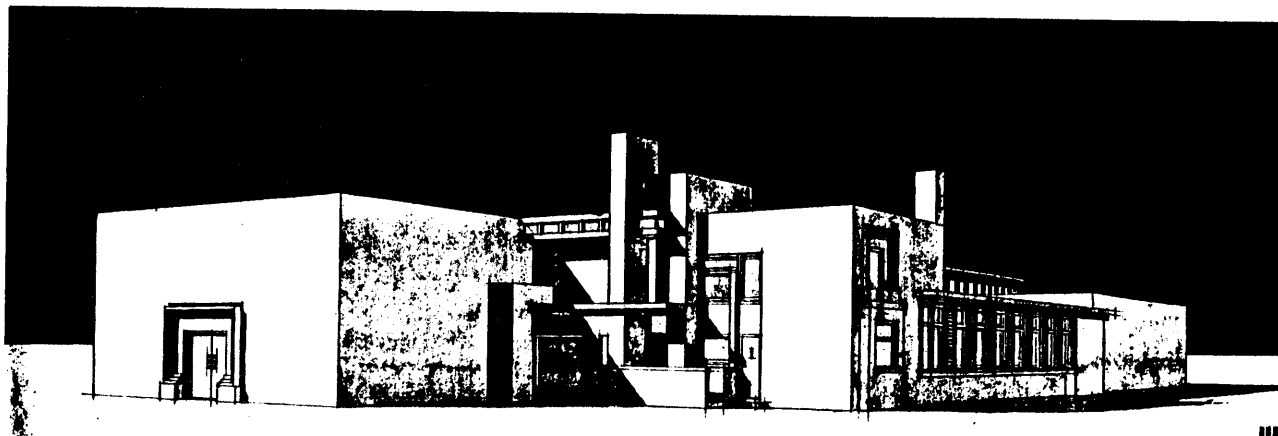


This discussion in no way is intended to be exhaustive, but rather a beginning to understanding the forms and a basis for analyzing existing forms and one's own design work. More possibilities may be found in the Range of Elements for Collage.



Lower Mills: glazing at entry.

Intensification at entry, J.P. Oud.



J. J. P. Oud

## Stability

The built result of adding to a landscape should sit with stability on the land.

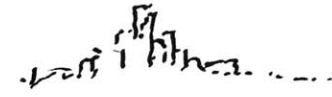
This stability is importantly related to the predominance of the horizontal dimension, stressed by F.L. Wright in much of his work. In a building, horizontal directions or differentiations can be emphasized over vertical directions. Stability is also affected by the dimension of open ground beside a building.

Aggregations of tall, vertically directional buildings will appear stable if in aggregation they achieve a strong horizontal dimension. This is also achieved by the proximity of intermediate height buildings around a taller structure.

*Stability in aggregations of buildings:*



*aggregation and surrounding open space.*



*adjacent intermediate heights*

*unstable.*



N. Carver

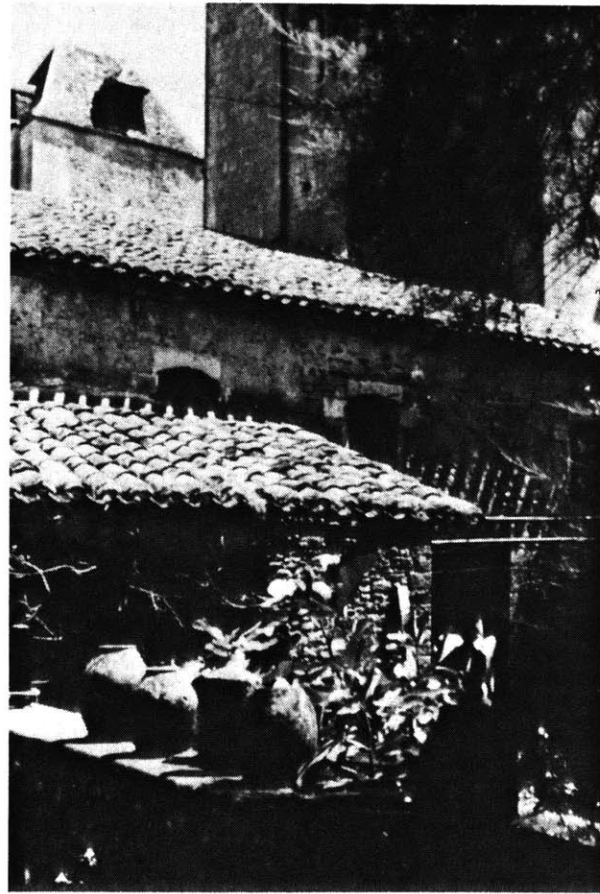
Stability occurs in smaller scales or in plan when the horizontal and vertical or two horizontal directions are equivalent, as in the case of a square. This form may stand independently (as an object in a field) or as the terminus of a directional sequence.

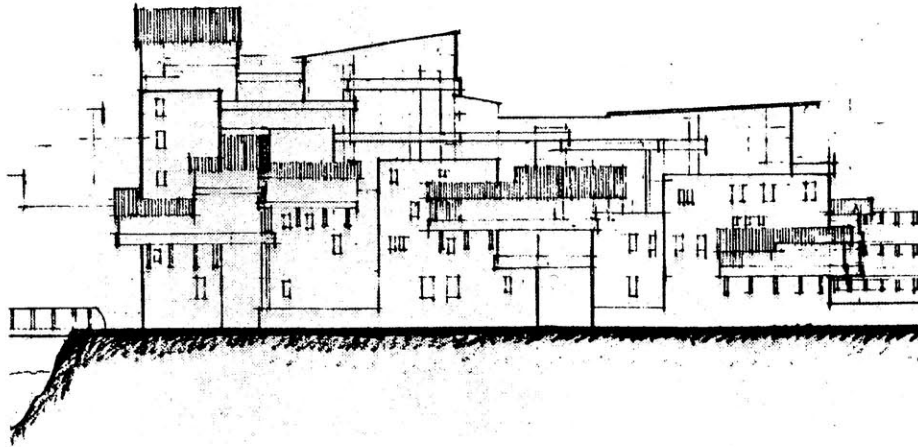
## Continuity

Continuities are fundamental to our understanding of space and our place within it. Things which are similar or connected define spaces, provide orientation as we move, and enable us to differentiate familiar and new.

When settlements and built additions to landscapes were small in comparison to context and built of the materials indigenous, continuity between built and natural landscape was strong. The additions to the landscape frequently complemented as well as extended the natural forms. The places of difference signified the human habitation, but it was a habitation compatible with and subordinated to the land.

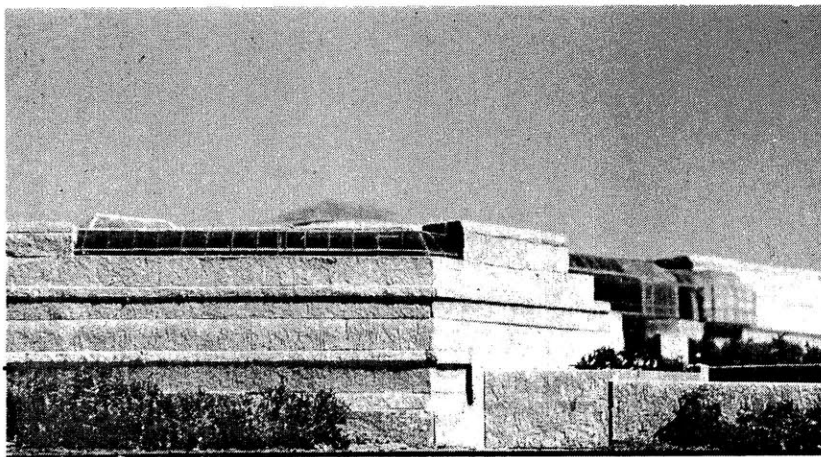
As the density of habitation and settle-





Lower Mills: study of continuous surface in elevation.

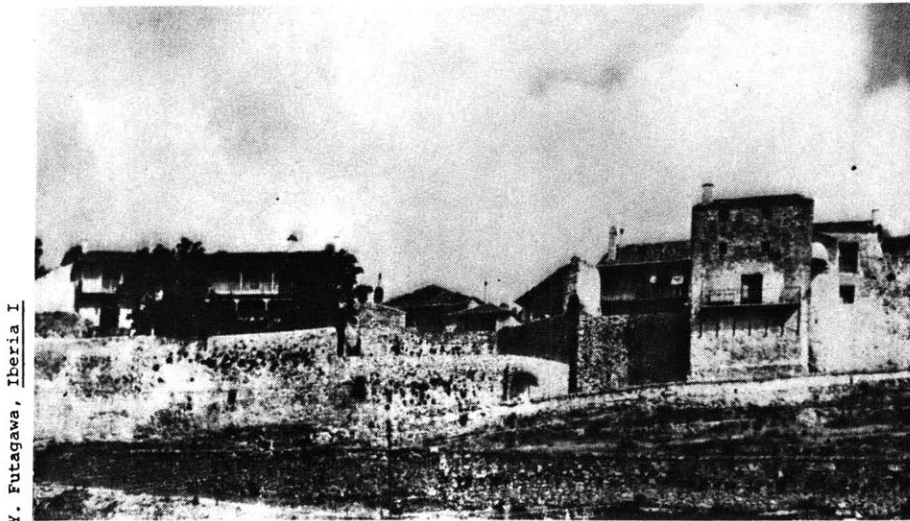
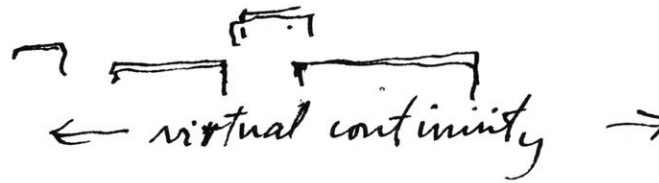
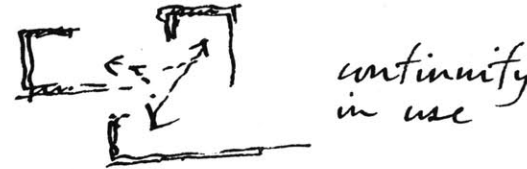
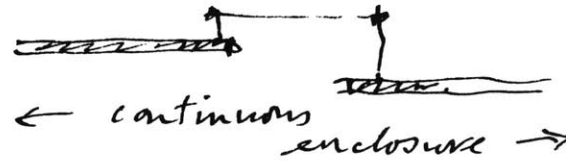
Continuity in granite, glazing Mass. Archives, Arrowstreet, Inc.



ment increases, the landscape has usually been subordinated. The processes of land ownership and construction have tended to further reduce the significance of land form in the total environment. Repetition is essential to the new forms - lots, blocks, typical floors, -- but the connections to landscape and to personally meaningful involvement in the environment are often gone. Continuity, in comparison with repetition, suggests the extension of certain attributes, say material and method of assembly, while one (possibly more) attributes vary, say height and lateral position.

It is possible to differentiate several types of continuities:

- Continuity in enclosure, ie. a continuous wall, screen or similar definition.
- Continuity in use, ie. a continuous use surface without continuous enclosure subdividing it.
- Continuity by aggregation or virtual continuity, ie. the sense of continuity achieved by closely spaced units.



Y. Futagawa, Iberia I

← . Continuity by aggregation.

← Continuous enclosure (and continuity with the ground).

## **Relation to the Larger Landscape**

The extent to which any new addition can be continuous with the larger landscape form in which it lies will be a primary determinant of its success by the values described here. By reinforcement of significant directions, by analogous forms, by indigenous materials, by references to local processes of formation (glacial erosion and deposits) additions and changes can be continuous with and strengthen the character of the landscape.

From the perspective of the Myers, the larger landscape is a thing to which it is appropriate to be subordinate: the penultimate provider, the good guardian.

From the perspective of Norberg-Schulz, it is the original repository and

expression of a genius loci and worth according reinforcement and extension.

Even in urbanized areas there is potential value to be found in the larger landscape as reference. Norberg-Schulz's above-mentioned analysis of the landscape sources for Rome's genius loci is one example.

Jack Myer suggests Trinity Church's powerful image may be related to its sense of association with the geological substrate of the Back Bay - an upward thrust of bedrock in the midst of urban life.



Shelter among trees, Les Landes, France.



Finnish landscape and building form.

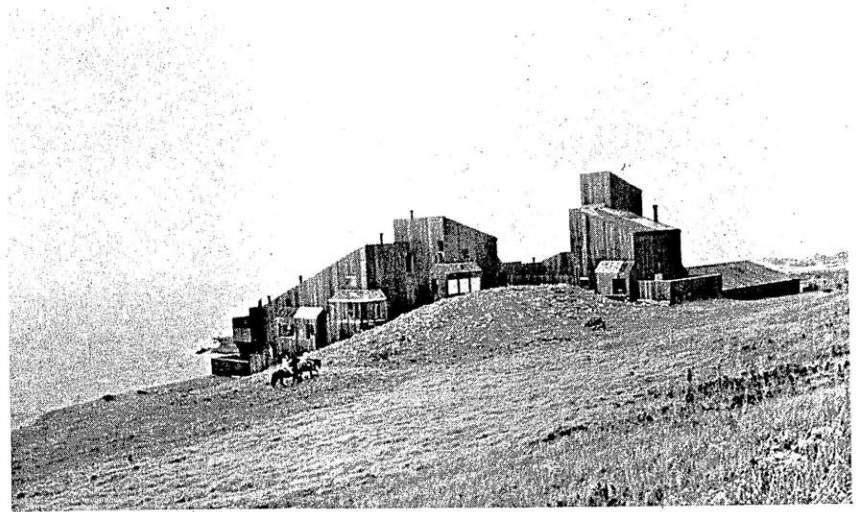


C. Norberg-Schulz, Genius Loci

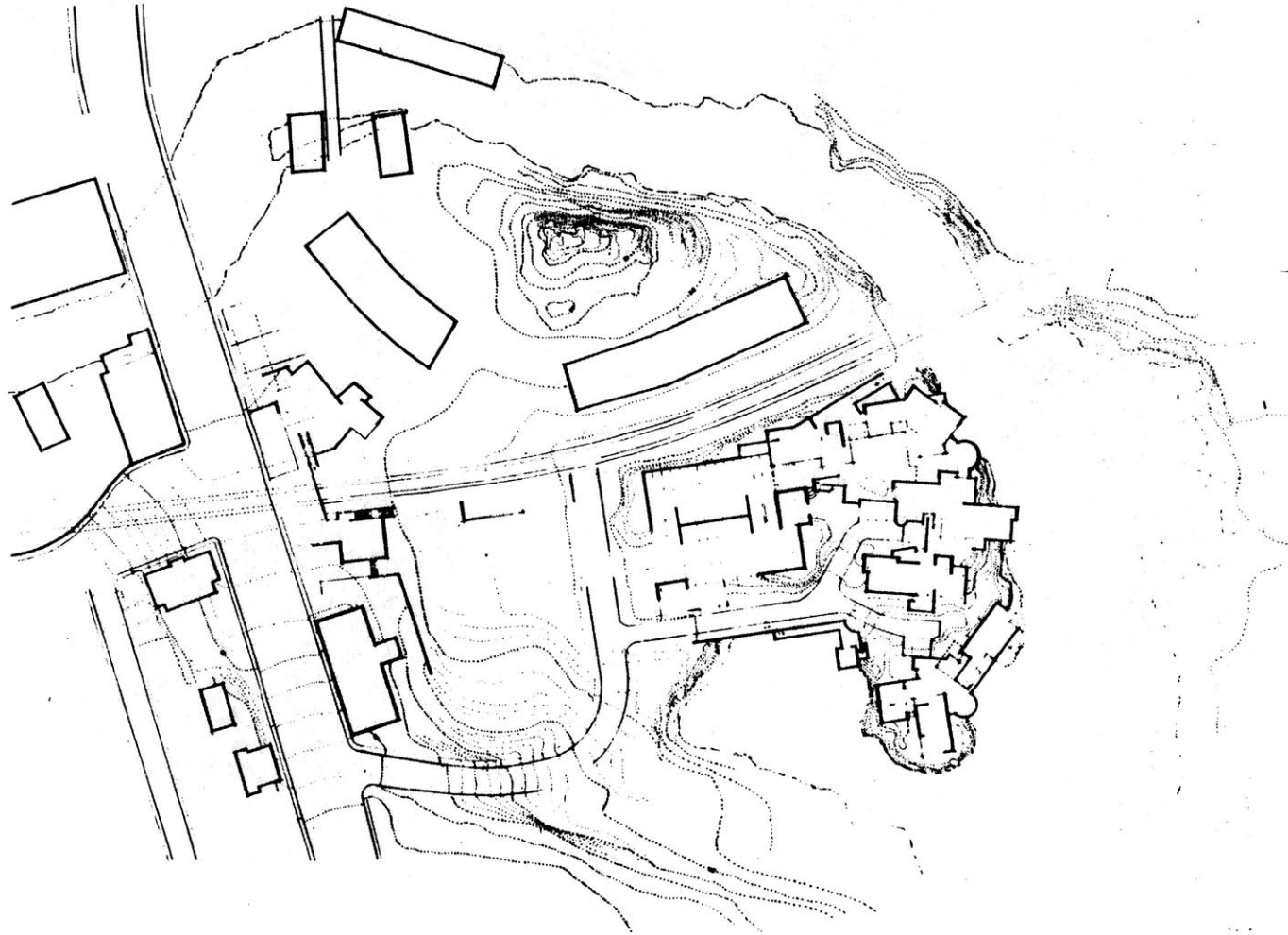
Continuity with an urban context.  
Piazza Media, Milan, BBPR.



California's coastal bluffs, Sea Ranch, MLTW.

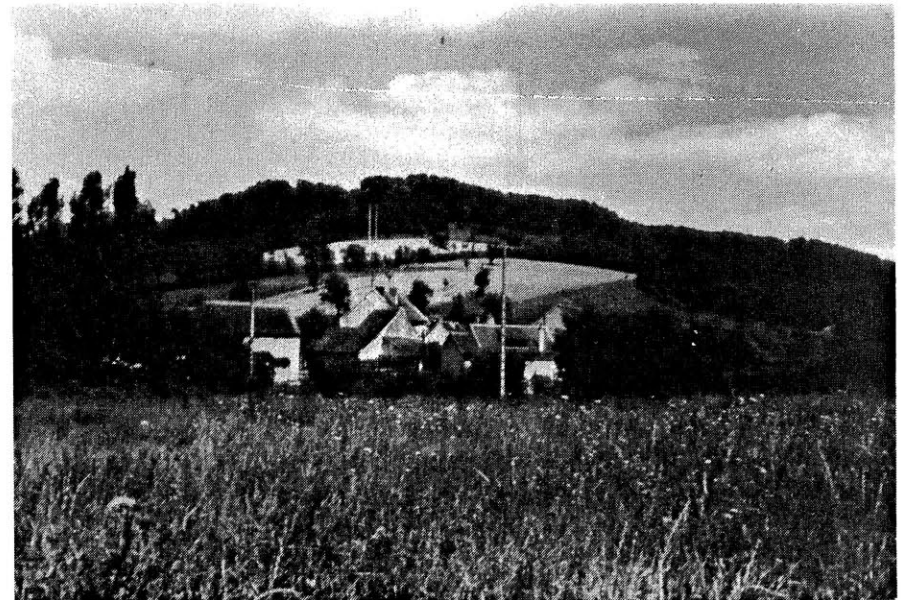


*Lower Mills:  
Outcropping form shaping the river bend.*



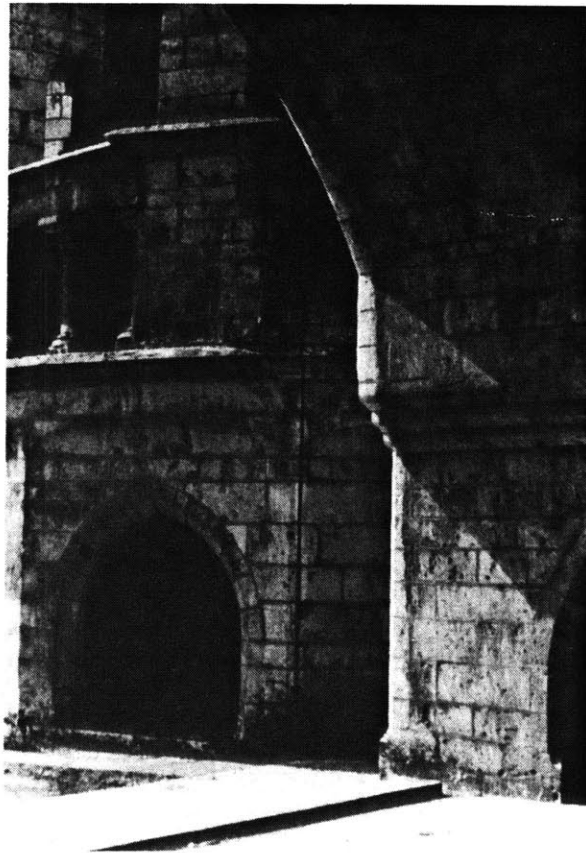
## Association with Life Processes

Places can take associations (by form or process of making) with life processes, both those common to all forms of life and those significantly human. Our ability to make connections between places and such processes explains the significance and emotion we attach to certain places.

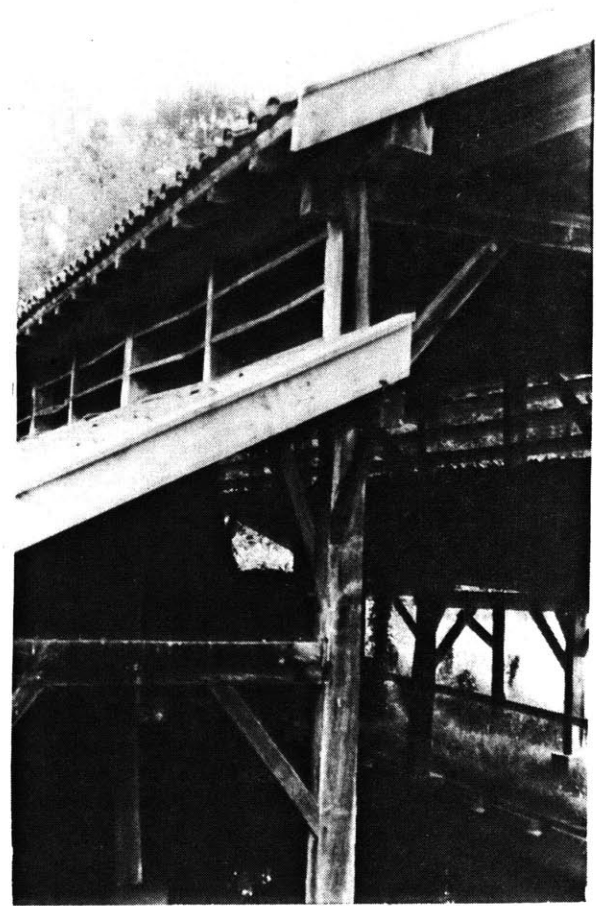


Nurturing....

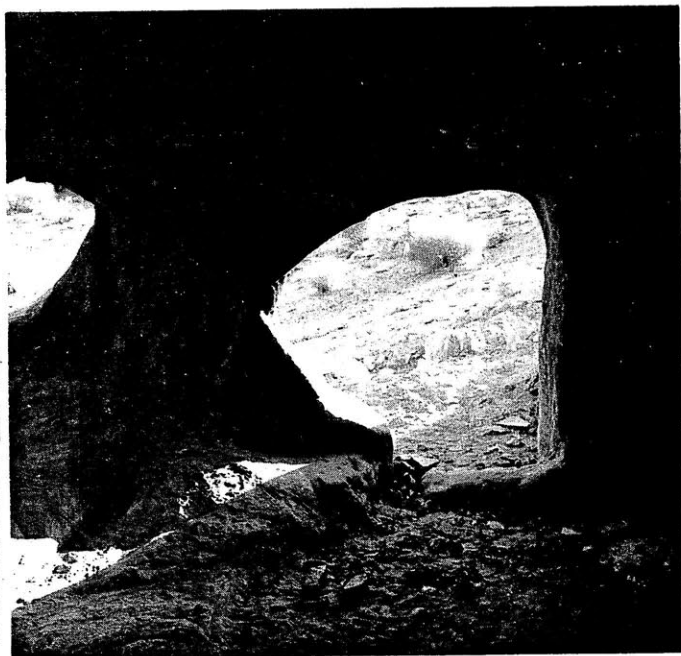
Sheltering....



Bearing, shouldering....

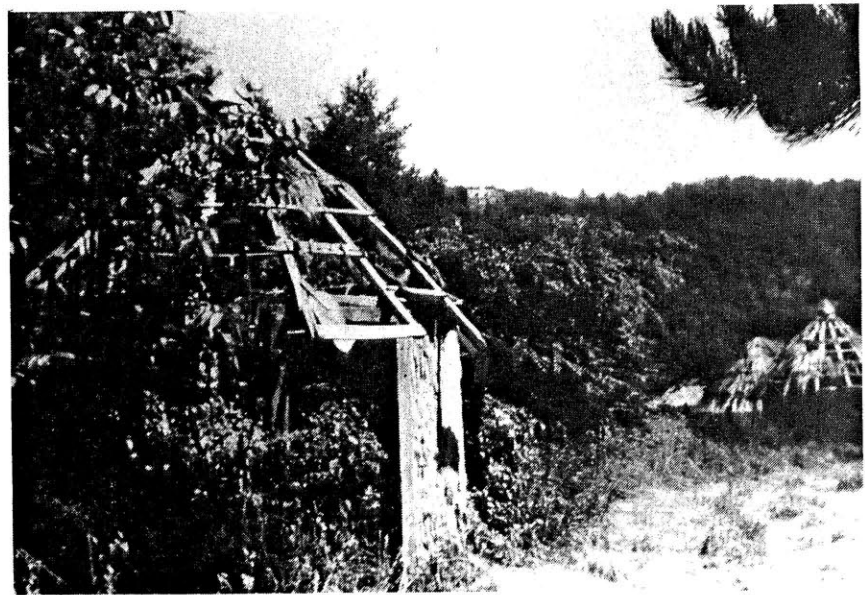


Originating....



C. Norberg-Schulz, Genius Loci

Passing away....



## Renewal

The lack of connection to any past has left many new environments sterile and lifeless. So to, restorations have removed the patina of time and made costumed manikins of older places. What is needed is a process of renewal that continues the old and allows the new. It is a continuity over time which is meaningful and like the processes of life.

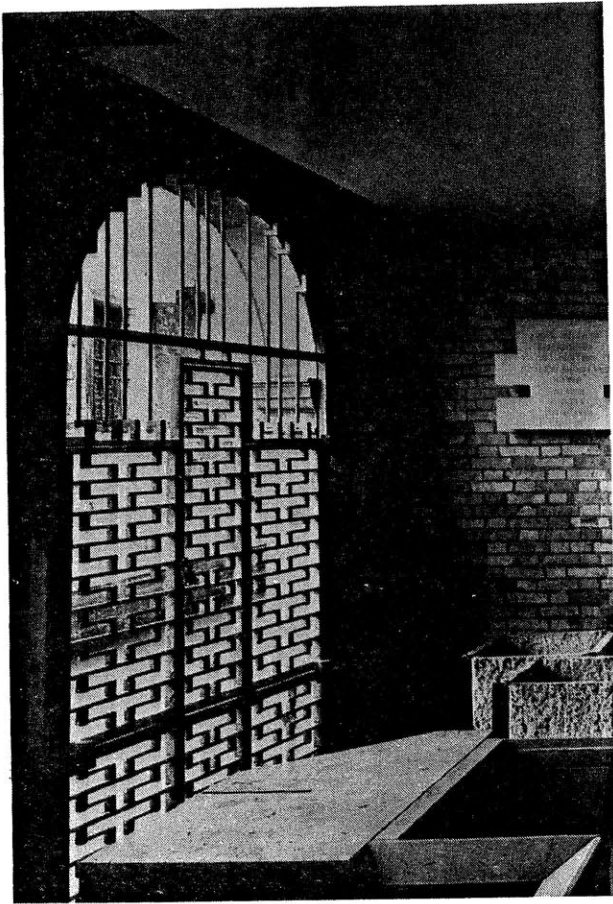
Farm buildings added over time.





Even in new construction the process can be supported by differentiation of more permanent and more temporary types of construction. A transition in responsibility for design and construction midway through such

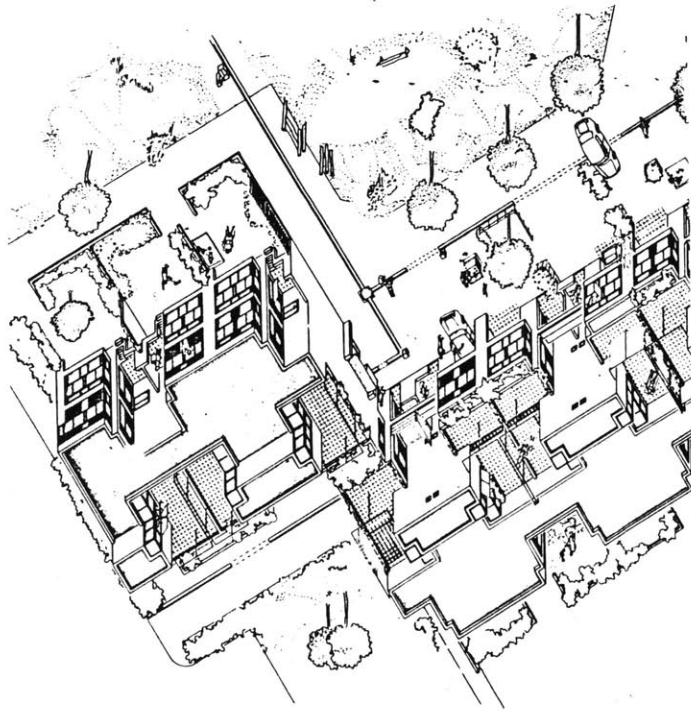
New added to old.



photos by Y. Futagawa, #51 (Carlo Scarpa)

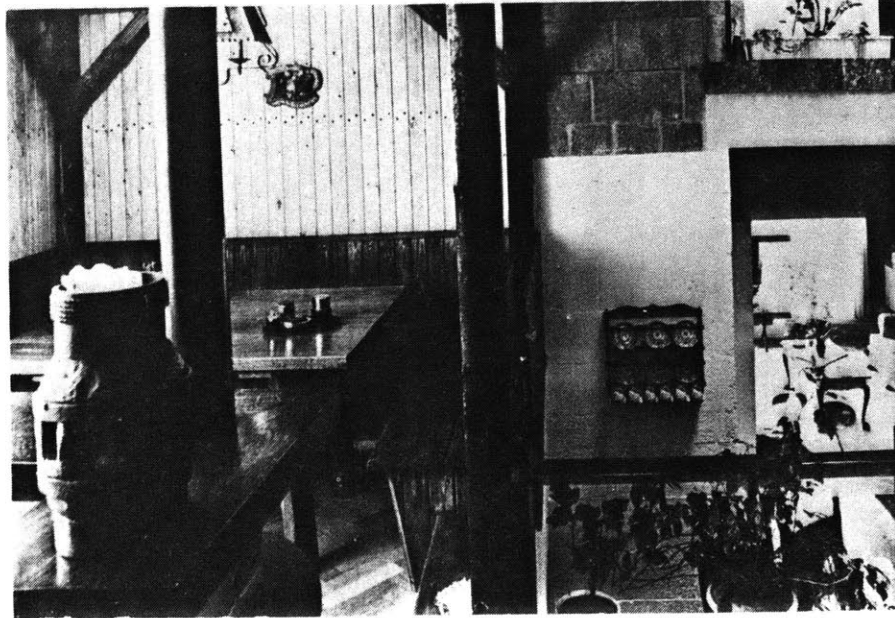
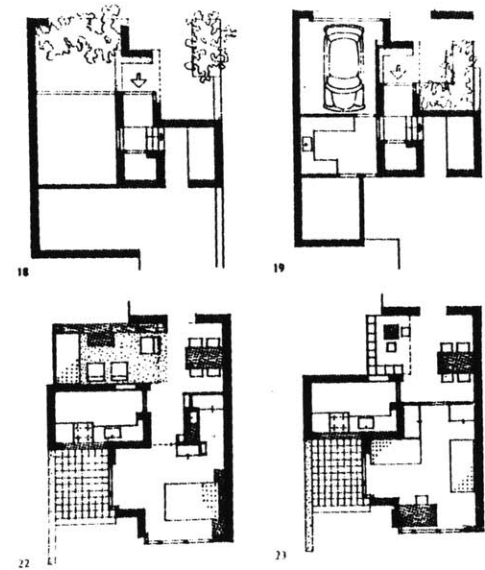


a project can provide the quality of renewal in the initial building, as done for example in Hertzberger's "carcase" houses in Delft. Though mostly constructed by a single developer they were individually completed by the occupants.



Delft houses:

- .(R) alternative infill.
- .(below) resident's interior.
- .(L) isometric.



drawings and photo from H. Hertzberger

Neponset river above  
Lower Mills.



### **Section III**

## **Design Studies: Lower Mills**

The site for these design studies is along the Neponset River at the southern edge of the City of Boston and the northern edge of the town of Milton. A village center there known as Lower Mills clusters around a series of old industrial building. To the north extend the urban suburbs of Dorchester, to the south emanate the ample lots and homes of Milton.

The river runs west to east, and makes its transition from narrow inland river to open



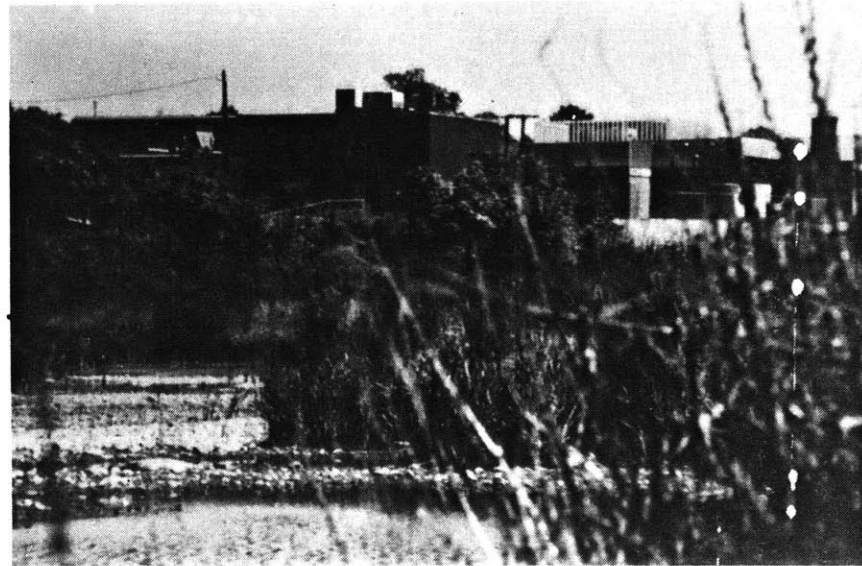
Air photo of Lower Mills. Site is at river bend. Ice cream warehouse is below railroad tracks. Crescent-shaped buildings used for moving and storage are above the tracks.



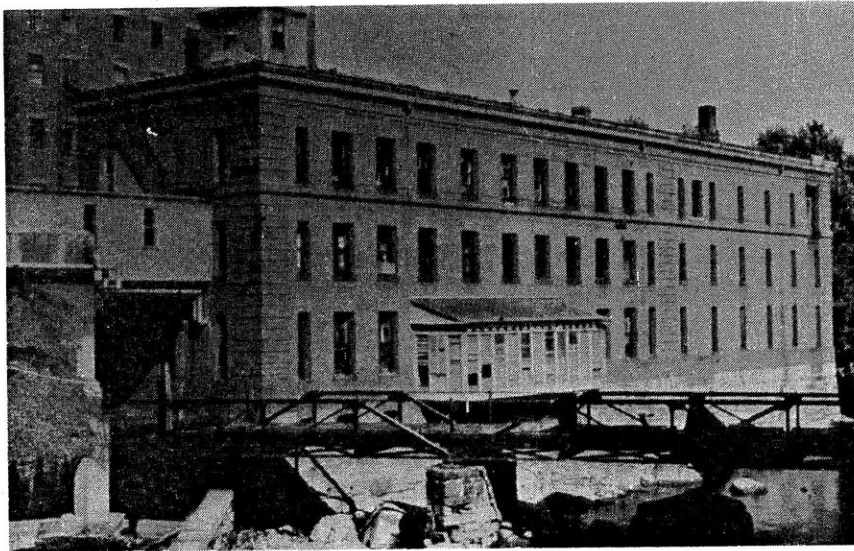
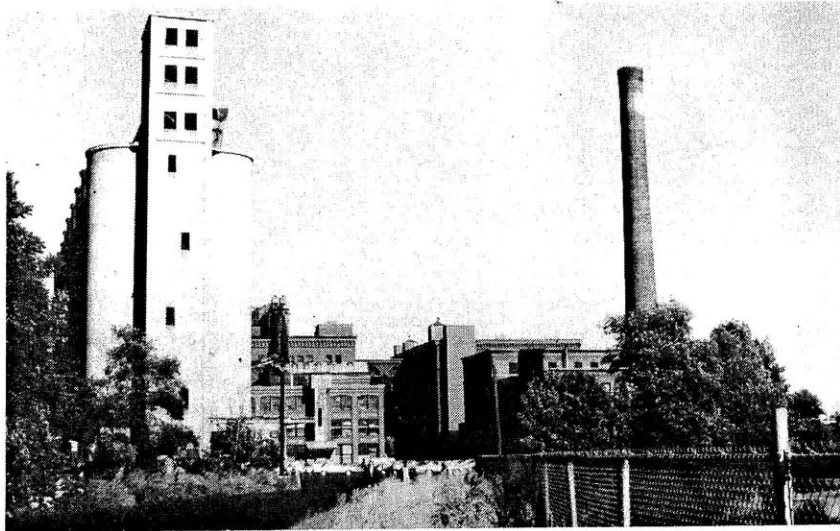
estuary as it passes through Lower Mills. The course and character of this river and its valley are central to these design studies.

Above Lower Mills the river runs a relatively narrow course. It leaves, Mattapan, the next village upstream, in a quiet uniform flow. As it heads toward Lower Mills it passes for a while through marsh-like flats which divide it into many smaller streams weaving in among the grass. This section of the river is remarkably inaccessible. The grid of neighborhood streets on each side is lopped off mid-block and chain link fence keeps neighborhoods away from the river. The discontinuity has an eerie fear associated with it - the traffic of bad kids and worse.

Shopping Center backside to River.



Early mill (lower photo) and more recent industrial forms (upper photo) along the river.



A shopping center with its back turned to the river concludes this pattern just above Lower Mills village center. The river regains a coherent flow and heads for the small dam that was at one time the source of power for the mills of the village.

The value of the river's form and potential waterpower was so significant to early settlers of the region that a history of the area could claim that it became "one of the earliest centers of industry in the United States".

Its early industries were multiple: grist mills ("In exchange for permission to construct a grist mill (1634), Israel Stoughton had to build and maintain a foot-bridge across the Neponset"), gunpowder mills, fulling mills for woolens, a snuff factory, and in 1765 the first chocolate

Mill.

Chocolate so grew under the direction of the Baker family that by the late 1800's it occupied all the mill and industrial buildings in the village. Its owner, also state legislator and Congressman, became Mayor of Boston after Dorchester was annexed to the City. Ten thousand pounds of Chocolate daily were handled by the plants.

But the exigencies of modern automated processing outstripped the power of the River. In 1965 the Baker Chocolate company moved out, to Delaware.

Below the dam are more rapids and the traces of early water power. Passing under the Adams Street bridge at the heart of the village, the river enters a rocky gorge and makes a sweeping curve.

Lower Mills village center, Adams St. crossing the Neponset into Boston.



In this riverbend the transition is made. The river's estuary forms. Beyond one more rocky promontory the river basin widens and heads to the sea. It is within the riverbend that the specific site for this study lies.

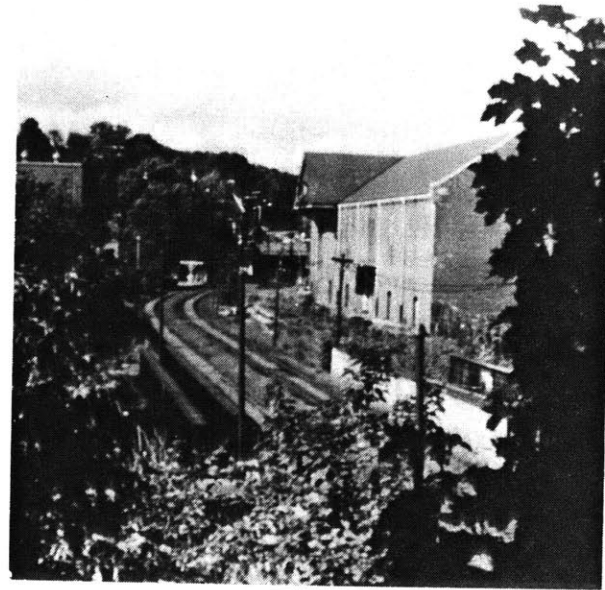
The southern bank of the river - the hill of Milton - is quite steep and close to the river up at the dam but actually turns south when the river turns northeast crossing the dam, passing over the rapids, and making its curve. The site within the riverbend is comparatively flat, defined on the north by the gorge and some distance to the south by the receding hill of Milton.

On this flat land is a small steep outcropping hill. It forms a nubble along the south edge of the river as it passes through the narrow gorge. It and other



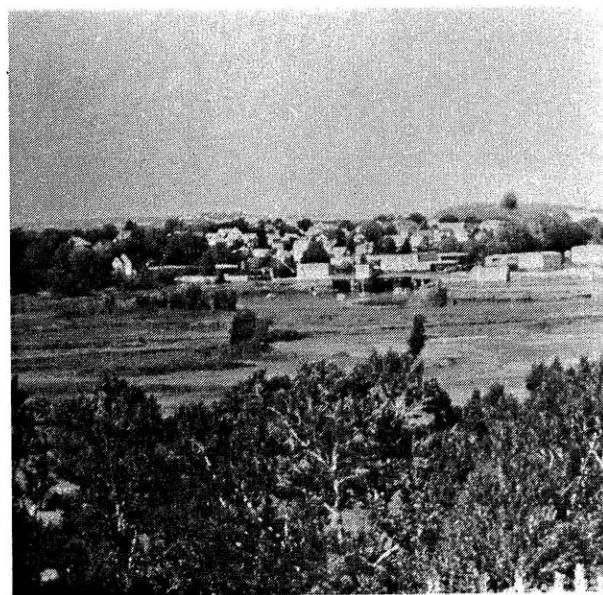
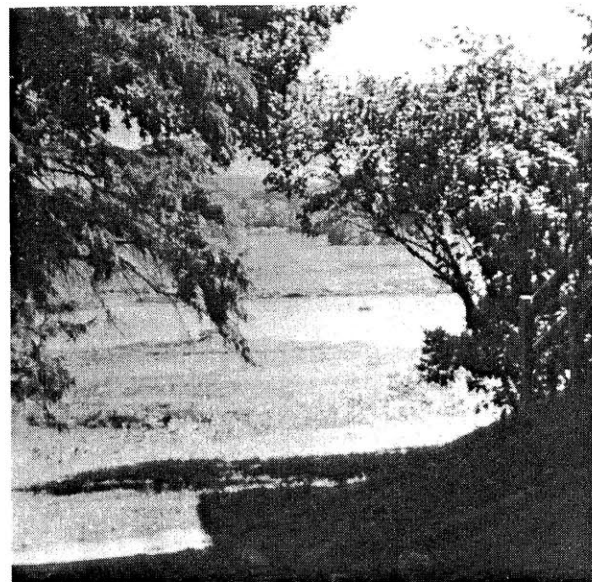
The Riverbend:

- Trolley lines through the site (L).
- A corner of the ice cream warehouse and the marina.
- Shoreline opposite the warehouse.



embedded sections of outcropping rock probably explain the sharp curve and protected bit of flat land. Outer outcroppings on the north side of the river force a second riverbend. Following the combined s-curve the river takes a more predictable course to the sea.

The area within the riverbend is bifurcated by a railroad line. Originally important to the industry it is now an extension of the Red Line - a bucolic trolley. On the northern side of the tracks are two crescent-shaped industrial buildings now used by a moving and storage company. On the south side of the tracks is a large ice cream company warehouse. For this study both uses above and below the tracks are assumed to be relocated elsewhere, leaving land and buildings for reuse.

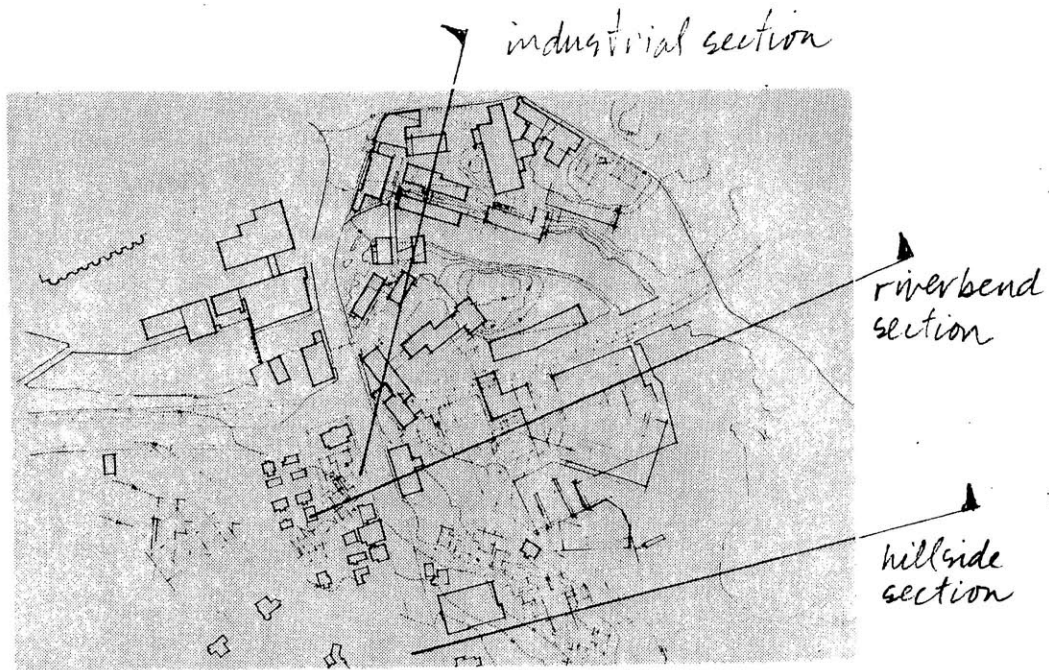


The estuary.

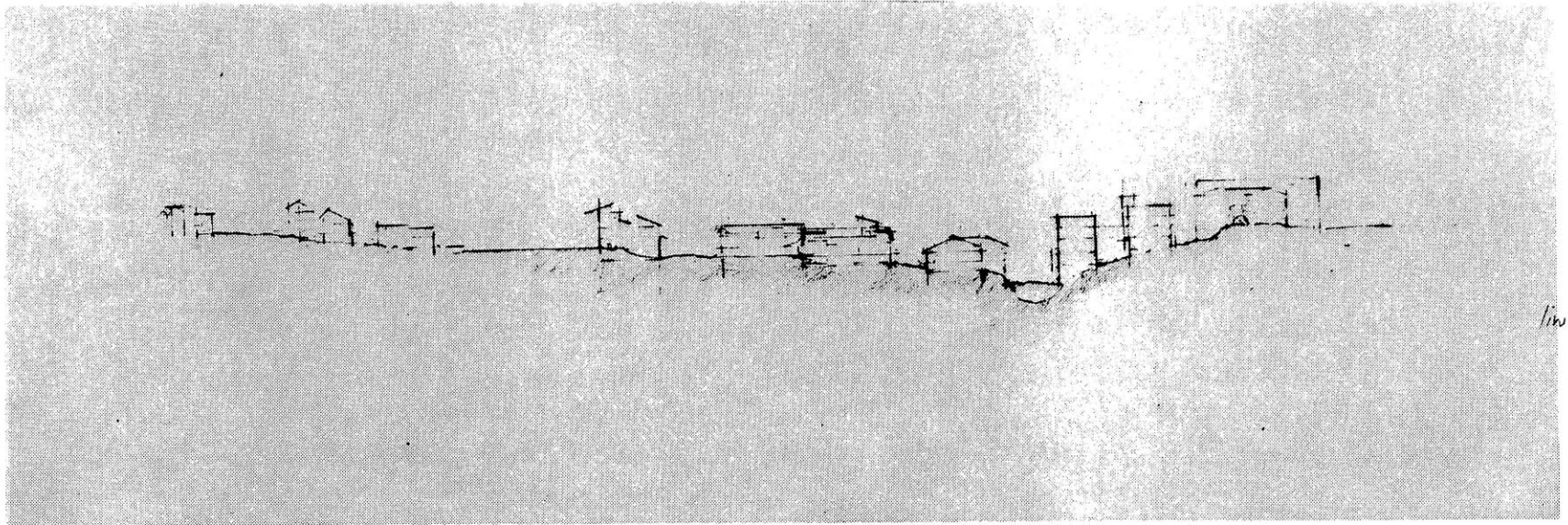
.(opposite page) two views from the  
Milton hill.

.(below and right) the river as it heads  
to sea.

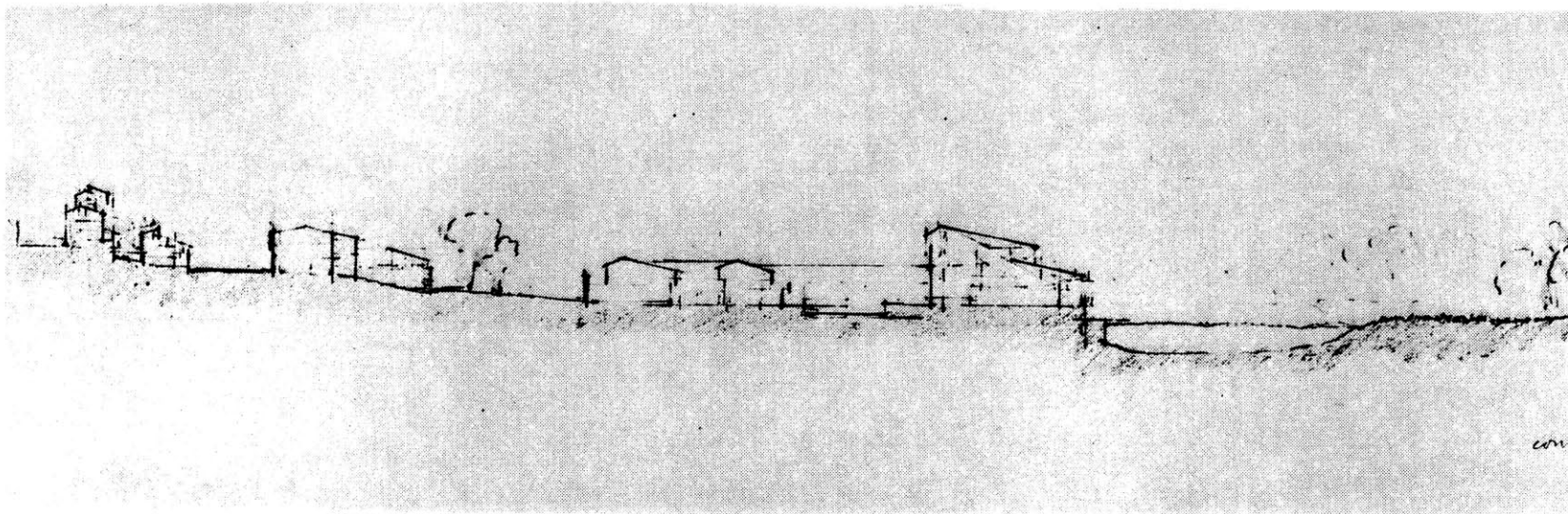




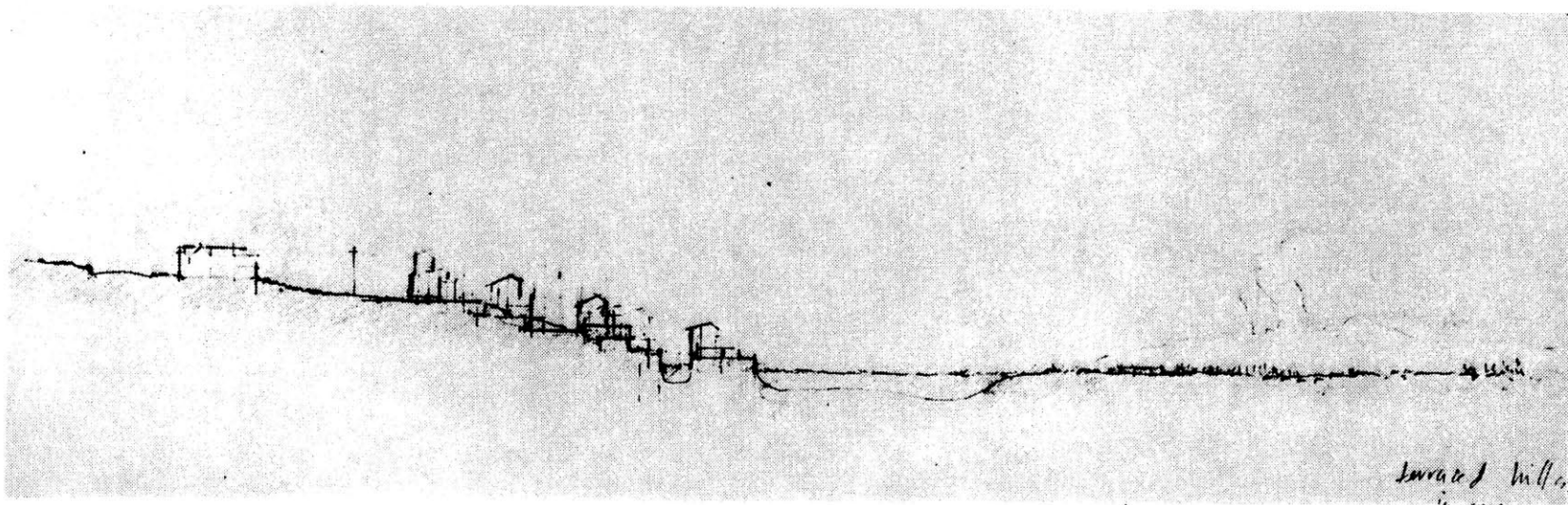
- Early studies of forms along the river:
- 1) linear industrial buildings along the river (below).
  - 2) the riverbend, a court in this scheme (opposite, top).
  - 3) terraced hillside (opposite, lower).







com



Lucretia Mills

## New Uses for the Site

The existing uses of the site completely prevent any public use or access on the promontory. The moving company forbids trespassing, and the original industrial forms plus connecting additions block any view to the small hill. The ice cream warehouse fully occupies the site below the tracks. Redesign for more public uses and access is essential. Future plans for the area include a Heritage Park with access along the river edge. Re-development of this site studied here in publicly accessible ways would be a major contribution to such a park.

The proposed uses are a mix of workplace, housing, and parking garage. Working within heights comparable to the build-

ings in the surrounding area (three to seven stories), parking for 150 to 200 cars and 60 to 90 units of housing could be accommodated on the site of the warehouse. (The parking would serve rail commuters and users of the crescent shape buildings.) Workspace could be substituted for housing at a rate of about 1500 square feet per housing unit.

Renovation of the two crescent buildings could provide about 80,000 square feet of space. The site between the crescent buildings and Adams St. could accommodate about 30,000 square feet of space. If the hillside along the southwest side of the River below the promontory were used for housing (three to four stories in height with parking) perhaps 50 more units could be created.

In some later design studies a theater and music stage are included on the site of the warehouse (the promontory). A main auditorium seating about 500 persons plus about 20,000 square feet of support spaces are included in these plans. The stage, perhaps also an outdoor amphitheater, could bring a most public use to this unique location.

## **Extension of the Landscape Form**

The identity of the site as a riverbend formed by outcropping rock is central to the genius loci. Areas of flat land formed and protected by rock-like form should be strong in the image of the place. Also central to the larger image should be the site's position at the head of the estuary. There should be an openness to the south, extending along the rising south bank of the river up to the center of the village and on to the west. An existing town green can extend the reciprocity. So too, relocation of the parking lot for the trolley line can further extend the river basin form.

### Directions in the Landscape and Village

The river, dominant in the landscape, moves

west to east but passes through major river bends. This seems to be the appropriate basis for laying out directions in the new construction: Primarily east-west but with significant north-south dimension and movement.

The new construction should be nubble-like and out at the river edge as part of the outcroppings which form the river edge. Inside the nubble should be open space, extending the river valley up into the village center.

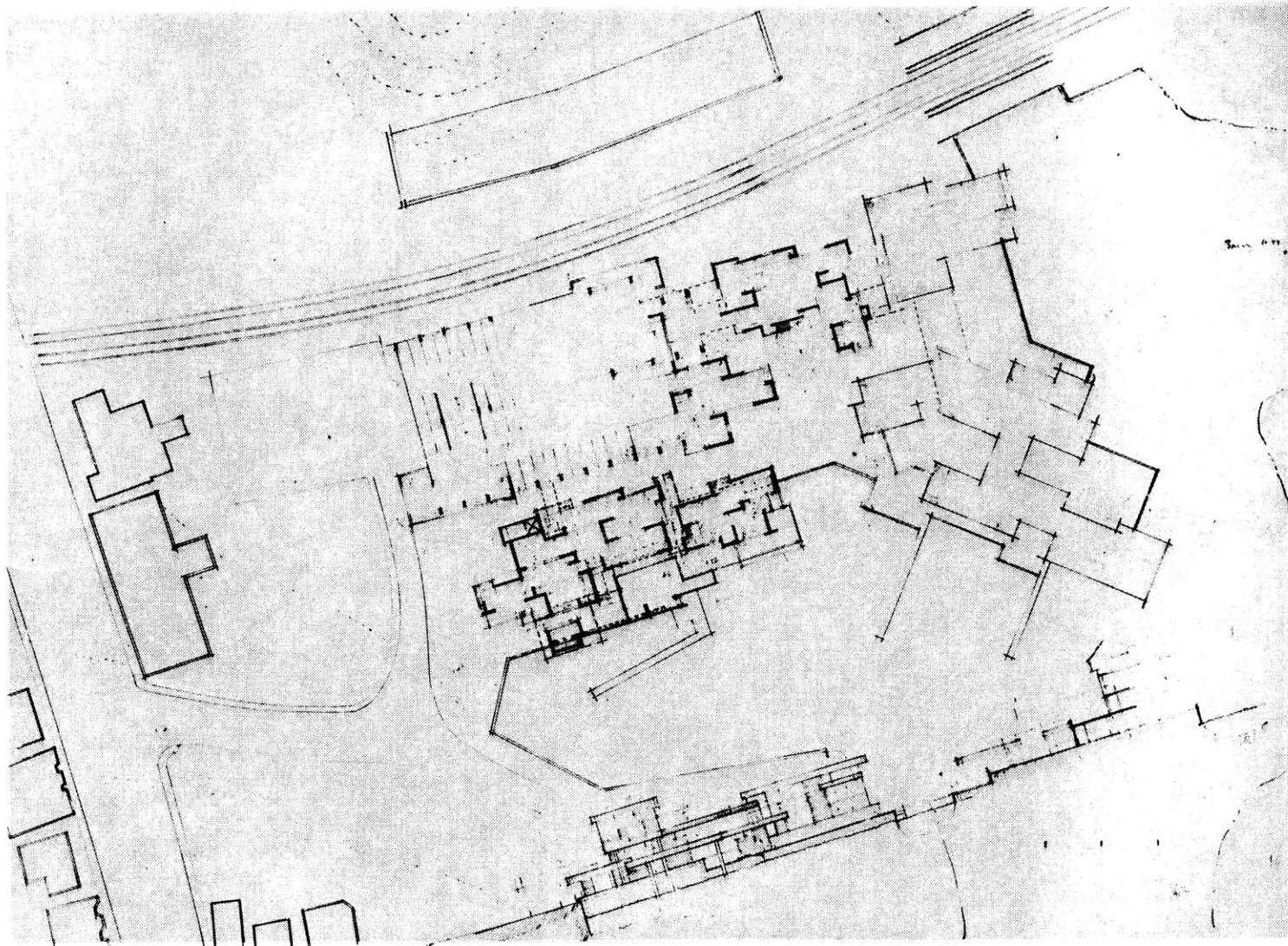
It should follow the larger valley form and highlight the local outcroppings which cause the riverbend.

### Reciprocal Form along the River Edge


Rather than line the river edge, the added forms should extend the edge of the river



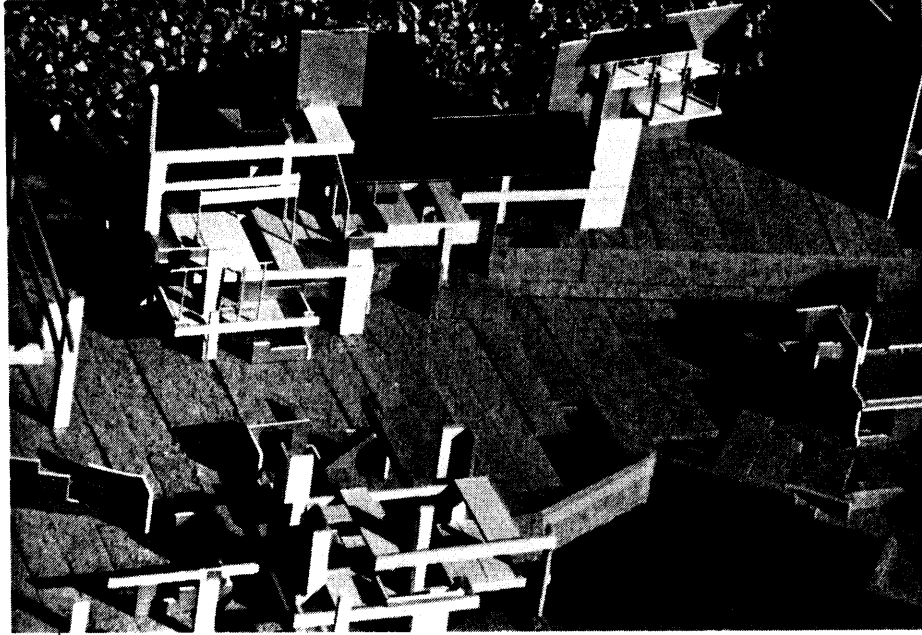
into reciprocal forms, increasing access and open spaces along the river. The site of the ice cream warehouse can become a major reciprocal form (like a harbor) and strengthen the sense of extension of the river basin up into the town.



Title: *site study with structural system.  
garage - commercial - housing*

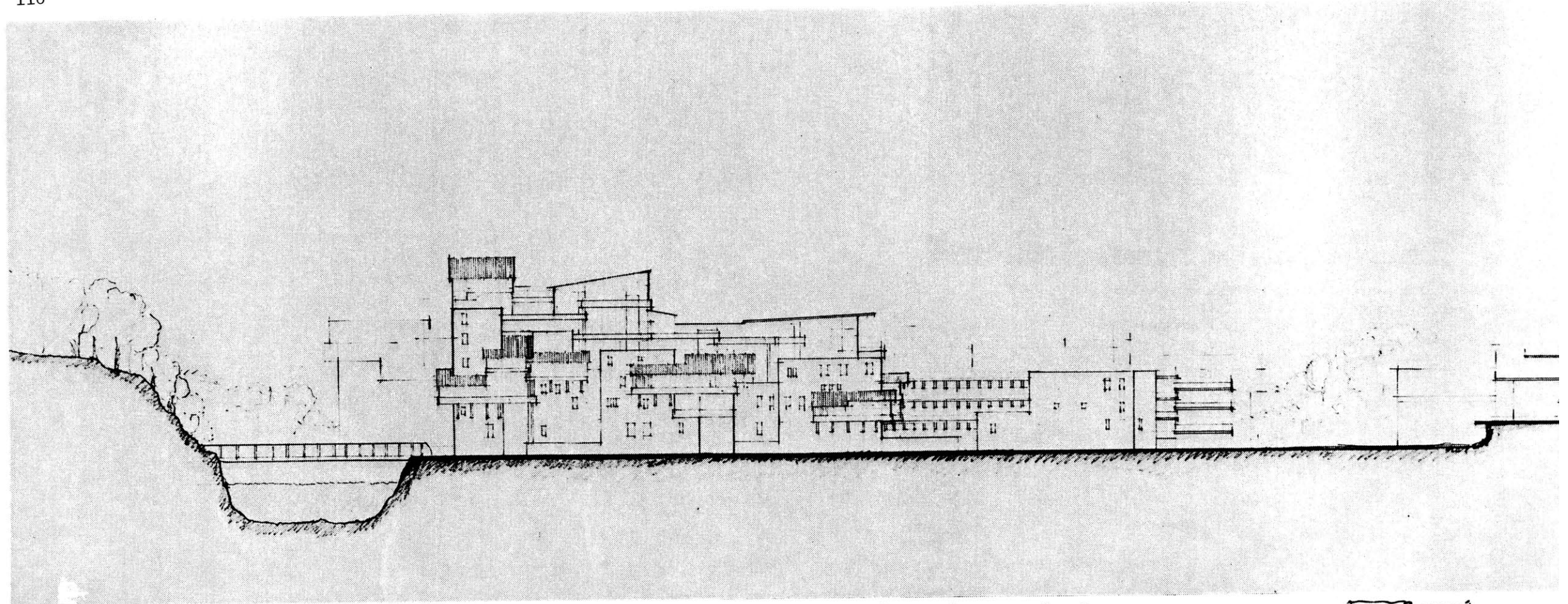
Scale:  0 40' 80'

Date: *10/80*



Above and opposite: Early studies of development on the site: directional fields and reciprocal form. Commercial uses, housing and garage are proposed.

South side elevation (below) with reciprocity in plan and section.



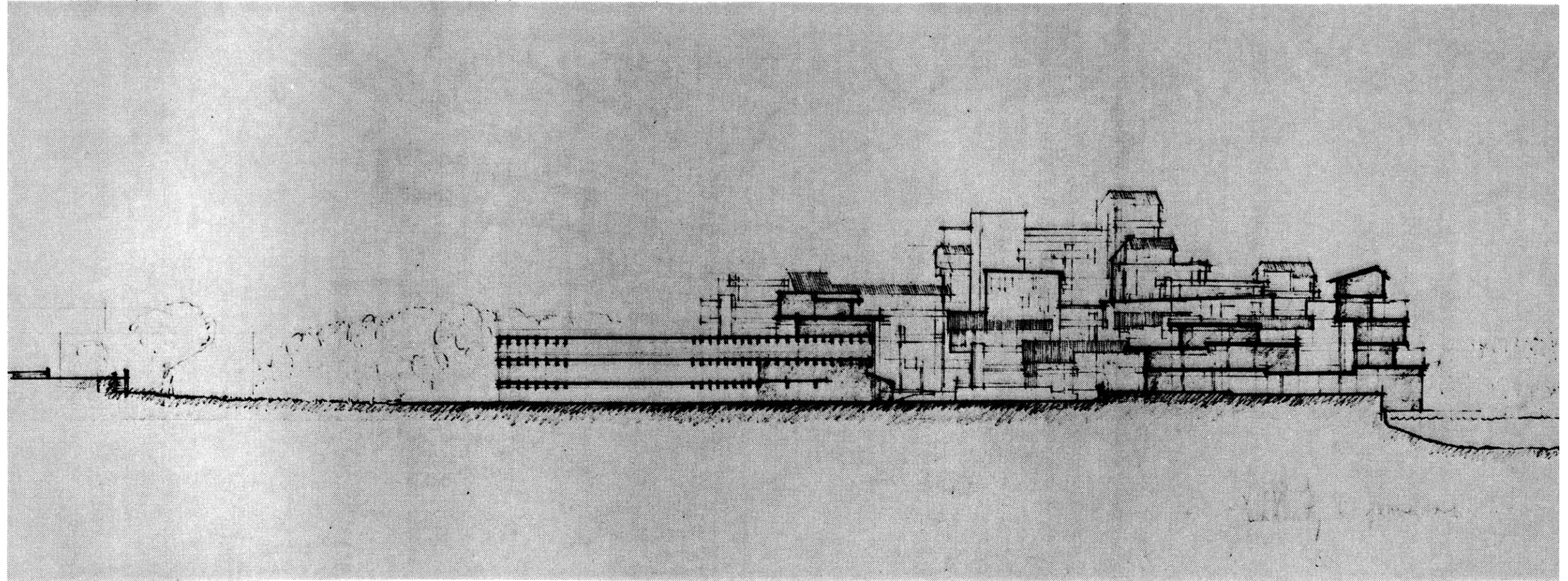
Title: *Elevation looking South*

Scale: 0 25' 50'

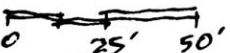
Date: 11/80

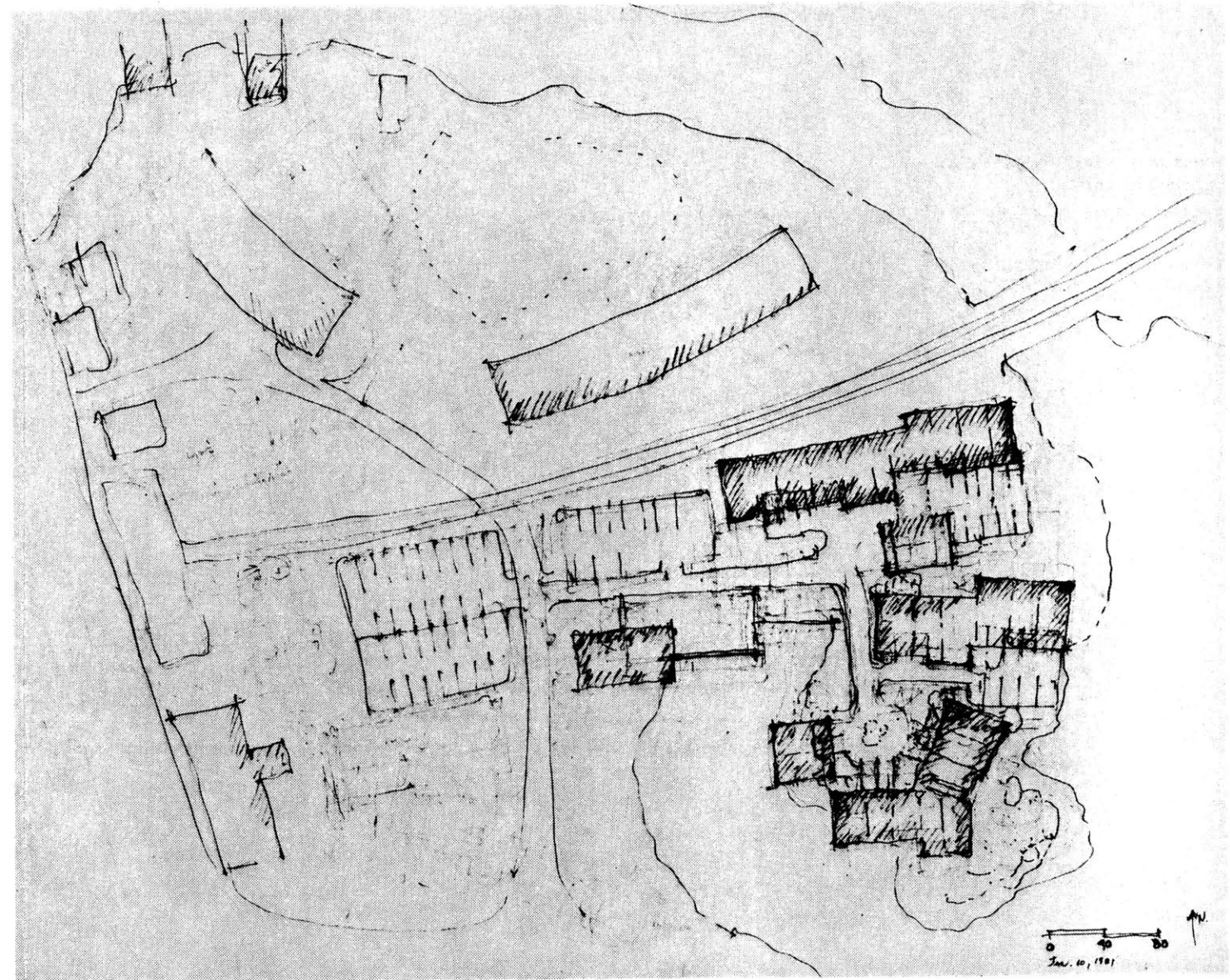


North side elevation: continuous surface  
with added outcropping forms.



Title: *Section/elevation looking North*

Scale:  0 25' 50'  
Date: *11/00*

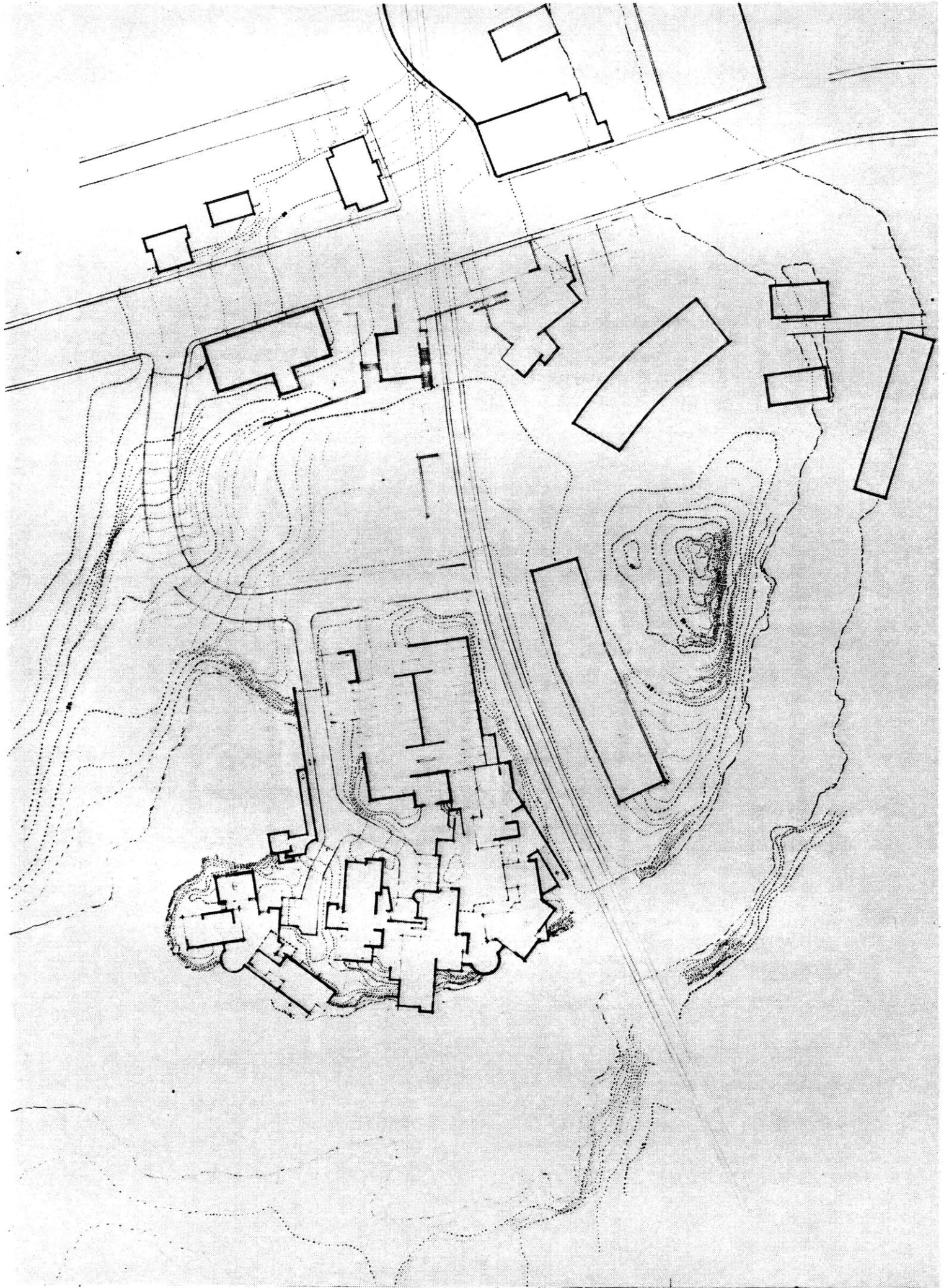


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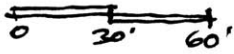
Increasing the reciprocity between water and land. Site plan with housing and without parking garage (below).

Opposite: "Nubble" and outcropping form in housing. East-west direction of river reinforced by parking garage.





Title: *site study: housing and parking garage*

Scale:  0 30' 60'  
Date: *2/20/81*

ACCESS ON THE SITE

The Heritage Park and Public Access along  
the River

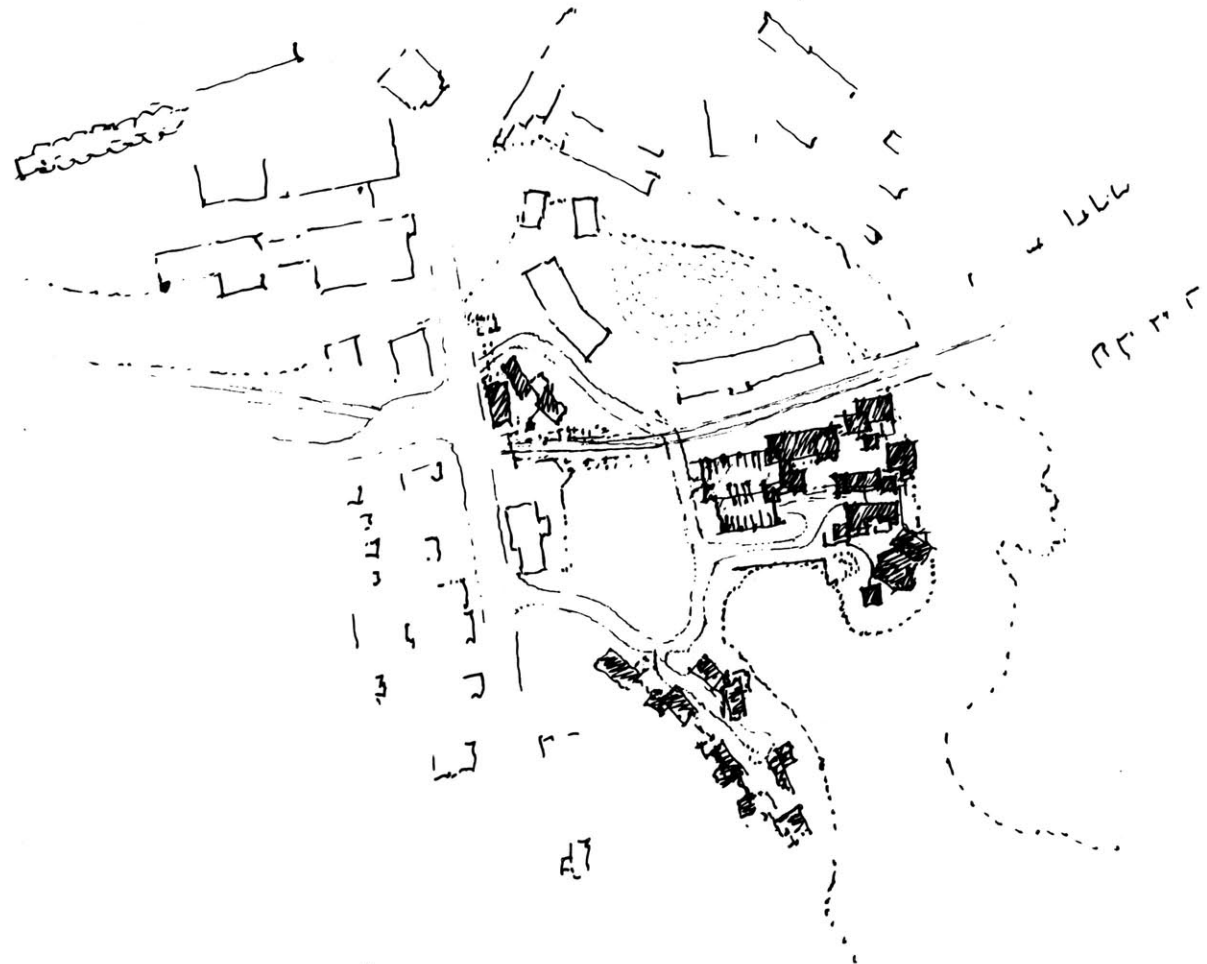
A central goal should be to increase public access to the river edge and the significant natural landscape of the river bend. The Heritage Park could run from the Baker Chocolate Mills, across the river to this area and back across the river to the MDC reservation that extends through outcroppings down into the marshy basin.

Road Access on the Riverbend

The riverbend is quite large to be served only by cul-de-sacs from Adams St., though this option was used in early schemes. In later schemes a loop is proposed which crosses the trolley line at grade.

This seems reasonable given the limited trolley use and desirable because it supports the flow of movement north-south, as part of the extension of the river basin. In fact, a route for the road which reinforces the north-south rather than east-west direction seems helpful to the overall form.





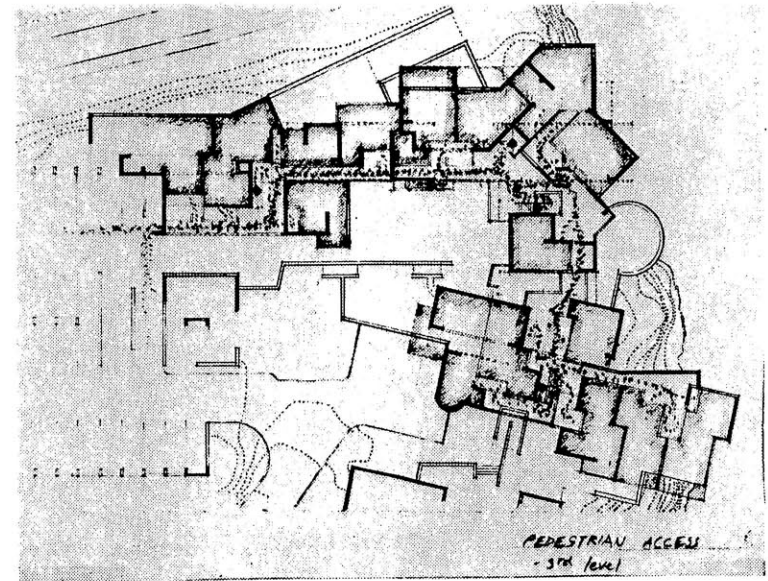
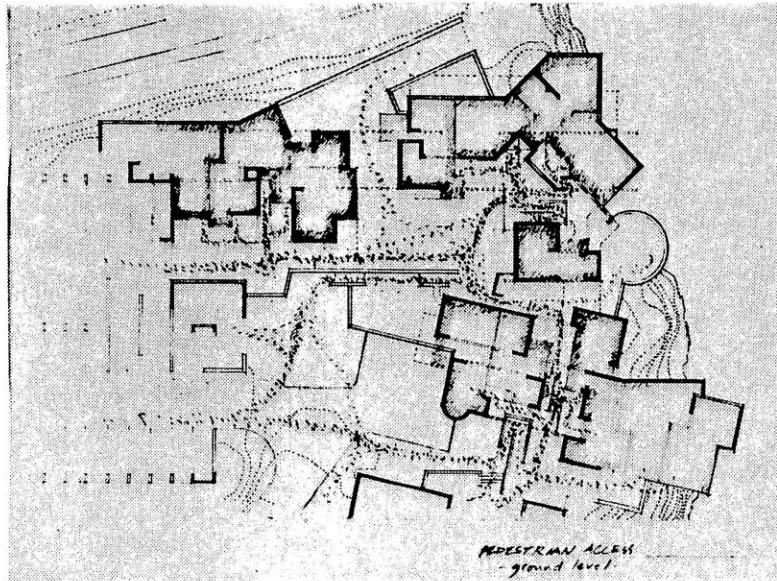
Site plan showing road access from Adams Street and reinforcing north-south direction; compare preceding site-diagram.

Access on the Promontory

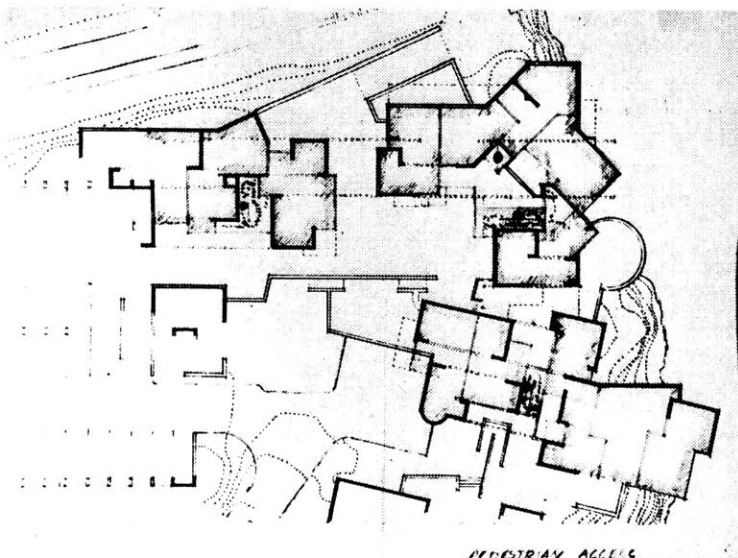
An east-west spur into the parking/housing/work/theater site is necessary for vehicle access. It could return through the parking garage or allow turning around at the end.

Pedestrian access will include east-west movement north and south of the parking garage. Paths of pedestrian access

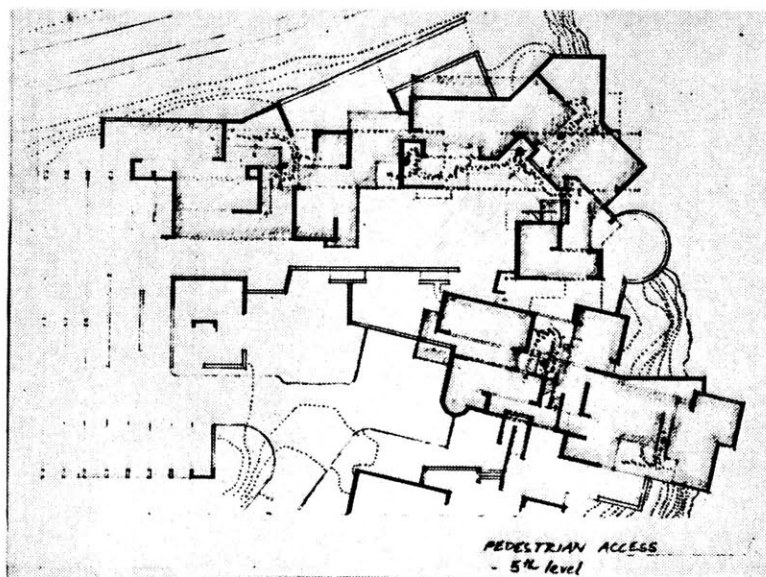
follow the principle of directional growth and movement: Public access lies predominantly in east-west direction; access to privacies is predominantly perpendicular (north and south).



Pedestrian access on the promontory.



PEDESTRIAN ACCESS  
- 2<sup>nd</sup> level  
(4<sup>th</sup> similar)



PEDESTRIAN ACCESS  
- 5<sup>th</sup> level

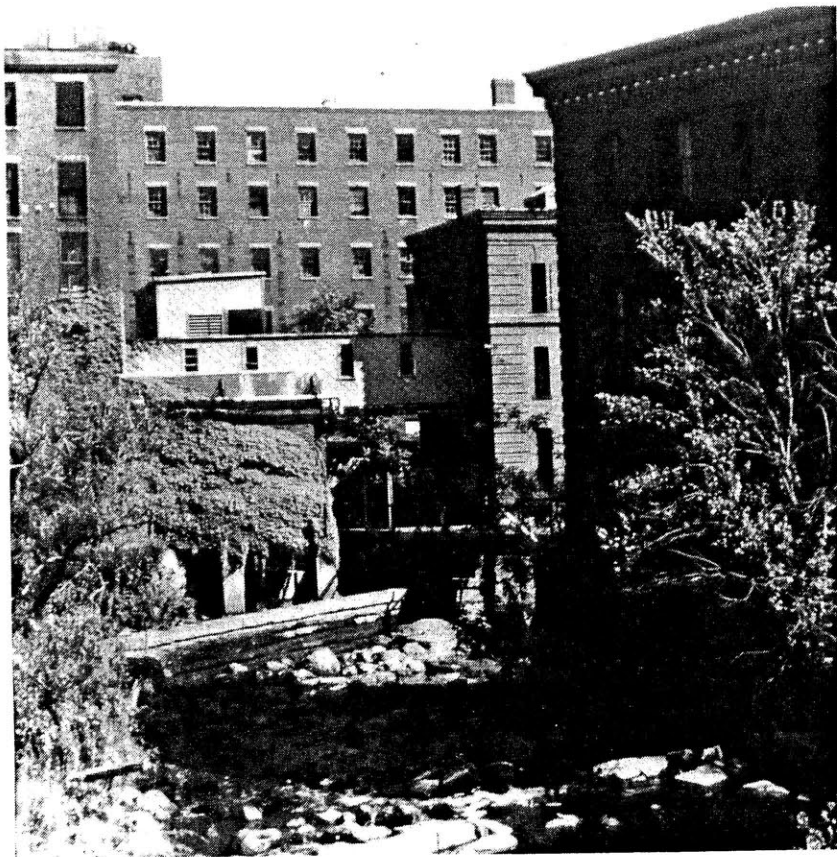
## BUILDING METHOD AND FORM

### Renewal

The sense of time and building adding up over the years is strong in lower Mills. The industrial buildings are built in a manner that suggests incremental addition: slight shifts in direction, changes in detailing, light wood and metal additions and complex connecting passageways. Recent disuse has accelerated the decay of wood and metal, while masonry has remained solid.

Continuity and extension of these patterns of changing use, additions over time, and renewal are important. The building method proposed is designed to accommodate these patterns. Also, re-use of at least some of the crescent-shape buildings will add to that extension of visible time.

Incremental additions and connections, Lower Mills.



The building method has a primary masonry construction system and secondary infill and enclosure. The primary system should last for a long period of time, perhaps over two or three successive generations of secondary infill and enclosure.

A pre-cast concrete plank floor system and pre-cast beams are proposed for the primary system. The planks and beams would be supported on unit masonry or poured-in-place walls.

Infill could be timber and wood framing or steel framing. Alternative studies illustrate both.

Enclosure is proposed to be brick or masonry units for the primary construction.

Unit masonry, wood cladding, or other light materials could be used in the secondary infill enclosure.

### Direction in the Building System

The primary precast system is a "one-way" structural system. Beams lie in the east-west direction. The floor planks lie north-south, adding up east-west.

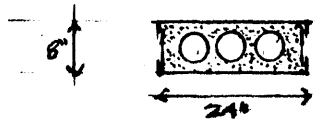
### Reciprocity in the Building System

The root form for the structural walls is abstracted from the reciprocal form: a J-shape with the long direction running east-west. This form provides in the definition of the primary structural system a pattern of larger open spaces and protected corners at the edge of the larger spaces. In section the reciprocal form is used in the terracing, defining sheltered outdoor areas as well as exposed terraces.

primary construction:

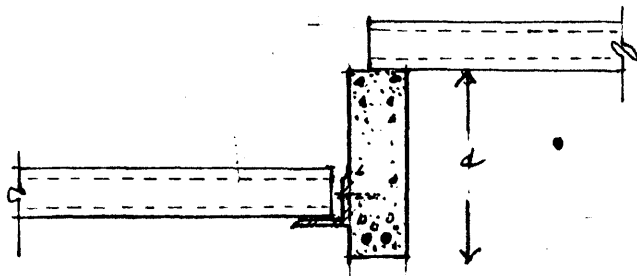
major spatial definition:

Floor system: PLANKS:



Lengths @ 16', 20', 24', 28'

BEAMS:



depth @ 24", 32", 36"; 16"  
Length @ 36', 45', 60'; 24'

The basic units of the primary system:  
precast beams and planks.

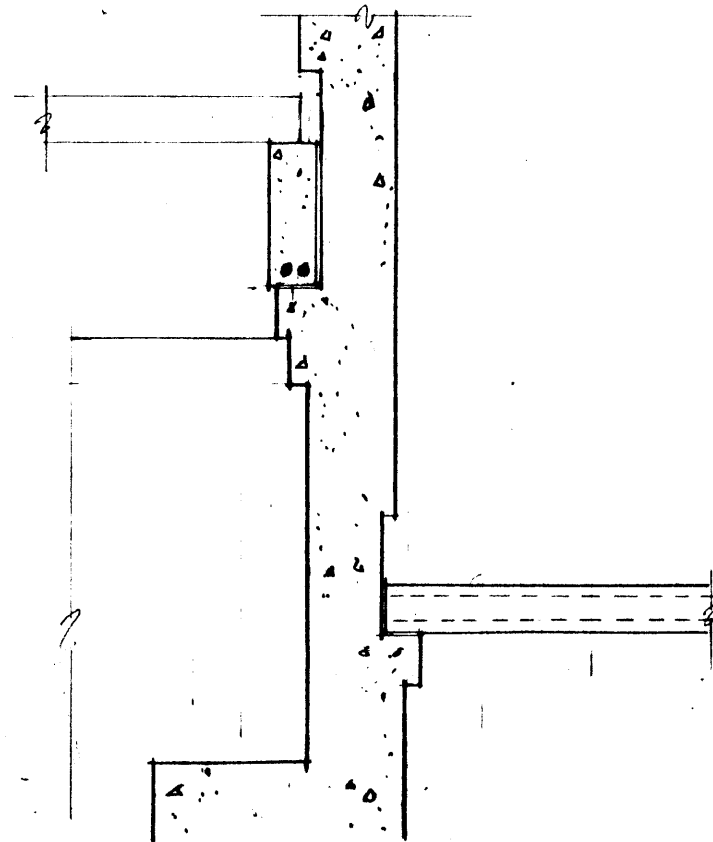
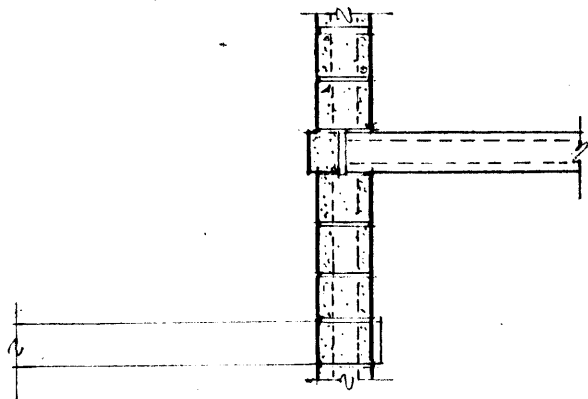
Support System:

BEARING WALL - POURED-IN-PLACE

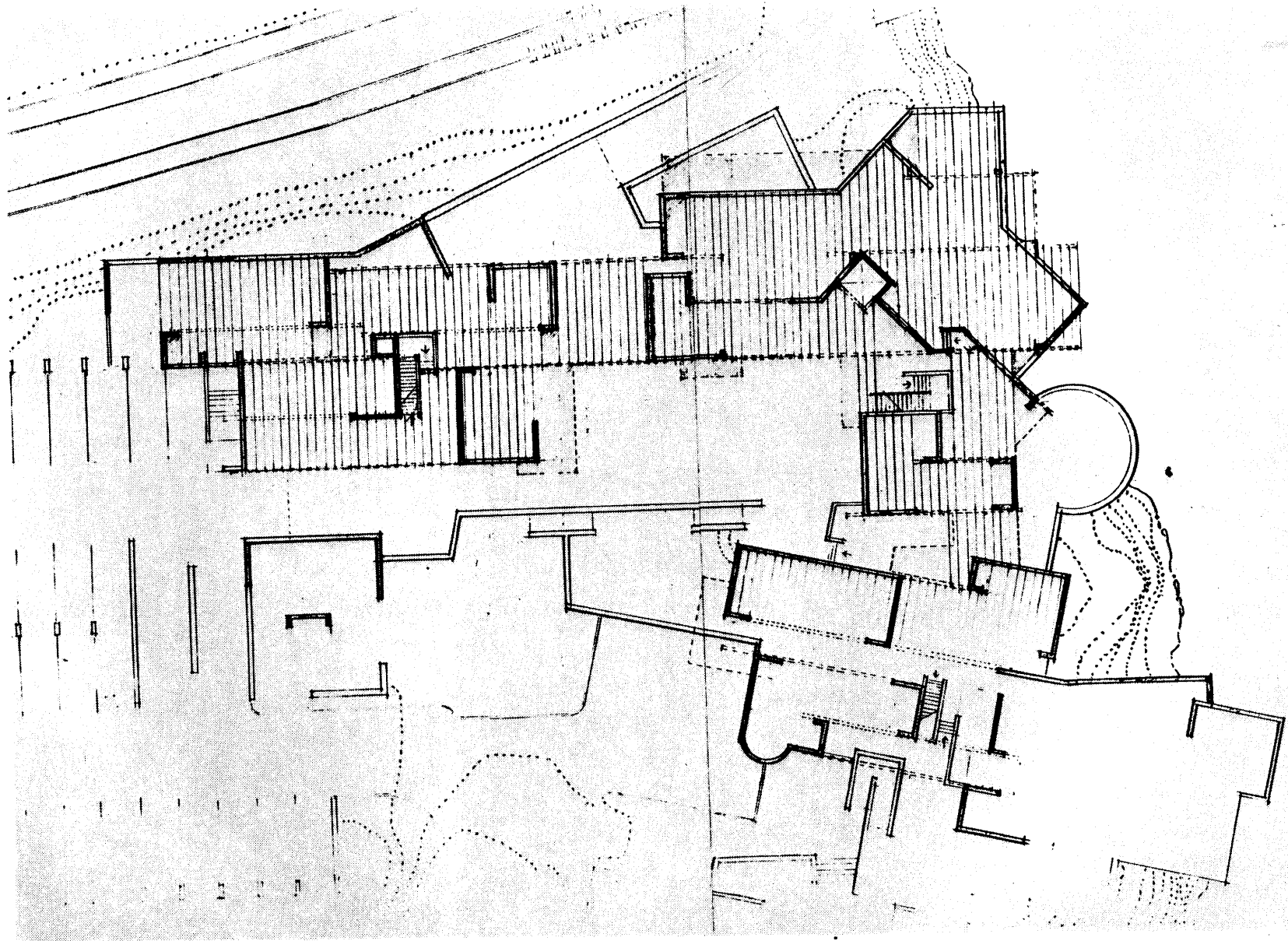
BEARING WALL -

UNIT MASONRY

SCALE: 3/8" = 1'-0"

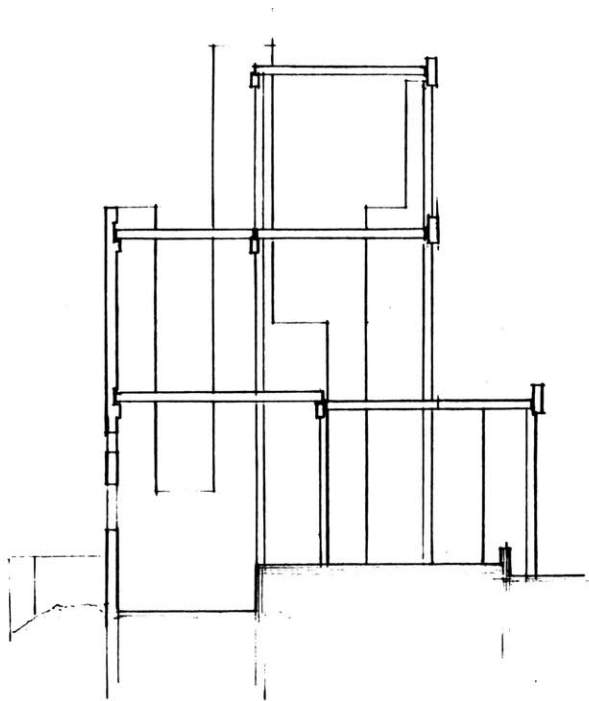


Options for supporting the planks: masonry units and poured-in-place concrete. Wall support for a beam is shown.

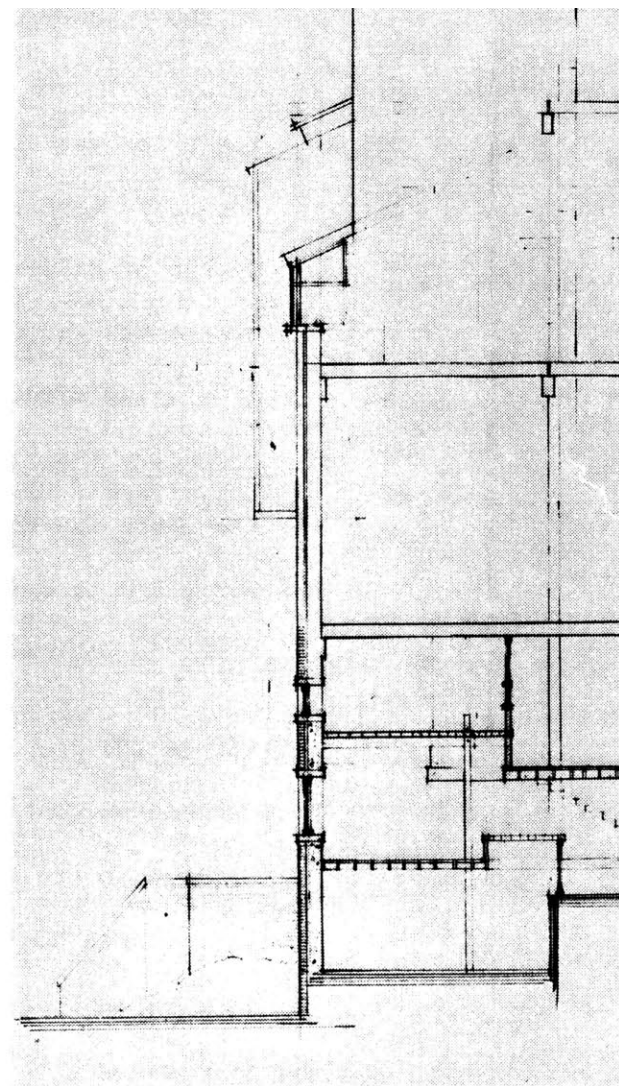
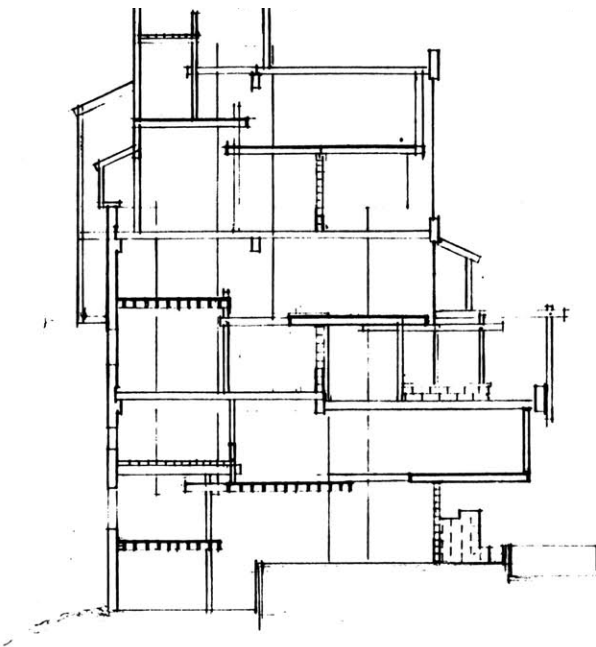


Plan showing two-foot-wide planks of primary system supported on beams and walls.





Primary and secondary (infill) structural systems and enclosure systems.

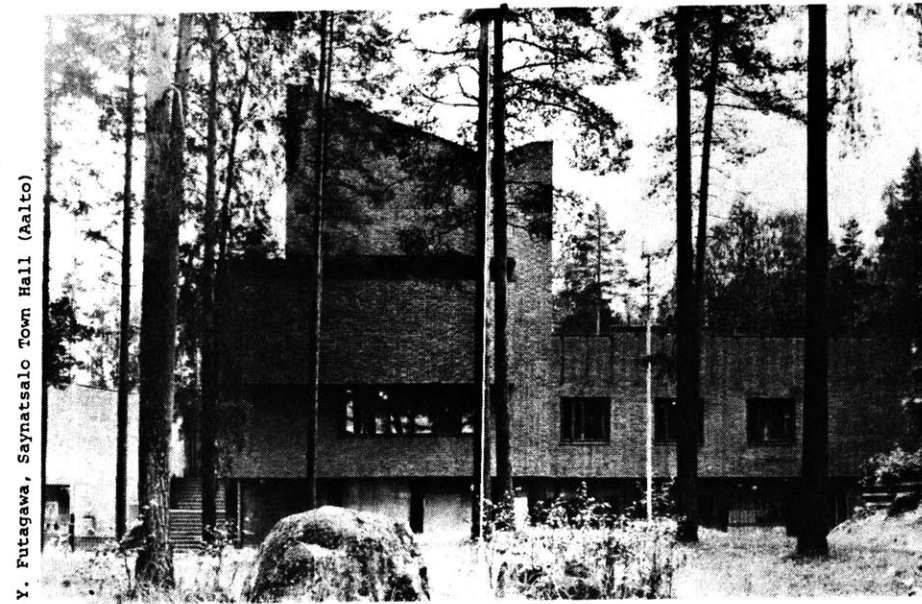


In the primary construction continuity is sought with the rock in the landscape and the brick masonry of the town center. The secondary infill should be lighter; some degree of deterioration should be expected over time; and it should be more expressive of the individual (temporary) users. The secondary infill should be continuous with the light additions to the industrial masonry and also with the wood frame of surrounding residential construction.

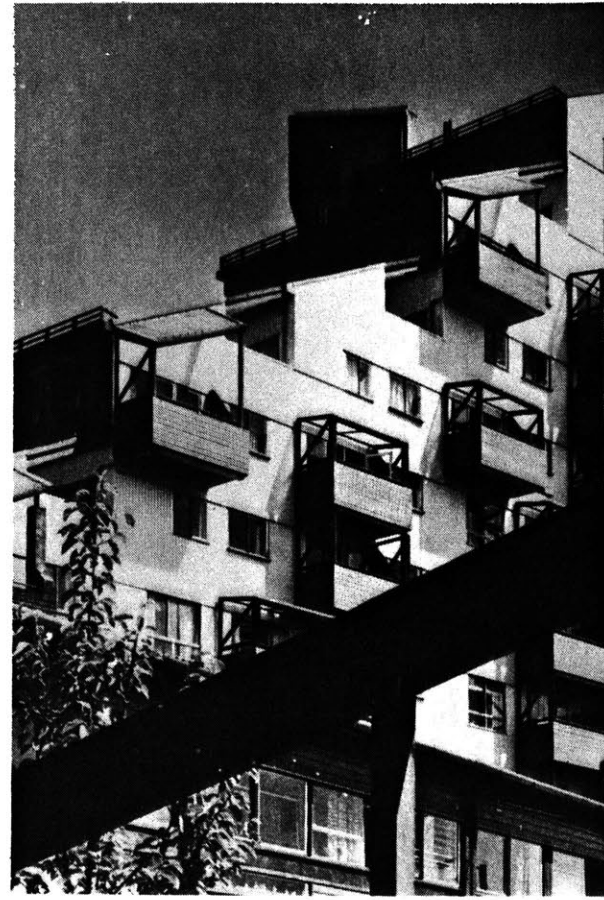
Within the proposed project substantial horizontal continuities with the ground and water edge are sought. The precast beams form strong horizontals in the upper stories and the walls in the landscape are continuous with the primary definition for the buildings.

sion of bu  
patchwork  
rials are  
from the g  
generally  
the roof.

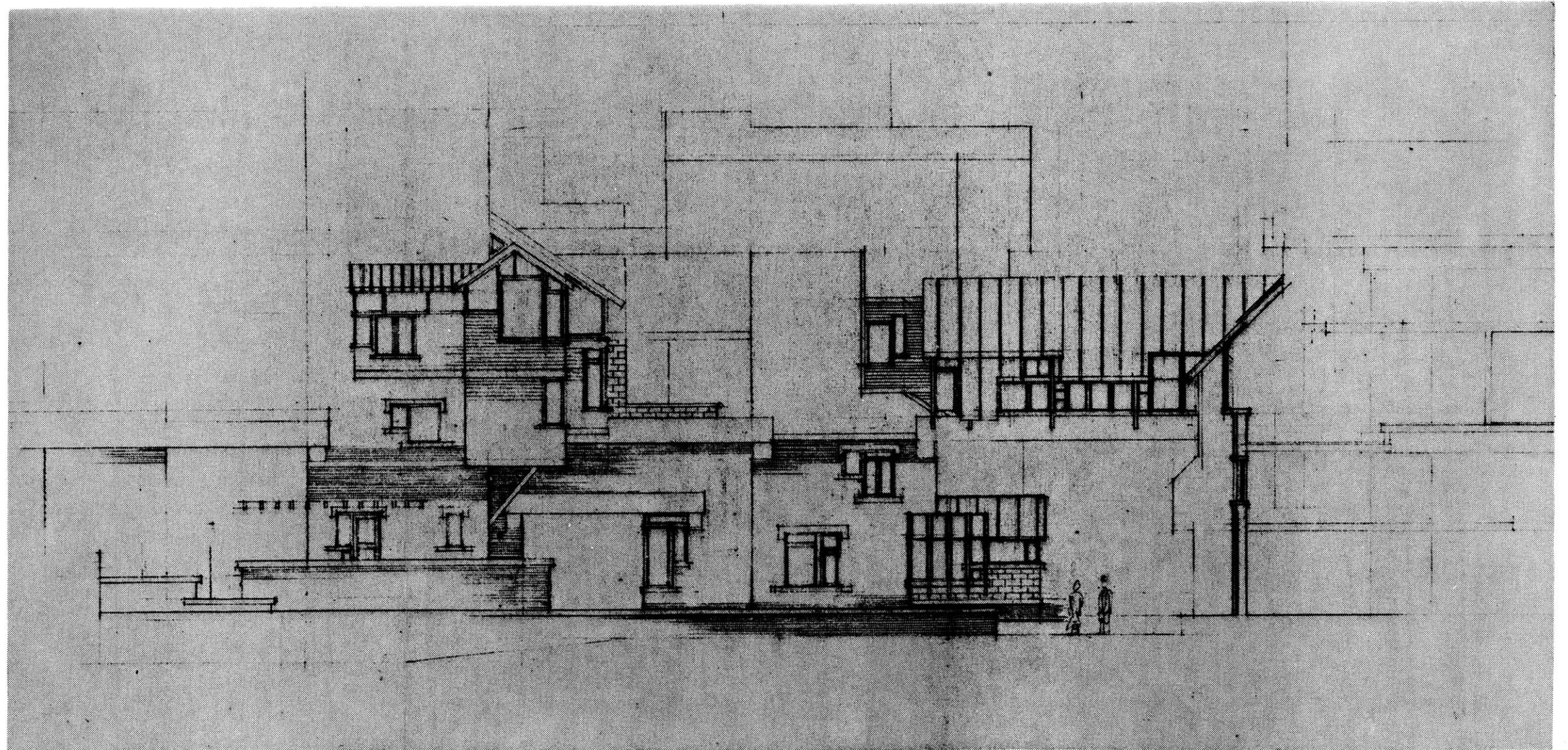
Continuity in continuous surfaces and by aggregation.



Y. Futagawa, Seynatsalo Town Hall (Aalto)



Y. Futagawa, Byker Redevelopment (Erskine)



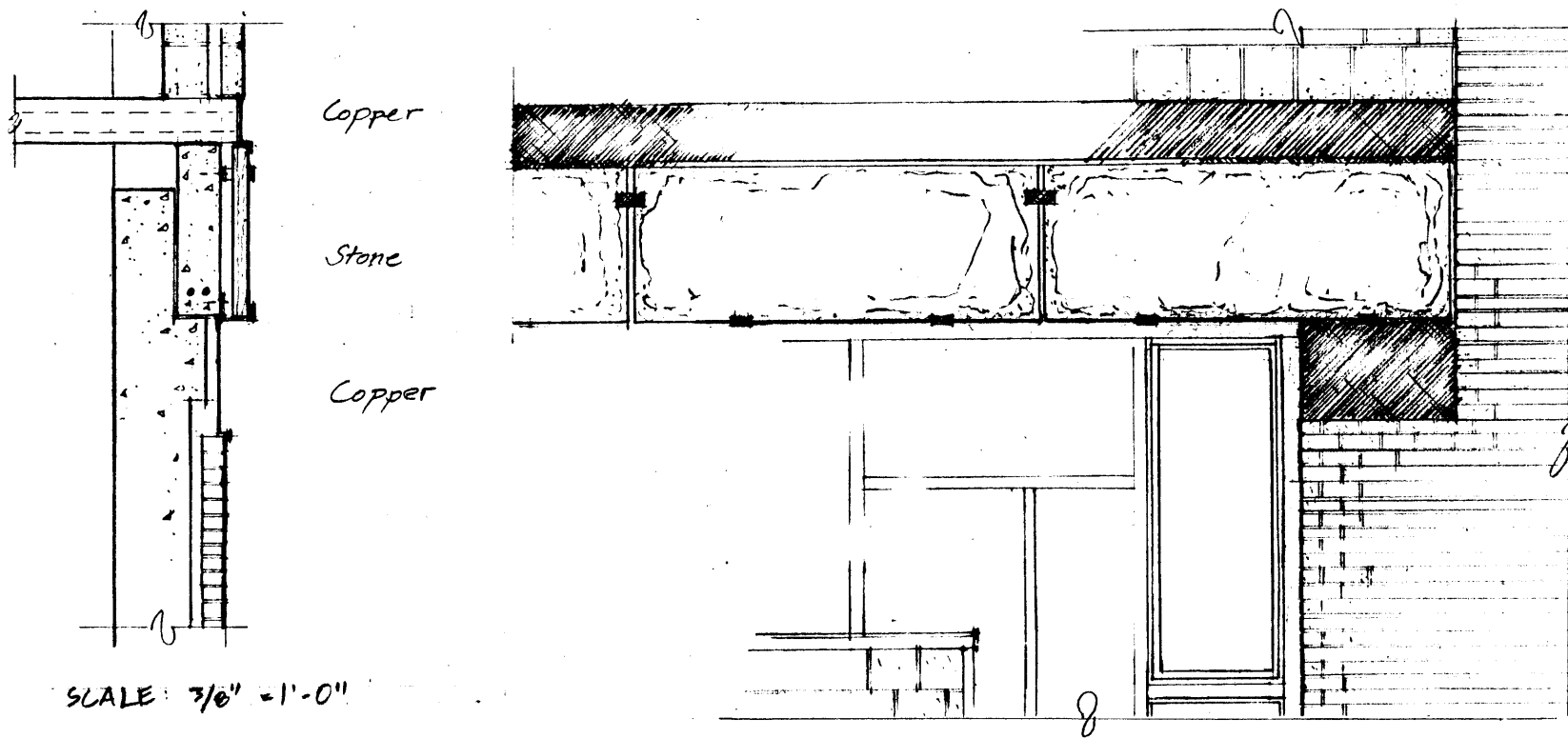
Title: *Elevation*

Scale: ~~6' 4" 0' 16'~~  
Date: 3/15/81

Elevation study showing continuous surface masonry (primary system) and added secondary structure.



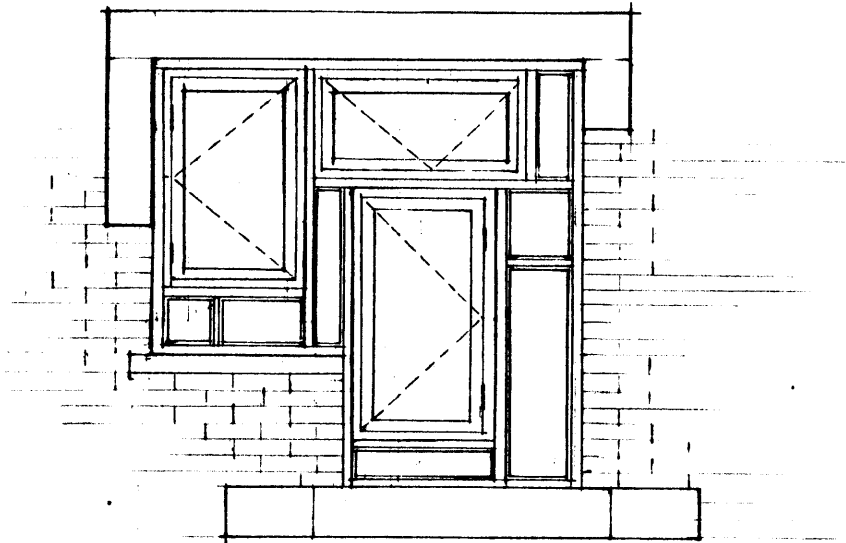
CONCRETE WALL, BEAM...



SCALE: 3/8" = 1'-0"

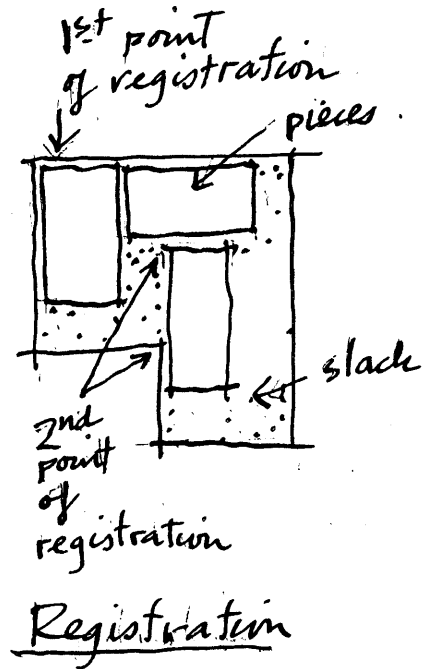
Detail of beam showing stone facing and copper covers.

Continuous Surface - Wall Openings



CONTINUOUS SURFACE WALL  
OPENING & GLAZING

SCALE:  $\frac{3}{8}'' = 1'-0''$



### Registration in the Building System

Registration is used in the primary construction as well as the infill and enclosure. The parking garage - the largest spanning structure - serves as a point of reference to which the primary structure for the rest of the development is added.

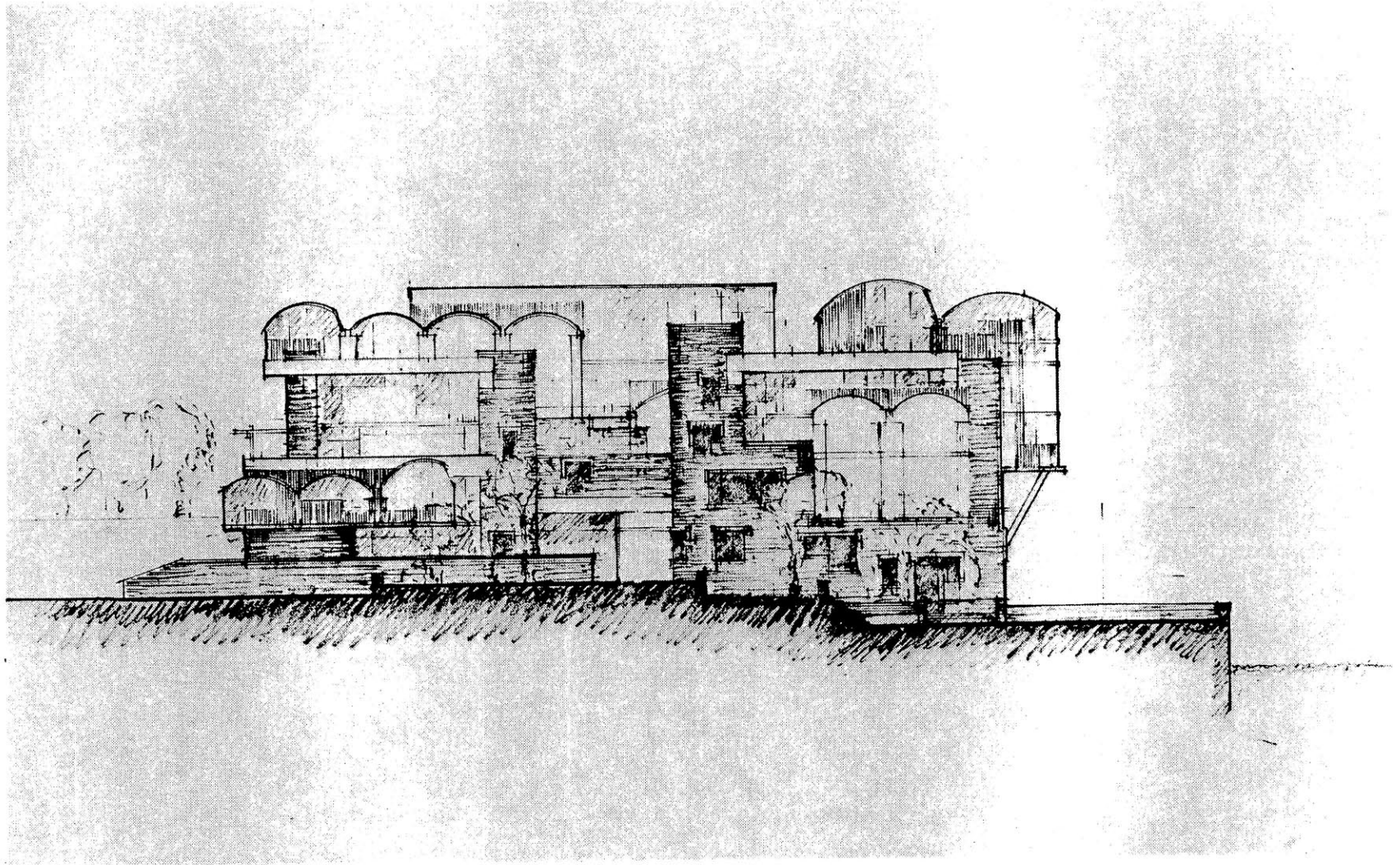
In the enclosure registration is used to order and aggregate glazing. Standard size windows are added starting from a corner.

"Slack" pieces are made of fixed glazing or other cuttable material. Slack, as well as added pieces, is generally continuous within an opening.

### Optional Growth and Opportunity for Individual Initiative

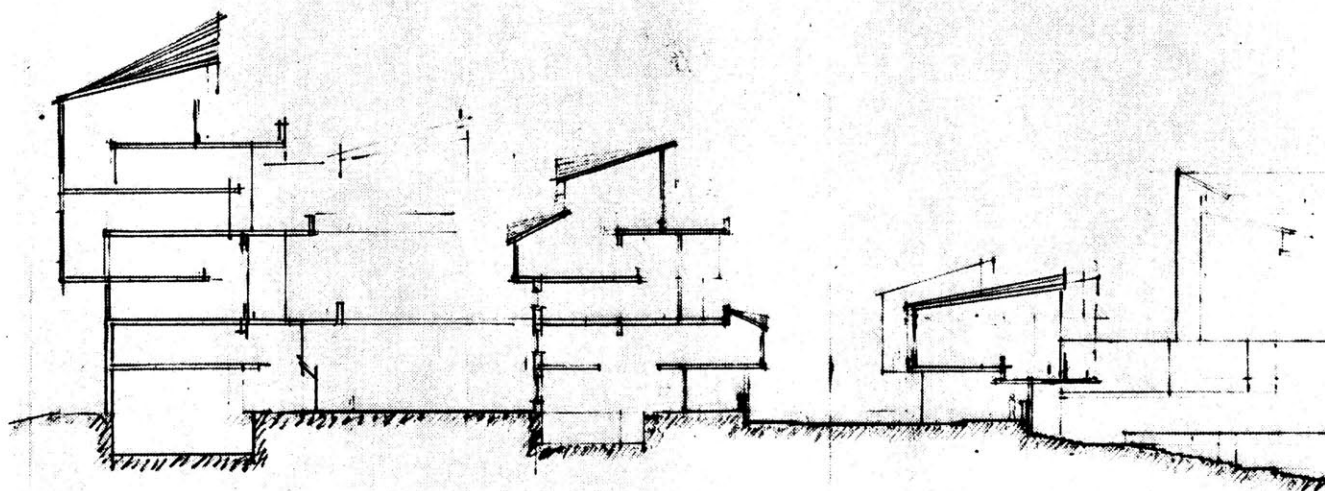
Particularly the infill and enclosure, but also the primary system, should allow for options and for individual occupants to

make local changes. Design studies show how the primary beams might be movable, and the planks are optional if greater openness or enclosure be desired. The infill and enclosure might ideally be undertaken under the direction of the individual occupants: perhaps with a standardized kit of parts for some degree of continuity or without such standard parts, pre-meeting the values associated with individual choice and action.

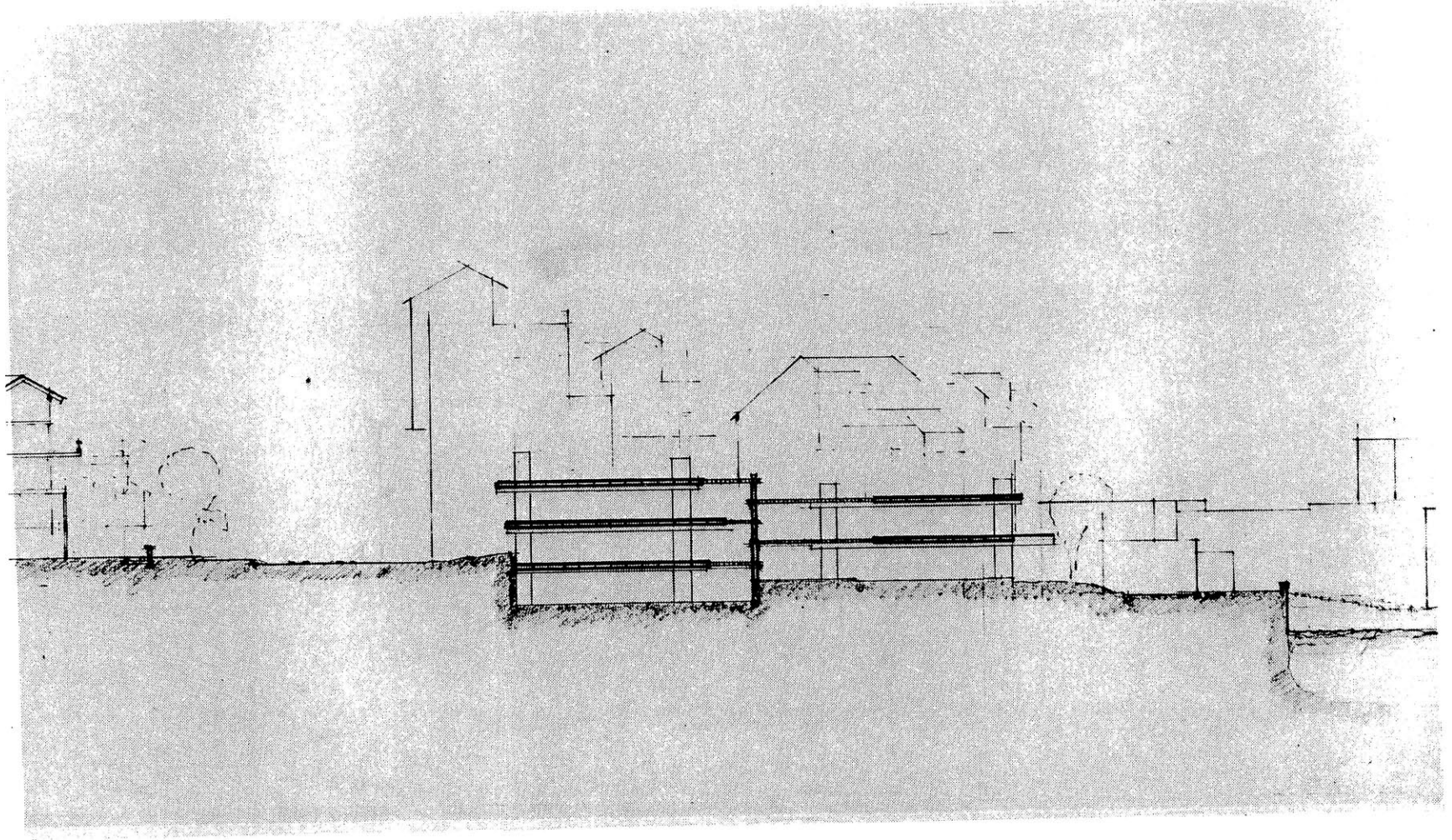


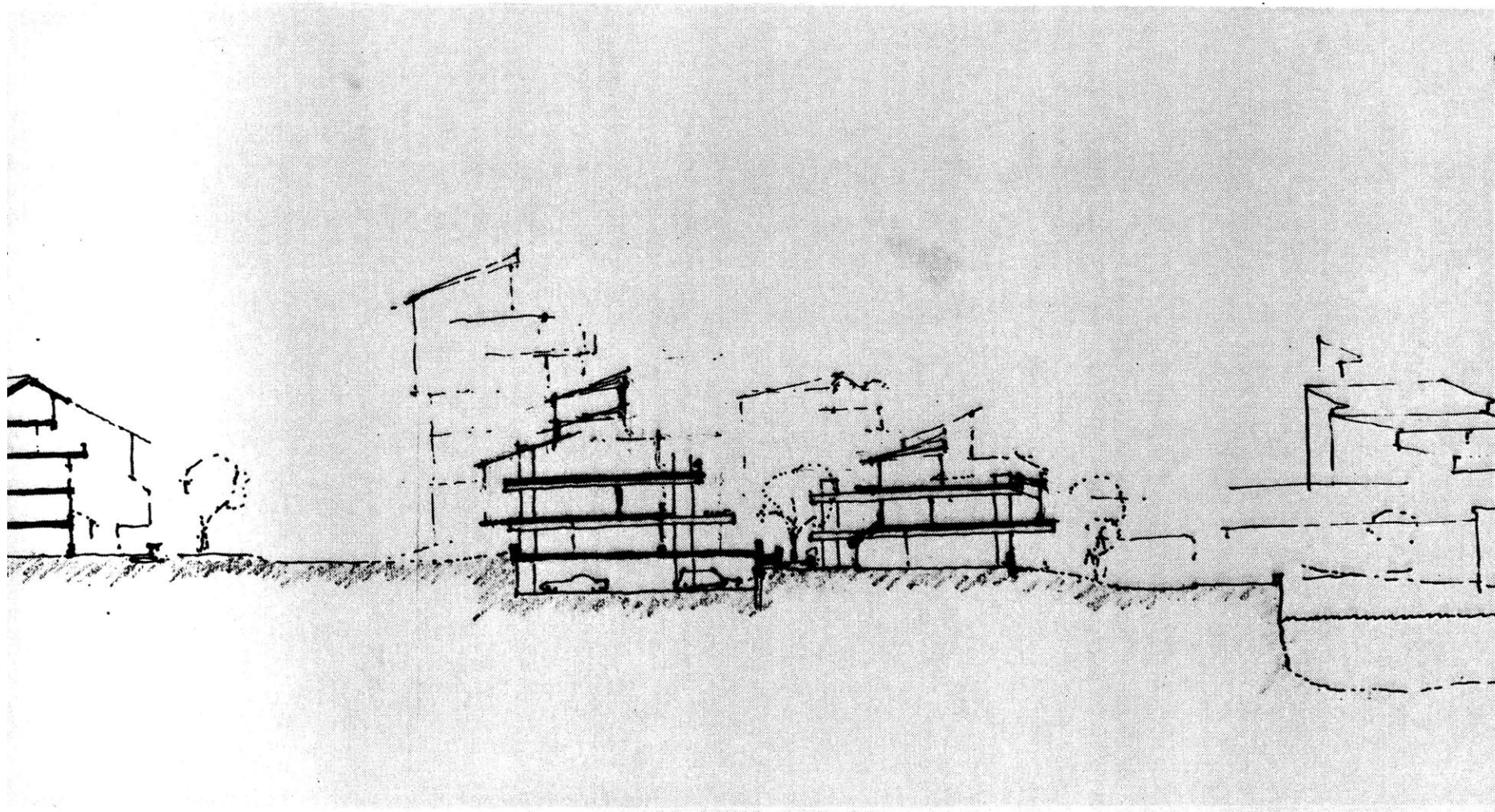
Elevation study and section (opposite) showing another secondary enclosure system. This one has arching openings and curved roof forms, perhaps associating with industrial uses.





Study of a re-usable parking garage. The middle bay is made of a removable system (such as steel). When removed, the remaining bays are of widths more usable for housing or office. The middle bay is a street and open space between the two sides.





## Studies for a Stage and Amphitheater

The significance of this site within Lower Mills and along the river suggests a public use which could take advantage of the site's inherent potential. A series of studies have been made for an amphitheater and a stage. These studies focus on issues of public access and form.

The program for the amphitheater and stage is taken from the Building Types standards for Community Theaters and Amphitheaters and adapted to take advantage of the surrounding site. Natural lighting and openness to the outdoors are included in some schemes, which might lend the place to musical stage production more than theatrical productions.

In the studies both an outdoor stage with

amphitheater and an indoor stage with auditorium are proposed. There are two major iterations in the design studies. In the first, the indoor stage and auditorium are generally enclosed. In the second iteration the auditorium for the indoor stage is designed to allow it to be opened to outdoors.

### First Iteration - Enclosed Auditorium

Drawings on the following pages show the first scheme to be studied. The site study generated the forms for the theater in the following way:

1. Cove and promontory. The location on the site which it seems most important to claim for public use is that which forms the promontory and shelters to cove. This point generates the reciprocal form which does not exist in the existing land use.

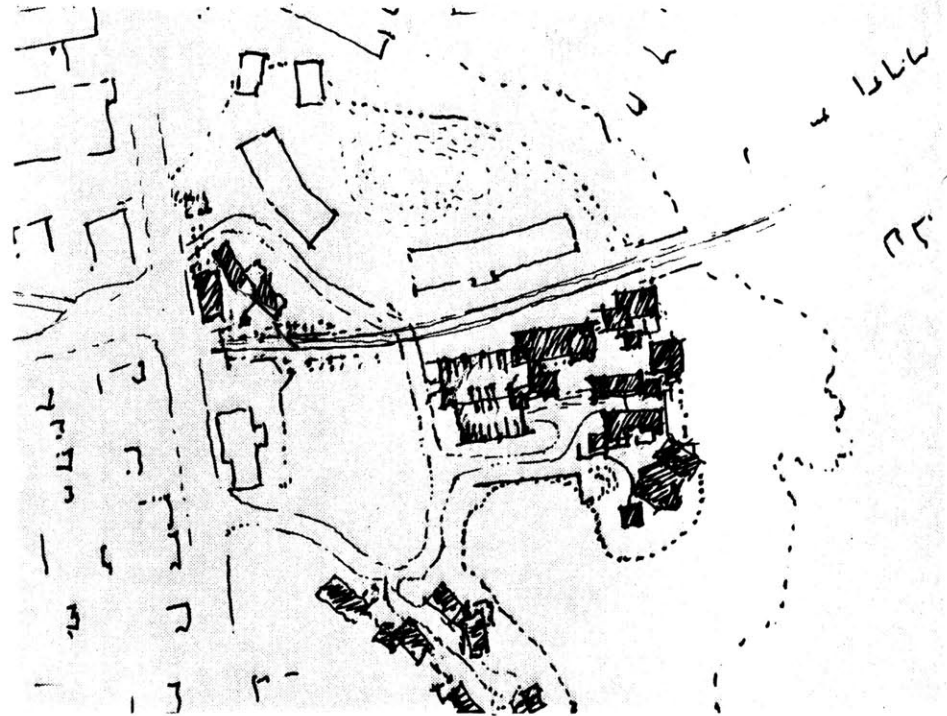


The proposed site form both reaches out into the river basin and creates a protected cove. In comparison with the second scheme, greater emphasis in the first scheme is placed upon uses along the cove and the protected part of the promontory.

2. Identifiable Public Form. Emphasis is also placed upon making an identifiable public form, the "object in the field". The circular form of the amphitheater and enclosure for the theater lobby as well as the curved roof forms are intended to suggest that the place's purpose is one of public gathering.

The round form can be so strong that it adversely affects the sense of continuity with the rest of the development on the site and the surrounding landscape. In

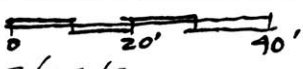
the building the curved form is limited to segments. In the amphitheater the round seating is broken and shaped by extensions of the natural landscapes.



Theater sited on the promontory and reciprocity. Note object forms (circle and square) in field.

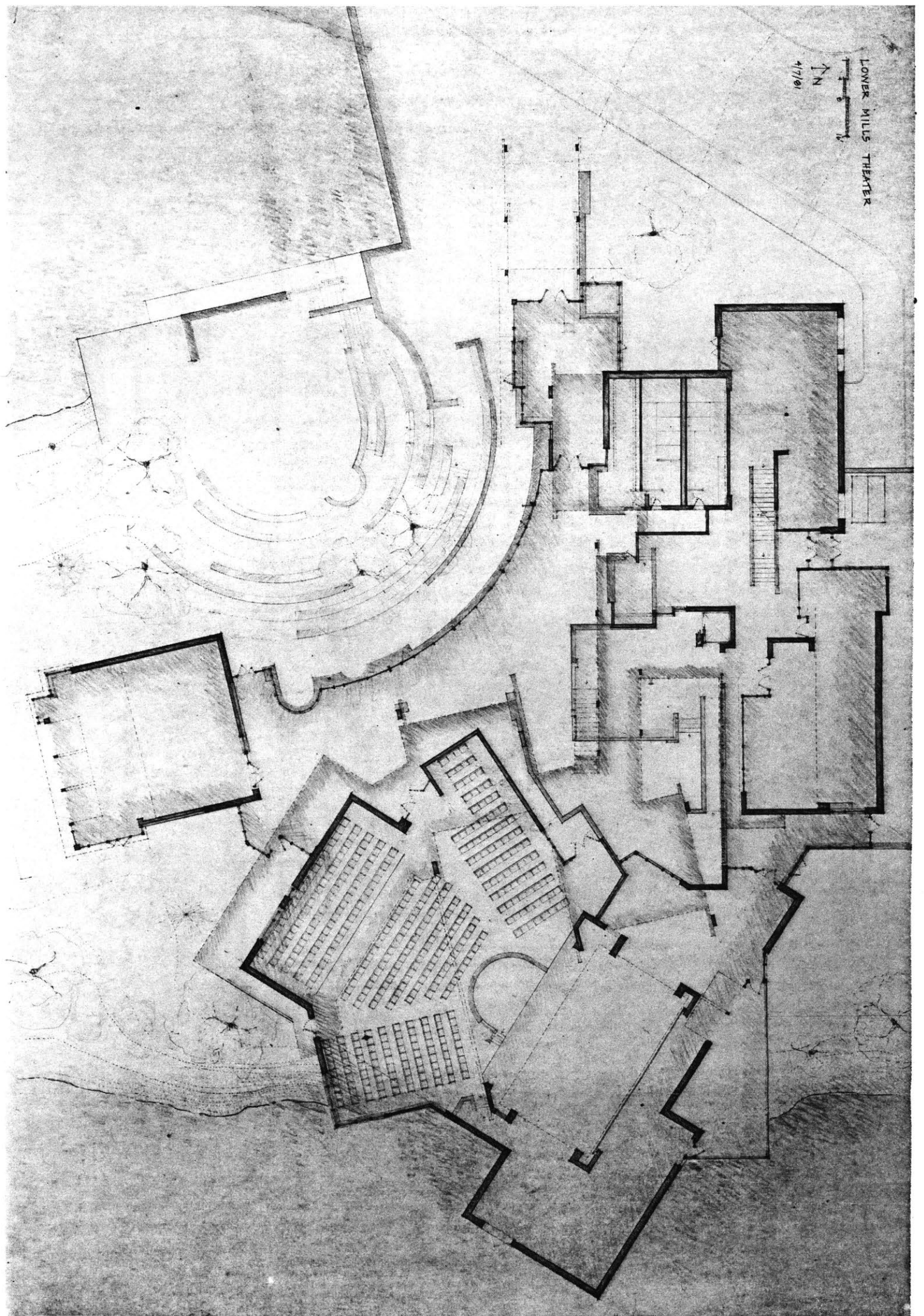


Title: *Garage - office space - theater*

Scale:  0 20' 40'

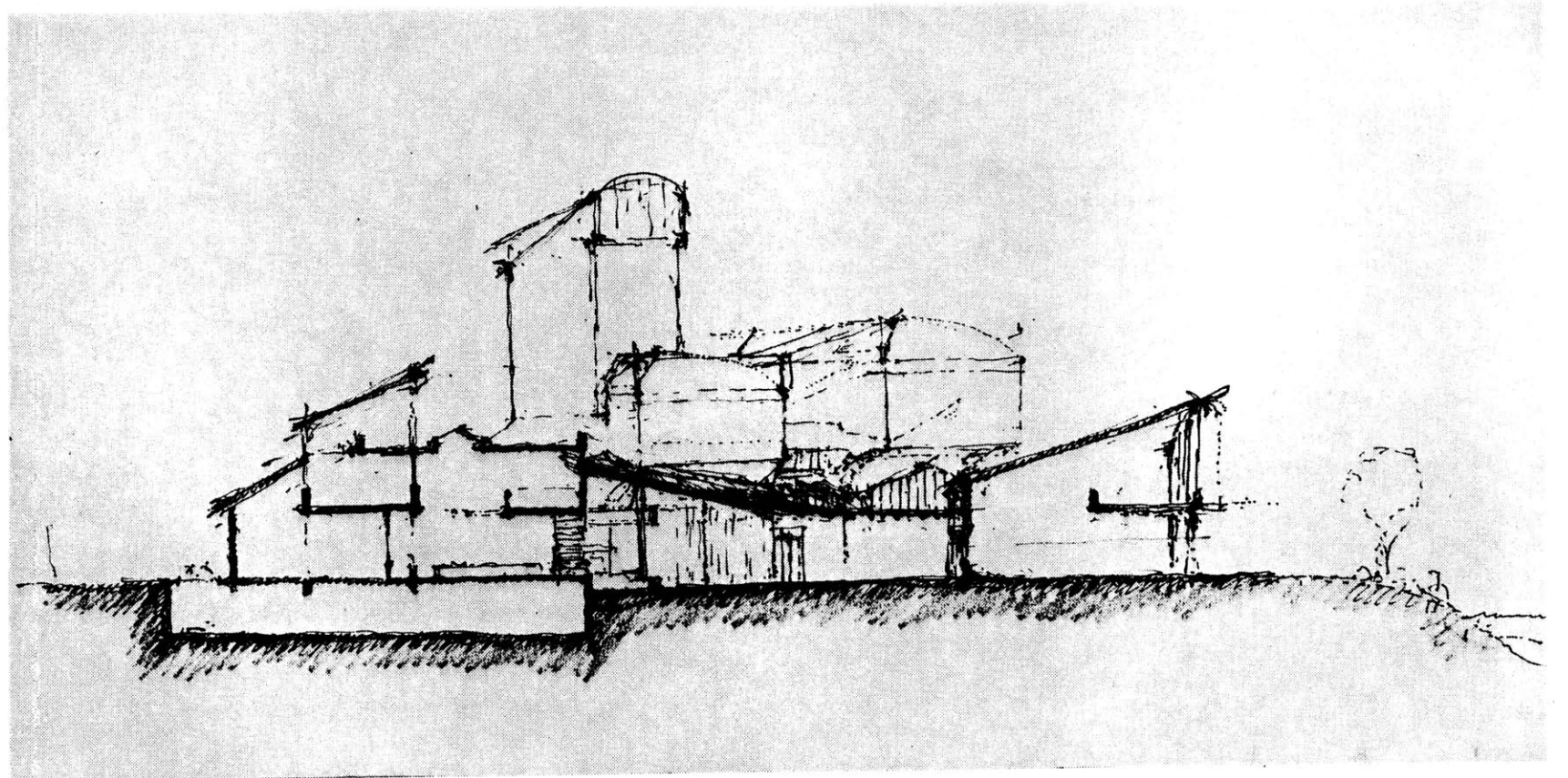
Date: *3/27/31*





Title: *Lower Mills Theater*

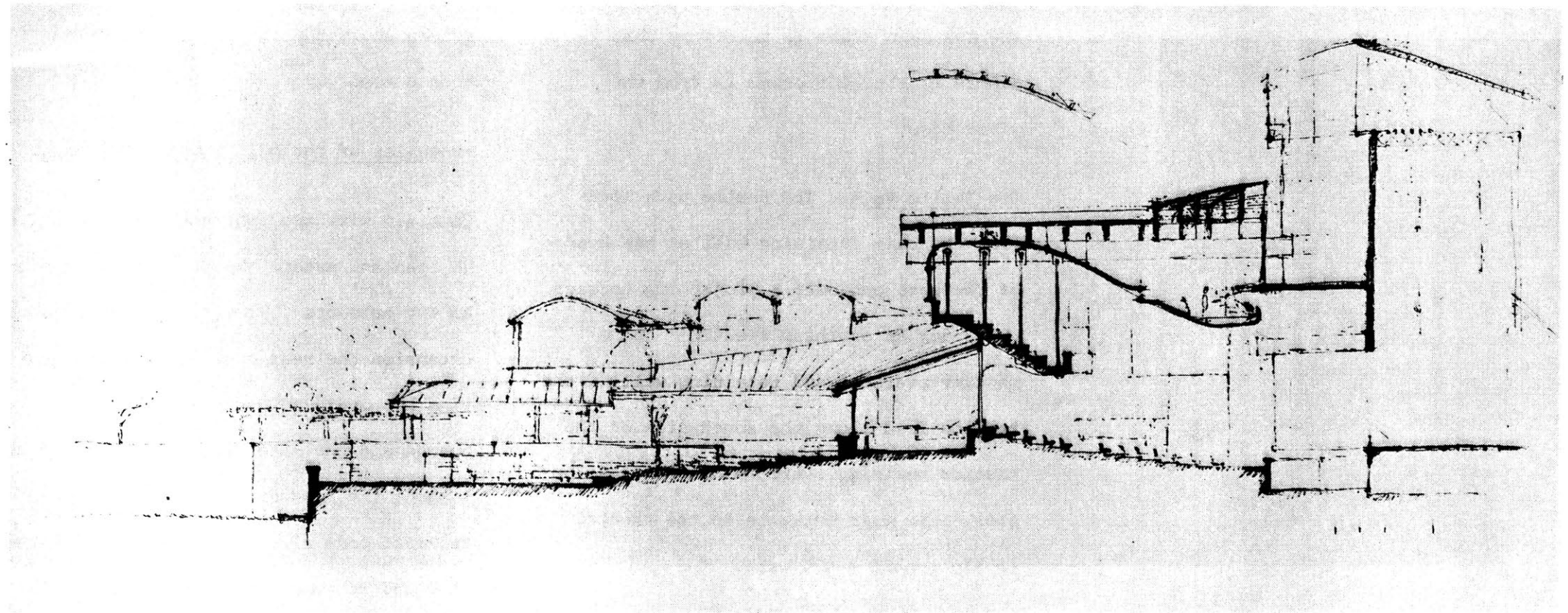
Scale: 0 8 16 32'  
Date: 3/27/01



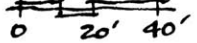
Title: Section thru support space, lobby/  
display, and experimental theater.

Scale: 0 20' 40'  
Date: 3/27/81





Title: *Section through amphitheater and theater (looking North)*

Scale:   
Date: *3/27/81*

Second Iteration - Auditorium Extended Outdoors

The second scheme pushes the extent of public access to river edge further. An ambulatory moves along the river's edge, and the main stage is turned so that access to the auditorium is from the river edge.

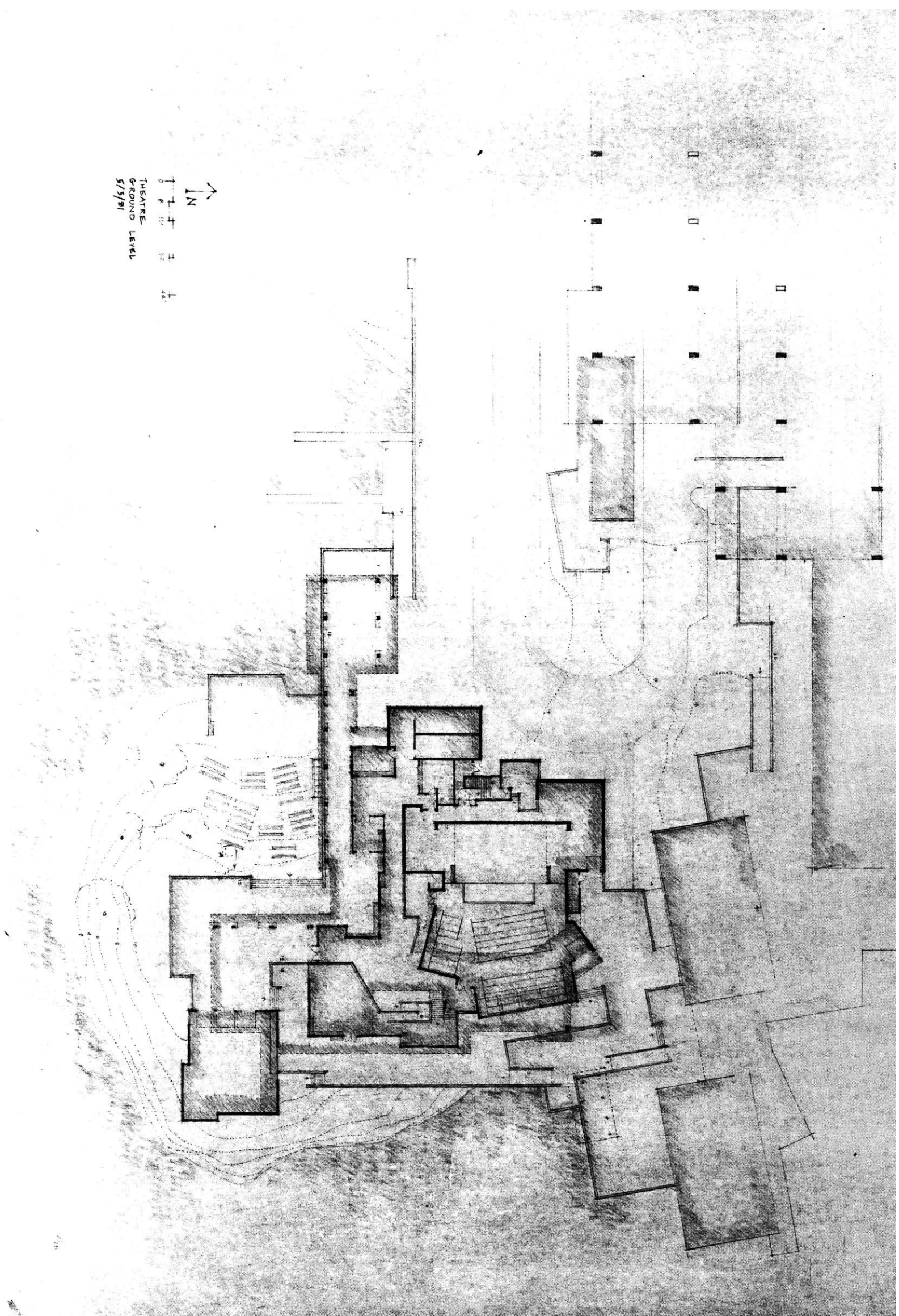
The Public Path. The public path leads from the main retaining wall at the head of the cove out onto a projecting terrace and under an overhead shelter. The shelter overhead and retaining wall of the terrace lead along the south side of the theater building overlooking the amphitheater. The main entrance to the theater is along this south walk.

The walk moves around behind the amphitheater, between the theater lobby/display

area and a seasonally separate experimental stage, and up behind the main auditorium along the river. There is then the option to continue north into other sections of the proposed development or return above the theater to the main access road.

Extension of the Main Theater Outdoors.

Combined with the ambulatory is the option to open and extend the theater auditorium to the outdoors. To achieve this optional extension the rear enclosure of the auditorium has overhead doors which can be opened and the site behind is terraced up towards the adjacent built areas. The terraced form also surrounds the amphitheater and to some extent the experimental stage.

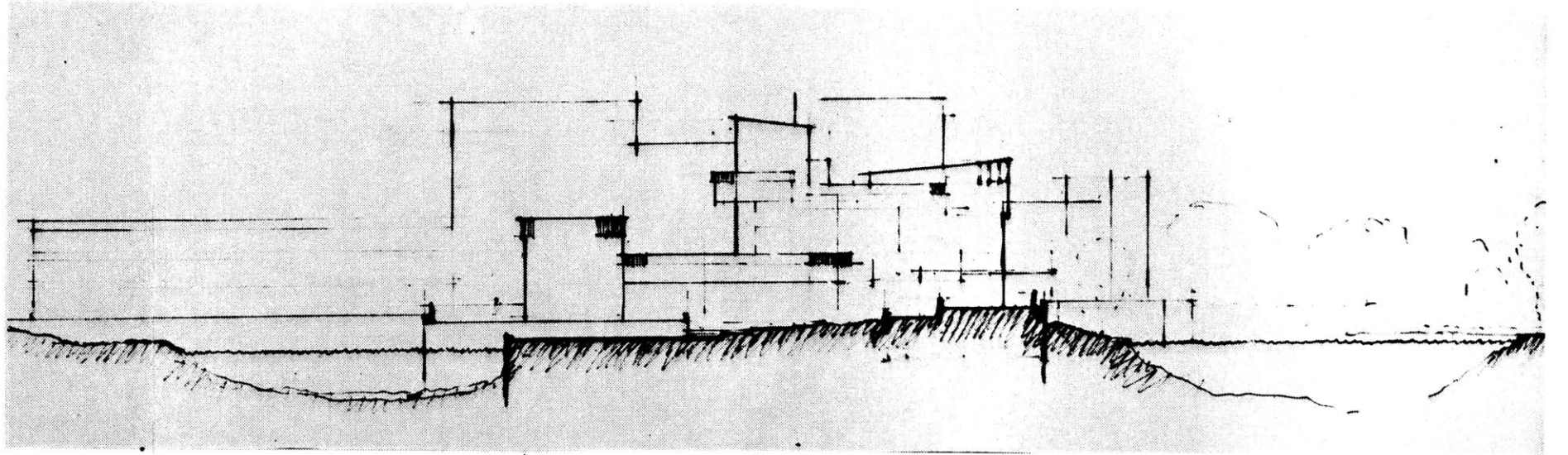


↑ N  
THEATRE  
GROUND LEVEL  
5/5/81

Title: Theater on the site (2nd scheme). Public path goes around theater

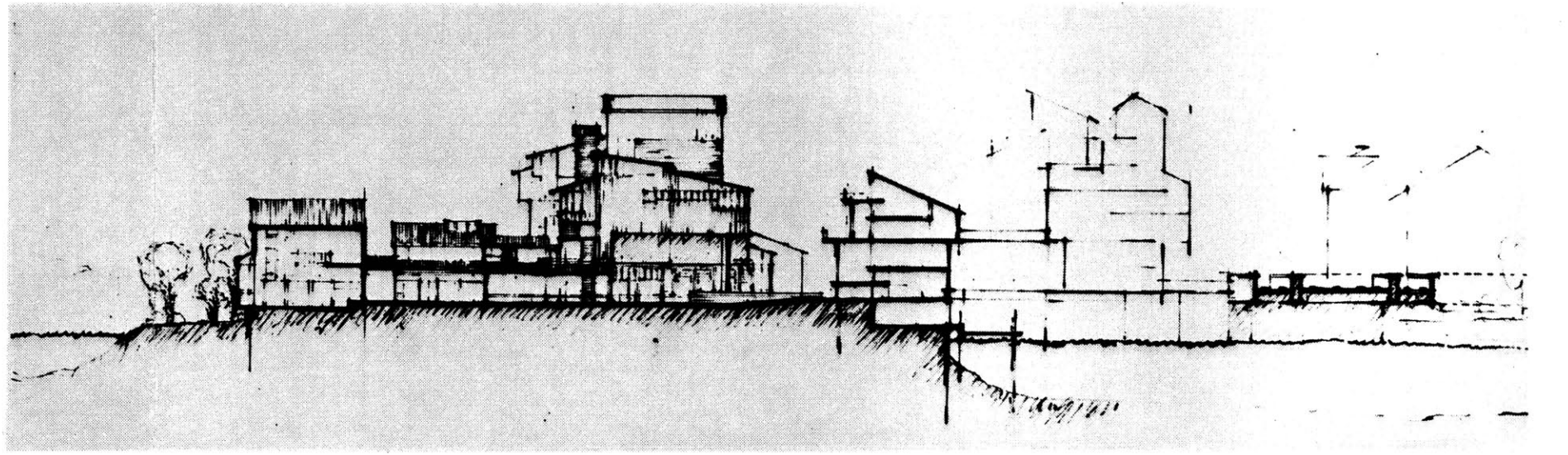
Scale: 0 16' 32' 48'  
Date: 5/5/81





Early section (east-west) through amphitheater looking north. Experimental stage was at left

over an entrance lobby which could be entered from the north side.



Section (north-south) through perambulatory looking west. From left to right: experi-

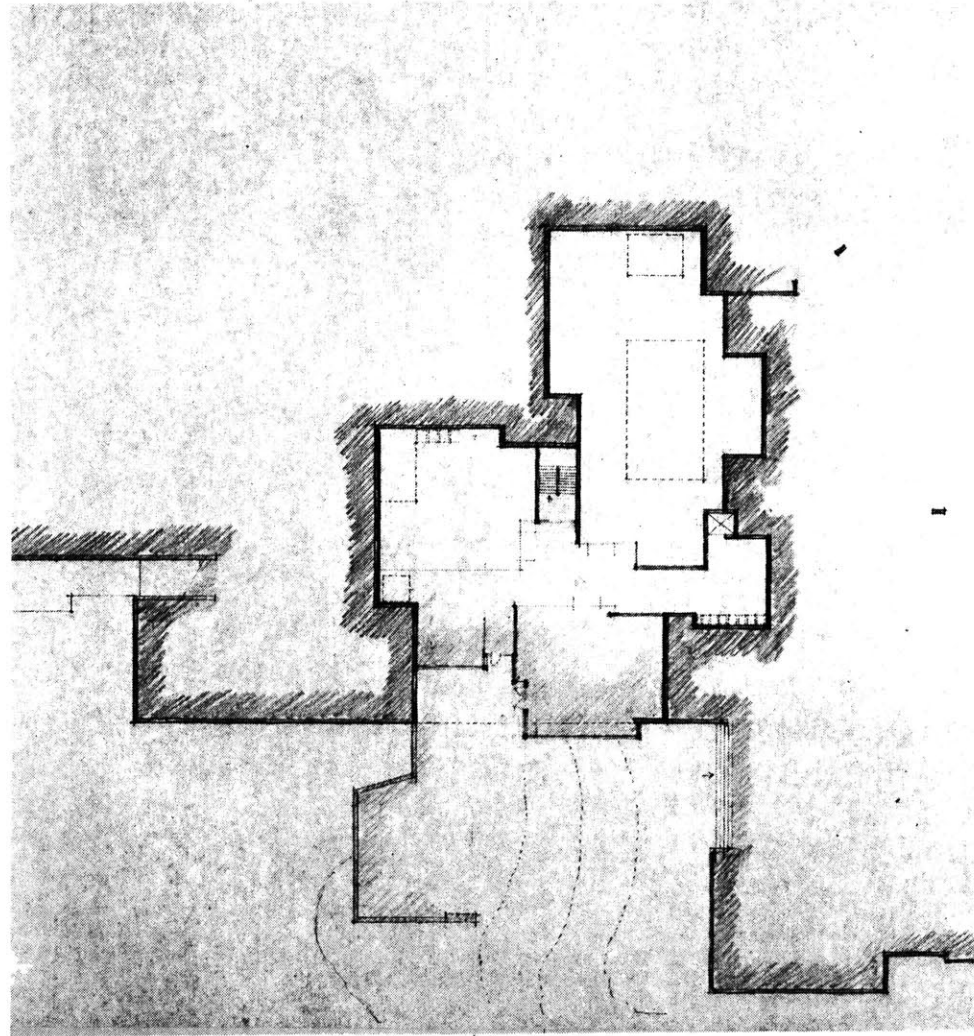
mental stage, lobby (reception/rehearsal above), theater, and housing or office.

Upper and Lower Level Plans. The lower level plan shows workshop, storage and space under the stage. Access for delivery of materials occur at the north side through a large door shown on the main level plan and through a hatch in the floor; delivery can also be made through a hatch in the paving just to the east of the building. Workshop areas open onto the amphitheater stage area which could be used for outdoor work activities.

Access from upper levels and a lounge accommodate the performers during performances in the amphitheater.

The upper level plan shows in the most public (east) zone the balcony for the main theater and a rehearsal/reception area overlooking the river and the main

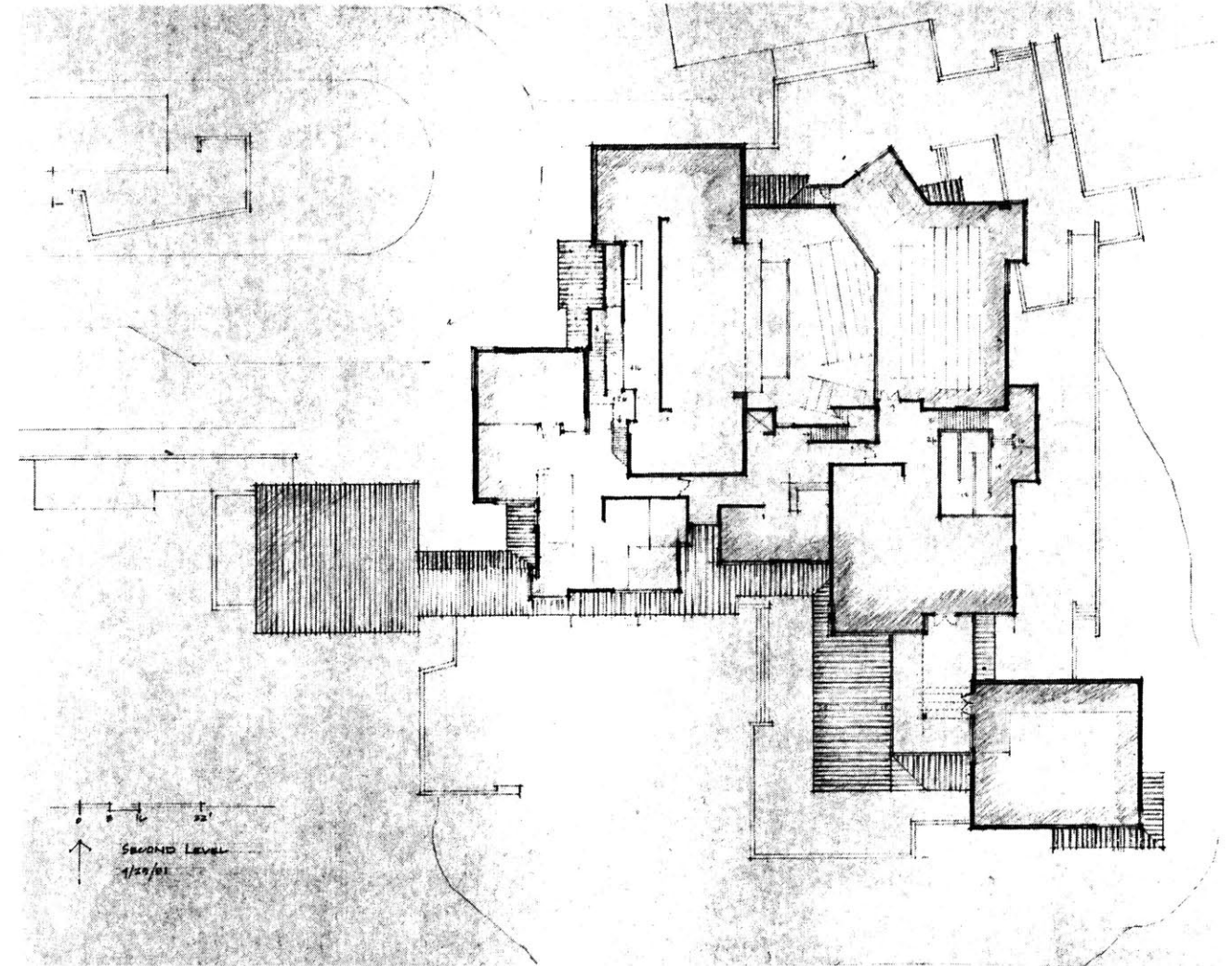
level lobby. In the middle zone are administrative offices and access up to technical support areas on higher floors. In the west zone are private rooms for performers and lounges or chorus rooms. The main and upper level plans show a circulation path behind the stage with a lounge for waiting actors a half-level above stage and a half-level below the upper level.



Lower level plan showing workspace which opens out onto amphitheater, storage, areas below stage, and circulation.

Upper level plan with balcony, rehearsal/reception area, office and pre-performance areas.

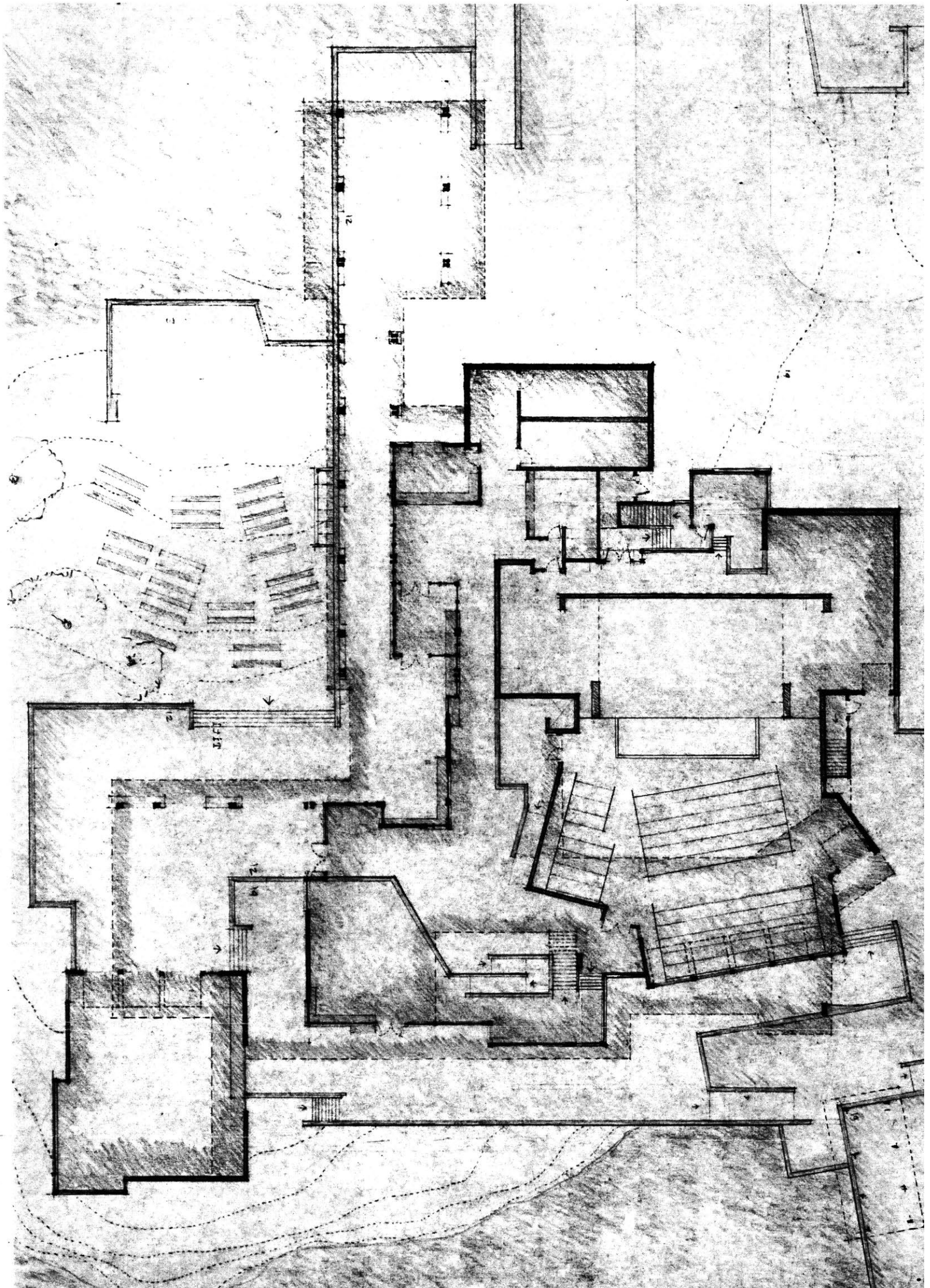
144



Title: *Second level plan (above)  
Basement level (above left)*

Scale: ~~1/8" = 1'-0"~~  
0 5' 16 32'  
Date: 4/29/81



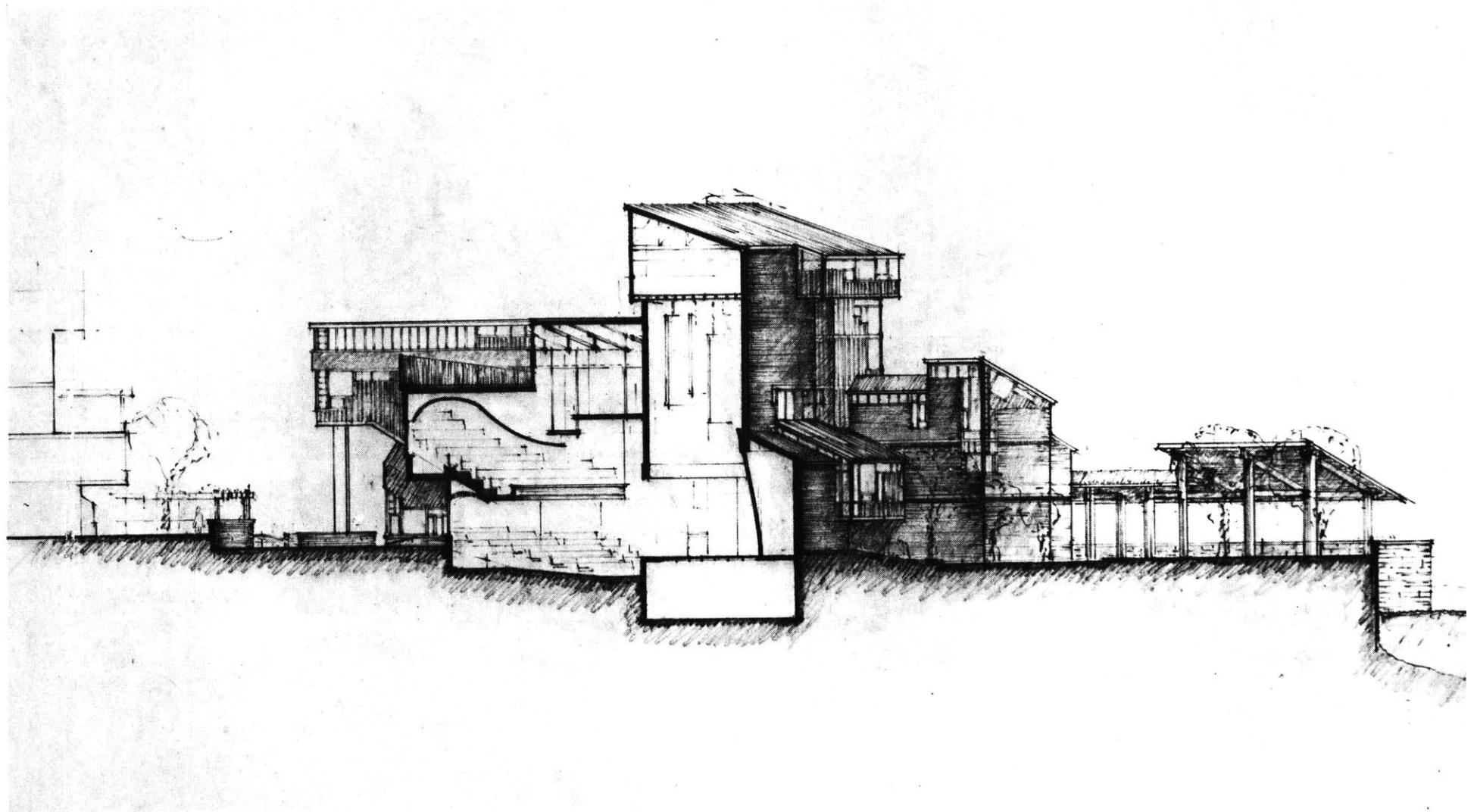


Title: *Theater (second scheme) : Main level*

Scale: 0 8' 16' 24'

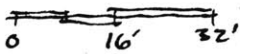
Date: 5/5/81

Main level plan showing sheltered approach, entry on south side, ticket booth serving theater and amphitheater, lobby and display and theater. Experimental stage is at south-east corner. Perambulatory goes behind.



Section showing (from right) sheltered approach, added form of support spaces, stage, seating, openable rear wall and terraces.

Title: *Section through theater*

Scale:  0 16' 32'  
Date: 5/8/81



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