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DESIGNING AT THE EDGE: Exploring the Interface Between the Built and Natural Environment

by Anne Elizabeth Hritzay

Bachelor of Arts
University of California
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Submitted to the Department of Architecture in partial fulfillment of the requirements of the degree of Master of Architecture at the Massachusetts Institute of Technology

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Signature of the Author
Anne E. Hritzay
Department of Architecture
May 9, 1986

Certified by
John R. Myer
Professor of Architecture
Head of the Department
Thesis Supervisor

Accepted by
Thomas Chastain
Chairperson
Departmental Committee for Graduate Students

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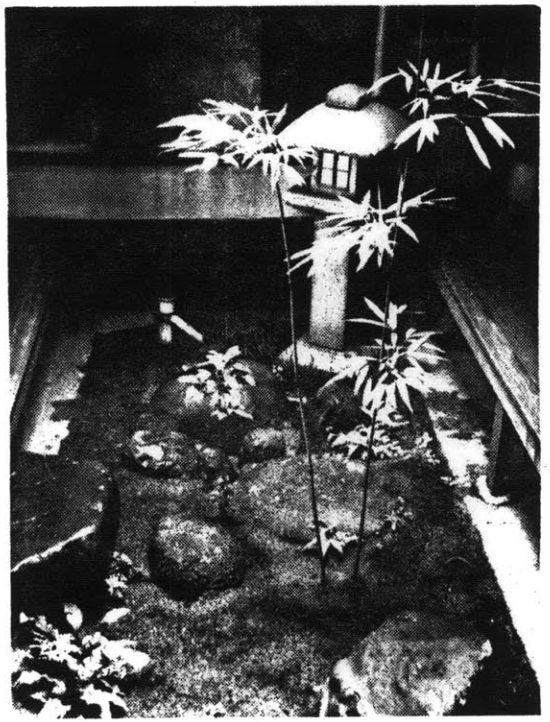
ABSTRACT

Architectural form embodies layers of cultural meaning which reveal people's attitude about their connection to their world. Architectural form has the capacity to contain a plethora of statements about the individual identity of the builders and occupants, as well as a general statement about their place within the continuum of human history.

Traditional architectural forms have shown past civilizations to be much more responsive to their natural context, deriving ordering and building systems from the immediate environment. Increasingly however, architectural forms have arisen from more abstract concepts of order. The past few decades have witnessed rationalist expression of building forms underscoring the disconnection from the greater natural cycle of existence as a generative basis of formmaking systems. This attitude denies the opportunity for buildings to express cultural meaning about people's natural interconnection, in addition to formal geometric expressions. The "modern architectural movement", set within the framework of our current state of cultural development in a technological age, has contributed to alienating people from the natural world in which they are integrally entwined.

In order to bridge the gap formed between natural ordering systems and current design expression in a technological age, this thesis explores design as an integration of built and natural form. The design of a retreat center in a dominant natural setting is the vehicle for this exploration. It embodies both functional (programmatic) and physical (architectural form) aspects through an integrated order which can facilitate people's reconnection to the natural order.



Thesis Supervisor:

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To every natural form,
rock, fruit, or flower,
Even the loose
stones that cover the highway,
I gave a moral life, I saw them feel,
...and all that I beheld
respired with inward meaning.

- William Wordsworth

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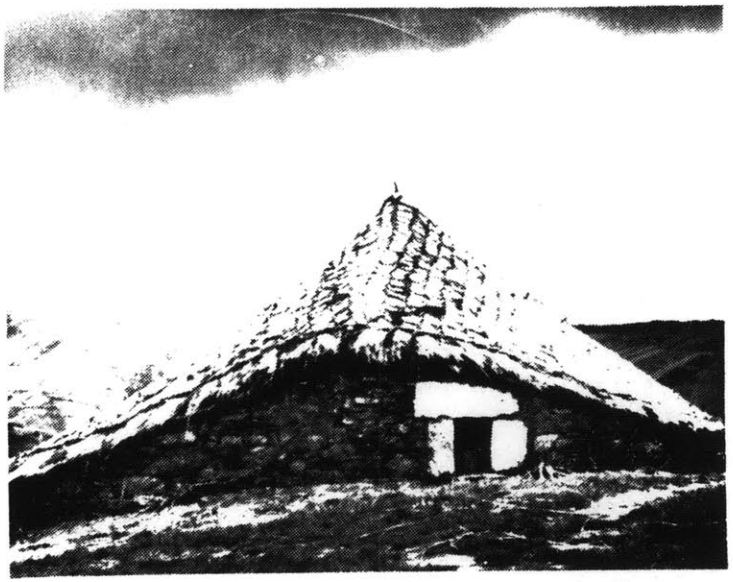
In nature the emphasis is in what is rather than what ought to be.

- Huston Smith

INTRODUCTION

INTRODUCTION

"Architecture is the manifestation in form of the order of our experience. It is a model of our consciousness, the fitting of ourselves between the earth and the sky, the patterns in which we relate one to another, and the physical presence of our institutions. The architecture of each culture is a model of that culture's world, not of the world's shape, but of its underlying form."[1]



3. Pallaza: Oval plan traditional dwellings; El Cebrero, Spain.

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[1] John Lobell, Between Silence and Light (Boulder: Shambhala Publications, 1979), p. 60.

4. Levittown; Single family house tract development.

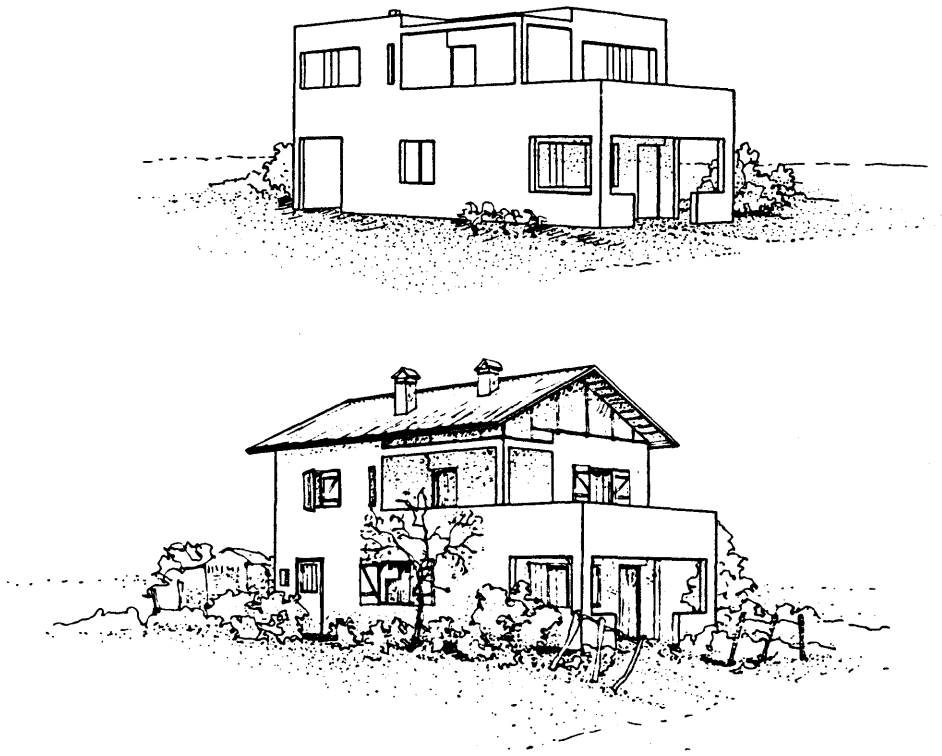
5. Single family detached suburban sprawl near St. Louis, Missouri

The representation/manifestation of architectural form incorporates a multitude of generative influences that include cultural, technological, socio-political and spiritual values. I wish to address the components of architecture that can invoke deeper levels of meaning and spiritual expression than has been exhibited by much of today's architecture. The expression of spirituality through architectural placemaking can facilitate a greater awareness of our inner selves. Conversely, when this component is ignored, architectural forms can increase a sense of alienation and abstraction from the already chaotic world in which we live. I feel the modern architectural movement has promoted this disconnection over the past several decades.

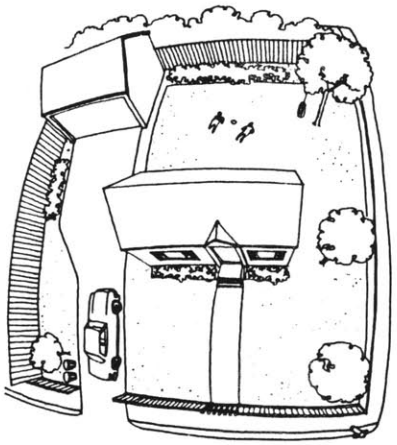
"I can't find my house."

An example may aid in the clarification of these issues as seen in current architectural expression. The house, a most ordinary building form understandable to all cultures, acts to shelter people from the outside environment, weather, enemies, etc. It is also a container of possessions, identity and meaning for the individuals who reside there, offering them a most profound sense of comfort and security. Houses are personally modified to provide clues to outsiders as to the character of the occupants. This personalization of homes is especially prevalent in the United States, where monotonously similar single family dwellings in tract developments express characteristic marks of individual identity as soon as the new owner

This feeling manifests itself in a detachedness of the human spirit from people's integral relationship to and place within nature. Architects can use an increased connection to nature and natural systems to invoke greater spiritual meaning into their buildings. In addition, through the use of a natural design metaphor, architecture can provide a setting for a more peaceful existence in order to transcend modern day stress and anxiety.

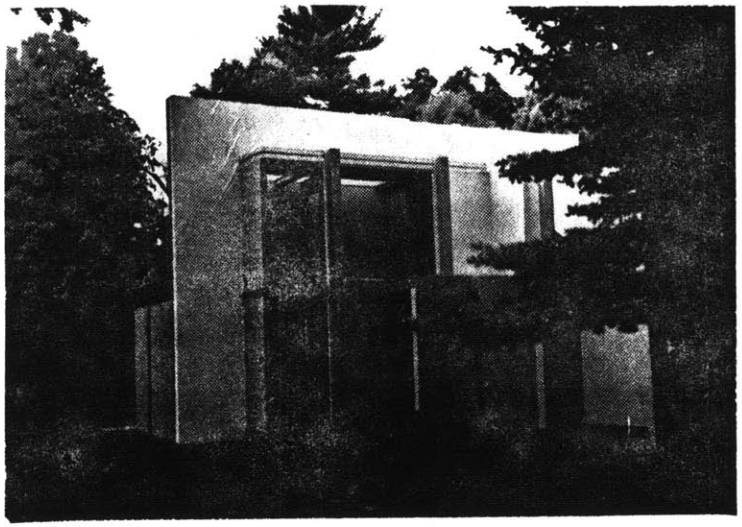


6. A house at Lege by Le Corbusier (top, before; bottom, after); Modified by owner.



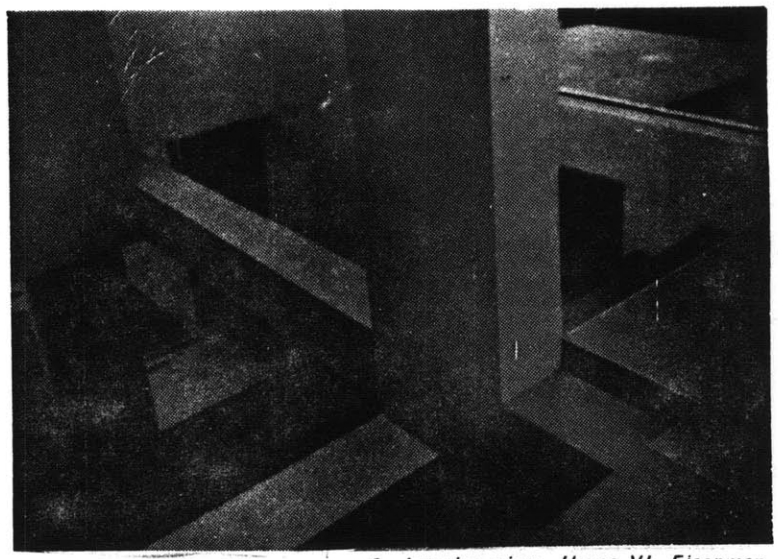
moves in. We see these signs in paint color variations, decoration, garden plantings, the type of car in the driveway, the ceramic cat on the roof or the elaborately monogrammed aluminum storm door, etc. All these signs work to invoke a deep meaning for the occupants of the dwellings, through established/acceptable symbols which are generally recognizable by other culturally attuned dwellers.

7. House VI, Peter Eisenman, 1976; East Elevation.

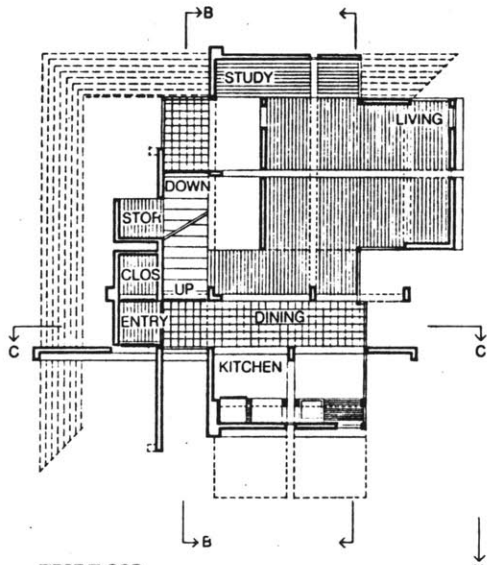


An extreme example of modern architecture's rationalist interpretation of the traditional house form can be seen in the residential work of Peter Eisenman. These houses (Eisenman never uses the word "home" with it's layering of socio-cultural meaning to describe these buildings) establish a formal identity through the logical manipulation of mathematically derived geometric forms, completely controlled by the will of the designer. The actual use and users as well as the specific site and physical context are considered of little importance in this formula. The inhabitant of such a house becomes completely disconnected from the culturally established methods of expressing

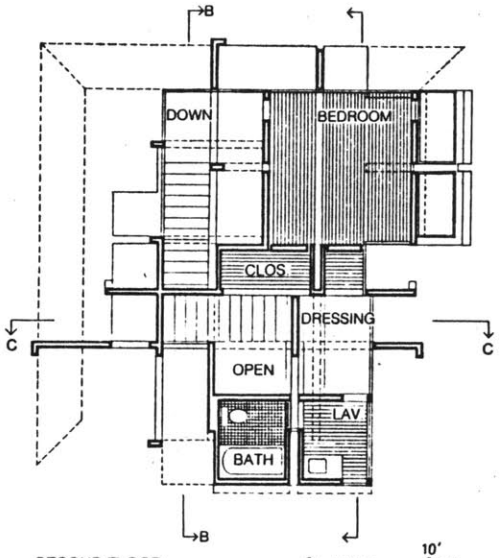
personal identity, as the house has had it's meaning imposed upon it by the designer in such a way that it leaves few conventional options open to the occupant. One of the ways in which this type of house has also alienated the occupant is by decreasing the sense of connection to a place within history and within the natural environment in which the house sits.



8. Interior view, House VI, Eisenman.



FIRST FLOOR



SECOND FLOOR

9. Floorplans, House VI, Eisenman.

10. Living between and under trees; Denmark.

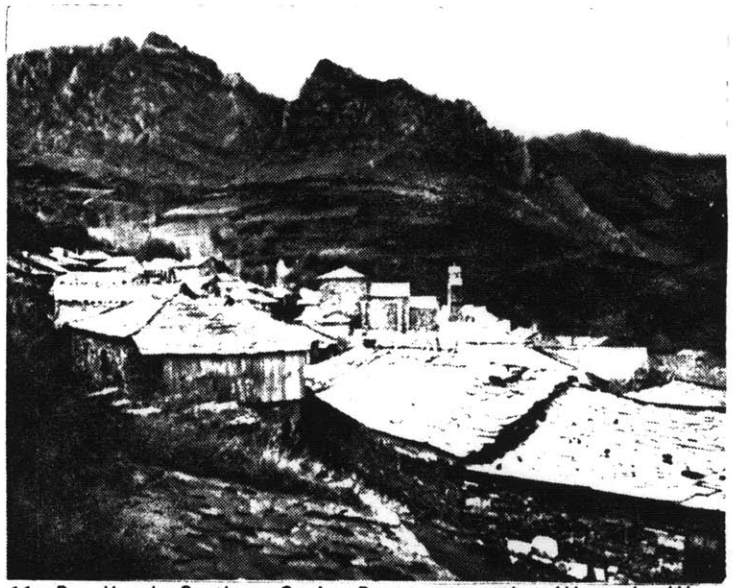
Traditional values of American pastoral utopianism have included a deeper awareness of the natural world than the tenets of the modern architectural movement has been able to fulfill. This issue of disconnection from nature has pervaded my architectural and spiritual thinking for several years. Certainly there are many mediums and fields through which this issue may be addressed, but as an architect, and for the purposes of this design thesis, I have investigated this spiritual detachment through the medium of architectural formmaking. As a fundamental assumption, I have recognized the opportunity that architecture possesses to define and help clarify/reveal people's connection to their environment.

The design proposal presented in this thesis addresses how this clarification can occur on two levels. Firstly, an architectural program of activities is presented that offers people an opportunity for personal spiritual exploration and community formation within a powerful natural setting. Secondly, physical forms are arranged so as to integrate sympathetically with the existing natural order of the landscape on several scales, and to

establish a sense of physical and psychological/spiritual community.

This thesis is organized into four major headings, this introduction, a discussion, a design proposal and my reflections/conclusions. The discussion section explores the historical development of culture as expressed in physical form through architecture and planning. The impact of modern architectural attitudes towards formmaking is then explored, revealing the shortcomings that these utopian visions had in providing people with adequate structures to meet their needs and desires. Drawing from this background, I then express my own design attitudes through a discussion of the variety of approaches that can be taken to rectify the schism that modernism has created between people and nature.

The design proposal, which occupied a large portion of this thesis exploration, is for a retreat center on a large unbuilt natural site. The program offers an opportunity for the issues of spiritual disconnection to be explored through creating places and activities for group interaction as well as communication with



11. Penalba de Santiago, Spain; Remote mountain village dwellings. Roofs are of local slate and walls are of unmortared stone.

nature. The architectural formmaking issues revolve around the notion of establishing an integrated order with the natural surroundings, one which accepts the power that natural forms have to augment and amplify the harmony of the designed composition.

Upon completion of this design study, I then reflect upon my process of research, analysis and design investigation to formulate a framework for continuing this work into the future as an architect.

DISCUSSION

To see a world in a grain of sand
And heaven in a wild flower,
Hold infinity in the palm of your hand,
And eternity in an hour.

- William Blake

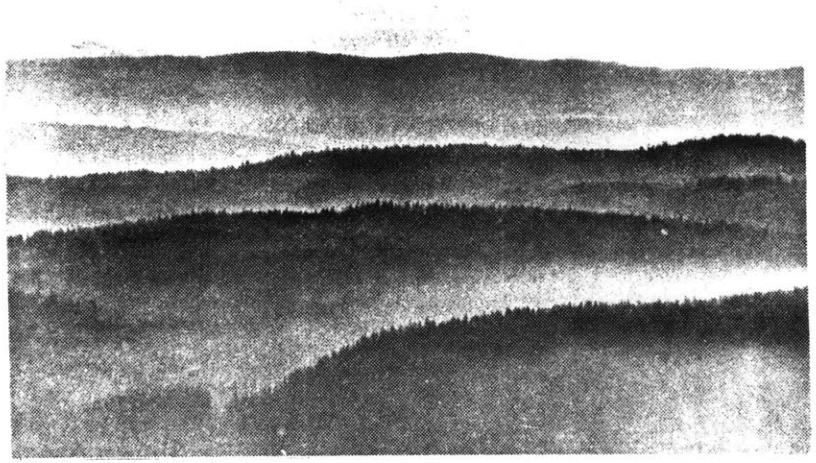
B. DISCUSSION

The following section lays out the foundation for which I propose a change in current design attitudes. First, an explanation of the importance of nature, and how it affects our lives is presented. Secondly, a discussion about people's perception of their place within the natural world over the course of human history is presented. This provides a foundation for contrasting the current context following the modern architectural movement in the third section. The fourth section discusses a proposal for an integrated order of architecture within the natural landscape. This includes a recognition of the scales by which we perceive the environment and a representative look at several built examples of how architecture relates to the landscape. These methods are then evaluated in order to propose an integrated order of architecture and landscape.

13. Houses and terraced pasture near Salamanca, Spain.

1. NATURE IN OUR LIVES

Nature has always played an important role in people's understanding of their inner selves. Being in a beautiful outdoor place can help to calm fears and reduce the anxiety and stress generated from everyday activities. This experience in the outdoors can promote a feeling of a connectedness to a greater whole, thereby reducing the alienation imposed by today's social and cultural isolation. "Every character consists in a correspondence between outer and inner world, and between body and psyche. For modern urban man, the friendship with a natural environment is reduced to fragmentary relations."[1]



14. Norwegian landscape.

It is necessary for spiritual sanity to maintain a sense of connection to the natural world, even if it just seeing a bit of green grass, or feeling the cold chill of a winter night, or smelling an approaching summer thunderstorm. Sometimes we just don't slow down enough to see the small signs of nature in a predominantly built urban environment. When we do experience these forces, we feel the temporary relief of being removed from the petty

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[1] C. Norberg-Schulz, Genius Loci (London: Academy Editions, 1980), p. 21.

It is so small a thing
To have enjoy'd the sun,
To have lived light in the spring,
To have loved, to have thought,
To have done?

- Matthew Arnold

existence of our daily routines, and grasp a more substantial recognition of our place in the world and this life.

"We wander through life overwhelmed by the myriad details of the material world, but we have no sense of what stands beyond that world and what our place might be in a larger scheme of things."[1] Nature, "the primitive state of things, as untouched and uninfluenced by civilization and artificiality",[2] has the power to return people to a simpler state of existence, if only momentarily, where everyday worries are reduced to insignificance.

"From the beginning of time, man has recognized that nature consists of interrelated elements which express fundamental aspects of being. The landscape where he lives is not a mere flux of phenomena, it has structure and embodies meanings.

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[1] John Lobell, Between Silence and Light (Boulder: Shambhala Publications, 1979), p. 69.

[2] The American Heritage Dictionary, 2nd College Edition (Boston: Houghton Mifflin Co., 1982), p. 832.

In general any understanding of the natural environment grows out of a primeval experience of nature as a multitude of living forces".[1] These meanings, drawn from the experience in the natural world, can offer us clues for the creation of a richer built environment. Through these meanings, we may establish our cultural presence more permanently, linking to our past (through our integral place in the ecological cycle) and to our future through reaffirmation of a timeless archetypal order.

[1] C. Norberg-Schulz, ibid, p. 23

What a delight it is
when, of a morning
I get up and go out
to find in full bloom a flower
that yesterday was not there.

- Akemi

15. The Jewish Cemetery, Jacob van Ruisdael; Nature reclaims built form.

"A landscape allowed to expand to suit temporary needs leaves a great deal to be desired. Each of us feels the need for something permanent in the world surrounding us, just as we feel the need for a permanent identity for ourselves. This is not merely a matter of security or of objection to change. It is a matter of satisfying a fundamental human urge to be part of an order which is more lasting than we are: a moral or ethical order which transcends our individual existence. The Romantic generations derived this kind of satisfaction from their feeling of oneness with nature. What do we have to take it's place?"[1]

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[1] J.B. Jackson, The Essential Landscape (Albuquerque: Univ. of New Mexico Press, 1985.),p. 48

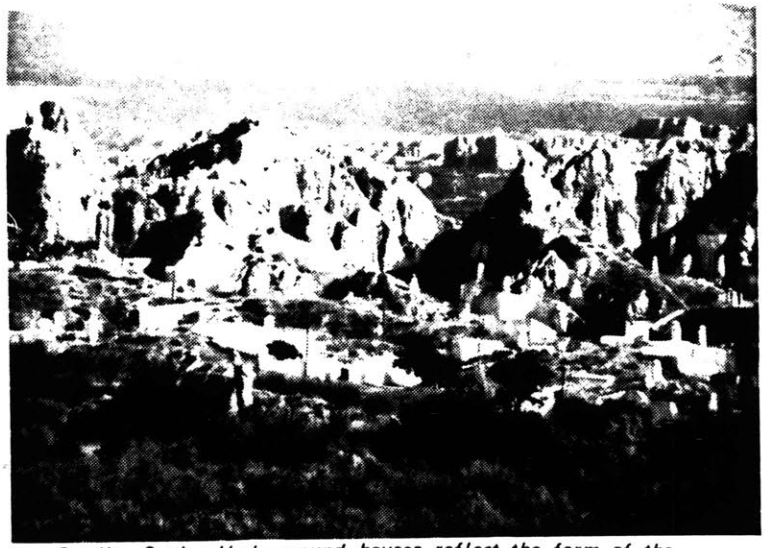
2. AN HISTORICAL OVERVIEW OF PEOPLE'S RELATIONSHIP TO THEIR ENVIRONMENT

THE STAGES OF DEVELOPMENT

Architecture, until recent history, had been an act that every person participated in. As such, the built environment has always provided primary clues as to the emotional, spiritual, technological, intellectual and political-social stages of the development of humankind. The representation of physical form by a building's siting and volumes, as well as applied ornamentation derives primarily from practical constraints (environmental conditions, structural systems and material availability) and cultural (spiritual, artistic and intellectual) meaning. These aspects reveal the dreams and aspirations of a culture, as well as personal deviations from these expressions of cultural identity.

Notions of how to create built order in the natural landscape have evolved over the course of history, parallelling the stages of general socio-cultural development. These stages are intimately dependent on the development of people's perception of their place in relationship to their environment, and their psychological and physical ability to alter it. I have focused on how general cultural development

16. Stimmung, desert village outside Khartoum; Primitive dwelling form.



17. Guadix, Spain; Underground houses reflect the form of the landscape.

has influenced the way in which people perceive their relationship to their environment, and thereby their ability to alter, create and shape it.

These stages are clearly not historically distinct from each other, but indicate a general linear progression of the development of the arranged environment over time. As will become clear in the following discussion, the most recent stage incorporates a variety of previous and current attitudes depending upon designer's choice as informed by specific cultural development.

This discussion intends to illustrate the attitudes that builders and designers have taken towards the natural and built environment as seen as a representation of cultural identity and an understanding of people's place in the natural world.

A. NATURAL STAGE:

In this primary stage, people survived at a subsistence level. All energy was spent on food gathering efforts and protection from enemies and harsh environmental conditions. People situated themselves near to food and water, based on the natural lay of the land. Technological advances were limited, and no sophisticated tools for altering the shape of the land, or the paths taken across it were available. The size of social groups were related to the ability to feed and protect the group within a certain system of food gathering. Generally a small number of families created individual communities, coordinated by a hierarchical age-related system of governance.

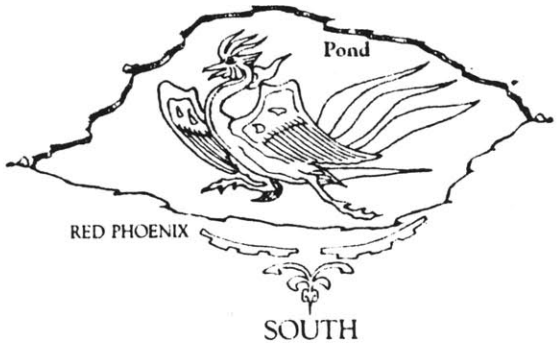
The spiritual concerns of these communities were derived from an ultimate respect for nature as the unchallenged controller of all forces. During this period, places took on the form of an overriding natural order, following waterways and natural contours, allowing their architectural forms to be primarily responsive to environmental factors including available materials, solar exposure, relationship to food gathering patterns and degree

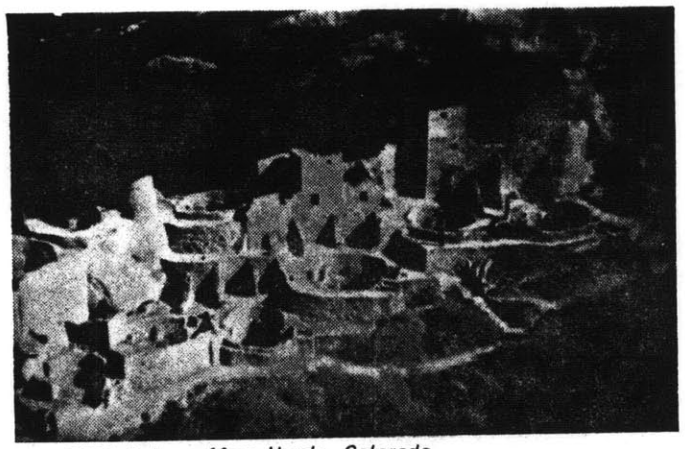
18. House, Stimmung; Primary protection from the sun.

of food supply permanence, etc. There was minimal agricultural manipulation of the landscape during this period as people were primarily hunter-gatherers. Any secondary order that was imposed upon the organization of the landscape was usually generated from spiritual factors relating to people's position within a dominant natural order. Ritualistic celebrations payed homage to the forces of nature, using sacrificial offerings to ensure the success of the hunt and the safety of the hunters.

19. Wine terraces in Calabria; building the landscape with primitive means.

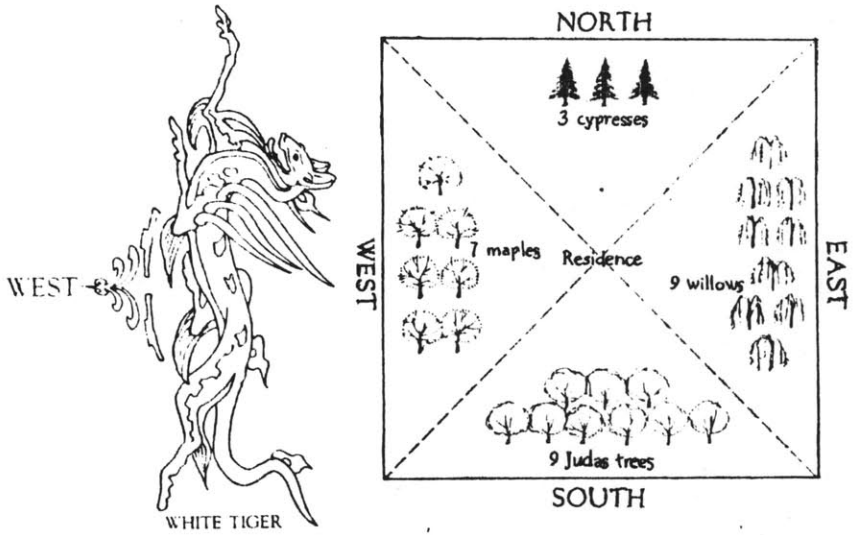
Several examples taken from geographically isolated cultures support this universal acceptance of a natural order. At Stonehenge, built form was derived from what they understood to be the order of the universe and the position of the earth within it, reflecting the cycles of the seasons. On the opposite side of the earth, Asian geomantic principles prescribed a way of ordering built places in response to the spiritual characteristics and orientations of natural forms such as mountains and rivers. Primitive American Indian dwellings such as those at Mesa Verde and Chaco Canyon oriented themselves towards the winter sun for maximum heat gain and elevated themselves within a stone cliff to provide protection from enemies. At this early time, natural forces dominated exclusively over man-made impositions in determining the order of the built environment.



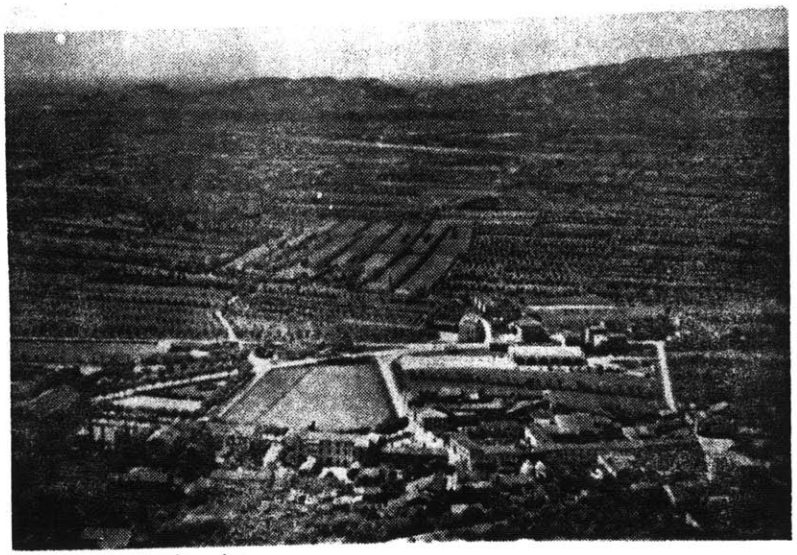


20. Cliff Palace, Mesa Verde, Colorado.

21. Asian geomantic building siting principles.

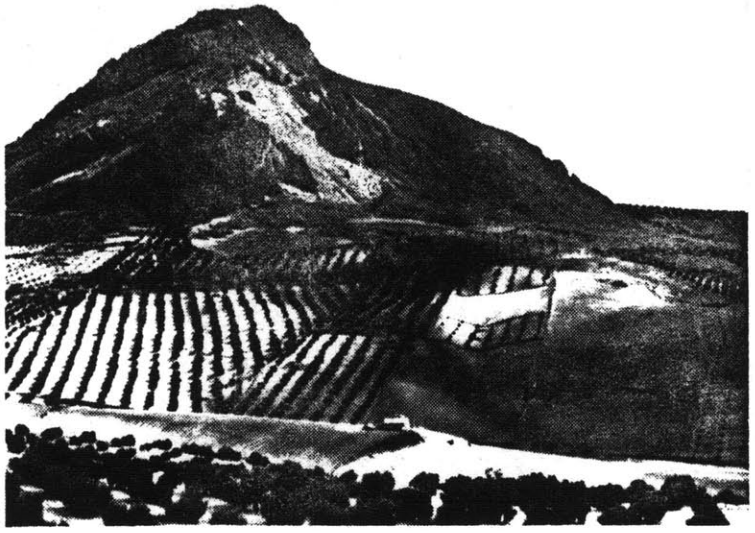


"Japanized" fengshui.



22. Agricultural order.

23. Bednar, Spain; Geometrically ordered olive groves.



B. FORMAL OR GEOMETRIC STAGE:

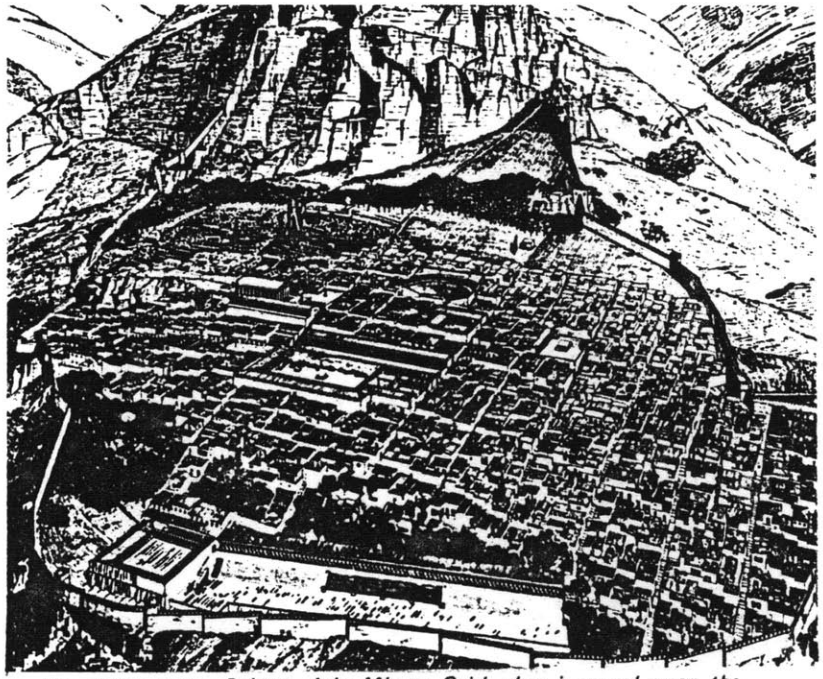
Specialization of labor and the development of farming technology freed certain members of the society from the tasks of food gathering. With more time for intellectual explorations, people began to experience themselves as higher beings, their capacity to think and create permanent meaningful objects and rituals helped them gain control over the unpredictable short term cycle of natural occurences. This rapid intellectual development also provided new technology for tools and methods to shape the natural environment. Formal systems of organizing built places were explored on an increasingly rational level, surpassing the limitations of natural systems to control the built order.

An attitude of humankind's dominance over natural forces developed, a feeling that was expressed in ordered and mathematically derived geometric forms being placed upon the landscape. This formal geometric system of order emerged to respond to problems of rapid growth and organization on a bigger perceptible scale, that of towns, cities and

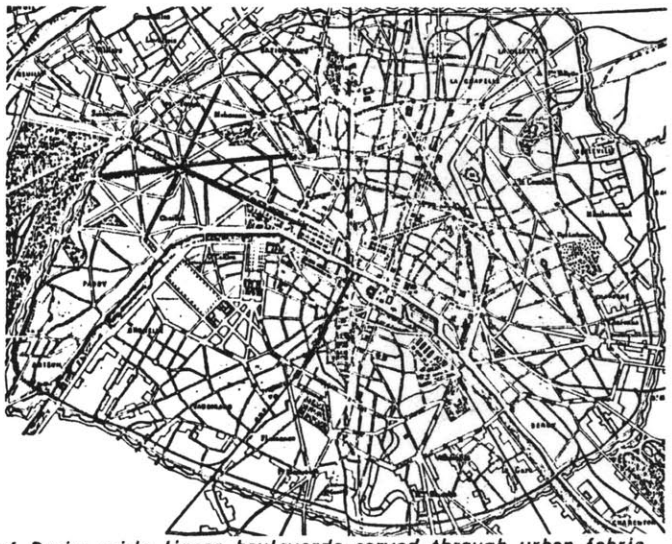
regions. Transportation and communication systems allowed this knowledge to be shared cross-culturally, expanding communities to a more global network. Larger numbers of people engaging in more widespread bartering systems forced the development of new political and social organization systems.

Grid plans appeared in culturally isolated communities such as Loyang and Chang-an, China in the 5th to 9th century A.D. or in the ancient Greek city of Megara on the isthmus of Corinth. Hierarchical political systems segregated societies into elite ruling classes and subservient subjects. These systems represented the power that rulers had over the populace, and often expressed this structure through grand planning gestures in much later examples such as at Versailles, France or in Hausmann's wide boulevards of Paris which served primarily to facilitate the movement of military forces through the city, and to provide mob control with straight lines of sight (and gunfire).

New spiritual communities formed that were abstracted from naturalistic beliefs. These religious traditions crossed cultural boundaries and involved

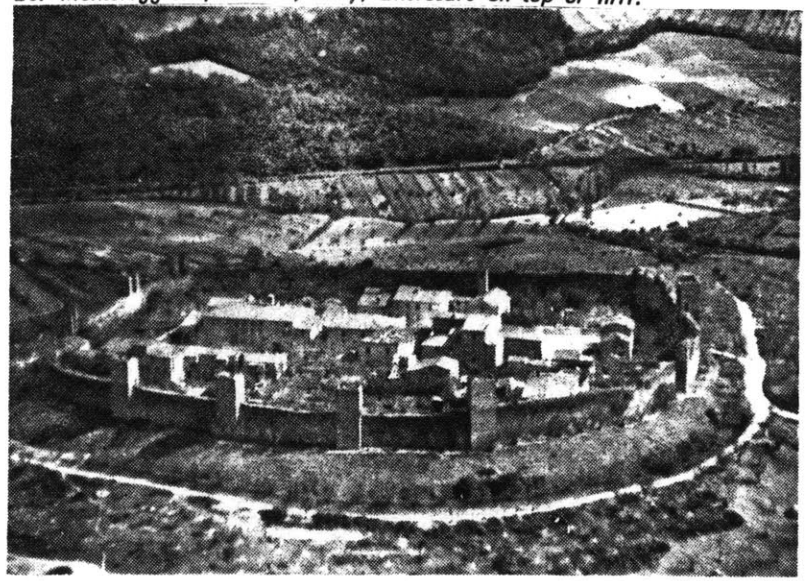


24. Urban form, Priene, Asia Minor; Grid plan imposed upon the hillside.



25. Plan of Paris; wide linear boulevards carved through urban fabric.

26. Monteriggione, Toscana, Italy; Enclosure on top of hill.

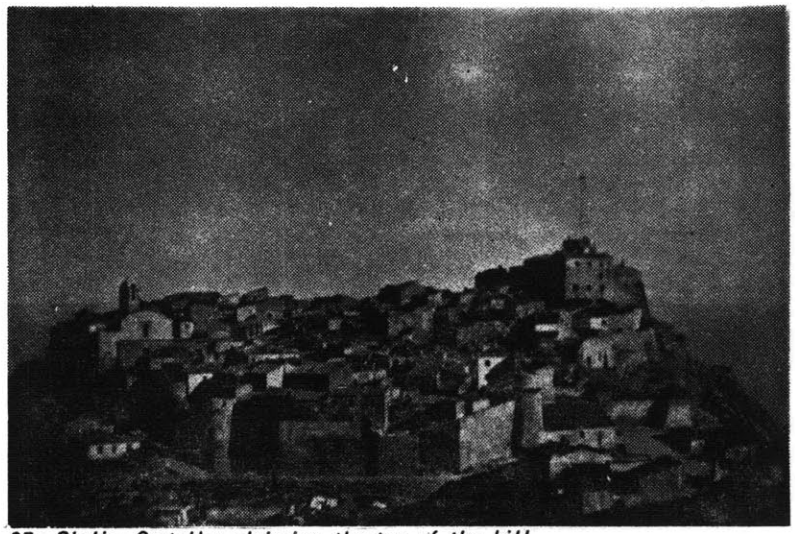


much larger groups of people through the efforts of persistent missionary movements. Naturalistic explanations of spiritual occurences and mysterious phenomena were replaced by some cultures with the laws of organized religions. In general, Western cultures abandoned the dominance of a natural order as Christianity, Judaism, and Islamicism developed. However, in the East, a duality was allowed to develop, maintaining the importance of natural forces as generators of architectural order, while more abstract religious concepts also flourished. In China, Taoism and Confucianism coexisted, as did Buddhism and Shintoism in Japan. Even to this day, the sanctity of nature is revered in Asia with cultural identity centering around festivals which are marked by the seasons, and a strong awareness of place and physical surroundings.

A good example of this contrast between cultural design attitudes is seen through the relationship of built form to mountainous landforms. Western/Christian cultures placed religious structures and villages on the crown of hills. Many examples of hilltown design are seen in Spain, France and Italy. The occupants of these places perceive a

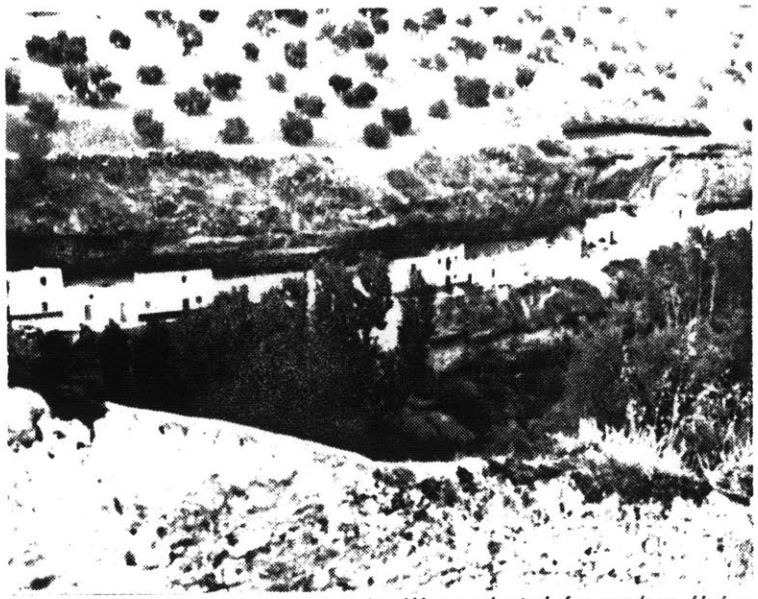
sense of domination over the surrounding region in an aggressive statement of power and control. In contrast to this philosophy, Asian villages are situated at the foot of the hills, their occupants paying homage to the ever-present natural spirits of the mountains. It is understood that only the deities are permitted to dwell on the top of the mountain.

Geometrical, logical systems of town planning imposed themselves upon the landscape creating an alternative system of order to overlay the natural structure of the landscape. Architectural forms also responded to more intellectual concepts of order as opposed to responding singularly to environmental conditions or tectonic limitations. The Greek temple reveals it's abstraction from nature with it's perfectly proportioned columns standing quite distinctly from the more chaotic, spontaneous landscape in which it is situated.



27. Giglio, Castello; claiming the top of the hill.

28. Second Hera Temple, Paestum, Italy; Perfect geometric proportions.



29. Setenil, Spain; Ancient cave dwellings adapted for modern living.

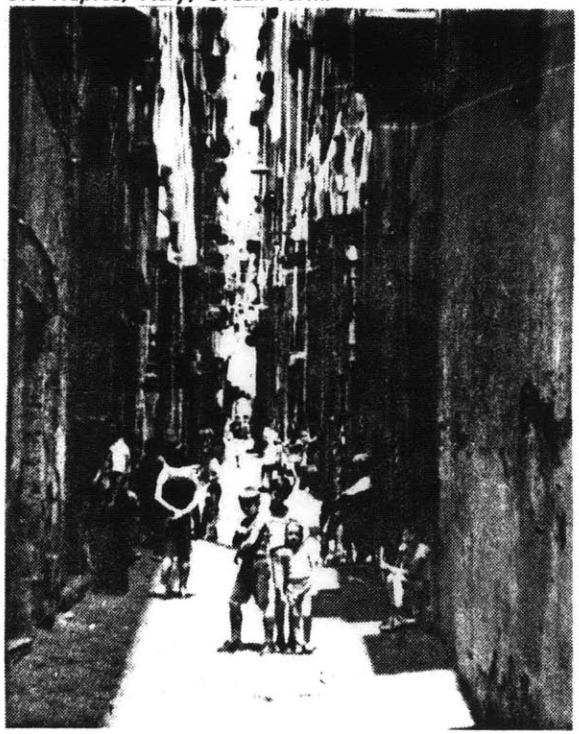
It should be recognized that at this point as formal systems of landscape organization develop, they incorporate components of previous systems and a more compiex order develops which is an amalgamation of all that has come before in various combinations. The ability to consciously manipulate the natural and formalistic systems of order, even to rebuild the natural environment, emerges as a Complex Stage, an outgrowth of mathematically derived systems of environmental organization.

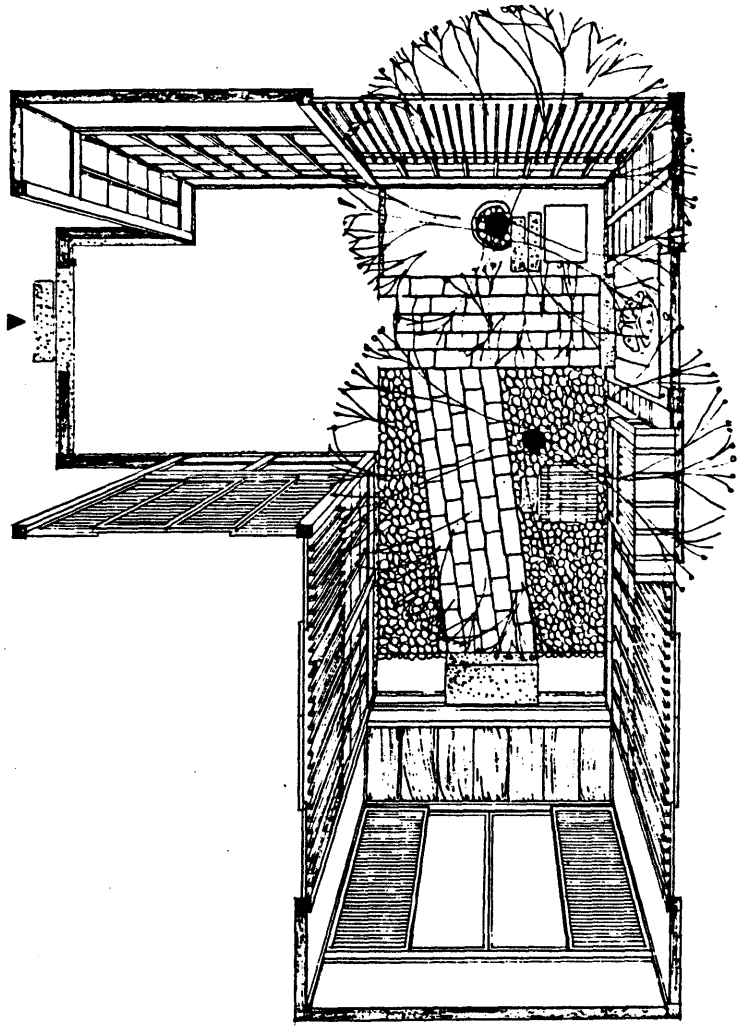
C. COMPLEX STAGE:

The Industrial Revolution has offered perceived limitless opportunities for achieving people's aspirations as well as developing the technology for potential self-destruction. Historical references had the ability to embody a variety of sophisticated socio-cultural meanings. Technological advances in construction techniques allowed for new formal explorations to occur in architectural and urban design. Security and stability of most social structures decreased the need to impose a social order in physical form upon populations.

Traditional spiritual and religious values were increasingly questioned, their influence on the impetus for architectural construction decreased, and other meanings replace the dominance of religious piety in contemporary lifestyles. This phenomenon is certainly culturally related, for example, in America, the most obvious multi-religious culture, corporate identity, technology, financial success and individual empowerment seem to be examples of equally dominant cultural philosophies. As an extreme, a building that yields a good profit may

30. Naples, Italy; Urban form.





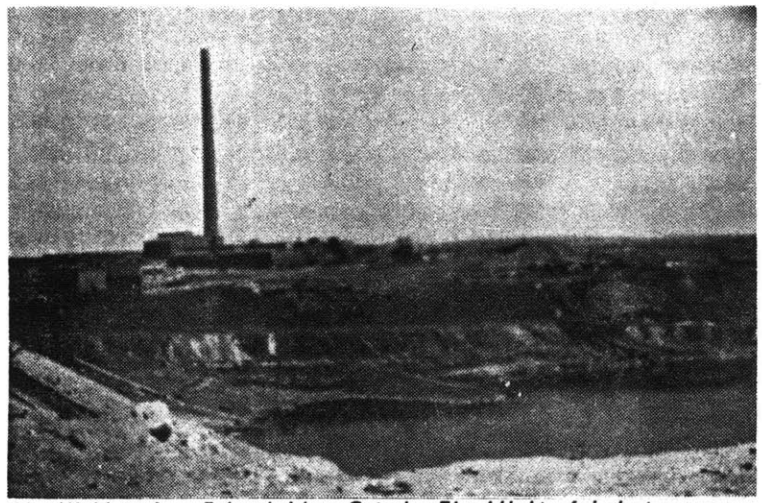
31. Courtyard Garden, Japan.

be construed as being culturally conscious in America.

Today's ability to conquer, control, alter and virtually rebuild the original underlying natural structure of the environment allows the designer to choose from the plethora of attitudes towards incorporating the landscape into the built order. Unlimited technological opportunities exist which allow a designer to replicate or even replace natural landscape systems into a built world. This so-called "natural order" then becomes an artificial "built natural order". An increased design complexity can now be achieved through the manipulation of these forms which use nature as a design metaphor, utilizing methods ranging from pure preservation or reconstruction to destruction of natural systems of order while synthesizing historical and invented formmaking approaches. The "built natural order" is often seen today as an allusion to the nature that existed before people's intrusions, even to be idealized to a more "perfect" (in the designer's eye) nature as in much of japanese garden design.

By reconstructing a natural system of order, some people have made a conscious choice to return to a

simpler value system, extracting a feeling of peace and serenity from this reacceptance of natural dominance. The rapid scientific advances coupled with a loss of control of technology's effects have created an atmosphere of uncertainty and confusion, promoting a nostalgic return to a simpler existence, one that recognizes and accepts the power of dominant natural forces. Although we can never return to a pre-technological state, we must reevaluate our blind acceptance of the industrial model. Current irreversible ecological imbalances (acid rain, greenhouse effects, the nuclear accidents at Three Mile Island and Chernobyl) point to a necessity to accept the complex interdependencies and reciprocities of the ecological model. This ideology begins to reaccept the notion that people are intimately intertwined with the preordained natural systems. This nostalgia may also satisfy some underlying guilt that humankind has been the source of pushing life out of balance (Koyanisquatsi).

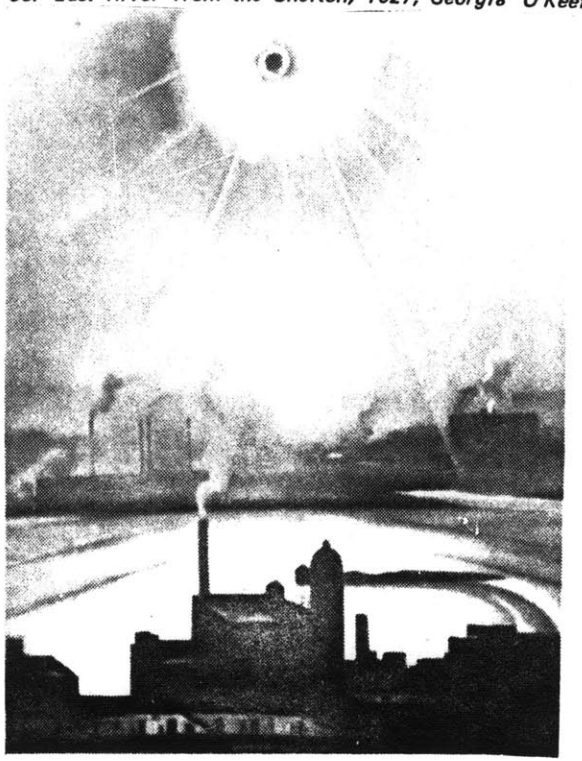


32. Nickle mine, Falconbridge, Ontario; The blight of industry upon the landscape.

KOYANISQUATSI (from the Hopi language)

1. Crazy life
2. Life in turmoil
3. Life out of balance
4. Life disintegrating
5. A way of life that calls for another way of living

33. East River from the Shelton, 1927; Georgia O'Keefe.



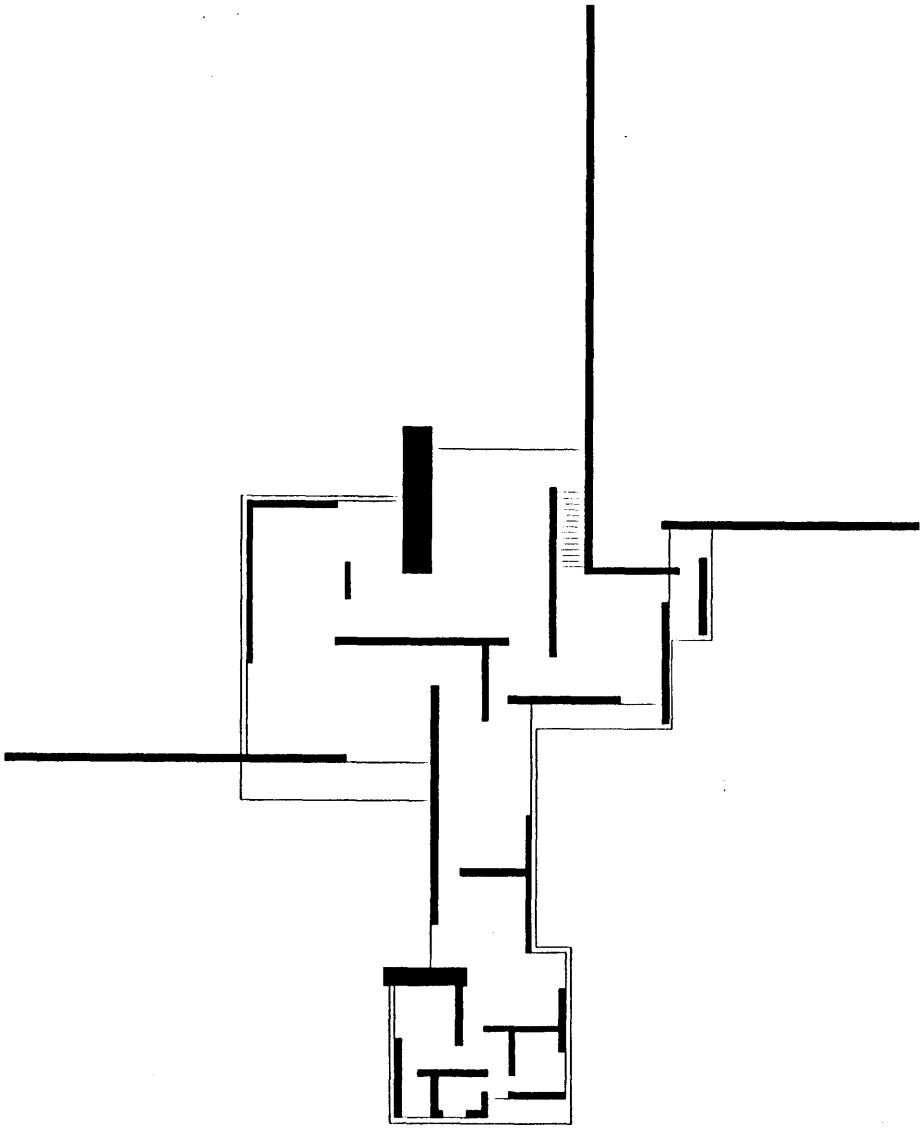
3. THE MODERN PREDICAMENT

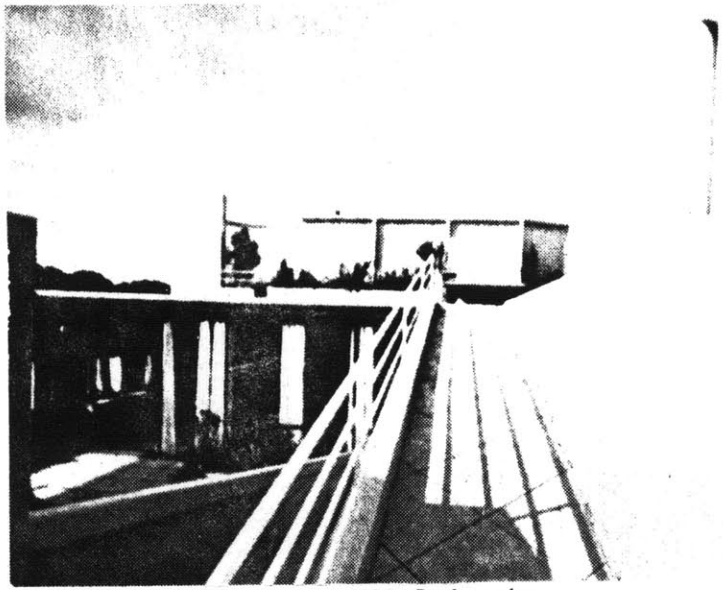
THE CURRENT CONTEXT

Modern architecture arose from a rationalist world view, where mathematical laws defined man's position within nature, and attempted to structure the built world through logical intellectual processes. Rationalism became expressed in architecture through functionalism and through abstract rectilinear forms. Functionalism stated that a building must respond in form to it's programmatic requirements, the conditions of the site and the materials of construction, allowing it's structural integrity to be revealed. Functionalist theory denied any reference to historical precedents imbued with symbolic meaning, and used no applied ornamentation, thereby legitimizing the doctrine of strict utilitarian function. In addition, it paid no attention to the human spiritual component derived from cultural meaning and associational references which could not be expressed in terms of programmatic requirements.

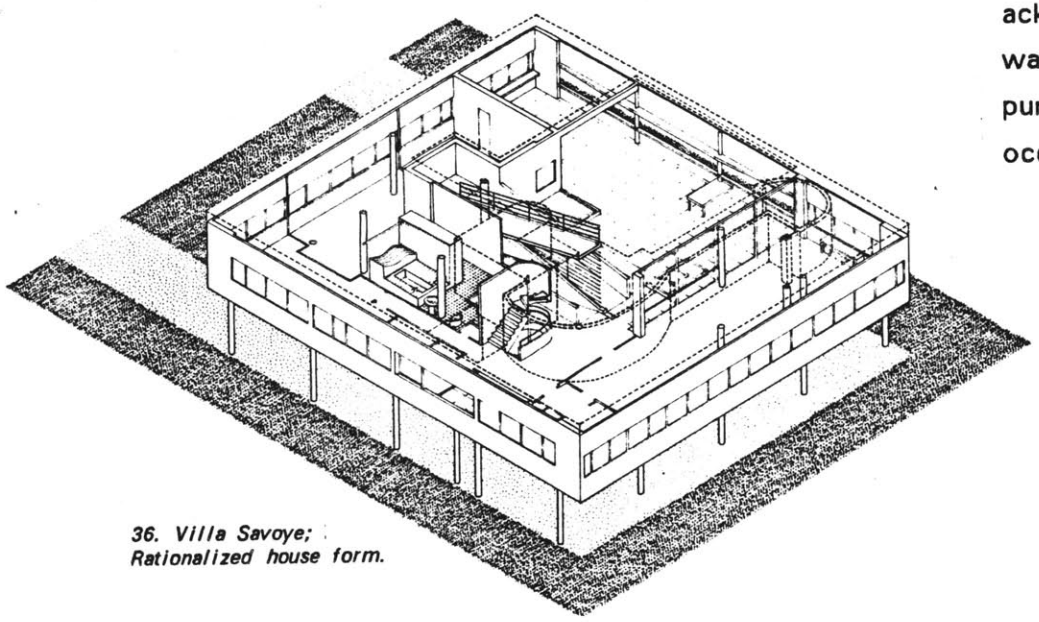
Geometrically derived forms and abstract rectilinear shapes became equally influential in defining the modern aesthetic. These new forms helped to

34. Brick country house (project), by Ludwig Mies van der Rohe, 1923; Abstract ordering principles.





35. Villa Savoye, Le Corbusier, 1929; Roof garden.



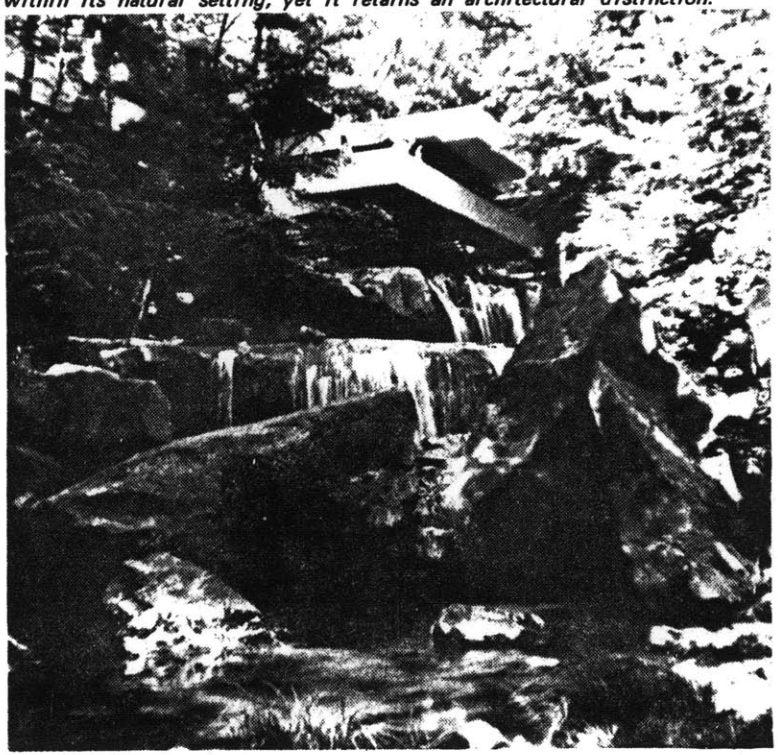
36. Villa Savoye; Rationalized house form.

disassociate modern architecture's connection with the past. They also helped to symbolize a new aesthetic of industrialized construction processes and the imagery of the machine. Le Corbusier's Villa Savoye demonstrates the formal rigor that the architect applied to the house with his five points of architecture (see box), defining a highly rational geometrical style of aesthetic expression. This house sits above and apart from it's site, replacing the real connection to the landscape with a roof garden. Le Corbusier claimed that this roof garden would serve to offer nature and fresh air to the occupants within their machine for living, not acknowledging the fact that all around the house was open space that could equally fulfill this purpose more naturally, rather than alienating the occupants from the real nature.

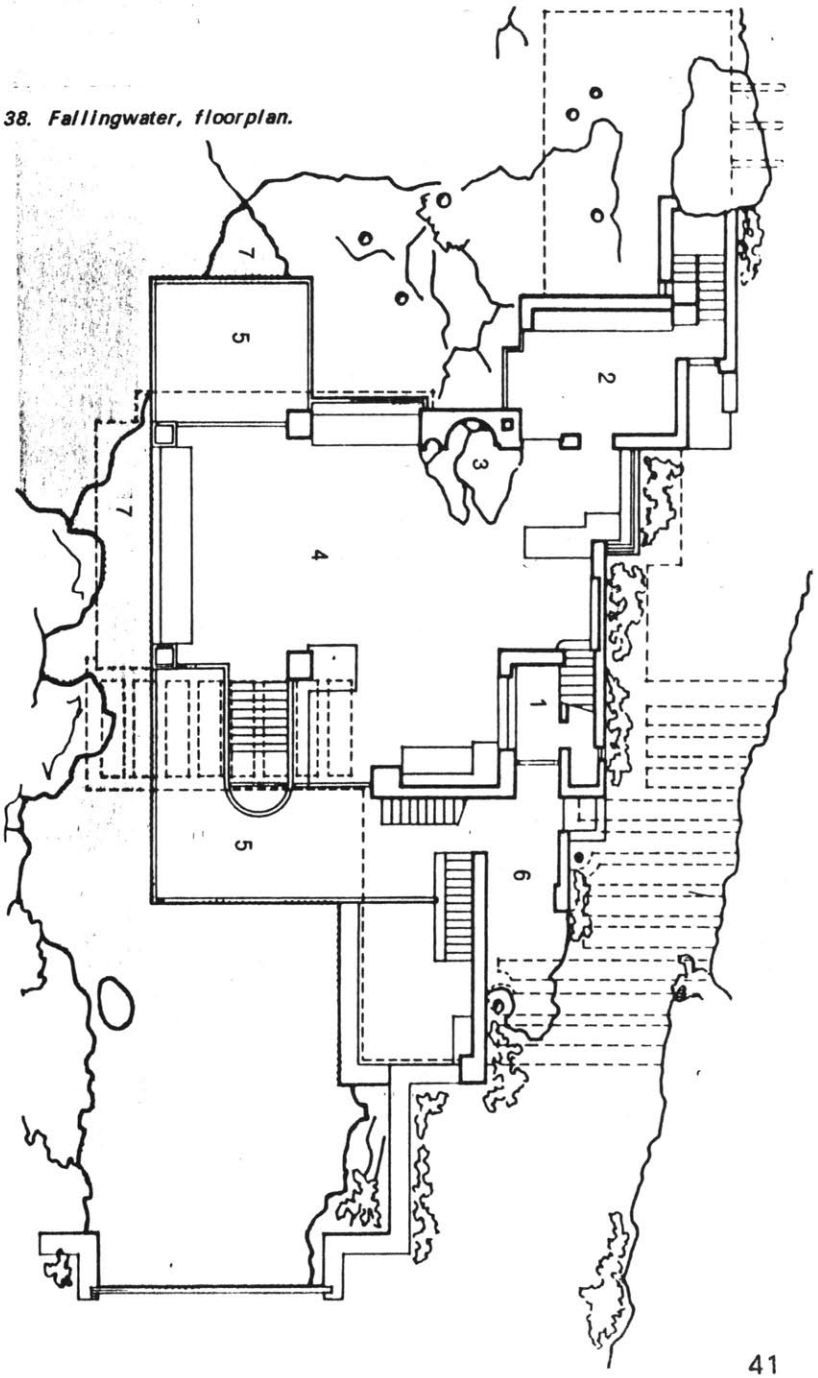
Le Corbusier's Five Points of Architecture:
1. Pilotis
2. Horizontal Band of Window
3. Free Plan
4. Free Facade
5. Roof Garden

These design principles predominantly underpinned architectural thinking of the early twentieth century and are still evident today, especially in developing countries. Some architects rebelled against these attitudes, most notably Frank Lloyd Wright with his vision for an "organic" architecture. The Kauffman house by Wright at Bear Run, Pennsylvania (known also as Fallingwater), utilizes cantilevered concrete

37. Fallingwater, Frank Lloyd Wright, 1938. House form is integrated within its natural setting, yet it retains an architectural distinction.

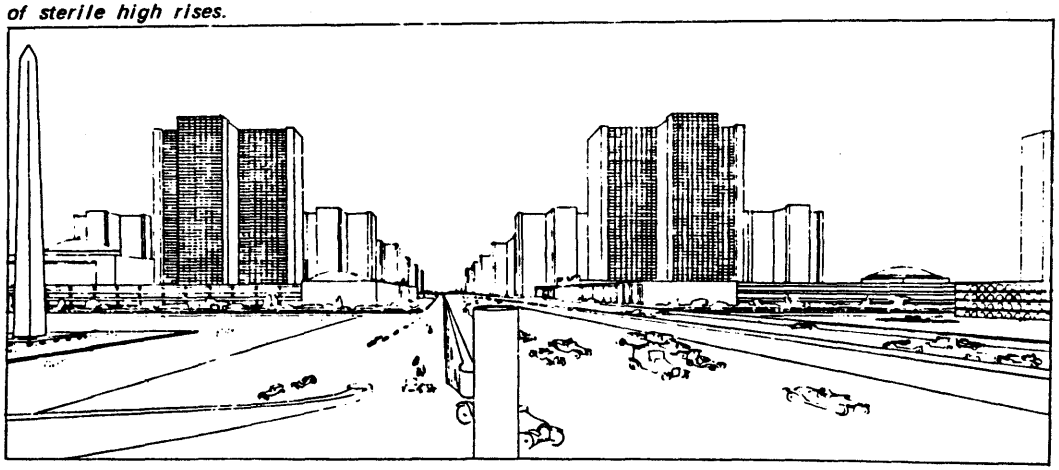


38. Fallingwater, floorplan.

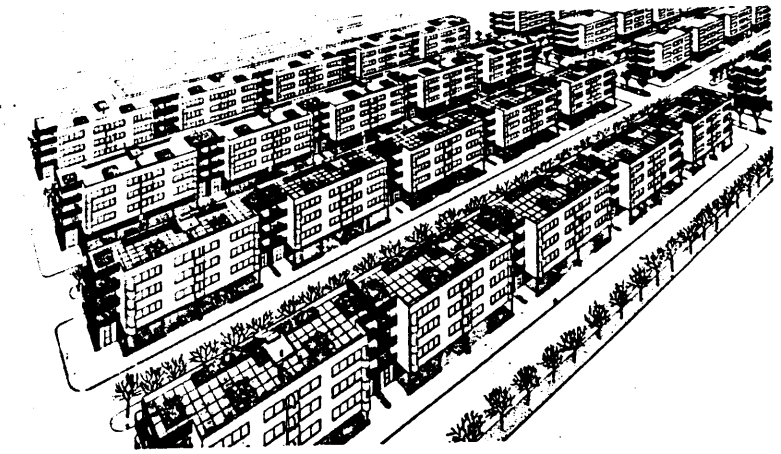


forms which hover over a stream in a juxtaposition to the craggy rock hillside. The house's materials, (stone and concrete) help to anchor the building solidly to the earth in a sympathetic composition with the landscape. Wright was able to achieve this integration while at the same time expressing a very original style of architectural formmaking within the modern architectural venue. However, European modernists such as Le Corbusier dominated the architectural scene with the promise of crystal cities of glass boxes and "sidewalks in the sky" as a cure for the ills of the industrial city. Le Corbusier's highly influential plan for Paris proposed the obliteration of the existing historical city fabric, replacing it with high rise apartment buildings set in

39. La Ville Contemporaine, Le Corbusier, 1922. Utopian urban vision of sterile high rises.



a landscape of green parks and an absence of automobiles. Soon, the rationalist rigor could no longer uphold these utopian visions, and cities were blighted with vast stretches of anonymous, sterile architecture; interpreting the modernist's plans and serving only to underscore the alienation of people from their environment.



40. Andre Lurcat, housing project, 1926. Relentless urban repetition.

THE POST-MODERN STAGE

As an outgrowth or a reaction to the rationalist technological era, there seems to be a perceived threat to the very survival of the human race. As technological extremes have produced ever-sophisticated weapons of destruction, there becomes for many a sense of hopelessness and lack of control over future events. This attitude reverses the sense of optimism experienced through the utopian plans of the late nineteenth and early twentieth centuries.

I suggest that the motivation for today's architectural aesthetics (as celebrated as post-modernism by the popular architectural press, and subsequently copied ad infinitum by would-be designers and builders) is no longer an expression

of human hopes and ideals, but instead uses past cultural architectural imagery as the butt of pseudo-intellectual jokes. The short-term appreciation of these places before the joke gets old, blatently denies the opportunity for these places to establish a strong place rich in cultural identity, thereby leaving a void of helplessness and pessimism. The temporary nature of these places contributes to the feeling of spiritual isolation and powerlessness towards shaping a future world.

I believe that we have an opportunity to resolve the dilemmas that have been passed on to us by the modern movement in architecture during this post-technological era. A new formmaking attitude is necessary which addresses the problems stemming from current architectural form which embodies minimal meaningful cultural expression, and the increasing alienation of people from their natural place in the world. In this thesis, I set forth a proposal for an integrated architecture, one that celebrates the relationship of people to their environment, one that again offers an optimistic vision for future life and advancement of our culture.

4. A PROPOSAL FOR AN INTEGRATED ORDER

In a response to the alienation from our environment created by the modern movement in architecture and our increased technological capacities, I have studied attitudes with which designers create form within the natural landscape. In order to best understand these attitudes, it is first necessary to grasp a perception of the scales at which design concepts are perceived. Using this framework, different design approaches can be used as references for formulating an integrated order for built and landscape form.

Though we do not preach the doctrine,
unasked the flowers bloom in spring.
They fall and scatter,
they turn to dust.

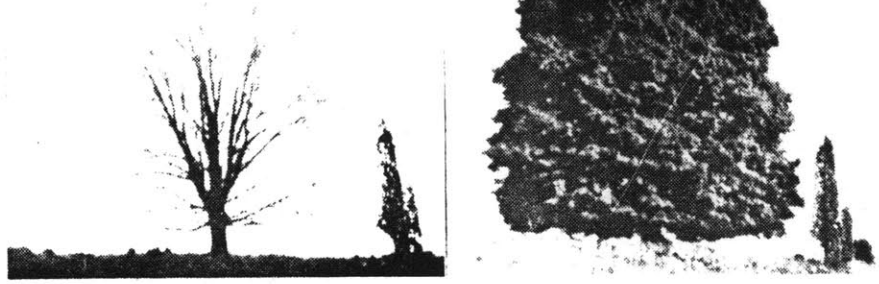
- Rikkyu

41. Frank Lloyd Wright, Jacobs House, 1936; View of sunken garden through entry tunnel.

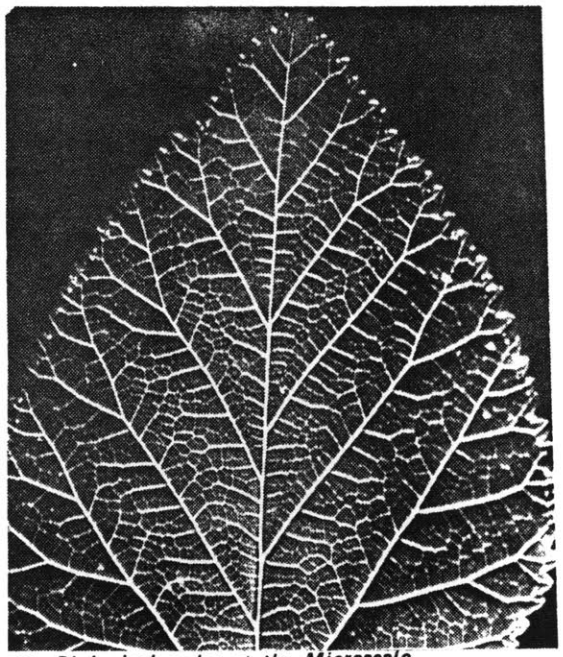
A. SCALES OF PERCEPTION

The formal organization of the landscape occurs at several scales of perception. For the purposes of this study I will discuss the relationship of architectural forms (those that have undergone a process of construction) to natural forms (unaffected by designer's intentions) at three scales of distinction: the macroscale, the human/building scale, and the microscale. Different attitudes about landscape organization can be taken by designers at different scales. The scale of a project can influence a general attitude that a designer may have about integrating landscape and architectural forms. For example, a planner may impose a completely unnatural (i.e. rationally derived) system of organization on the macroscale such as a grid street layout, and then work very closely with local materials and groundforms, responding directly to the natural forms when building a habitable place at a human scale.

Natural systems of order, seemingly disjointed and unrelated at close scale, become evident at a distance. For example, logical patterns of repetition



42. The cycle of the seasons; change.



43. Biological order at the Microscale.

reveal themselves from an aerial view of the landscape, or through the lens of a microscope. "Their role (biological and ecological systems) is to reverse entropy, which is done by creating order and meaning. The most meaningful and highly evolved order is to be found in nature, especially at the biological scale."[1]

The perception of the natural environment and its underlying order occurs most easily at the macroscale and the microscale, those which have been least effected by the forces of human development. At the intermediate building scale, or human scale, the structure of natural order seems most difficult to discern. It has been at this scale that most human intervention in shaping of the environment has occured, and is most readily perceived by human beings, thereby decreasing its ability to reveal a natural order. The understanding of these scales can better inform the development of an integrated order for architecture and environment.

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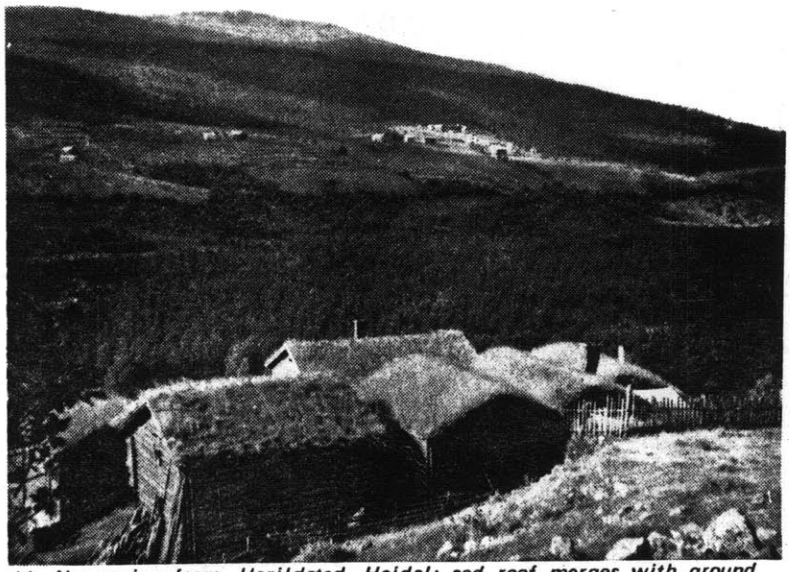
[1] Douglas Kelbaugh, Proceedings of the 6th National Passive Solar Conference, 1982.

1. The Macroscale

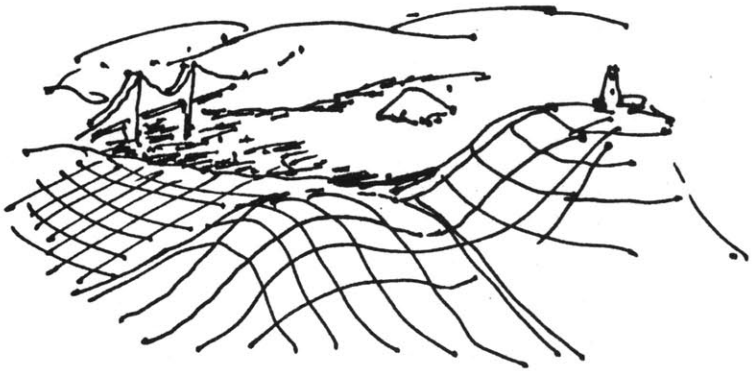
Regional organization occurs at the macroscale. Sometimes it is planned at this scale, while more commonly it is a product of incremental growth and the visions of many designers. Regional organization is also directly affected by the time span required to develop large areas, thereby manifesting patterns of seemingly disjointed organization. The major natural organizing elements at this level of analysis are geological landforms such as rivers and mountain ranges which impact the layout of circulation and transportation routes.

A designer may also impose a formal system of organization upon the landscape, such as a grid street layout, which denies the existence of landform in determining order. The plan for the city of San Francisco is a good example of the overlaying of a geometrical system of order onto a topographically complex hilly landscape.

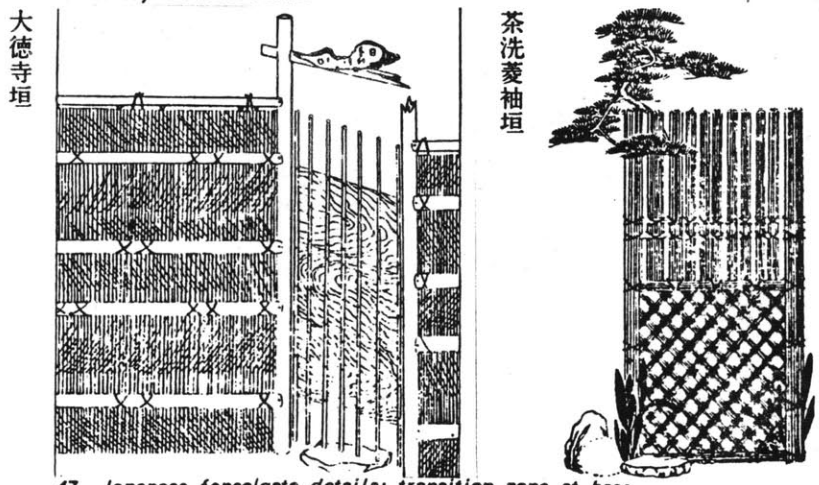


44. Norwegian farm, Harildstad, Heidal; sod roof merges with ground form.

45. San Fransisco. Grid street layout over hilly landscape.



46. The Trevi Fountain, Rome; Classical formal order merges to naturally derived form.



47. Japanese fence/gate details; transition zone at base.

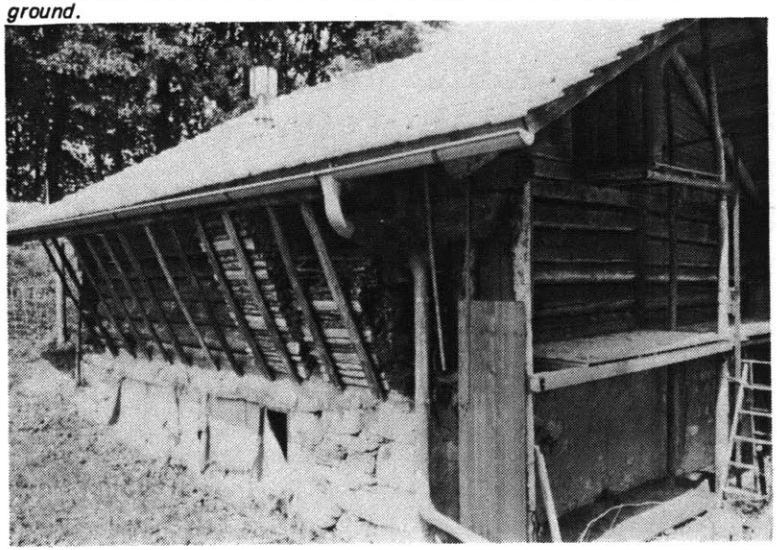
2. The Microscale

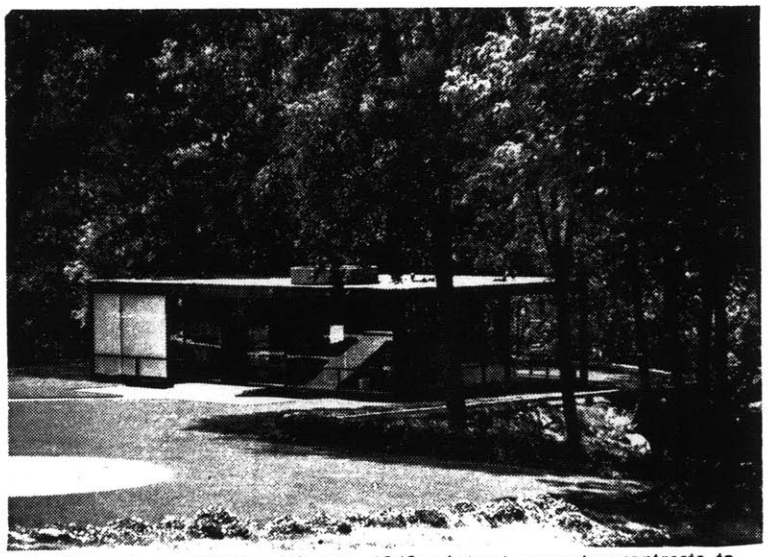
The microscale level of built and natural form relationship deals with the exact point at which the interface occurs between built and natural forms. The integration of natural systems at the microscale revolve around techniques for relating the building to the ground. These include choice of material types, colors, textures and construction systems, geometrical and formal relationships between natural and man-made materials and the overlap of the systems, repetition and incorporation of natural patterns into the built construction, and degree of built/unbuiltness of the environment around the building.

In architecture, the base of the building confronts the ground most directly, a condition which must be addressed by the designer when designing at the microscale. Practical constraints like the connection between materials help to inform the designer as to how to best make this transition. For example, due to the harmful effects of moisture on wood, an impervious material such as concrete or stone may prevent the premature deterioration of a building.

A differentiated base which strengthens the relationship between the ground and the building can respond to the materials of the site and help to soften the transition from architectural materials to plant materials. For example, Henry Hobson Richardson's buildings incorporate a heavy rusticated stone base which help to anchor the building to the ground and relate to the surrounding natural materials of the site. In contrast, a building like Philip Johnson's glass house in New Canaan, Connecticut (1949) makes a conscious separation from the ground by lifting itself up and placing itself on a geometric base of unnatural material, thereby abstractly removing itself from its site.

48. Farmhouse near Interlaken, Switzerland; Stone base meets the ground.





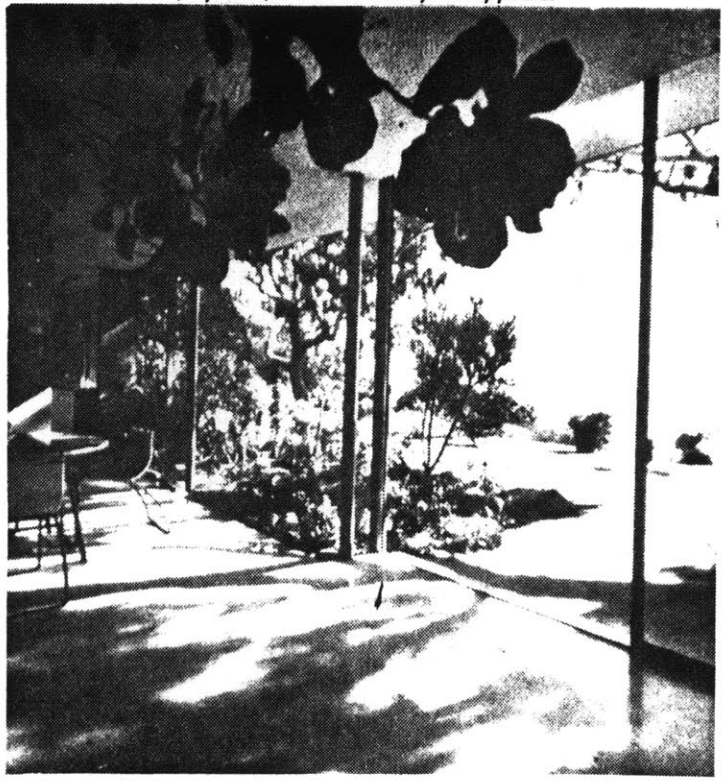
49. Glass House, Philip Johnson, 1949; abstract geometry contrasts to the landscape.

50. Glass House, Maynard Lynndon, 1949; Abstract geometry subservient to the landscape.

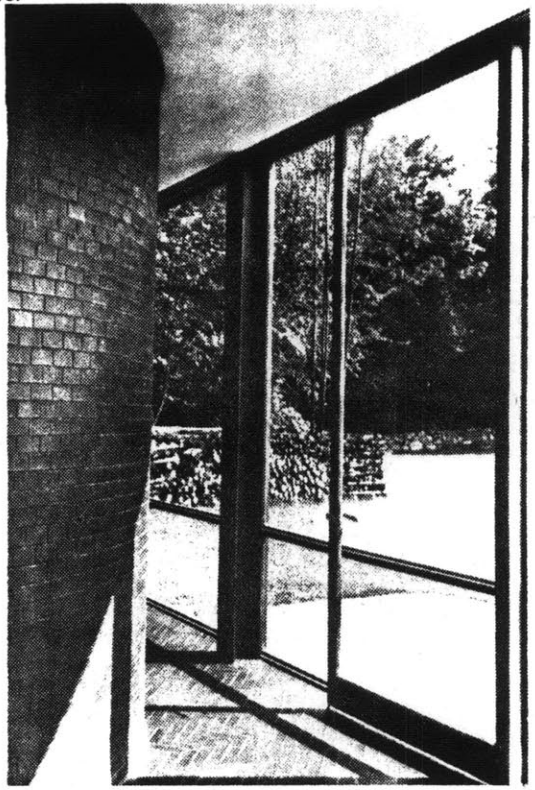
The detailing of the materials of Johnsons's glass house also increases its abstraction from the site. Comparing the glass house in Malibu, California by Maynard Lyndon (also built in 1949) to Johnson's house, one notices the very similar architectural intention to create a glass box which allows the outside environment to create a backdrop to the interior rooms. However, the detailing of each house exhibits a dissimilar attitude about the intention to merge with the site. Lyndon's intention to truly integrate his house in its site is achieved through a minimal presence of the connections of materials. The glass surrenders to the concrete of the slab, and virtually disappears into the ground

and the ceiling. On the other hand, Johnson draws attention to the materiality of his house which further isolates it from its natural surroundings. The window frame asserts itself as a self-conscious primary focus of attention, reducing the exterior view to secondary importance.

51. Glass House, Lyndon; Wall virtually disappears.



52. Glass House, Johnson; Wall asserts iteself as division between inside and outside.



3. The Human/Building Scale:

At an intermediate scale level between macro and microscale comes the human size building scale, perceived by the user in reference to his/her dimensions. Human beings, by engaging in a rational thought process of deliberation and decision making, remove themselves from their interrelationship with more intuitive natural processes. Humans are certainly part of a larger ecological order, but as a whole, they have empowered themselves to the point of interfering with and destroying the natural order, thereby denying their position as an integral link in the chain. It is due to this fissure that we become less able to perceive the natural order at our own scale, as we have consistently and increasingly denied the connection of people to the greater natural order over the past few generations.

The organization of the built volumes represents certain attitudes towards placing the building in the landscape. Natural order and built order become intertwined at the building scale. The

architect/builder's approach to the landscape and the buildings consequence upon it can be reflective of several attitudes, specifically relating to local contextual issues. These are further design elaborations of general attitudes as mentioned below and represent ways of dealing with specific architectural problems within a specific contextual framework.

The conscious act of construction and building automatically deny the opportunity for architecture

to take on a completely natural order. However, the natural landscape can be manipulated and changed according to a designer's intention, or left in a completely natural state affording it the opportunity for taking on qualities of both being built and natural. This distinction is important in classifying the way in which the designer chooses to incorporate the landscape into his/her architectural ordering system. In addition, it expresses the attitude that I am taking in this thesis, to explore ways in which the architectural designer approaches the integration of the natural landscape into built forms simultaneously with the placement of architectural forms within the landscape. An all too common practice today asks the landscape designer to approach his/her task after the architect has taken a position on how the building will sit on the land, making a clear delineation of the domains of architecture and landscape architecture, and the hierarchy of architectural form over landscape form.

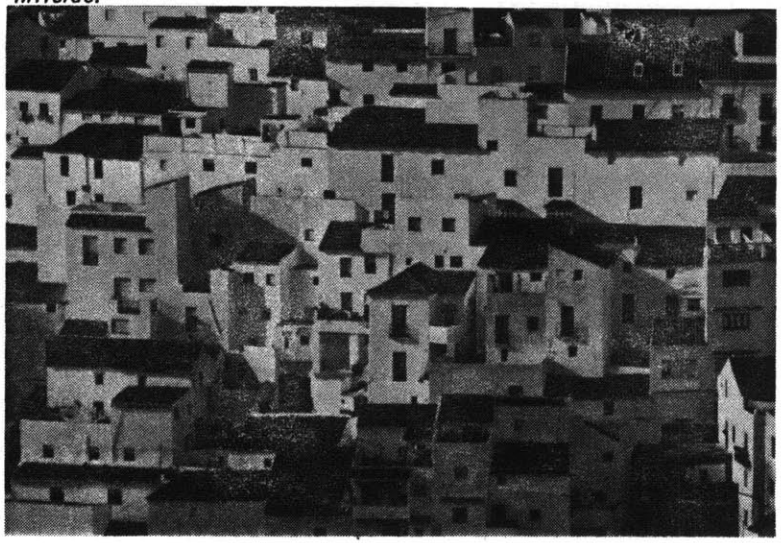
B. DESIGNER'S ATTITUDES

Looking at examples of designer's work, we can see a variety of attitudes taken in approaching the integration of architecture and landscape forms. These approaches can acknowledge the dominance of either the architecture, or the landscape forms, or can treat them as equal, playing off of each other and integrating their design forms. The following methods are a generalized way of looking at ways in which architects have approached integrating their buildings into the landscape.

Through my own design studies, I have approached this problem by making an intervention in the natural landscape following some of the principles outlined below. This list is a categorization of all the attitudes towards approaching the integration of architecture and landscape forms. Following this categorization, I will then discuss which attitudes seem best suited for a mutual integration of architectural and natural landscape forms.

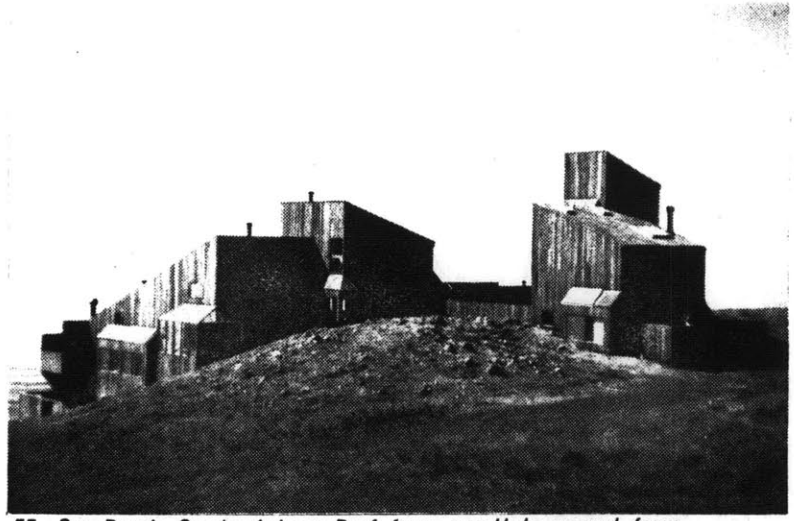
53. Sea Ranch Condominium; Building form reflects landscape form.

54. Casares, Spain; Small scale incremental housing growth hugs the hillside.



1. Fitting

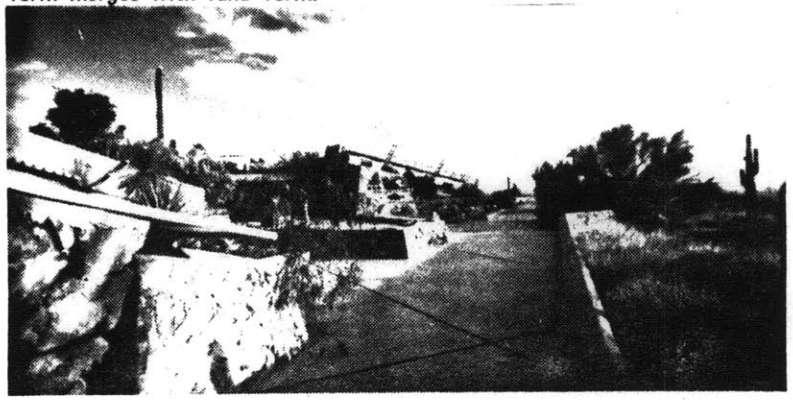
Buildings can be made to "fit" into the form of the land by echoing the slope of the land with their roof forms, or by nestling between existing trees. This approach, called "merging" by Charles Moore[1] is exhibited by the condominium building at Sea Ranch, California designed by Moore, Lyndon, Turnbull and Whittaker. The building, although stating it's presence in the open landscape, maintains a predominantly low profile that relates to the sloping ground upon which it sits. The exterior is treated so as to blend harmoniously into the grassy slope, it's weathered wood siding dropping to the ground level with no transition zone from building to earth.



55. Sea Ranch, Condominium; Roof form parallels ground form.

Another example of fitting into the landscape is Frank Lloyd Wright's winter studio complex at Taliesan West. It is located in an open desert landscape and the buildings have low sloping roofs which seem to rise from the earth while maintaining a strong connection to the ground from which they spring.

56. Taliesin West, Arizona by Frank Lloyd Wright, 1938; Building form merges with land form.



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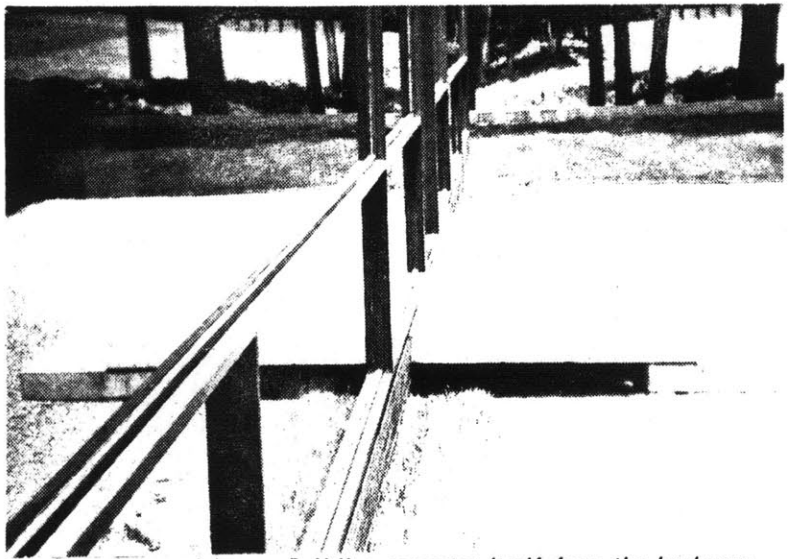
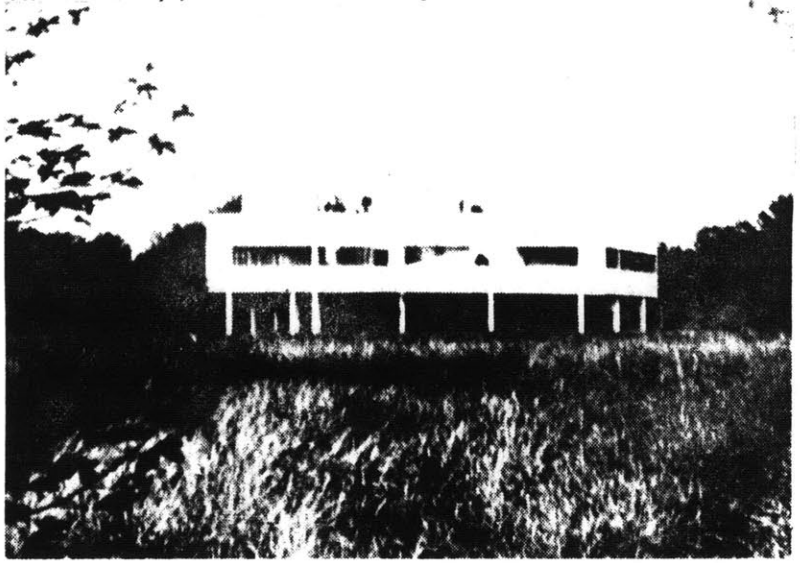
[1] Moore, C. et al., The Place of Houses, NY: Holt, Rinehart and Winston, 1974.



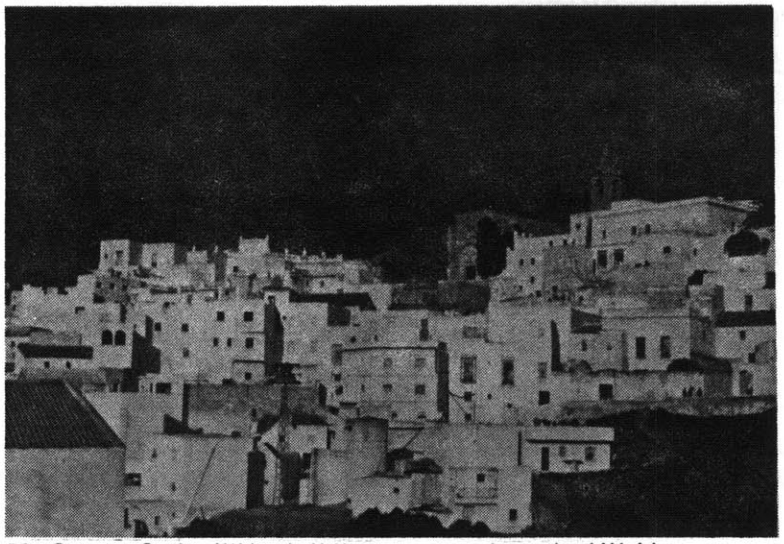
57. Glass House, Johnson; Building separates itself from the landscape.

58. Villa Savoye, Le Corbusier; Building lifted off of the ground.

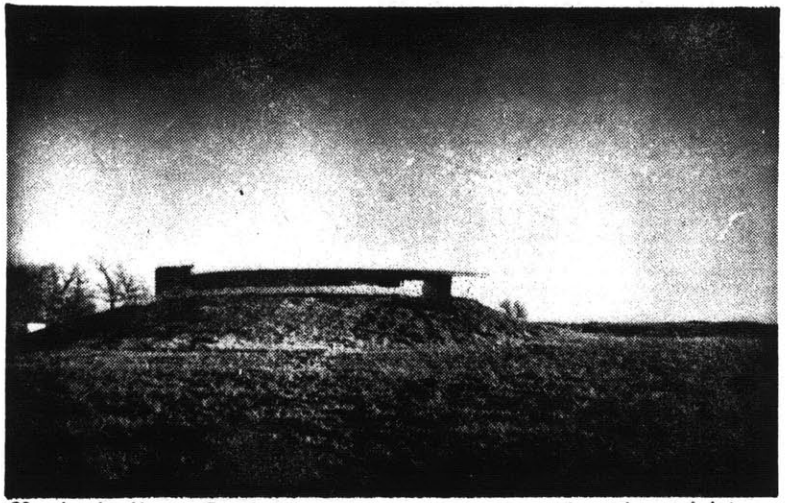


2. Contrasting

Buildings in a natural environment can contrast with their environment to draw attention to either the constructed forms or the landscape around them. Philip Johnson's Glass House in Connecticut has a strong geometrical form made of non-natural materials (steel and glass), raised above the ground on a platform. The contrast of the minimalism of architectural form to the complexity of the natural environment around it reveals the drama of the surrounding woods from inside the house. Conversely, the forms of the house are dramatically revealed through the juxtaposition of the architecture to the woods. Another building which uses a contrasting system of formal organization to set up this contrast, is the Villa Savoye designed by Le Corbusier which incorporates a system of rational rules to arrive at a house form which is suspended off of the ground, and highlighted by the grassy field upon which it sits.

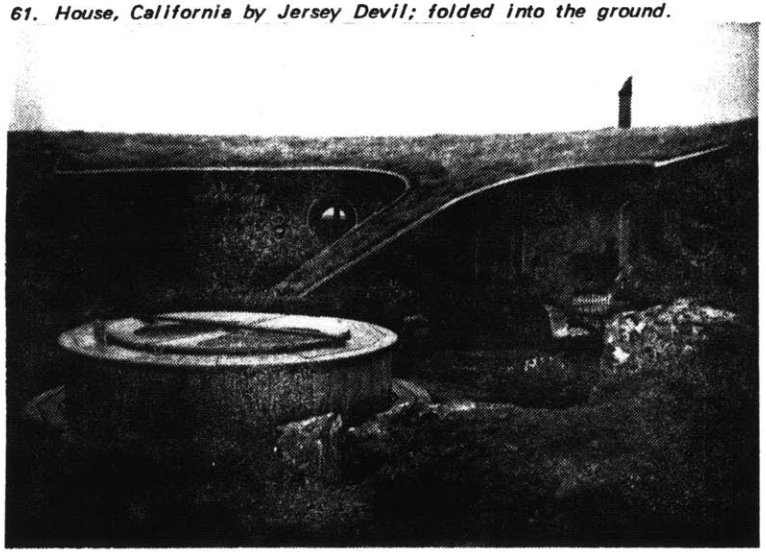


59. Casares, Spain; White buildings contrast the rocky hillside.

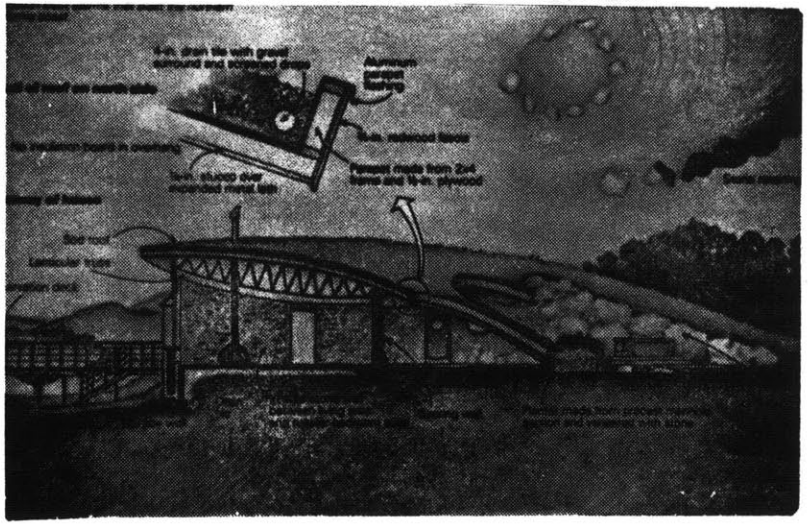


60. Jacobs House, Frank Lloyd Wright, 1936. House form bermed into the earth.

61. House, California by Jersey Devil; folded into the ground.



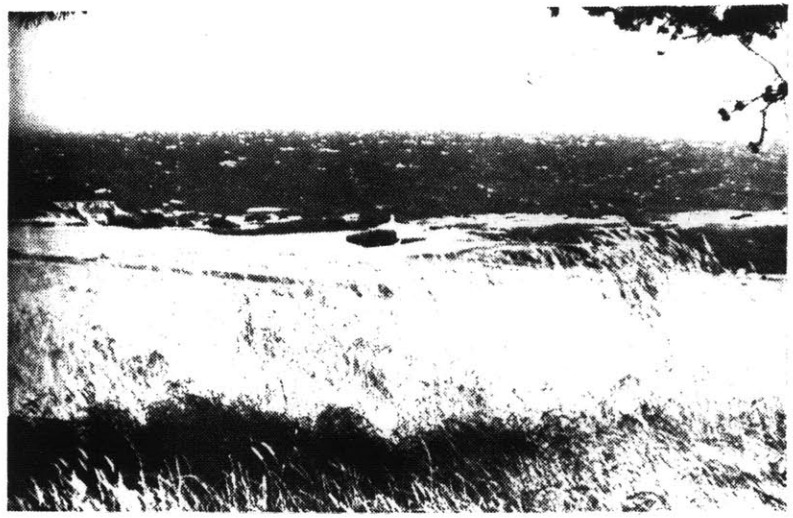
62. House, California by Jersey Devil; earth covers the house.



3. Hiding

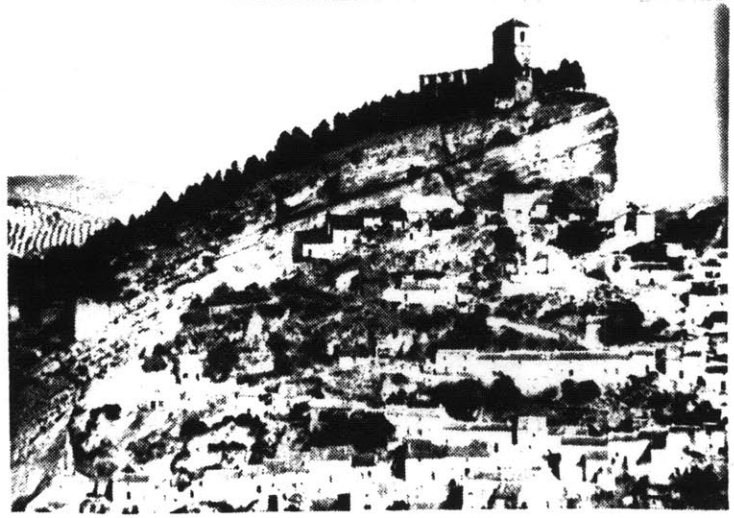
An attitude which denies the presence of architecture as a discrete entity intends to hide architecture within the landscape. This approach is taken primarily for reasons of energy conservation, but manifests itself in physical form in varying degrees of hiding within the landscape.

An underground building in California by the Jersey Devil exhibits aspects of hiding within the land, (although may be also be seen to be dominating the hill upon which it is situated.) The land extends up over the grass covered roof, folding the living spaces into the earth. Some of the houses at Sea Ranch, California, such as an early prototype hedgerow house by Joseph Esherick, extend the ground cover of the surrounding fields to sod roofs in an effort to blend into the landscape. Many primitive vernacular dwellings ue apects of hiding in the landscape to help protect their homes from environmental conditions. This is seen in cave houses built into the walls of rock cliffs at Monte Frio, Spain.



63. Sea Ranch, California; Landscape dominates.

64. Monte Frio, Spain



65. Mirador, a house in Cuernavaca. Transitional planting at building edge.

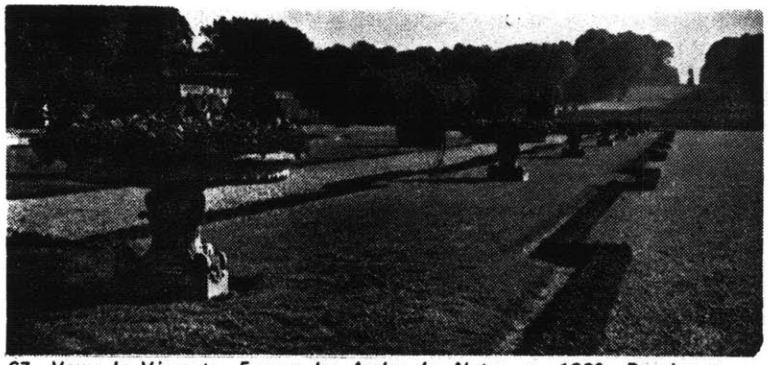
4. Ignoring

By ignoring the relationship between the building and the land, building plans may result which do not sit well on the land, creating difficulties in the plan execution. Many examples of new tract house development in this country exhibit an insensitive relationship to the land upon which they sit, as if the architectural plans were generated without seeing or understanding the lay of the land. This detached building form usually demands some post-occupancy makeshift planting to hide unintentionally exposed foundations or to alleviate the lack of dwelling privacies from each other. This afterthought of transitional planting usually requires a fair amount of time to mature and hide the awkward connection of building to ground.

66. Oak Alley Plantation, Louisiana; Architectural order extends itself into the landscape.

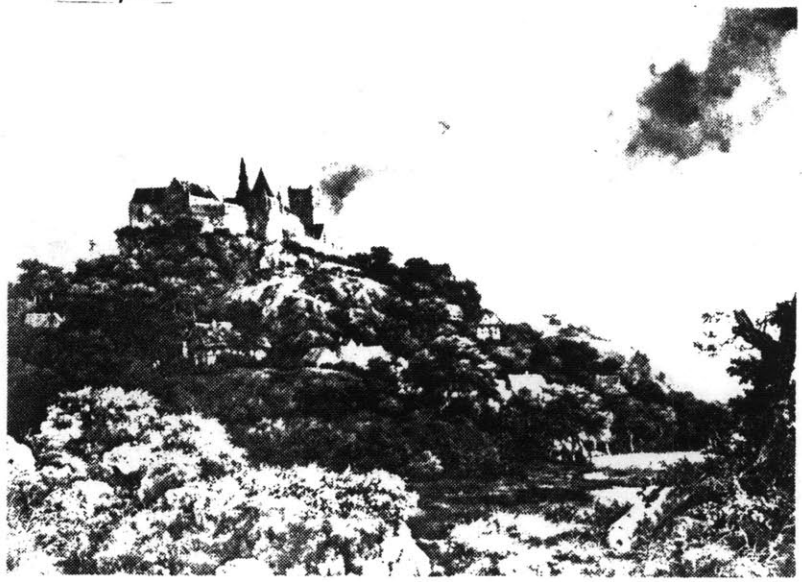
5. Dominating

An imposition of built form upon a landscape suggests an attitude of an overriding architectural order, one which restructures the natural landscape to respond to the controlling geometry. A familiar example of this claiming of the land is seen at Versailles, where the geometry of the palace extends itself into the adjacent town plan, and far into the garden system surrounding the buildings. The natural forms have been "rebuilt" to strengthen the overriding built order imposed by the designer. (Note that the opposite attitude of a dominant natural landscape, a landscape that extends into and overrides the architectural system of order is theoretically impossible, since any building of the landscape implies that the natural order has been changed and therefore lost.)

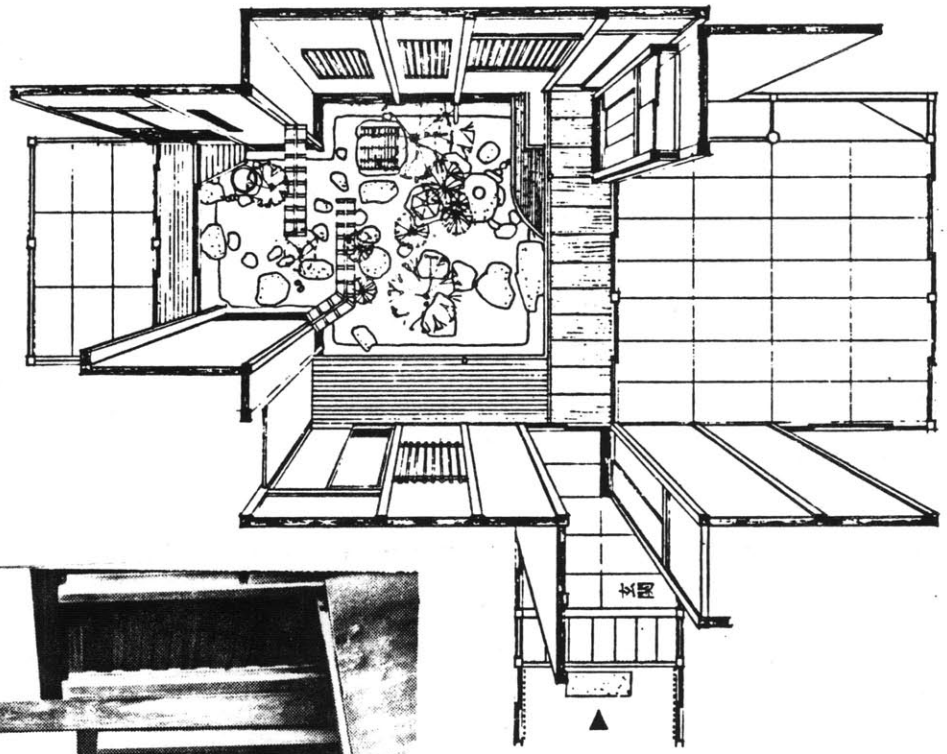


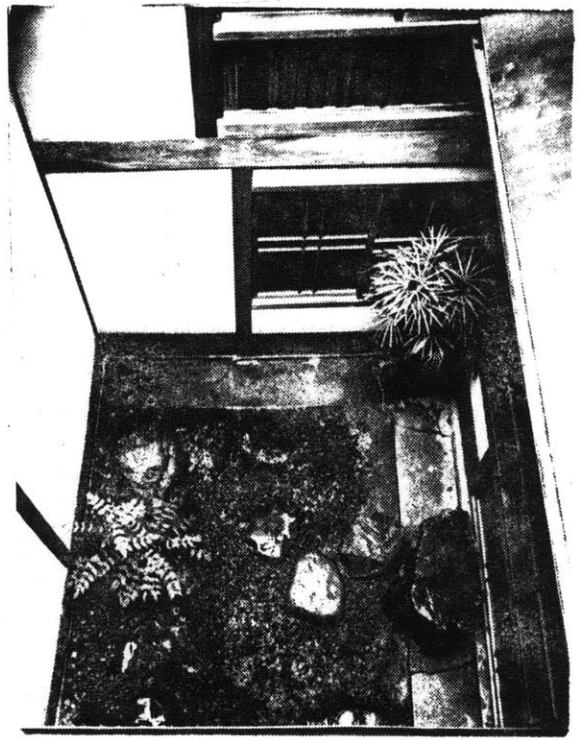
67. Vaux-le-Vicomte, France by Andre Le Notre, c. 1660; Dominant architectural order.

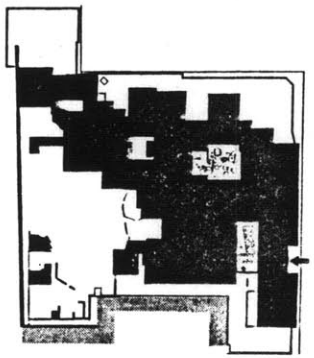
68. The Castle of Bentheim, Jacob van Ruisdael; Building dominates landscape.



島原の揚屋　坪庭俯瞰図（写真四四・四五頁）







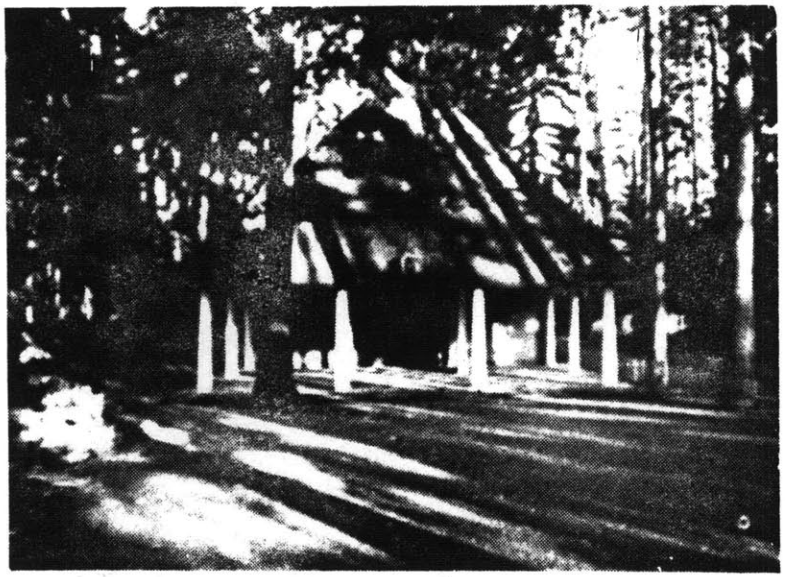
島原の揚屋　坪庭配置図

69, 70, 71. Japanese Courtyard Gardens.

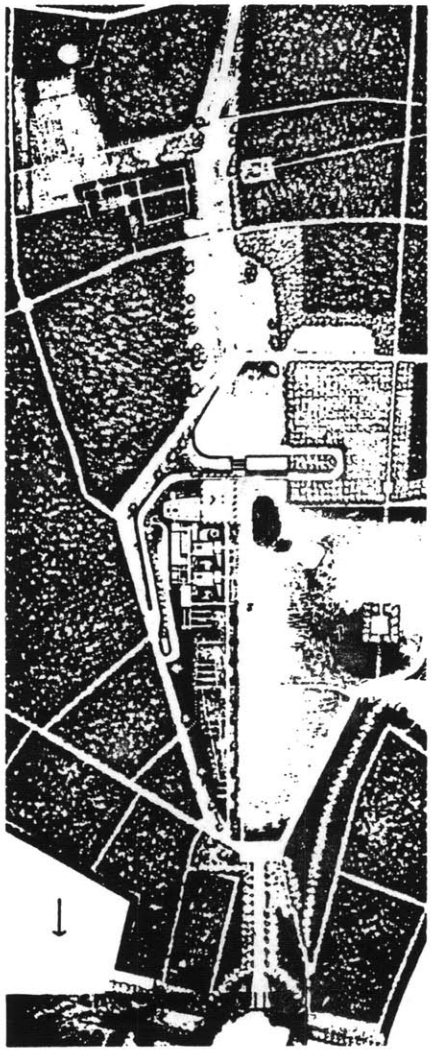
6. Recreating

An artificial "natural" landscape can be built to simulate the true natural state of the landscape and/or to reclaim a natural system from an environment where a person has previously intervened and altered or destroyed the original natural state. This can be seen in Japanese garden design which tries to idealize the natural forms, recreating scenes from the natural environment. These gardens are also seen in city dwellings which capture a piece of idealized nature within a courtyard garden, completely isolated from a continuity with the outdoor natural world. In Boston, the Gardner Museum captures a rich representation of the natural world in an interior atrium, on a much grander scale than the Japanese courtyard gardens.

72, 73. Interior Courtyard/Atrium, Gardner Museum, Boston.



74, 75, 76. Woodland Cemetery, South Stockholm, Sweden, Erik Gunnar Asplund and Sigurd Lewerenz, 1915-1922; An integrated order of architecture and landscape.

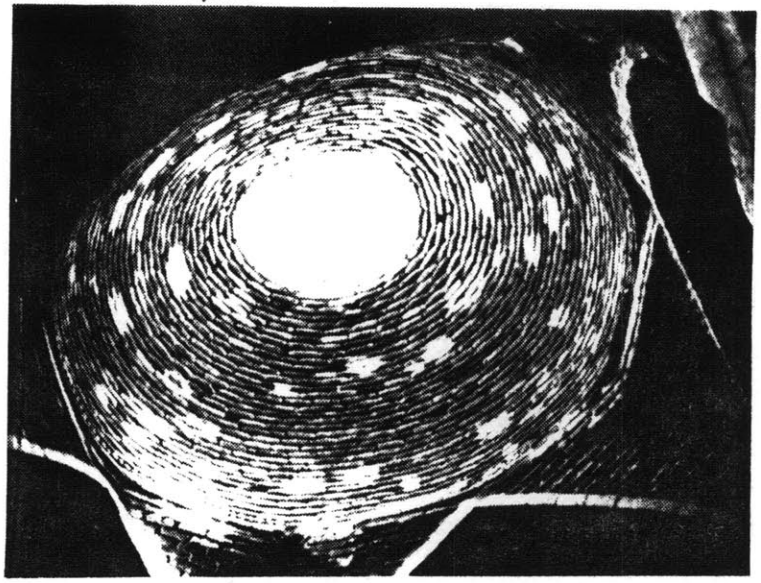


8

7. Enhancing

An integration of architectural and landscape forms is one which allows the two to maintain their own characteristics, but in an artful and considered fashion combines the two to enhance the experiencing of either one, independently of the other. Erik Gunnar Asplund's Woodland Cemetery in South Stockholm, Sweden integrates architectural forms sympathetically with the natural and built landscape in a composition of powerful serenity. The order of the constructed forms does not dominate the landscape, but in fact it's experience is heightened by the controlled landscape around it. "This continous reflection and alternation of perception, rather than the architectural forms alone, ultimately yields a state of harmony and equilibrium."[1]

77. Dome in Friday Mosque, Isfahan; using light and texture to enhance interior space.



[1] Treib, M., "Inflected Landscapes," Places, Vol.1, No. 2, p.73

78. Jacobs House, F.L. Wright, 1936; House integrated in the landscape.

C. A PROPOSAL FOR AN INTEGRATED ORDER

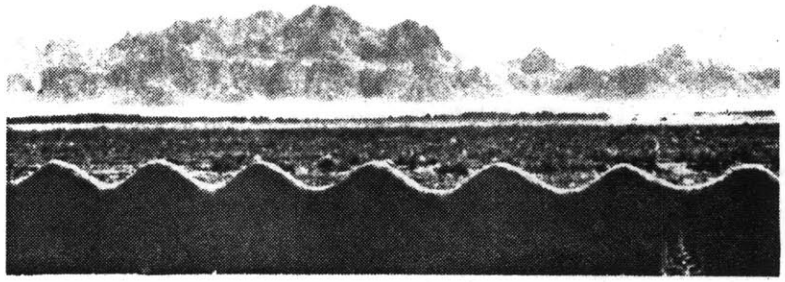
The success of these architect's attitudes towards the landscape depends upon the specific contextual conditions confronting the designer. However, I feel that certain attitudes create an alienating force towards the user of a building. Certainly in the case of a dominating building, and often in the case of a contrasting building, the user of the building may sense a certain elitist attitude presented by the design of the building that prevents her/him from accessing the meaning of the building.

A design which has ignored the form and elements of the landscape also increases the sense of alienation of people from their environment. However, the building need not hide within the natural surroundings. It should reveal its own presence through a sympathetic integration with the landscape. Marc Treib describes this condition as an inflected landscape: "Definition derives from opposition: what the structure is not. Merger, on the other hand, is most clearly represented by the picturesque garden type... Somewhere between the

two extremes, though closer to merger, lies the landscape of inflection: places that retain in part the natural order or material while articulating an order distinct from the natural form of the land, a distinction sufficient to generate a sense of entity."[1]

This balancing of architectural and landscape ordering systems does not deny the opportunity to explore a variety of architectural formmaking attitudes, as long as they are conceived of with their contextual impacts in mind. The design approach which I promote in this proposal, "integration", incorporates the attitudes of fitting, recreating, and enhancing to create a lively interplay of architecture and landscape. This controlled juxtaposition enriches the appreciation of the overall composition, and adds multiple levels of interpretable meaning.

79. Garden Wall in Desert; parallel architecture/landscape form.



[1] Treib, M., "Inflected Landscapes," Places, Vol. 1, No. 2, p. 68.

Empty yourself of everything.
Let the mind rest at peace.
The ten thousand things rise and fall while the Self watches their return.
They grow and flourish and then return to the source.
Returning to the source is stillness, which is the way of nature.
The way of nature is unchanging.
Knowing constancy is insight.
Not knowing constancy leads to disaster.
Knowing constancy, the mind is open.
With an open mind, you will be openhearted.
Being openhearted, you will act royally.
Being royal, you will attain the divine.
Being divine, you will be at one with the Tao.
Being at one with the Tao is eternal.
And though the body dies, the Tao will never pass away.

- Lao Tsu (trans. Gia-Fu Feng and Jane English)

A DESIGN PROPOSAL

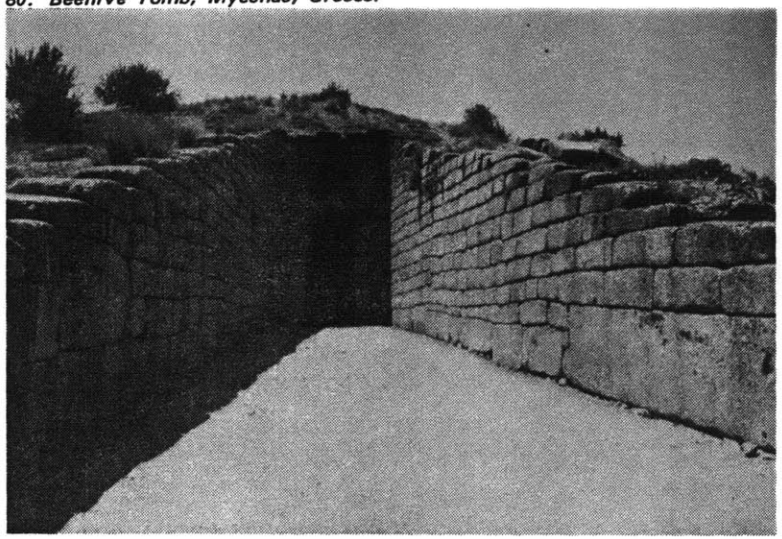
C. A DESIGN PROPOSAL

I have designed a retreat center on a large natural site. Through the design exploration, I have explored the issues presented in the previous discussion section. I present here the program, site location and the design for this retreat center at World's End in Hingham, Massachusetts.

1. PROGRAMMATIC INTENTIONS

The issues of personal disconnection from the natural world are addressed through a program for a retreat center which focuses attention and activities on the out of doors. These spatial requirements facilitate an awakening of the introspective side of ourselves, while accomodating a diverse set of activities intended to draw the community of retreat participants closer to each other and to the natural world around them.

80. Beehive Tomb, Mycenae, Greece.



A. DESIGN PROGRAM

This Retreat Center will house a community intended to gather people for a length of time, allowing them to remove themselves from their daily routines and explore a common theme, either collectively or individually. The buildings allow for a variety of spontaneous activities to occur, depending upon the nature of the participants and the topic of exploration. Several different types of experiences are provided for such as recreation, solitude/contemplation, group activities, relaxation and socializing, each of which require different types of facilities within the complex. The facility is flexible in design so as to allow for the greatest variety of activities to occur.

SPATIAL REQUIREMENTS:

The programmed spaces include the following:

Main Gathering Place:

1. Entry/Reception Area/Lobby
2. Administration Offices
3. Library/Lounges
4. Meeting Hall/Auditorium
5. Dining Hall
6. Kitchen/Service and Support Areas
7. Cafe
8. Meeting Rooms/Classrooms
9. Toilet Rooms, Storage Space

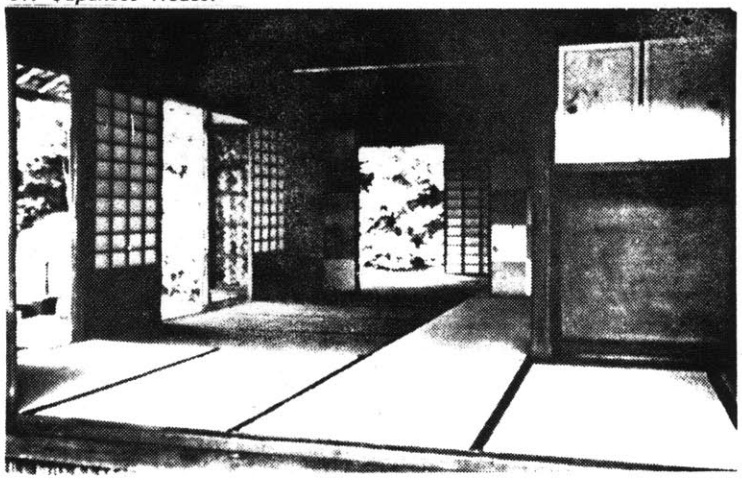
Sleeping Place:

1. Bedrooms
2. Bath/Toilet Facilities
3. Laundry and Storage Facilities (All of the above shall be located in a combination of Private Cottages, Guest Rooms and Dormitory Style Buildings)

Site Places:

1. Parking/Site Circulation
2. Recreation Facilities: Tennis, Ballfield, Swimming, Play Equipment
3. Meditation Pavillions
4. Outdoor Furniture: Benches, Lighting, Paths, Shelters, Storage Sheds

81. Japanese House.



B. SCENARIOS FOR USE

1. RELIGIOUS RETREAT:

A religious group sponsors a retreat for counseling couples with marital difficulties. They meet in large groups as well as smaller encounter groups for organized activities. Religious services may be offered, requiring a large, quiet space with spiritual qualities. The couples and individuals will also need space to explore their own feelings independently from the group. The private rooms as well as outdoor landscape elements (benches, pavillions, paths) may provide this outlet for the participants. An example of this type of event is the Catholic Church sponsored Marriage Encounter retreats.

2. CORPORATE BRAINSTORMING SESSION:

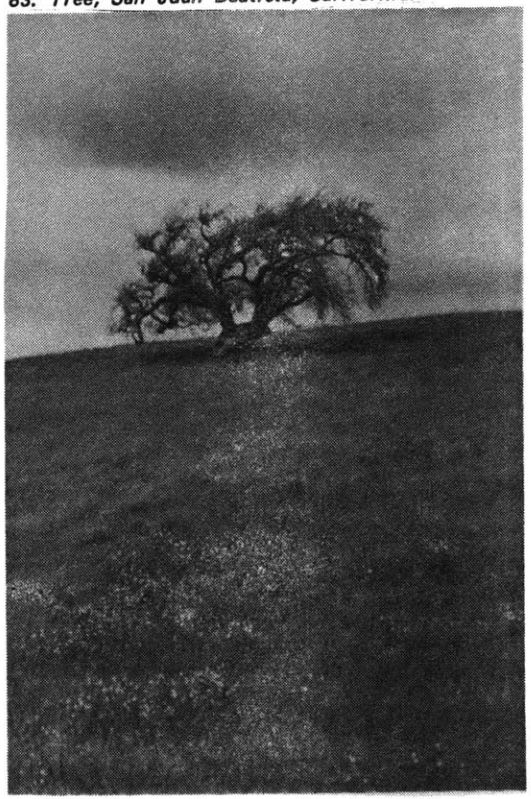
A group of corporate executives wishes to propose a new operating strategy for the upcoming business year. The management gathers for a few days to discuss ideas, and to work in an unpressured environment, away from the daily pressures of their workplace. They need meeting rooms as well as recreation facilities and lounge areas where discussion can take place on an informal basis.

3. MEDITATION RETREAT:

A meditation weekend is offered to the general public, providing guided meditation and group chanting/dance sessions within an atmosphere of serenity and solitude. Many places for individual meditation will be required, free from the distractions of other guests, kitchen, traffic and other noise. Participants should be able to transport themselves effortlessly into a relaxing, supportive environment in order to facilitate their process of self-enlightenment.

82. World's End; Tree-lined road.

83. Tree, San Juan Bautista, California.



4. NATURE STUDY WORKSHOP:

A several day long conference is held for families to learn more about their natural environment. Classes, field-trips, guided walks, films and lectures are offered thoughout the course of the event. Many activities will be held outdoors at all times of the day and night. Children will be an important component of this user group and their recreation needs should be provided for. An example of this type of event is the Audubon Society's Focus:Outdoors Conference held annually at varying locations.

C. ISSUES FOR INVESTIGATION

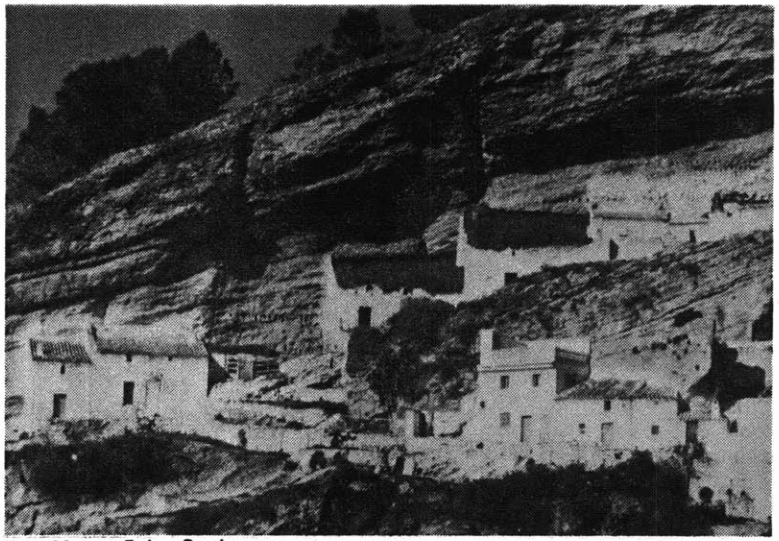
My investigation of the design of this retreat/conference center intends to focus on the following aspects of architectural expression:

1. Integration of built forms within the landscape:

- so as not to alter the dominant natural character of the site
- to use forms and materials which do not call excessive attention to themselves as being separate from their environment and/or function
- to draw clues for design form and materials from the site

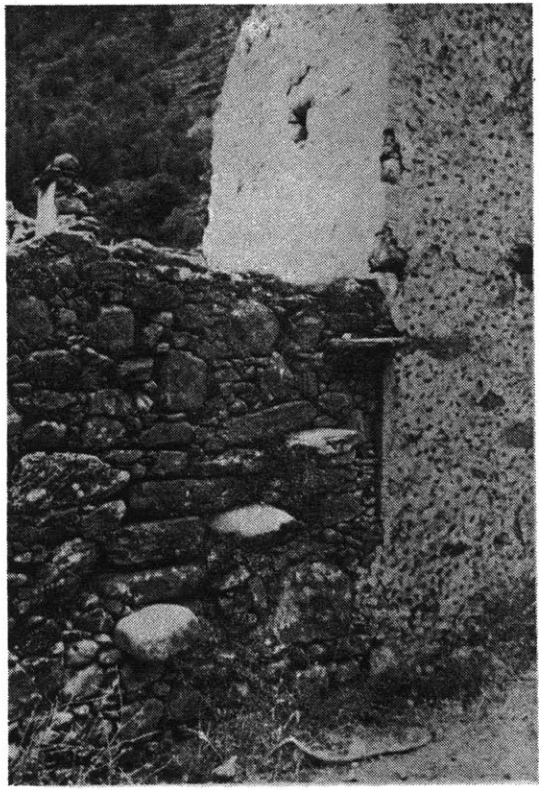
2. To create an architecture of repose, approaching spirituality:

- to allow the solemnity and solitude of the built and landscape forms to provide places for contemplation and habitation



84. Monte Frio, Spain.

85. Samaria Gorge, Crete, Greece; steps in the wall.



3. To establish a strong sense of community:

- offering shelter and protection from the weather
- which serves as a home away from home
- sharing visions, interests and common goals of guests
- which facilitates activities and the successful functioning of the retreat or conference

4. Making sensitive transitions at the edge zones from built to landscape forms:

- using porches, steps, planting, etc. as interface
- to provide protection from weather, wind, sun
- where the buildings meet the ground
- how the building system of organization extends itself into the landscape and vice-versa

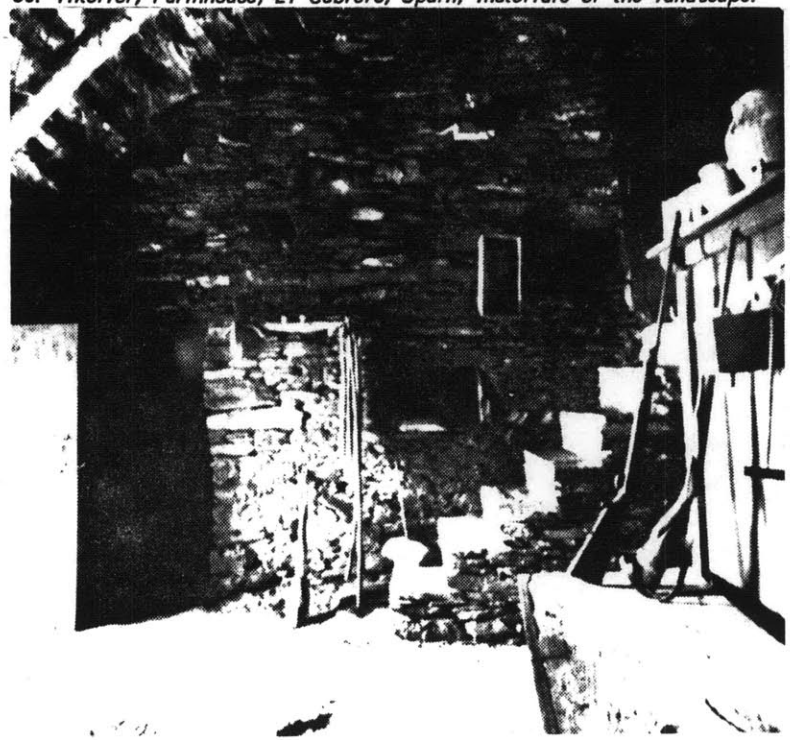
5. To establish a clear hierarchy from public to private zones associated with a logical sense of movement between these zones:

- allowing for adequate separation of functions for privacy
- to prevent confusing circulation patterns
- to create a clear, simple organization of functions

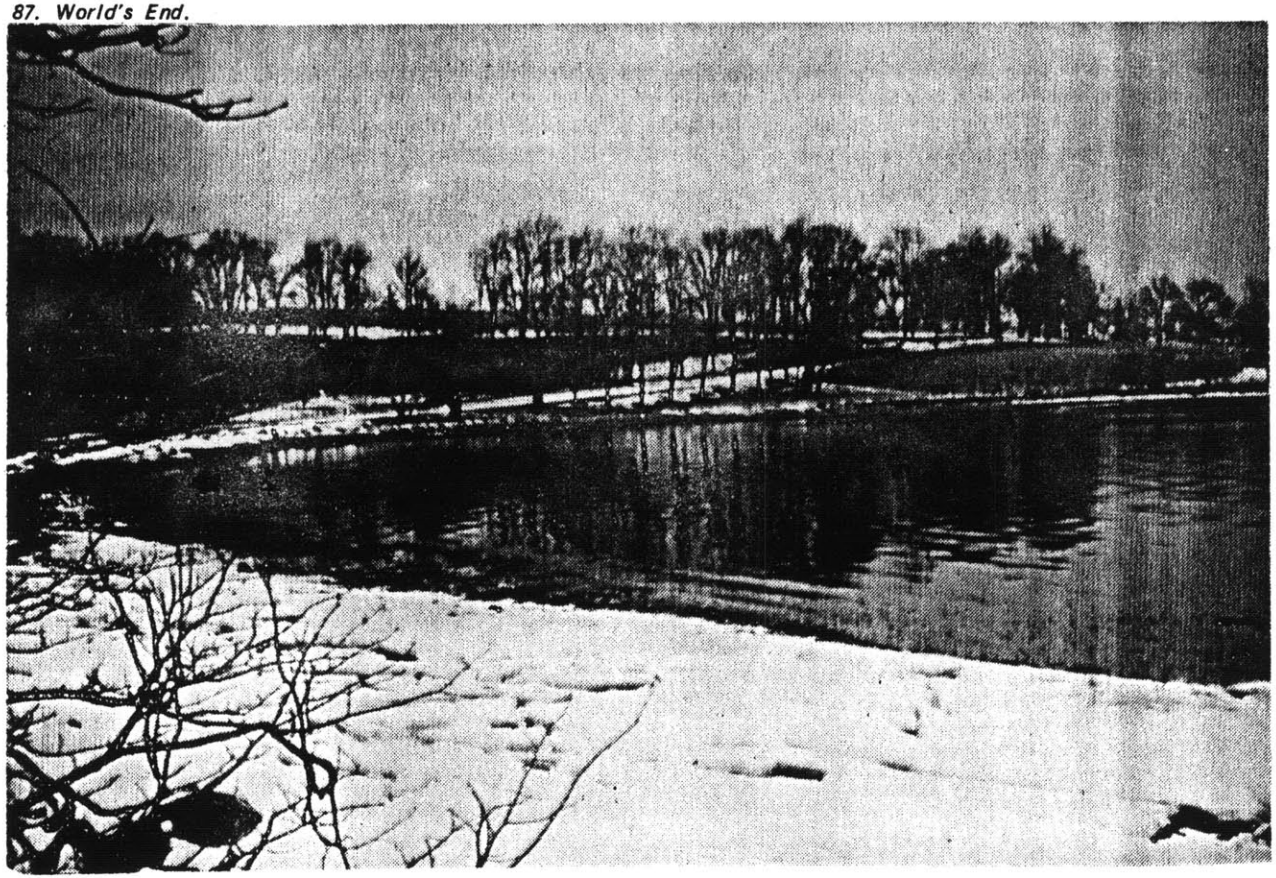
6. Making a distinction between the front and the back:

- with the front representing the formal entry image
- and the back being more spontaneous to the interior function and exterior natural environment

86. Interior, Farmhouse, El Cebrero, Spain; materials of the landscape.



87. World's End.

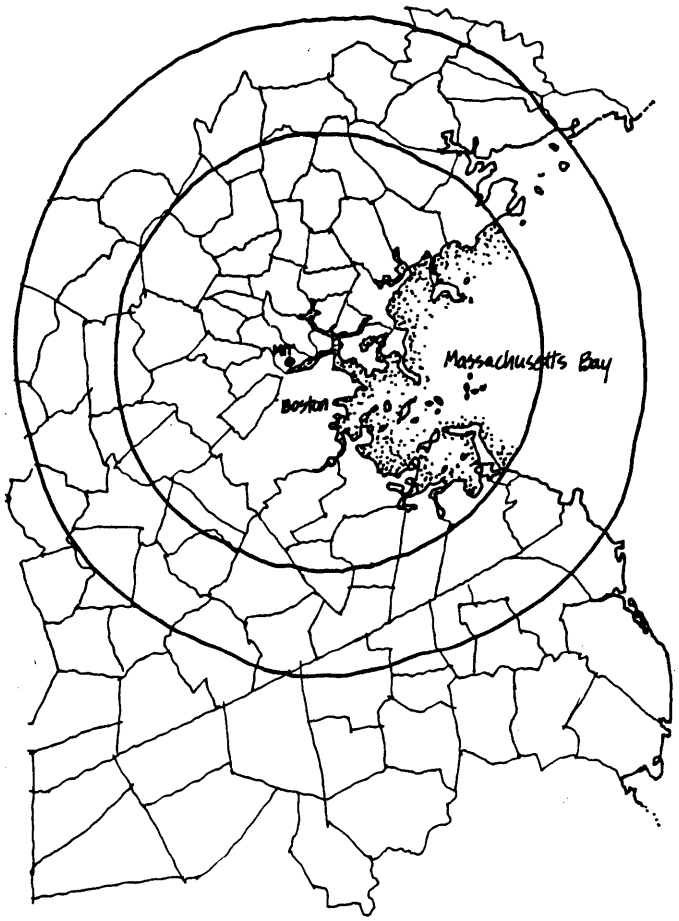


2. THE SITE

A. SITE SELECTION CRITERIA:

In searching for an appropriate site for a retreat/conference center, I felt that several landscape features were necessary to fulfill my programmatic expectations. In working closely with the existing landscape to develop an "organic" architecture that fits closely with the site, I needed to draw design clues about materials and form from the immediate environment. In addition, for the convenience of frequent site visitation, I limited the options for my site location to the greater Boston area. Ideally, a development of this type would take into account the location of client groups and in fact would probably be sited near to a major metropolitan area for the greatest potential for success and use.

The following landscape characteristics seemed critical to the successful fulfillment of my programmatic concerns, and my vision of an architecture integrated within it's environment.



88. Boston Metropolitan Area.

89. World's End.

1. Solitude/Peacefulness/Serenity

Many of the gatherings at this center will require and inspire a good deal of self-introspection by the participants. A location away from the noise and activity of urban/suburban centers is critical to allow a psychological separation from the frenzy of daily routines, and a transportation into a more relaxed environment.

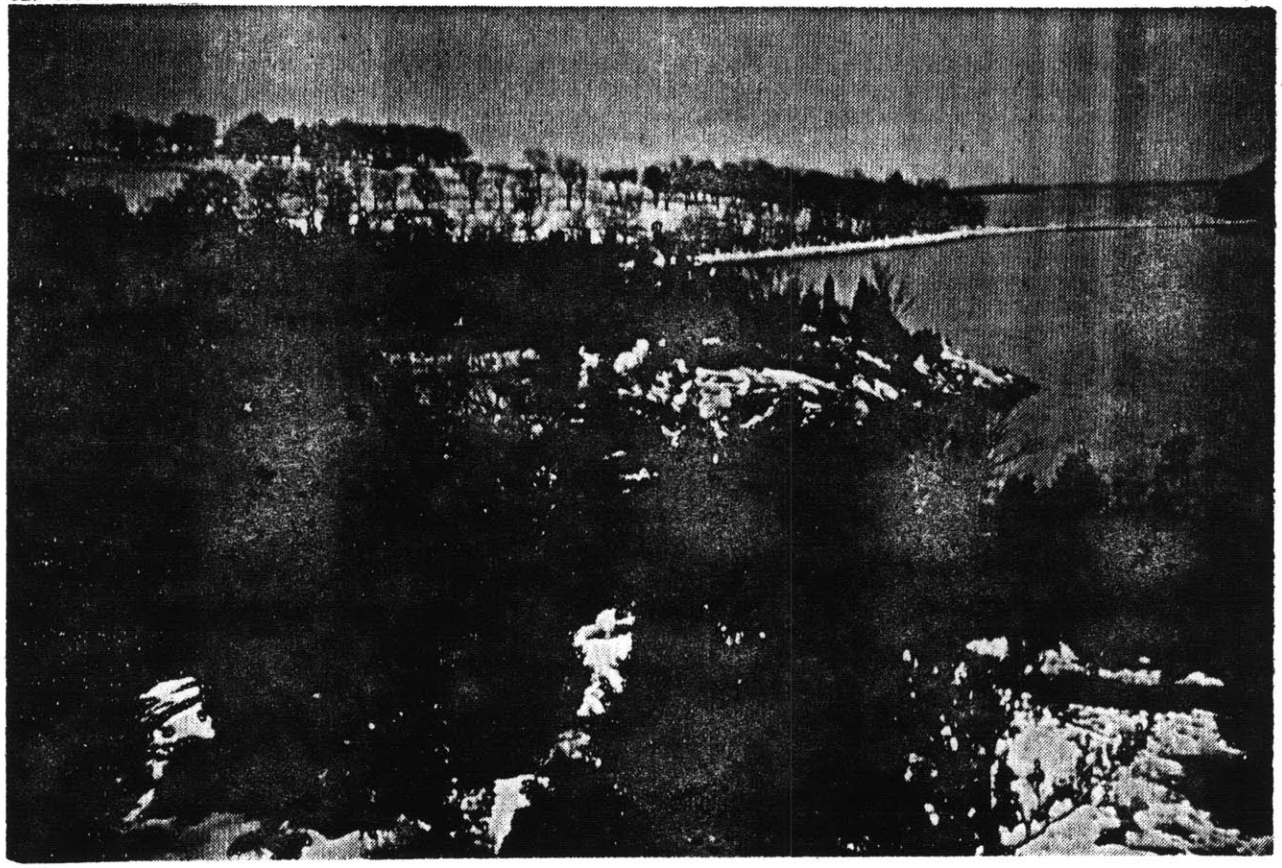
90. World's End.

2. Dominant Landscape Features

The site should inspire a sense of awe and beauty, encouraging interaction with the out-of-doors. A hilltop location for distant views, and water on the site (preferably the ocean with its ever-pervasive white noise of waves lapping the shore) offer an opportunity to experience a natural setting through its changes over hours, days and seasons. This type of site will maximize the potential for variety in the natural setting. In addition, the exposure to the elements will increase the sense of shelter and protection offered by the built forms, reinforcing the notion of community within the buildings.

91. World's End.

92. World's End.



3. Adequate Open Space

In order to develop a community within the landscape, there must be sufficient acreage to develop the site without crowding it, and leaving ample room for open space and recreational opportunities. There should also be a strong separation of the retreat center from nearby buildings which can disturb the tranquility and isolation of the guests.

93. World's End.

4. Relatively Unbuilt Site

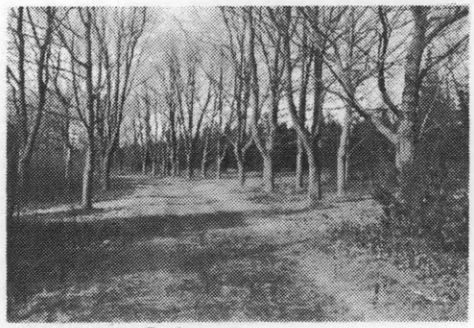
Rather than returning a built site to a natural state for this design proposal, I prefer to work with an undeveloped site to accurately visualize its landscape characteristics.

94. World's End.

95. World's End.

5. Long Entry Sequence Potential

In order to transport guests from the world of the automobile to a home away from home, I wish to work with partial view corridors of landscape and built elements to raise expectations as guests arrive at the site and proceed to the main entry. The process of transportation into a separate world is vital to the psychological preparation of the arriving guests. Much of this study will be based on English romantic landscape traditions, and the Japanese garden design principle of "borrowed scenery".



96. World's End.

97. Aerial Photo of World's End.

B. THE SITE: WORLD'S END

"World's End is an island of beauty where we can still enjoy the satisfaction of lying in a field of warm grass and looking at the sky; where we can still watch wildlife undisturbed by the noise and confusion of the city; where we can still walk on beaches washed by the sea without seawalls and hot dog concessions, and where we can turn momentarily to simple pleasures such as seeing a child explore the mysteries of the coming spring."[1]

1. Description

World's End, a 251 acre site in Hingham, Mass is the location for my design proposal. It embodies all of the characteristics described above, thereby making it a suitable location for a retreat/conference center. It is currently conservation land which is owned by the Trustees of Reservations, A Museum of the Massachusetts Landscape, and is open to the public for recreational purposes.

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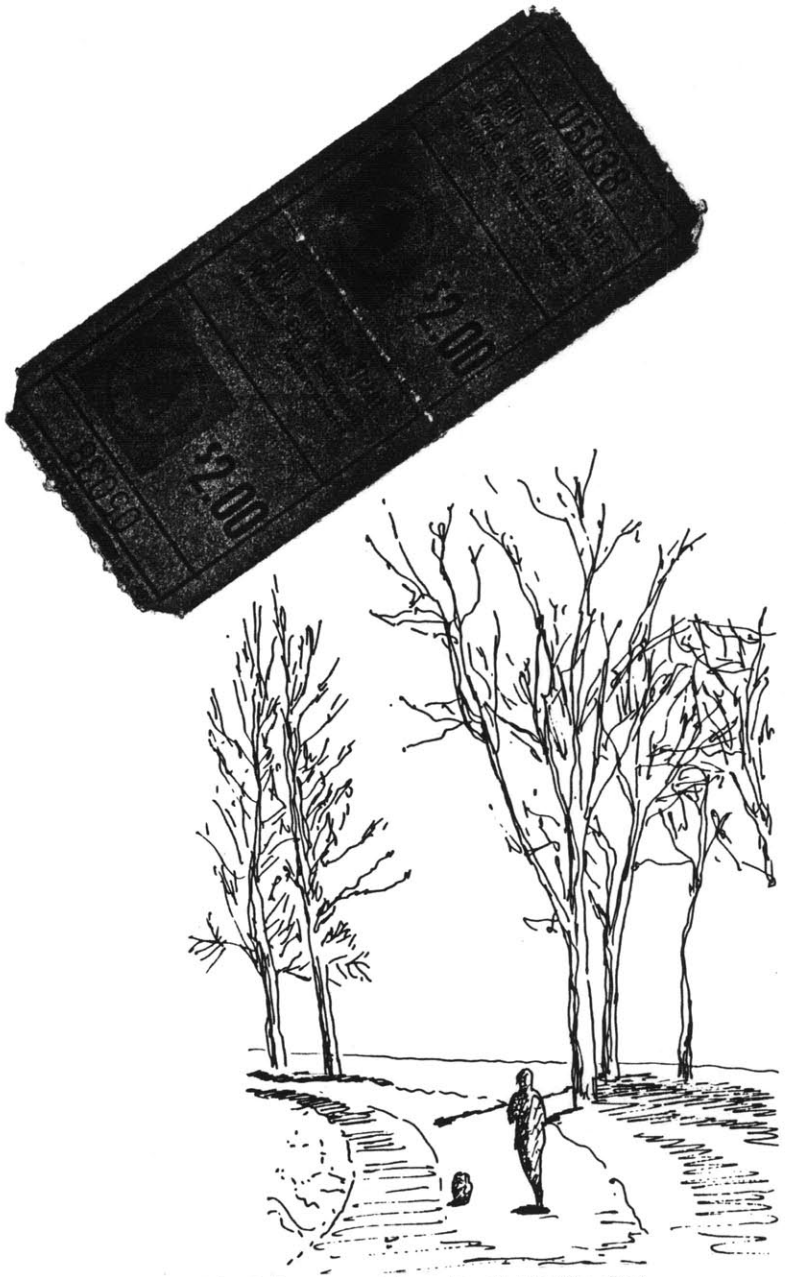
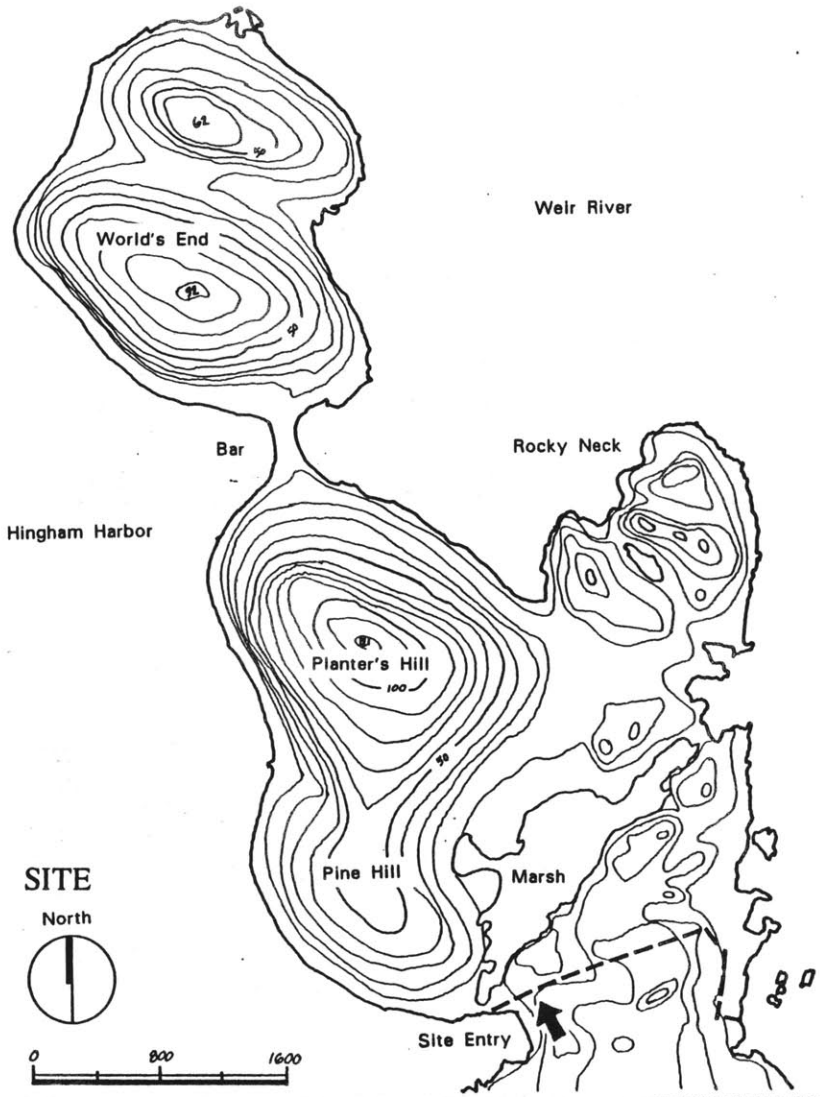
[1] Samuel Wakeman from a letter written as Chairman of the Board of the Committee to Save World's End.



98. A jogger and her dog at World's End.



I feel obligated to state here that this design study in no way intends to imply that conservation land should be so developed, as environmentally sensitive as the design may be. Under its current ownership, it provides an opportunity for the public to retreat to a beautiful, natural landscape. It serves some 60,000 local and regional visitors each year.[1] This is a theoretical proposal that ideally would occupy a site further away from the city in an undisturbed natural setting such as on the coast of Maine. Time and convenience have prevented my use of a more realistic site in private ownership further away from Cambridge.

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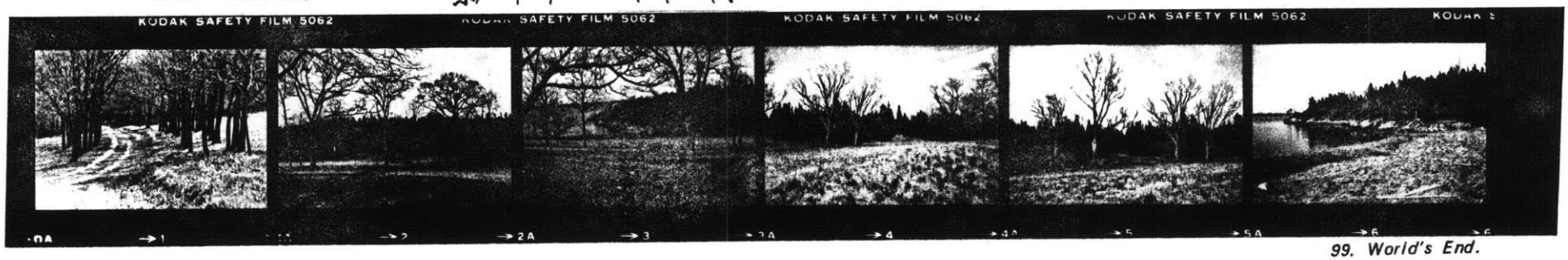
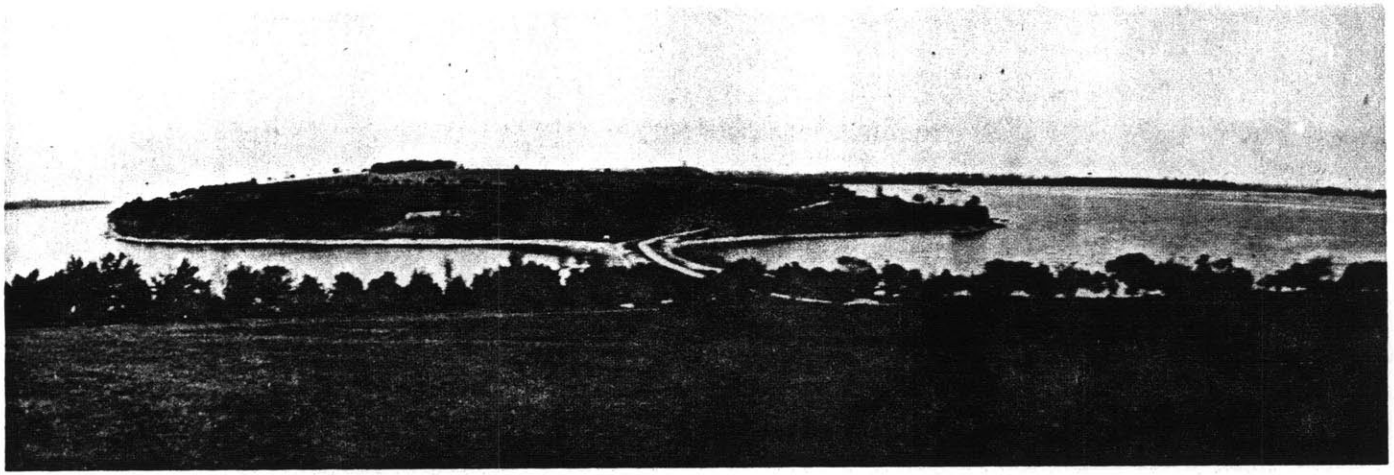
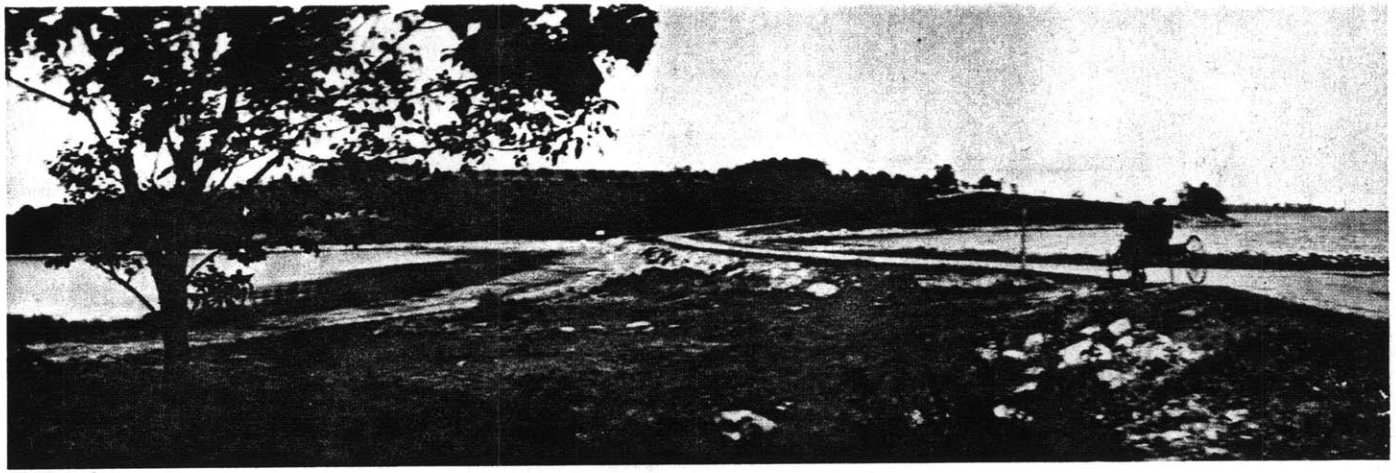
[1] W.H.C. Walker and W.B. Walker, A History of World's End (Milton Mass: The Trustees of Reservations, 1973) p. VIII.

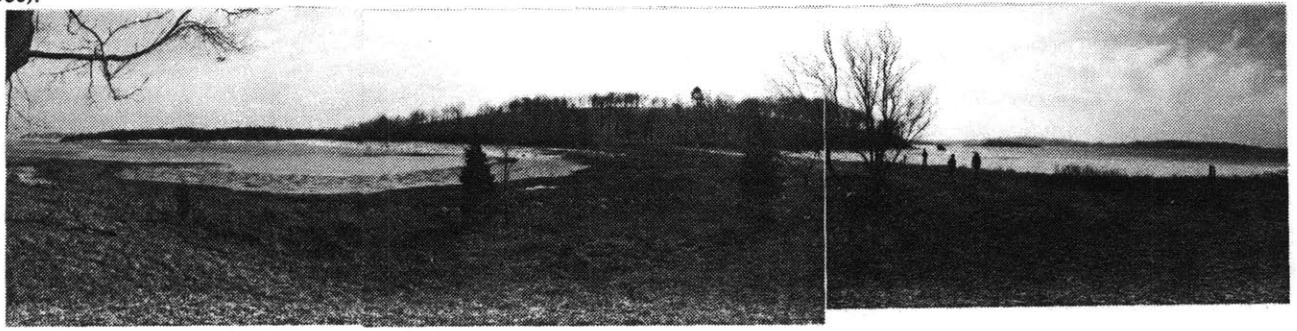


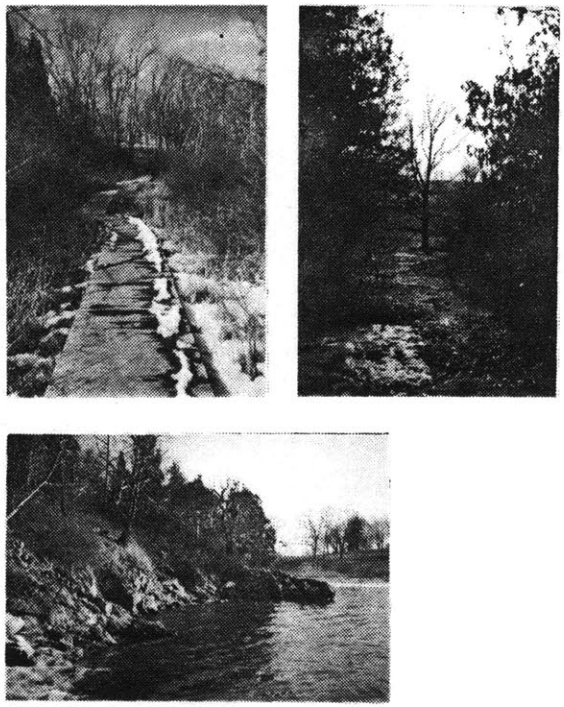
99. World's End.





100, 101, 102. Three views of World's End (top, 1906; middle, 1906; bottom, 1986).



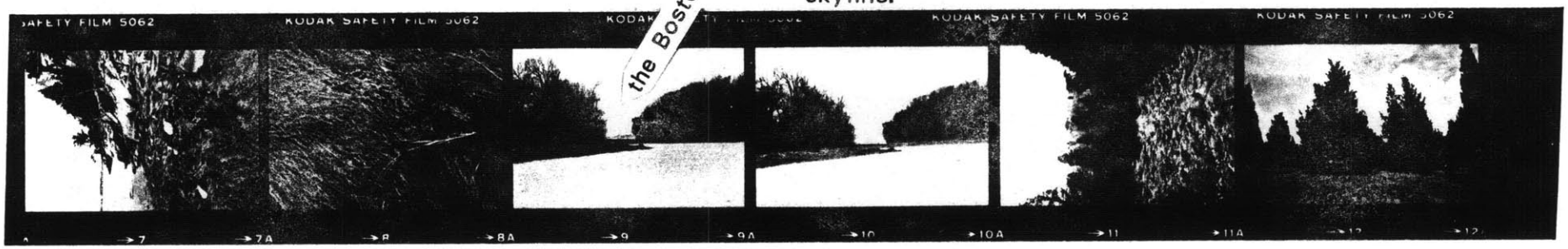


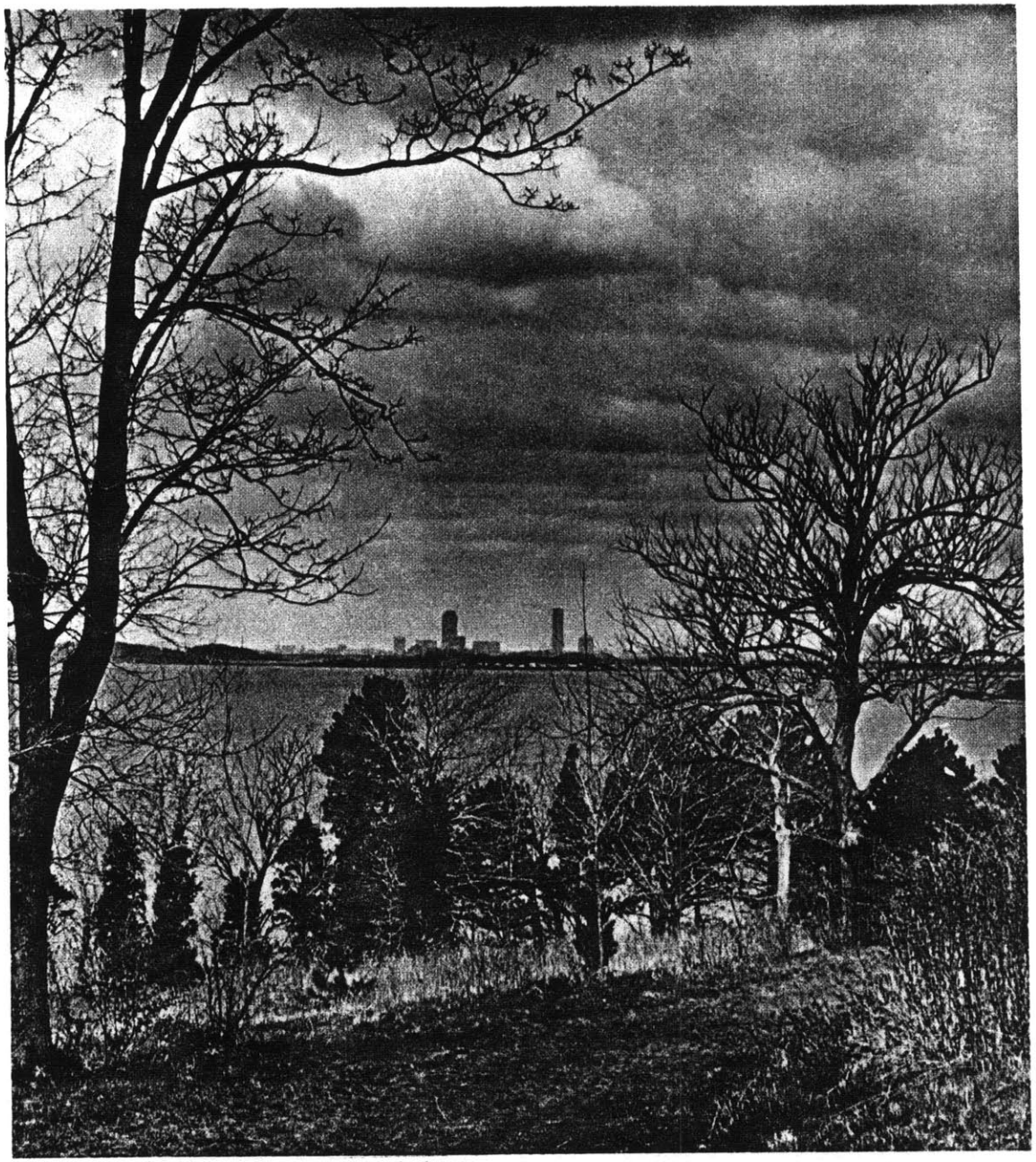
103-106. World's End.

2. Relative Location and Views

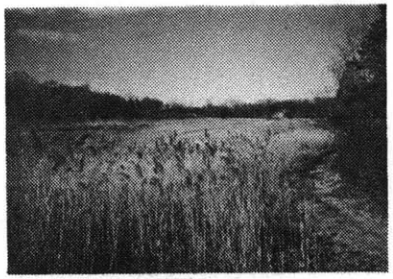
World's End is located only 17 miles from downtown Boston, and consists of two tall drumlins joined by a narrow beach of rough sand. The reservation contains 251 acres and five miles of shoreline, and is surrounded by the water of Hingham Bay and Hingham Harbor to the west, and the Weir River to the north and east. It connects to Cushing's neck to the south, and is protected from the northeast storms and the open sea by the connecting gravel reefs of Hull.

From the 120 foot high elevation of Planter's Hill, views abound in every direction: northward to Grave's Light and the north shore, northeasterly over the Weir River and Nantasket Beach to the Atlantic, southeasterly over Hingham Harbor and it's islands, westerly to the Blue Hills of Milton and northwesterly to Bumkin Island and the Boston skyline.

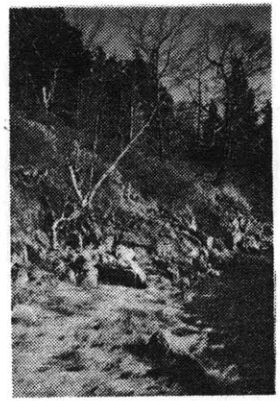


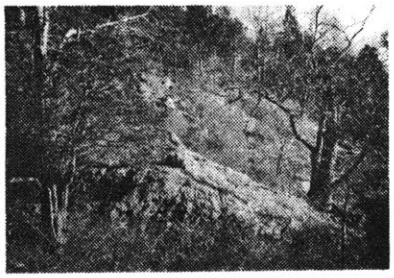


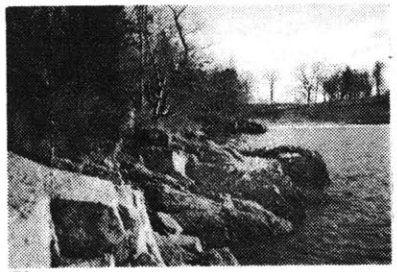
107. Boston Skyline seen from World's End.



108-110. World's End.



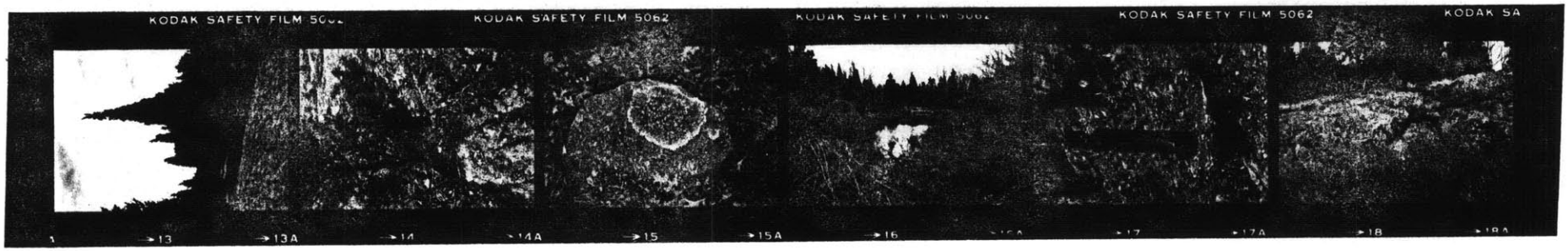




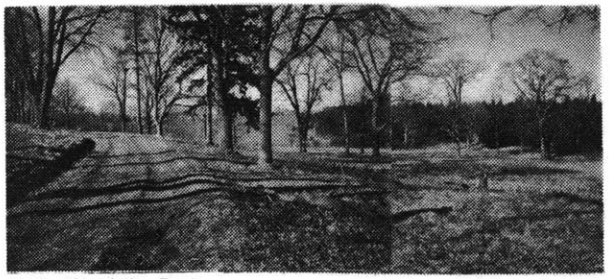
111-116. World's End.

3. Landscape Elements

The landscape consists of two large and two smaller hills, an area of cliffs and ledges to the east of Planter's Hill, known as Rocky Neck, a large meadow south of Rocky Neck and Planter's Hill, and a strip of red cedar woods, ledges and ravines separating this meadow from Cedar Gables (see map). The two main hills (known as Planter's Hill and World's End) are predominantly covered with grasses which are harvested as hay and are crossed



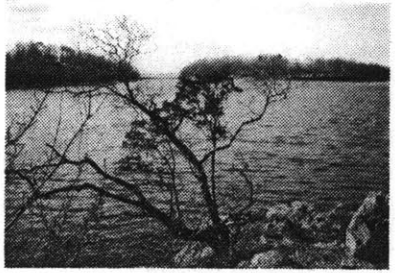
by a series of dirt roads, lined with a double row of trees layed out by Olmsted at the turn of the century (see site plan). Today the tree lined roads still dominate the grassy hills , although the precise alignment has diminished over the last eighty years as trees have fallen and smaller trees rise to take their place.

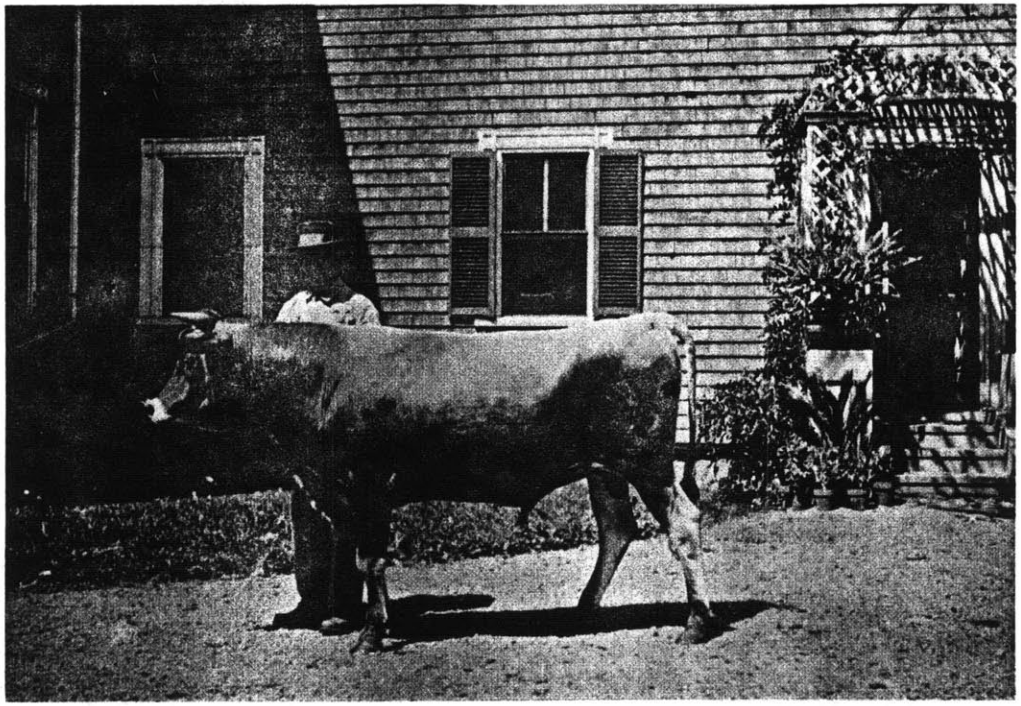


118. World's End.

117. A horse near one of the three original elms with Rocky Neck in the background, 1895.

119. World's End.





1o0. Simon Van der Zee and Felix Interest of World's End, 1917.

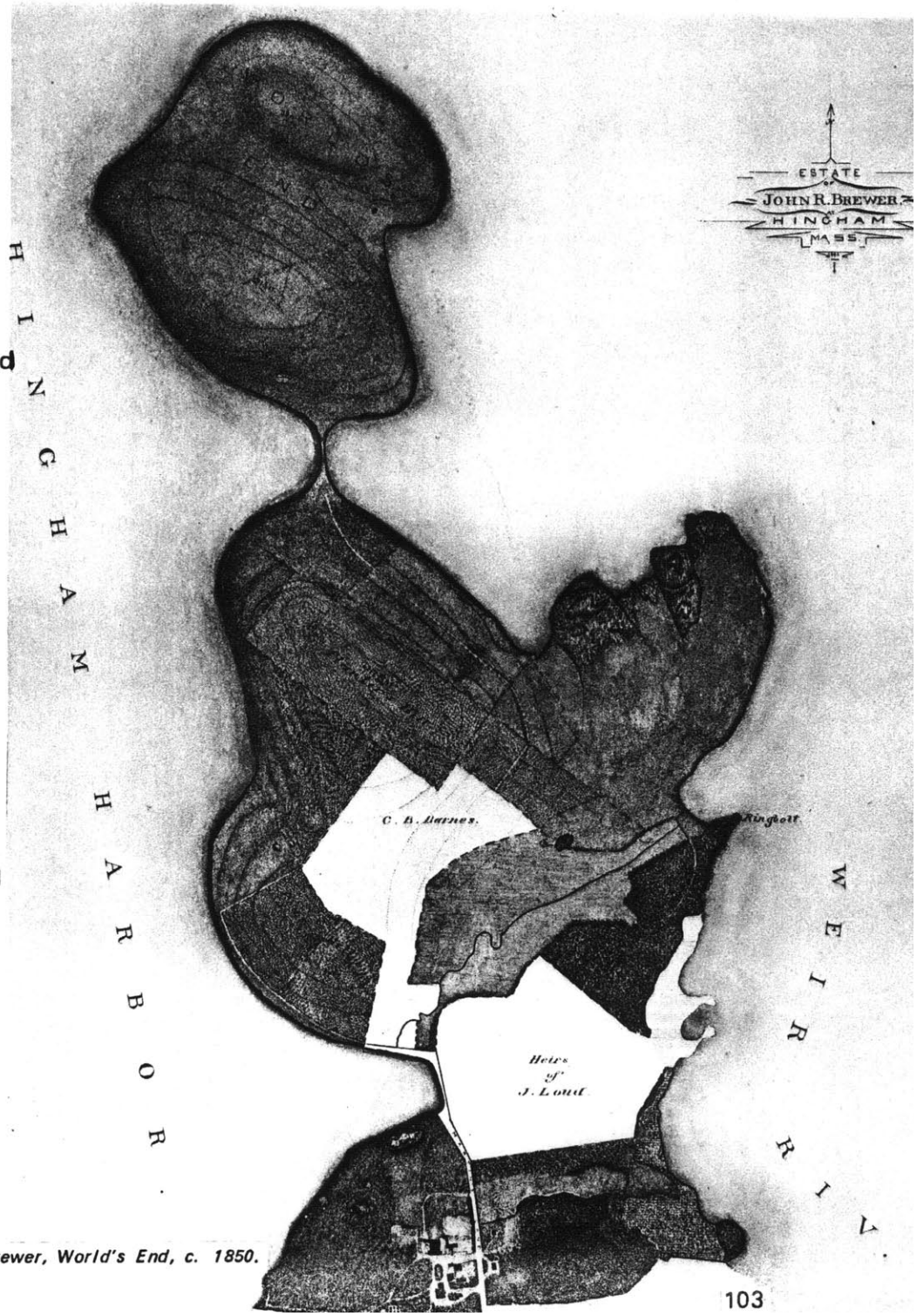
121, 122. World's End.

4. History of the Site

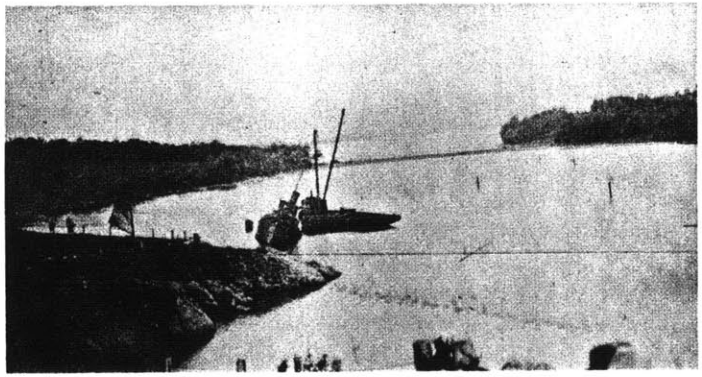
Planter's Hill and World's End are drumlins, composed of glacial till on bedrock formed by glacial action. Originally, these hills were separated from each and from the mainland at high tide, but seventeenth century settlers built two dams at either side of the "Damde Meddowes", thereby reclaiming this area from the sea. At about the same time, another causeway known as "the bar" was built to connect the two islands, linking the entire property to the mainland.

World's End was never industrialized or developed, even though nearby Hingham Harbor was a busy commercial port during the eighteenth and nineteenth centuries. The Weir River also accomodated ship traffic upriver to a flourmill and a foundry. The site has been used over the years as cropland, hay meadows and pasturage for cows and sheep, as well as for bird and fox hunting.

The Brewer family, which owned most of the land on Cushing's Neck and World's End for many decades, maintained an active farming and horse-raising business. There was also a summer



123. Estate of John Brewer, World's End, c. 1850.



124. Vessel aground on Dolphin Ledge off Rocky Neck in 1918.

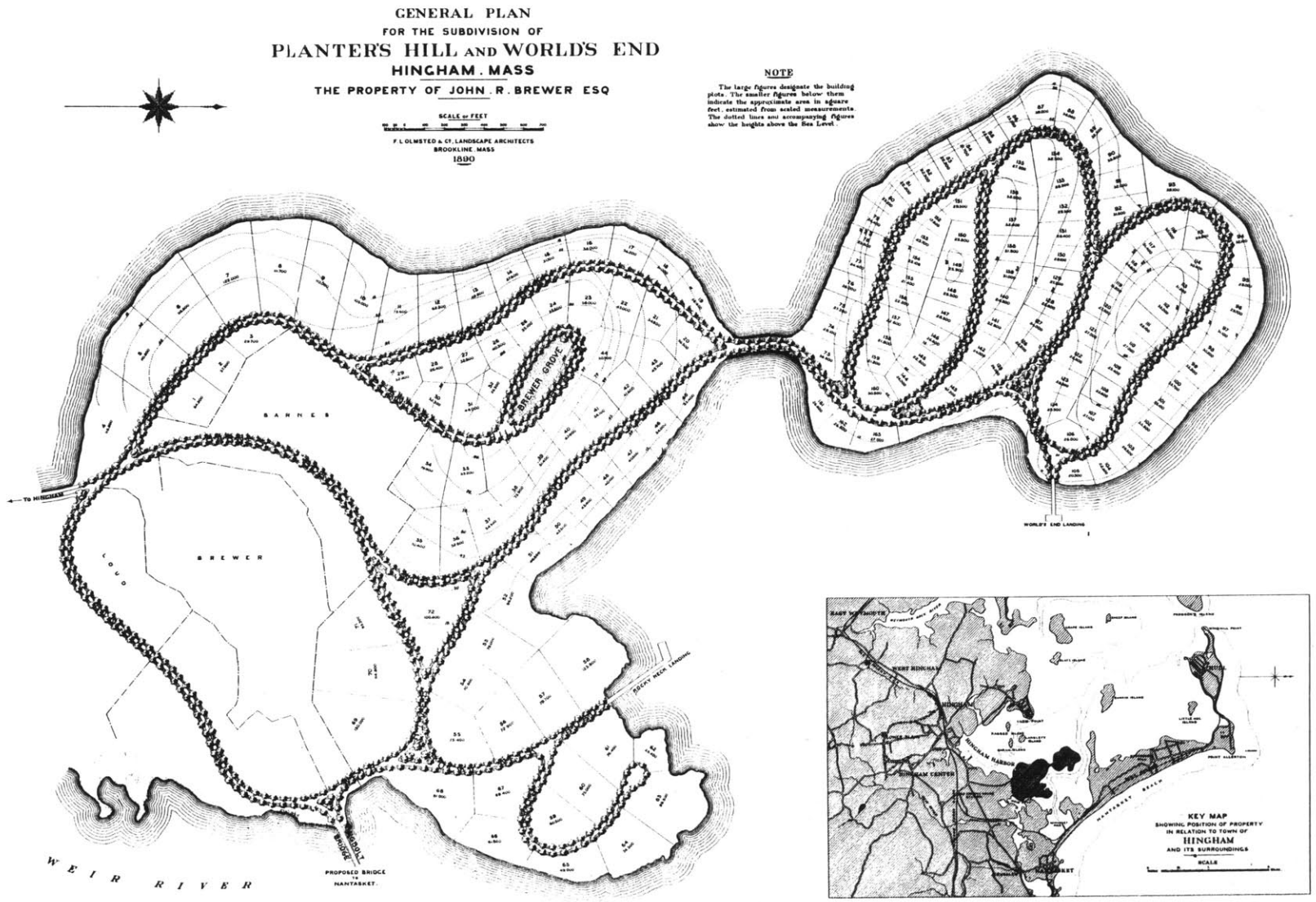
resort for wealthy Bostonians which was known as the Old Colony House and was operated from 1832 to 1872 when it burned to the ground.

In 1890, Brewer hired Frederick Law Olmsted to plan the roads, landscaping, boat landings and subdivision into houselots of World's End. The plan provided for 163 building lots varying in size from 17,600 square feet to 130,000 square feet. A tree-lined road system, which still exists today, was laid out, but the subdivisions and boat landings were never realized. A great variety of tree species were planted in double rows lining the roads, a variation from the single line of trees on Olmsted's plan. Additional trees were planted in groves on top of Planter's Hill and beyond the bar in "the valley".

Around the year 1900, the road building and tree planting was completed, but the land continued to

125. World's End.

126. Olmsted plan for World's End housing lot subdivision, 1890.



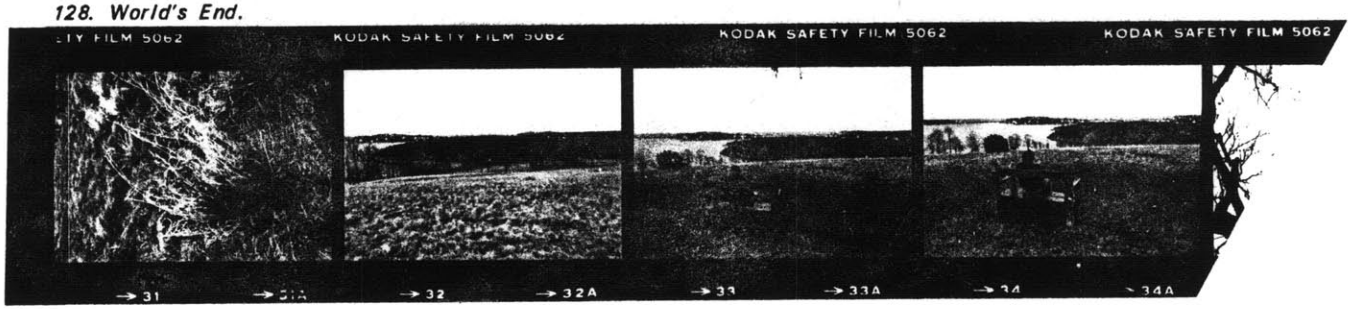
127. World's End.

be farmed for field corn, oats, sugar beets, alfalfa and vegetables until 1936. The death of the last surviving member of the Brewer family prompted the demise of the farming of the property, and only a few hands stayed on to care for the grounds. The farmhouse, barn and main house on Cushing's Neck were eventually razed by the mid-1940's.

Many proposals were made for the ultimate disposition of World's End. One proposal was considered to use the site for the location of the newly formed United Nations Organization in 1945. Another proposal in 1965 by Boston Edison envisioned a nuclear power plant on World's End, but a site in Plymouth, Mass was selected instead.

Most of the proposals were for residential developments. One plan was completed and subdivided the Cushing Neck area into minimum one

128. World's End.



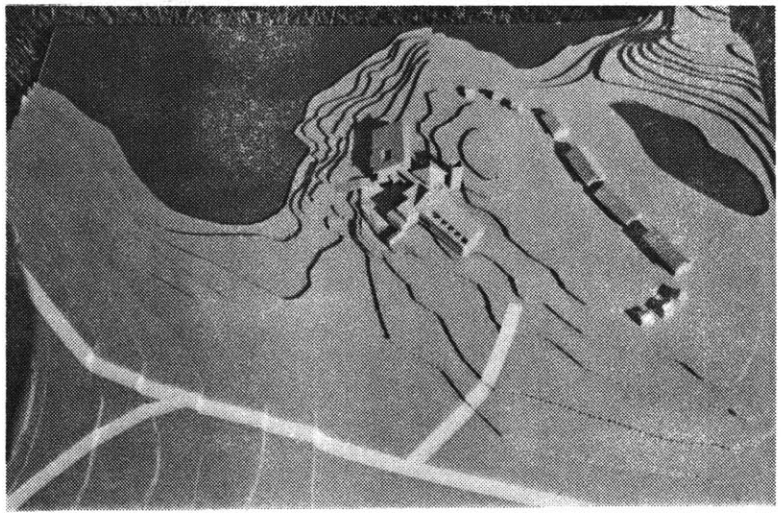
acre lots. In the 1960's, several large-scale developers made offers for the remaining land that now comprises the reservation, but preservation interest was also mounting. In 1967, a campaign to raise money succeeded in purchasing the property for over $450,000 to be placed in the hands of a private land trust, The Trustees of Reservations. It is now protected in perpetuity as an open space for public enjoyment.

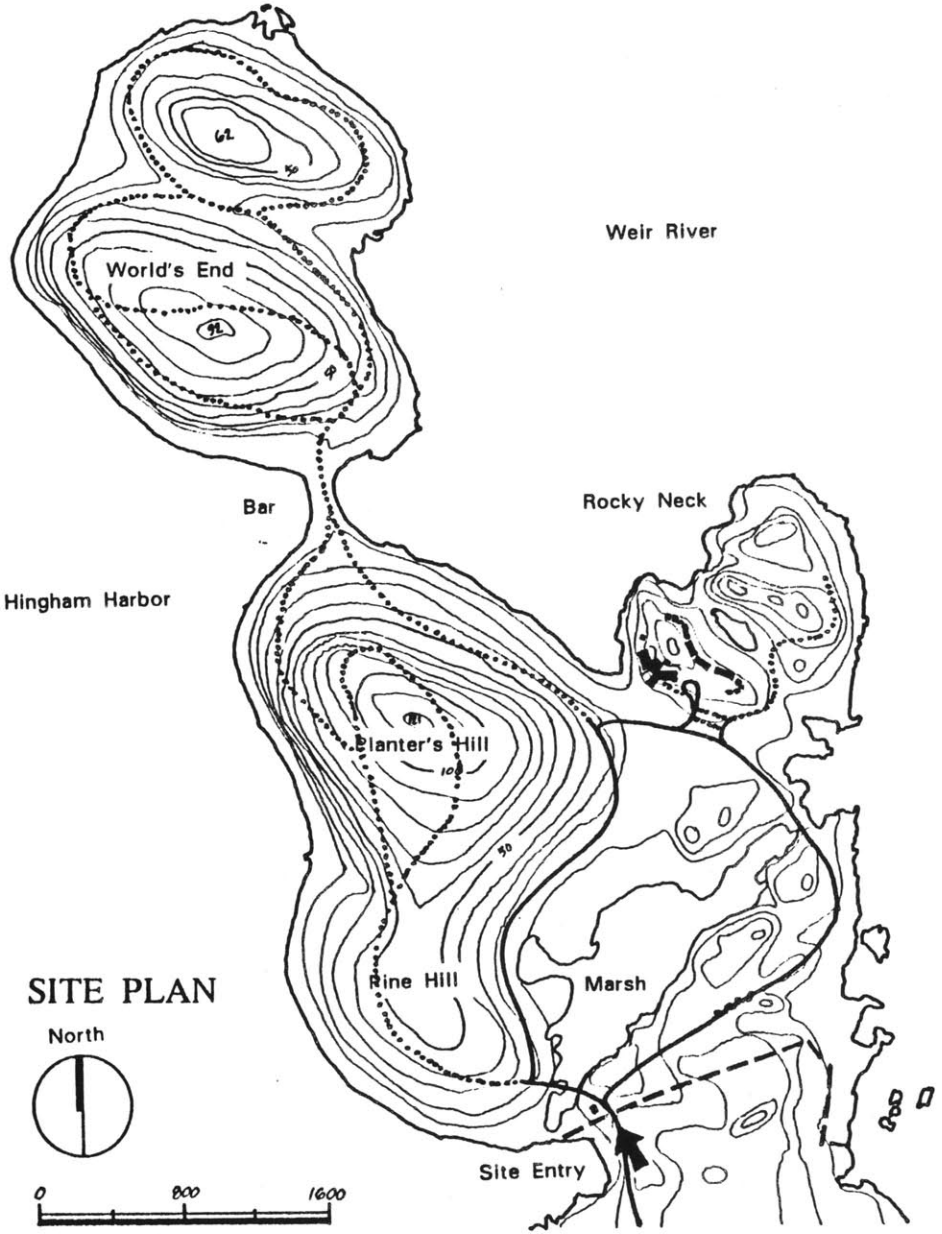
129. Brewer Estate Barn, World's End in background, 1932.

3. DESIGN FOR A RETREAT CENTER

The following pages document the design proposal for the World's End Retreat Center. Following the discussion of scales of investigation, I have organized this section into similar categories of Macroscale, Humanscale and Microscale in order to facilitate the discussion of the design.

130. Site Model.

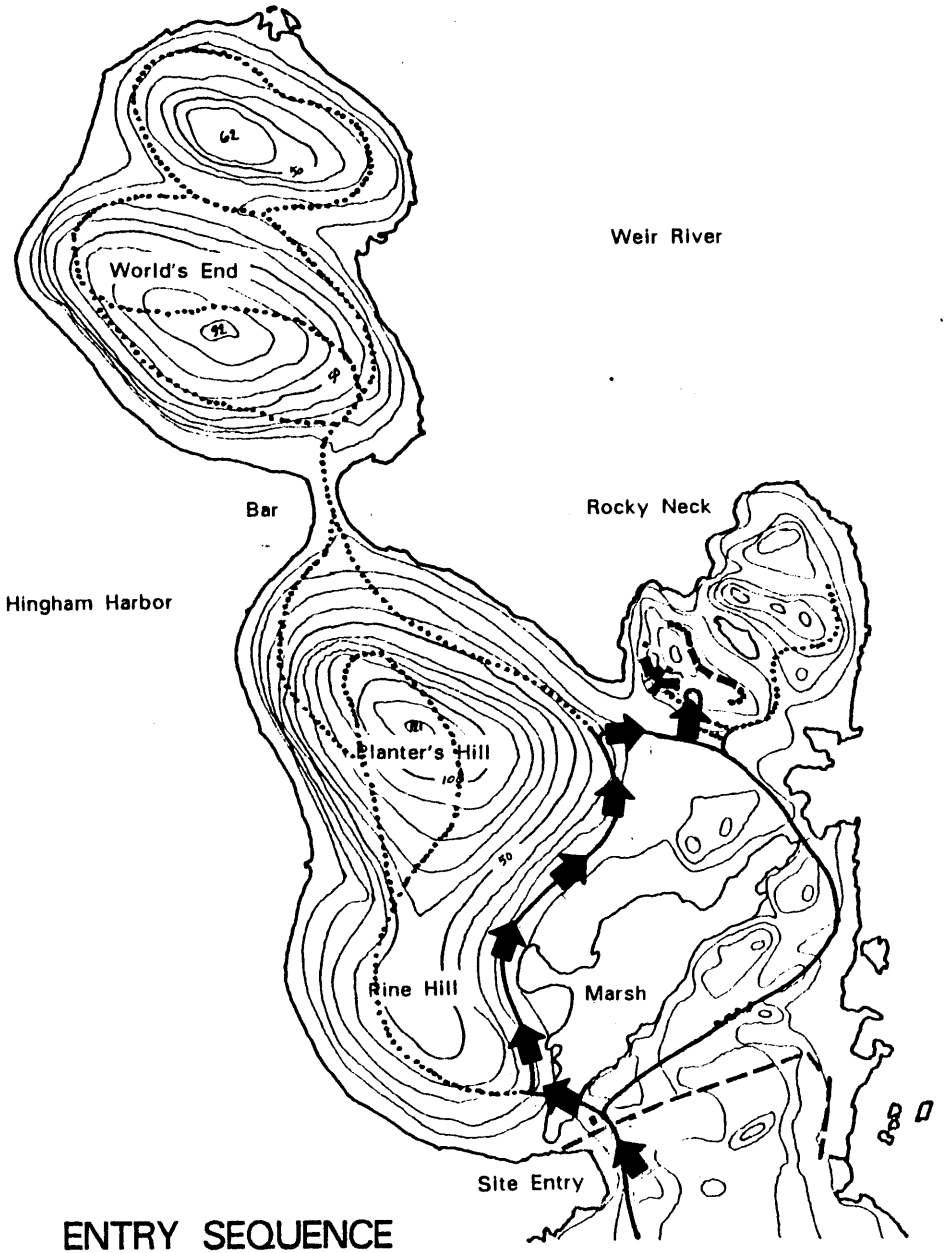




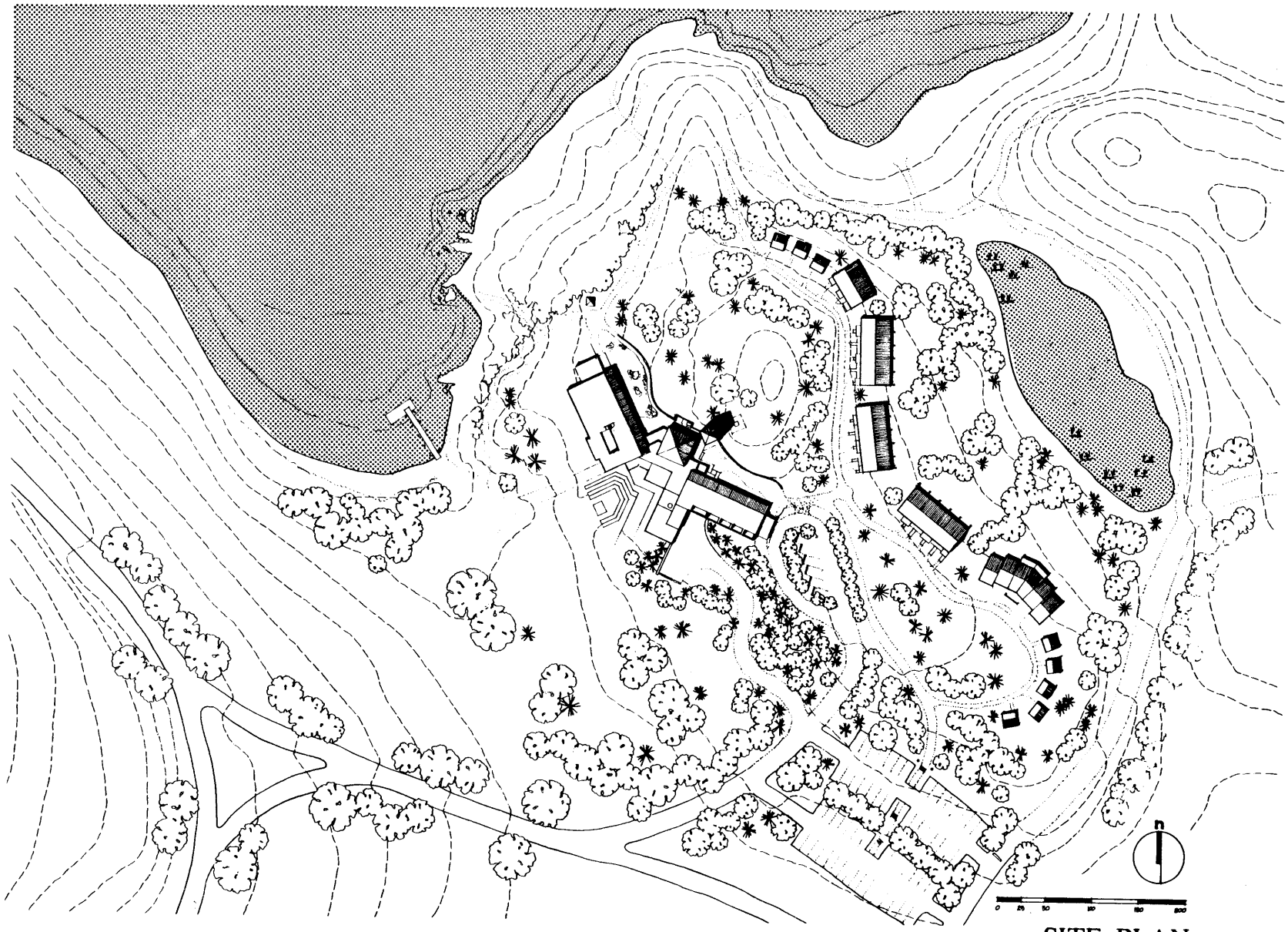
A. MACROSCALE:
ATTITUDE TOWARDS SITE ORGANIZATION

The World's End Peninsula landscape maintains the strong patterns as laid out by Olmsted in 1890. The roadways are now lined by fully mature trees which are gradually returning to a less maintained state as some trees die off and smaller trees take root in a less geometrically consistent pattern. I chose to integrate this road system into the entry sequence for the World's End Retreat Center to minimize the impact of new road construction on the site, and to capitalize on the opportunity for a long entry sequence. The process of moving through the natural site helps the visitors to remove themselves from the cares of their everyday lives. This distance provides a buffer zone between the inside world of the retreat center, and the outside world.

This entry drive also reveals partial views of the site and the buildings, increasing the expectation and mystery of arrival, yet not revealing the entire layout, leaving full discovery of the site places for the duration of the visitors stay at the retreat



ENTRY SEQUENCE

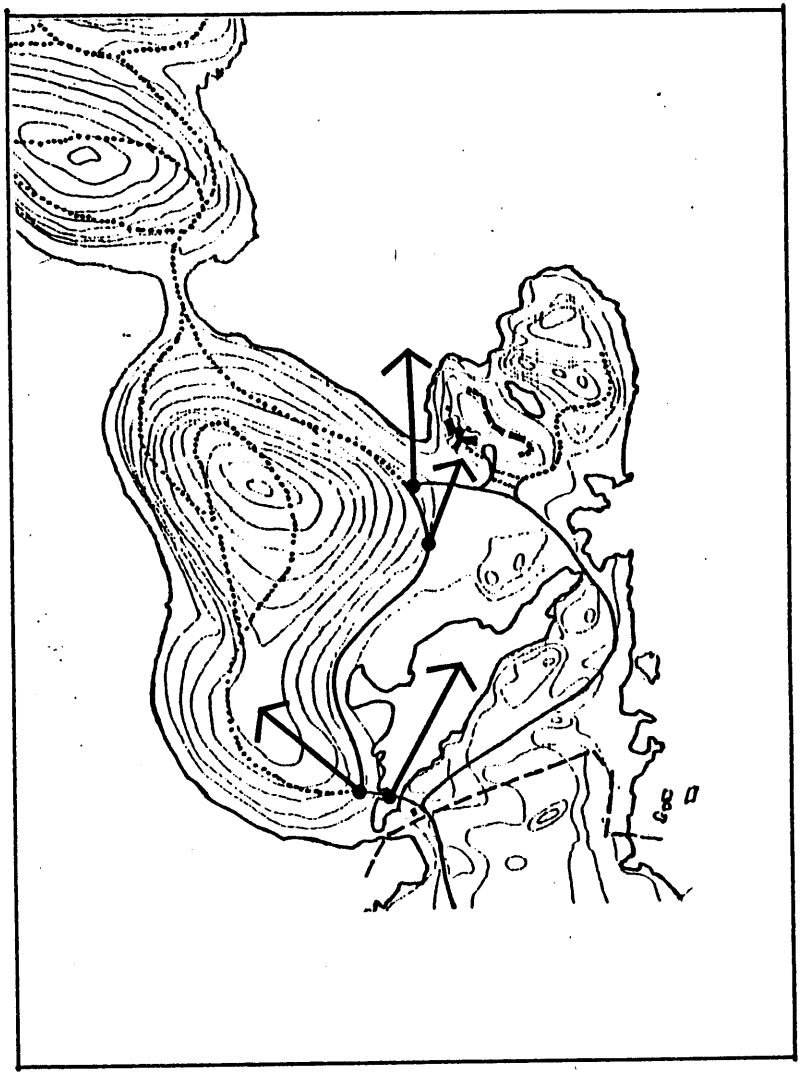


SITE PLAN

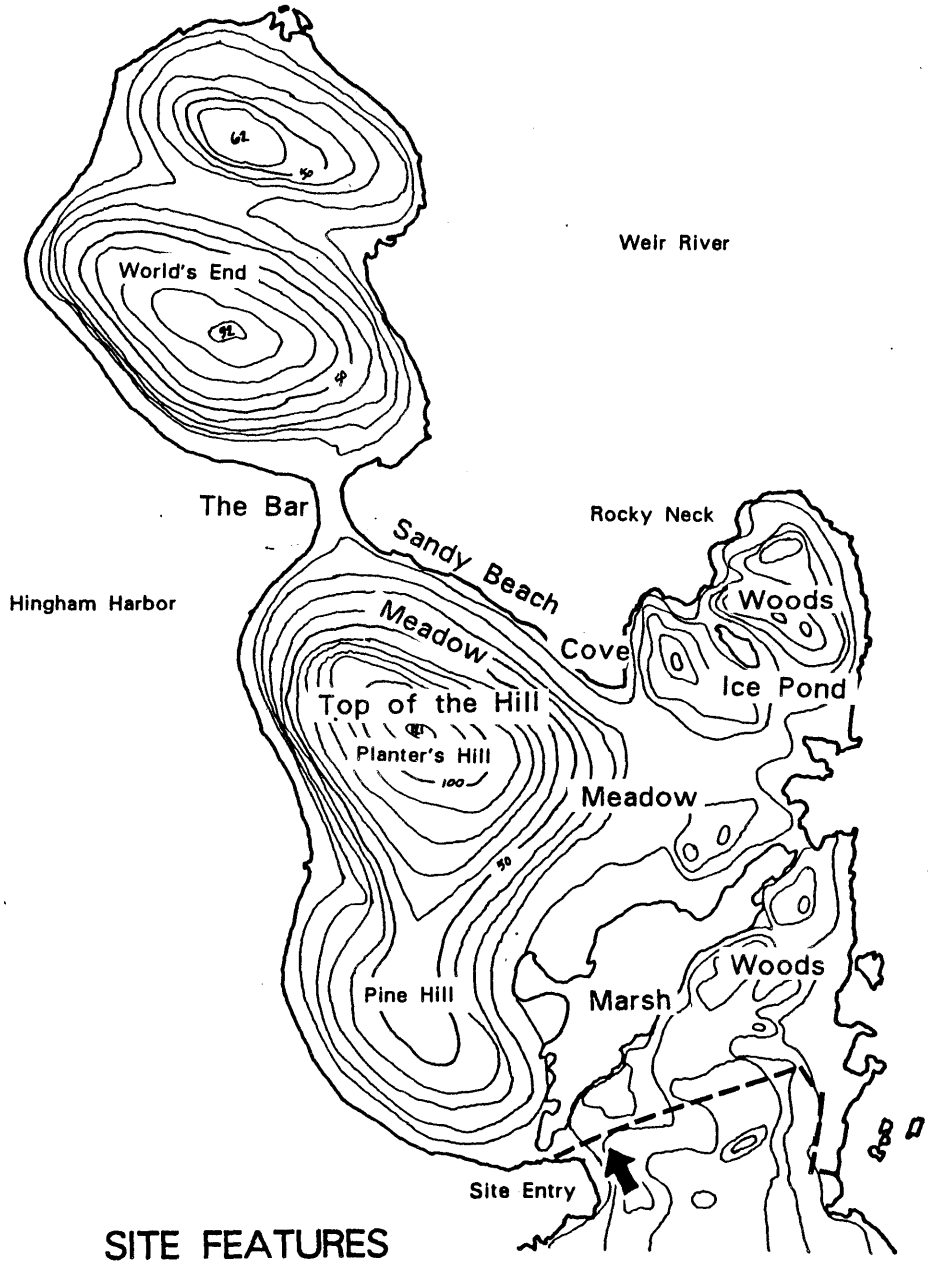
center. This simulates the principle of "borrowed scenery" used in Japanese garden design.

Guests park their cars in a lot in the woods before they actually reach the buildings (handicap and temporary parking are provided near to the entry). The parking lots are shielded from the view of all the site facilities, so the visitors never need see their cars after they leave them when they arrive.

The building complex is located at the edge between the open fields and the Rocky Neck woods. This edge condition affords a sense of protection for the buildings, yet also allows for extensive views out to the rolling fields. The landscape here is complex, jagged and rocky, scattered with cedars and low bushes. It was inappropriate to locate the buildings on top of the open hills and fields as they would have become a dominating presence in the landscape. The location at the edge of the woods allows them to assert their presence, yet remain subservient to the order of the landscape around them.



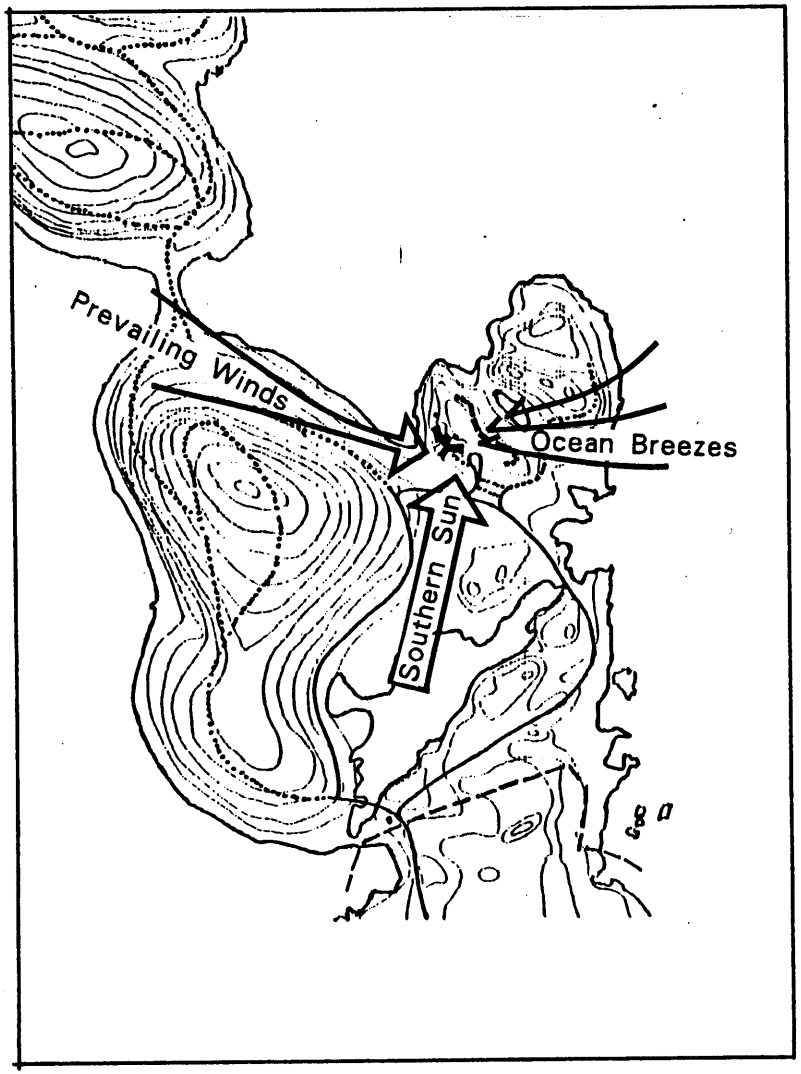
VIEW CORRIDORS



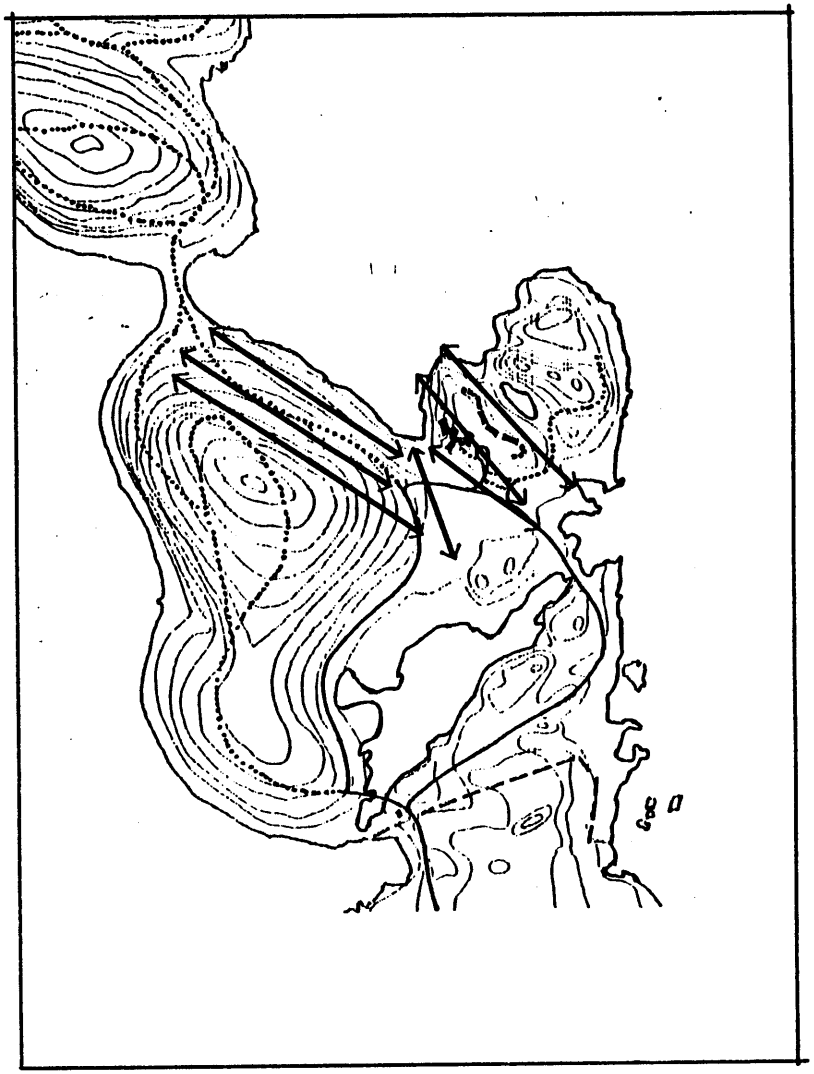
SITE FEATURES

The main building cluster faces south and surrounds an open amphitheater that faces the setting sun and the views of the rest of the site. The buildings are protected from the winds coming off of the water. The buildings align themselves along the general direction of the site, following the contours of the hill, and creating a ring of circulation around the top of the knoll. This single path system encourages guest interaction along the line of movement and acts as a collector from all the site places.

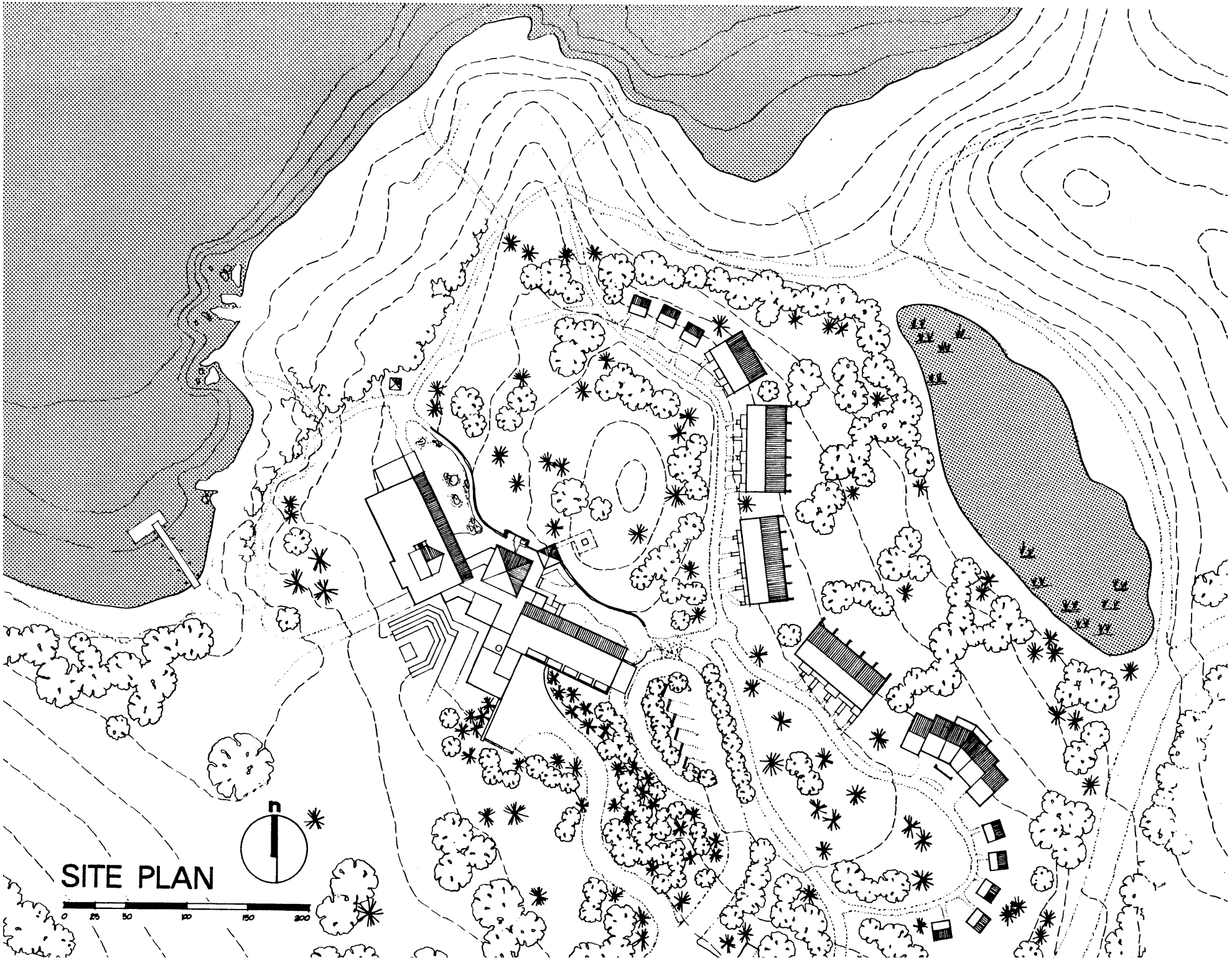
The main features of the site are addressed by the location of the buildings. The cove area is accessed from the main building along a direct path. The housing orients itself towrads the main circulation path on the public access side, and towards a view of a little swampy pond (Ice Pond) on the private side. The existing path system along the Rocky Neck point is maintained and connected to the new site system circulation. The large amount of open space is maintained for guests to use during their stay, unhindered by the presence of other guests, or other buildings other than the main complex and housing.



SUN AND WIND



DIRECTIONALITY


n
SITE PLAN
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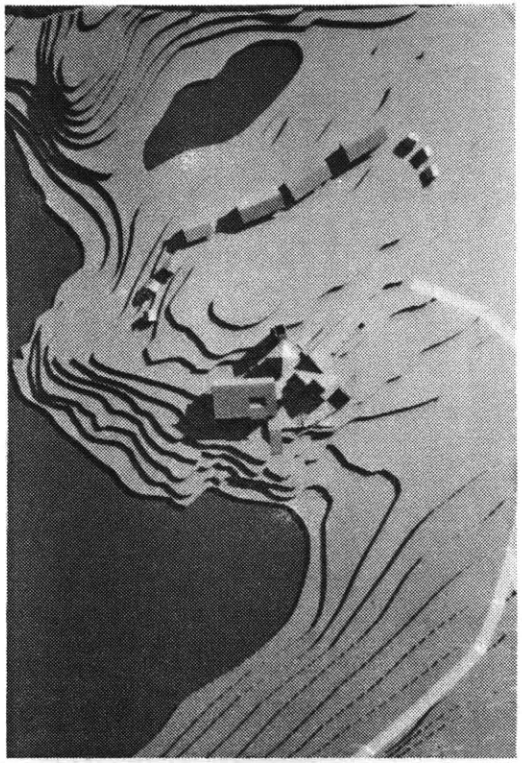
B. HUMANSCALE: THE BUILDINGS

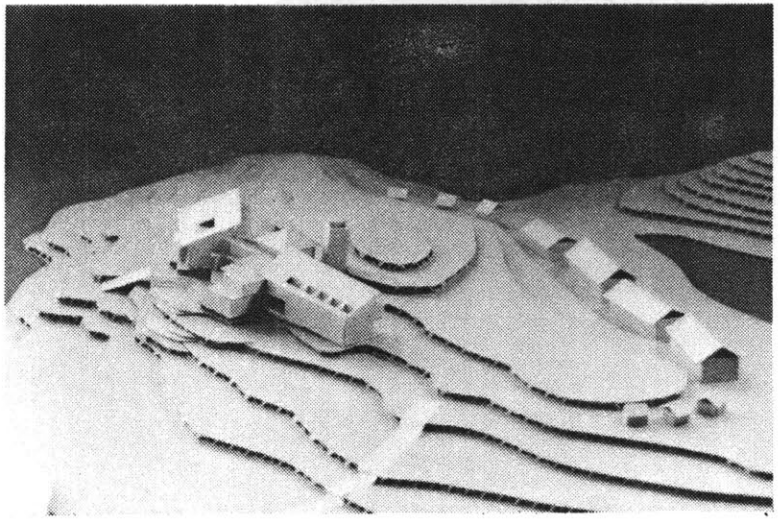
1. The Main Building Complex

The buildings are oriented along the side of the hill, following the direction of the landscape. They create an internal, quiet, contemplative side at the entry by cutting into the hill, retaining the earth with natural stone walls. The more social side faces the external distant views and the south. The entry to the building comes from the internal side in order to prevent confusion with the service access, and to retain the south side for activities related to being at the complex, rather than with the act of coming or going. It also provides a sense of immediate intimacy with the building group, as if entering from the back door in one's home. The building forms help to contain the outdoor spaces and define their edges.

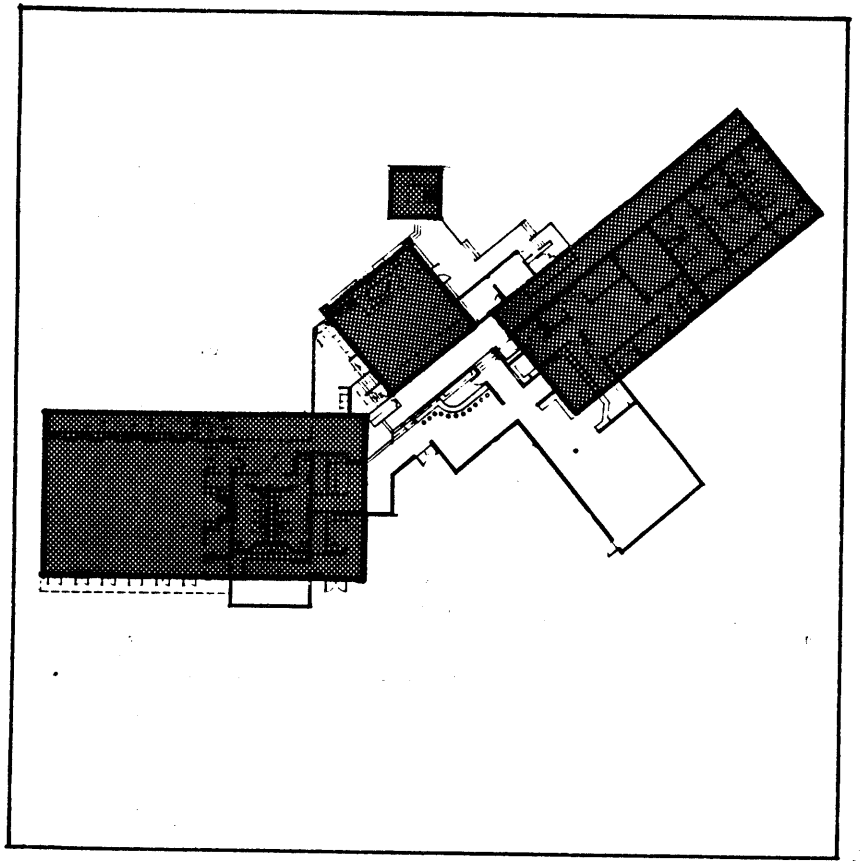
131. Site Model.



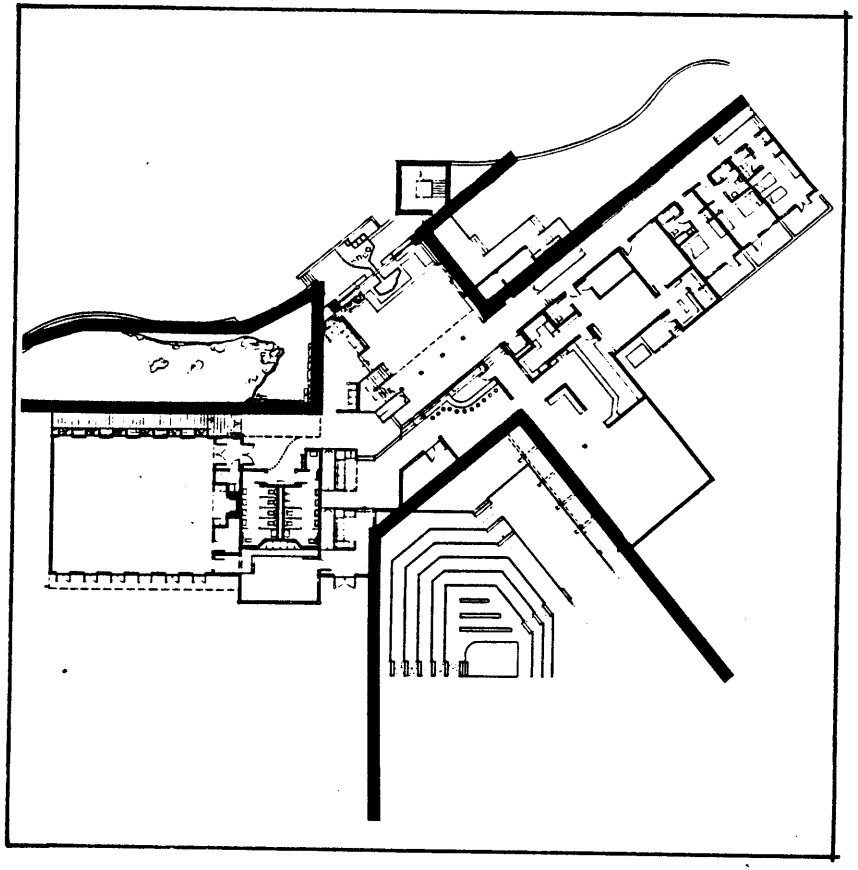
132. Site Model.



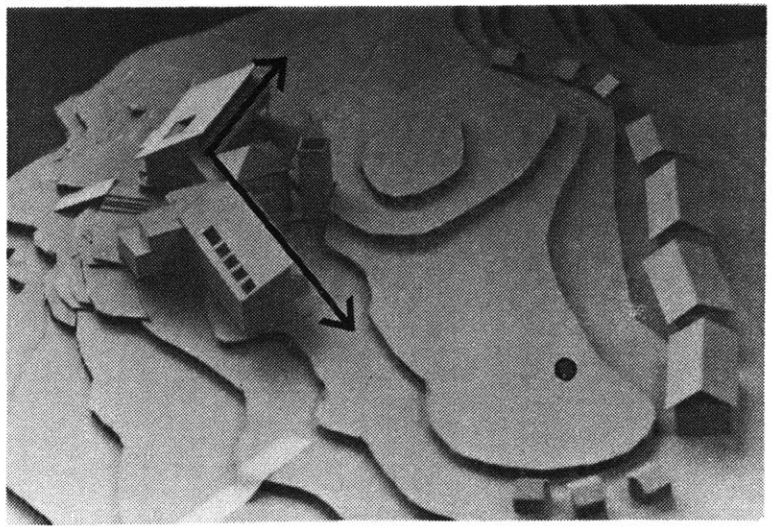
MASSING



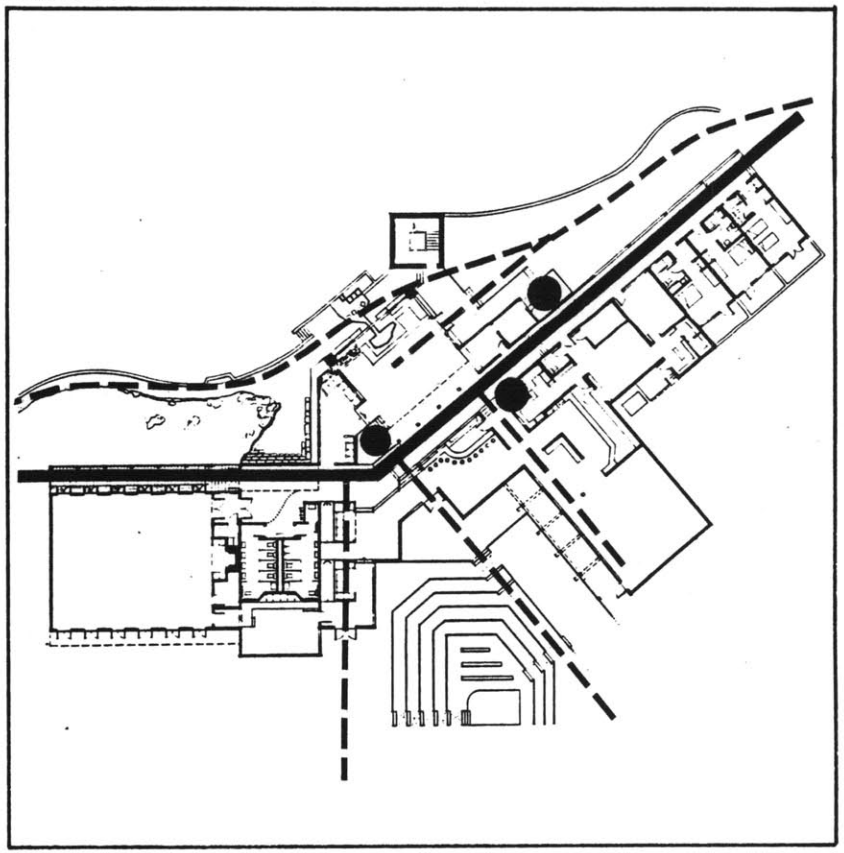
CONTAINMENT



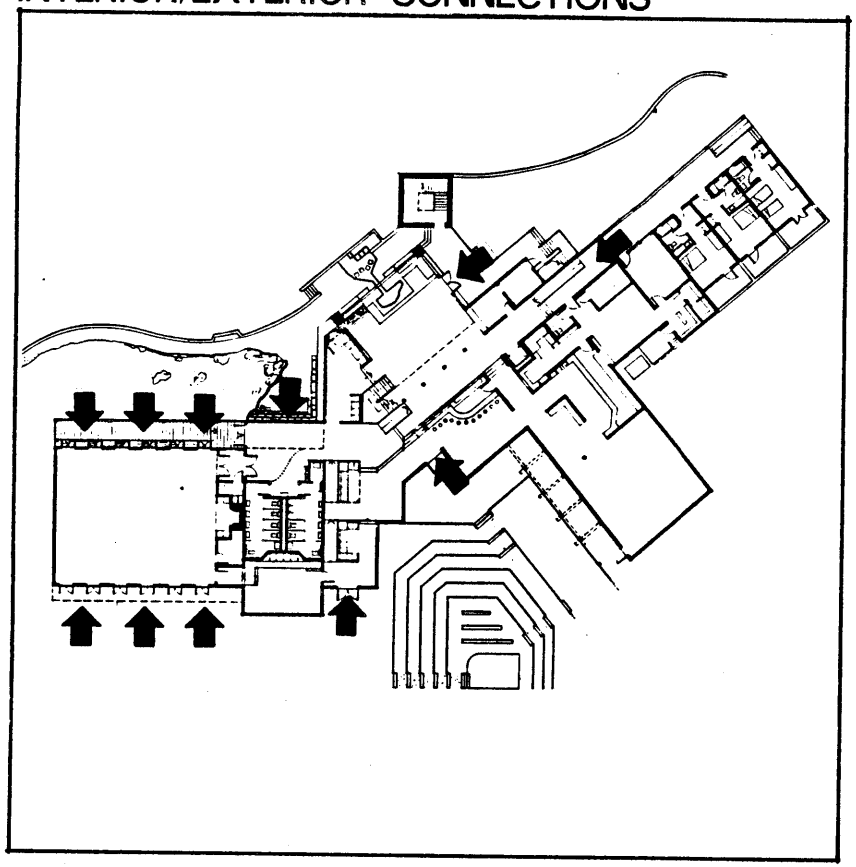
133. Site Model.



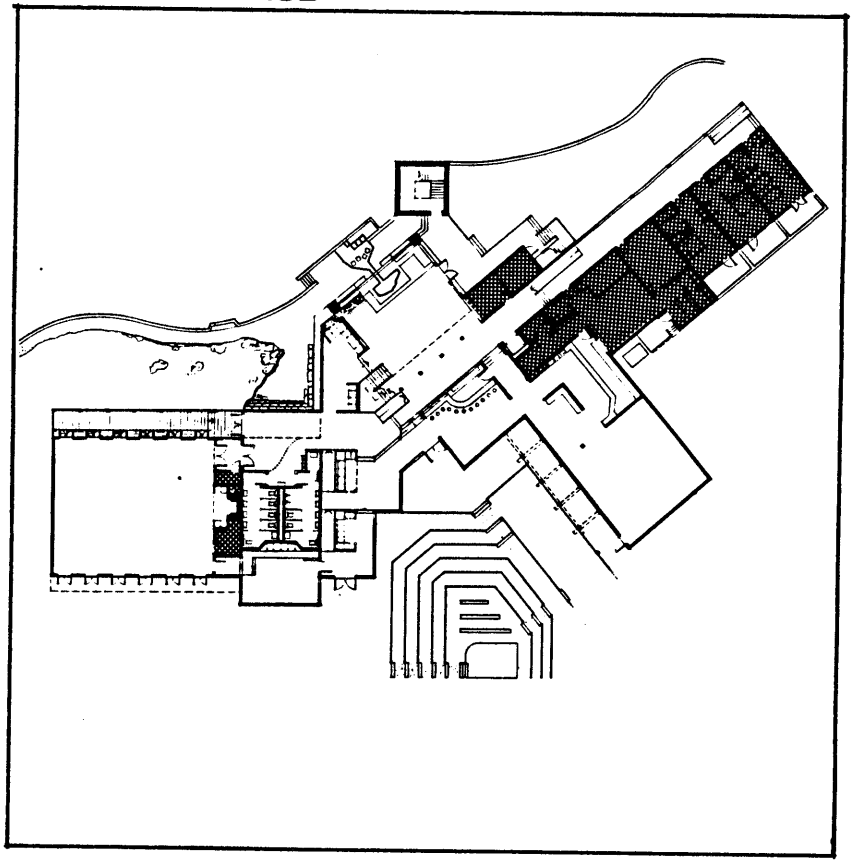
CIRCULATION



INTERIOR/EXTERIOR CONNECTIONS

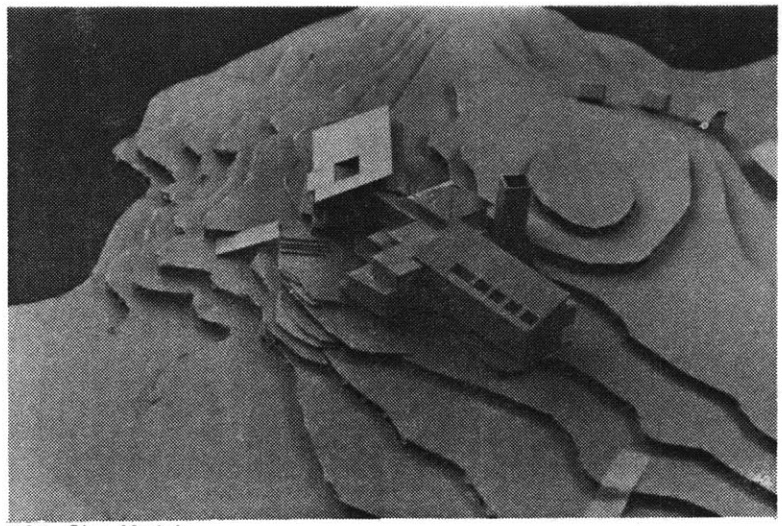


PRIVATE SPACE



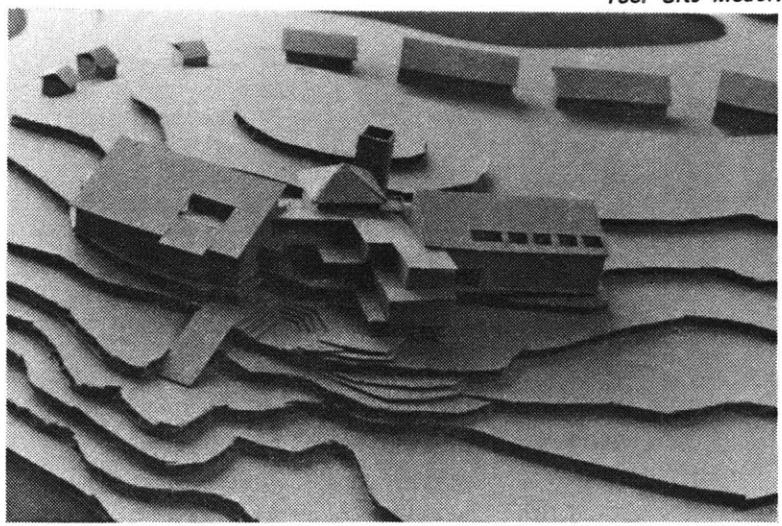
The building masses follow the slope of the hill, so as to minimize their apparant imposition on the landscape. The two long volumes have the same structural and volumetric configuration as if split into two halves from one linear building. The entry lobby is contained by a centralized pavillion form, and further marked by a tower just off the entry door. These forms locate a perceptual center to the building group, to help orient the arriving guests.

Once inside the buildings, circulation occurs along a major spine, with a variety of public activities happening off of this collector route. This route ties directly into the circulation system extending itself out through the site to the housing buildings. Minor circulation routes work off the spine and take the guests down and out into the public landscape to the south. Vertical circulation occurs at a stair placed in the lobby and at the point where the major spine bends. A hydraulic elevator also serves to transport physically challenged guests to the second floor facilities. Ramps provide access to all the internal facilities at different levels on the first floor.

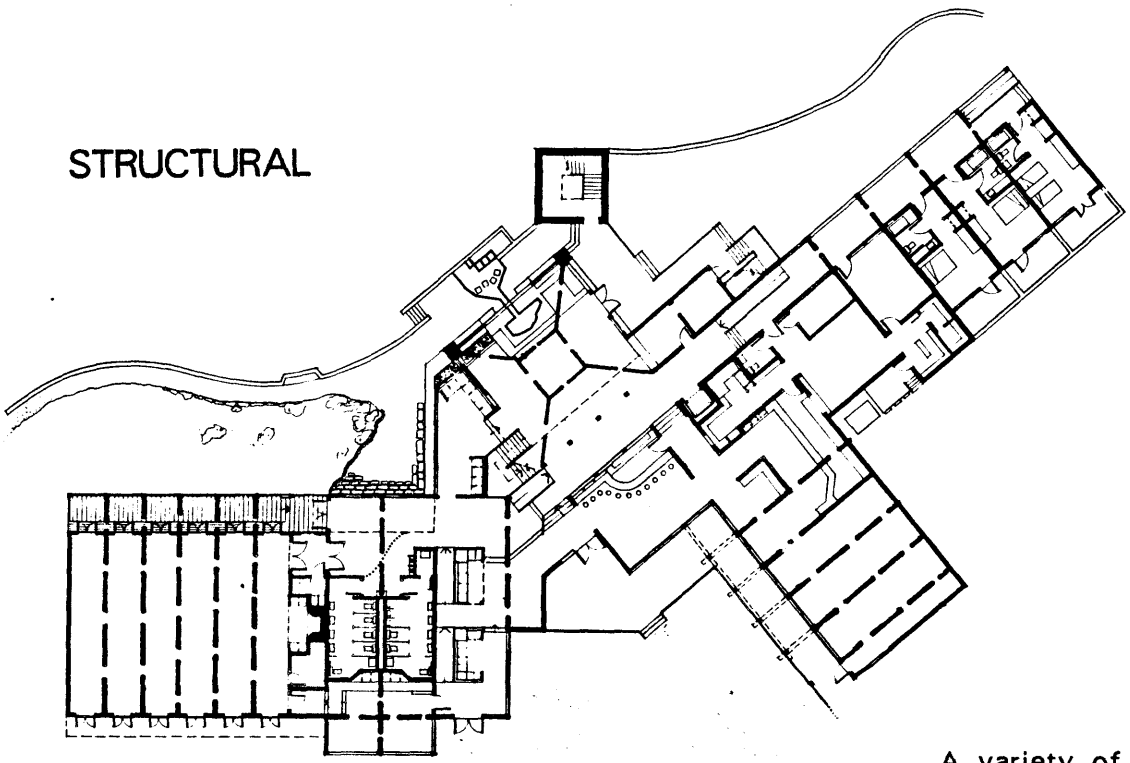


134. Site Model.

135. Site Model.

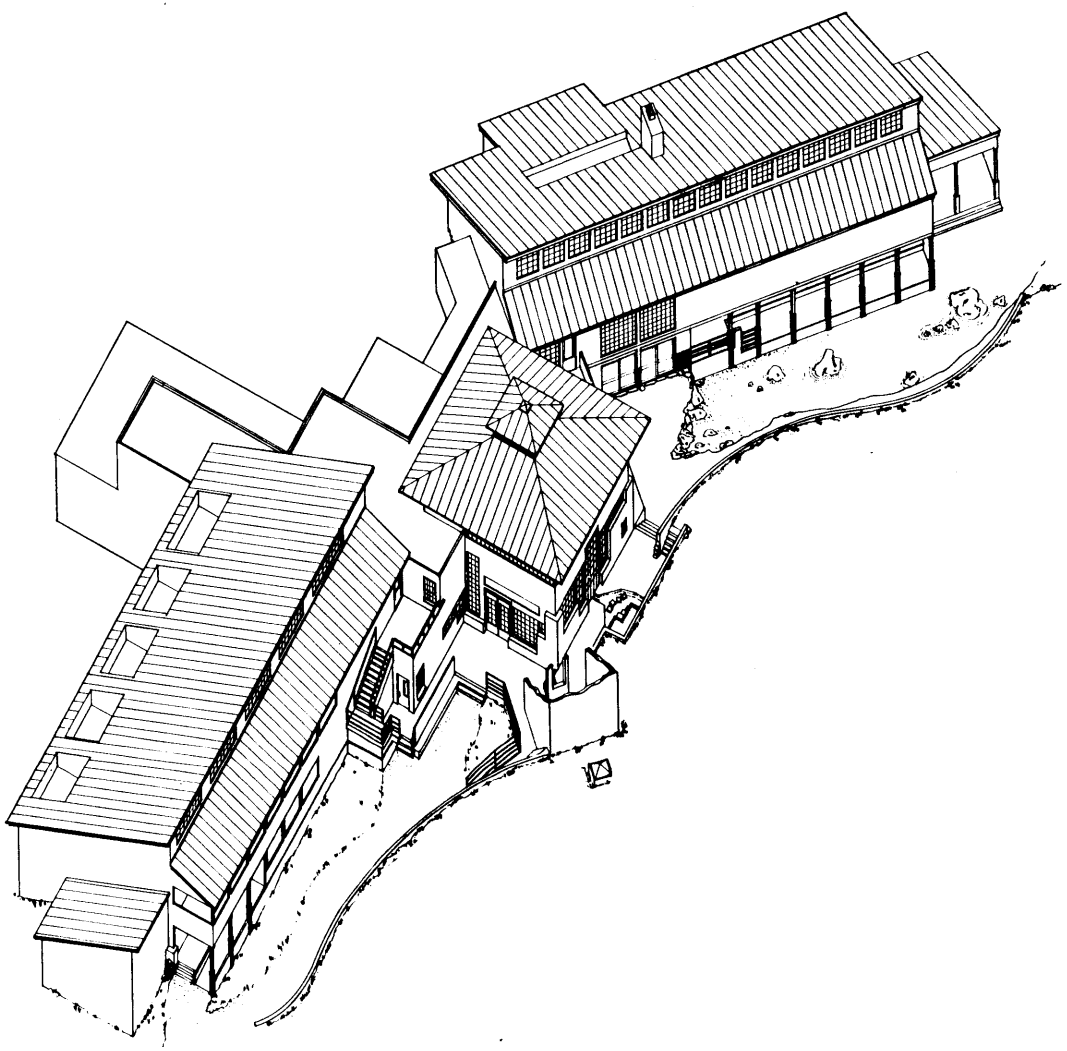


STRUCTURAL



A variety of spaces are provided within the building group to serve a number of projected activities. These spaces have varying qualities of public and privateness as well as differing sizes. The operational spaces for the facility (i.e. kitchen, offices, etc.) are located away from the social heart of the building so as not to interfere with the group's activities.

Wooden trusses on wood columns make up the primary structural system. Heating, Ventilating and Air Conditioning Systems are located under the floors of the major spaces.

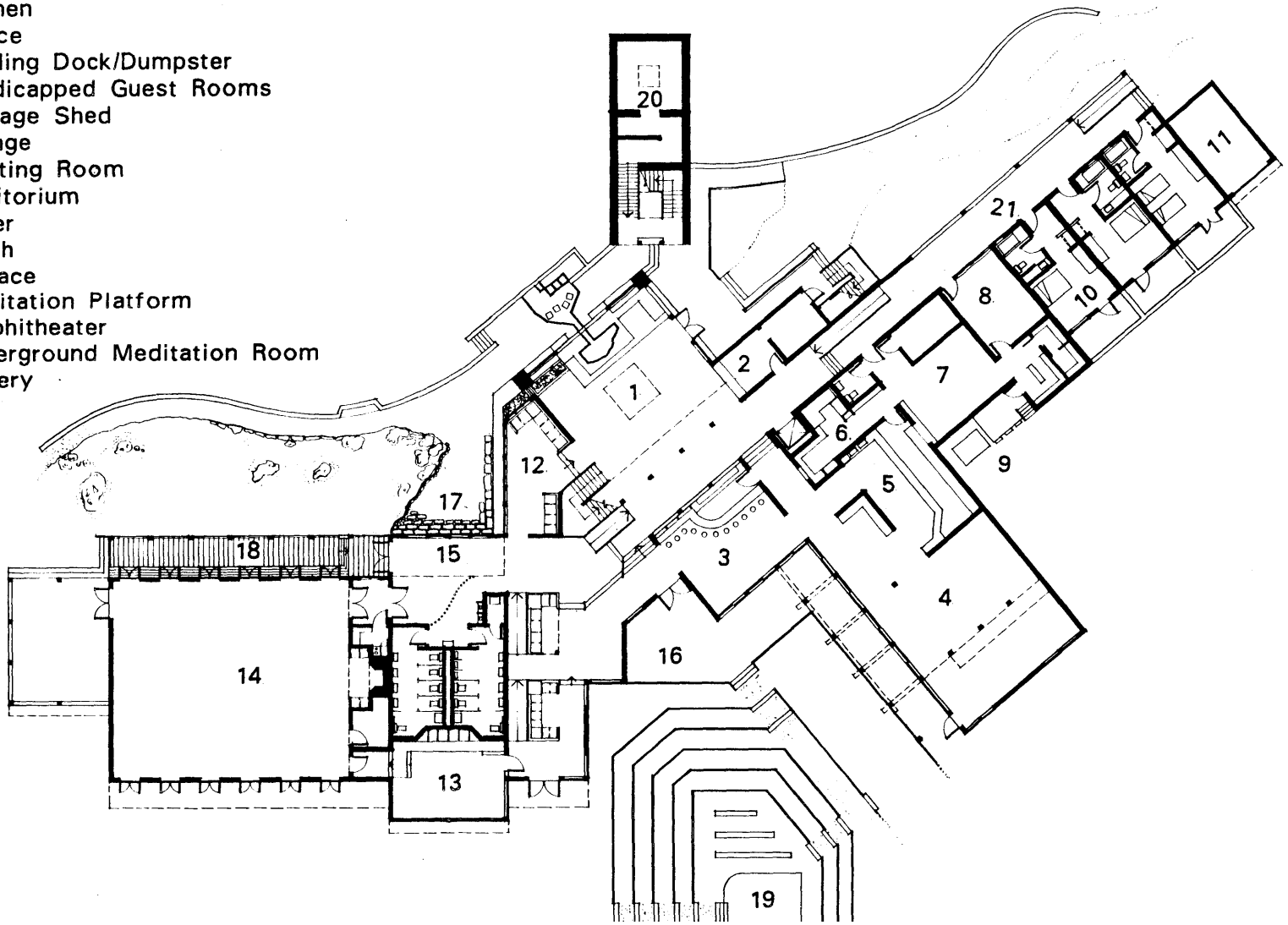


ENTRY AXONOMETRIC

1. Lobby
2. Reception
3. Bar/Cafe
4. Dining
5. Servery
6. Dishwashing
7. Kitchen
8. Office
9. Loading Dock/Dumpster
10. Handicapped Guest Rooms
11. Storage Shed
12. Lounge
13. Meeting Room
14. Auditorium
15. Foyer
16. Porch
17. Terrace
18. Meditation Platform
19. Amphitheater
20. Underground Meditation Room
21. Gallery

FIRST FLOOR PLAN

0 16 32 64 96



1. Meeting Room
2. Balcony
3. Library
4. Deck
5. Projection Room
6. Lounge
7. Steam Room
8. Sauna
9. Massage Room
10. Hot Tub
11. Exercise/Therapy Room
12. Manager's Apartment
13. Guest Room

SECOND FLOOR PLAN

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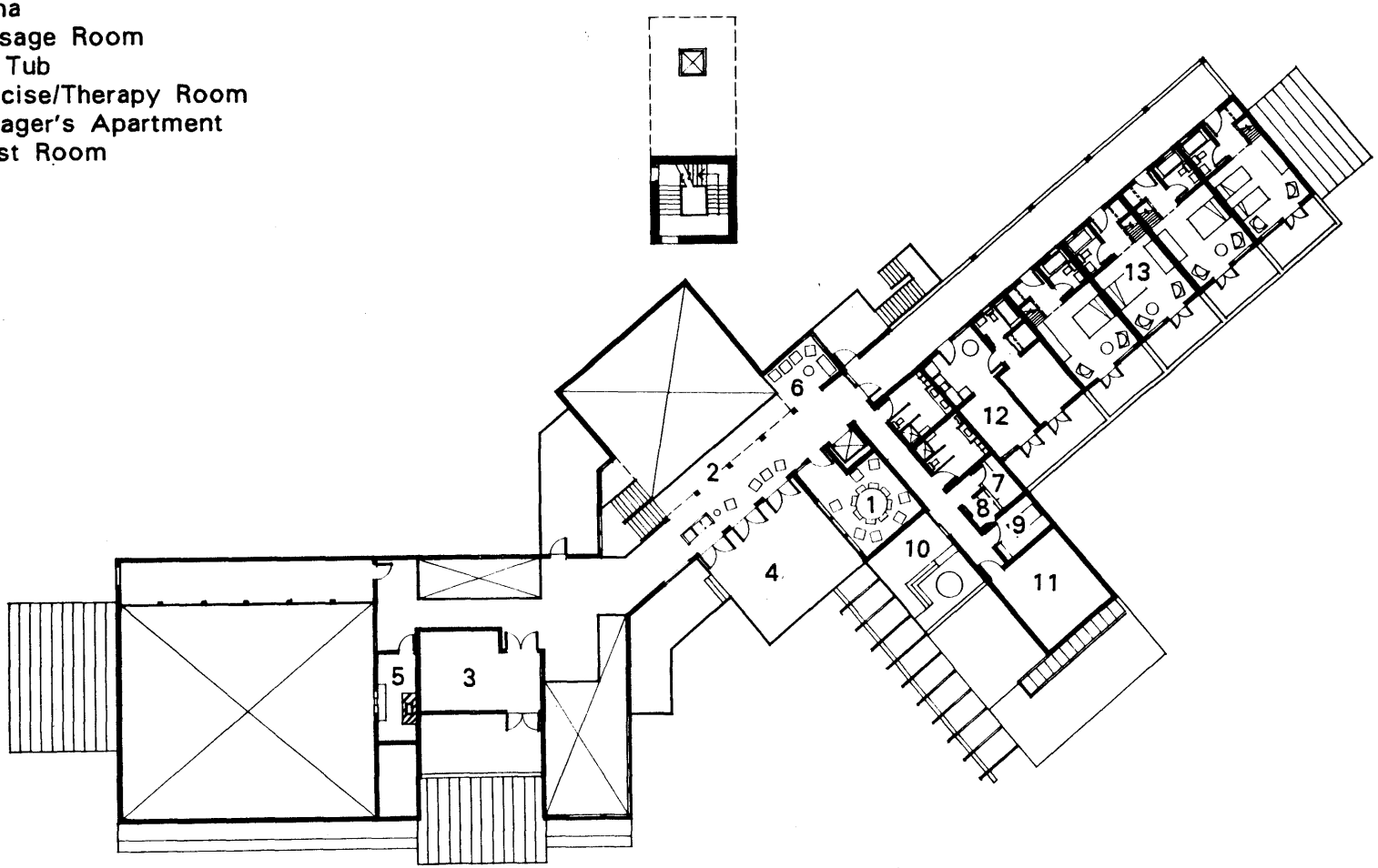
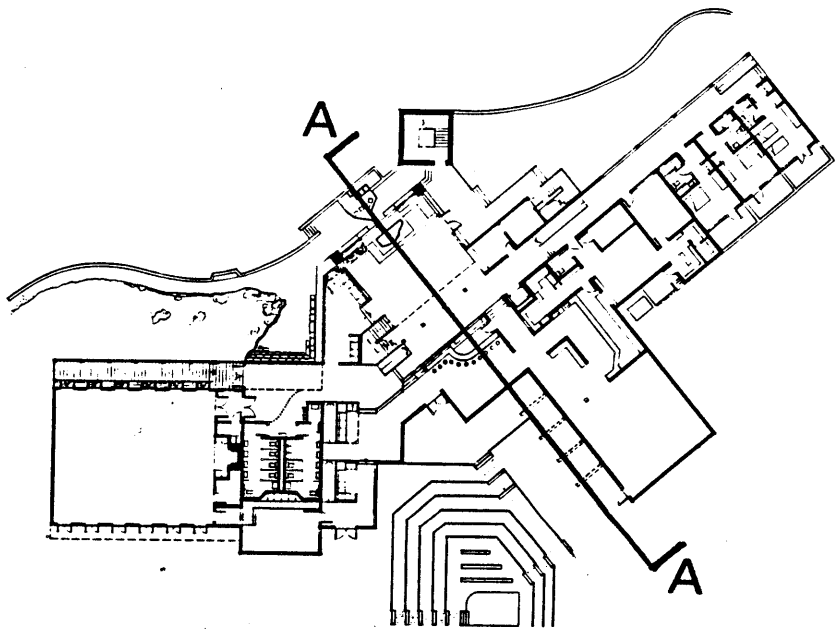
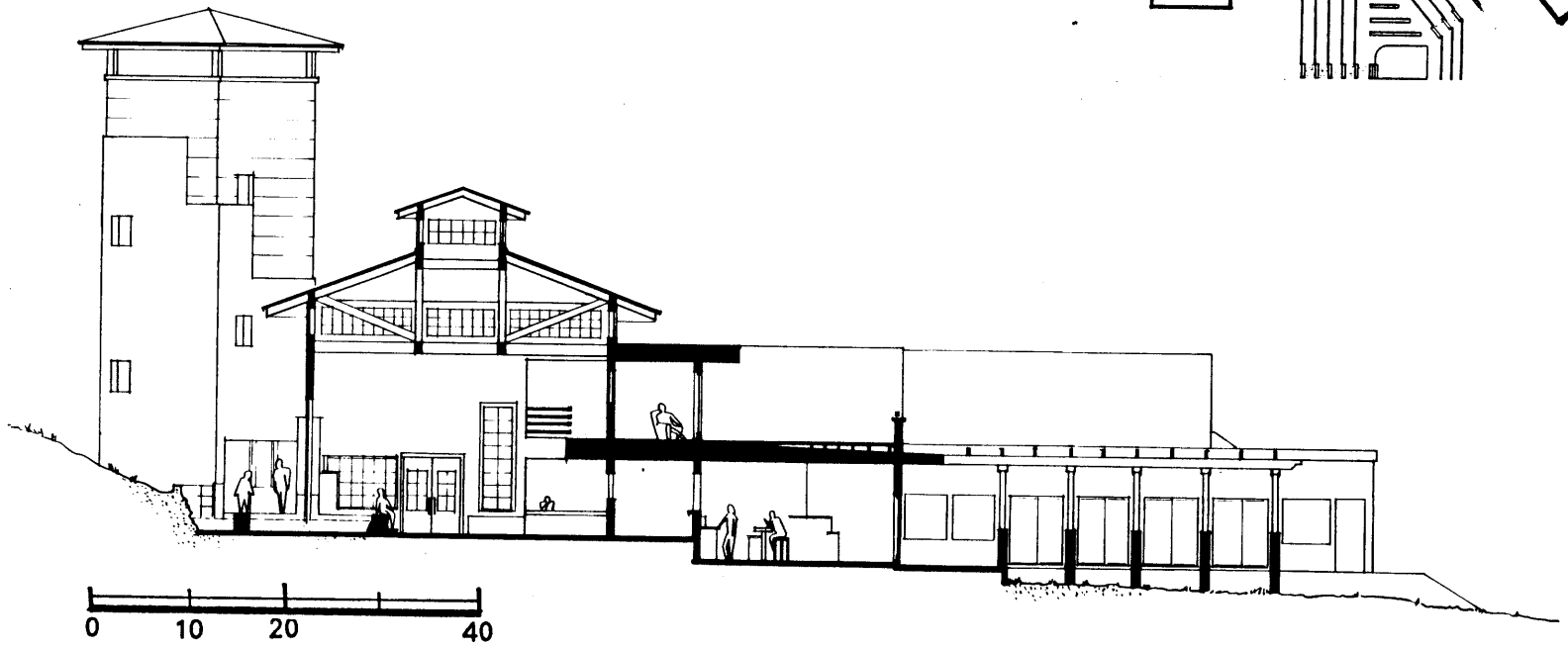
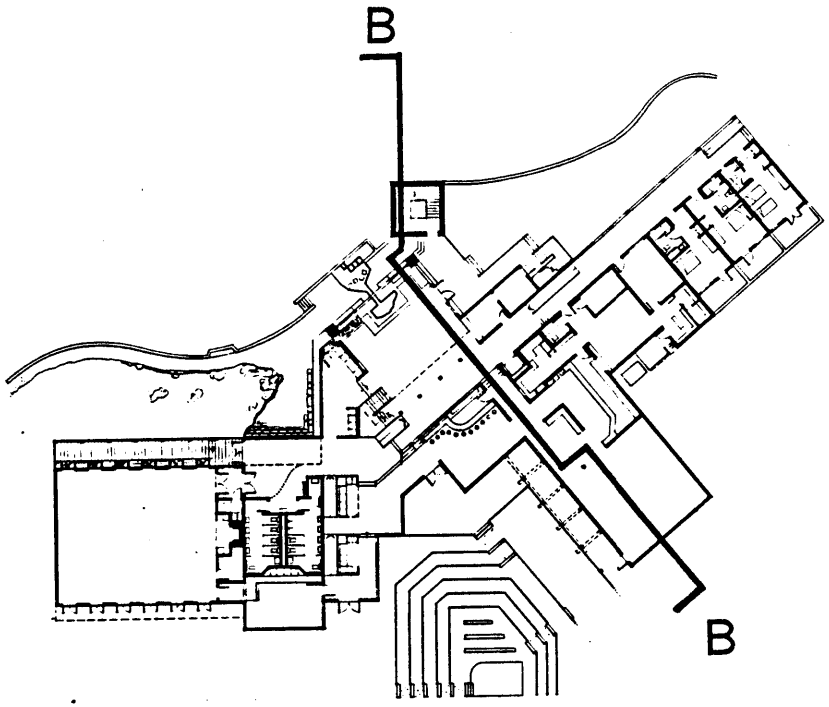


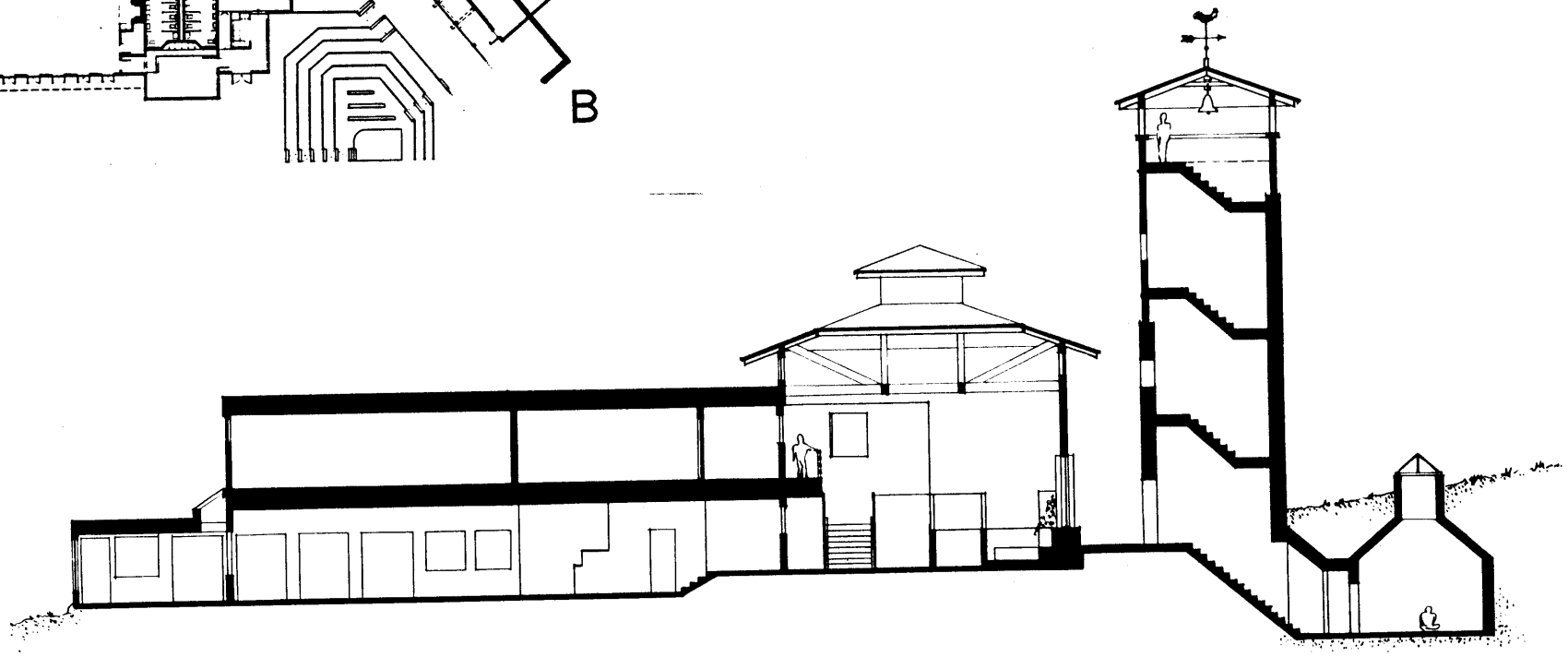
SECTION A·A



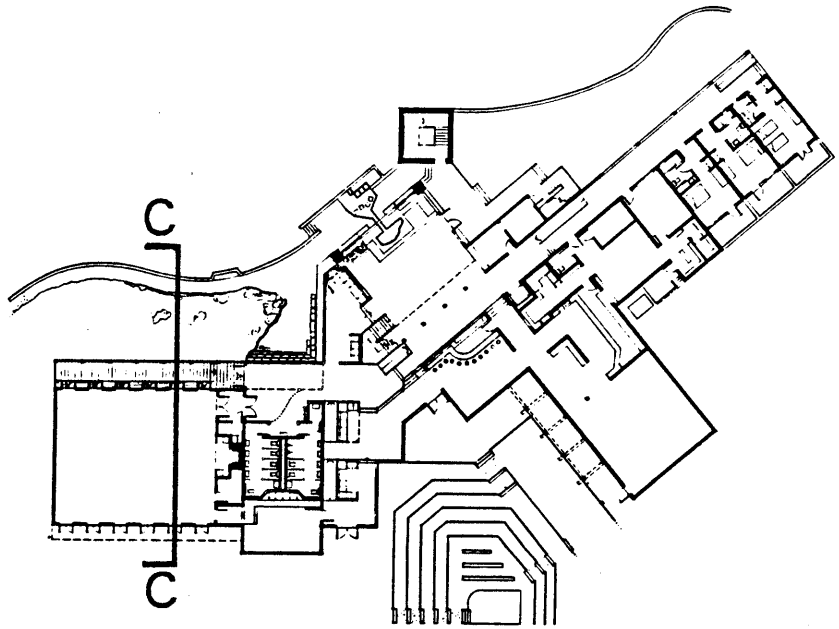


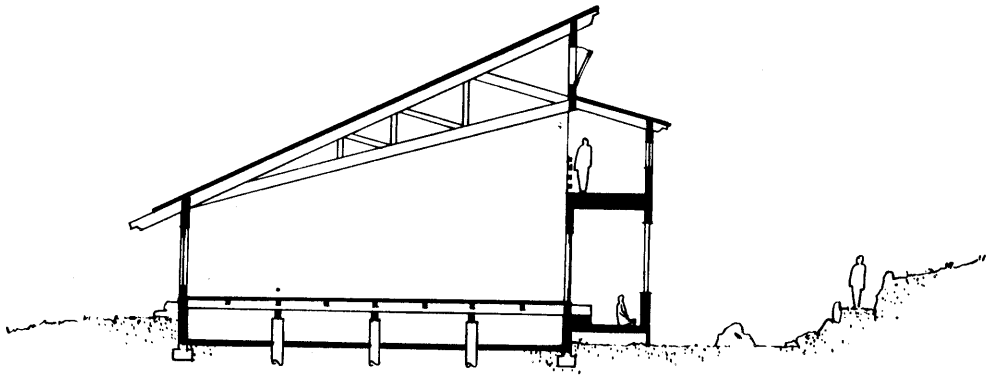
SECTION B·B

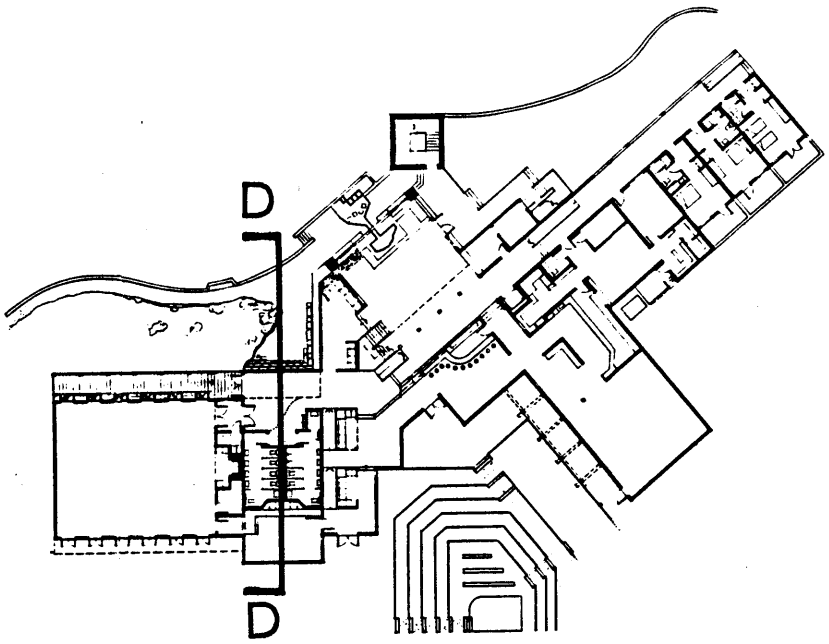




SECTION C·C







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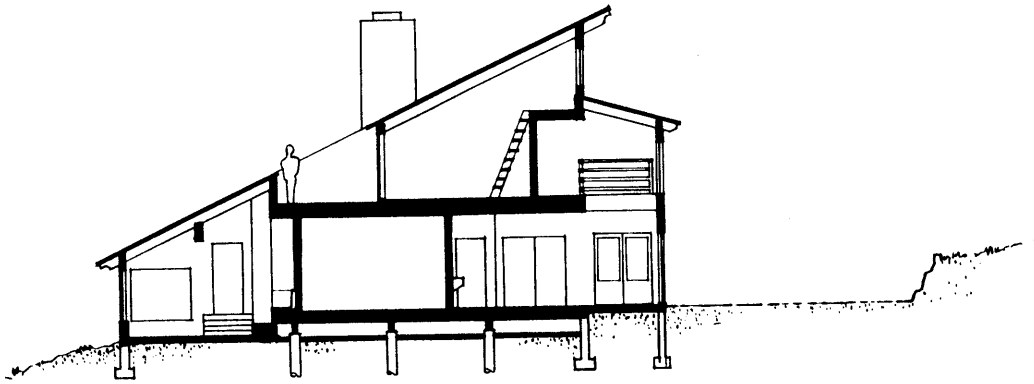
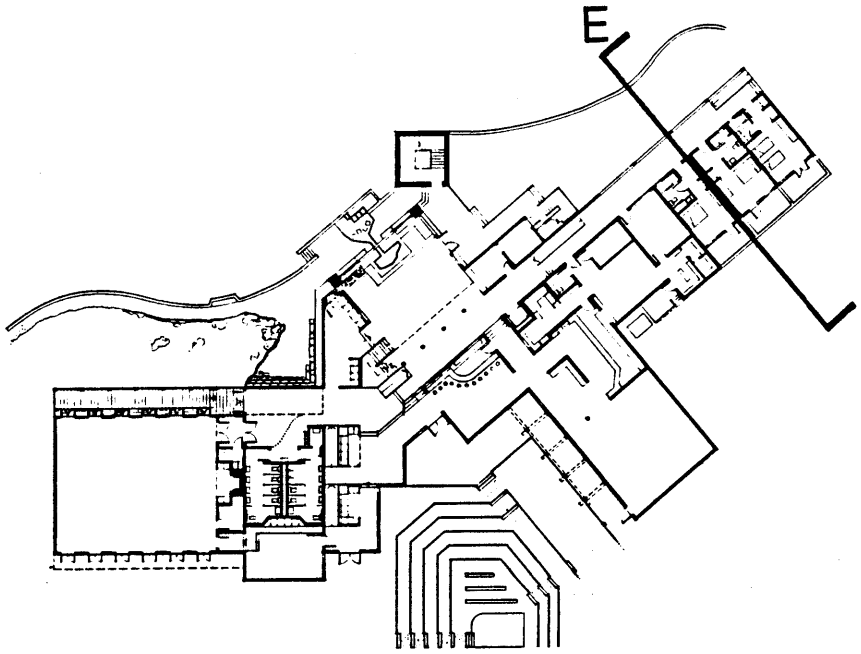
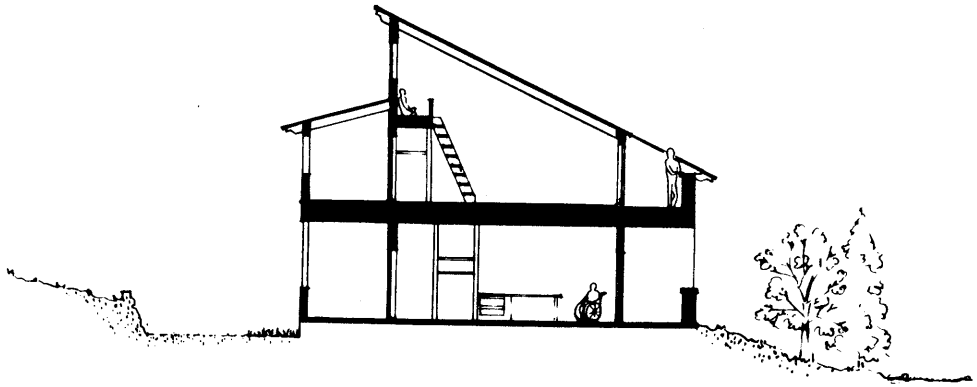
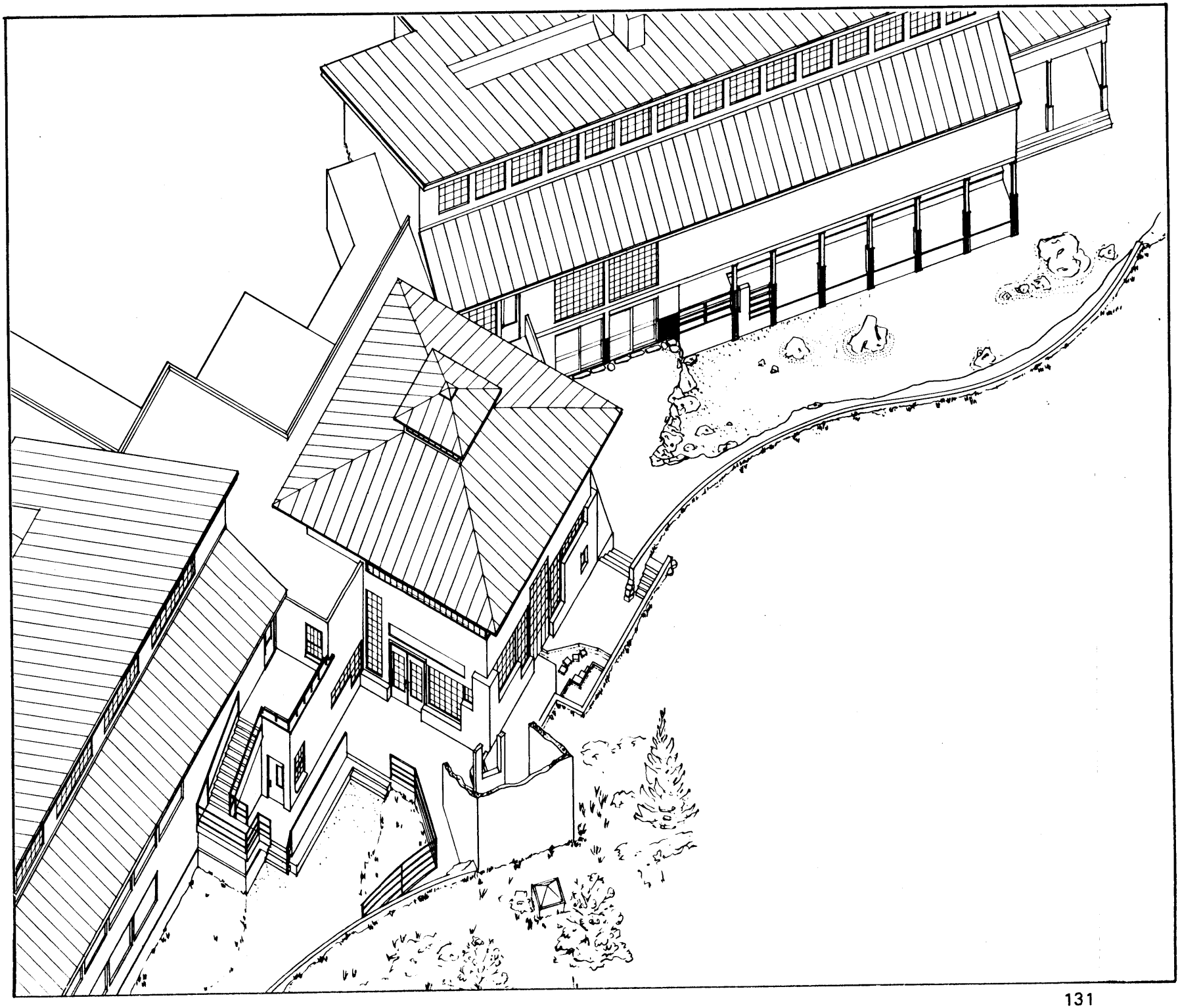
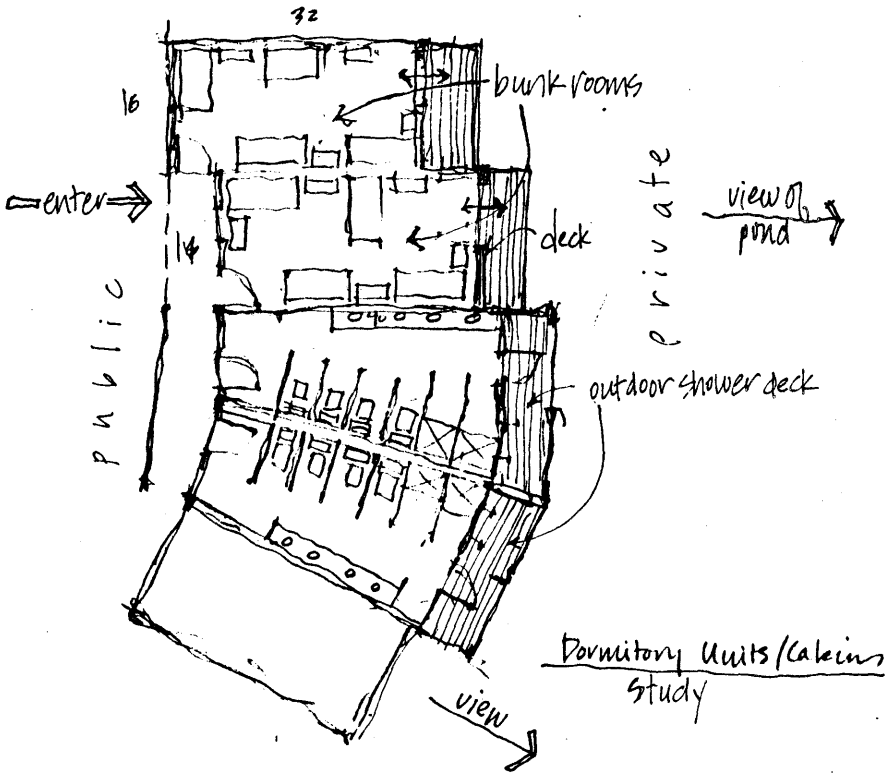


SECTION E·E





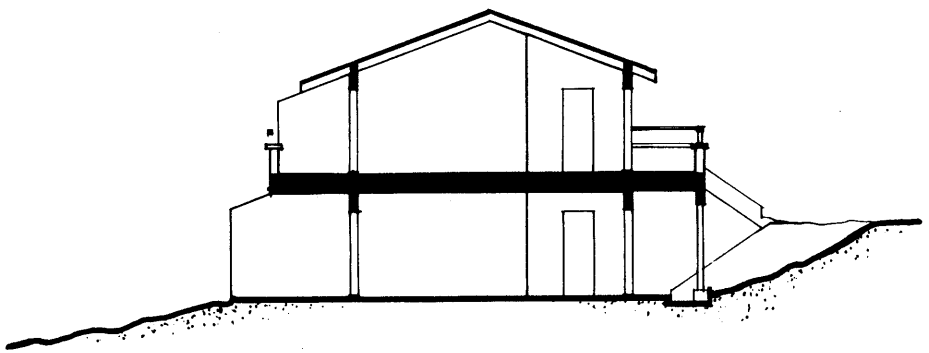




2. Housing Units

The main building rooms are intended to serve the handicapped guests and a small number of guests for winter events. In addition to the seven units in the main building, there are a variety of accomodation options on the site. These include hotel-style double and single rooms with private baths, single cabins and dormitory rooms with common bath facilities. Each of these rooms have private entries with direct access to the outside, and private balconies or terraces. It is important to maintain this privacy for the units to allow a guest to retreat from the group activities.

The private edges of the housing units are oriented towards a small pond down a hill. The public entry edges face the common circulation path through the site.



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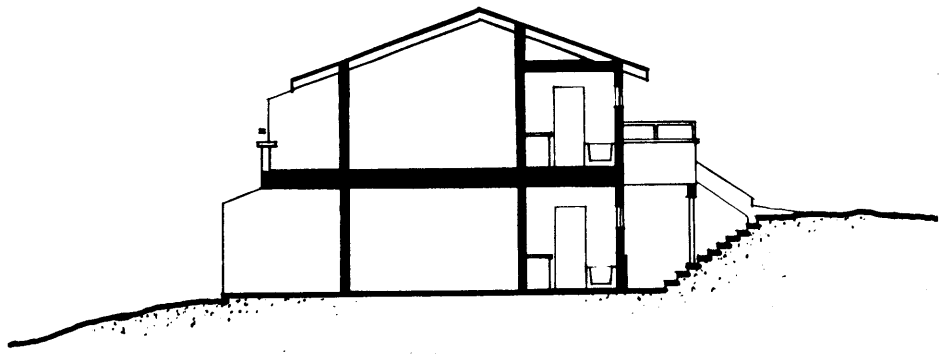

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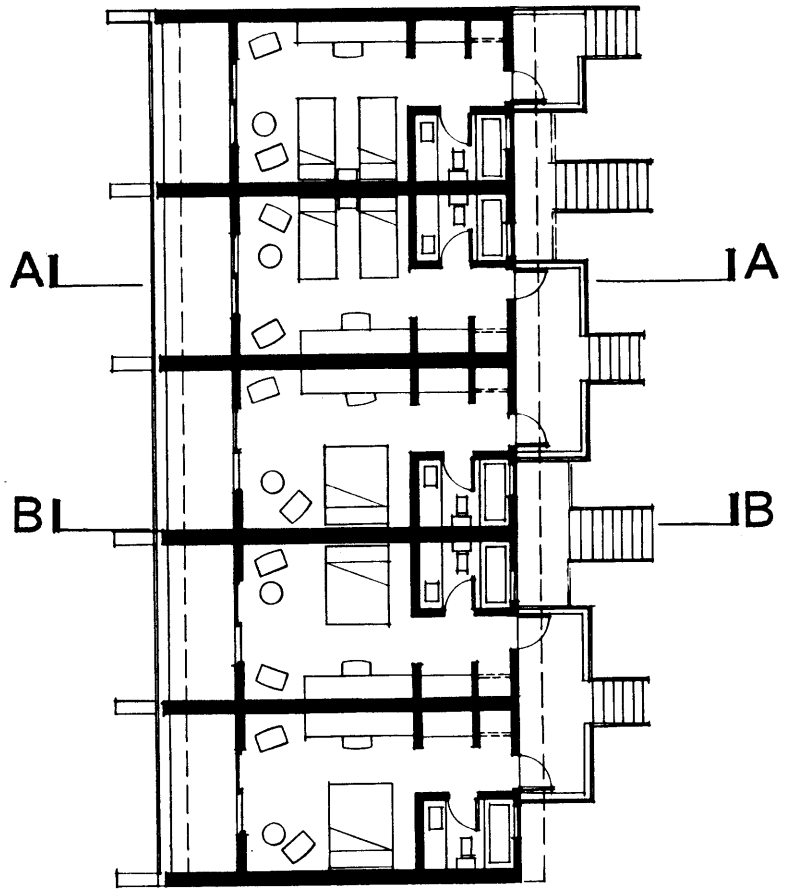
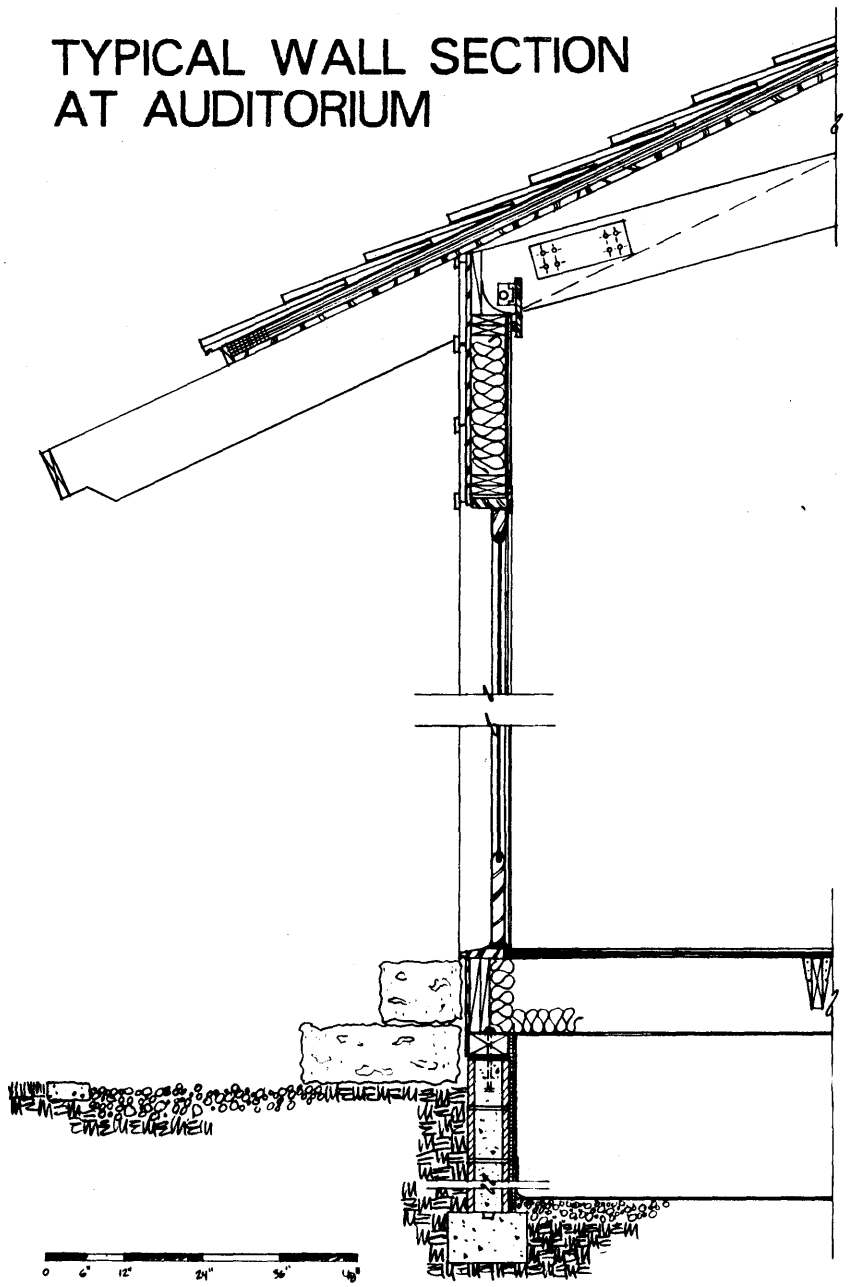


TYPICAL HOUSING UNITS PLAN



C. THE MICROSCALE: TRANSITION ZONES

At the microscale, material selection, colors, textures and construction details affect the way that the buildings fit the site and their uses. These conditions occur mostly at the transition zones between the interior and exterior, and define areas of overlap and integration. These overlap zones allow for a blurring of the edges between space, volume and material transition. When these integrations are designed into a project, a more sensitive integration of building and site occurs.

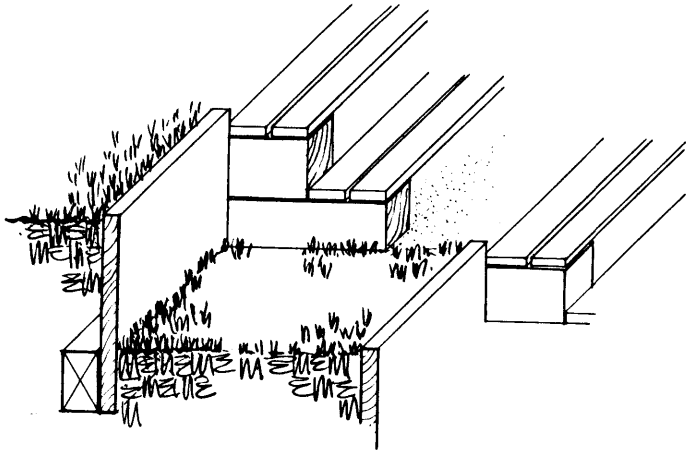
1. Materials/Colors

Near where the building meets the ground, a transition material of a similar material to the ground is employed. Stone bases provide a solid base for the wooden structure above. The natural quality of the wood is emphasized with wood structural elements exposed, and a natural stain finish on the wood siding. The building is intended, through the use of similar colors and materials, to blend more readily into the World's End landscape.

2. Details

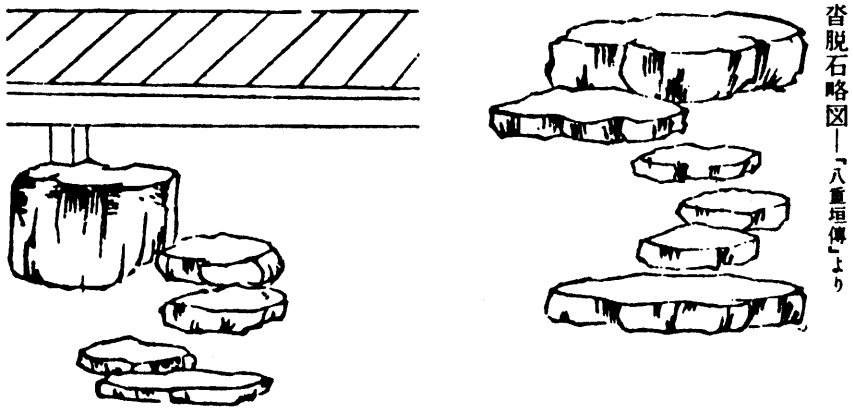
To strengthen the connection of the inside to the outside, removable window panels line the gallery of the kitchen/guestroom building for summer use. The gallery then becomes an arcaded walkway, serving to transport guests in the rain. A drip edge from the roof is designed against the exterior auditorium wall, which also allows people to walk out directly into the landscape.

At the terraces near the lobby, a stone paving material extends from the outside into the foyer area under glass sliding doors, to minimize the appearance of the wall between inside and outside. This terrace is retained by a natural stone wall which bleeds into the forms of the Zen meditation dry garden. Metal roofing is employed which will color and age to a weathered patina, also blending with the landscape colors.



136. Section of Amphitheater Construction.

137. Japanese Garden Stepping Stones; Transition at building edge.



沓脱石略図―「八重垣傳」より

The shadows of the bamboo leaves
are sweeping the steps,
but the dust is not stirred at all.
The reflection of the moon has
penetrated the bottom of the stream,
but no traces are left on the waves.
- Anon

REFLECTIONS

1. CONCLUSION

Certainly not a finishing point, this thesis is merely a stepping stone from which to depart on future study and reflection.

Architecture need not deny it's role as a creative artistic medium, but it must not lose sight of it's role as an arbiter of cultural values, and it's functional place in sheltering people and facilitating their activities. The context of the natural world is but one element that influences the personal design expression of architects. It should not be seen as a limiting contextual constraint, but rather embraced as an opportunity to enrich the built world with multiple layers of universal meaning.

2. INTENTIONS FOR FUTURE STUDY

In presenting the argument in this thesis, I realize that I have just scratched the surface of several issues. Certainly, this all-encompassing view of people's perception of their relationship to their environment needs to be analyzed on more specific levels, as many diverse disciplines come into play to affect this discussion.

Firstly, I recognize that this analysis is presented from an American's perspective, and many of these issues are very culturally bound. I would like to explore other cultural attitudes and try to discover any differences or similarities that these perspectives may offer to my development of a set of criteria for a naturally integrated architecture. I would like to be able to extract those aspects of attitudes that are culturally specific to our American culture. I plan to look more closely at this development in the Japanese context, recognizing their spiritual attachment to natural forces through Shinto beliefs, and their careful attention to and their requirement for gardens even in the innermost part of the cities.

Secondly, I would like to be able to bridge the perceptual gap that seems to have formed between architects and landscape designers. The attitude that has developed is one which seems to view these two disciplines as completely separate, resulting in an awkward integration of the two design spheres. I would like to come up with a series of examples for designers to look at that achieve this successful integration, along with an analysis of the techniques used, in a continuation and elaboration of the discussion of an integrated order in this thesis.

Thirdly, I feel that many of the difficulties facing today's architects stem from a recent history of ignoring this vital link to the natural environment, and instead drawing design inspiration from formalistic, rational and historically referential sources. From this perspective, I would like to formulate a criticism of "post-modernism", cumulating in publication in a journal.

Fourthly, through the process of looking at and practicing architecture, I see the need to instill a greater meaning into the built world, one which recognizes and responds to our cultural place in the existing built and natural environment. I intend to make many beautiful and meaningful buildings in my upcoming career as an architect.

3. REFLECTIONS

I went through my education feeling that a thesis should address and resolve many if not all of the issues that I have struggled with throughout the course of my studies. Not realizing how numerous or complex these issues would become, it appeared that I had proposed an impossible task for a one semester research project. Narrowing these goals to a more realistic scope, my thesis topic and expectations have gradually changed over the last year. This evolutionary process has been equally as rewarding as the actual process of producing this thesis document.

My design explorations for a retreat center prompted a deeper look at the reason behind why I chose this program, as well as the design issues that have continuously interested me throughout the design process. Although I have touched upon several broad issues in this thesis, I recognize that architects are ultimately involved with designing the built world. Therefore, I have felt the need to bridge the gap between generative formmaking principles and the actual design process and

resultant physical form. However, I have continuously encountered difficulty conceiving of the two realms simultaneously, and recognize the multitude of problems revolving around translating intention into meaning in design.

Pulling together philosophical and spiritual issues in this thesis, I began to see a way in which I, as an architect, could overlay a greater level of personal meaning in my designs, that dealing with the integration of the natural environment into the built world. I can foresee this becoming a dominant theme in my future work, as it has been emerging over the past few years.

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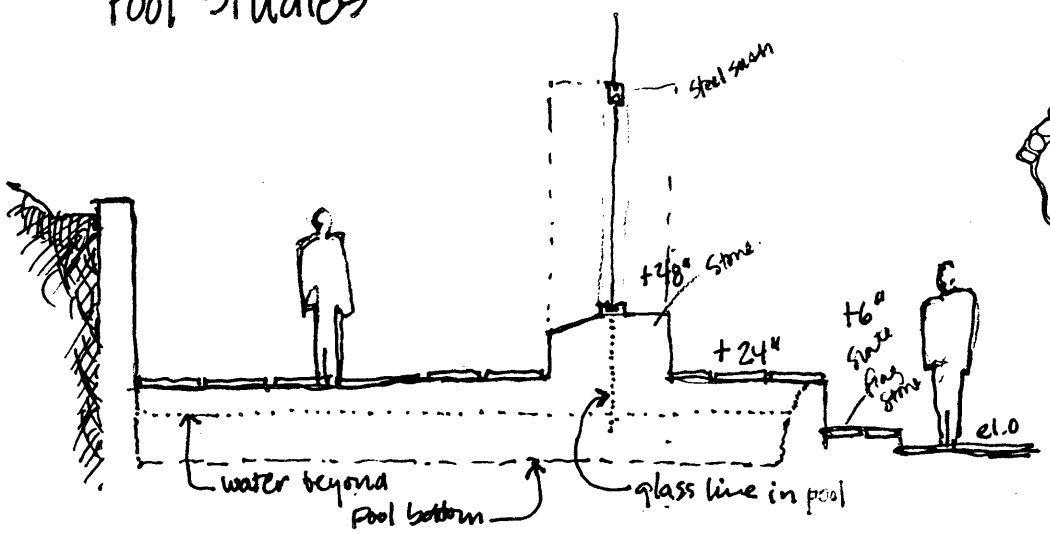
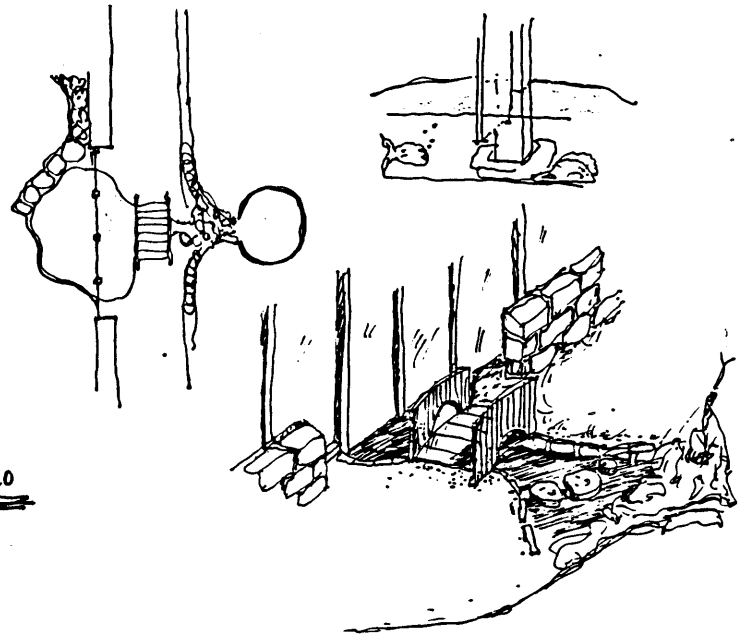
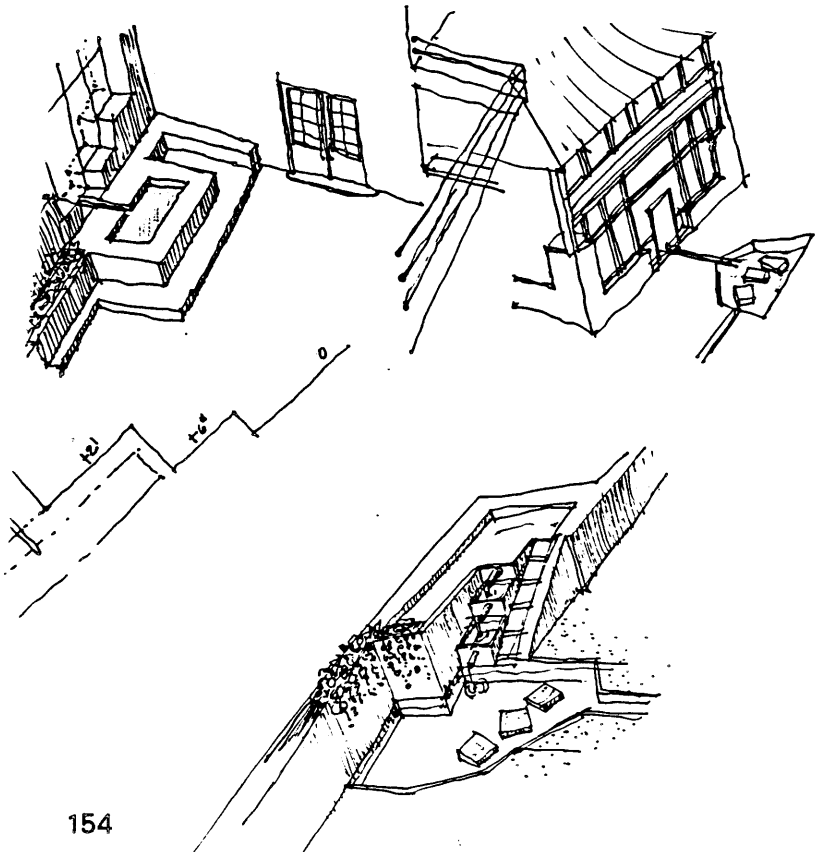
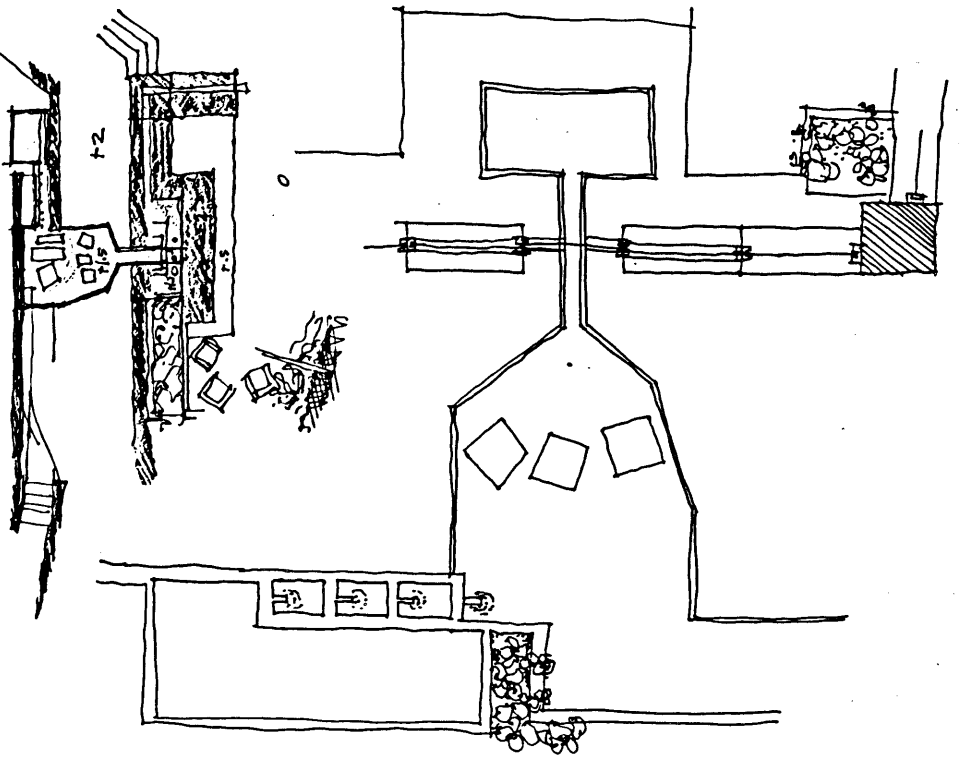
APPENDIX

Pool Studies









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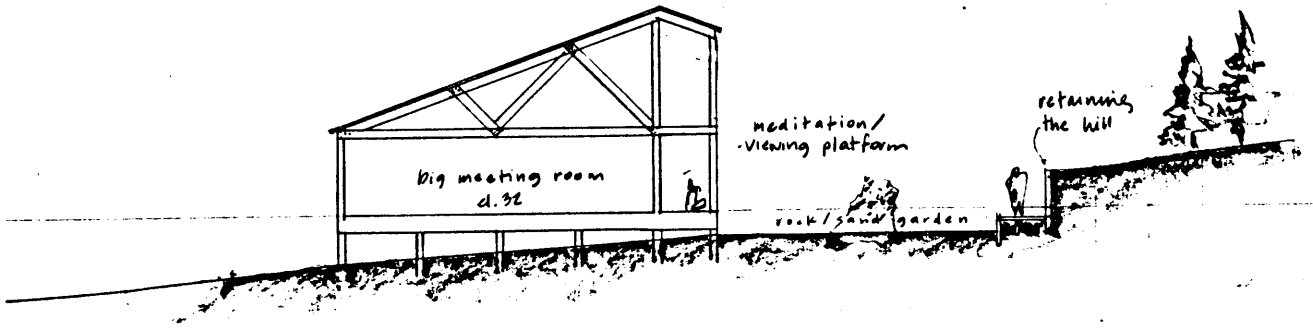

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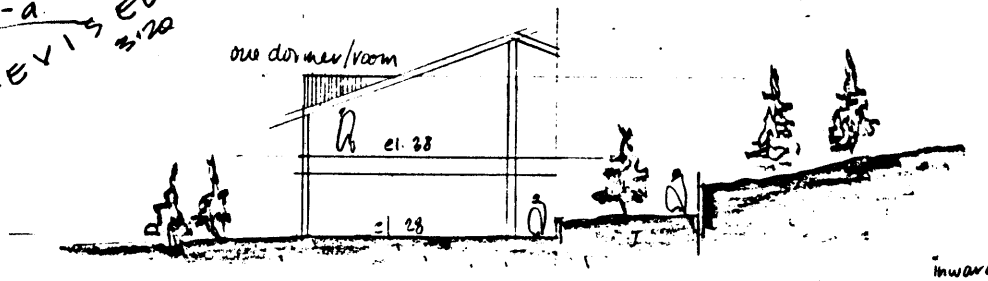

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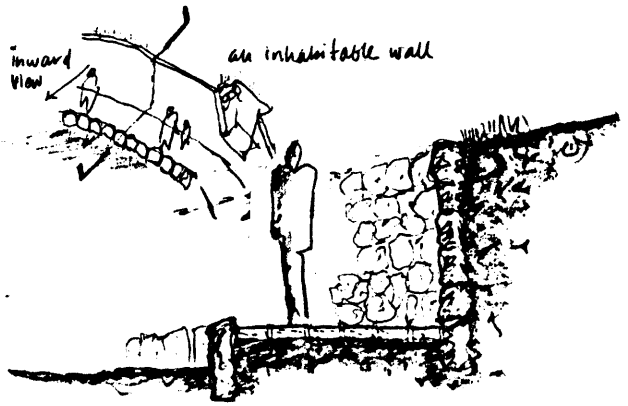
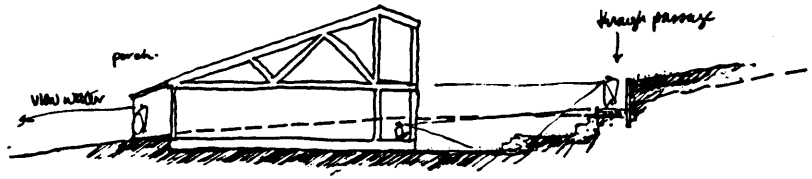
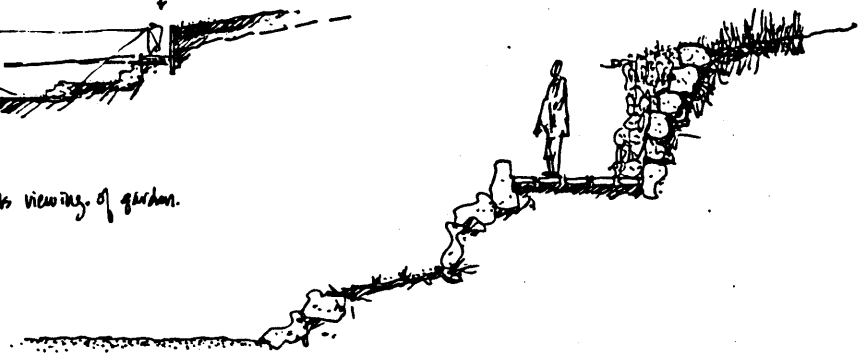


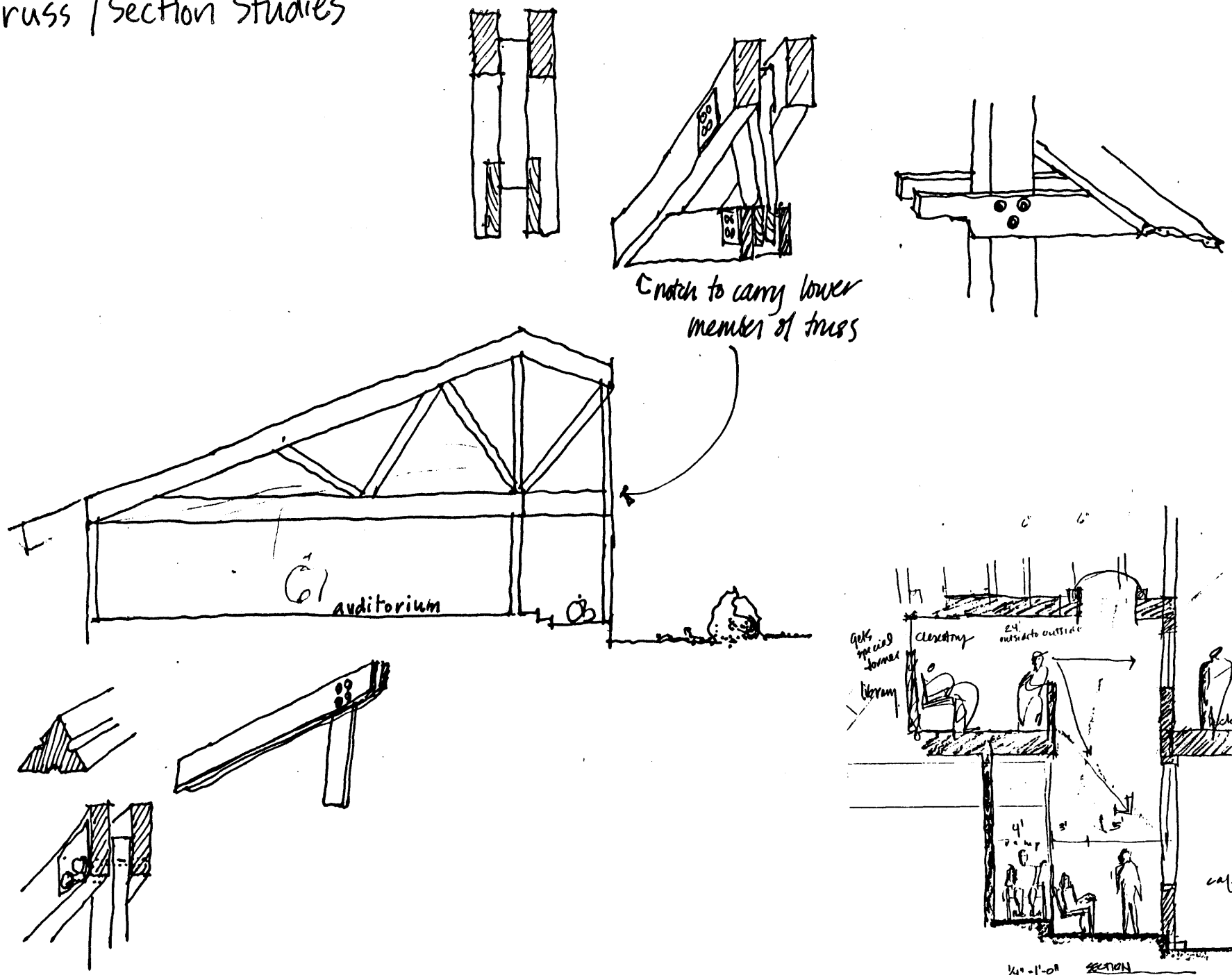
Section through wall/wall



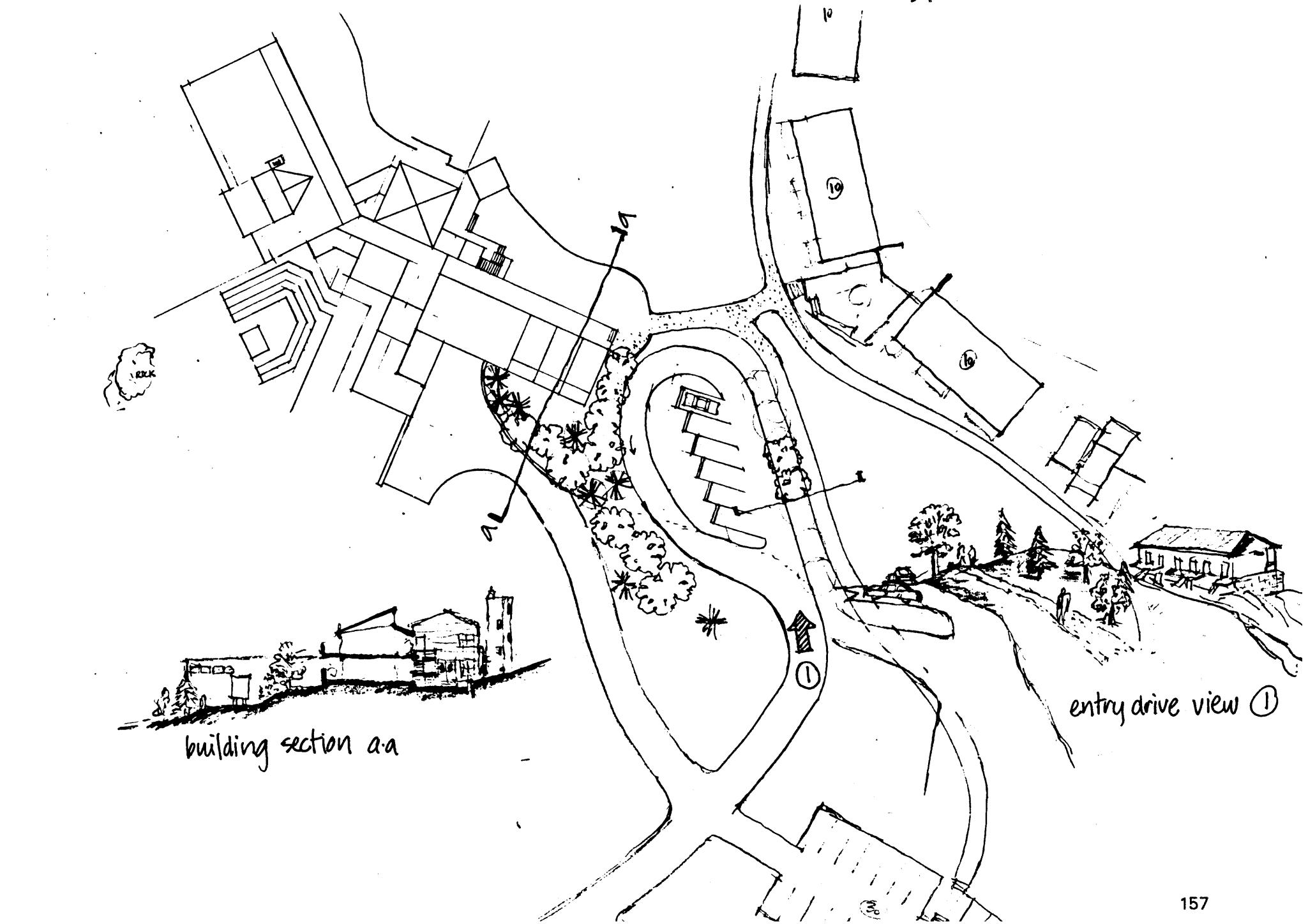
2 levels viewing of garden.



Truss / Section Studies



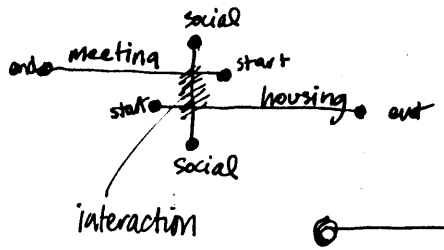
site studies

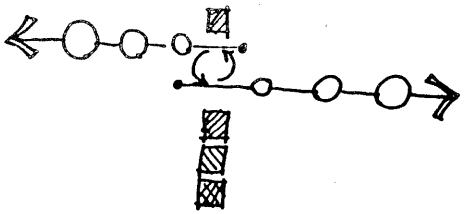


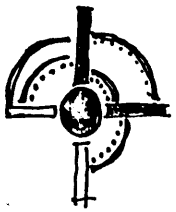
building section a-a

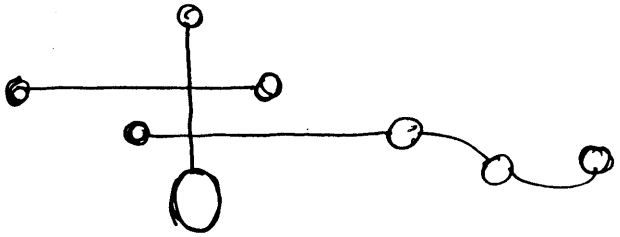
entry drive view (1)

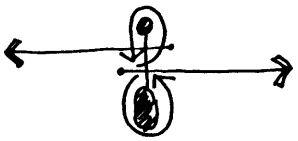
Concept Studies

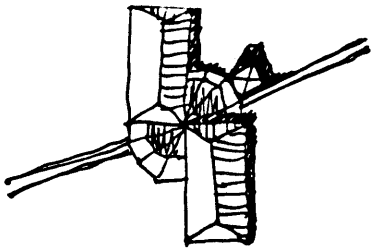


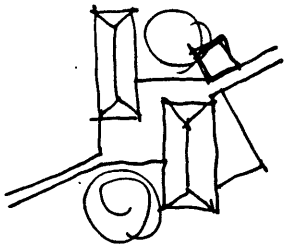


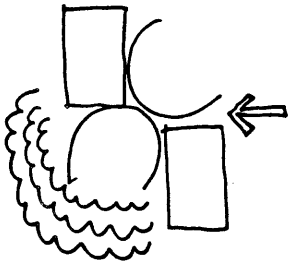


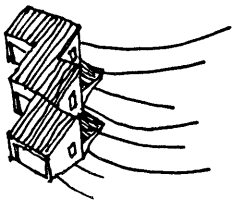


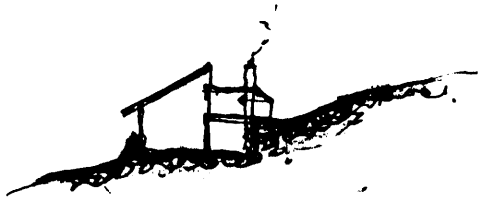


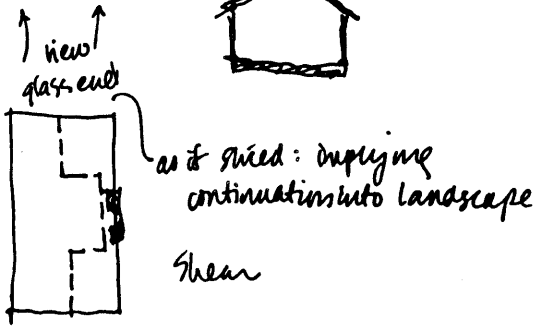


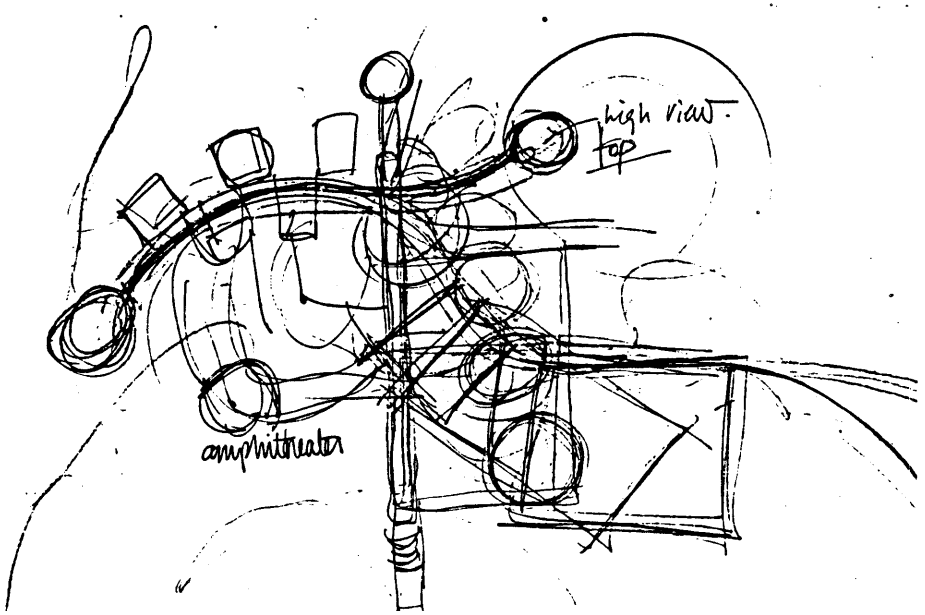




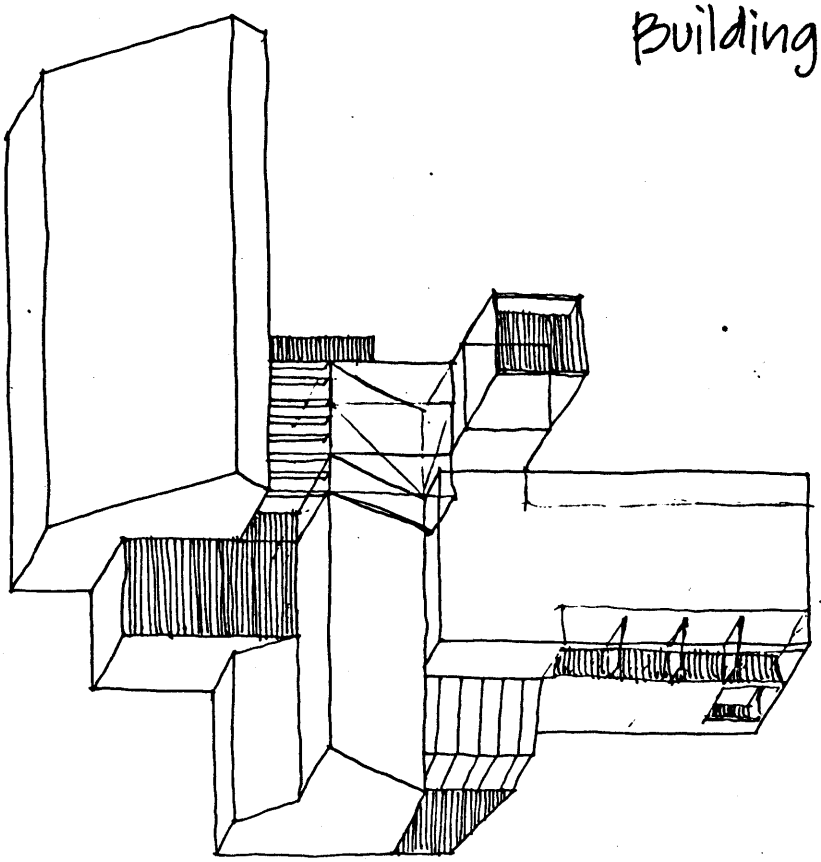








Building Studies



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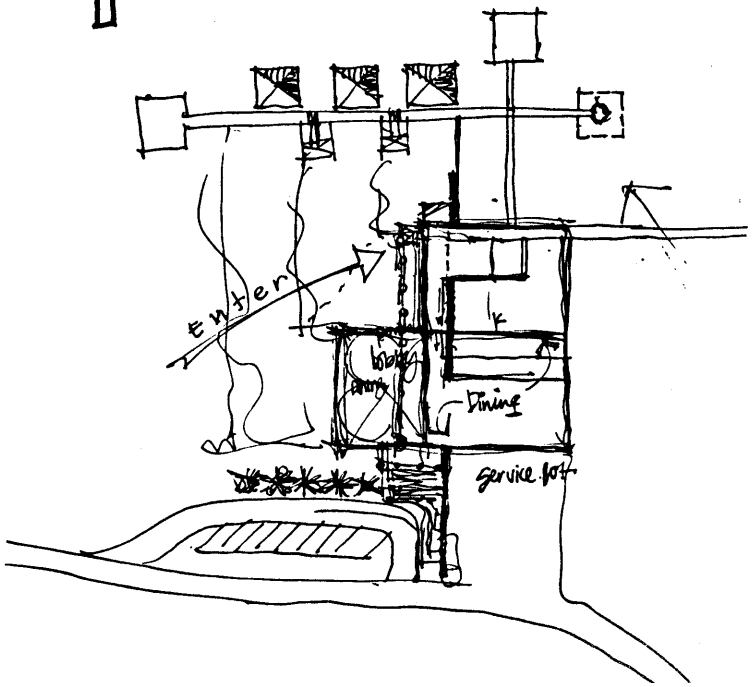

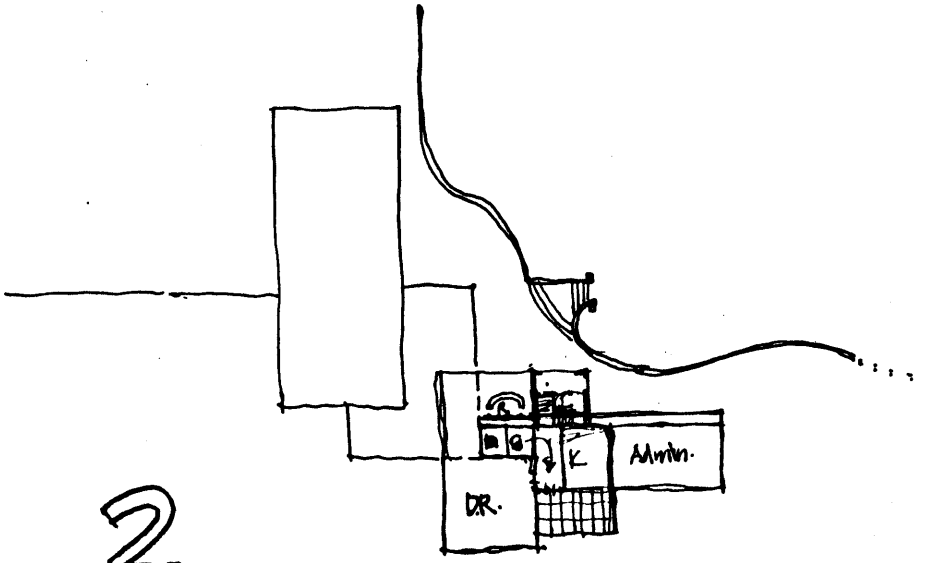

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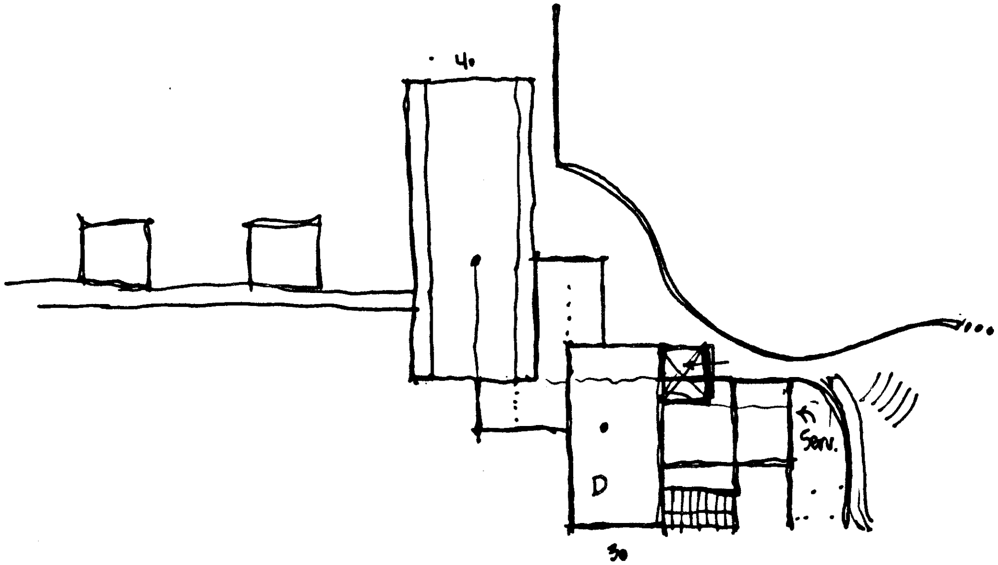
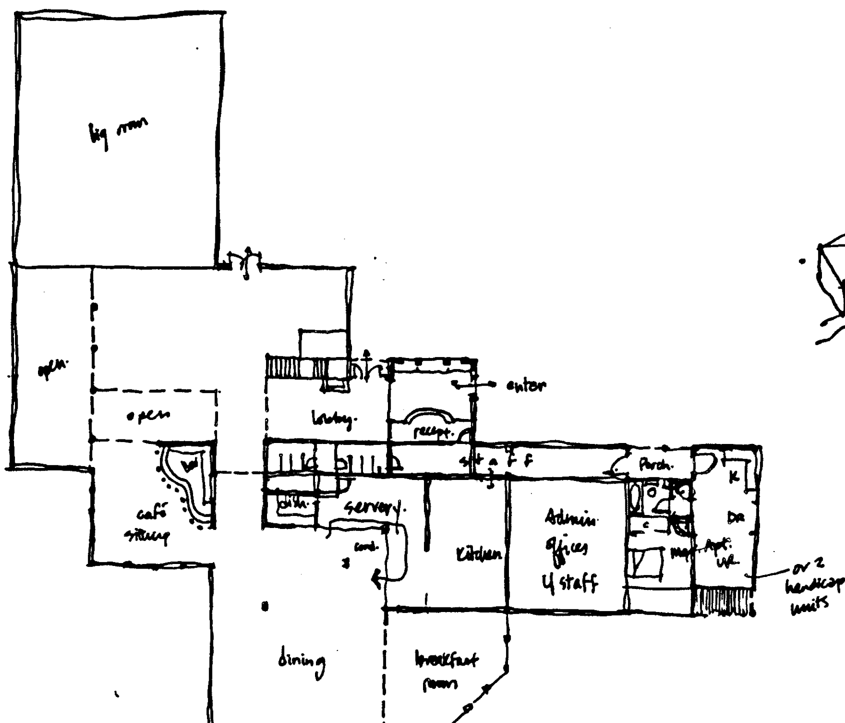
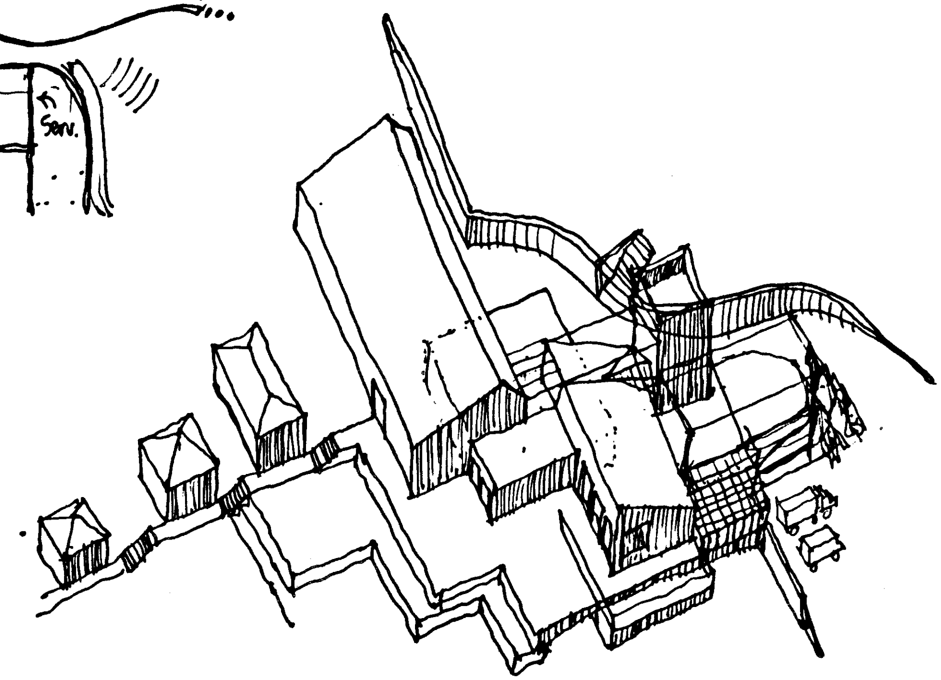

40
Serv.
D
30


big room
open
open
lobby
enter
recept.
staff
Porch
K
DR
Apt.
LR
servery
café sitting
Kitchen
Admin offices 4 staff
or 2 handicap units
dining
breakfast room



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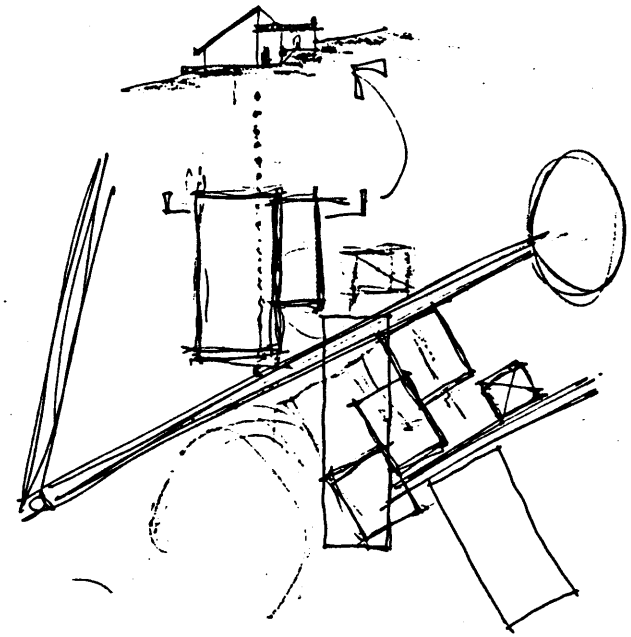

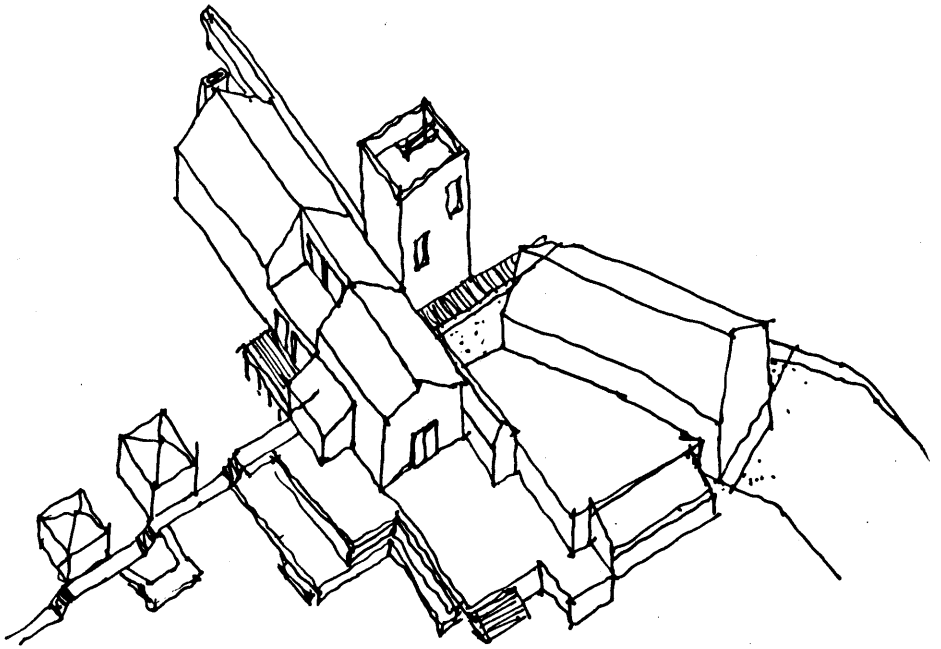

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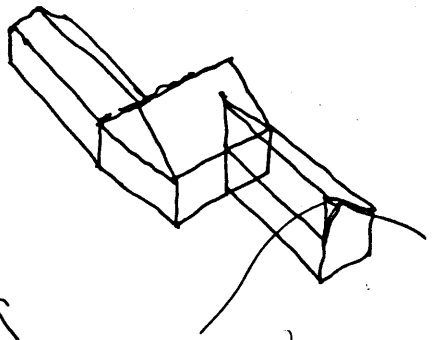
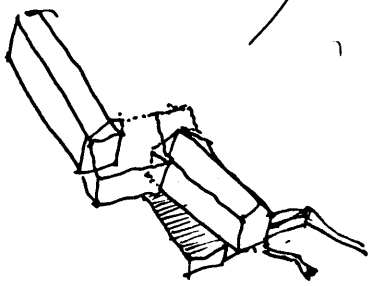
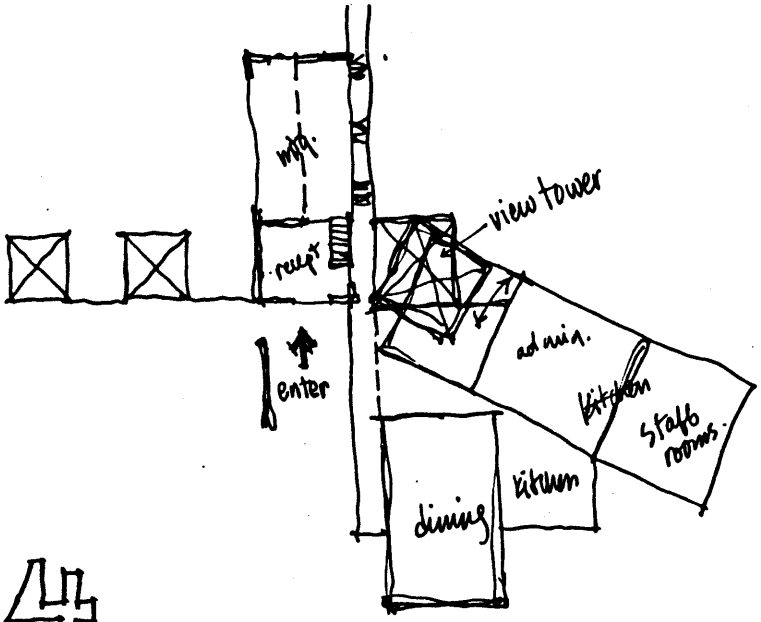
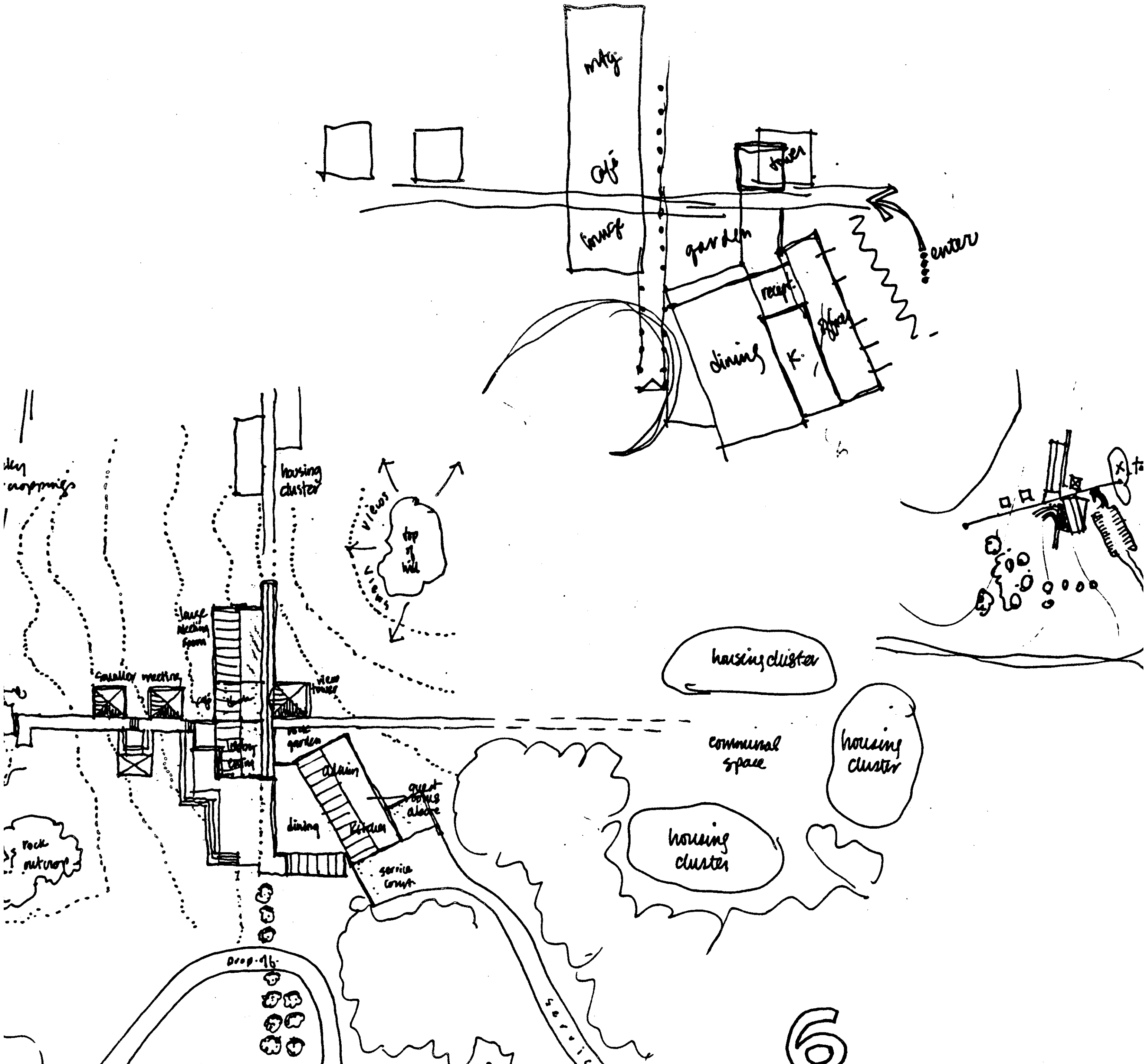
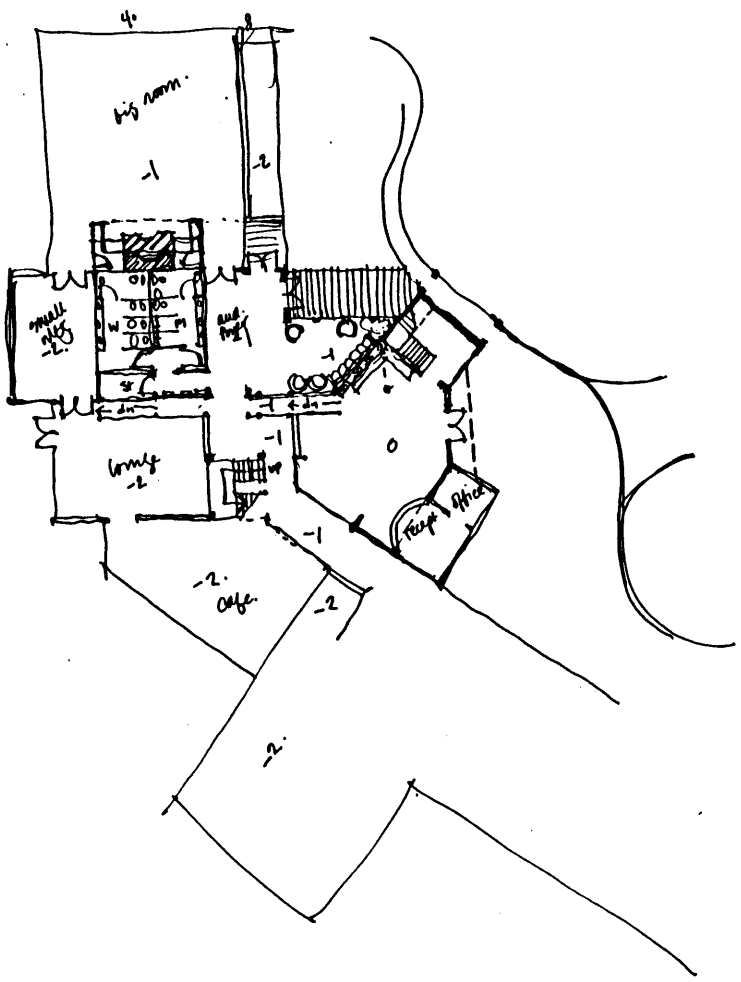


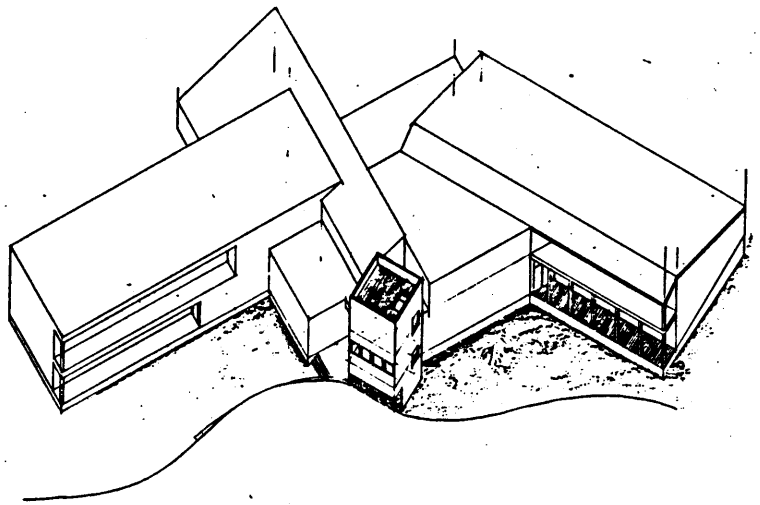



entr.
view tower
admin.
kitchen
staffs rooms
dining
kitchen
enter

4


mtg
café
lounge
garden
recep.
office
dining
K.
enter
housing cluster
views
top of hill
large meeting room
smaller meeting
view tower
rock garden
dining
kitchen
guest rooms above
service court
dining
rock outcrop
drop off
service
housing cluster
communal space
housing cluster
housing cluster
6





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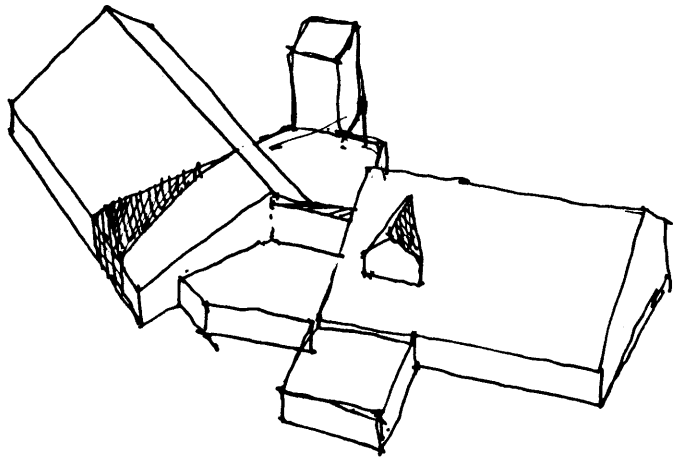

The End...