THE CAMBRIDGE SWIMMING CLUB:
An Exploration of Body, Landscape, and Architecture

by

MATTHEW HAINES MARTIN

Bachelor of Science in Art and Design
Massachusetts Institute of Technology
Cambridge, Massachusetts
February, 1980

Certificate in Landscape Architecture
Conway School of Landscape Design
Conway, Massachusetts
June, 1985

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Signature of the Author, _____

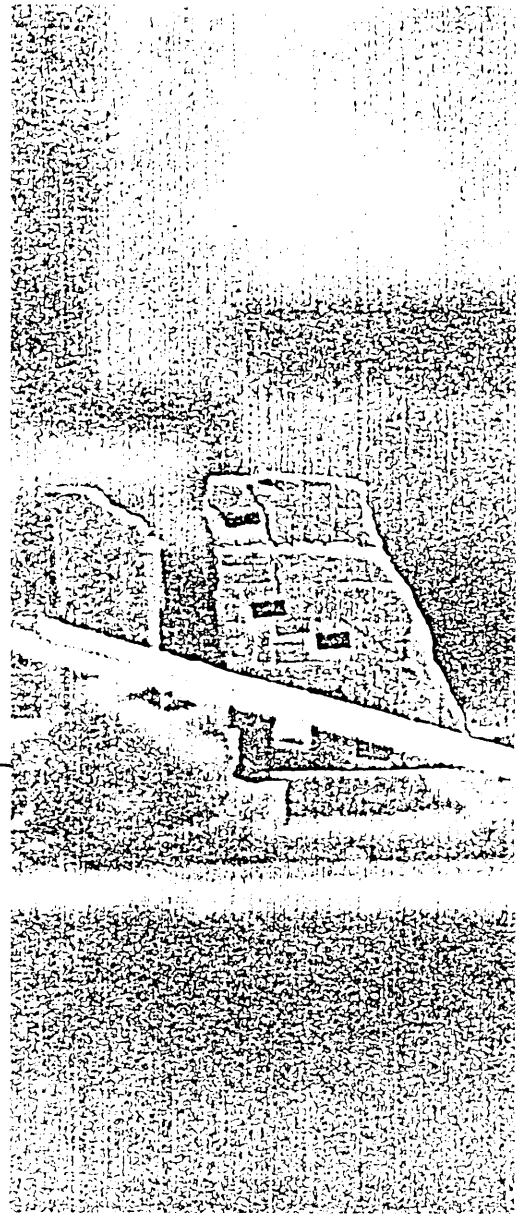
Matthew Haines Martin
Department of Architecture
30 July, 1992

Certified by _____

Thesis Supervisor **John Randolph Myer**
Professor of Architecture

Accepted by _____

Chairman, Departmental Committee on Graduate students **Thomas Chastain**



ABSTRACT

The place of the human figure in the built landscape is explored in the design for a small swimming and bathing club. The thesis seeks ways in which continuity and connectedness between the individual and the world may be enhanced through an architecture which takes design cues from the body and the land.

The program for a swimming facility focusses attention on the swimmer's dynamic experience of the built environment. The site, along the Charles River and next to a Cambridge neighborhood park, combines a landscape of distinct character with local precedents for its inhabitation.

Design associations are developed as a means of stimulating and enriching the project. Studies of the human figure and the landscape contribute specific associations for the formal explorations, evoking archetypal images of the individual and the world, and revealing some of the continuities and ambiguities between them. Further associations are made in a number of narrations from the designer's experience of water. An initial sketch study coalesces the associations into a gestural form, which is then progressively developed into the inhabited landscape of the Cambridge Swimming Club.

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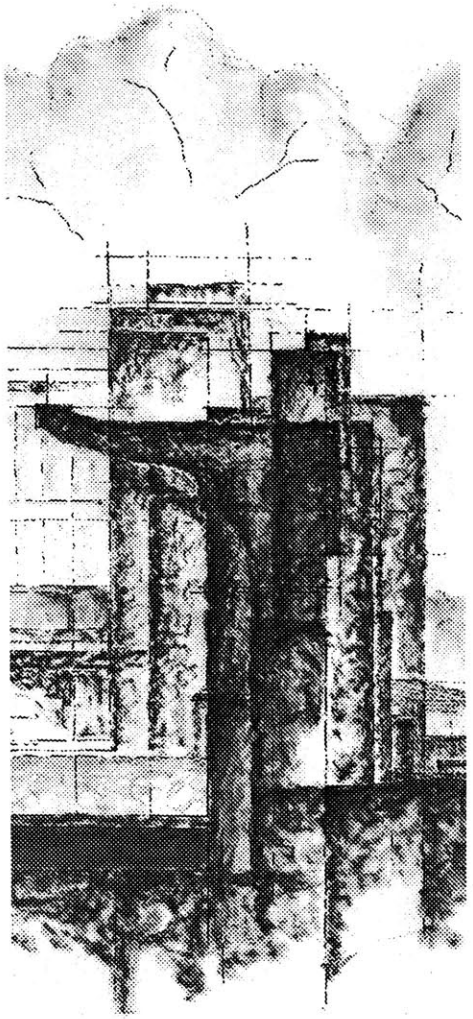
This is the place to say that I could not have finished this thesis without the encouragement of my father.



This thesis is dedicated to the memory of Rose Struse.

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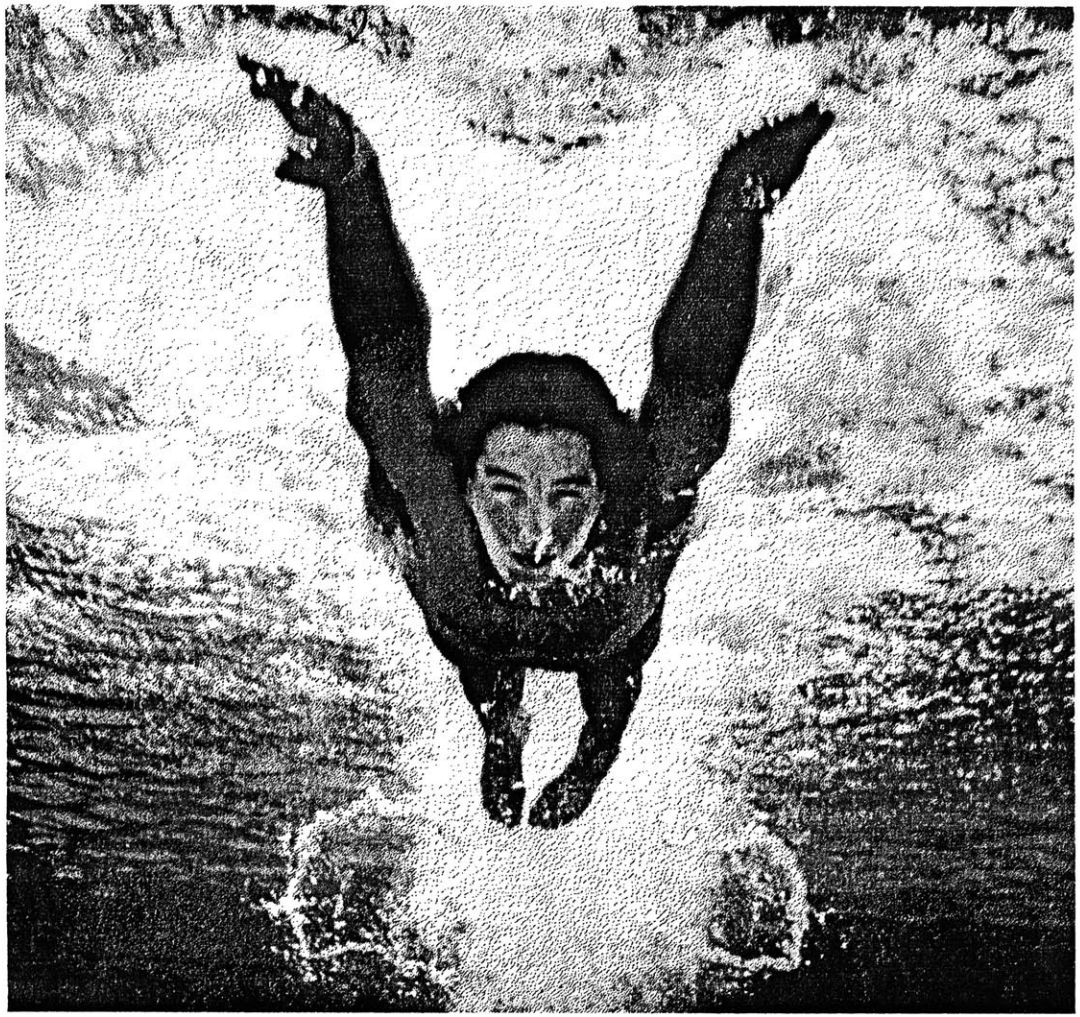
THE DESIGN PROJECT



L'eau peut être centrale...
en étant partout.
-Moley

This thesis is the response to a long-standing desire to design a place for swimming: an environment full of possibilities for containment and exposure, for physical well-being, joy and, not least, for water. Water's fascinating, elemental, life-supporting nature has proved to be a lasting source of inspiration.

An integral purpose of the thesis is to develop and document a personal approach to form and design through the swimming pool project, by exploring and asserting the value of design intuitions. In design, these intuitions express themselves in terms of associational references to the designer's world and experience. Such associations can transfer complex meaning from the designer's experience into design and design language, stimulating both unconscious and explicit qualities.

At the outset, the human figure and figure-drawing served as the primary associational reference. Experience of one's body is universal and archetypal. Awareness of one's body extends from the earliest preconscious sensations, through every unconscious moment, to our conscious thought and language. Study of the figure provided insight and inspiration to the design.

During the project, the landscape emerged as a second formal reference. This developed in response to the figure studies, as a complement to them. The two came to have a relationship which reflects the relation of figure to

ground, singularity to plurality, self to other. This relation of figure to landscape—more properly, the place of the figure in the landscape—is explored throughout the thesis, pointing to an attitude about the individual's place in the world.

A third, less tangible set of references took shape with the project. These were memories and impressions of experiences with water, swimming, and bathing. Such experiences are valuable and formative, but they had been taken for granted. Their influence needed to be examined. Narrated and written, they became more coherent, and their significance to the design took form. They brought immediacy, conviction, and imagination to the design.

The project's organization is straightforward, and its progression is reflected in the thesis. Preliminary documentation of the clients, program, and site is presented in Chapter One, along with a discussion of the design process. Chapter Two discusses the associational references used in the design. In Chapter Three, the initial sketch problem is documented, and in Chapter Four it is developed and built upon. Chapter Five presents the final form of the Swimming Club.

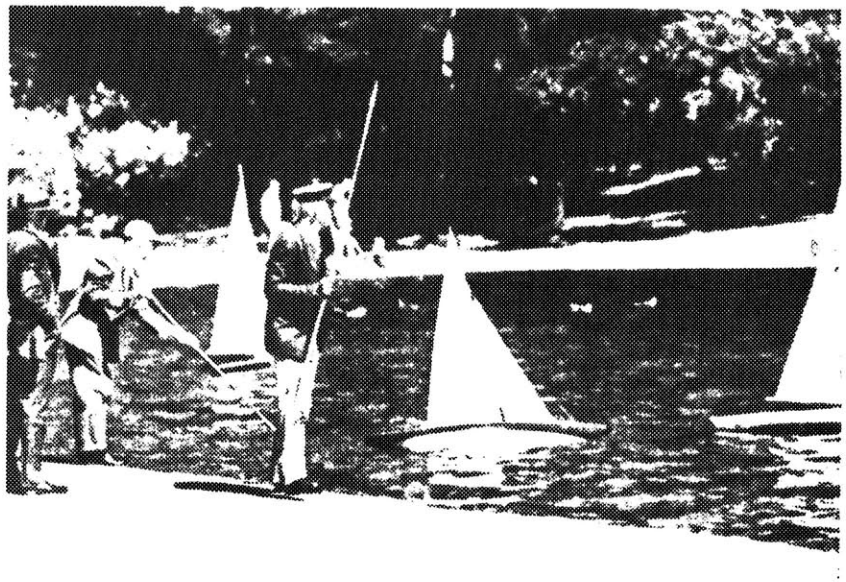
The design explorations led to several happy discoveries and unexpected difficulties which changed the emphasis of the project's work. These changes are significant for the light they shed on the place of associations in design. This is discussed in Chapter Six.

At present, two clubs use the Willard Street site: the Cambridge Skating Club, which owns the site, and the Cambridge Tennis Club, which rents the facilities during warm weather. The Skating Club's activity has declined in recent years, due in part to less interest in skating and in part to the variability of the outdoor skating season (as few as five days in some winters). Neighborhood children, who once used the rink heavily, now have access to a new indoor rink at the Buckingham, Brown and Nichols School, with its extended season of use.

The Tennis Club is active and well-supported. Membership, which is in demand, is limited to 300 families. About half of these use the courts with any frequency, and fewer use them regularly. However, there is a lively social interaction among these members.

These clubs share an interest for a socially oriented, year-round facility such as a swimming pool and bath house. This thesis assumes that the two clubs will join in building a new Swimming Club facility. Existing skating and tennis activities may be accommodated to a reduced extent on site. More probably, they will be relocated off-site.

The Swimming Club members will be drawn from the area's established urban couples (from late 30's to seniors) and their children. This implies a broad range of skill and ability, with provision for tots and children

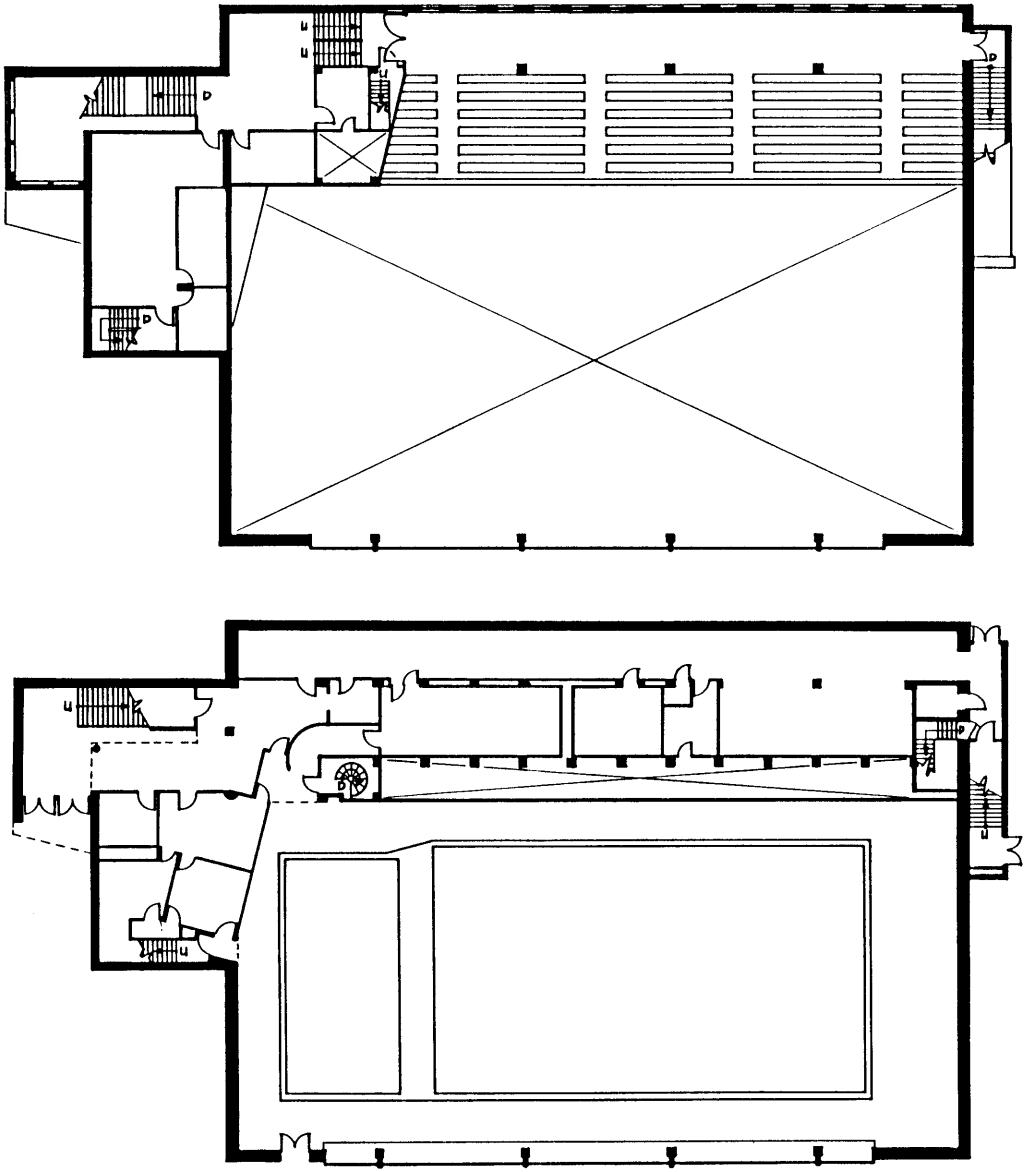


English gentlemen sailing model boats (Shalaby)

learning to swim and for seniors' exercise regimens as well as for adults' lap-swimming workouts. It also assumes an active social program, from unstructured leisure activities such as sunbathing or meeting for drinks to organized functions such as parties and receptions. There is no call for competitive or spectator events, which can be supported at several nearby institutional facilities. Since the facility is for local residents (within walking distance), parking will be provided for staff and the handicapped only.

The following approximate space needs are adapted from the Alumni Swimming Pool at M.I.T. by Anderson and Beckwith.

Natatorium	(2 pools: 25m. x 50 ft., 20 ft. x 40 ft.)	7,200 sq. ft.
Locker rooms	2 @ 700 sq. ft.	1,400 sq. ft.
Bathrooms	2 @ 150 sq. ft.	
	2 @ 80 sq. ft.	460 sq. ft.
Saunas	2 @ 100 sq. ft.	200 sq. ft.
Gym	(with whirlpools)	450 sq. ft.
Open Lounge	(for 250 guests)	2,400 sq. ft.
Enclosed Lounge		300 sq. ft.
Classroom	(for 25 Students)	400 sq. ft.
Offices	3 @ 120	360 sq. ft.
Equipment	2 @ 150	300 sq. ft.
Air Handling		800 sq. ft.
Lobby		250 sq. ft.
Terrace		5,000 sq. ft.
Parking (Staff, 2 spaces; handicapped, 1 space)		
TOTAL		19,320 sq. ft.



M.I.T. Alumni Pool
Anderson and Beckwith

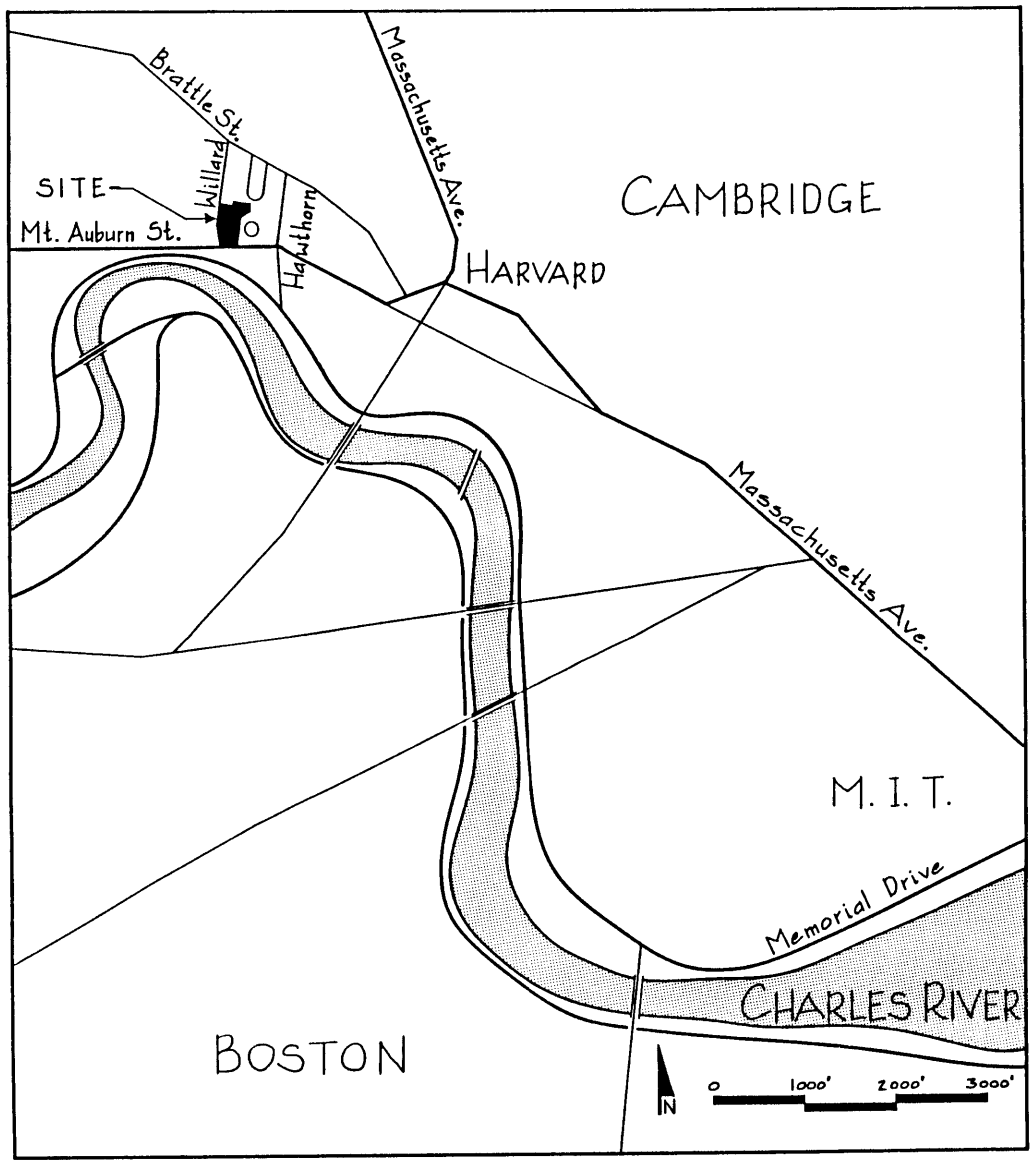
Scale 1″=32′-0″

M.I.T. Alumni Pool
Anderson and Beckwith

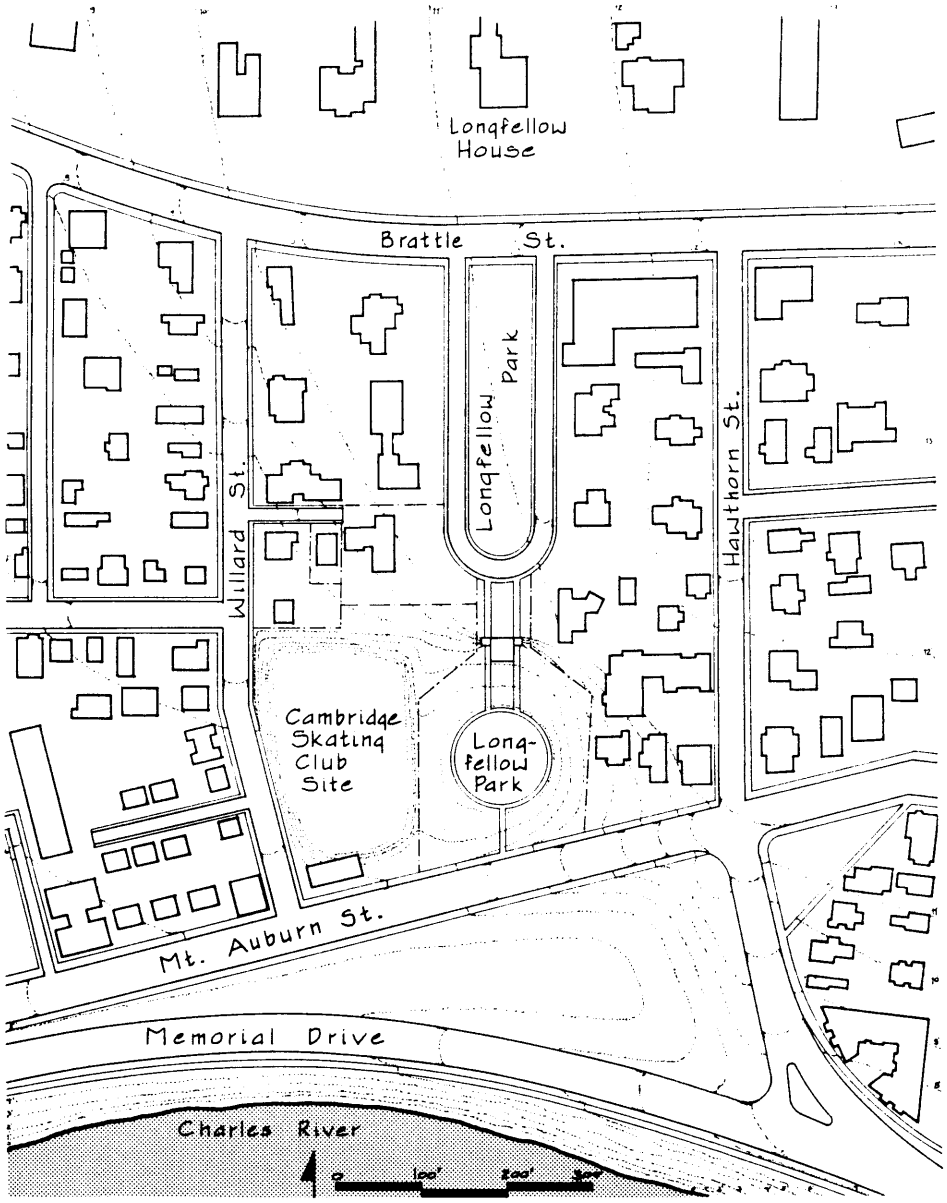
The Swimming Club site contains elements from the local neighborhood, the city's public space, and the regional landscape. Its location makes it important for identifying the neighborhood and tying it into its context.

The Charles River, visible from the site, defines the regional geography. Long views extend up and down its open banks as they curve inland to the west, and toward Boston and the harbor to the east. The rise at the site's northern edge helps define the river's broad channel and directs attention down to it. Memorial Drive extends along the river, a major public artery connecting regional urban grids. The river and roadway curve into Cambridge as far as Mount Auburn Street at the site, exposing it and the neighborhood to the river's long views. The neighborhood is made up of a fine texture of local, tree-lined streets, interconnecting foot paths, closely-packed houses, and short views.

The contrast between this fine texture and the river's expanse and views is enhanced by the presence of large apartment buildings along Memorial Drive to either side of this exposed area, framing a sort of gateway to the river. For these reasons, the site's location reveals and marks the neighborhood, and it has a unique potential for defining its identity.

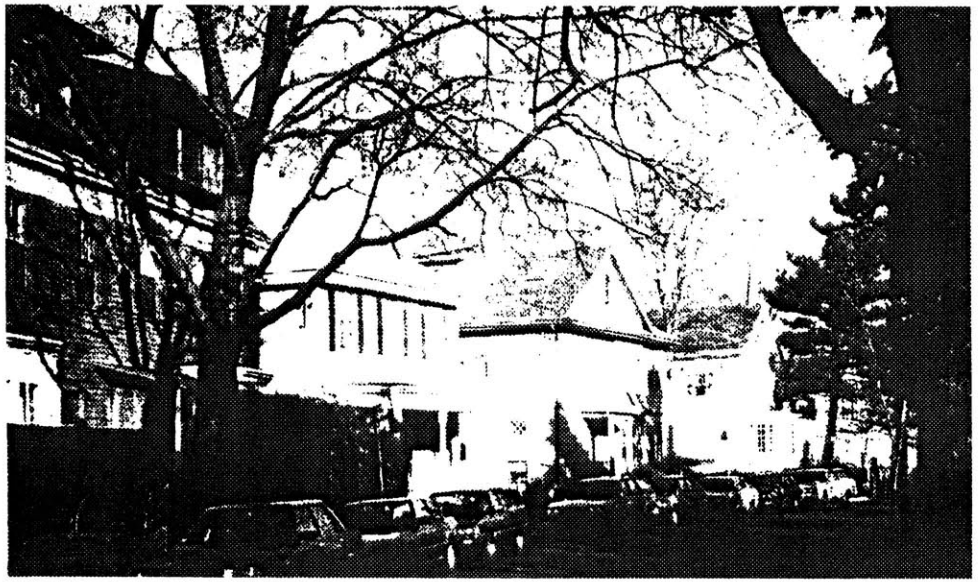


Site Locus Map

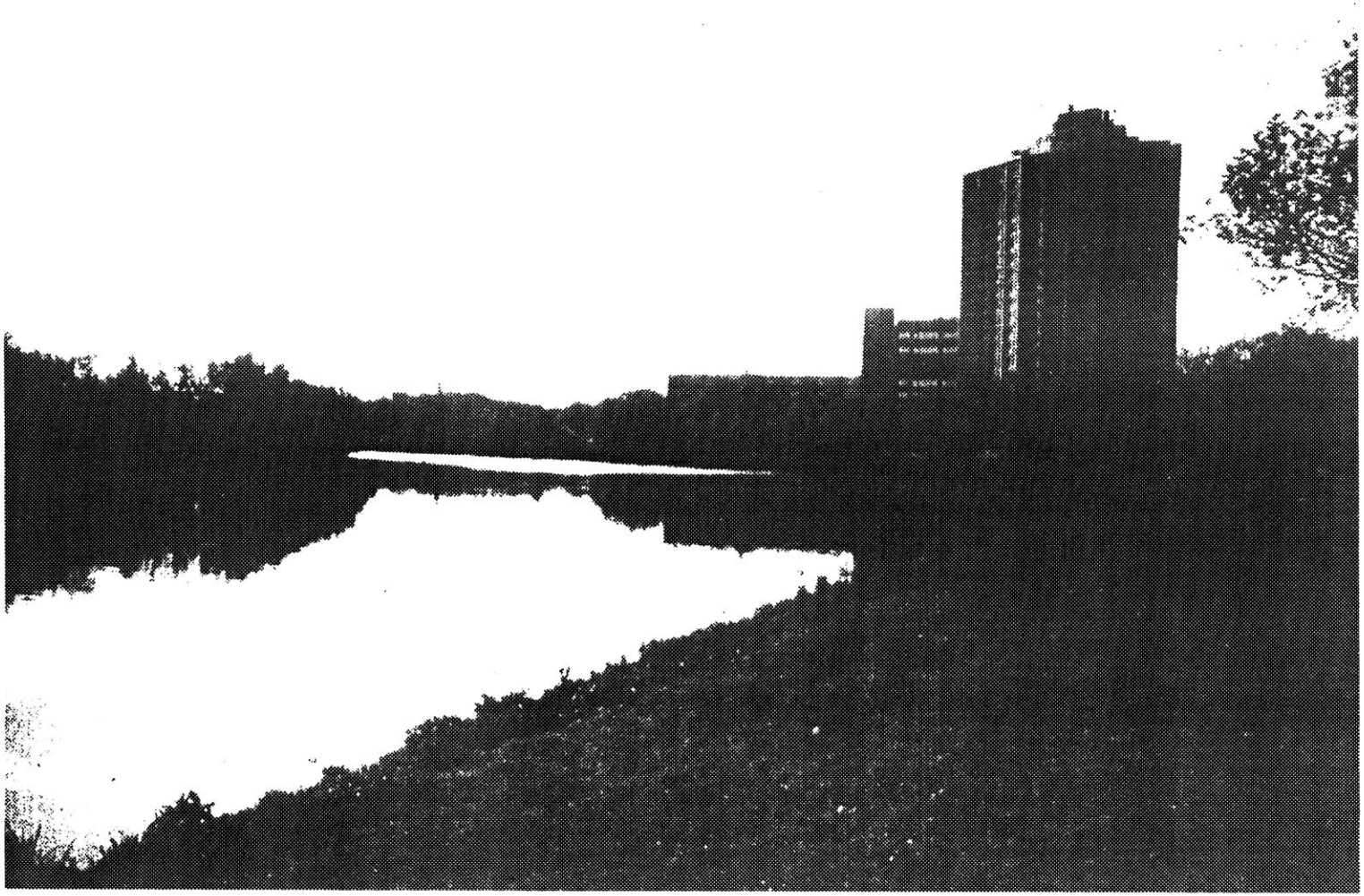


Site Context Plan

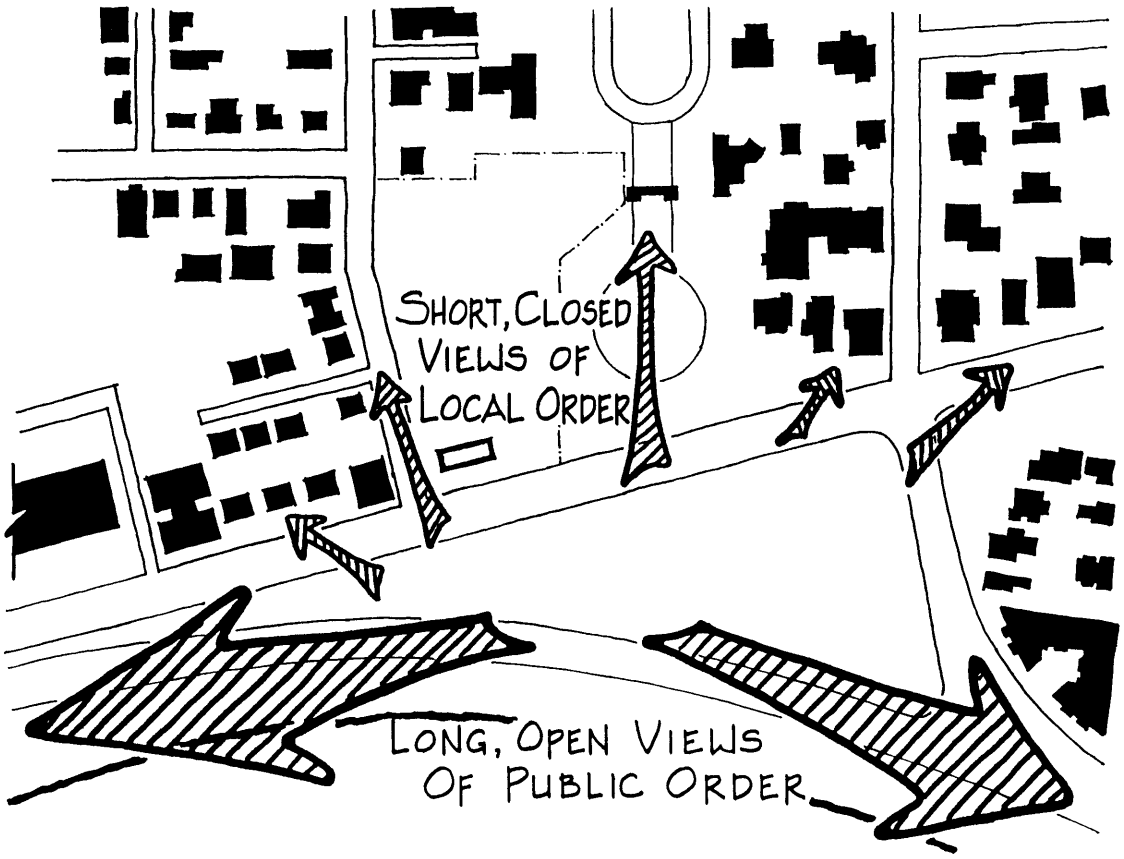
View of Longfellow Park
from Mount Auburn Street



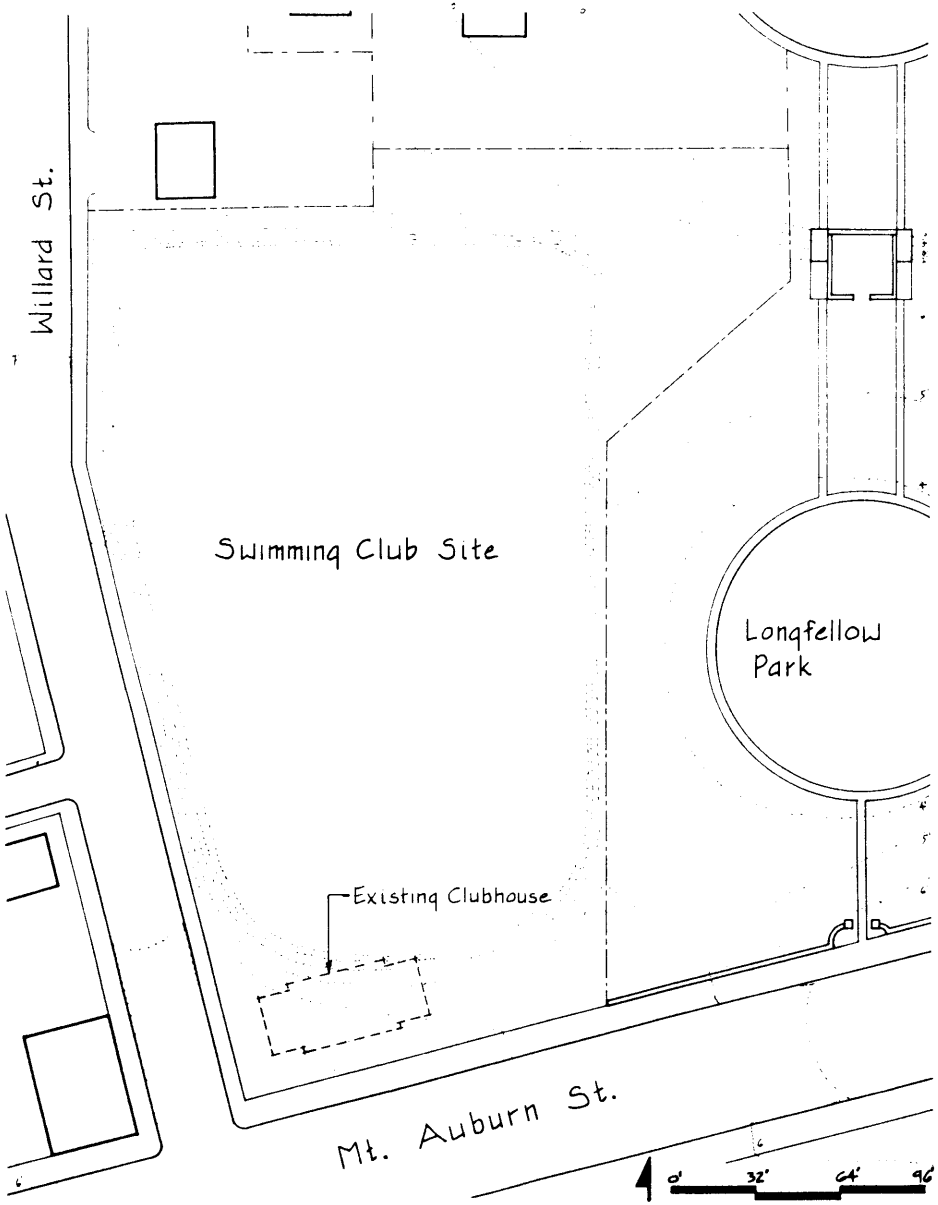
View of Willard Street
opposite site



View up Charles River to West



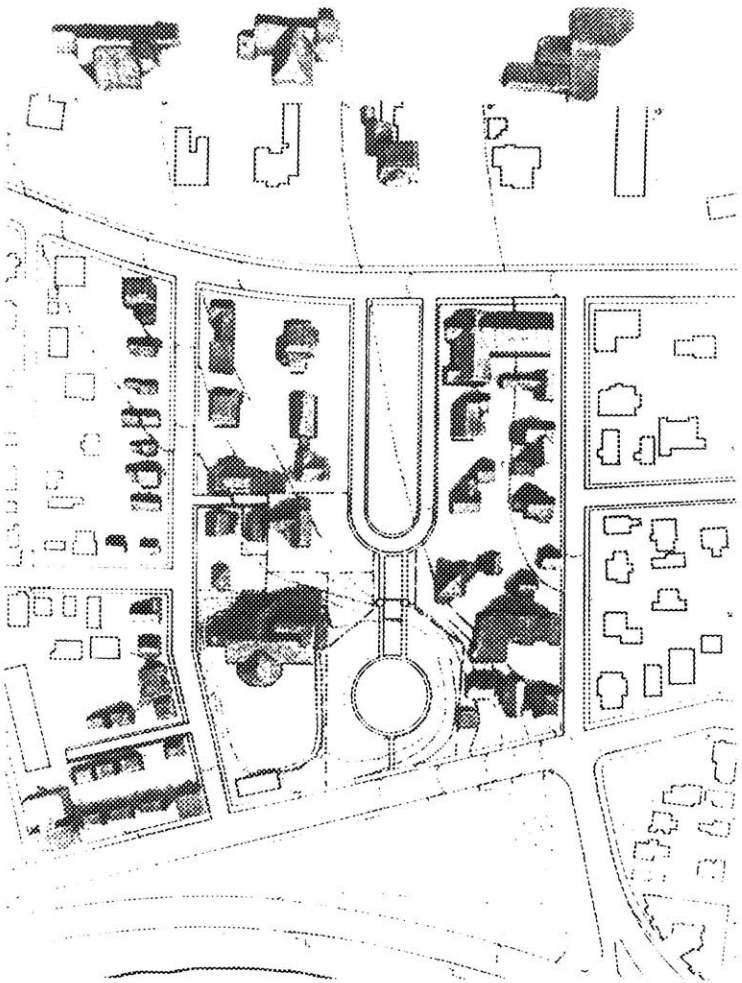
Site Analysis Diagram



Site Contour Plan

The Swimming Club's use and context suggest that it should continue to be identified as neighborhood territory, while the building's mass expresses its public, institutional use. These needs can be accommodated by setting the building well back from Mount Auburn Street and treating the rest of the site as a semi-public extension of Longfellow Park. A precedent for this may be seen in neighborhood grade schools, which combines public open space, the playground, with a large institutional mass set back from the street. Local public access and use is invited by this placement, and, like the school, the Swimming Club comes to be a neighborhood landmark.

The Swimming Club building's main axis—the ridgeline—is set along the major axis of the landscape, following the site's northern slope and the river's direction while containing the open space before it. The building's most active areas thus have good southern exposure across the site, and the outdoor areas are sheltered from breezes by surrounding trees, the site's contours, and the building itself. These effects combine to extend the site's useable outdoor season. Formally, the large mass of the building becomes part of the larger landscape, while its western end impinges minimally on the residential scale of Willard Street. The building's presence on the street is further moderated by articulating this facade on a residential scale. Conversely, the largest masses of the building are kept at its east end, where they can freely express the building's highest and deepest spaces. Here, by



Massing Study
Alternate schemes above

building to the boundary with Longfellow Park and into the extension at the site's corner, these masses serve to anchor, contain and reinforce the park. In this it is similar to an apartment building on the opposite side of the park.

The design process for the project follows a straightforward sequence. However, the focus on exploring associations in design leads to special emphasis on particular points in the design, which are linked to a series of parallel associational explorations.

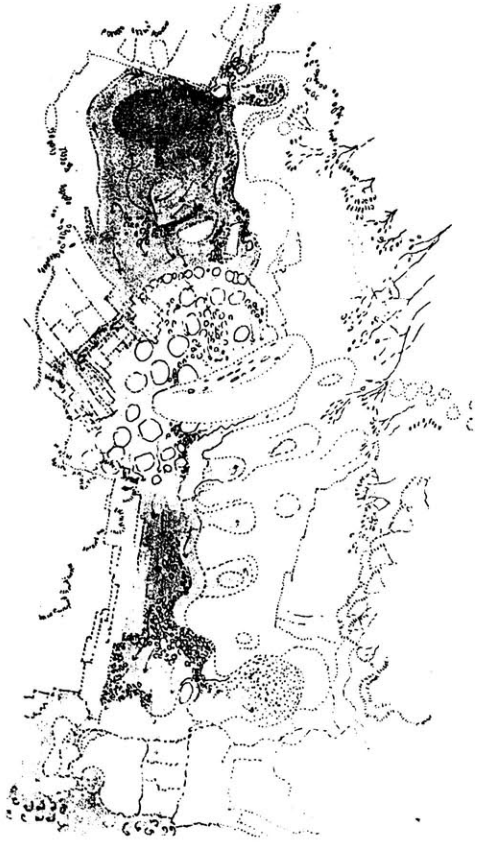
Preliminary studies were quickly made of the clients and their hypothetical program, the site and its context, and swimming pool technology and precedents. Schematic siting and massing decisions followed from the site studies. This stage has been presented in the first chapter.

Preliminary formal ideas for the design were then explored in a sketch model—the *gesture model*. After a prolonged (and at times difficult) study of this model and related associations, it became the basis for the formal development of the design. The gesture model and studies are presented in Chapter Three.

The development of the model's form became the main challenge of the project, because it raised central issues of design associations, form, and architectural identity. In a series of studies, presented in Chapters Four and Five, the model was developed as a simple figure, as abstract fields, as inhabited landscape, and finally, as the proposal for the Cambridge Swimming Club. Throughout these studies, the original gesture model was actively maintained as the central reference for the design.

Ongoing studies of associations paralleled this process and heavily informed it. They are introduced in Chapter Two, and they accompany the gesture model and its development in Chapters Three and Four. They focus on drawing from the human figure, references to the landscape, and narration of past experiences involving swimming or bathing. The associations correspond loosely to a progression of the design from figural mass to inhabited landscape, or from singularity to field. The studies were especially instrumental in stimulating the development of the gesture model's form, which enriched the design with meaning and complexity.

ASSOCIATIONAL ELEMENTS IN DESIGN



At every turn we find associations of the surrounds with some portion of the body. These associations have been continuous in us from our earliest being.
(Myer, Patterns..., *1978)*

Design draws on intuitions to stimulate the ideas and images which drive architectural form. Intuitions arise unconsciously or half-consciously from memory, suggested by experiences or images related to the design. When they are recognized and developed, they enter into the designer's conscious vocabulary as design associations. They can be used as reference-points; they always, however, preserve the ambiguity and the tension of their unconscious roots.

These associations can be incongruous or tangential, yet they identify forms and qualities which the designer knows intimately, and link them closely to the design. They, in turn, stimulate other associations—sensory, emotional, formal. Because the associations are tangible references, they can be consciously called forth, while their intangible, intuitive powers remain potent and accessible. They have the nature of metaphors, and they enter into design as easily as metaphors enter into speech.

Associations which are based in direct experience bring particular qualities to design. They have an unconscious complexity which gives them an open-ended nature, supporting an exploratory design process. In such design, a comfortable sense of adjustment and proportion can be found. The immediacy of these associations stimulates further associations, with a growth of complexity, partial relationships, and rich ambiguities. Such richness could not be produced rationally.

The processes of which we are the least conscious are precisely the most deep-seated and universal and continuous... (Scott)

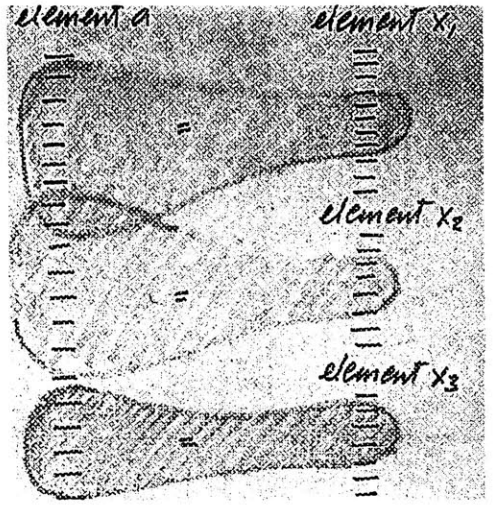
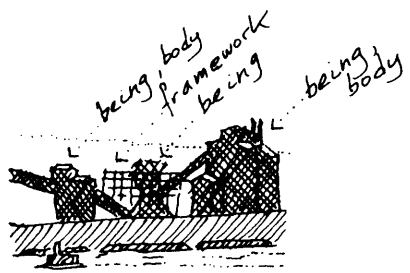


Diagram of Partial Analogues (Myer, *Patterns...*, 1987)

The most powerful associations are archetypal and universal, originating in the most basic of human experiences—birth, nurturing, separation, learning about oneself, learning about others. Many of these experiences were neither understood nor remembered, but they determine the emotional background to which our present intuitions refer. Associational design involves these potent experiences, and in so doing it addresses the human condition, contributing to an architecture of humanism.

This commonality of associations makes it possible to communicate them through images or experiences. Their richness and their power to stimulate further connections are maintained. Associations can serve as reference points in dialogue between designers as well as for a designer's internal process. Similarly, a building's users interpret its references through associations with their own experience.



Associational sketch of industrial buildings (Myer, *Patterns...*, 1978

This design project focuses on a set of personal design associations, to explore and affirm a sensibility to form and the world. Three associational references in particular are considered: The human figure, the landscape, and narrated experiences. The figure evokes our most basic experience of self, while the landscape evokes a sense of the *other*—that which is not the self. The narrations from memory afford glimpses of both in close interaction, in especially rich settings. They reinforce the complex interaction of the figure and the landscape, and stimulate other, more intuitive associations. The result is a rich form-generating matrix. It is, at times, complex to the point of ambiguity, but its roots in real forms and experiences are always within reach.

The figure and the landscape are introduced in this chapter, with further development in chapters three and four. The role of remembered experience is also introduced, followed by narratives of several significant experiences.

Our understandings of ourselves and of the world are determined by our bodies. They are the necessary source of our first and our most basic sensory experience, and they are the metaphorical model for much of our thought as well. For the infant, there is simply no other reference for reality. His first perception is not of himself in the world but as undifferentiated self-and-world, and his early development hinges on distinguishing his body as a unique entity. Life's later experiences add to this first perception, but they do not replace it. The body, with its sensations and its limits, becomes an ever-present (if not always conscious) model for our thought and understanding. Even our language is brought to life by metaphorical references to the body, which we use unconsciously in every aspect of our lives.

In design, the human figure provides a potent intuitive reference, suggesting a variety of formal associations. We intuitively identify with the things that we encounter, often in a very literal, anthropomorphic way, attributing human qualities and purposes to them. This is a powerful, evocative understanding. Figure-associations frequently emphasize the singular, the unalienable, the indivisible—qualities which distinguish the individual from the extensive landscape of the world. The figure is also a reference for scale and proportion, for purposeful structure, and for gesture.

Detail of a photo by Wayne Miller (Steichen)

The body has reason that reason knows nothing of. (Pascal)

In this thesis, a series of figure-drawing studies was conducted in parallel with the design. This provided an opportunity to explore a loose set of figure-associations with the developing design at various points, in a familiar, loose graphic method. It also provided, with the landscape-reference and the narrations, a reference-point to restart from, fall back on, or to provide a sense of perspective. The figure especially informed the early part of the design (described in Chapter 3), in which the sketch model grew, quite directly at times, from life-drawing references. It is appropriate that its singular identity and its richness of form were inspired by the human body.

Michael Angelo: 'He that hath not mastered, or doth not master the human figure, and in especial its anatomy, may never comprehend it.' (Scott)

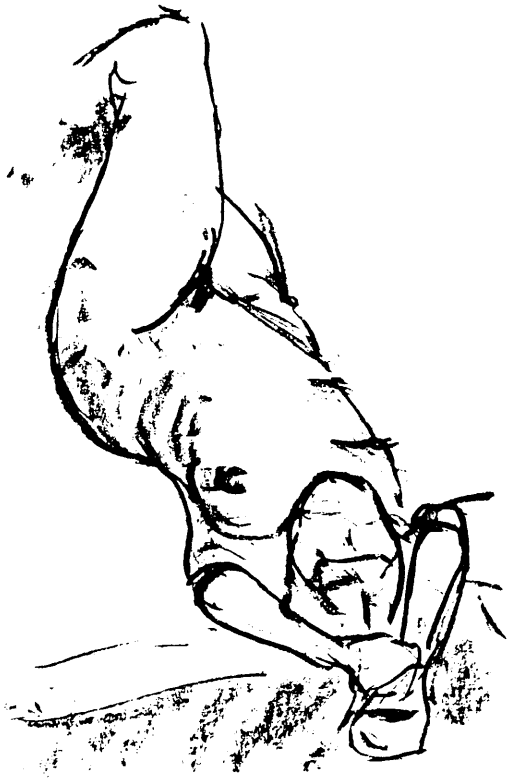
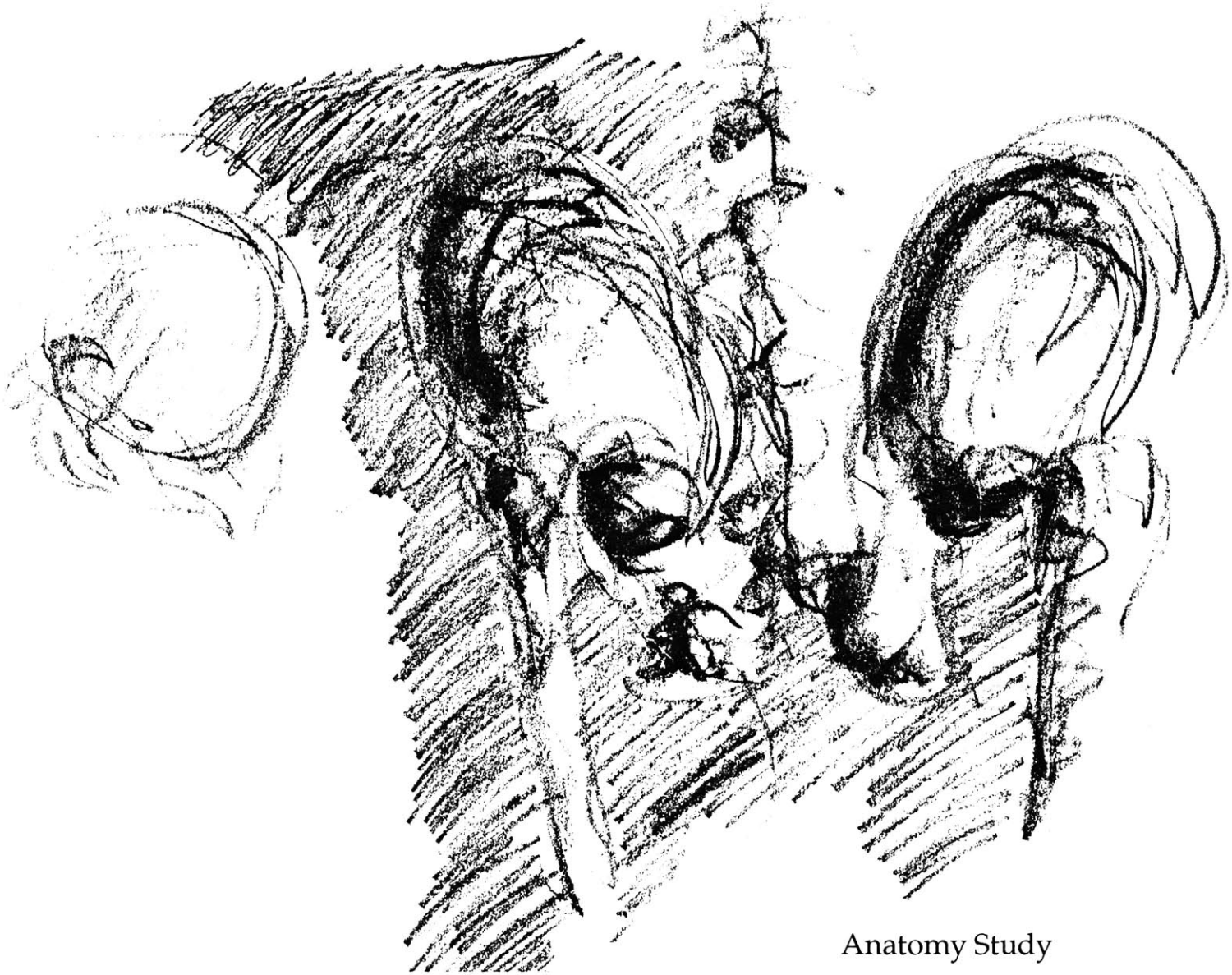


Figure Study

Figure Study



Anatomy Study

The complement to the self-centric, figural body is the landscape of the world around us. When we first come into this world as infants, we are aware only of undifferentiated being, of our needs as the only needs. We first learn about the world which is not ourselves when we confront the limits of our developing powers. It leads to the most basic of distinctions: Us and them, here and there, known and unknown, possible and impossible. The landscape is immense and it supports our life, but its geologic reality is ultimately incomprehensible to us, and it does not need us. We spend our lives making a place in it.

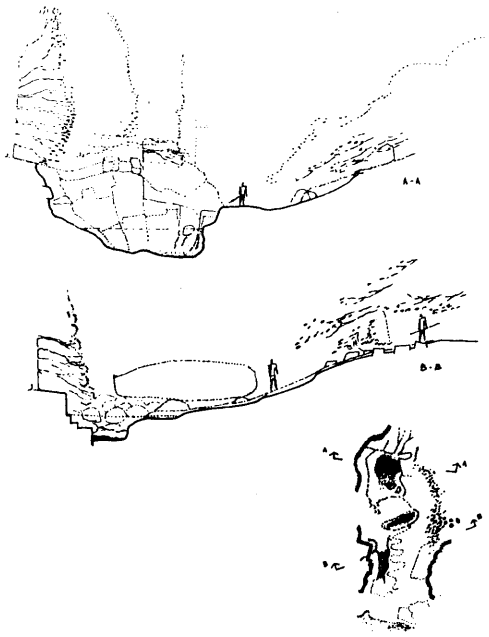
But we do not forget our first apprehension of the world: That it belongs to us, that it is part of us. In the process of finding our place in it, we develop a highly articulate language for adapting to it and for adapting it to our needs. As a result we re-create, in different terms, the continuity which we experienced as infants. Within the limits of our place and our potential, we become masters in the world.

Along the way, the landscape comes to have an evocative significance for us. It is as important to us as our own bodies, because for us neither is possible without the other. Our senses of direction and perspective, of rootedness and territory, or of underlying reality and truth, are associated with our sense of a lasting, geologic reality. The landscape's continuous presence, our dependence on it,

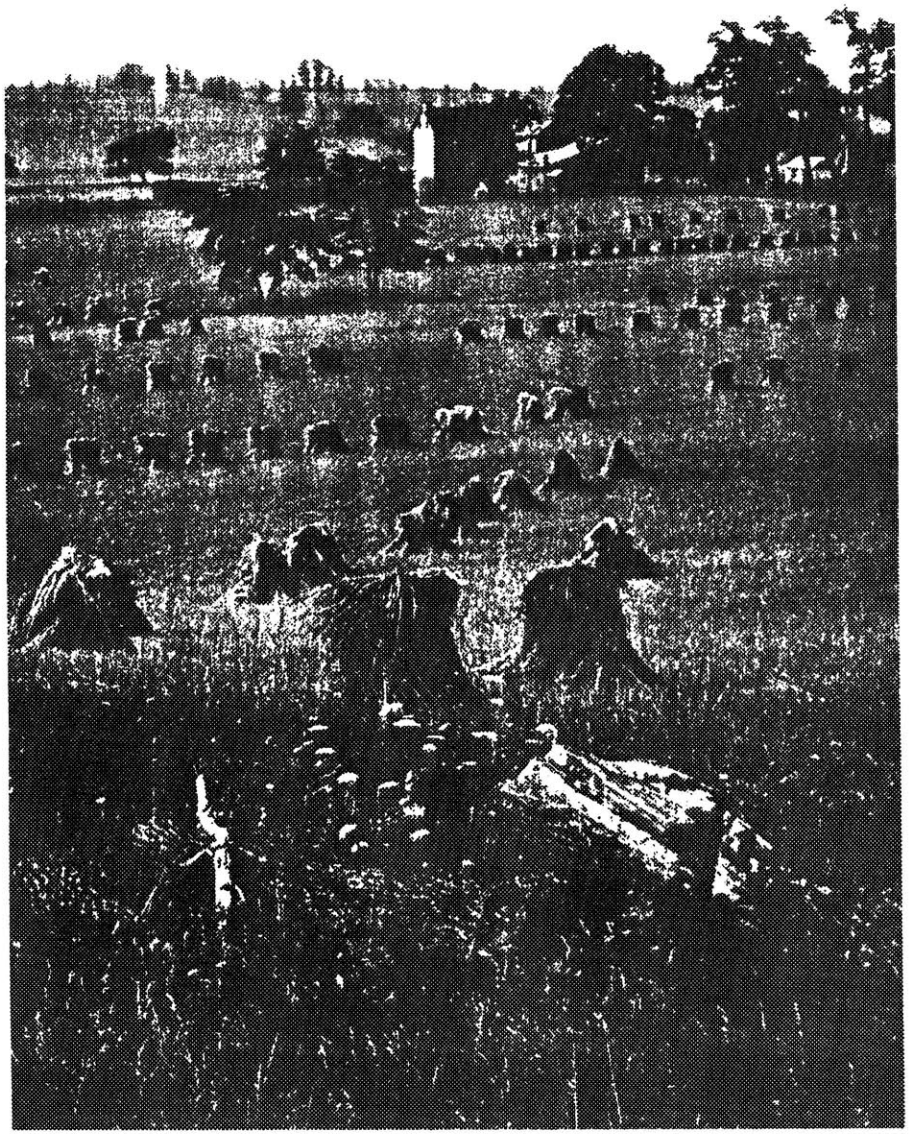
Landscape sketches
(Aalto, *Sketches*)

and our recurrent reference to it lead us to understand it in complex and subtle ways. Wild landscapes call up a sense of the primal, intractable *other*. In rural landscapes, the open, fertile field is rich with potential for inhabitation, for making one's mark, and it becomes the metaphor for fields of endeavor or fields of possibilities. Such archetypes are found throughout our experience of the landscape.

Landscape associations figure heavily in the subtle impressions we project into the built environment, whether designing it or inhabiting it. The landscape of architecture has the power to affirm our understanding of the world and our continuity with it. This thesis explores the complex richness which emerges with such reference to the landscape. This became particularly significant during the development of the gesture model into an open, inhabitable space, described in Chapter 4.

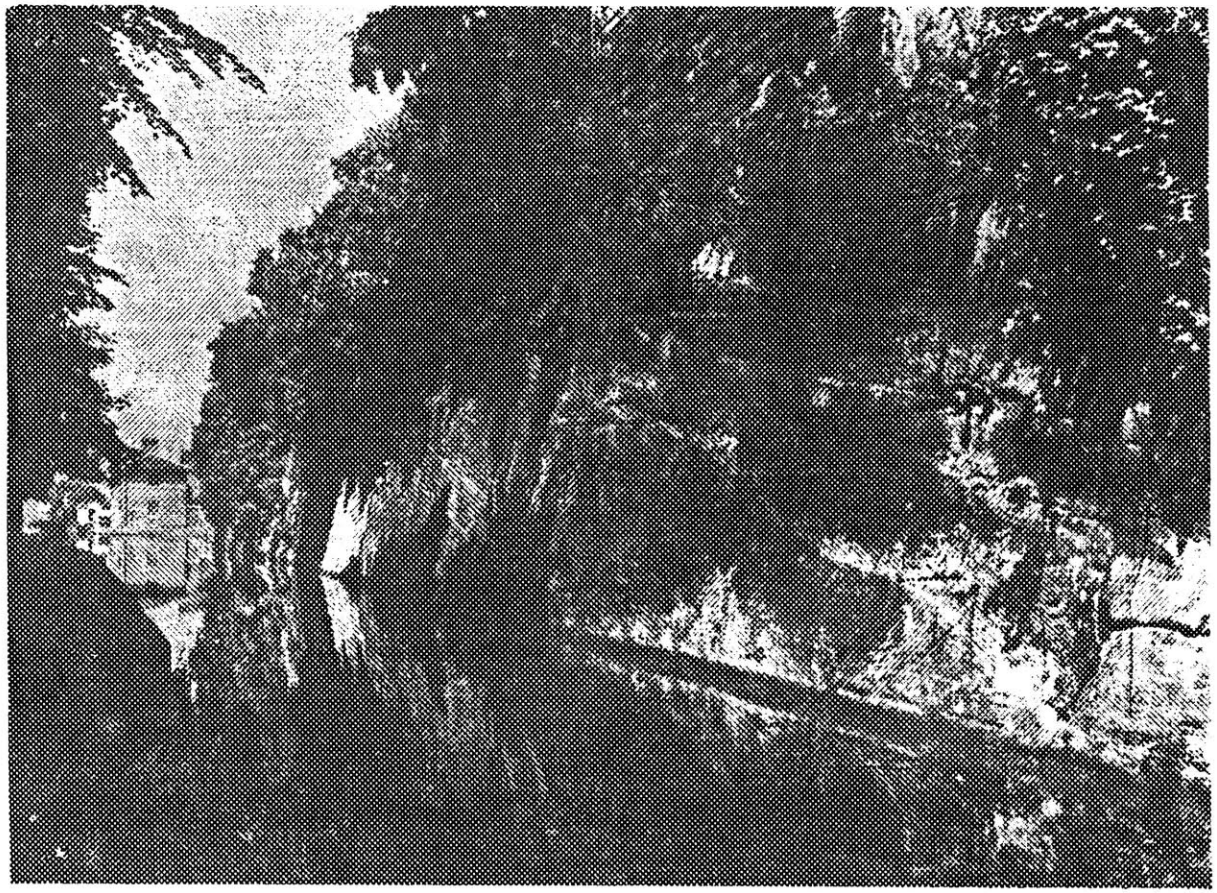


Sections of a swimming hole (Myer, *Whiteface*)



When architecture... is expressive of strong ties between itself and the land, we sense through it an intensified belonging to our surrounds; it makes manifest and reinforces that which we already sensed between ourself and the land.
(Myer, Patterns..., *1978)*

A harvested field in Lancaster County, Pennsylvania (Brand)



Canal cut through rock in
Chester, England
(Jellicoe)

During the design of the Swimming Club, a number of memories came to mind—memories of swimming or bathing in various remarkable settings. When these memories were narrated, they served as a loosely structured set of references, bringing immediacy and complexity to the design. In addition, they helped to clarify a sense of the individual and a sense of place, and to bring them together in the design.

The narratives are powerful because they come from real experiences, bringing with them a vital, many-faceted immediacy. Such associations, while intangible, can reinforce, inform and enrich the design. The pleasure of recalling them reinforces intuitions and possibilities for the emerging design, and helps to initiate and maintain design exploration. They provide design references which are complex and ambiguous, full of sensory qualities, to add a rich metaphorical vocabulary to the design process. Ideas and connections spring from this vocabulary in new and fresh combinations.

But if you want my blessing for your home, it should have one further characteristic: you must give yourself away in some little detail....If it is not there, the link with real life is broken.
-Alvar Aalto

And he spake many things unto them in parables, saying, ... Who hath ears to hear, let him hear.
(Matthew 13.3-9, KJV)

These experiences all involve water in some way. Its mere presence is usually memorable, but it can also compel a direct response. It can be life-supporting or life-threatening, lulling, intriguing, or challenging. Associations with water are probably universal, due to our inevitable and various encounters with it throughout our lives.

Two complementary aspects of these experiences are apparent in the narratives: A sense of self, and a sense of place or context. The relation between them is developed in the process of design.

The narratives recount episodes from the lifetime of experiences which mold a person's identity. In them, water plays a recurrent role. It is present during formative episodes at every stage of development. Experiences of contentment, fascination, loss of control and terror, coping, play, and mastery determine our development as individuals. They are not limited to our experiences with water, but they are frequently identified with those experiences, and they have strong sensory and emotional associations. Thus, for example, learning to swim becomes a model for growing up, or in the world of architecture, for learning to design. Discovery becomes tempered by familiarity, limitations become incorporated into mastery. The narratives hint at a few of the experiences along the way which consolidate an individual's development.

Italian grotto sketched by Jack Myer to accompany a story

A strong sense of place is important to these narrated experiences. This, also, is intensified by the central role of water in each. Its elemental, multivalent nature easily becomes part a powerful experience. It can be an opportunity, a challenge, or a comfort; or its simple presence can impart a distinct, memorable quality to a place. Water often becomes a focus of attention, heightening the person's awareness of his surroundings. A sense of place can be strongly associated with water, and given depth by it. It guides the designer's interaction with the design, lending it meaning and character.

In design, a sense of human purpose is brought into relation with a sense of place, of context. This is apparent in the synthesis of program and site, and it drives the designer's impulse to make a place for the human form in the landscape. It extends throughout the following experiences and their narration.

Children at a pool in Düsseldorf, Germany (Shalaby)

I can't remember learning to swim. I remember the old community pool very well, though, where I spent many summer afternoons. When I was younger, I often went there with my brothers, and sometimes my parents were there too. When I was pretty small my brother Leslie showed me how to move my arms and legs and hold my breath and breathe, and my father showed me, too— Perhaps our instructor knew that we would never adjust. I think he held me in the water so that I could kick and paddle. I started right out in the deep end with them. It was over my head, but I hardly ever went in the shallow end, and never in the toddler's area. The community pool has always held good associations for me: The long expanse of bright blue water, the lawn, the chlorine smell,

cherry shoestring licorice, and the smell of barbecues from the park nearby.

But I don't remember really *learning* to swim; I only remember being in the water while someone or other told me to do one thing or another. At our high school pool, the physical education instructor showed us training films and demonstrated strokes to us, and I remember him walking beside me as I swam the backstroke, telling me how to do something different, but I don't think I understood what he was saying.

When I got to M.I.T., I took the mandatory swimming test, and then returned to the pool regularly. I enrolled in a swimming class, for intermediate swimmers, to learn how to swim better, but I was a much stronger swimmer than the others in the class, and the instructor spent all his time with them. The level was much lower than I expected—there were people in the class who hadn't passed the swimming test. The beginners' class must have been for people who'd never even been in the water, and the intermediate class wasn't much beyond that. I went to a few classes, didn't get to swim much and didn't learn anything, and stopped going.

Then one day Sam, a friend who was on the swim team, saw me at the pool, and we stopped and talked. I had been swimming the breast stroke, and he said, "There's something funny about your breast stroke; I don't know what it is, your kick and pull look okay, but I think when you reach the wall you should be hitting it harder

with your hands."

I was comfortable with my breast stroke, and I had never really questioned it. So, this cryptic comment puzzled me, and finally bothered me. I wondered if I was doing something wrong. I began experimenting.

Nothing seemed right, once I started questioning it. I concentrated for a long time on pulling harder with my arms and kicking harder with my legs. It made breathing difficult. I experimented like that for a few days, feeling out of sorts. But finally I hit on something that made breathing much easier, and gave me the feeling of surging through the water. I suddenly realized that *that* was the way the stroke should be. I was using the same motions, but a different rhythm. It was a revelation to me: I had never been so aware of the total sense of *swimming*, the ease and power of it. And, I noticed that I really bore down on the wall when I turned. I counted out the rhythm, in four beats, to keep from slipping back into my habitual stroke. I practiced a long time, and returned to practice again and again. It felt like I had just learned to swim.

I showed my breast stroke to Sam and to other people, too, and started asking for feedback on my other strokes. I took an Advanced Swimming class. Finally, I swam on a master's swim team, learning flip turns and racing dives, and swimming timed sets and medley races. But the breast stroke is still my best. Later, Sam told me, "That's your stroke."

When I was fifteen I visited my brother Daniel in Mainz, in Germany. I was timid about putting myself forward in a strange country and in a language I didn't really know, so Dan acted as guide and interpreter.

He decided that we should go swimming. I didn't have swimming trunks, but he assured me that lots of Germans didn't wear anything at the pool where we were going, so we didn't need them. We rode a city bus out of town, and arrived at a sports complex with a large outdoor pool. The terrain was flat and open, and the pool was surrounded by a great lawn, fenced off from wooded parkland beyond. We paid admission and found a spot on the grass, where we undressed. The day was cool and not many people were there, but I could see that nearly all of them were wearing suits. The only exceptions I noticed were a few topless women, sunbathing at a distance from the pool. We stripped, but I expected a life guard to accost us at any moment to throw us out. None did, though, and I soon found refuge in the chilly water of the pool. I stayed in there as long as I could. At first I swam, but I became tired and cold, so I hugged my body and tried not to move in the cold water.

Dan wanted to dive. There were diving platforms at one side for 1, 3, 5, 7 1/2, and 10 meter dives. I had only dived from a 3-foot board, but Dan got me to dive several times from the 3-meter and 5-meter platforms, and once

Diving Platform, Frechen bei Köln, Germany (Fabian)

from the 7 1/2-meter. I dove head first, and the water tore at my eyelids. I was afraid that the impact would hurt my exposed genitals, if I dove too flat. On the 7 1/2-meter dive I overcompensated, and the backs of my legs slapped against the water. I was proud of having dived from it, and for a while I considered diving from the 10-meter platform.

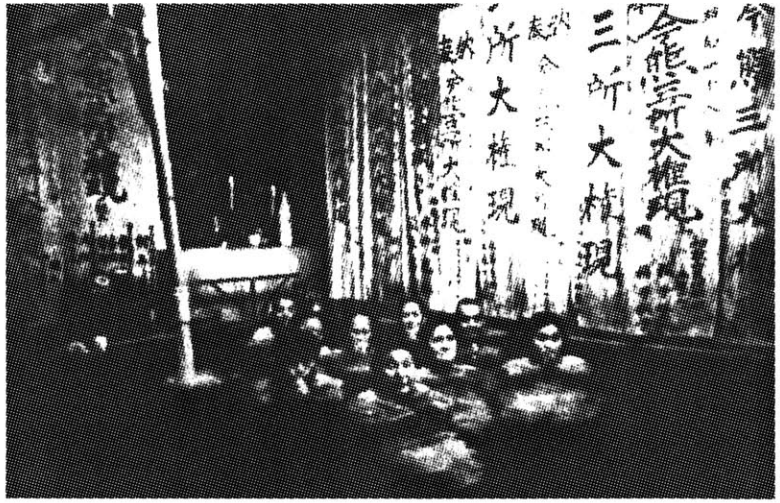
It was late afternoon when we got out of the water, dried ourselves, and tried to warm ourselves in the sun. We sat on the lawn wrapped in our towels, and talked for a while about the strange ways of the Germans. Finally we dressed and took the bus home.

My oldest brother, Willard, has a hot tub. It's on a timer so that in the evening, when we decide to relax in it, it's warm and ready. We lift off the big styrofoam cover and check the temperature, and then we take off our clothes and ease ourselves in. Entering the warm water is a slow process of adjusting to its heat as you go. People often enter cold water gradually, too. In the hot tub, it takes me just as much time to relax.

For a while after immersing myself, parts of my body feel incongruously cold—fingers and knees, for instance. This continues until I'm feeling quite warm and have to raise my upper body out of the water to cool off. Those exposed parts seem to cool precipitously, although they remain bright red with heat.

Once we're comfortable in the tub, Willard adjusts some controls which start a low background hum, and jets around the tub gently push water and a few bubbles against us. The circulating water makes me more aware of my buoyancy. The tub is smooth fiberglass, with contoured steps and ramps, so that we can both settle into a comfortable spot, up to our necks in water and nearly floating.

We're in a big room, and the ceilings are high and the lights are turned down so that we can't see the darker corners very well. Willard's wife and two small children are already in bed, and we'll go to bed right after the soak.



They wash twice a day and do not worry if their privy parts are seen.
(Jorge Alvares, in Grilli)

A hot-spring fed bath in Japan
(Grilli)

Sophia, the three-year-old, loves to swim and play with her parents in the tub, and I like to be there, too. But Willard and I generally get in after they've gone to bed. We don't see each other much anymore, and the hot tub is a special place to make the most of it after a long day.

We talk at first about the frustrations of the day, or work, or our parents, or our other brothers. Often we talk about the news, and what we see happening in the world—what we'd do if we were in charge. Sometimes Willard speaks in hushed tones about his family, his worries, or things he's especially proud of. I generally do more listening, so I hold my end of the conversation up by asking questions and nodding my head a lot. Sometimes we cover a lot of ground that way.

But our closeness as brothers isn't really renewed until we've fully exercised our mutual, and very particular, sense of humor. We warm up to it as we're talking, but eventually one of us will hit on a humorous tangent that draws the other out in stifled howls of laughter. That usually leads to other tangents, and more laughter. I think it's really in those moments that we come to admire each other, without judgement. Then it seems that nothing more seems important enough to talk about seriously. Even the urgent matters from a few moments before have lost their importance.

We begin to feel the heat, and we realize that we're sweating profusely into the water. Finally, thinking ahead to the next day, we realize that it's late, and so get out and towel off slowly as we cool. Still naked and bright red, we shut down the tub and replace the cover. Then we pull on our shorts and head for bed.

In Morocco, my brother Leslie and I visited the medieval town of Fes. We stayed in a small pension on the edge of the soukh, the old bazaar. From our window we looked out on a large, dominating roof across the street, which seemed to us like the surface of the moon. It consisted of a vast continuous surface of whitewashed plaster, with great spherical bulges covered by small pockmarks, each surrounding a shiny bit of glass. The roofs of the surrounding buildings were dingy by comparison—grey and crudely squared off, with occasional potted plants or laundry. On the street, the big building blended in among its neighbors, but it was marked by a small public fountain, set into its front wall with an elaborate and well-worn tile surround. The fountain flowed from one of the artesian springs which had supplied water to the town since it was first settled. Throughout the day on the busy little street, men stopped to drink from it, and donkeys drank from the trough below. Next to the fountain was a large wooden door with a carved grillework window, and a sign above in arabic and french. It was the hammam, the public bath.

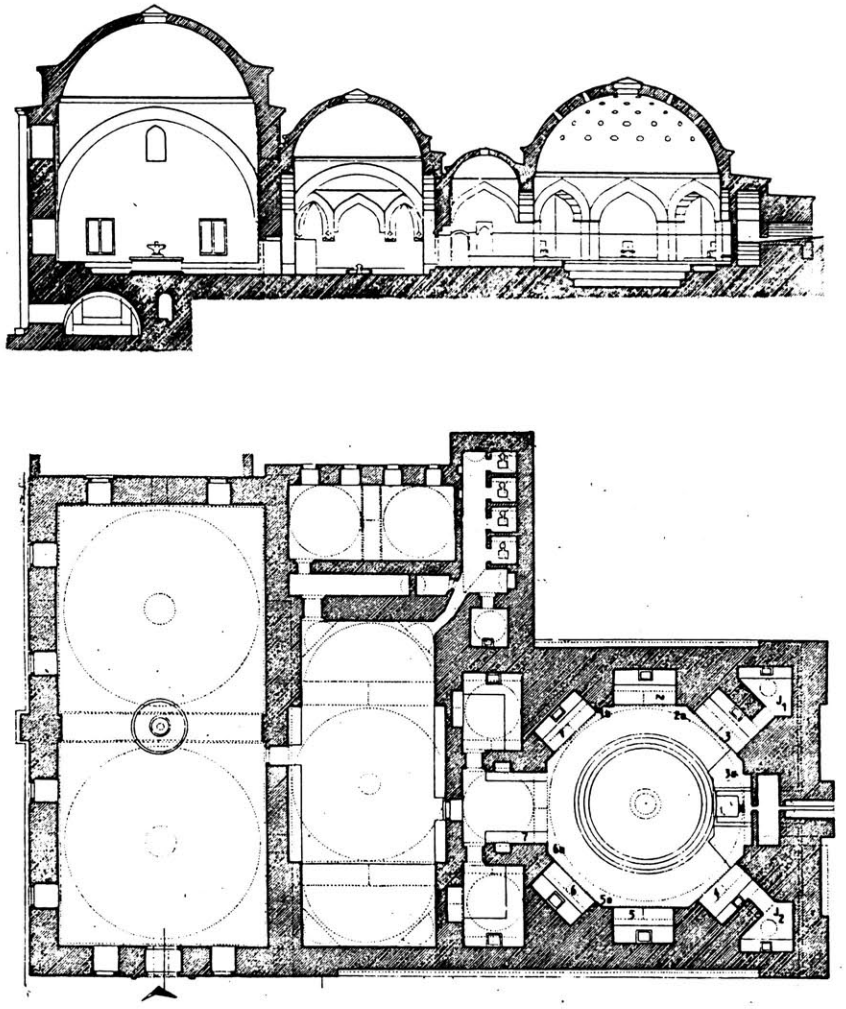
We asked for the men's bathing hours, overcame our apprehensions, and went to bathe. Behind the great door was a small room with an attendant's window, where we paid a small fee and were issued heavy rubber buckets. We were directed by gestures through a doorway into the

dressing room. Beyond was a series of arched doorways leading through dimly lit, vaulted spaces, each higher than the one before. As we undressed, we found a man who spoke enough french to explain the hammam to us. To our relief, he was quiet and discreet, and he did not hover about us aggressively after he was done, as so many young morrocan 'guides' did on the streets. In the bath it seemed that our privacy was respected.

We first went to a large, domed central room, surrounded by a gutter and cold-water spigots, where we were to wash and rinse. A raised trough in the center of the room held steaming water. We soon found the use of the buckets, dipping and mixing water for washing and rinsing. Several men had installed themselves in shallow niches in the wall to wash themselves.

The floor was covered with large flat slabs of stone, smoothed by years of wear. It was heated from below along channels, and at places it seared our bare feet. The domed roof overhead let in diffuse light through many small bull's-eyes of bluish glass.

An arched opening led to a long low room where men sat on the floor in groups of two or three and bathed slowly, or talked, or scrubbed and rinsed each other's backs. Another arched opening led to a smaller room where we filled our buckets at a single large spigot and rinsed ourselves with very hot water—often too hot to bear. The floor in this room was particularly treacherous,



Jeni Kaplica Bath at Bursa,
Turkey
(Tuna)

but we found a safe ledge to sit on, and spent some time sweating in the steamy heat and talking quietly.

Sitting in this little room, I looked up at the bright bits of glass, high overhead in the vaulted ceiling, and thought briefly of the sunlight and the bustling streets outside, and the whitewashed domes we saw from our pension window. It all seemed remote, with little relation to the world of the hammam. The stone walls and filtered light around us seemed more like a protected undersea cavern than an urban public bath.

After a while we began to feel restless and short of breath, and we realized that we were probably more overheated than we thought. We decided to leave. First, we went back to the central room and splashed cold water on ourselves and on each other. Then we retraced our steps back to the dressing room. As we dressed, our bodies slowly cooled. We were relaxed. We talked about our plans for the rest of the day. Finally, we stepped out into the blinding sunlight on the street, and slowly walked down into the soukh.

When I entered the sauna, the old man was already there. That was good, because it meant that the others wouldn't make a lot of noise when they came in. There's something initiatic and esoteric about the sauna, especially when only men may use it. I count on this, but often the younger men seem uncomfortable with it, so they talk boisterously and evasively. I've noticed that it often seems to be the athletic ones, the jocks—they just can't stand to be quiet in a room with other men. But with the old man there, they would be quiet.

He was alone, when I went in. I closed the door behind myself and nodded to him, and he nodded back. He sat close to the stove, facing it. I sat along the other wall, across the doorway from the stove. I settled in, leaning back carefully against the hot wall, letting myself relax, and looked slowly around the little room. He sat erect and immobile, with his eyes closed, in a full sweat. I knew that he could sit like that for a long, long time. He could take much more heat than anyone else, with only a few short breaks. Often, he'd be there when I arrived, and he'd still be there when I left in a state approaching heat stroke.

A few months before, I had gone to the sauna for the first time in years, and it had filled me with anticipation. When I went in, there were already three or four men inside, and I greeted them. But somehow it wasn't enough to say hello, so I asked if the clock was working. They said

Leaving a traditional Finnish underground sauna (Konya)

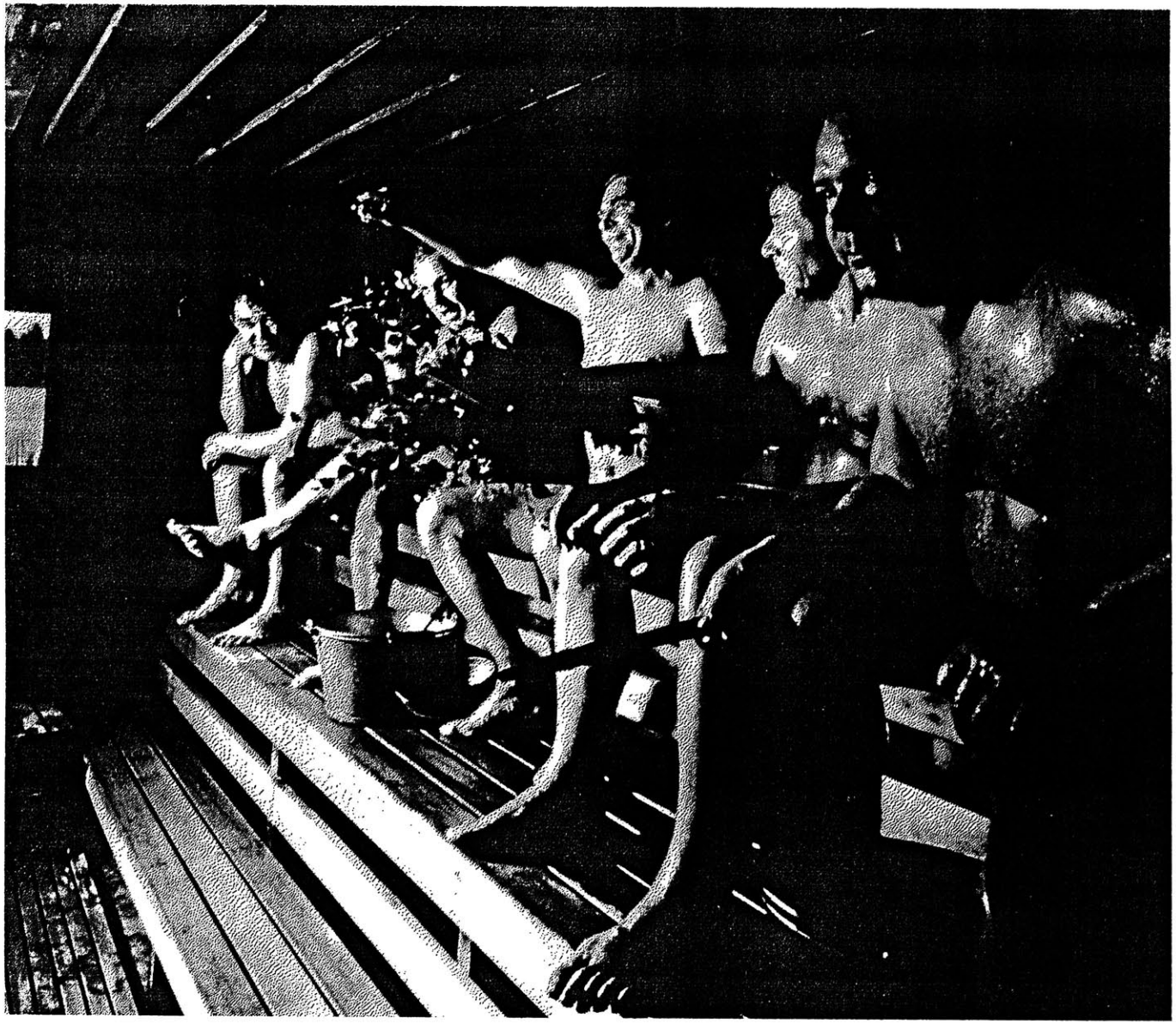
it was. I didn't want to be thought a stranger, so I told them that I remembered when it had been broken, and I'd stayed in the sauna too long. They didn't respond. I suddenly realized that I had already said too much and that I was still a stranger. The old man was there then.

Since that first visit I'd become a familiar face, but I'd probably said less, in all, than I did that first time. I'd found a comfortable rhythm for warming up and cooling off, usually entering three times for ten or fifteen minutes, with cold showers between. That did more than anything for my sense of belonging there, because I could plan to spend the last five minutes or so in a full-blown, aching, florid sweat—an impressive sight and a very impressive feeling.

After a few minutes one of the young men came in and sat down, followed by another. They were late afternoon regulars, and they gave nods of recognition and short greetings. One was a talkative sort, but he didn't get an opportunity to start, and anyway the old man was there. Finally a fifth came in, another familiar face, and the talkative one started a short conversation with him, intermittent and not too loud. Then, to my surprise, the old man joined in good-naturedly with a few words. The conversation went on for a short while, and then died down, and he returned into his closed-eyed silence. I smiled. It seemed to me that a rule had been broken, but then I reflected that there was no rule, really; what had happened was nothing but a simple conversation.

Ancient folklore has numerous references to the sauna indicating the vital place it has always held in Finnish life. Children were born in the sauna, the bride visited the sauna before she went to the altar, and the aged were carried there to die.
(Konya)

(Overleaf)
Interior of a Finnish sauna
(Konya)



If you stay in the sauna long enough, you overheat. Your body goes into an all-out effort to cool itself, to pump heat into the surrounding air, but that air is even hotter than you are, and rapid pulse, panting and engorged skin only serve to pick up heat faster. And, the high energy needed for this effort generates even more heat.

I enjoy the resulting sensation, the "burn". It's a primitive, elemental, wild feeling that overtakes me. I focus on it, savor it. When I breath in I seem to expand and fill the whole space of the little room, and when I breath out I let my throat rumble. It sounds like a big cat's raspy purr. I can't hide it from the others; they know that I'm feeling the heat. I'm taller than the others in the room, and I sit erect, with my head up in the heat. My body pulses, and I rock on the bench with sweat running down my body and dripping from it.

I have wild thoughts. Once it occurred to me that the sensation in the sauna is like a slow, choreographed dance with death, interrupted at the last possible moment. when I enter I'm calm, almost sleepy, and the dance starts quietly. The tempo increases gradually, and the tension imperceptibly mounts. I become restless—my breathing becomes irregular and I'm torn between movement and calm. Finally there is a moment of recognition, when it becomes clear that something must yield: to remain would be to perish. This begins a period of withdrawal and approach, torn between conflicting needs to avoid it and to surrender to its oblivious ecstasy. With experience, it's

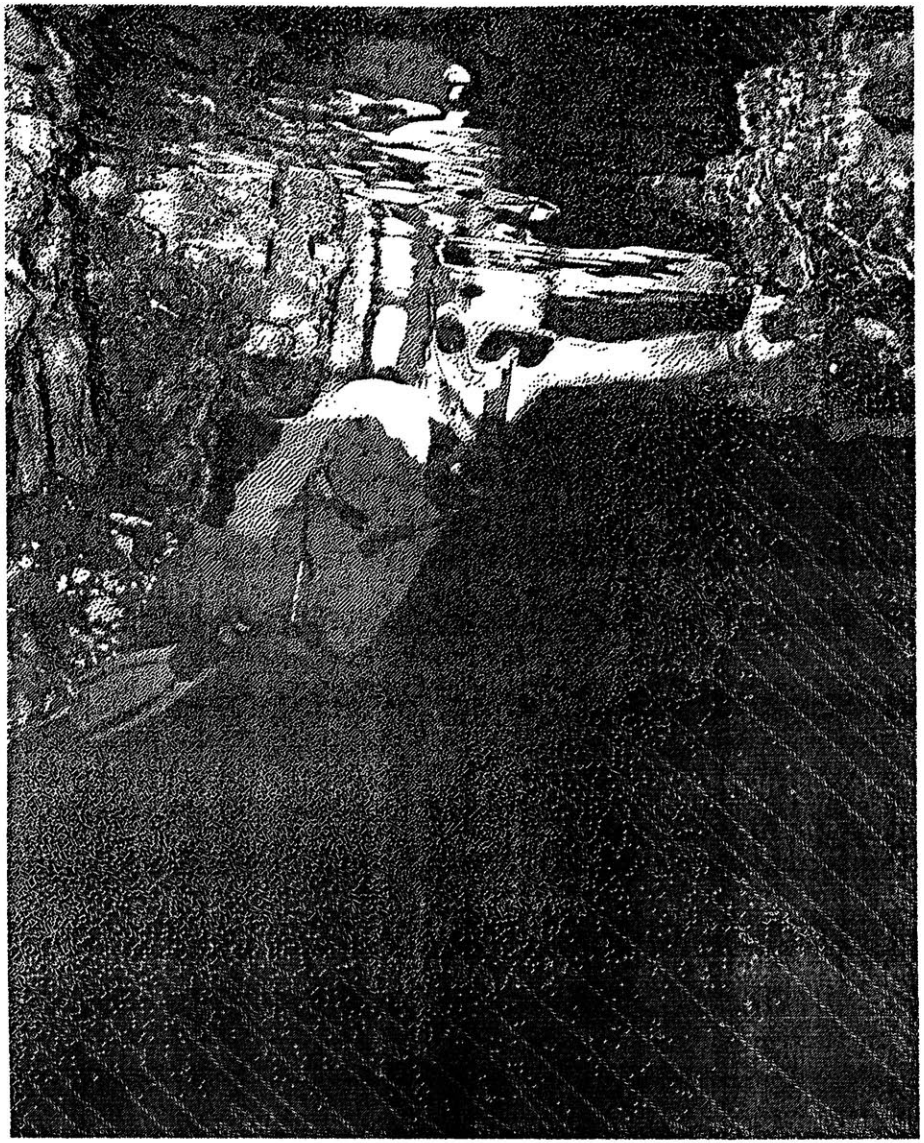
possible to control this tension closely, coming closer and closer to the crescendo, the moment of climax, without actually passing through it. This ends in a state of sweaty heaving, panting and gasping, leading to a physical and spiritual transport, involuntary and passionate.

But the sauna is not a dance. The equivalent of the climax in the sauna would be a delirious heat stroke—or worse. At a certain point in my increasing heaves I remember this, and I know I'll have to leave soon. Then, a little later, my rocking on the bench coincides with a pant to propel me forward a bit, and I slowly follow through, helping myself off the bench, out the door, to a cold shower.

Our scuba class made the last check-out dive from a boat in deep open water off Nahant, on a gray, blustery spring day. One of my biggest fears began to come true even before we dove: Sitting in the little boat on the way to our dive site, watching the sand recede, I noticed an uneasy seasickness taking hold of me. As we passed beyond the shelter of Nahant, big swells from the ocean confronted us and my stomach began to contract with each pitch of the boat. I'd been told that diving would dispel this, and I hoped it was true.

It was. When I put on my gear and tumbled into the water, the seasickness disappeared, almost unnoticed. Before we had a chance to adjust to the cold and the surges, we gathered around a diving buoy and went over our surface drills. The swells rose about us, narrowing our world to a little patch of ocean and sky. Already, we felt the near-freezing cold of the water as it filled the voids in our wetsuits and washed over our faces, into our ears. In the face of this threatening setting, a sort of deadly-serious determination set in. Perhaps our instructor knew that we could adapt to the water only by going through the drills we had learned by rote in the swimming pool; he made us repeat them until he was confident in us.

Finally, adjusting our masks and regulators one last time, we dove, and the confusion of the waves was suddenly forgotten. We looked down into water as far as we could see, dim and murky and suddenly calm. The surge now engulfed us



Underwater exploration
(Academia... Subaquee
Ustica)

so completely that it was barely noticeable. We had no way of sensing the movement of the ocean, and we rose and fell with it unaware, suspended in water as far as we could see. The thin white anchor line of the buoy stretched down and disappeared. We followed it down, breathing carefully through our mouthpieces. The water seemed to go on forever, receding downward into obscurity. It was a new sensation.

Our dives before had been shore dives, and we'd simply waded into the water. We had a sense of the land's continuity from beach to seabed. Yet even then a sense of dislocation set in after a certain point, when the land seemed to have been subverted by the ocean. Twice, other members of the class panicked—they bolted and swam frantically for the shore. For that, each had been asked to drop the class. But here there wasn't any trace of land, just a thin white line leading downward. The transformation was complete.

We dove deeper, peering into the darker water, forcing air into our ears to counteract the pressure on them. The air in our wet suits compressed, too, quickly reducing their insulation and exposing us to the extreme cold. Even while we descended, we began a race against hypothermia, because our bodies could never generate enough heat to replace what we were losing. We hurried down, looking for the end of the white rope.

Finally, we saw the green-brown bottom appear. Large rocks loomed up, covered with silt and strange-looking plants. Bits of debris lay here and there. We looked around nervously,

recoiling each time a movement brought cold water into our suits. We soon learned to crane our necks as little as possible.

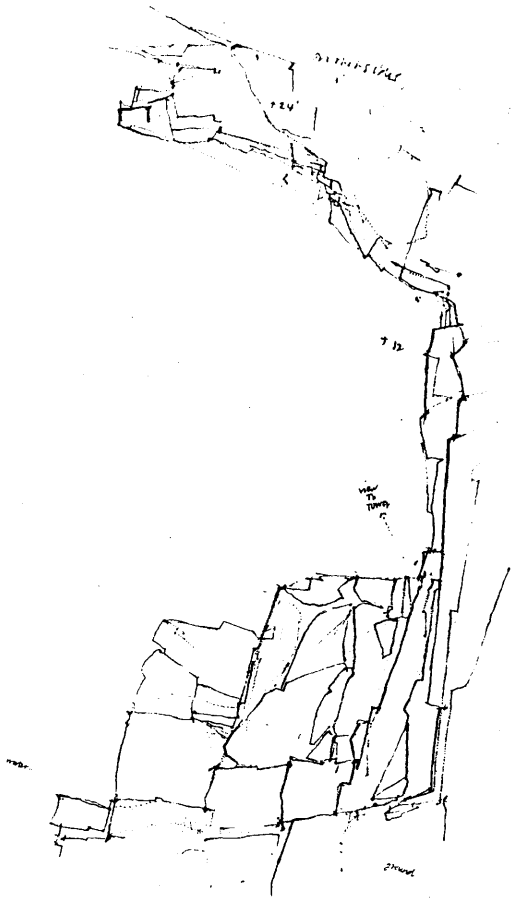
We quickly organized to do more drills, swimming between groups on the bottom, exploring as we went. I felt the surge again, as I swept slightly back and forth over the bottom. I knew it was synchronous with the waves above, but they seemed distant, unrelated. It was a part of this world, the undersea world, not the world of beaches and boats. It seemed normal, somehow. Suddenly, my sense of precariously floating had a tangible quality: To rise over a boulder I had only to breath in more deeply; to inspect the bottom I exhaled more, and slowly fell. In this way we explored the ocean floor, examining plants, harrying a few fish, and looking for lobsters in every hole. For a few moments in this wierd place, our ease of movement seemed to lend us grace.

I was wracked periodically by convulsive shivers. The cold distracted me and demanded attention, impatiently compromising grace and exploration. As I felt the cold more and more, I doggedly hurried through the drills, waiting for a few moments of relaxation between shivers. Finally, those moments were brief and far between, and I had to focus all my concentration on the drills. At last they were over, and everyone signalled the ready, and we began our controlled ascent to the glinting waves above, the boat, and our warm clothes.

One summer when I was 16 or 17 and my brother Leslie was home from college, I took him on a midnight trip to swim in a quarry. Some friends of mine had shown me where it was, on the grounds of a cement plant a few miles from our home. During the day swimmers were summarily evicted, but I had already sneaked in several times at night.

Bob, an old high-school friend of Leslie's, came with us. He and Leslie were years older and they had certainly been on their share of midnight adventures, but they were distinctly hesitant about this one. At the time I thought it was simply because they had never seen this quarry, or that they were showing their age, but in retrospect I see that other factors were in play. By instigating the trip and leading them to a place they did not know, I had reversed our childhood roles. They felt awkward in this, more awkward than I did. They probably weren't sure about my idea, especially since they hadn't seen much of me for several years.

We got some gear together—towels, swim fins and goggles, a flashlight, and an old lantern which I insisted on bringing—and went in Bob's car. I gave directions, and when we got there we parked on a side road a good distance from the quarry. The spirit of adventure grew on us quickly, which meant that we started worrying about being caught. Suddenly the fins and goggles were



Drawing of quarry at Halibut Point, Massachusetts (Hajian)

encumbrances, so we left them in the car.

We found our way into the middle of an overgrown field piled haphazardly with big ranges of rocks, to an enormous, angular crater. The quarry was L-shaped, and an old road headed straight for the inside angle of the L, as if to launch us directly into the middle of the pit. At the last moment, the track veered sharply to the right, down a steep ramp which descended the long inside wall.

Part-way down, the ramp disappeared into a smooth surface of water. It reflected the moon and stars above, but hid everything below it in darkness. We had no idea how far down the ramp went. Even in daylight the bottom of the quarry was lost in green darkness, and at night it was simply unimaginable. On several sides, sheer rock walls fell straight down into the water from fifty feet or more above us, and they could have continued down a good deal more. On other sides, enormous steps rose out of the water eight or ten feet at a time, leaving ledges barely large enough to sit on. Some of them were accessible, with some effort; others were not. The far wall was mostly lost in the moonlight's shadow, but we could dimly see that it had collapsed in a great landslide of boulders and rubble and huge slabs of rock.

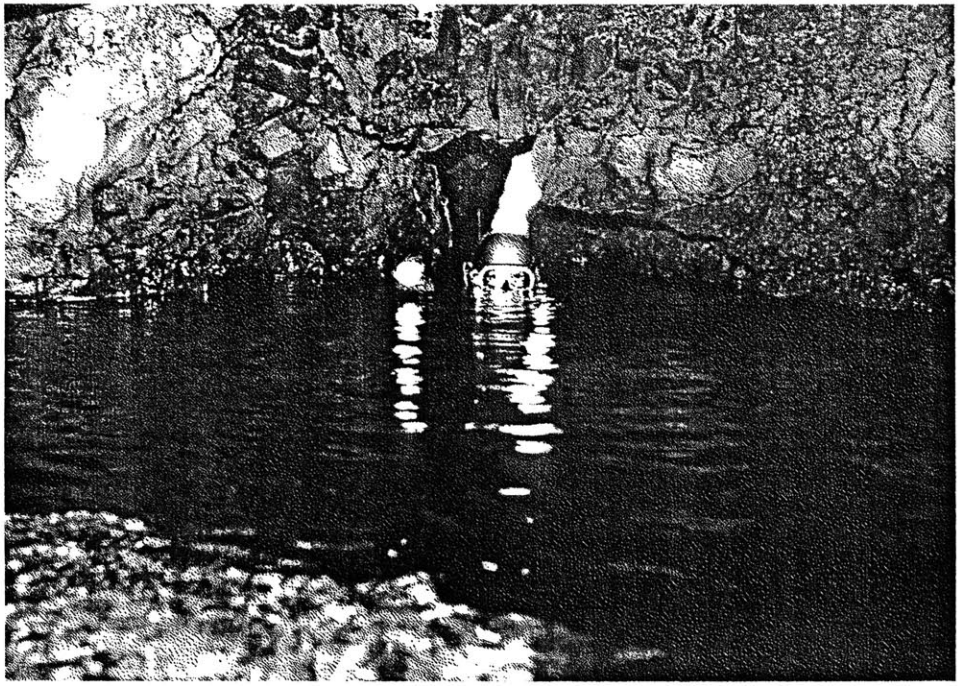
As we looked at the deep water, our tone changed. Our concern before had been simply not to be observed, but now we faced the real issue: to stay out of danger here in the deep, dark water. We didn't have to remind each other to stay together and keep away from ledges where rocks

might fall. During the day I had seen people carousing carelessly, but at night everything was different. There would be no fooling around.

I lit the lantern and placed it on a rock on the track, by the water's edge. We stripped—there hadn't been any question of wearing anything when we swam—and waded down the ramp, into the water. It felt mild in the night air, still warm from the afternoon sun.

Suddenly, when we disturbed the water, its surface was broken by small dark leaves. We were wading through floating water plants, crowded into the shallow water along the ramp. As they brushed against us, they seemed to cling to us unnaturally, and we knew that they were probably teeming with water beetles and insect larvae. We stopped when the water was halfway up our thighs and the plants were still thick, not wanting to go further, to immerse our genitals. Instead, we walked back to the edge of the ramp and dove off the side into the deep, clear water.

It pulled against our skin and wet our hair and rushed by our ears. When we came to the surface it bouyed us up. Our hearts beat fast, and we swam to the middle of the quarry. There, suspended in the middle of that immense dark hole, we stopped to look around us. We were looking at the sheer stone walls above us, but we were overtaken with thoughts about the unknown depth below us, more powerful because it was dark and unknowable. When we trod water, our feet extended



Exploration of a Grotto
(Academia... Subaquee
Ustica)

below the warm layer of the surface into the quarry's cold, deep, inhospitable water, constantly reminding us of what we could only imagine.

We swam around the long end of the quarry, in sight of the track and the lantern. We approached the walls and peered up at their rocky faces in the shadows, but we always backed away, afraid of hitting protruding rocks underwater. This became an overpowering fear at times, because it suggested to us that we might also hit other things that weren't rocks; unknown things. A few times,

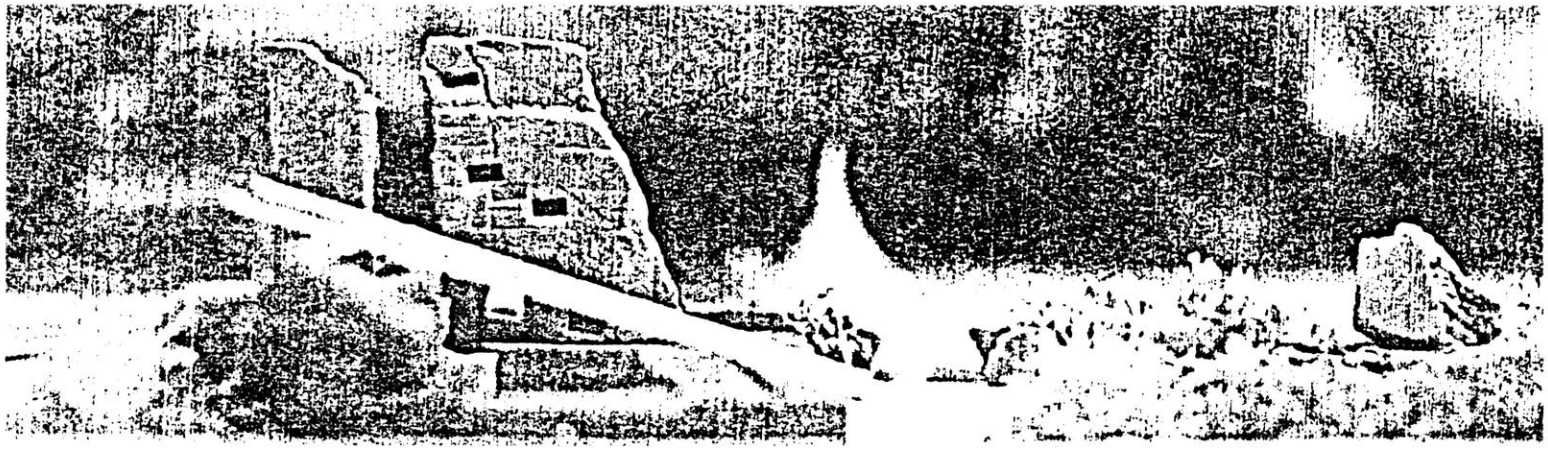
overcoming our fears, we dove down in the center of the quarry, into the cold water. But the nagging apprehension remained.

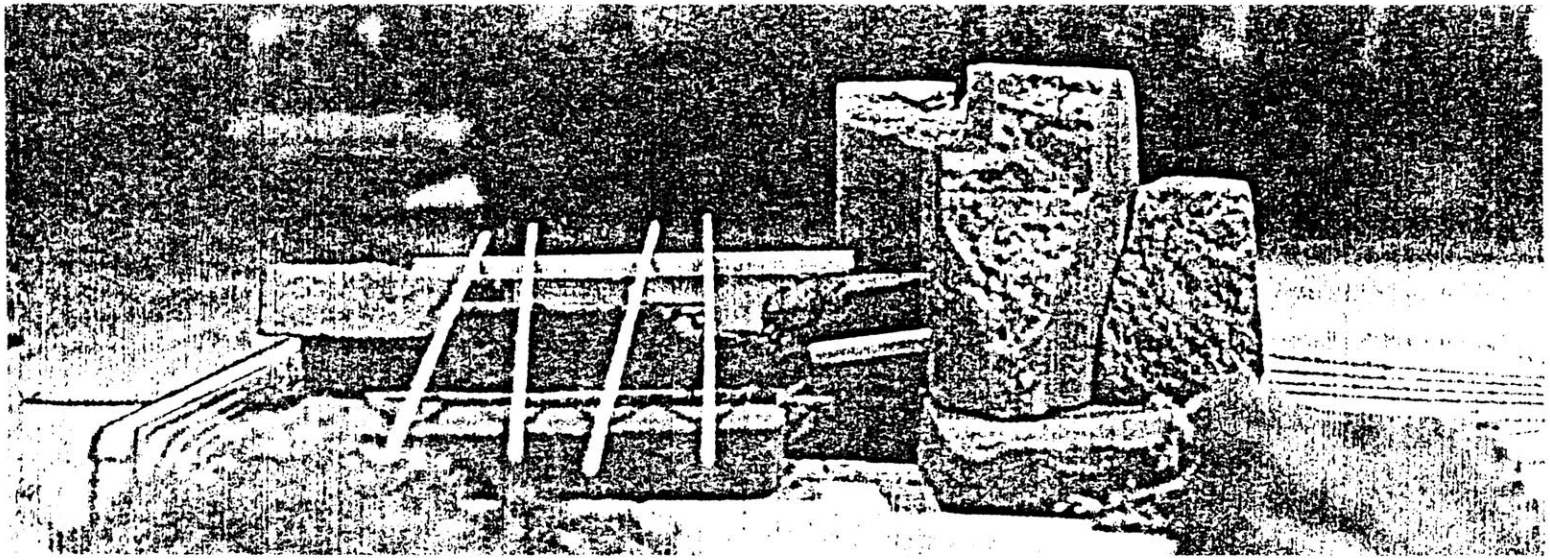
Finally we set out to swim the length, to the hidden corner. From the center of the quarry we looked into it. The walls there were closer together but quite sheer on all three sides, so we knew the water was deep. The moonlight couldn't enter this narrow canyon, and the walls were black faces. We swam in to the center, between the walls. We could barely see each other, until we were too close for swimming comfort. We stayed there a bit, treading water and talking in hushed, gasping phrases, with our echoes reverberating around us. Finally Bob said, "Let's go back."

When we came out into the open, we could just make out the ramp's shadow in the moonlight, but we could not see the lantern. We hoped it had not gone out, because, suddenly, it seemed as if it was the only way of being absolutely certain of our landing place. We swam along the middle of the quarry a bit, and looked again. Still, we saw no lantern. We swam again, and the lantern finally appeared from behind the slope of the ramp. We turned in, heading for it, closer and closer. Suddenly we were surrounded by the water plants, filling our hands and catching on our shoulders and brushing against our bodies. We lunged for the land, stubbing our toes on rocks and

fighting to keep balance as we hauled ourselves out of the water.

We found our towels and dried ourselves, feeling suddenly chilled. We talked, no longer in hushed voices, proud of our adventure. Then, before we left, we tried to guess how deep the water was—knowing it was pure speculation—and how wide, and long, and how high the walls were. Finally satisfied, we headed for the car.

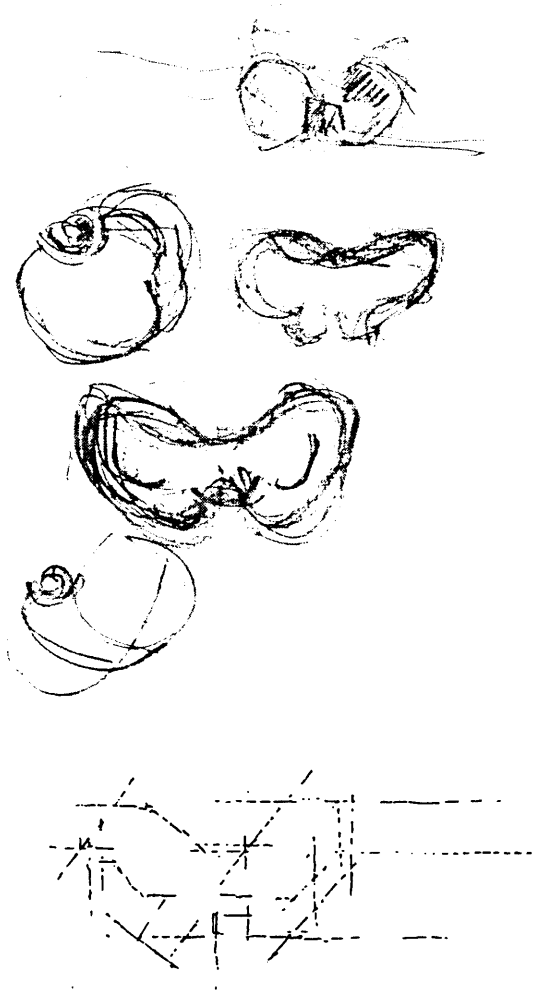




The design process began with a sketch exercise, resulting in the gesture model. Earlier, during the programming, siting, and diagramming phases, intuitions had emerged about the Swimming Club's formal identity. They found their first expression in this model. It marks the engagement of the design imagination, and serves as the formal inspiration for the design. As the design progressed, the gesture model gained significance both as a precedent for this intuitive expression and as a reference for the qualities sought in the Swimming Club.

The human figure strongly influenced the gesture model, both in its abstract character and as a direct formal metaphor. This influence was explored and developed in an ongoing series of life-drawing studies. The use of the term, *gesture*, is borrowed from life-drawing.

The plasticene masses of the model subtly recall a body's bony anatomy, with its smooth continuous surfaces, irregular contours, and facets. The masses' proportions, differentiation, and relationships recall these qualities in the figure. Where they meet, strong formal relationships suggest articulations. A hint of closure joins these masses and protects them from the weather, like a covering of skin. Where this tissue separates from the masses, it encloses body cavities, open space. These impressions vitalize the exploration and expression of the model's essential gesture.



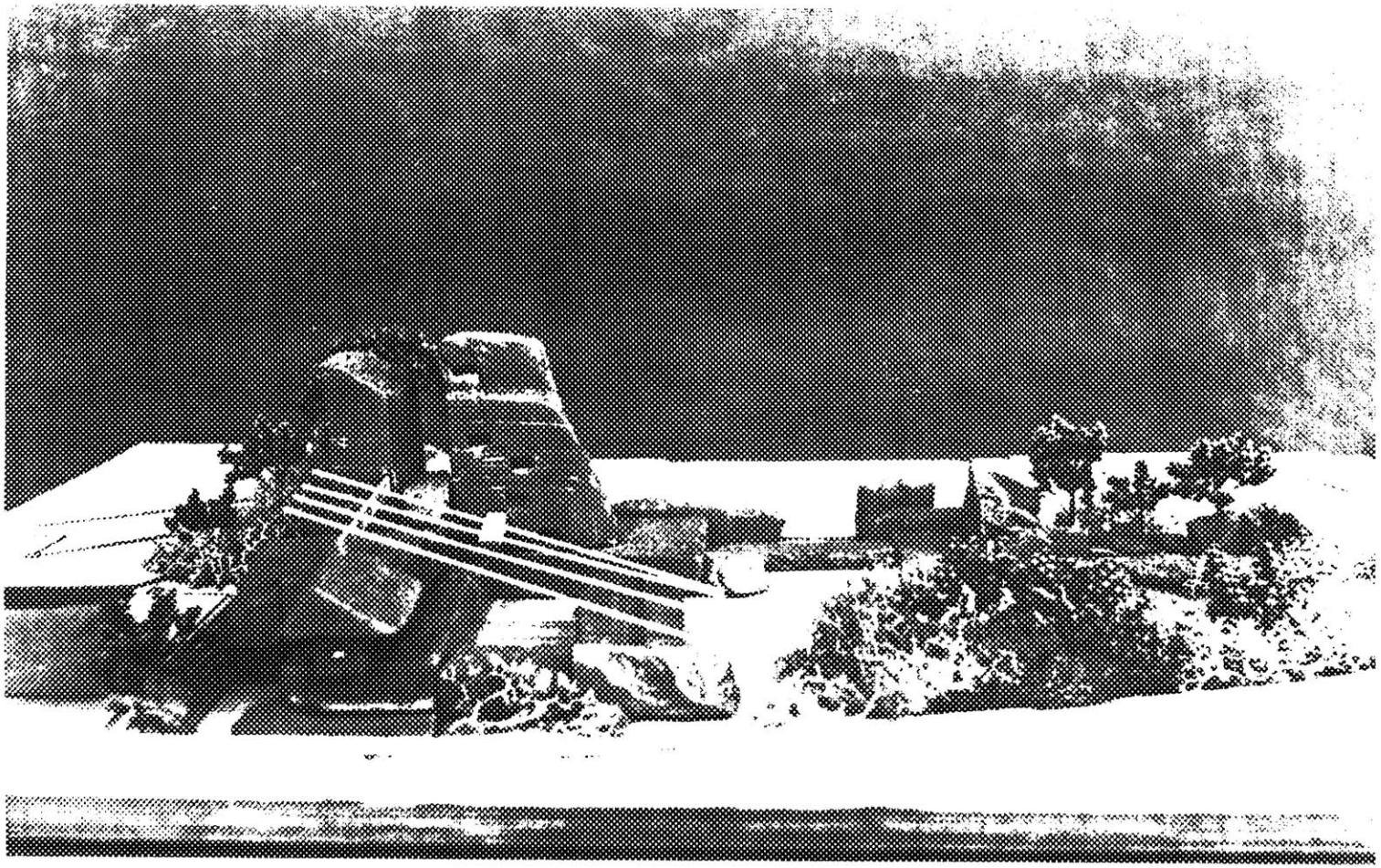
Hip studies and overlay

By focussing on this association of model and figure, the first sketch of the building could be organized quickly, with a resonant unity. By leaving the association open-ended, a playful ambiguity could be entertained about its significance, avoiding a rigid, singular sketch which would have pre-empted further exploration.

Although the figure associations were open-ended, the gesture model was also accompanied by a playful fantasy, in which it represents a person directly. The building rests its mass on the site somewhat like a reclining figure, a big-hipped woman. Her head lies along Willard Street (by way of the entrance), and her spine and ribs nestle into the contours of the site (sheltering the close quarters of the dressing rooms). Beyond, her overarching pelvic bones rise in two massive lobes, defining the greatest height and depth of the building. Her ribs and pelvis partly contain the spreading pool basin, the abdominal cavity, which is at its deepest where it meets the pelvis. Upper and lower extremities extend along the site's edges as walls and gates, to enclose it in a sheltering embrace.

Figure Study

Through these spaces we can conceive ourselves to move; these masses are capable, like ourselves, of pressure and resistance; these lines, should we follow or describe them, might be our path and our gesture. (Scott)

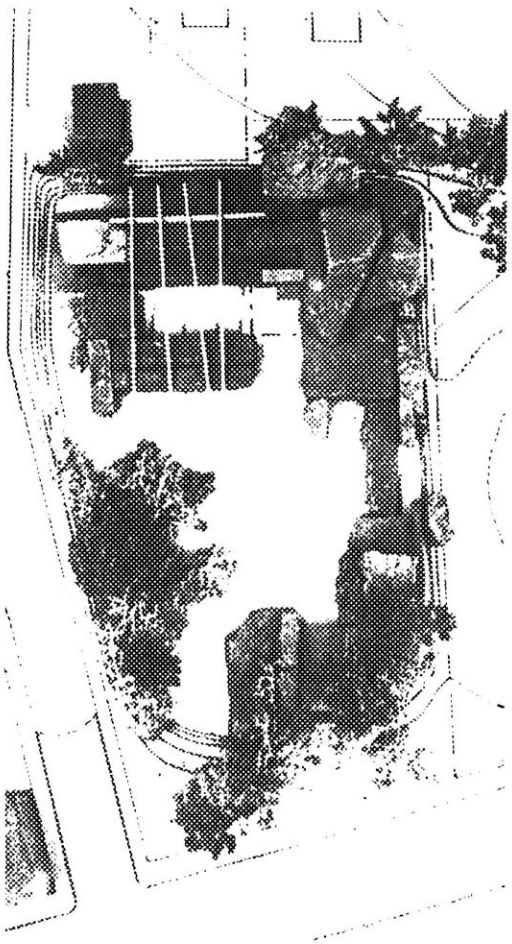


The model was constructed quickly, almost unconsciously, as latent intuitions about the site and building coalesced in primitive, powerful forms.

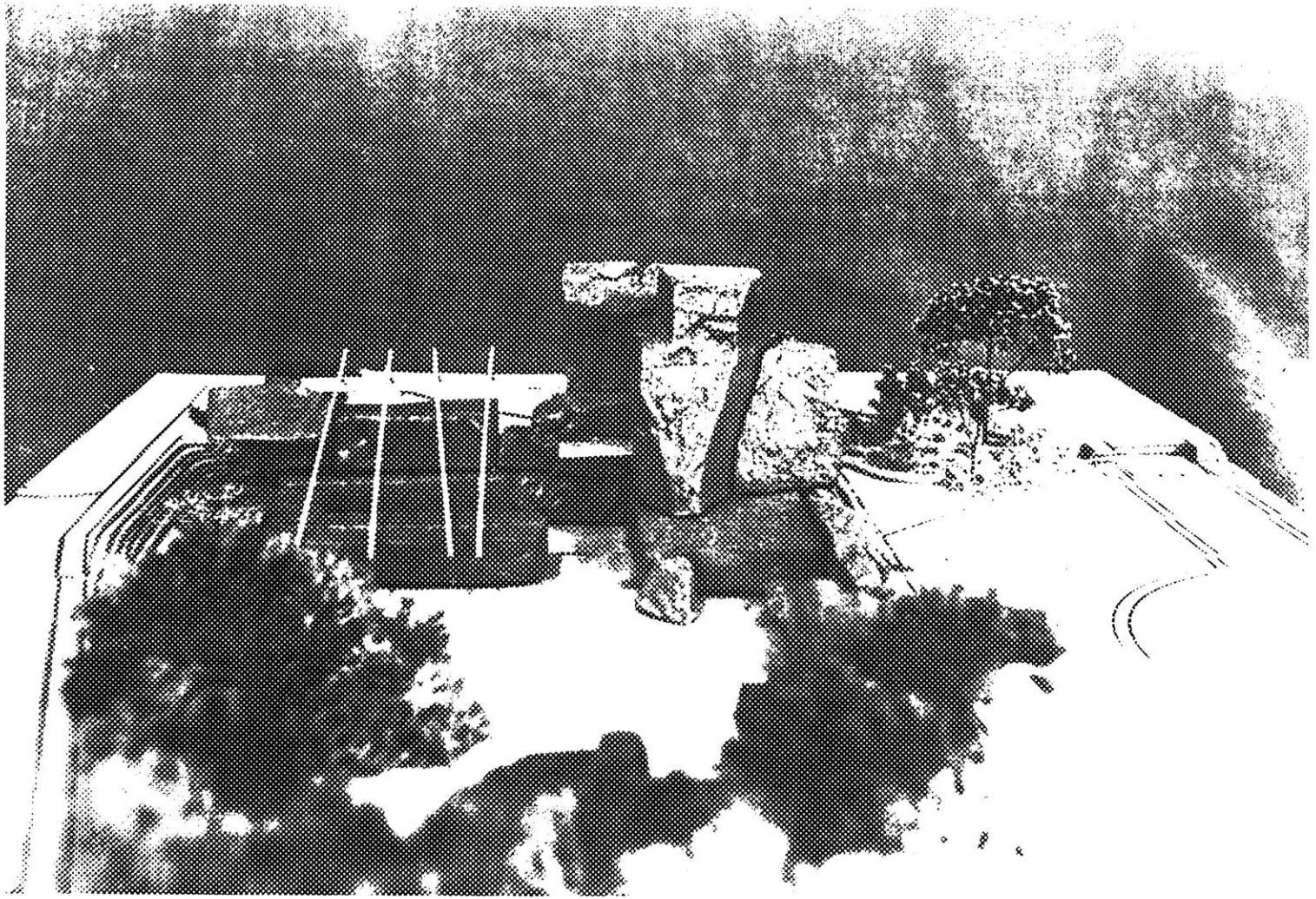
Gesture Model,
West Elevation

(Overleaf)
Figure Study

The gesture model was constructed of plasticene clay on a contoured site model at a scale of 1"=32'-0". This scale was ideal for the clay, as it could be picked up in the hands and molded, cut, and torn into approximate, expressive shapes. Its exaggerations of scale are enhanced by the clay's texture and mass, giving it a quality that can be smooth, elastic, and skinlike, or rough, hard and bony. This organic nature reinforces the design's body-associations, feeding back into the design, suggesting multiple meanings and possibilities.



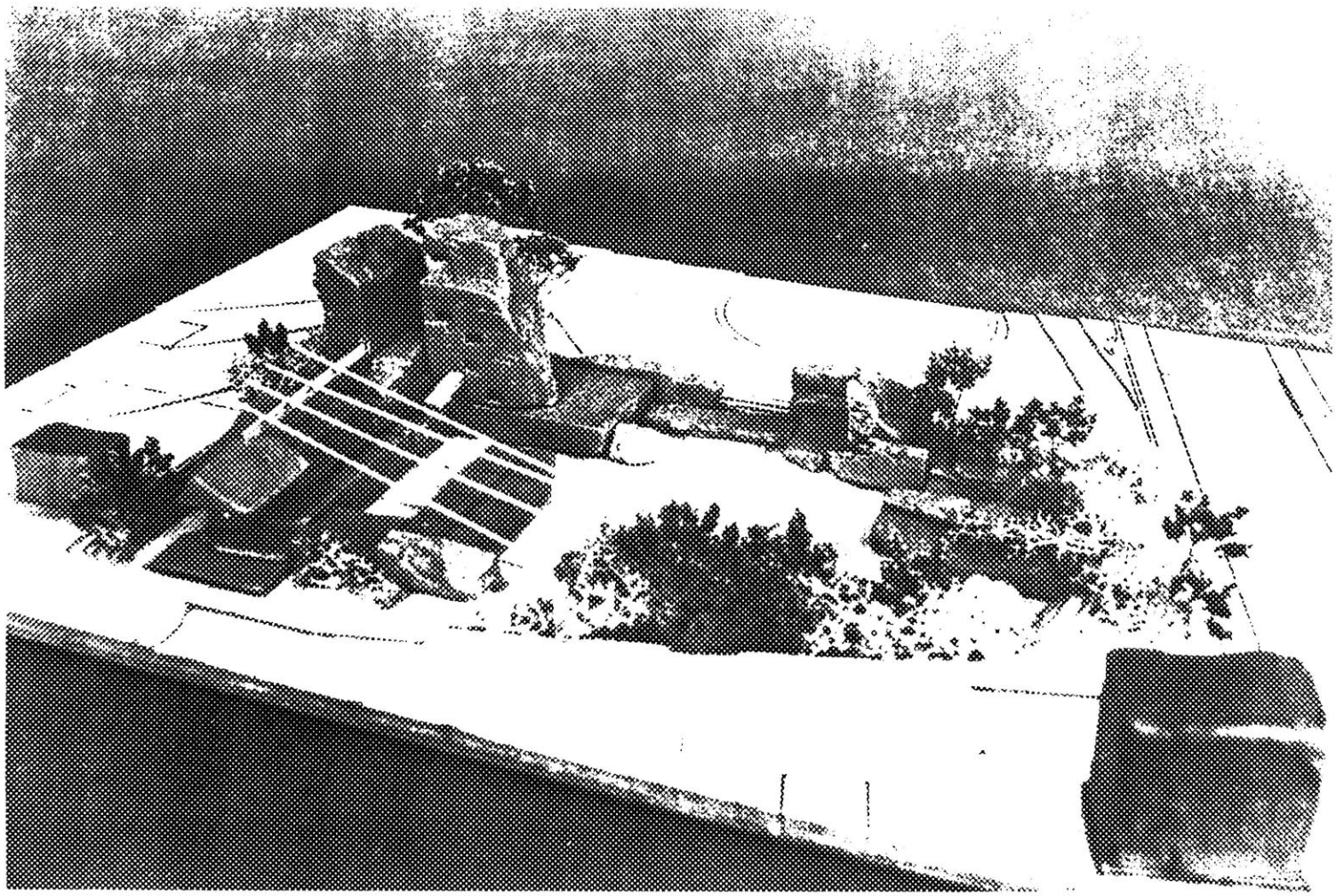
Gesture Model
Plan View



Gesture Model
South Elevation

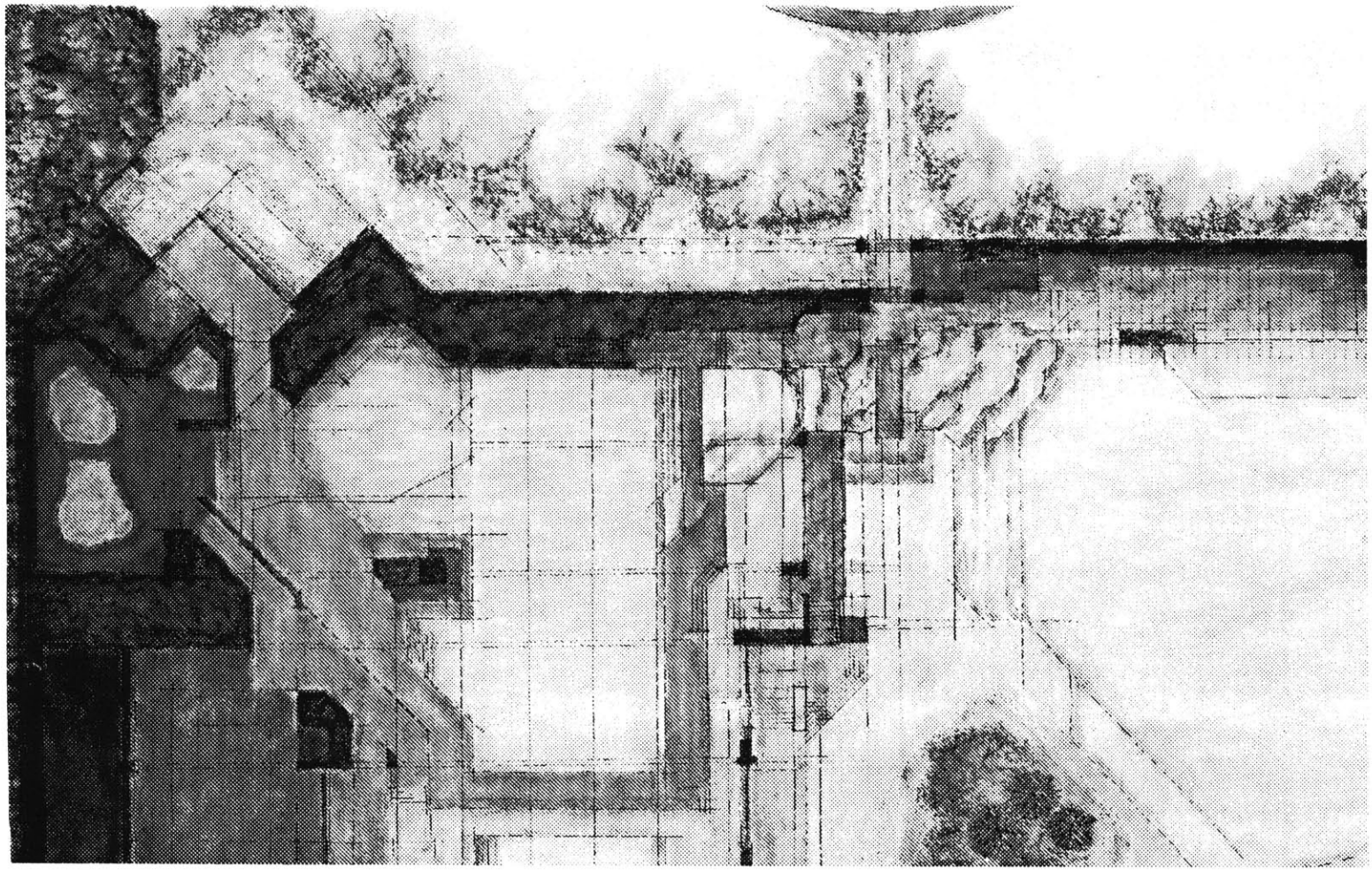
Figure Study

The reference to the figure imparts a tangible quality to the sketch model. With a few masses, this model establishes the building's essential weight, disposition, and movement. These are the qualities borrowed from life-drawing's gesture studies.



Gesture Model
Overview

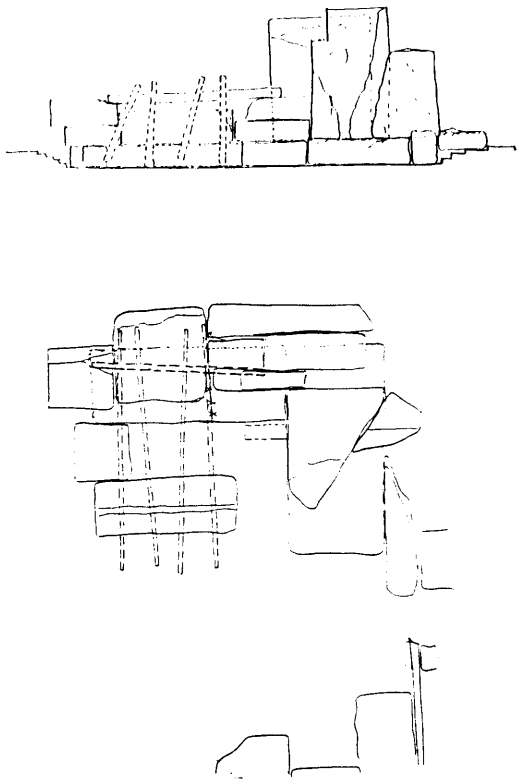
DEVELOPMENT



The gesture model served as the design's formal motive. It was the central reference for the main part of the project, the design development. In this phase, the objective was to maintain the gesture's suggestive quality while elaborating it into a spatial field which could then be developed and inhabited as a building. It is through this process that the gesture's power is affirmed and valued.

To maintain continuity with the gesture model, a gradual approach was taken. Photographs of the model were first enlarged xerographically and transcribed to line drawings, with no attempt to edit or change them. These gestural images were then redrawn at approximately 1"=16'-0" scale. To do this, the model's dimensions were adjusted to reflect the appropriate scale for the building's functions; this generally entailed a reduction of height. Vellum prints of these outline drawings were then rendered with pastels. Patterns were teased out of the outlines, representing projections of mass, water, vegetation, and circulation. In this way, the organization of the building and site were discovered in the gesture model.

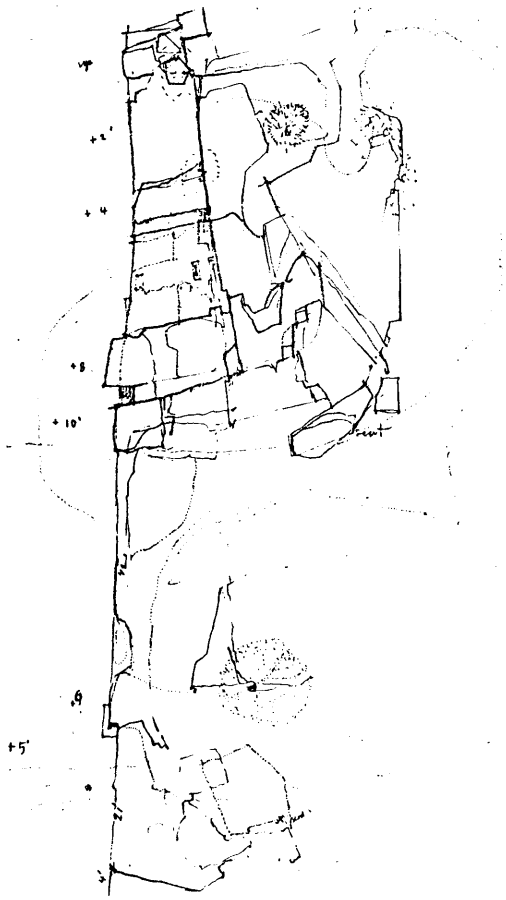
It is important that this was still essentially a process of observation, of finding a latent organization in the gesture model rather than superimposing one on it. This counteracted a limiting, deadening tendency which worked in opposition to the sense of discovery. It was the impulse



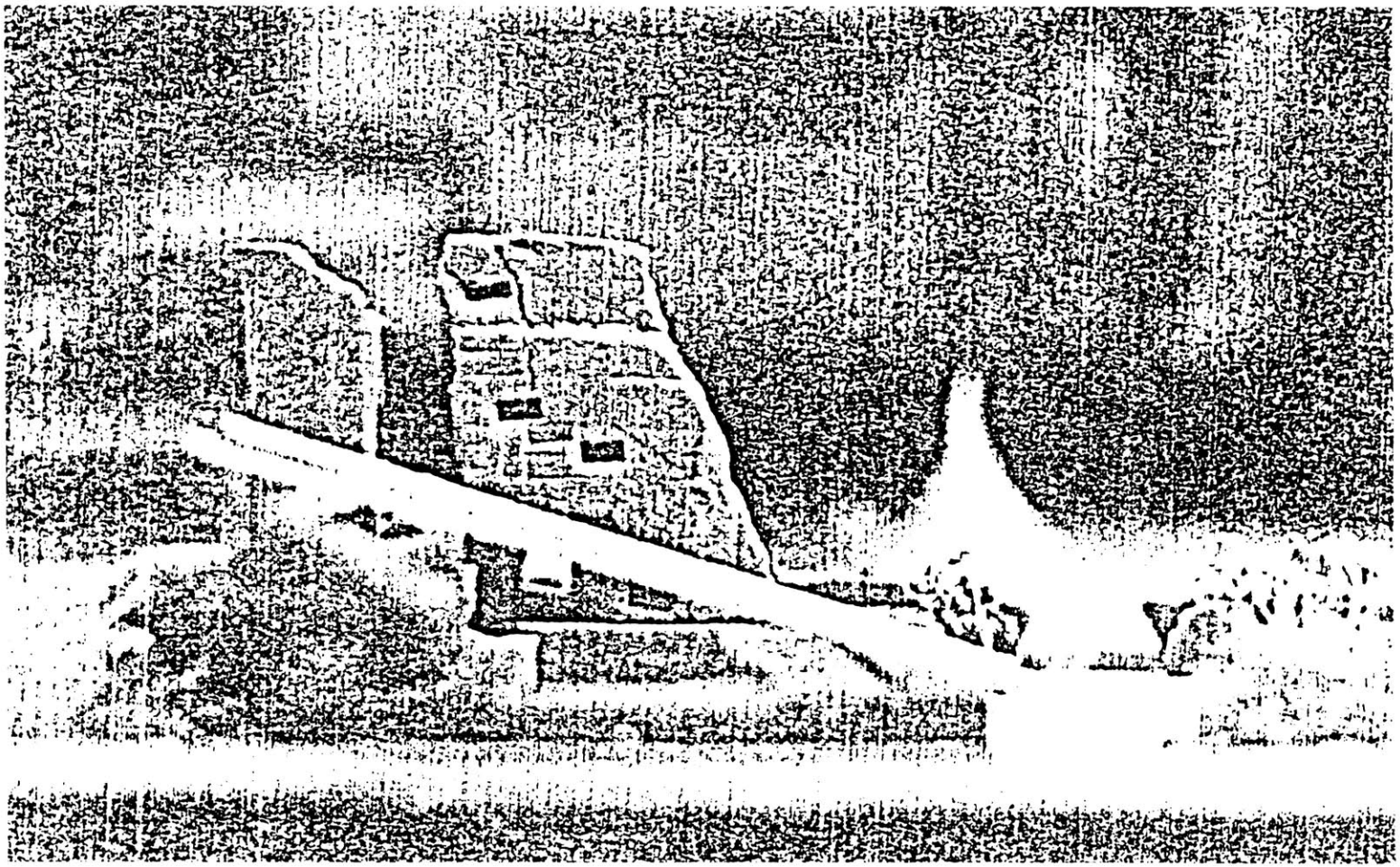
Outline drawings of Gesture Model

to simplify and rationalize the design, to reduce it to a few easily described forms. It would have compromised the gesture's suggestive power, with a resulting loss of initiative in the design process and a loss of meaning in the final design. One of the gesture model's most important functions was to embody an irreducible starting point for the design; one which could only be engaged with an open-ended, intuitive approach.

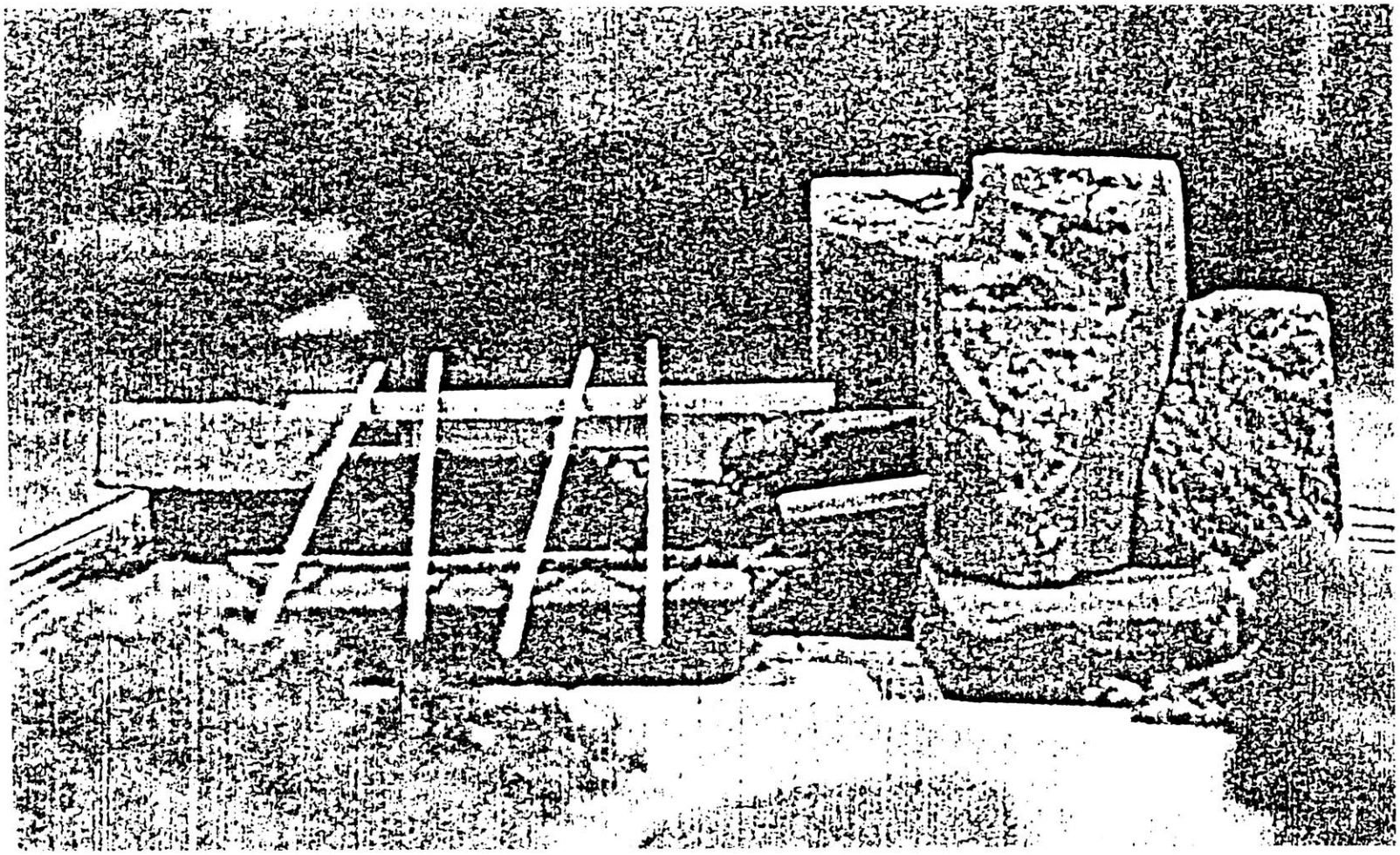
However, it is interesting to note that in the process of faithfully transcribing the gesture model's form, with no intention of altering it in any way, many formal decisions were confronted and made easily, on the basis of an implicit notion of the Swimming Club's nature. As the studies progressed, these decisions became more specific, and more directed to architectural issues.



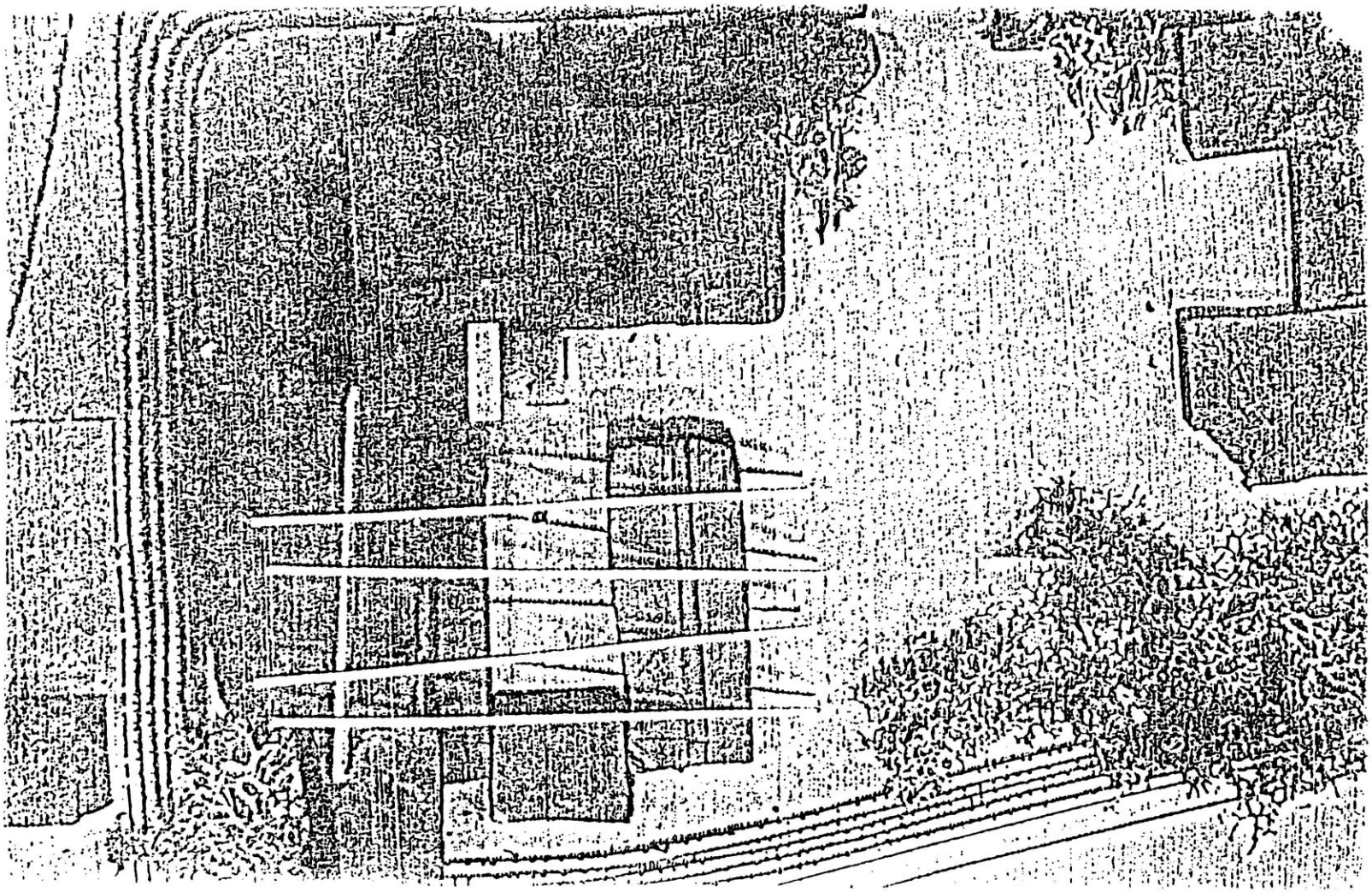
Drawing of quarry at Halibut Point, Massachusetts (Hajian)



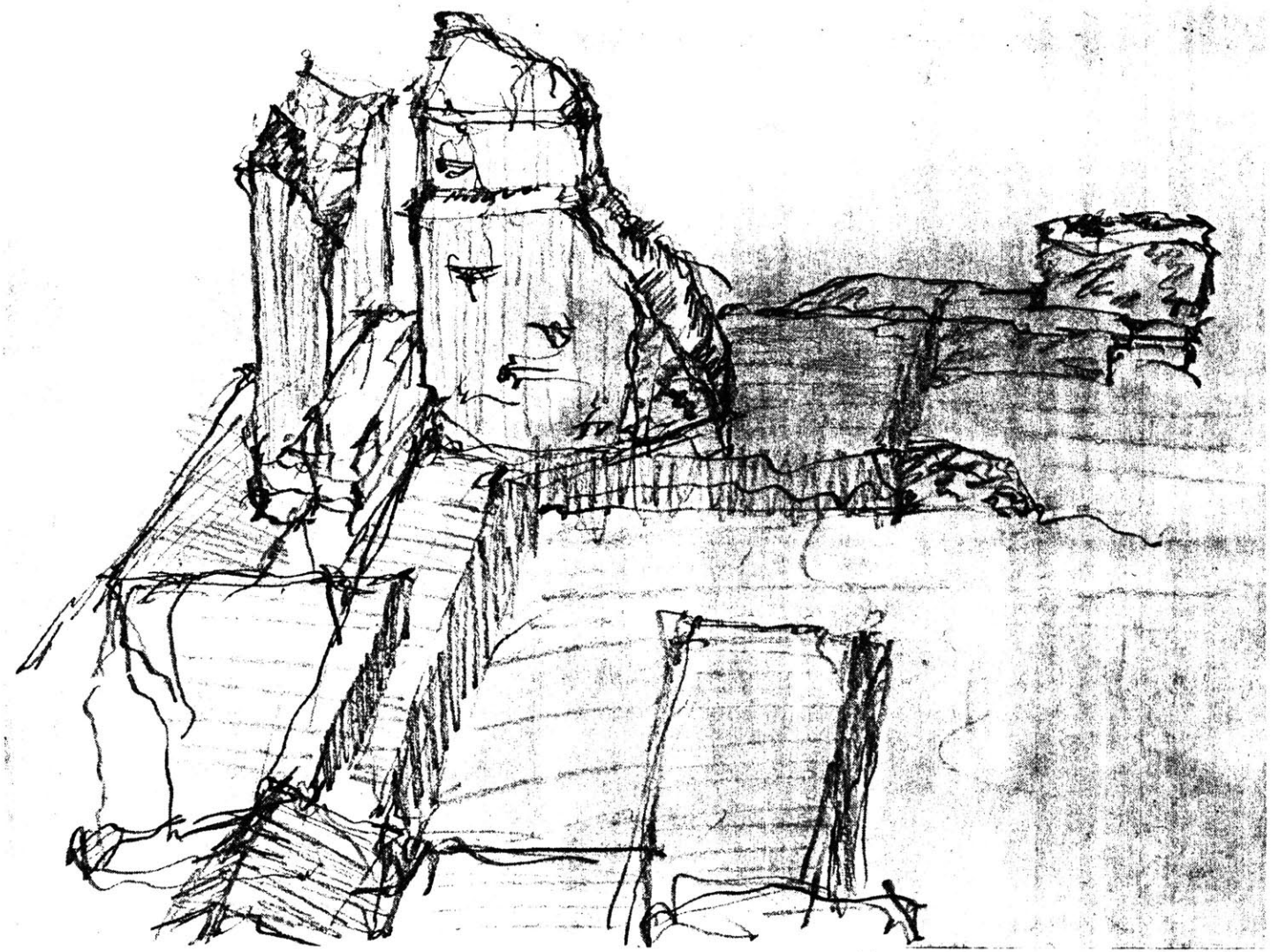
Gesture Model,
West Elevation
Enlargement of photograph



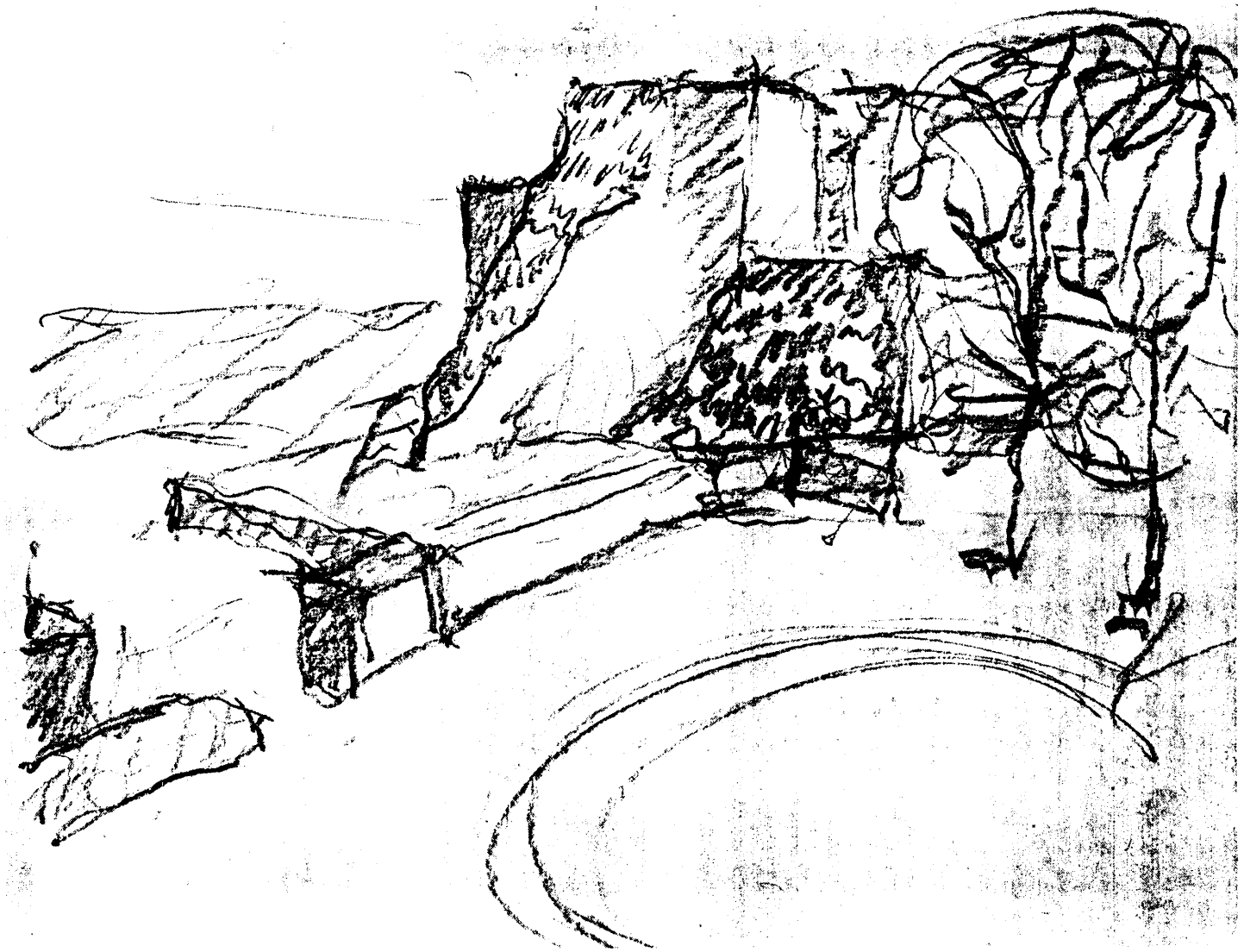
Gesture Model,
South Elevation
Enlargement of photograph



Gesture Model,
Plan view
Enlargement of photograph



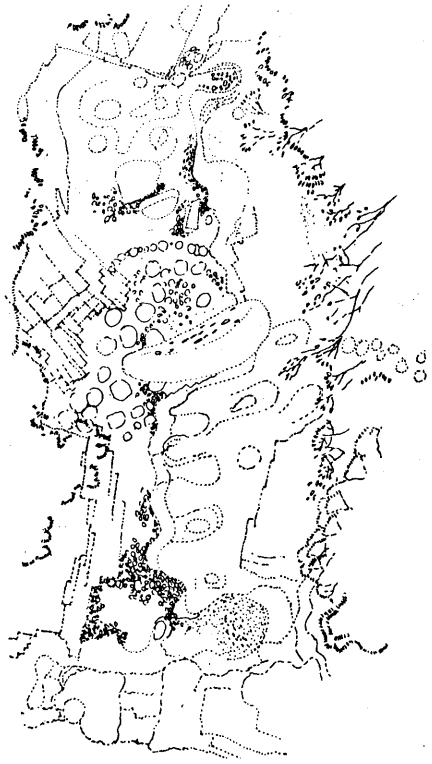
Sketch of Gesture Model
Eastern faces of piers



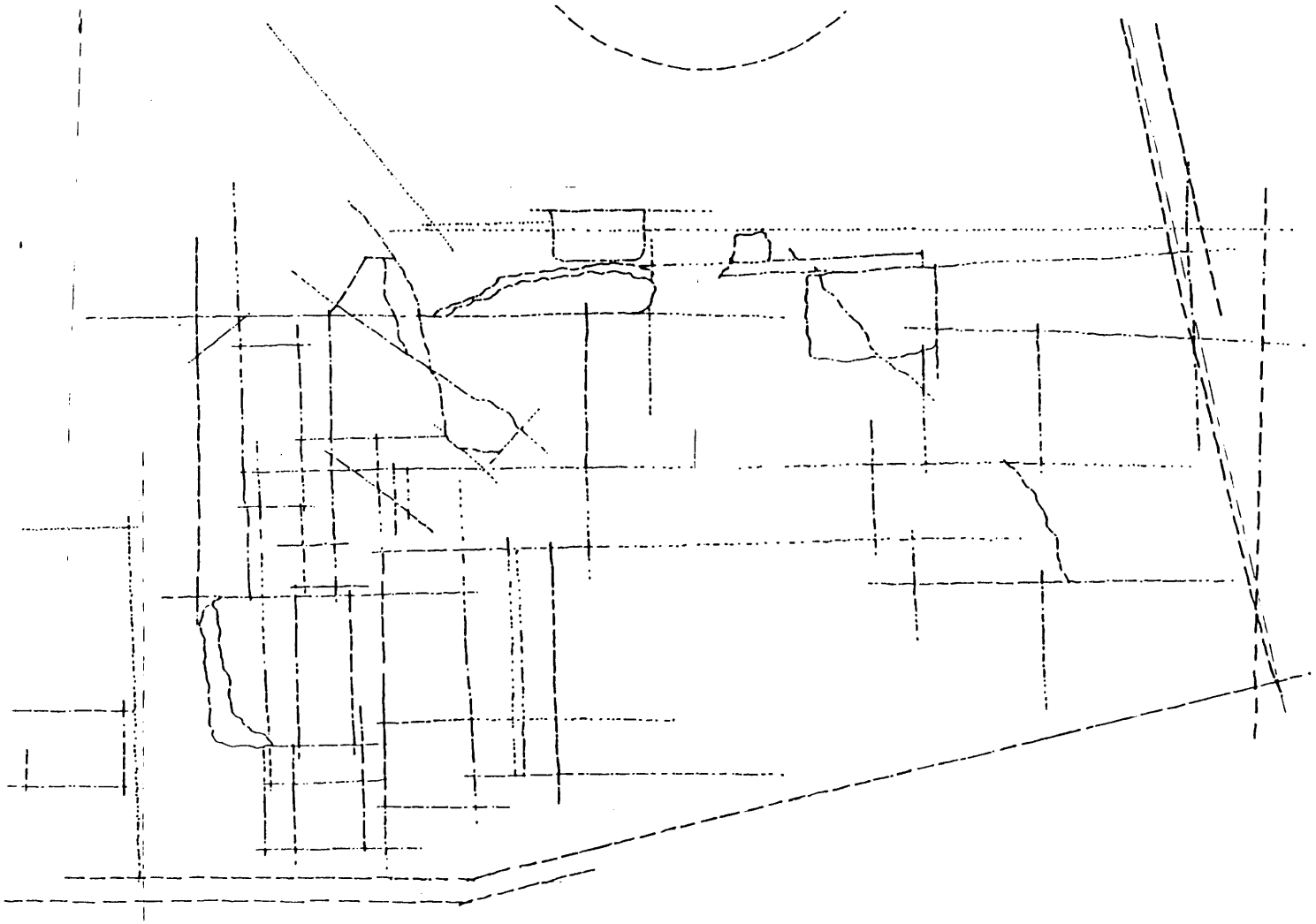
Sketch of Gesture Model
From Longfellow Park

As the gesture was gradually expanded into inhabitable form, its associational quality went through a shift. From being essentially body-related, it became more landscape-related. The solid masses of the modelled figure took on aspects of geologic structure, and the voids became fields of space.

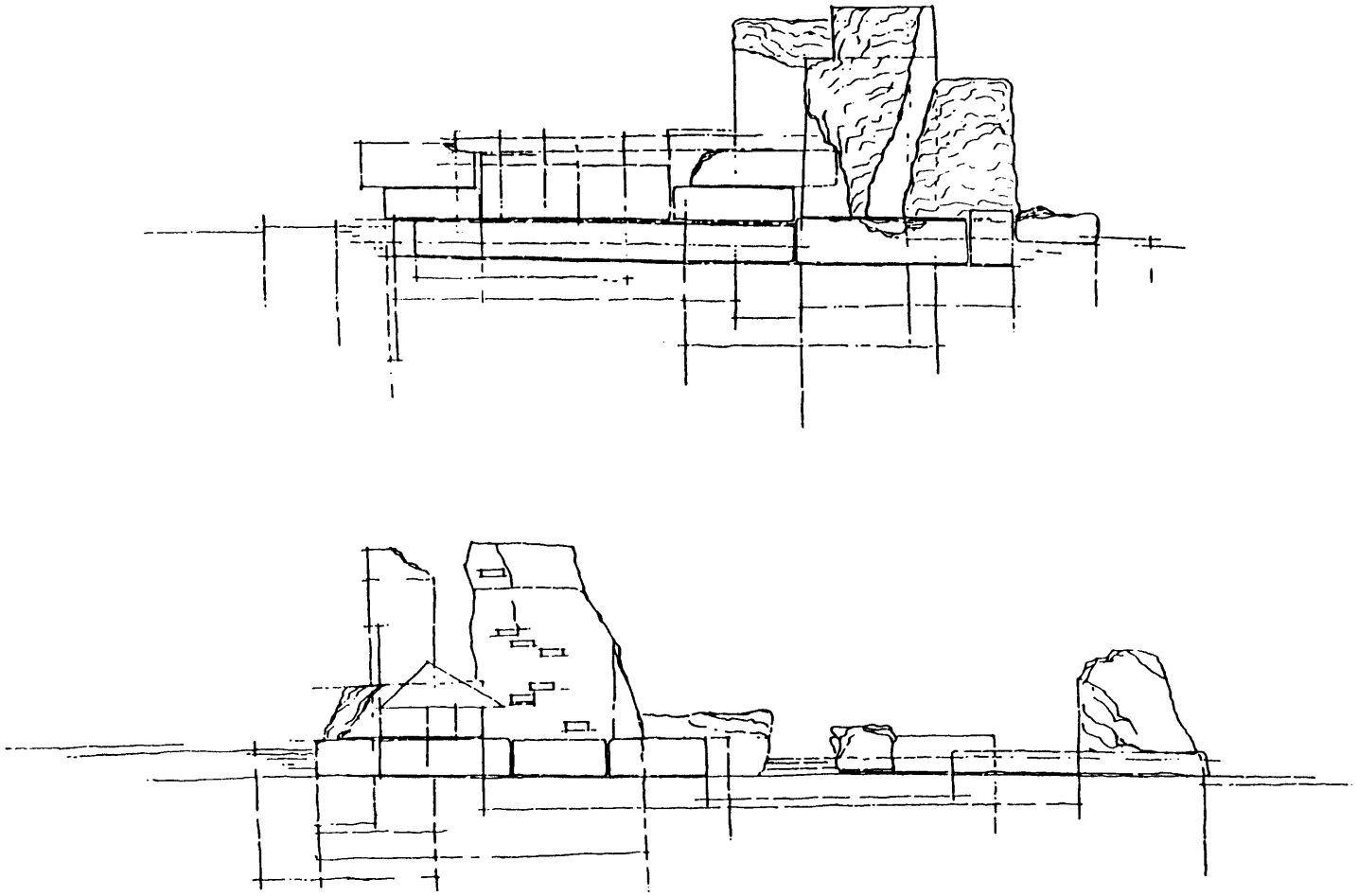
This shift to landscape-association is critical, because it makes possible the architectural inhabitation of the building. But also, it repeats and confirms our earliest experience of the world around us, from which we must differentiate ourselves before we can understand it. It is this which allows us to find our place in the world and to assert our identity and power in sympathetic relation to it.



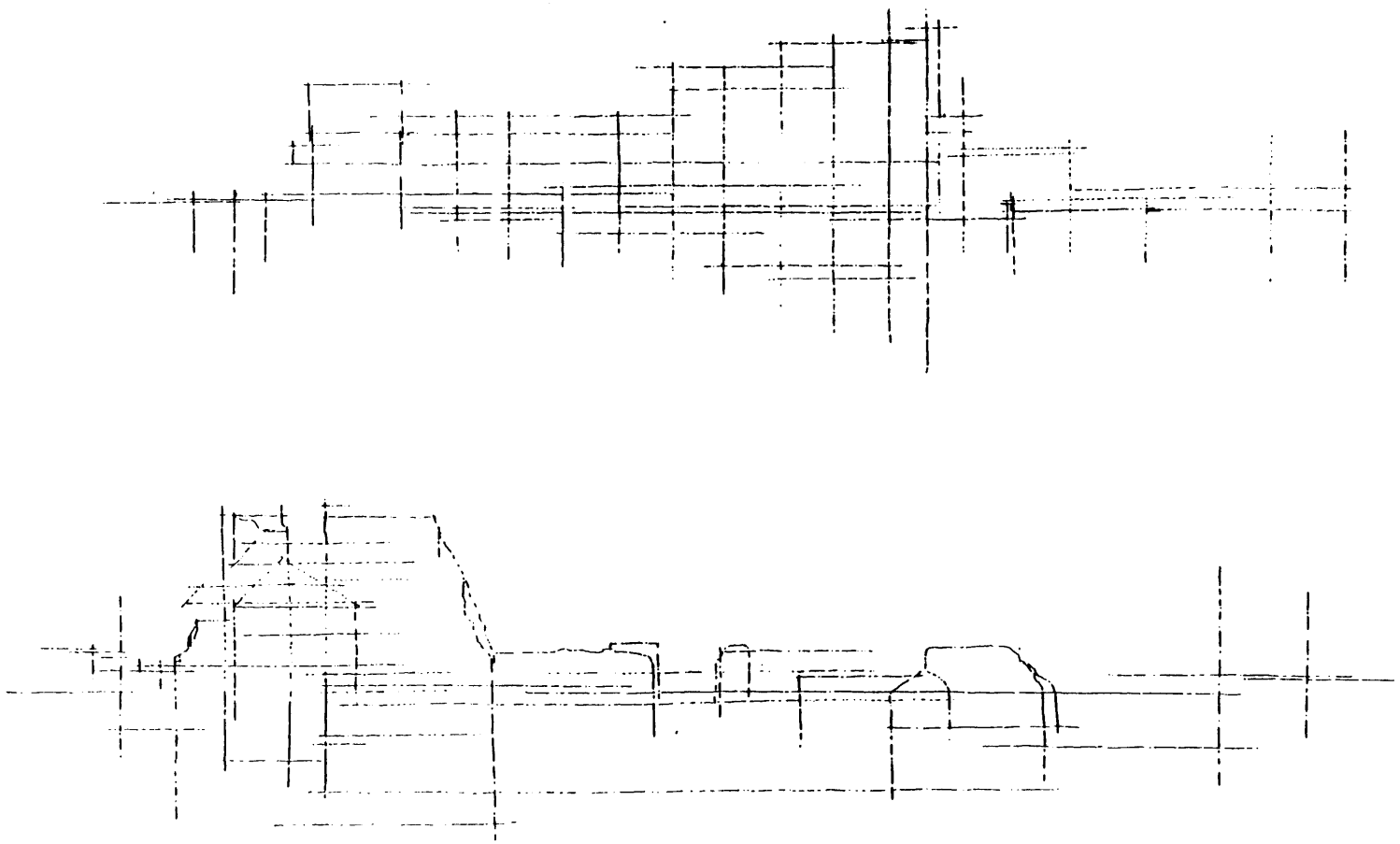
The rocky bed of a stream
(Myer, *Whiteface*)



Gesture Model
Overlay drawing of plan



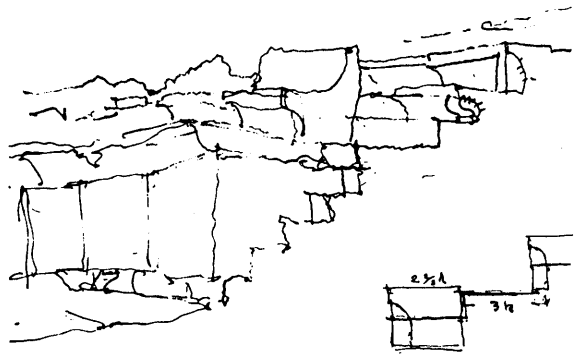
Gesture Model
Outline Elevations



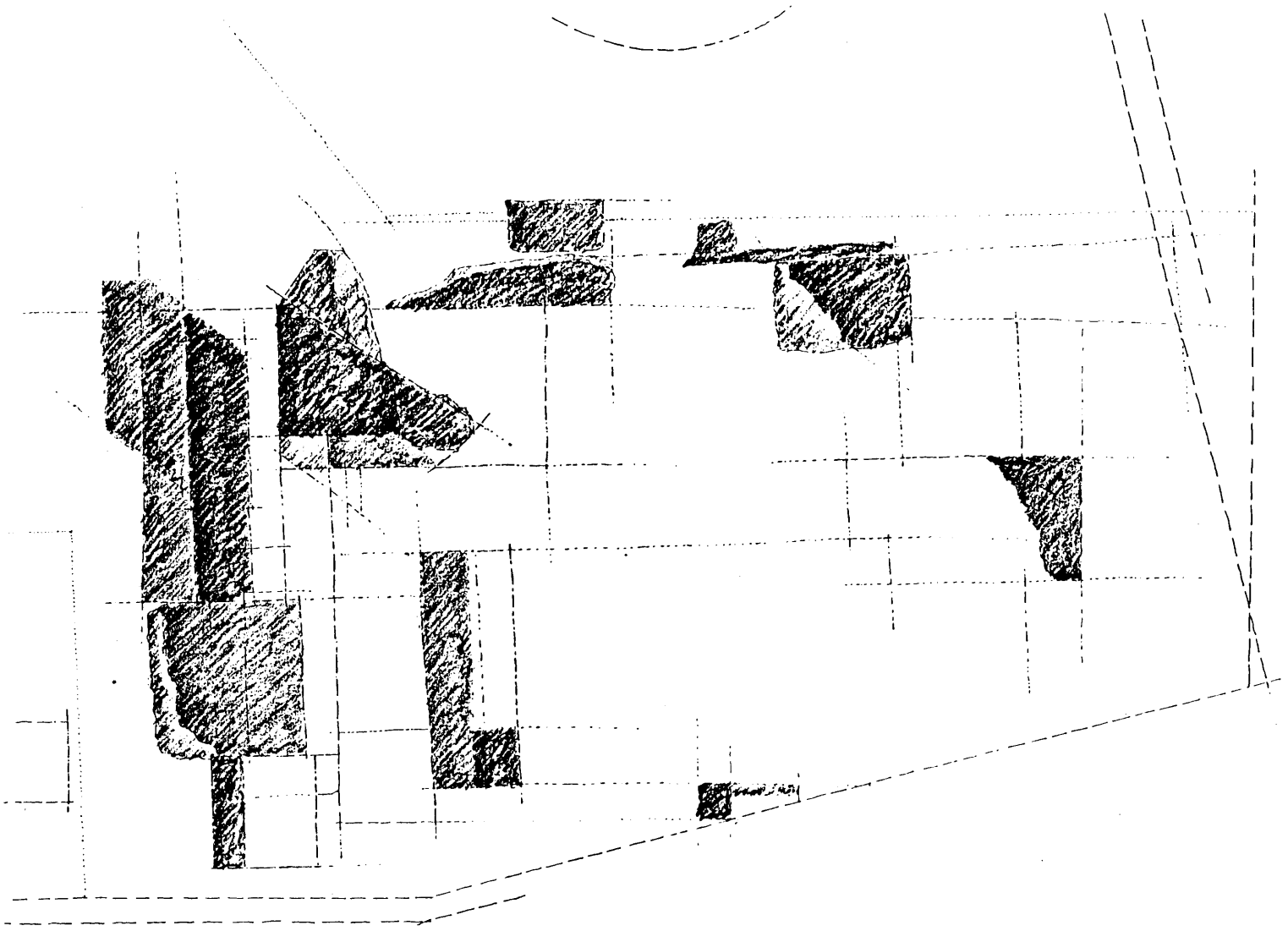
Gesture Model Elevations
Scaled overlay studies

When the gesture model had been transformed into field-like drawings, their capacity for inhabitation was explored. In successive overlays on the observational drawings, elements of them were given scale, materials, functions, and details. The open quality of the drawings, with their ambiguities and multiple readings, allowed a great freedom of movement and experimentation. Careful exploration maintained this rich associational quality while transforming it into specific form. A number of schematic design studies were then made, starting from the developed form of the observational drawings and applying them to programmatic uses. The earlier architectural decisions came to have more explicit significance, as these overlays affirmed and amplified them.

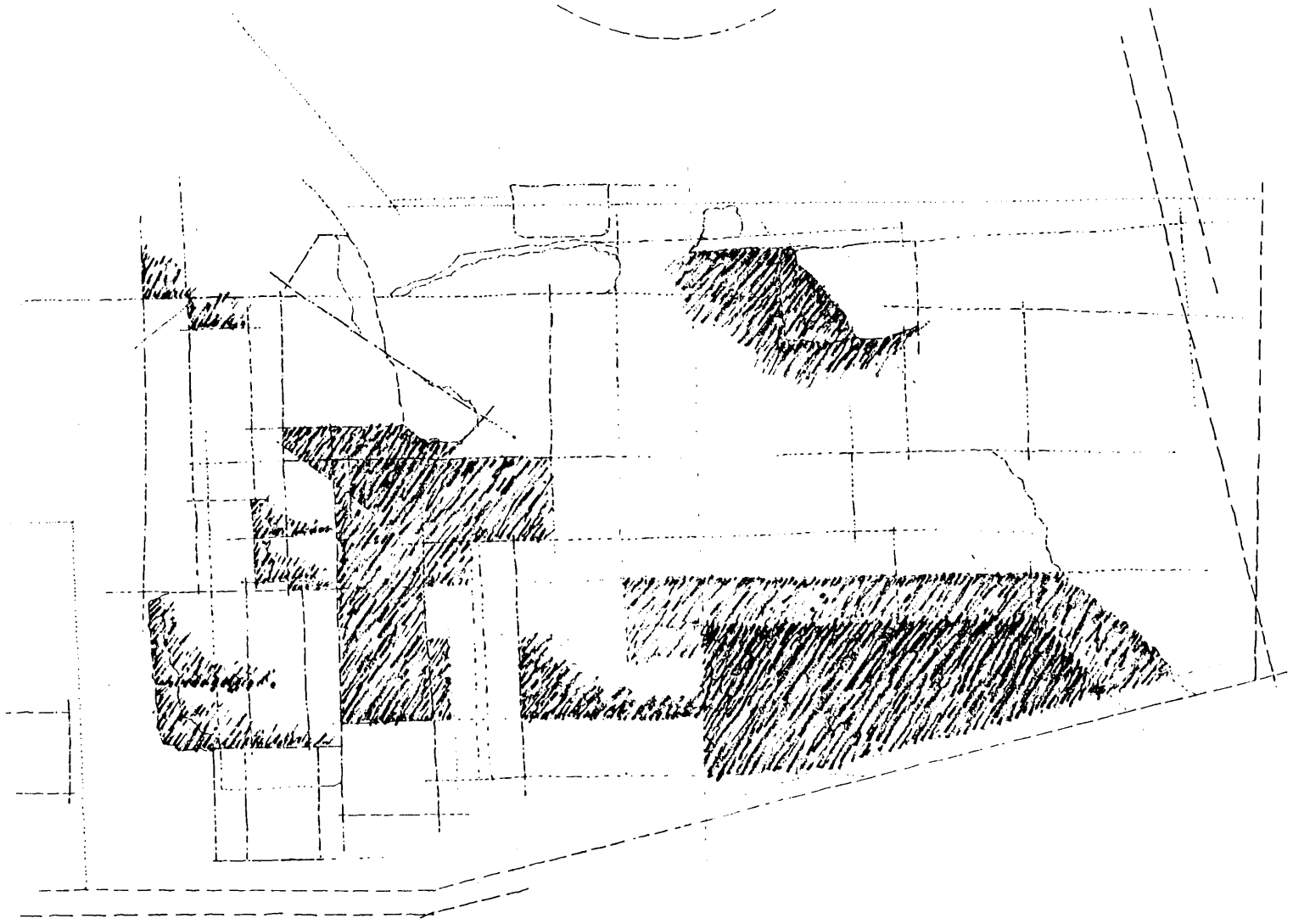
... architecture, the making of Places, is ... a matter of extending the inner landscape of human beings into the world in ways that are comprehensible, experiential, and inhabitable ...(Moore)



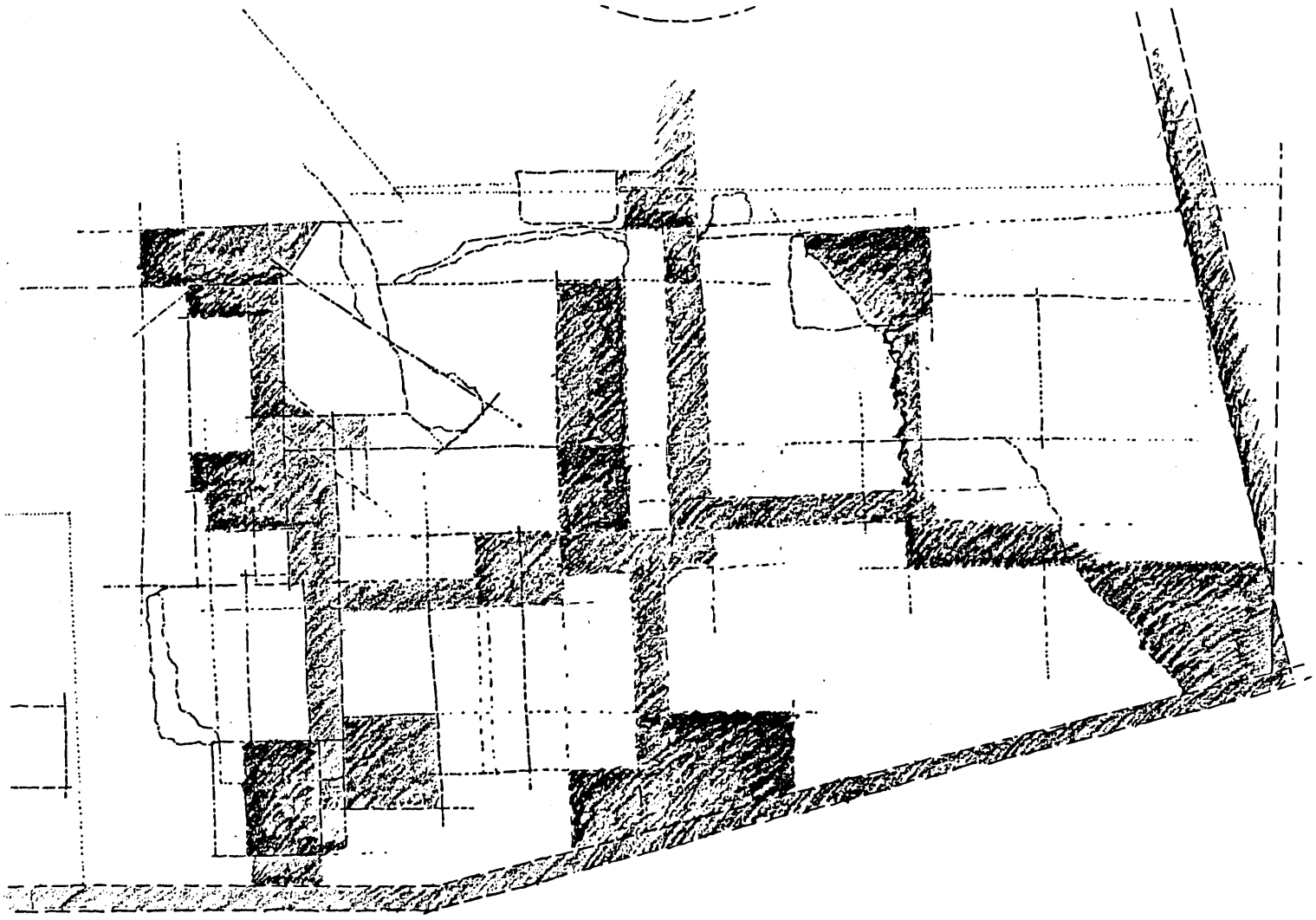
Theater of Dionysus, Athens
(Aalto, *Sketches*)



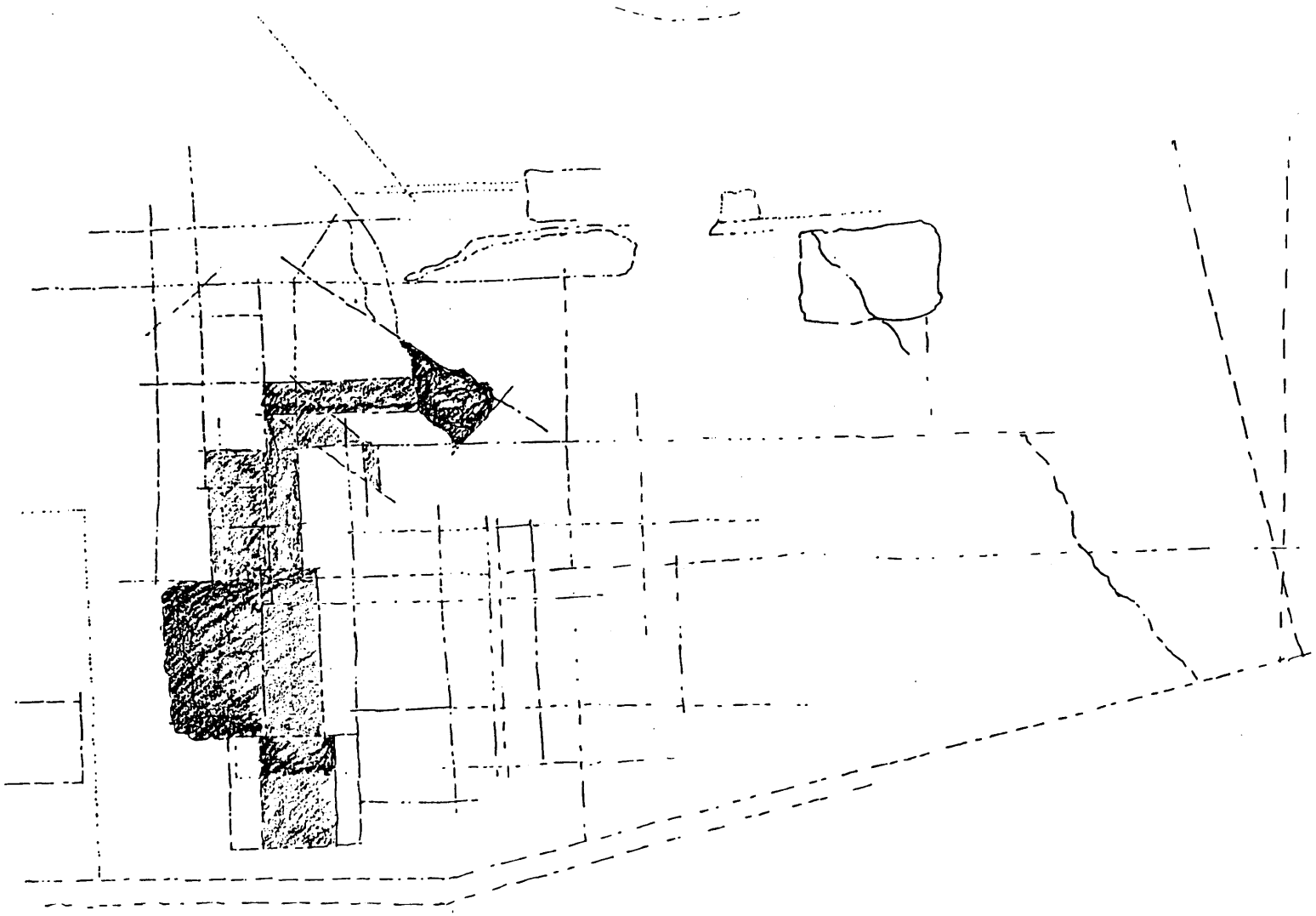
GESTURE MODEL
BUILT MASSES



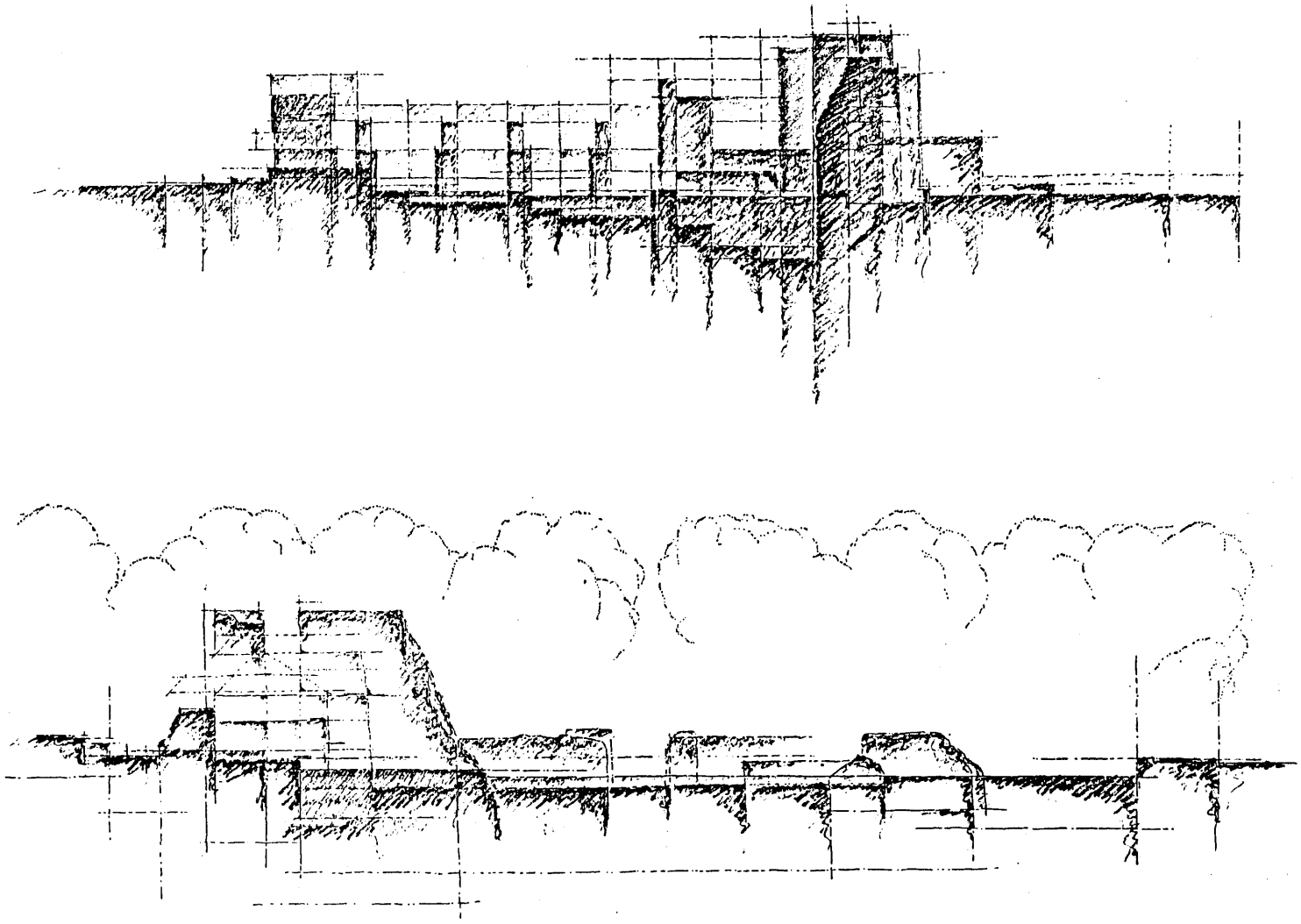
GESTURE MODEL
WATER



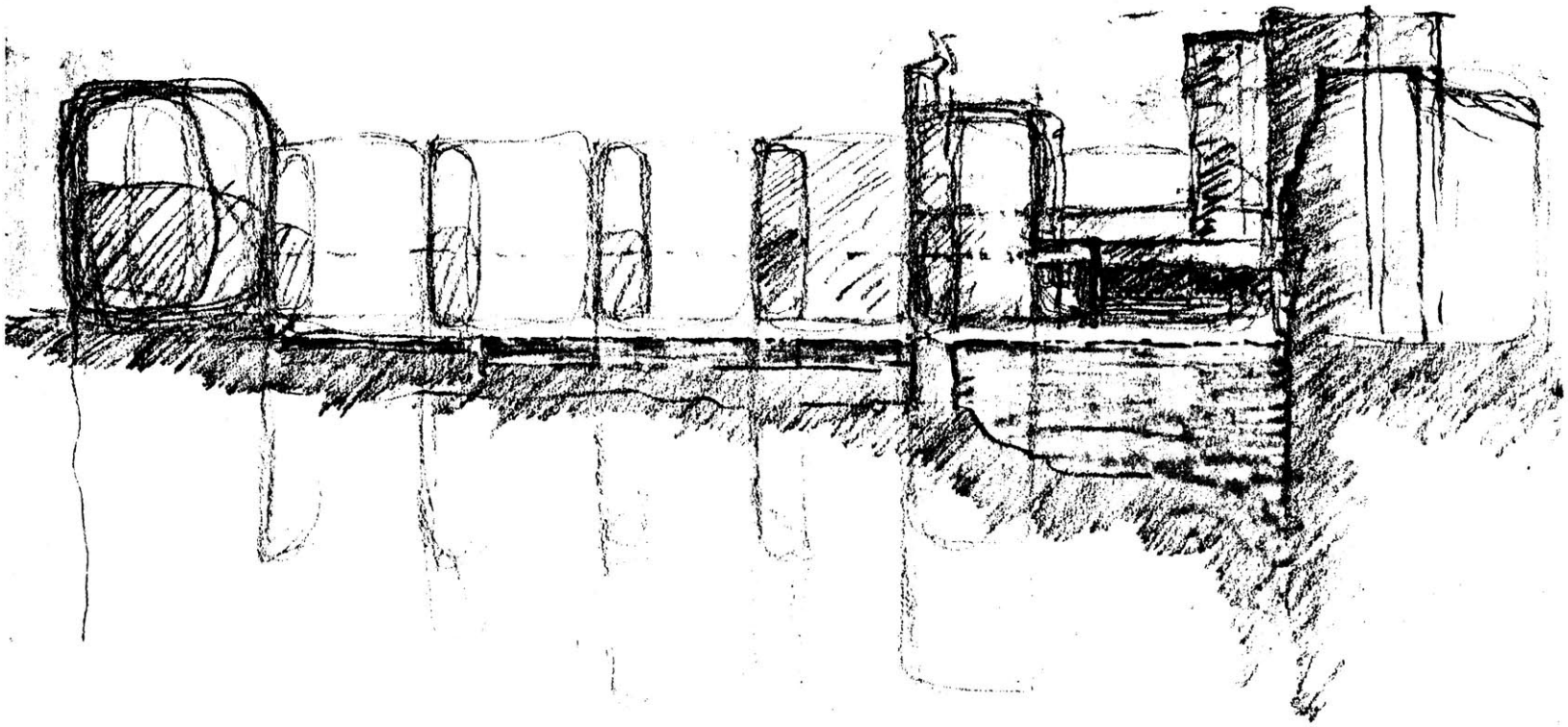
GESTURE MODEL
CIRCULATION & PLACES
GROUND LEVEL



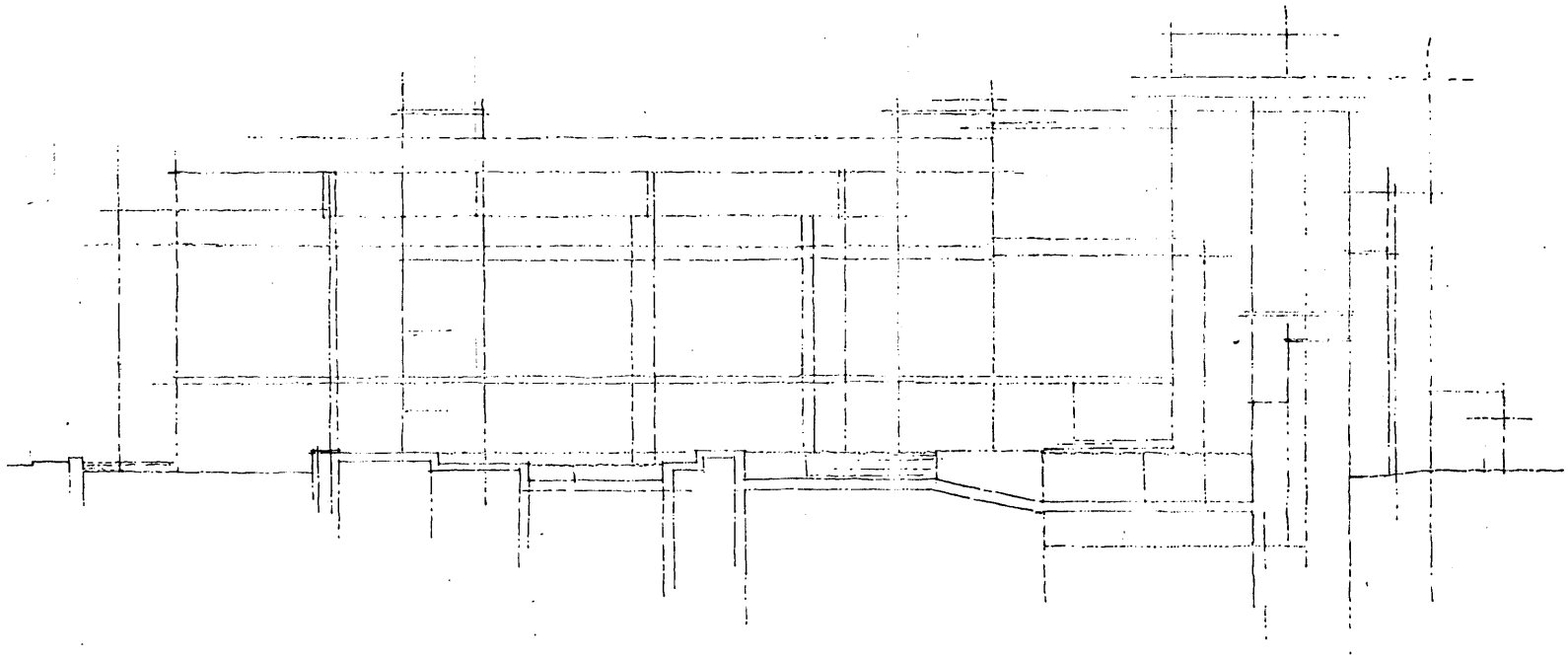
GESTURE MODEL
CIRCULATION & PLACES
MEZZANINE LEVEL



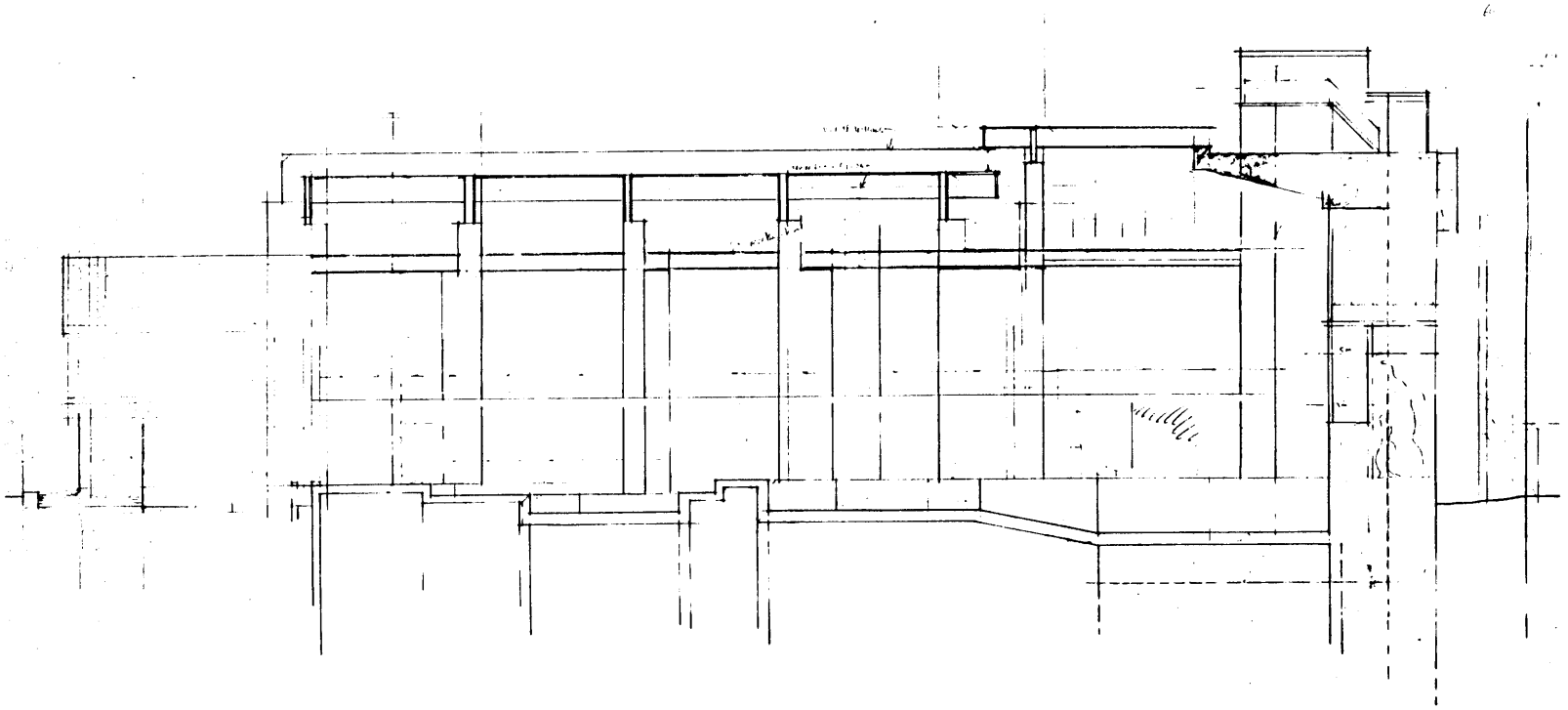
Scaled Outline Elevations
Detailed and rendered



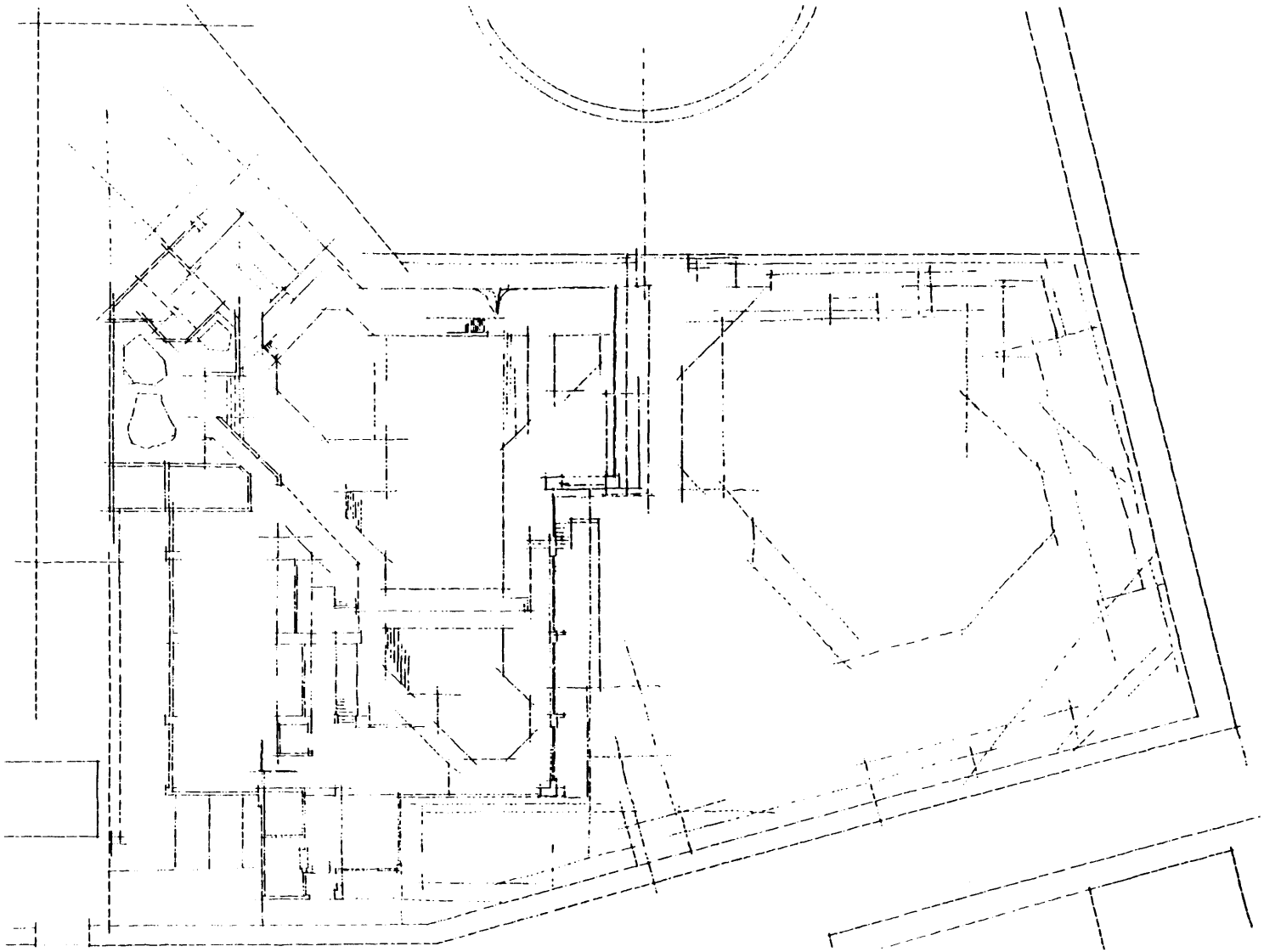
Study from Outline
Elevation



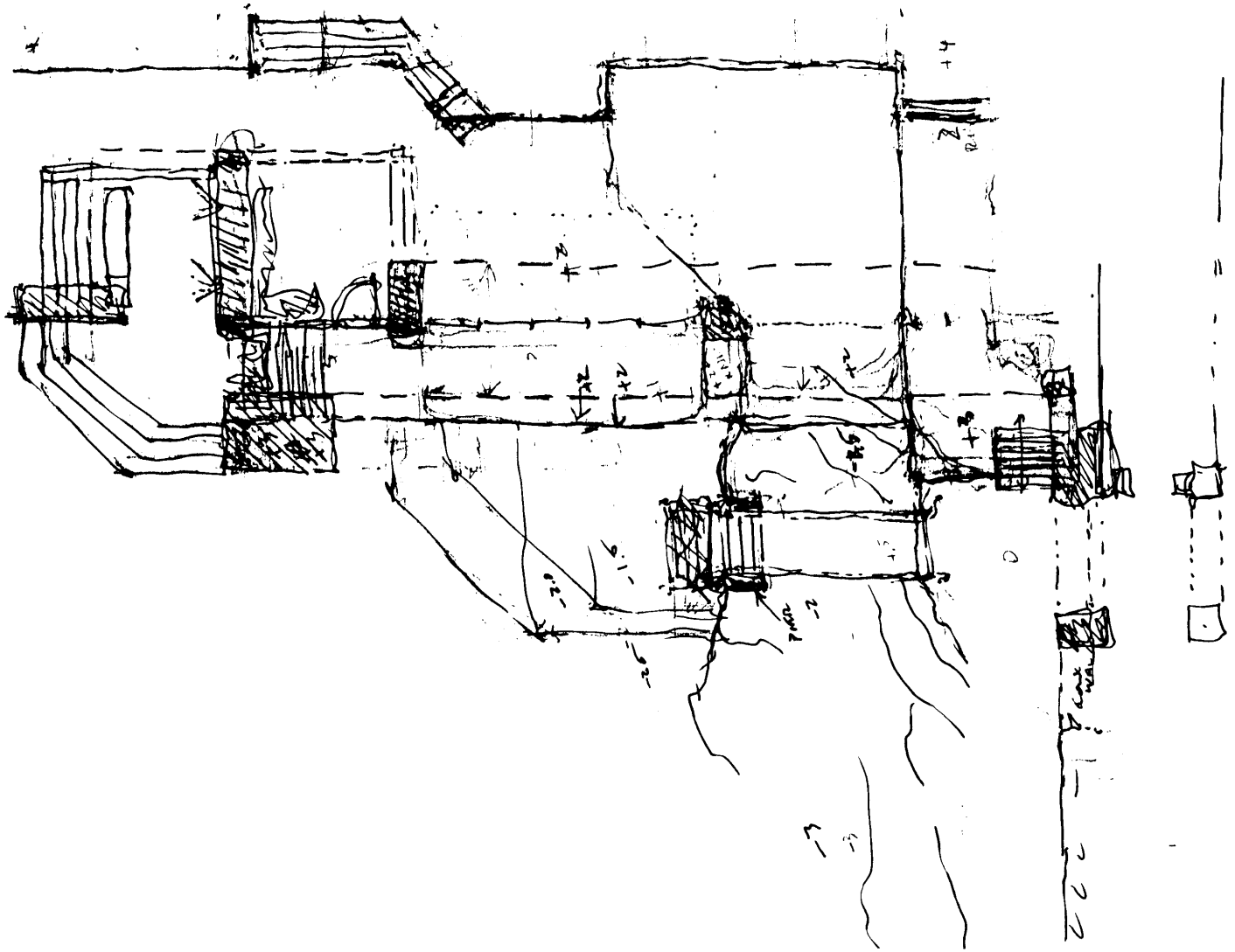
Longitudinal Section Study



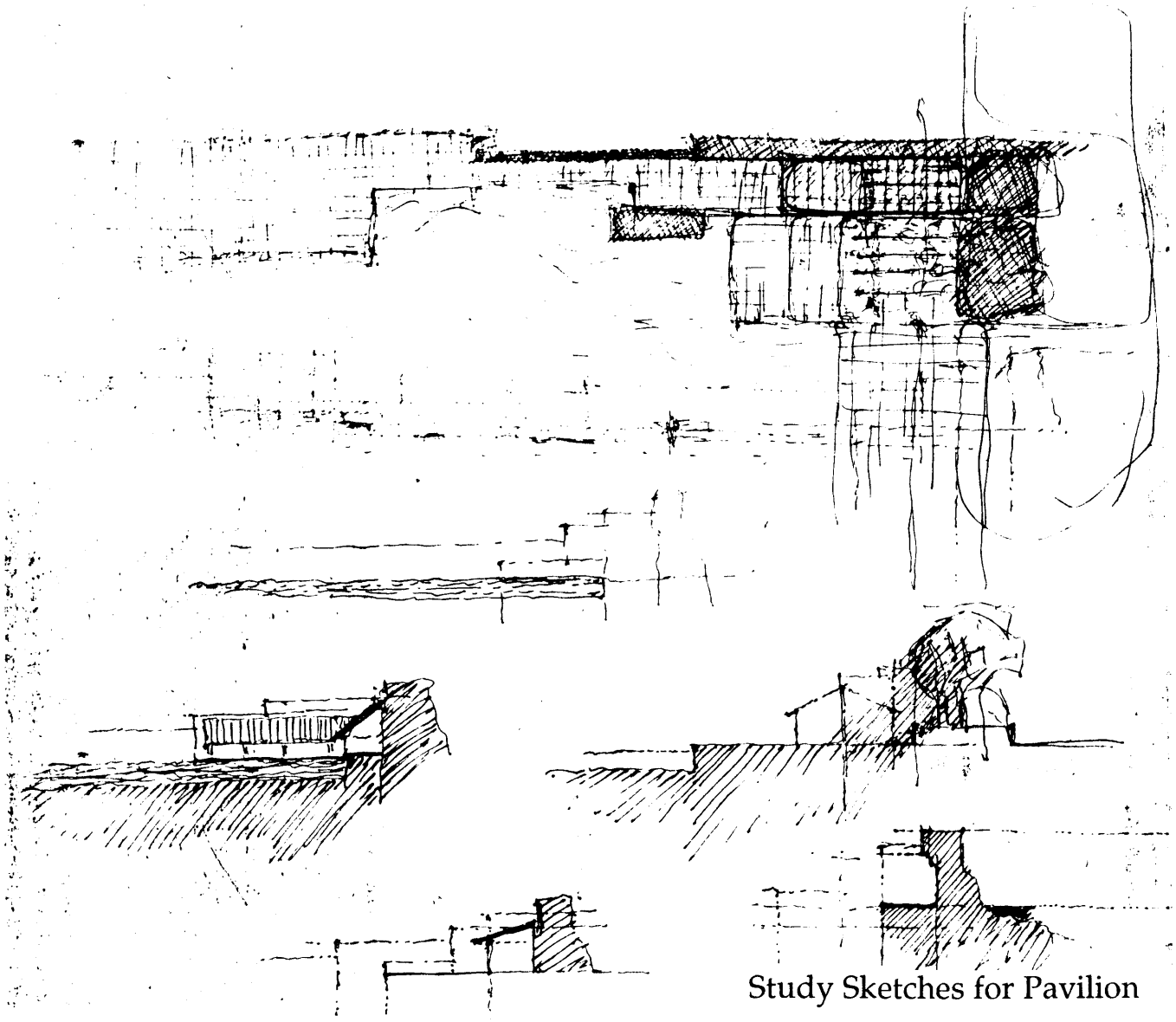
Longitudinal Section Study



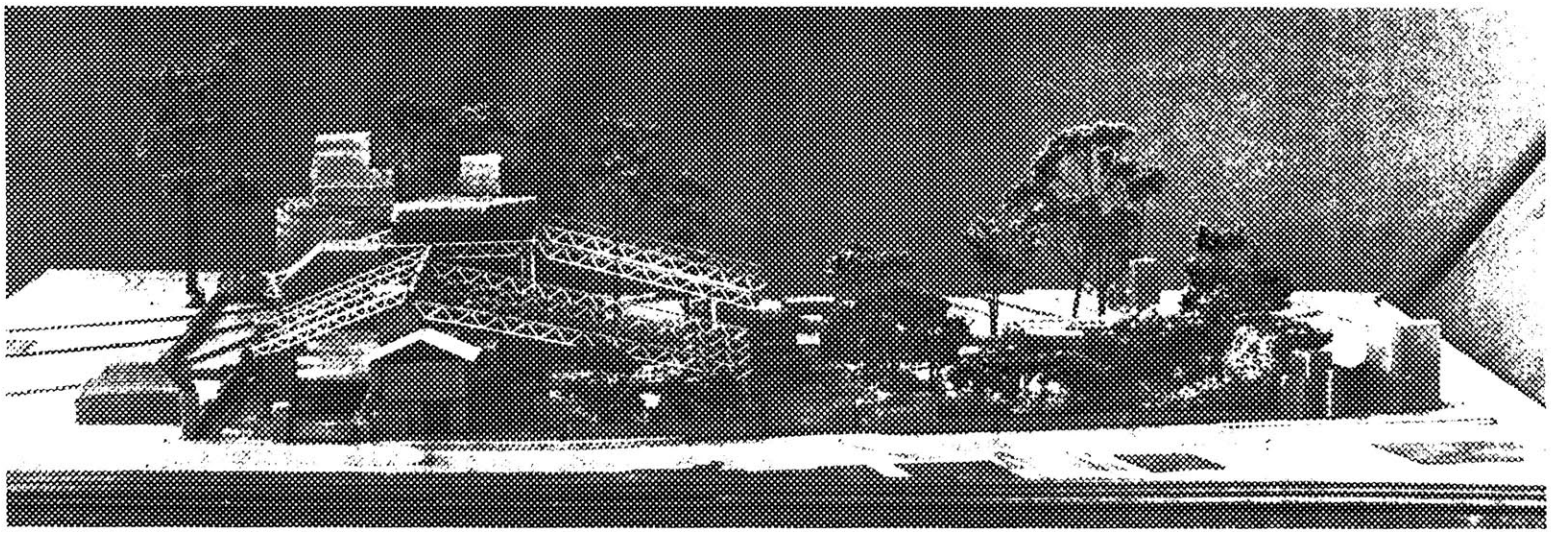
Plan Outline
Scaled and detailed



Sketch Study for Waterfall and Bridge



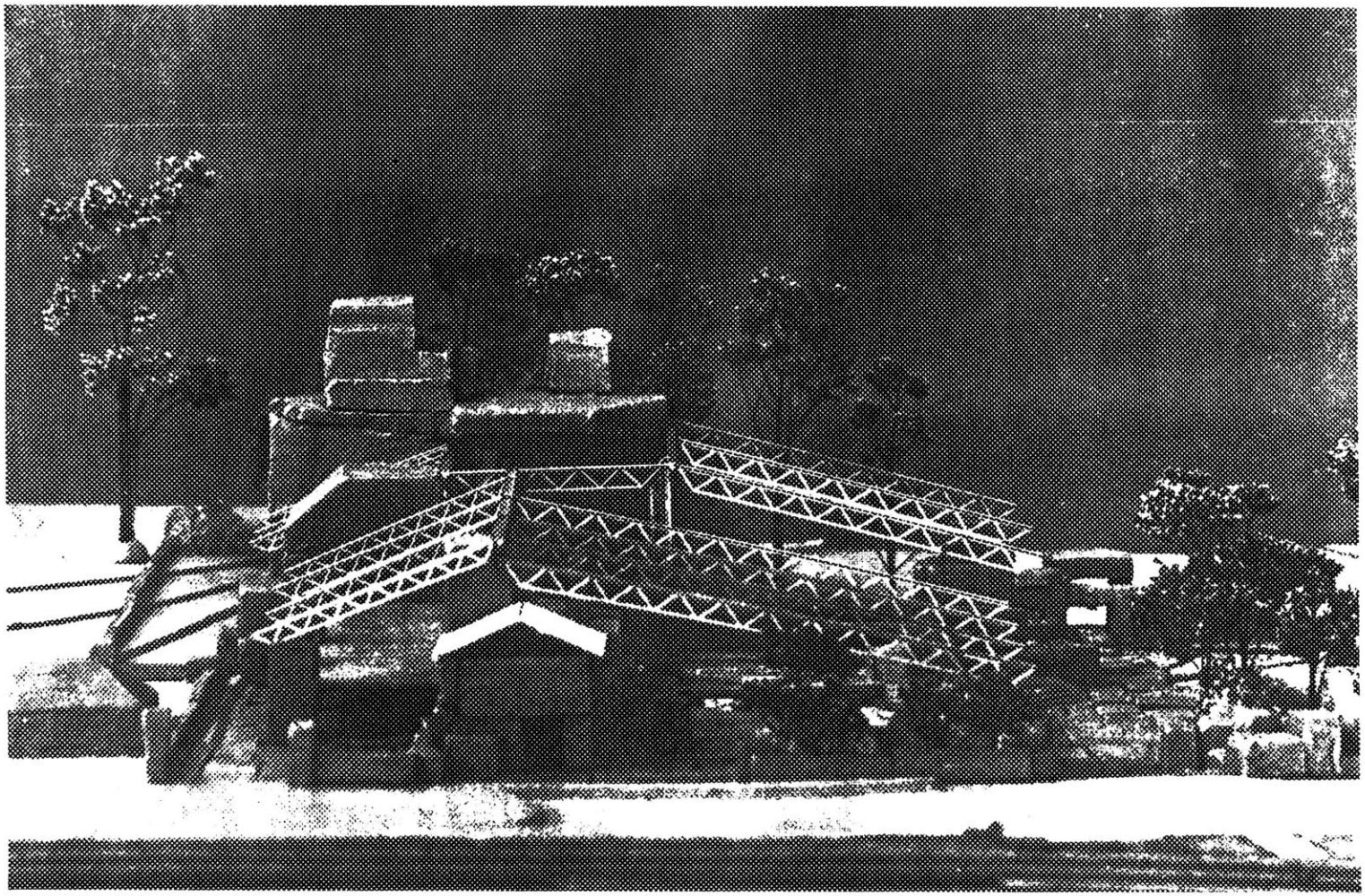
Study Sketches for Pavilion



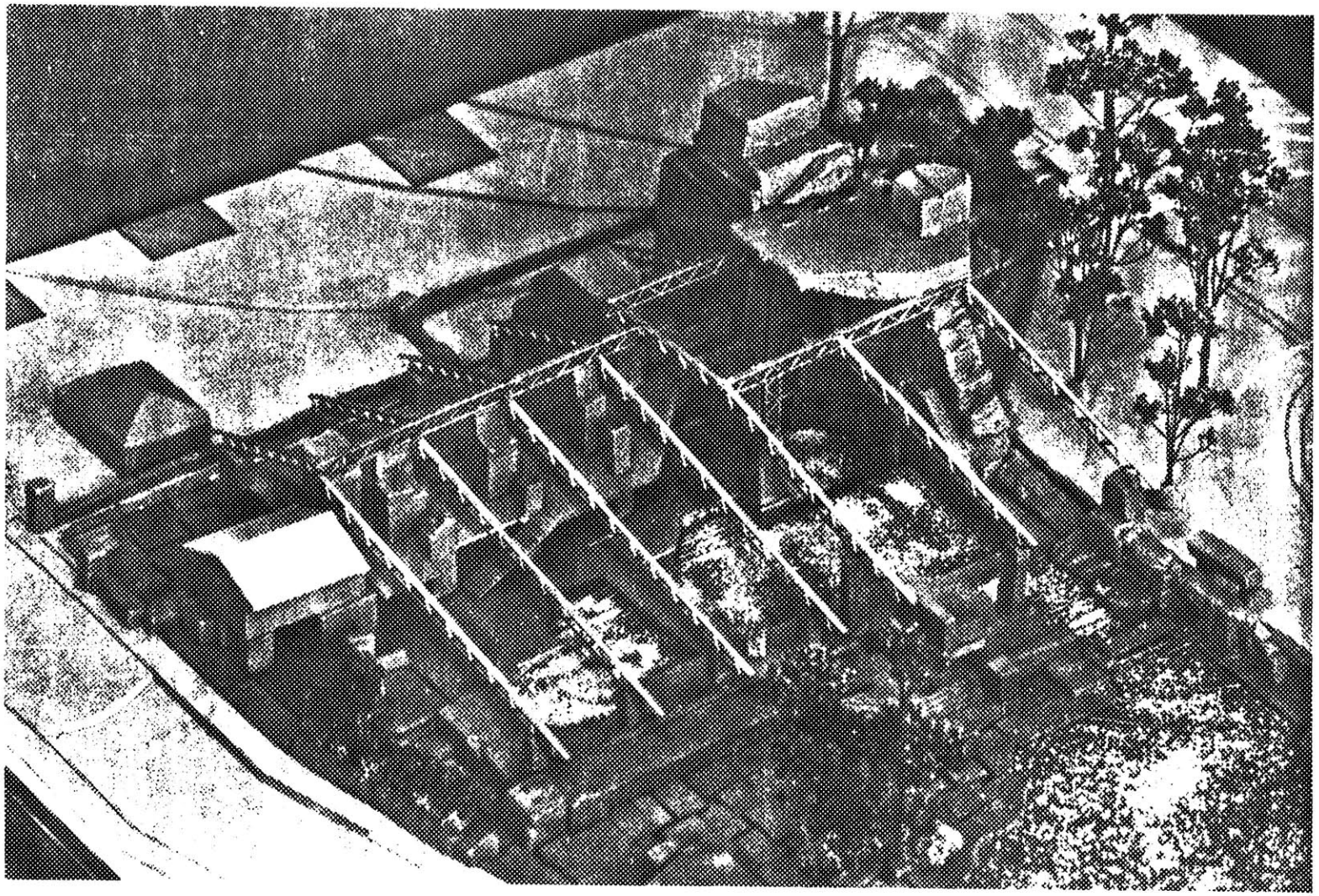
Study Model

Enlarging on this exploration, a study model was built at 1"=16'-0", the scale of the overlays. With it, underlying forms and structures could be explored freely in three dimensions, incorporating the earlier studies and further developing their capacity for inhabitation. It was here that details and human scale were introduced and developed in terms of inhabitation, linking the person and the built landscape.

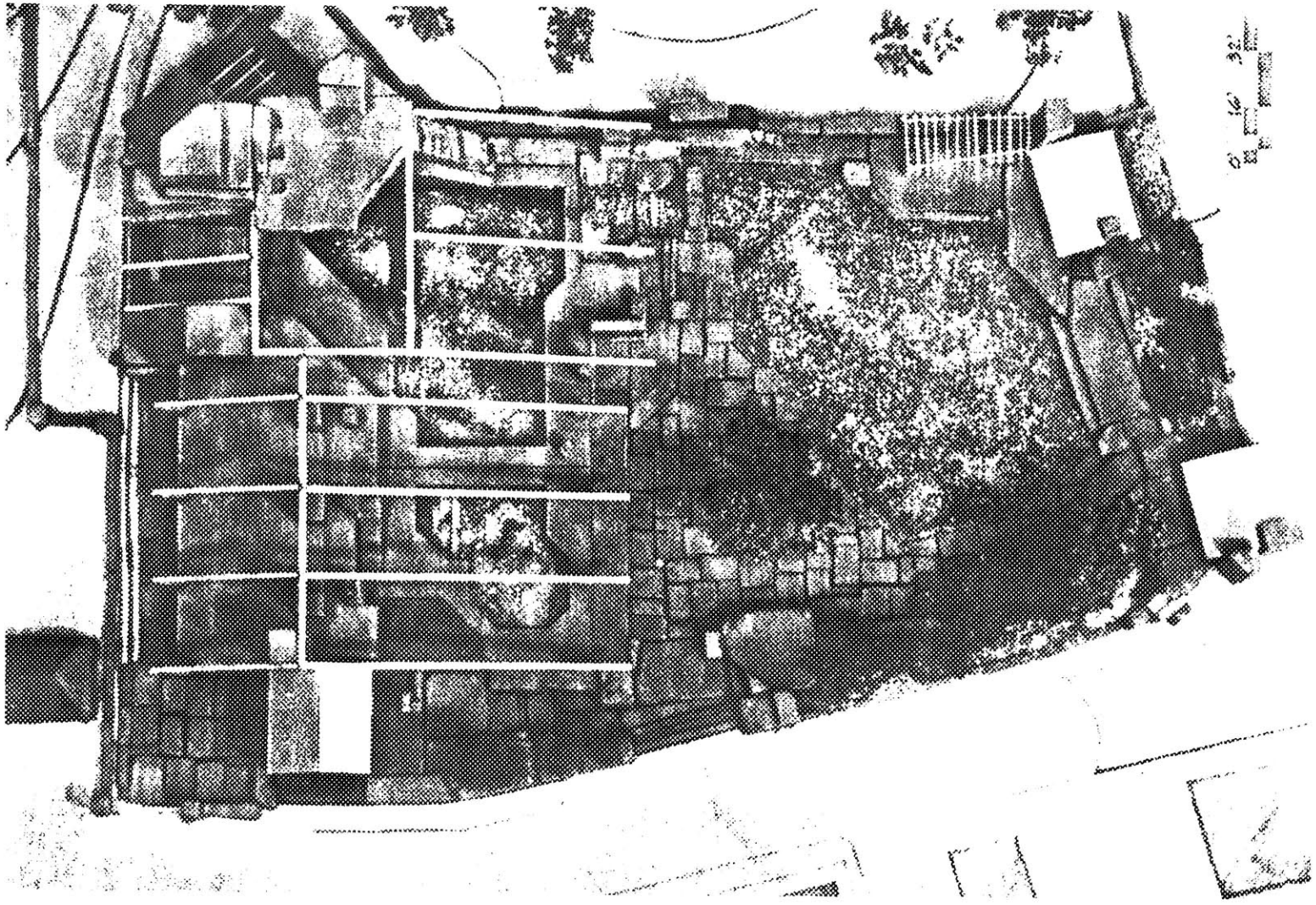
The model used a core of plasticene to represent masonry structure. This use of clay recalled the gesture model, conveying the rough massiveness of piers and walls. At the same time, it could be measured and cut where needed to convey specific scale and inhabitation. Chipboard was cut for floor surfaces, and wood and molded plastic were used for structural members.



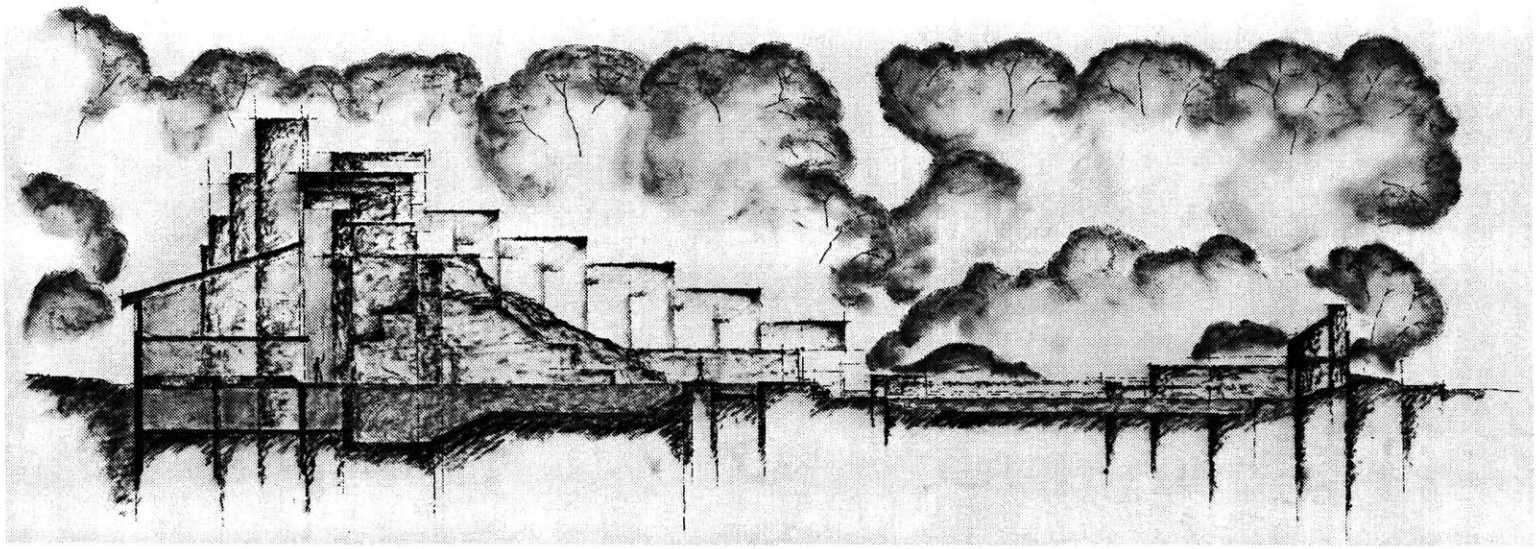
Detail of Study Model



Study Model



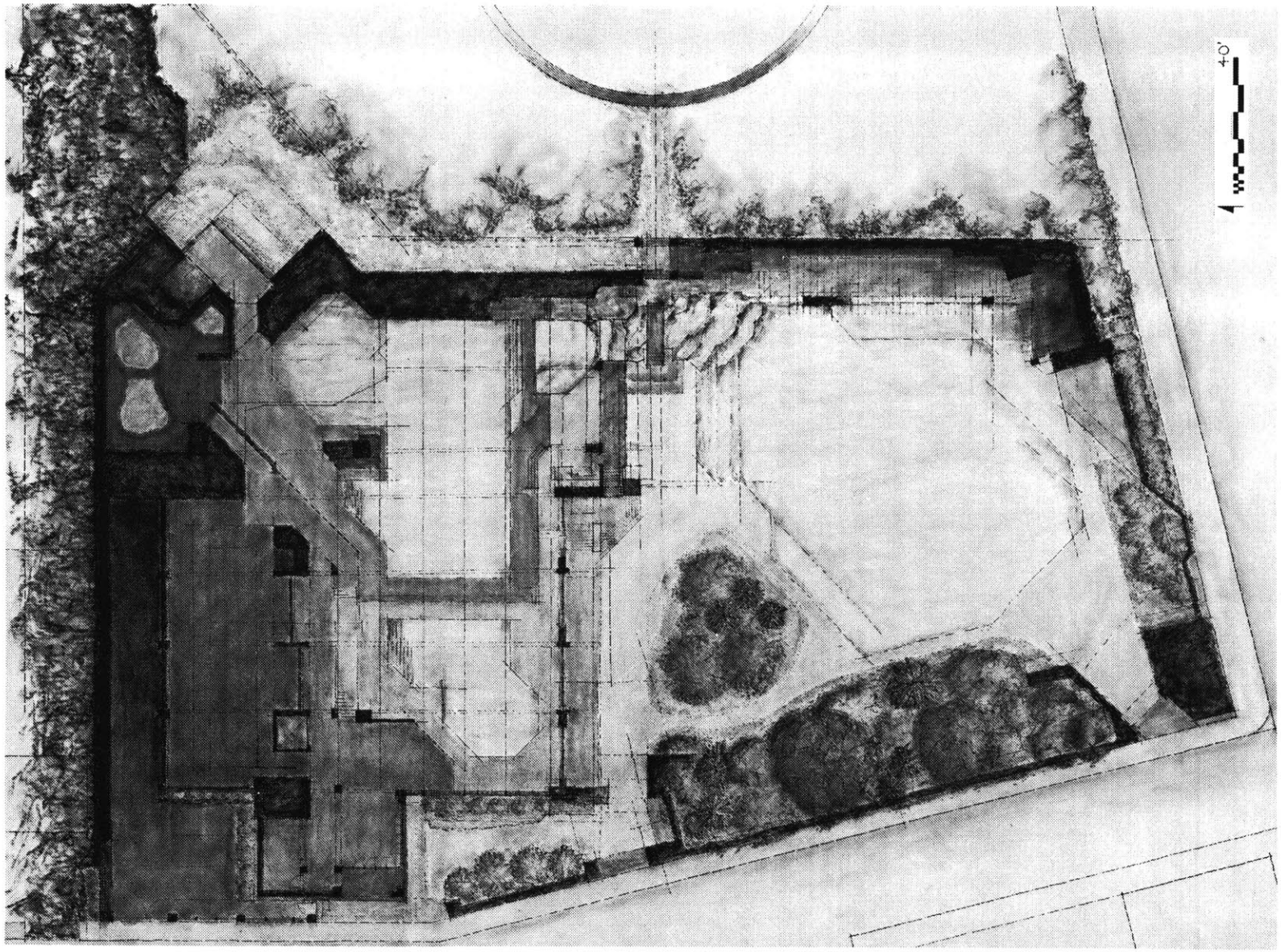
Study Model
Plan View



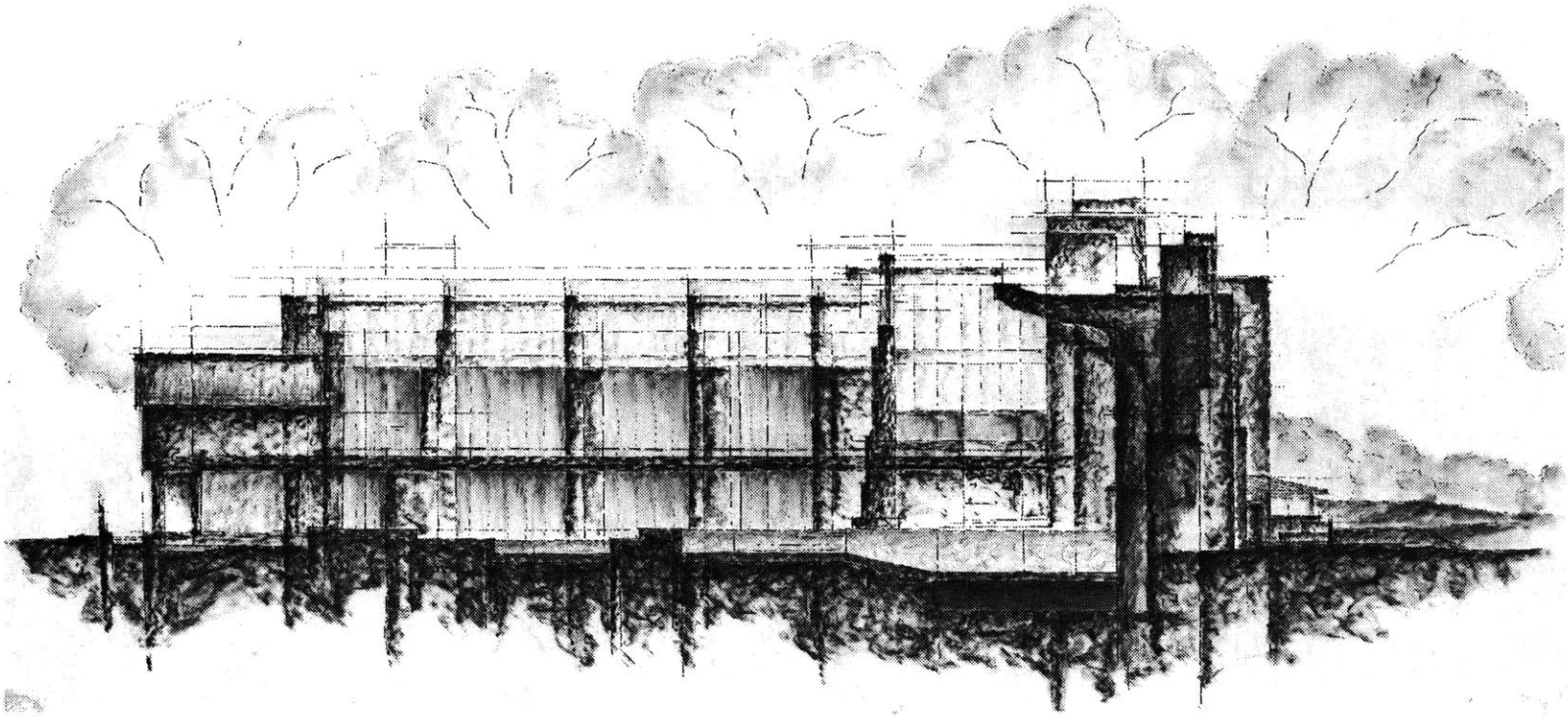
As a further study of inhabitation, the base drawings were enlarged to 1"=8'-0" scale and rendered with ink and pastels. The zones of inhabitation from the 1"=16'-0" drawings were developed with levels, closure, materials, and appropriate dimensions. These drawings allowed considerable revision and exploration at a scale which could reflect enough convincing detail to invite involvement in the design. The rendering process gave them a depth and realism which helped convey the robust gesture of the original model.

Pastel Study
Longitudinal Site Section

(Overleaf)
Pastel Study
Plan

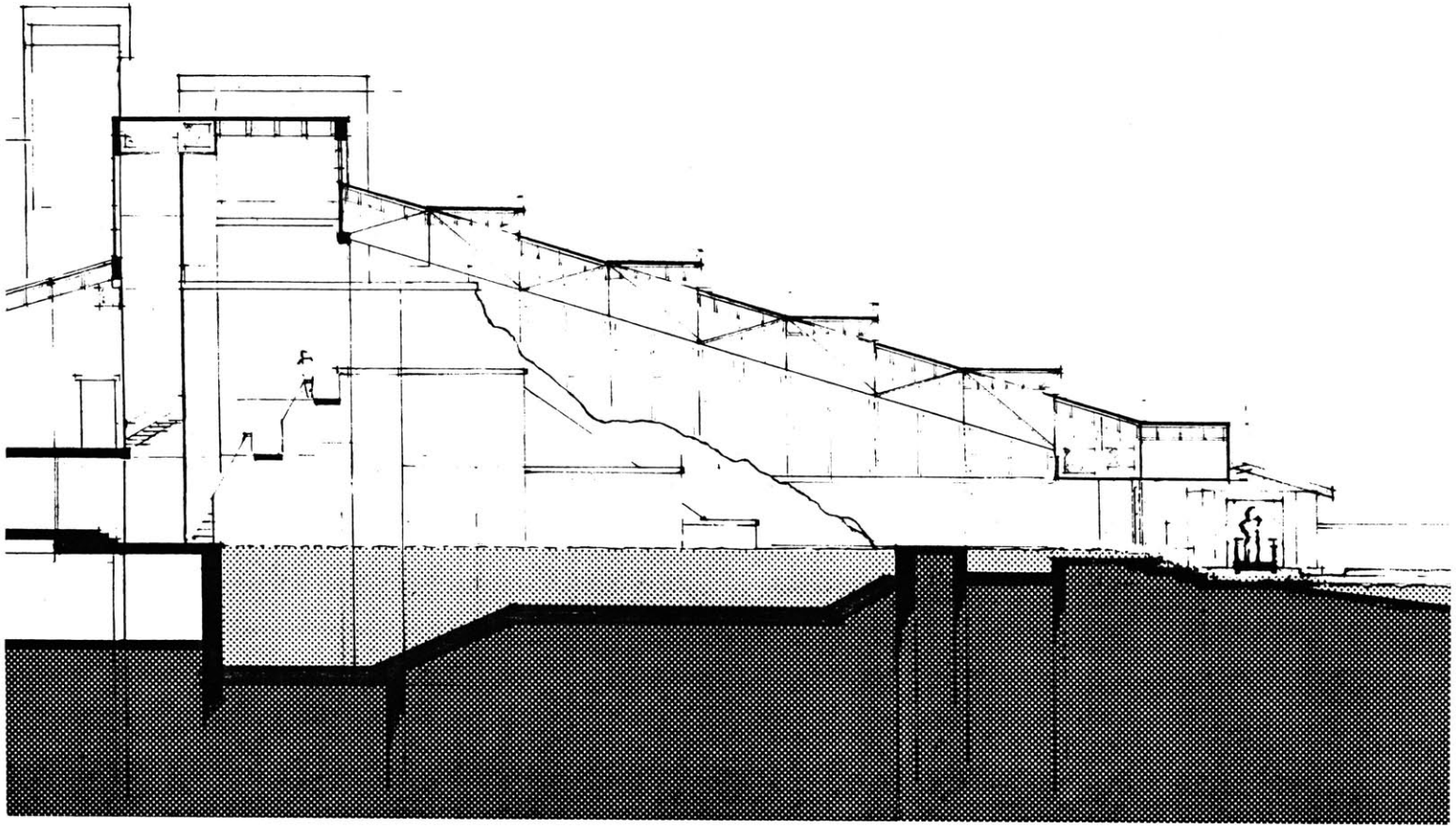

40'

The pastel drawings at 1″=8′-0″ and the study model at 1″=16′-0″ addressed the needs of design intuitions and rational, programmatic criteria, involving them in a synthetic expression. Their formal intentions were checked and affirmed in the schematic drawings at 1″=16′-0″. The pastel tones of the drawing and the malleable clay of the model maintained a continuity with the gesture model. Their sensory natures sustained intuitive involvement with the design. At the same time, programmatic criteria were addressed by the drawings' ink lines, the model's structural needs, and the realistic scale and details of both.



Pastel Study
Longitudinal Building
Section

THE CAMBRIDGE SWIMMING CLUB

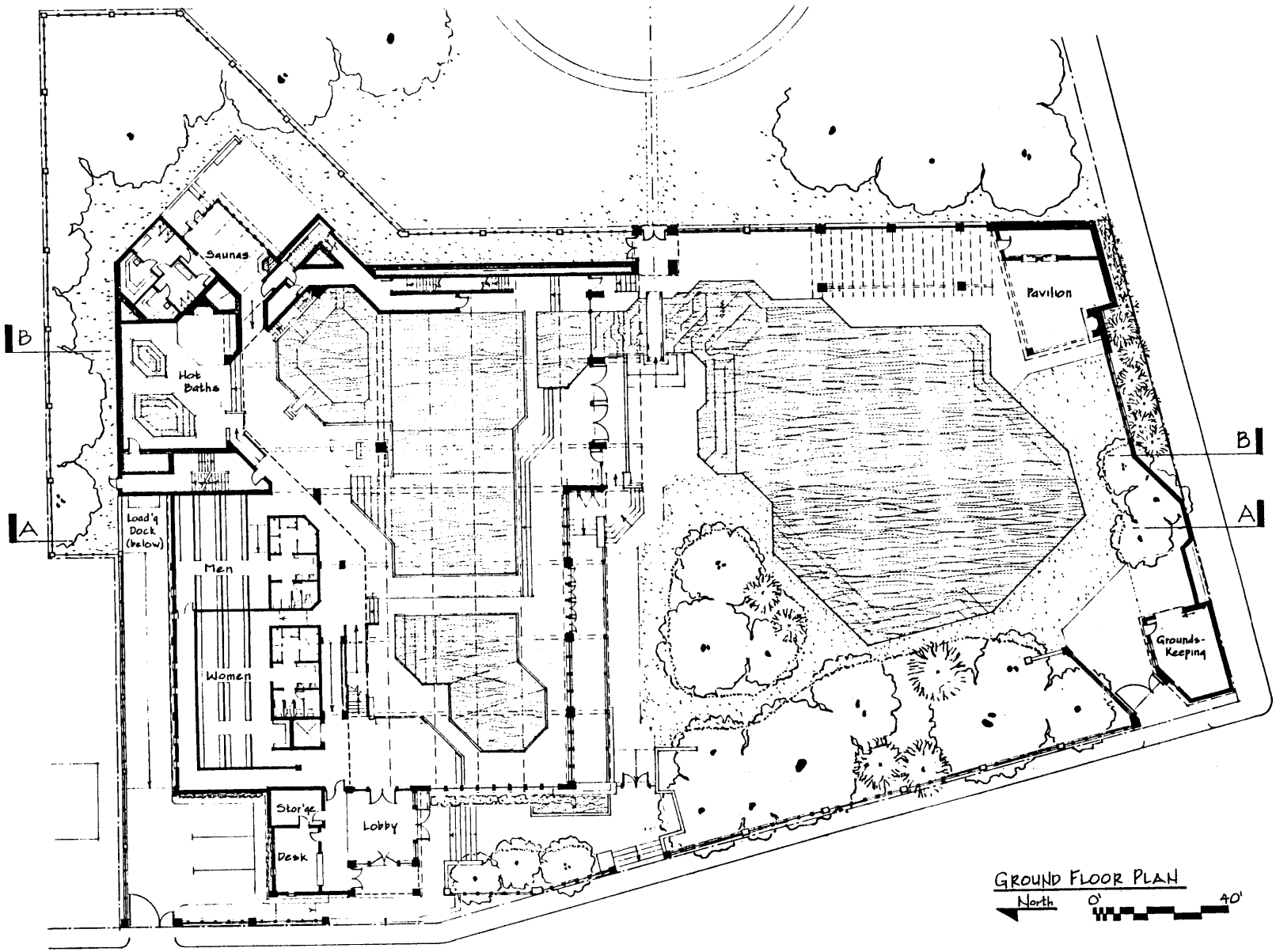


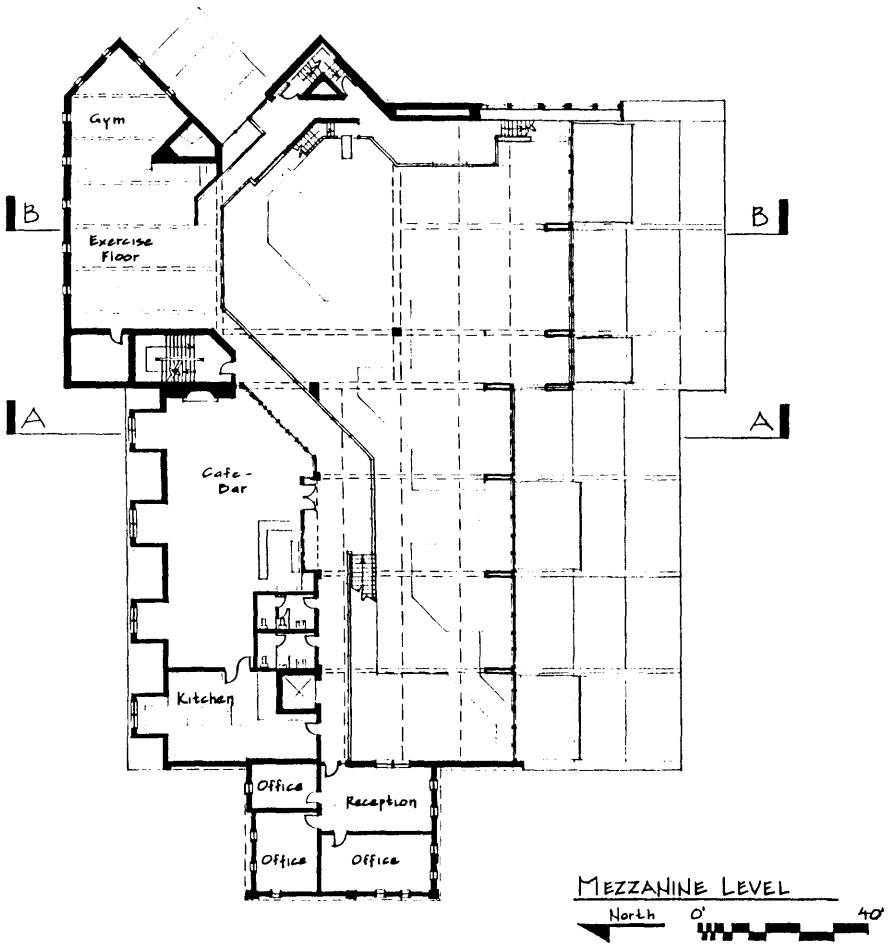
The final step in the design asserts the person's place in the landscape of the Swimming Club. During the sketch and development phases, the qualities of the initial gesture and its capacity for inhabitation were progressively explored, and design decisions were made intuitively, in a spirit of discovery. In the final part of the project, however, these design decisions became explicit and purposeful, establishing the person's active place in the form. In this way, the focus returned from the landscape to the figure, but in a newly inclusive, dynamic way.

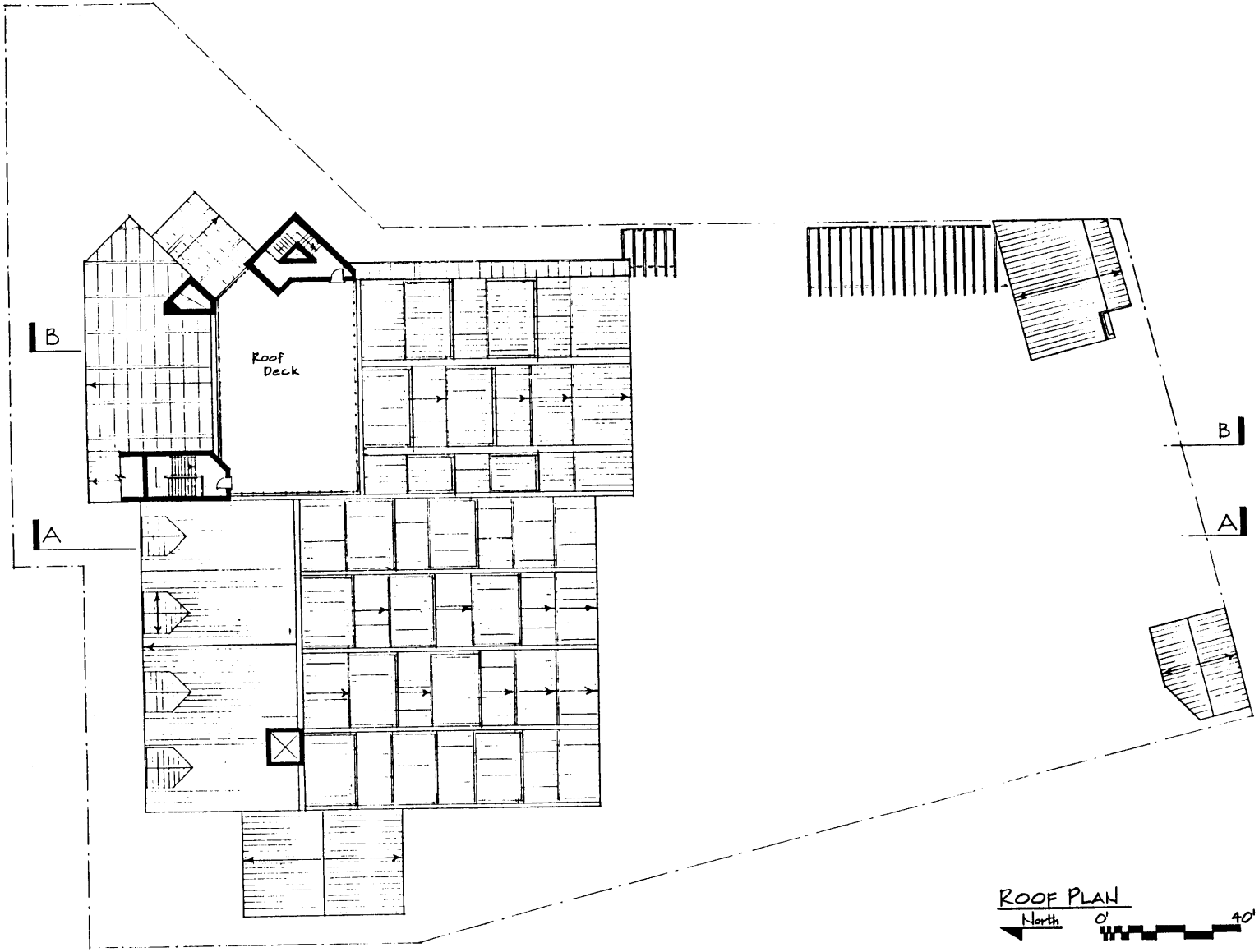
This transformation is developed in the study model at 1"=16'-0" and in pastel drawings at 1"=8'-0". They convey initial intuitions of gestural and field-like qualities, but they also reflect purposeful, form-giving decisions—decisions to build structure, containment, shelter. Finally, measured hard-line drawings at 1"=16'-0" add detail and concrete substance to the design. These drawings elaborate the study model and the pastel drawings, maintaining the gesture model's archetypal qualities in a developed architectural statement of place-making.

Certain parts of the building resonate particularly well with figure and landscape associations, amplifying their roles in the design. The most striking examples are in the pools, in the central column, and especially in the piers and their great cantilever. This chapter introduces the main parts of the design in a sequential description.

Thus, in making the masses, spaces, and lines of architecture respond to our ideal movement and ideal stability, a measure of symmetry and balance are constantly entailed. Not perfect symmetry, necessarily. (Scott)


Saunas
Hot Baths
Load'g Dock (below)
Men
Women
Stor'ge
Desk
Lobby
Pavilion
Grounds-Keeping
A
B
B
A
GROUND FLOOR PLAN
North
0'
40'


Gym
Exercise Floor
Cafe - Bar
Kitchen
Office
Reception
Office
Office
B
B
A
A
MEZZANINE LEVEL
North
0'
40'


B
Roof
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ROOF PLAN
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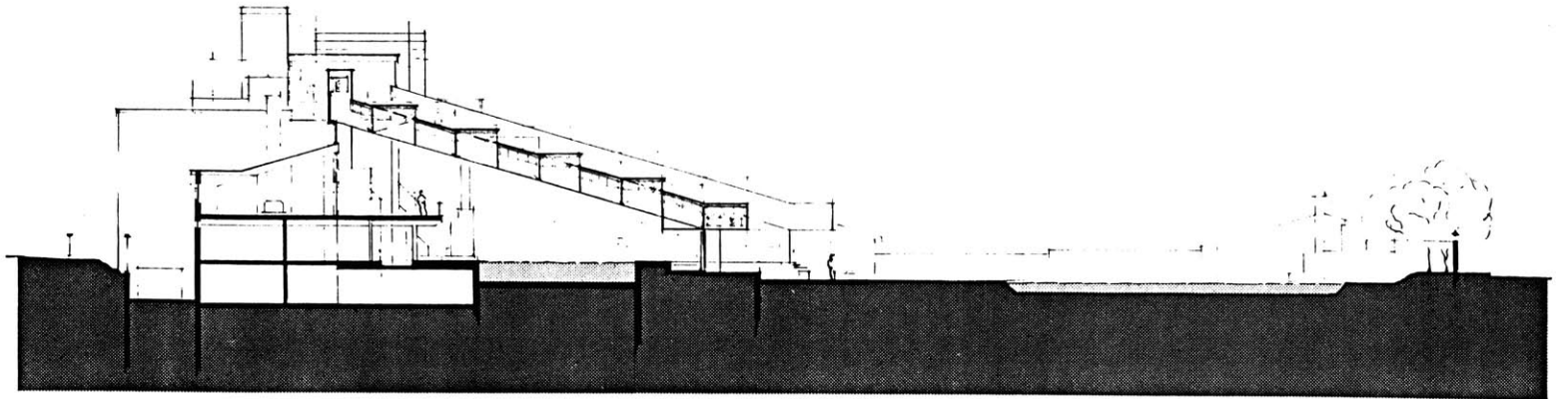
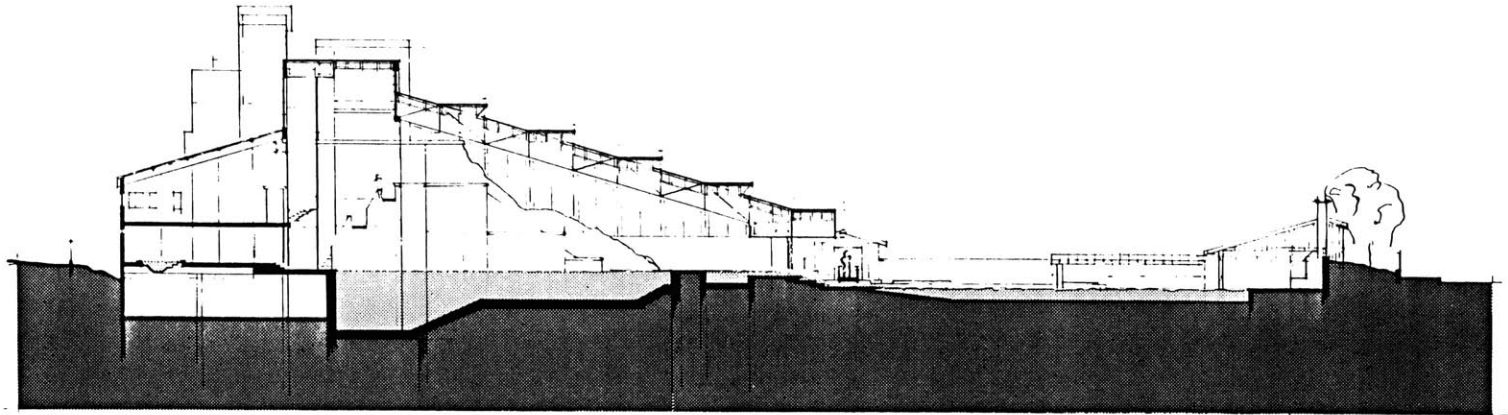


SECTIONAL STUDY A-A

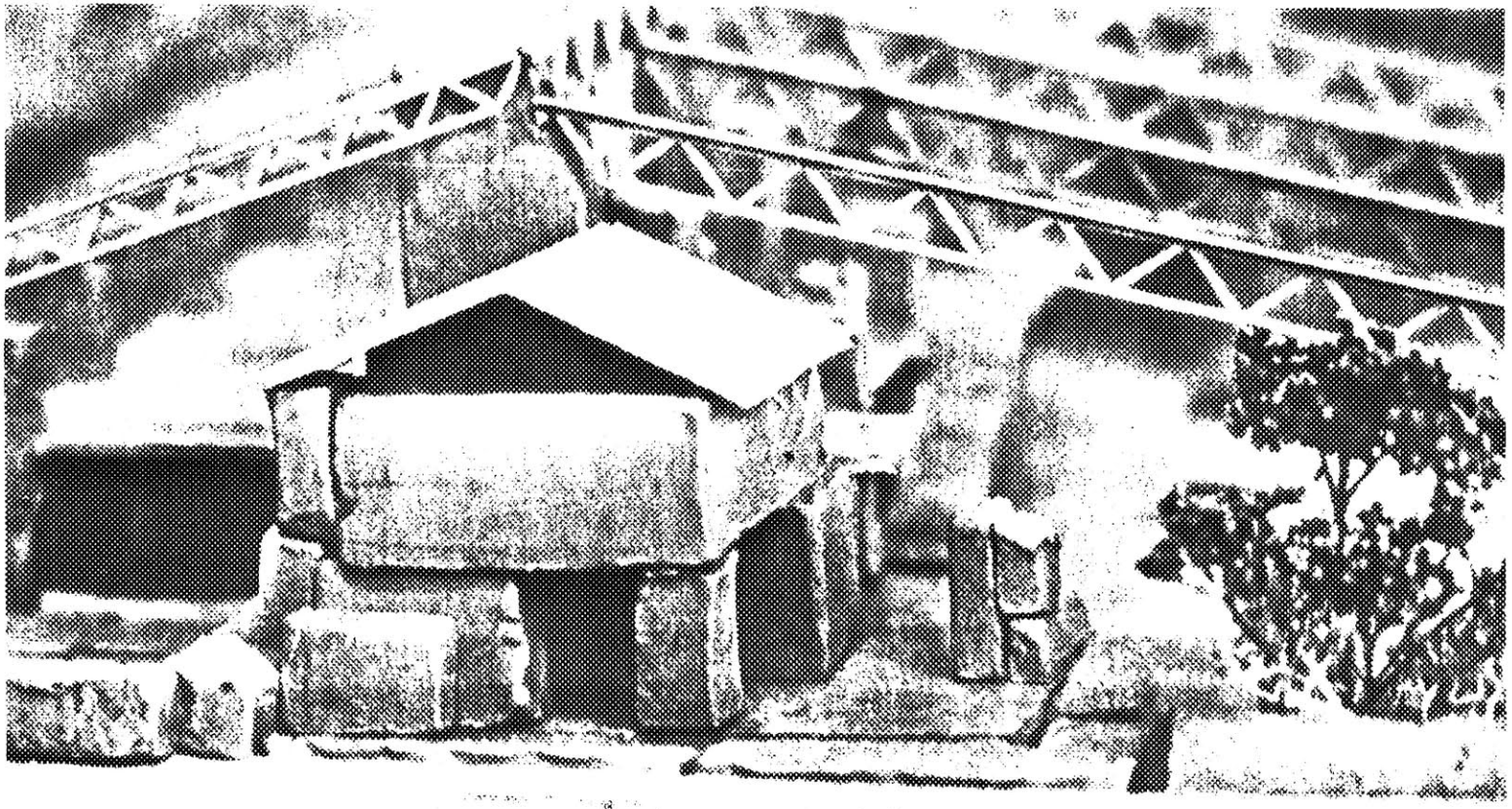


SECTIONAL STUDY B-B

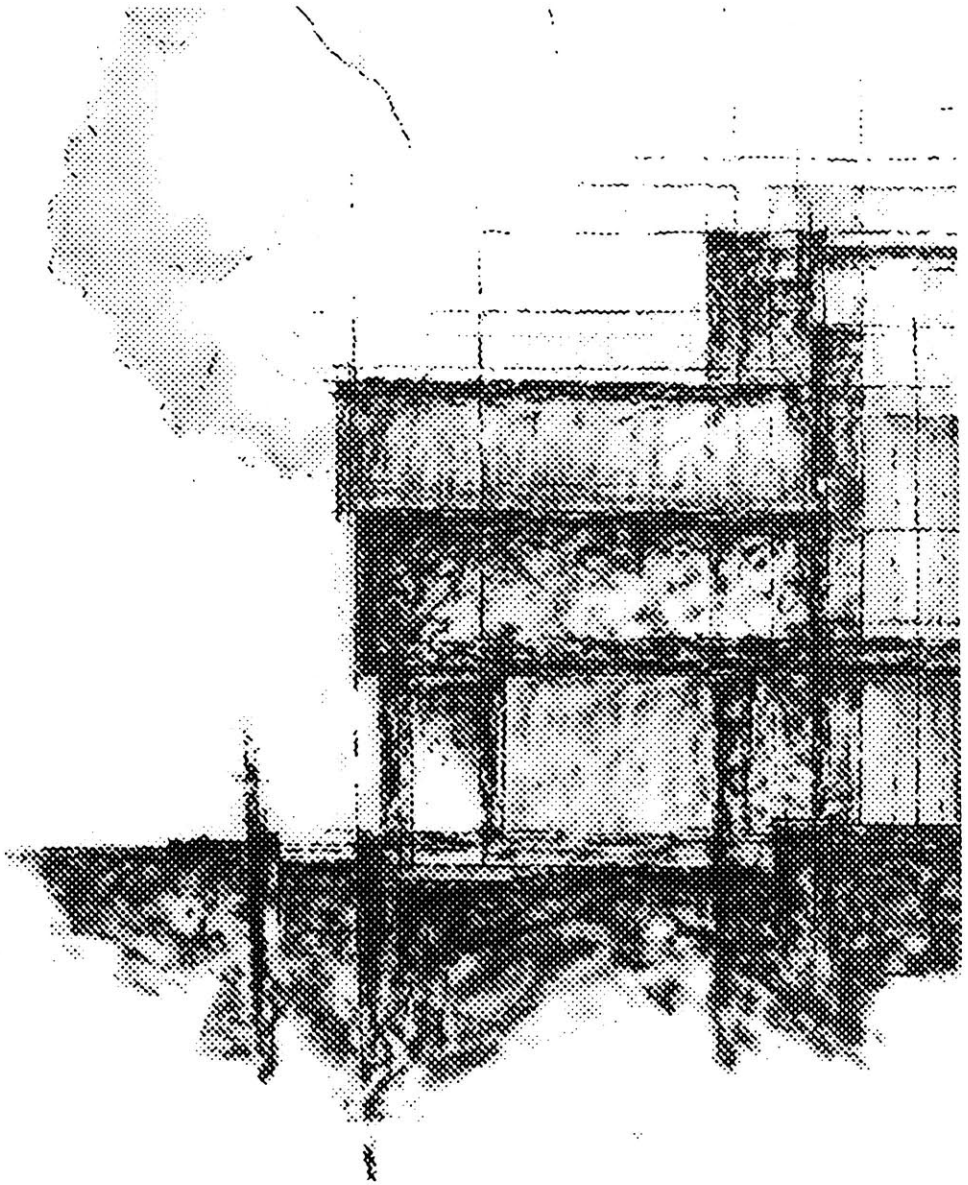
Bathers enter the club from Willard Street through a 'head-house,' a transition from the residential order of the neighborhood to the sheltered, park-like landscape of the swimming club, with its rocks and pools. This building houses entrance hall, front desk and coat room on the ground floor, and club offices above.

The headhouse resembles other buildings on the street in its massing, articulation, setback, and approach, but it introduces the monolithic masonry of the body of the building. It expresses this material's primacy in the solid mass which rises to the full height of the building and spans the entry, sheltering it. This mass is an extension of the building's masonry spine and a termination of it. It anticipates the dominant masses and cantilever of the masonry cores beyond.

Headhouse
Detail of Gesture Model



Headhouse
Detail of Study Model

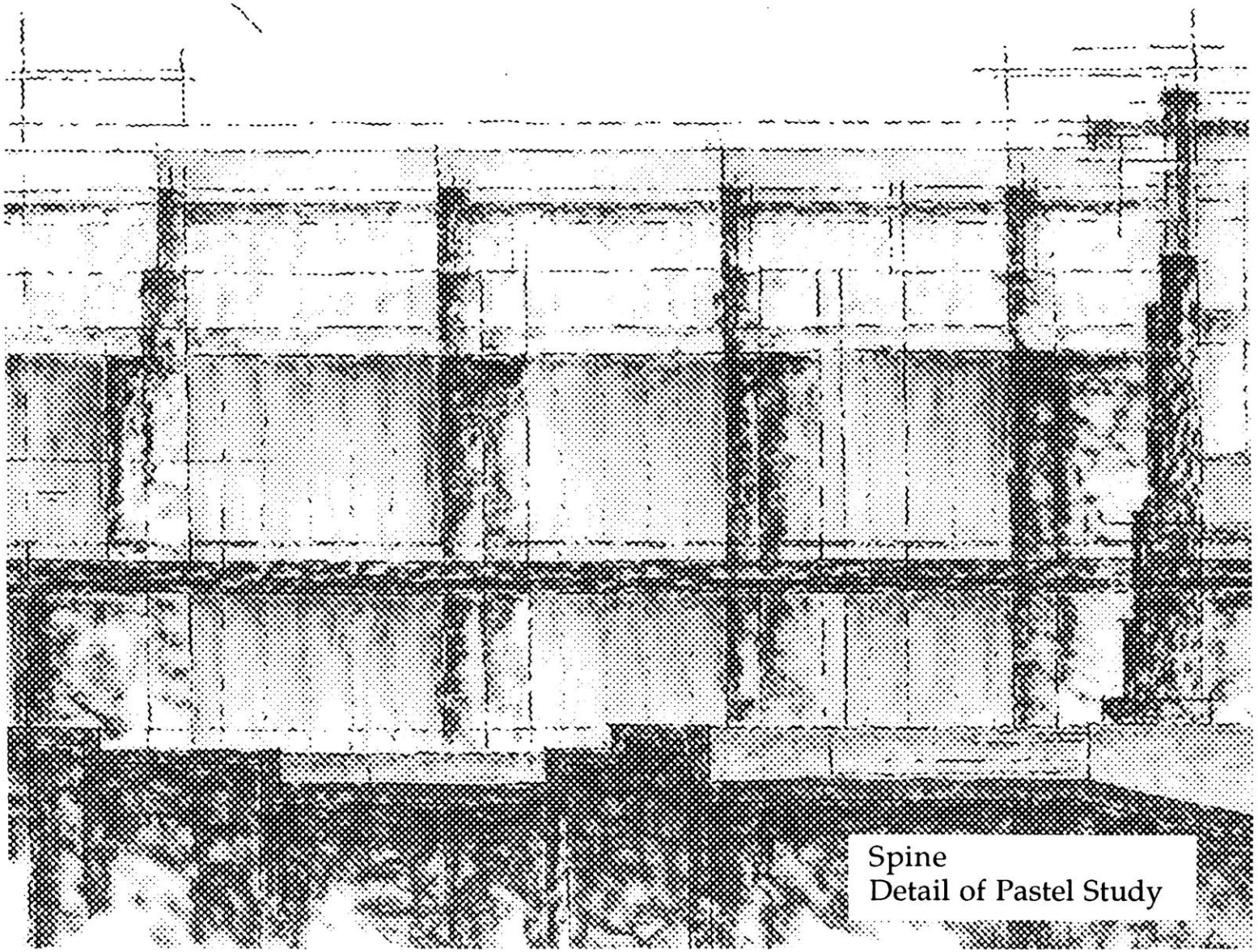


Headhouse
Detail of Pastel Study

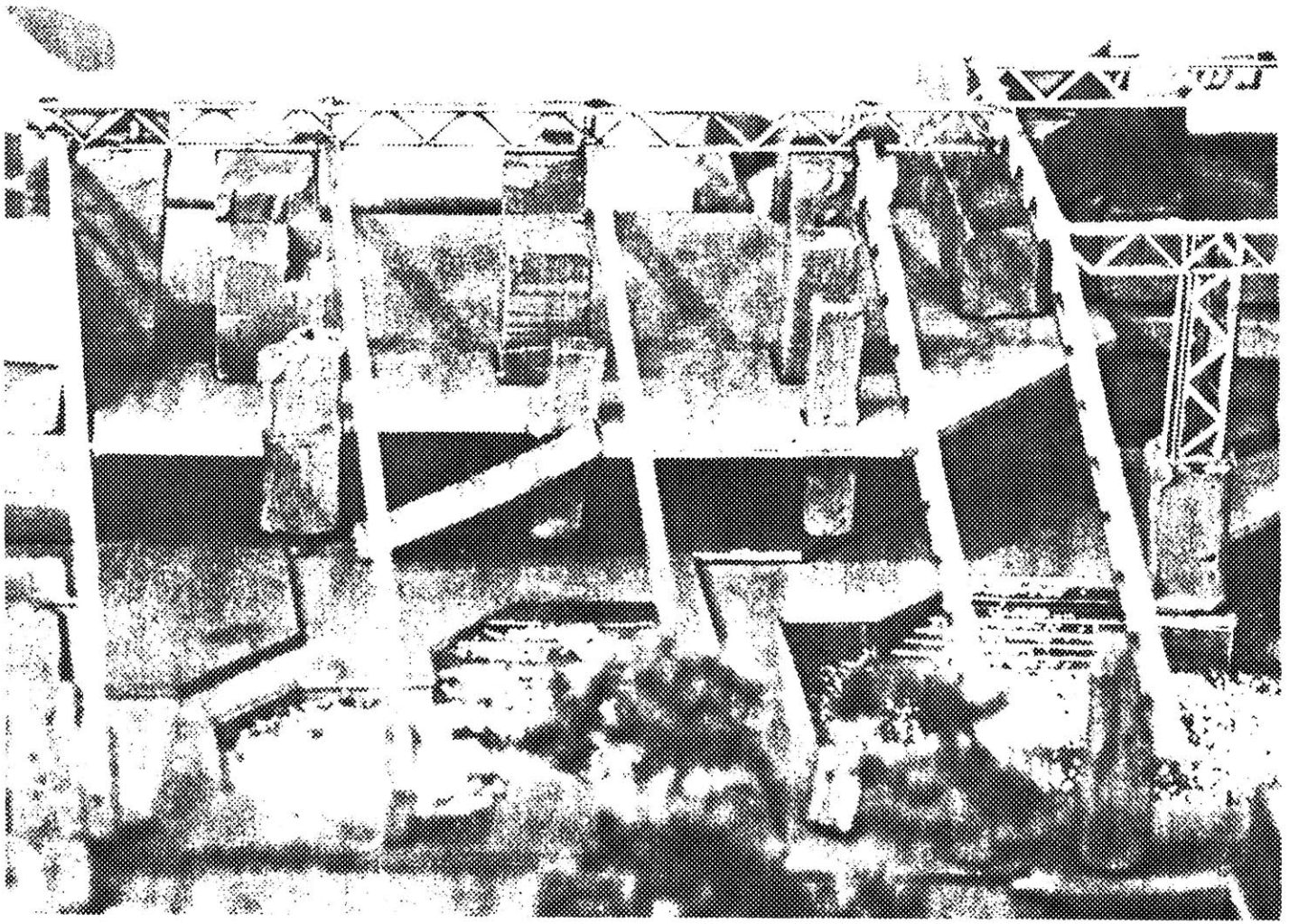
A row of masonry pilasters extends from the head house along the main space of the building to the masonry piers to the east. They are built up of glazed roman brick. At their bases they are deep and massive, and they carry the cantilevered floor slab of the mezzanine, which extends toward the pools. The elevator, firestair, chimney, and mechanical ducts are incorporated between these verticals. They become narrower above the mezzanine, where they rise to support the rib-like roof trusses which span the spaces to either side. The trusses to the north, over the club rooms, are shorter, and attach to the supports at a lower point than the long, deep trusses which span the open space of the pools.

A circulation axis follows this row of supports, above and below the mezzanine's cantilever. It is punctuated by low masses of masonry, tying together the entries to the locker rooms, the ramps, level changes, and the stairs to the mezzanine. Along the locker rooms and other private areas, this axis is some 10 feet wide, to allow articulation of the necessary circulation and zones of privacy. It is most exposed where it passes between the hot tubs and the diving pool, under the highest rise of the roof, to penetrate the masonry piers and finish at the sauna.

At a distance from the rhythmic structural spine, other masonry supports recall it and tie back to it. They are first apparent in the supports for the farther ends of the roof trusses, echoing the spine. On the south wall, these supports are incorporated in the terrace, which steps in and out and changes level in cadence with them. Beyond, the masonry of the walls, terraces, pavilion and gate house reflects the directional, rhythmic masses of the spine and piers.



Spine
Detail of Pastel Study

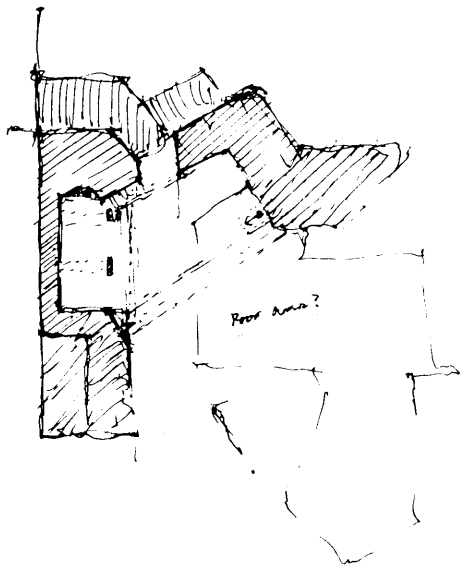


Spine
Detail of Study Model

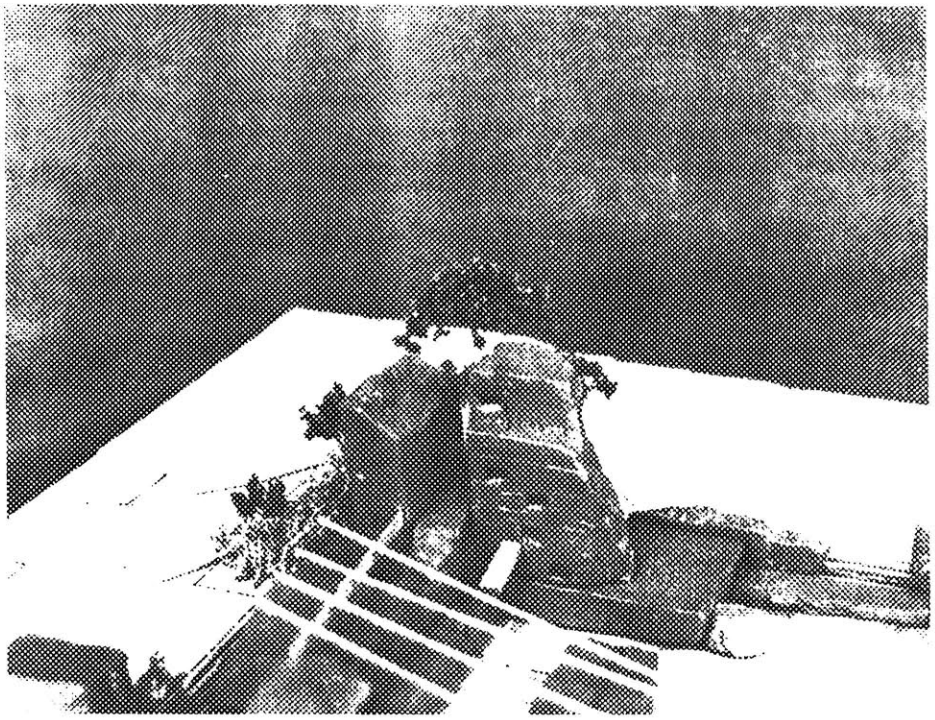
The building's center of gravity is rooted in the two dominating masonry piers at the end of the circulation spine. They are extensive, irregularly shaped masses. The southern pier builds up to a height of 50' and exposes a broad surface to the swimming pools, a sheer wall that drops into the water at its deepest point. Its southern extremity is eroded, providing a way to climb up to lookouts and diving platforms which project from its face. The northern pier rises 70' in a pronounced vertical to a vantage point above the ridge-line of the roof, overlooking the cantilevered platform. At its base, cave-like spaces are carved out for hot-tubs and sauna. The two piers are offset and separated. Through the narrow gap between them, the spine's circulation axis passes, leading from the main diving pool to the sheltered sauna garden to the east.

The formal directionalities of the building and site are received and resolved by the mass of the piers and the deep pool which they define. The angle of the site's rear extension appears here to anchor the piers in that corner of the site. This angle is then reflected throughout the design.

Near the tops of the piers, they corbel into each other and cantilever out over the pool in a broad pelvic arch. This cantilever shelters the deepest part of the pool and the passage between the piers, and contains the space where the site's major axes conjoin. It is here that the short,

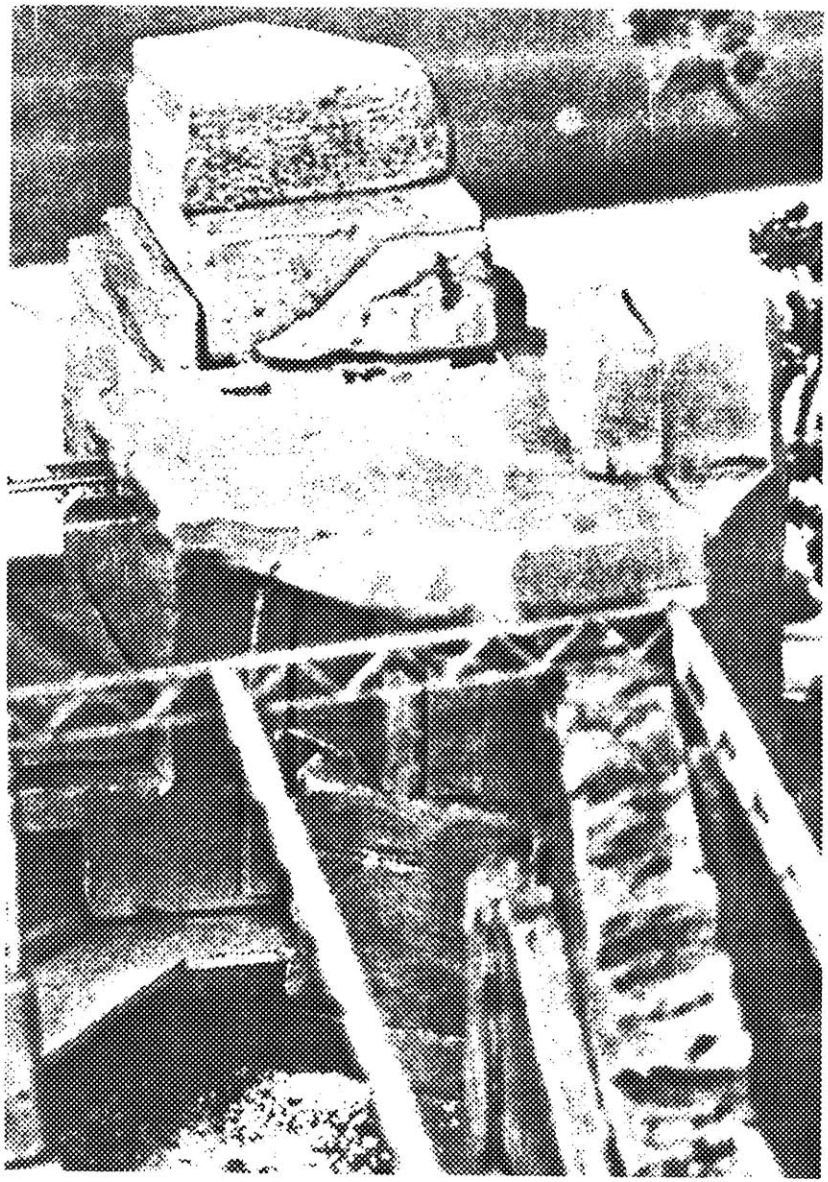


Study for Piers



Gesture Model
Showing Masonry Piers

rhythmic movement along the spine of the building meets the farther-flung sweep along the site and toward the river. The piers define the space where both are apparent and in play.

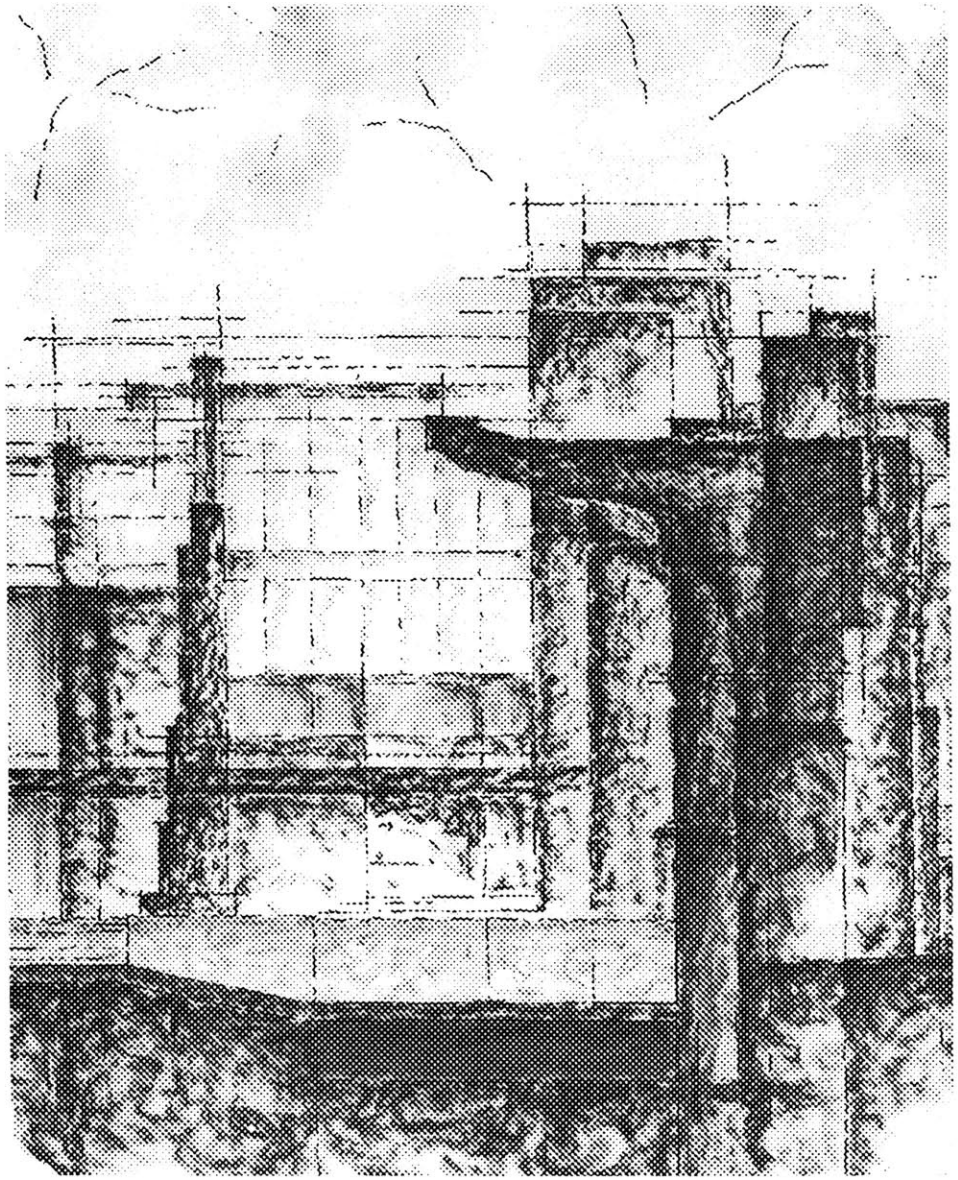


Study Model
Showing masonry piers

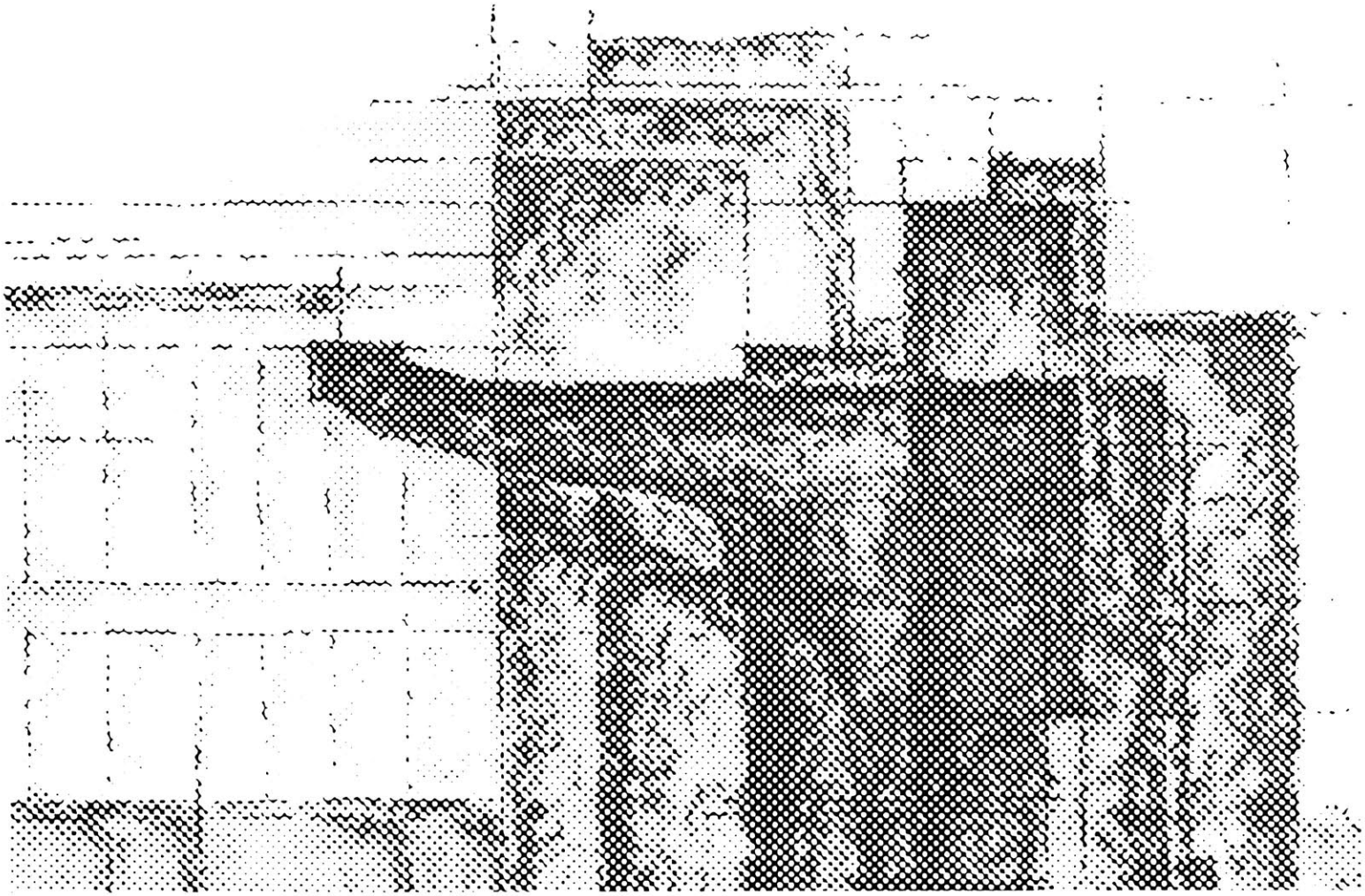
The Swimming Club's most singular structural elements are the column and cantilever at the diving pool. They extend the spine and the piers into the central space of the building to make a roof over the deepest water.

The column resembles the rhythmic masonry pilasters of the building's spine. It stands next to the water, detached, to bear the load of the roof trusses. The trusses tie it back to the spine, the stair, and the cantilever. It partially encloses the diving pool at its deepest point, where the water extends farthest into the masonry core.

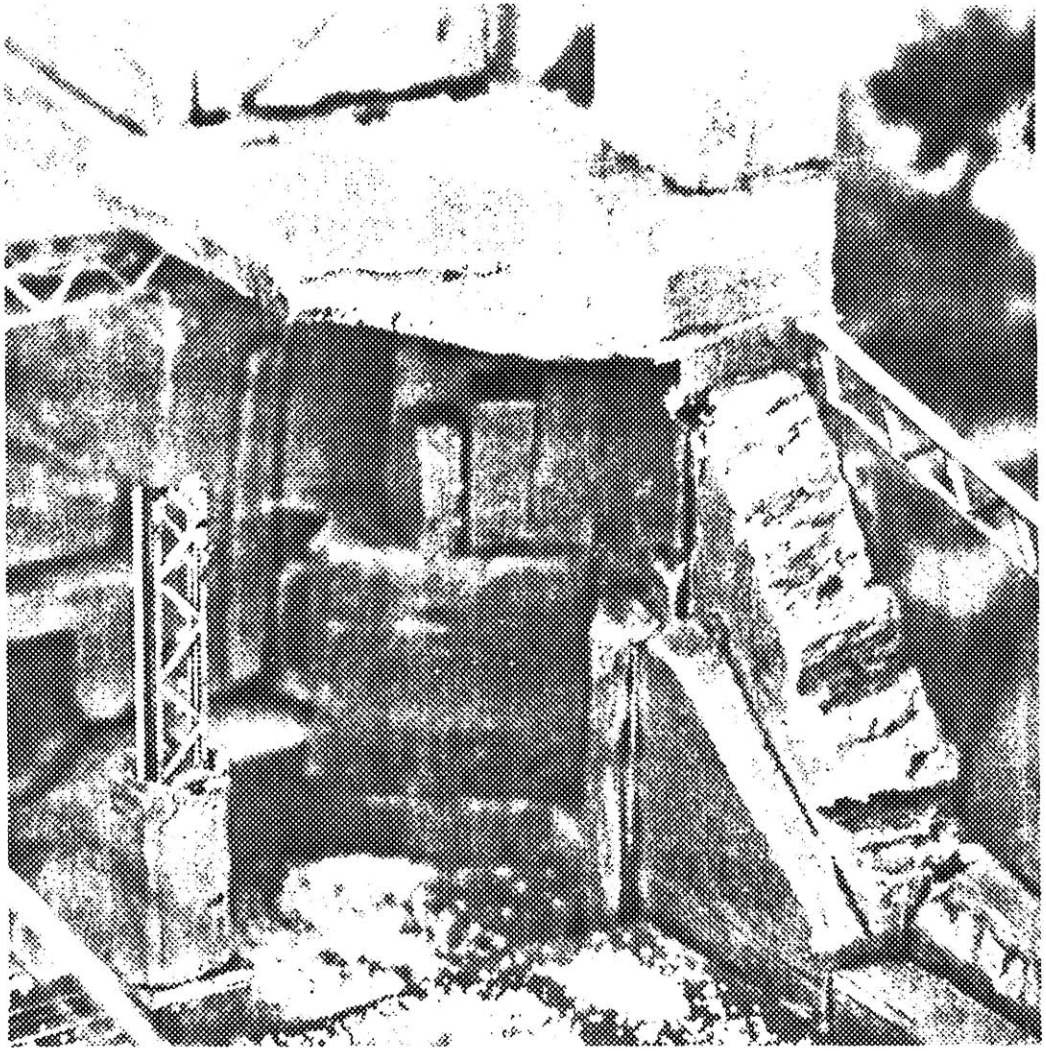
The cantilever springs from the piers and rises out over the diving pool. It forms the definitive, grotto-like shelter that is at the heart of the building. It works with the column to support the roof trusses which span the diving pool and the deep end of the lap pool. Bathers can climb stairs inside the south pier to an outside platform on top of the cantilever, sheltered by the taller north pier, from where the park and the Charles River beyond are visible.



Column and Cantilever
Detail of Pastel Study



Cantilever
Detail of Pastel Study

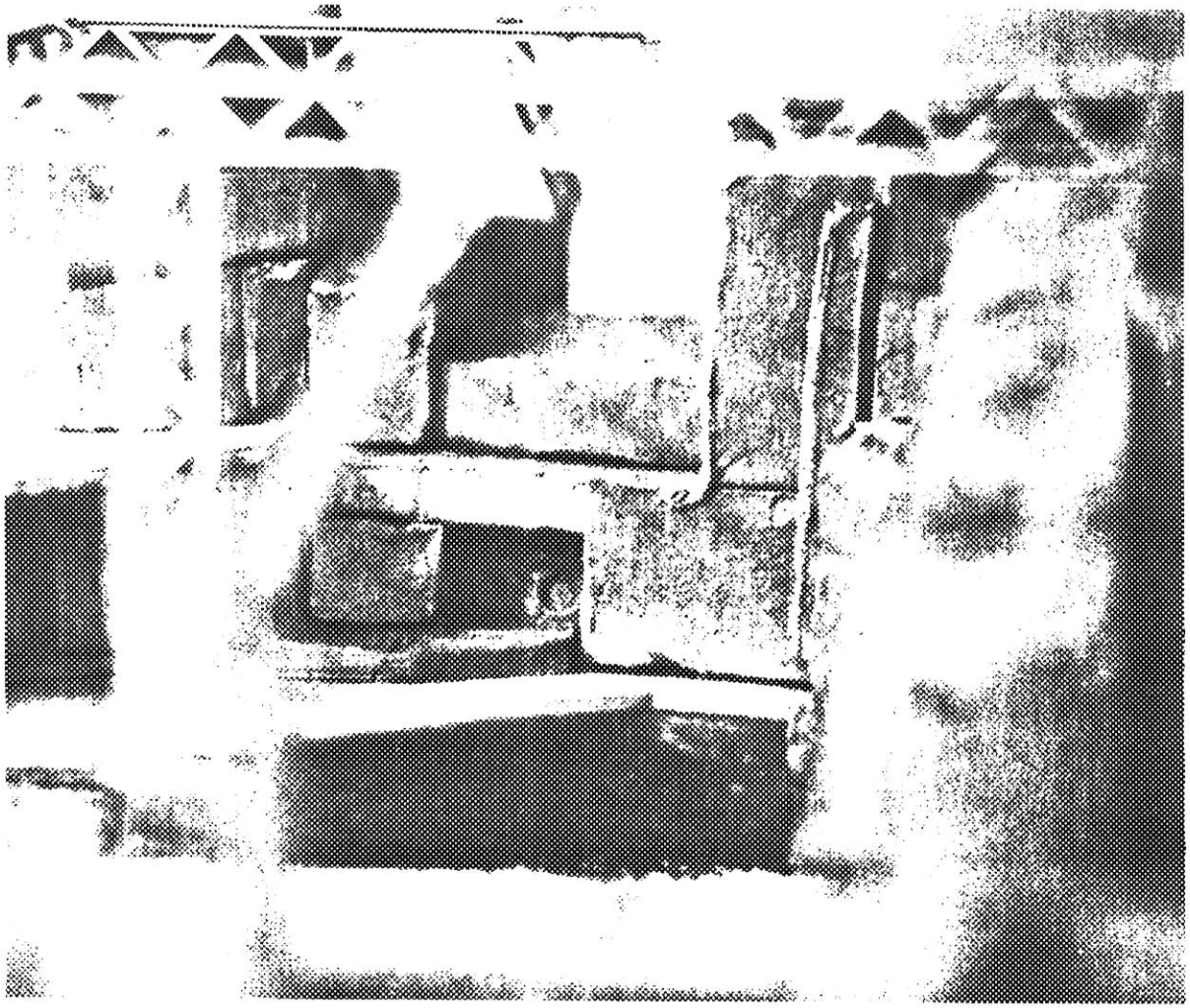


Column and Cantilever
Cut away detail of Study
Model

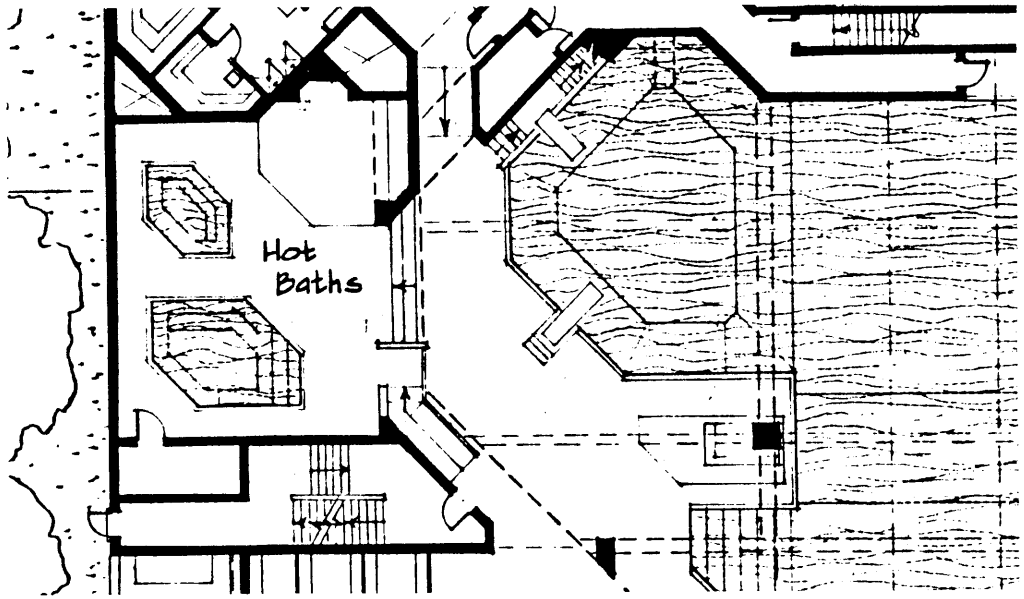
The diving pool extends back into the deepest part of the building, into a sort of protected cove. There, the circulation through the building comes out onto the pool deck, and the masonry mass behind emerges as a low horizontal block from the slope of the site, linking the fire stair and the north pier. The surface of this mass, initiated by the stair, continues the horizontal of the building's spine.

A few steps above ground level, an opening is carved into the masonry. It leads to a cave-like room which faces out onto the swimming pools. In it, partially screened, are several hot tubs, or spas, and a fireplace. This is a place for relaxation and social interaction, intimate but with enough space to allow a social distance when needed, and open to comings and goings from the pool and beyond.

On top of this low mass, between the fire stair and the pier, is a large mezzanine. It overlooks the pools in front, and the glazed roof and rear wall expose it to sky and trees. It is an exercise floor, with mats, barres, and wall-mounted gym machines. It can also be used as social space for larger club gatherings or for private receptions.



Hot Baths
Detail of Study Model



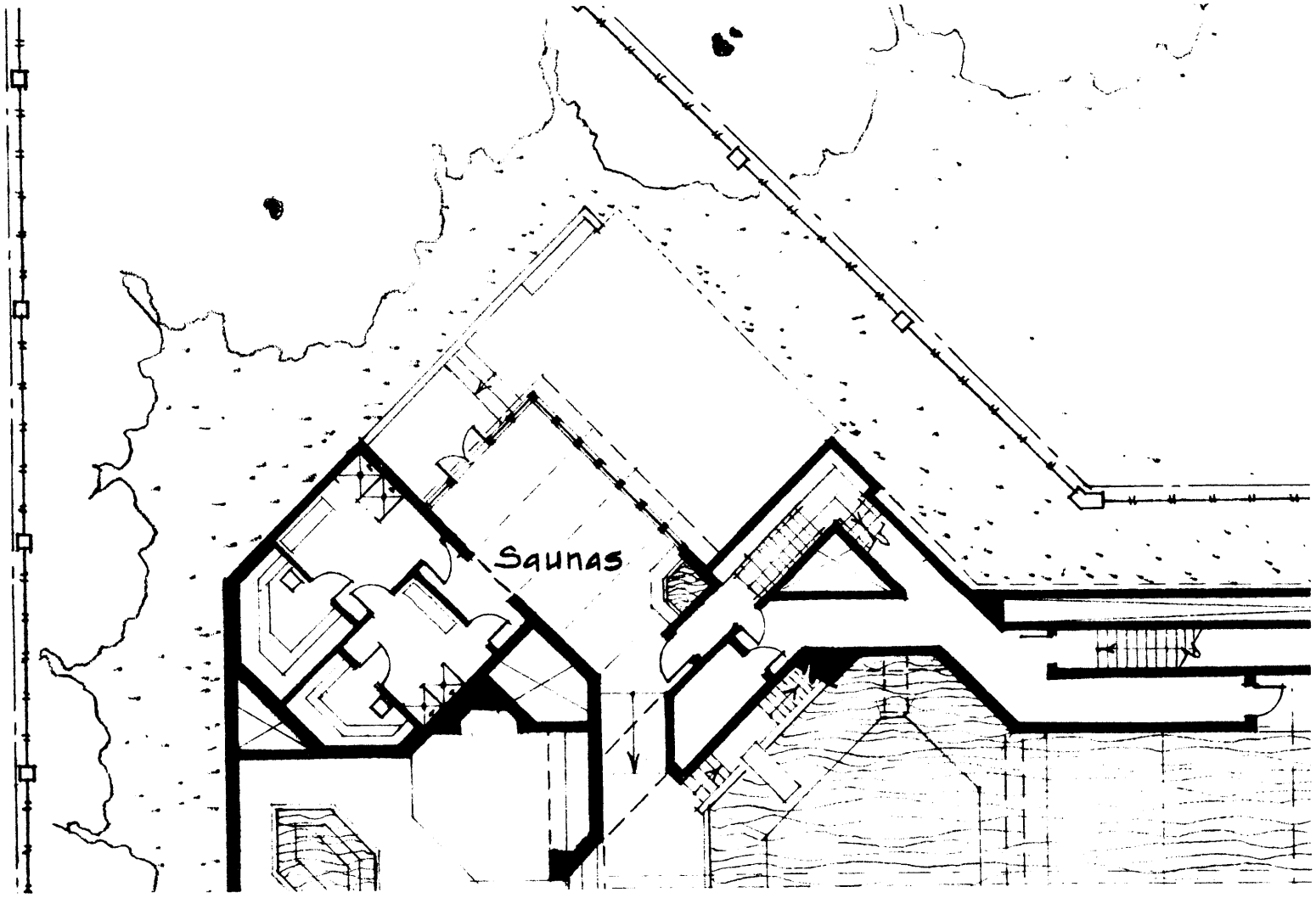
Hot Baths
Detail of Plan

For centuries, the Finnish sauna and its equivalents throughout the world have endured as places of tradition and ritual. They have a special role of retreat and renewal, and they are often carefully sited for this purpose. The sauna's extreme, elemental conditions of heat and enclosure mandate a routine of preparing, entering, cooling off, re-entering, resting, and so forth. Under these conditions, the exposure of one's body in close quarters brings an implicit social understanding, an intimacy, which is counterpointed by ritualized interactions. The entire process restores the spirit and affirms a sense of belonging, while it refreshes the body.

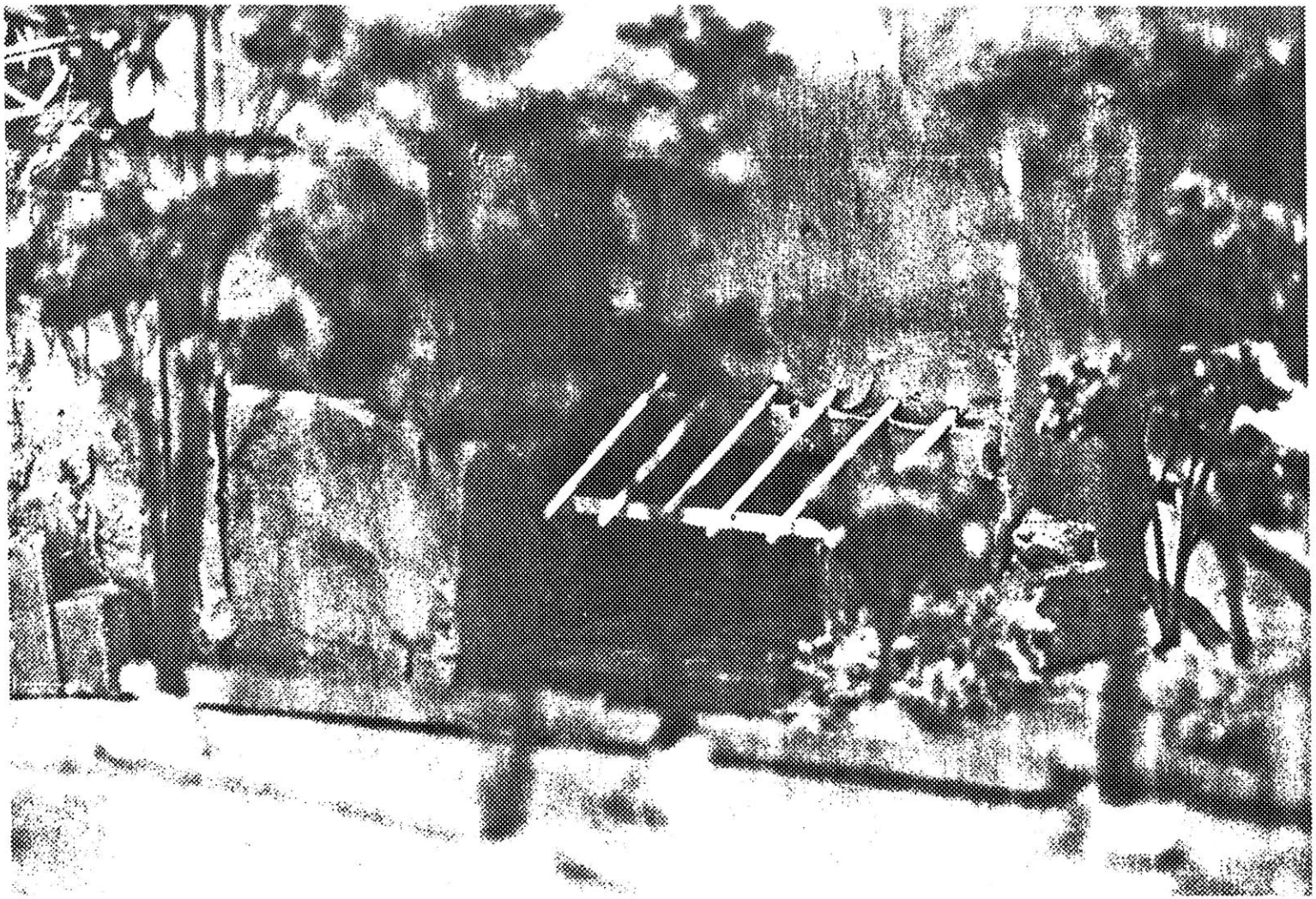
At the Swimming Club, the sauna is at the far end of the axis of the spine, just beyond the narrow passage between the two piers. It is carved into the northern pier at the point where it meets the steepest part of the site's slope. It looks out onto the most untouched part of the site, among mature trees, with a tightly screened view of the park beyond. A small terrace follows the contours of the ground between the piers. Part of it is enclosed by a shed-roofed greenhouse which links the sauna to the main building. Inside the greenhouse and facing the sauna, a fountain and plunge-pool spring from the pier to the south.

Traditional sauna scene (Konya)

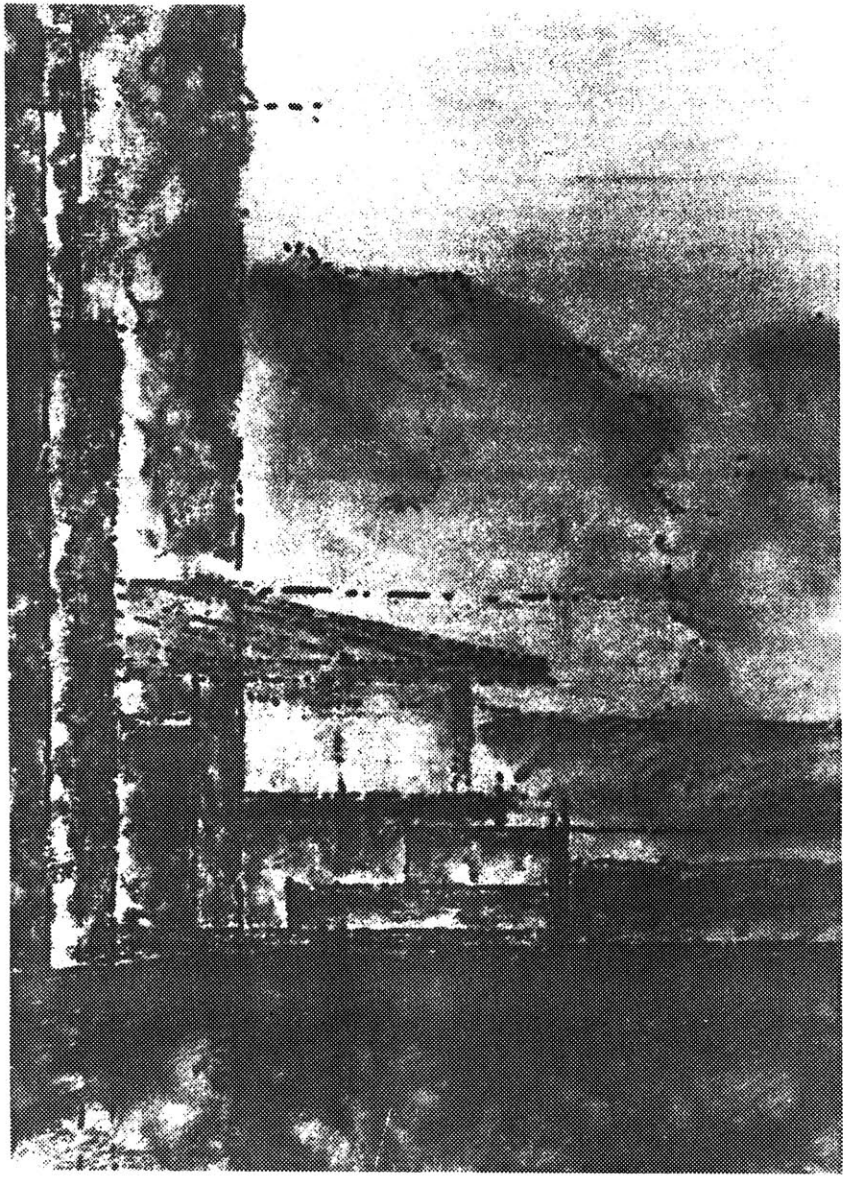
Two saunas with separate shower rooms are built into the pier. The smaller could be used for a hotter or a steam sauna, or for a separate women's or men's sauna. A connecting door between the shower rooms could be opened or blocked, depending on use. To cool off, bathers could plunge in the fountain pool, or make their way back to the main indoor pool to dive in the deep water. They could also rest in the greenhouse or on the exterior terrace, or follow a narrow side path to the open-air pool and terraces at the front of the building.



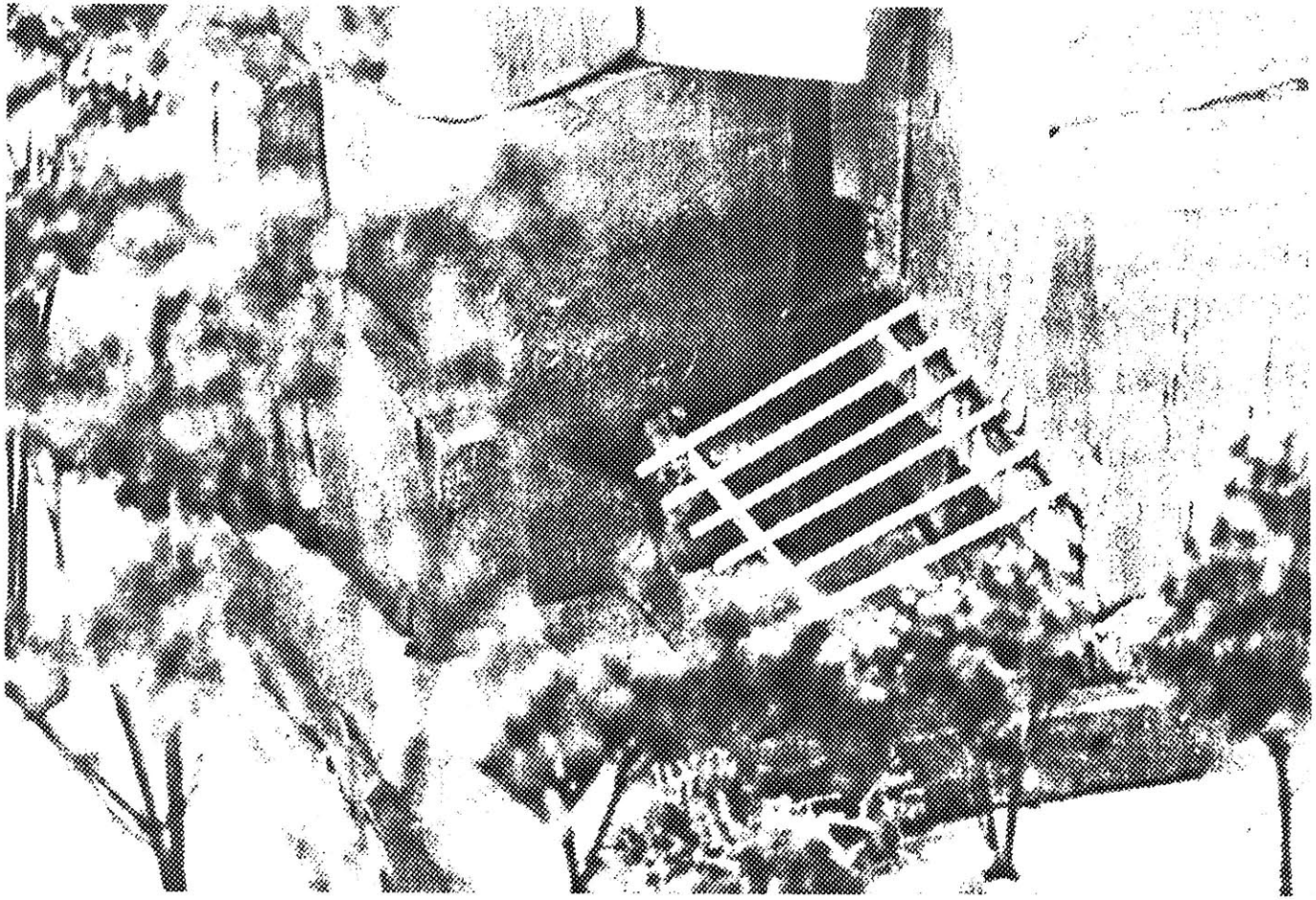
Sauna and Piers
Detail of Plan



Sauna
Detail of Study Model



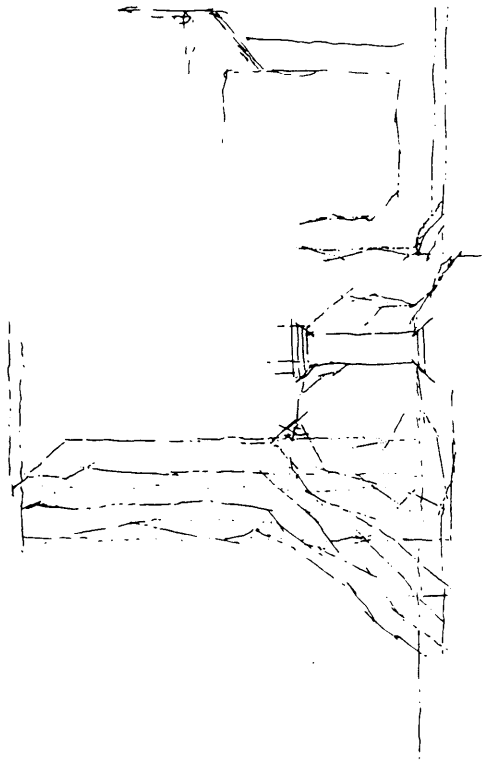
Sauna
Detail of Pastel Study



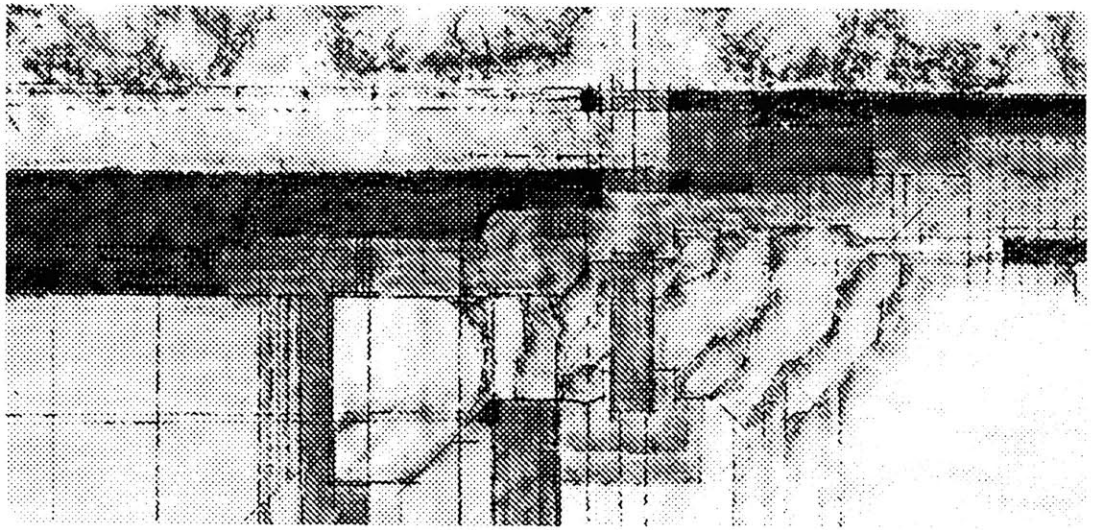
Sauna
Detail of Study Model

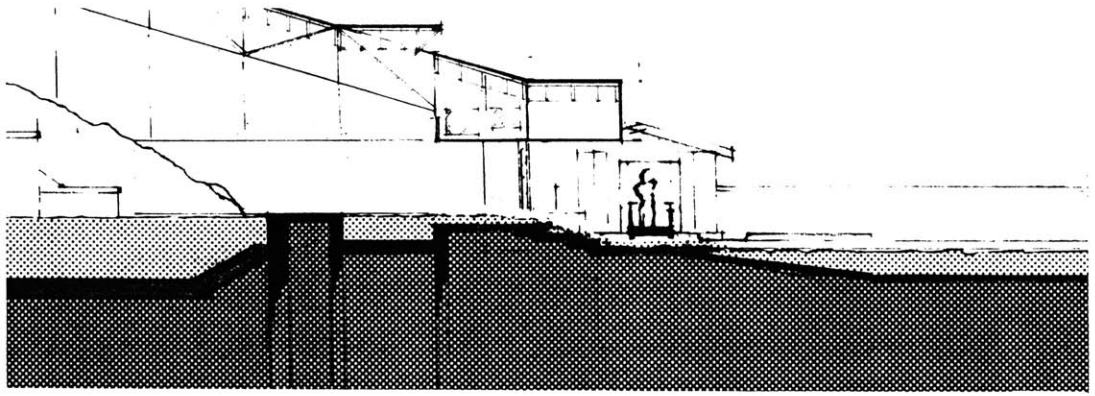
The building's southern edge, facing the site, steps forward near Longfellow Park to enclose a plunge-pool in a sunny, exposed solarium. It is surrounded by large glazed doors which swing up to open it to summer breezes. The water of the plunge-pool overflows down a series of rocky ledges and waterfalls to the outside (under the doors, when they are closed) to fill the open-air wading pool.

A footbridge spans this stream, giving an elevated view into the building to the pools and masonry piers, over the water as it descends the falls, and out to the wading pool. This bridge provides a way to the pavilion and the ledges along the eastern edge of the wading pool. It also completes a path across the site from the gate on Willard Street to the gate on Longfellow Park, giving an informal, controlled access between the site, the neighborhood to the west, and the park.

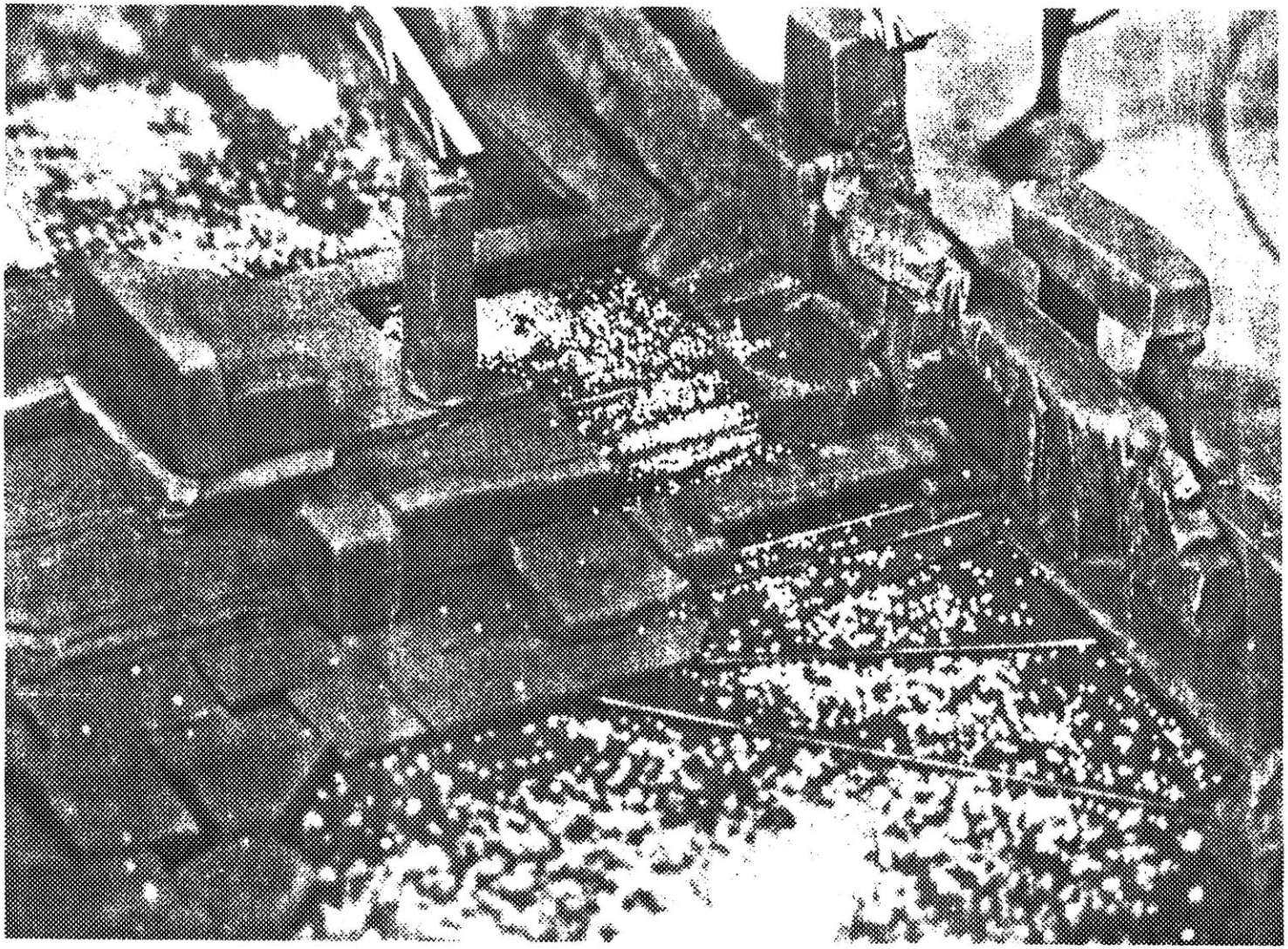


Study for Plunge Pool, Waterfall, and Bridge





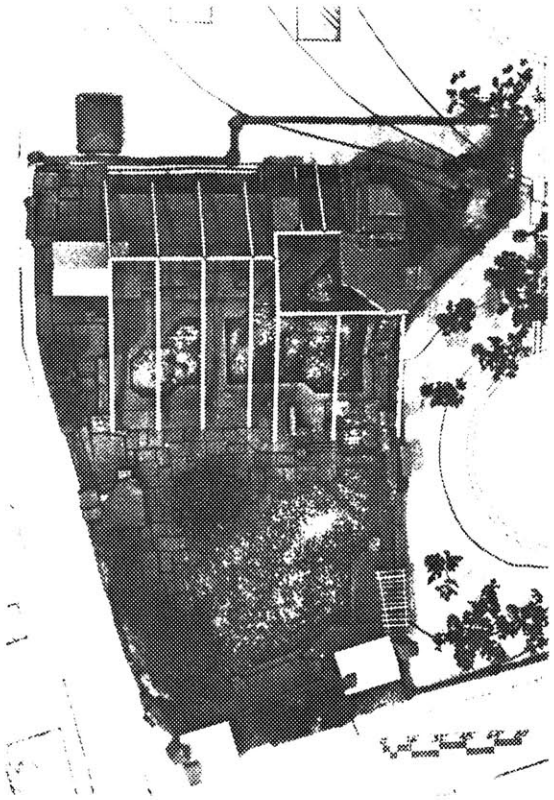
Waterfall and Bridge
Above, Detail of Pastel Study
Below, Detail of Section



Waterfall and Bridge
Detail of Study Model

As a complement to the open area of land in the adjacent Longfellow Park, the Swimming Club site is centered on the water of the wading pool, closely bounded by surrounding walls, levels, and outcroppings. Inhabitation by trees, grass, and sunbathers takes place along its margin. The water in this broad pool is lower and shallower than the water in the deep indoor pools, open to reflect the sky and respond to the wind and rain, and to freeze in the winter for skating. It occupies the lowest areas of the garden.

Along Longfellow Park, the water is bounded by a continuous masonry armature, an extension of the south pier, containing the gateway into the park and controlling views of it. This wall is massive where it projects into the pool. Between these projections, masonry terraces step down into the water. At Mt. Auburn Street, the wall thickens to enclose a building which anchors the corner and turns back toward the site, echoing the piers and terminating their movement. This is an outdoor pavilion, for picnics, barbecues, and small gatherings. From it, a fence and wall extend along the street with planting beds and terraces to the corner of Willard Street. There, a gate-house controls service access to the site and holds groundskeeping equipment. This outbuilding follows Willard Street, then steps back on a diagonal to form a



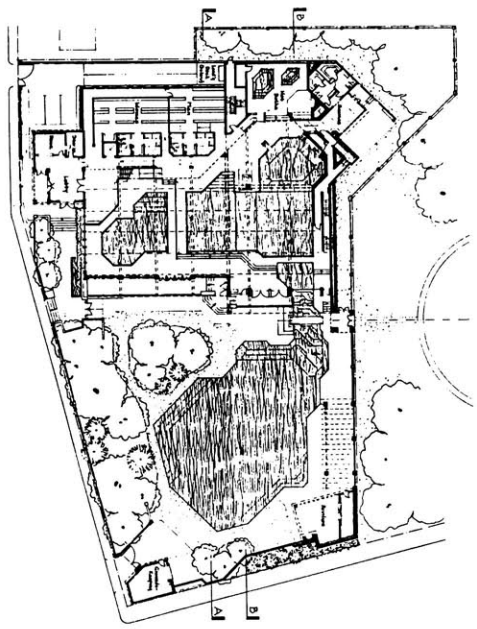
Study Model
Plan View

gateway, following the main movement across the site. This reflects the same diagonal found in the site's northeast extension and in the masonry piers.

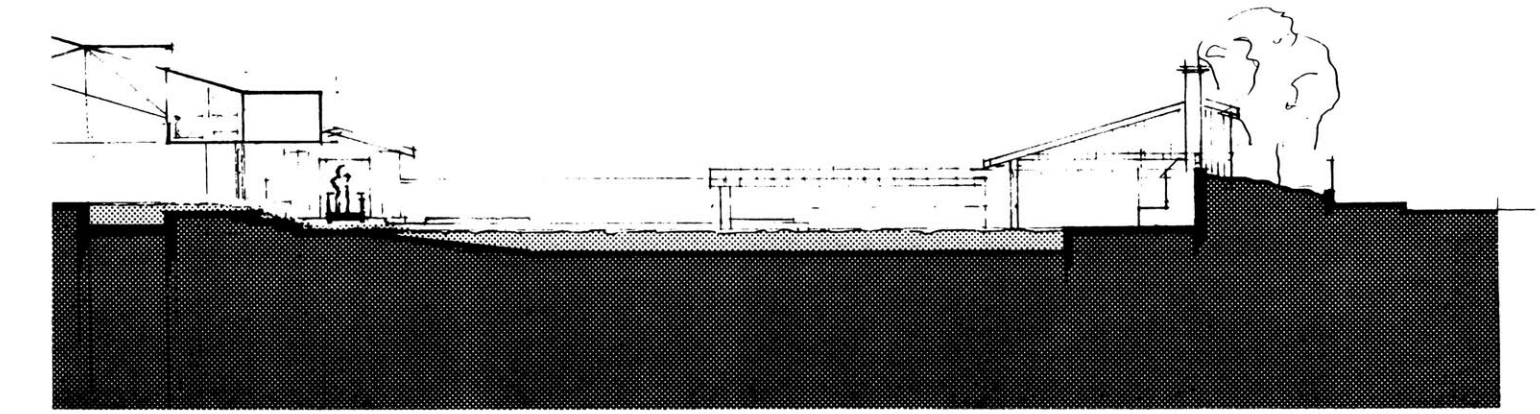
Along Willard Street, trees and lawn form an irregular border, screening the pool from the street. A fence of masonry and wrought iron follows the street. The inside edge of this border slopes down to a walk along the water. This walk continues along the pool from the gatehouse to the main building's sun terrace, and to the entry courtyard on Willard Street.

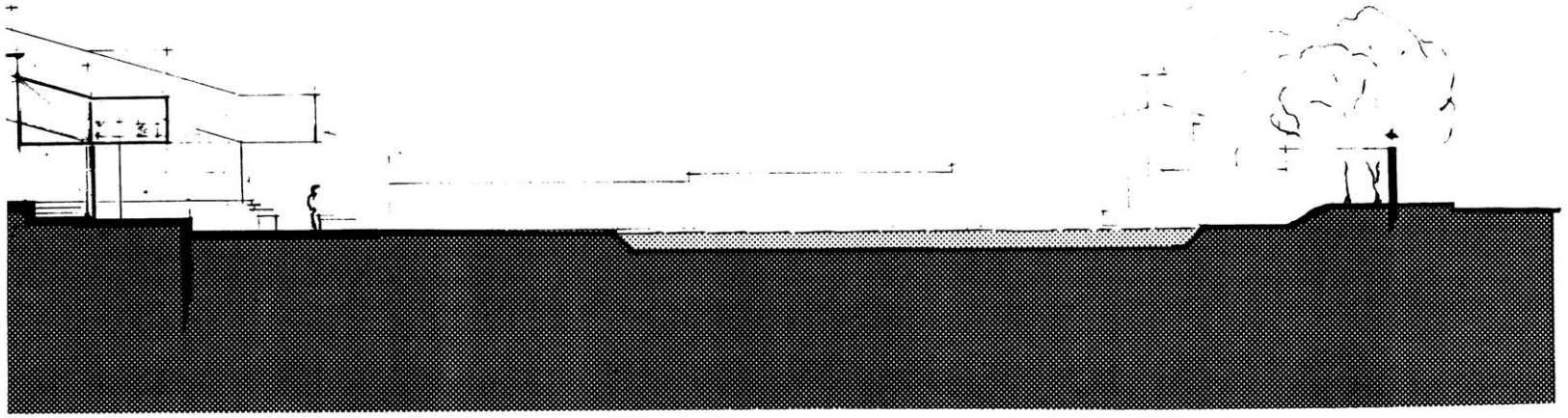
The Swimming Club's entry portico is up several steps from the street, beneath the headhouse overhang. To its side, it opens onto the entry courtyard, which is a small, quiet area with benches, a lotus pond, moss, and willow trees. It is below the level of the street, and screened from it by a low wall and planting. The headhouse lobby opens onto it, and at its other end it has a gate leading into the site.

To the north side of the headhouse are the building's service entrance, staff parking, and trash bins. These are screened from the street by a wall and gate. A truck ramp leads down from this gate along the building's north wall to a loading dock below grade, for direct access to mechanical areas in the basement.

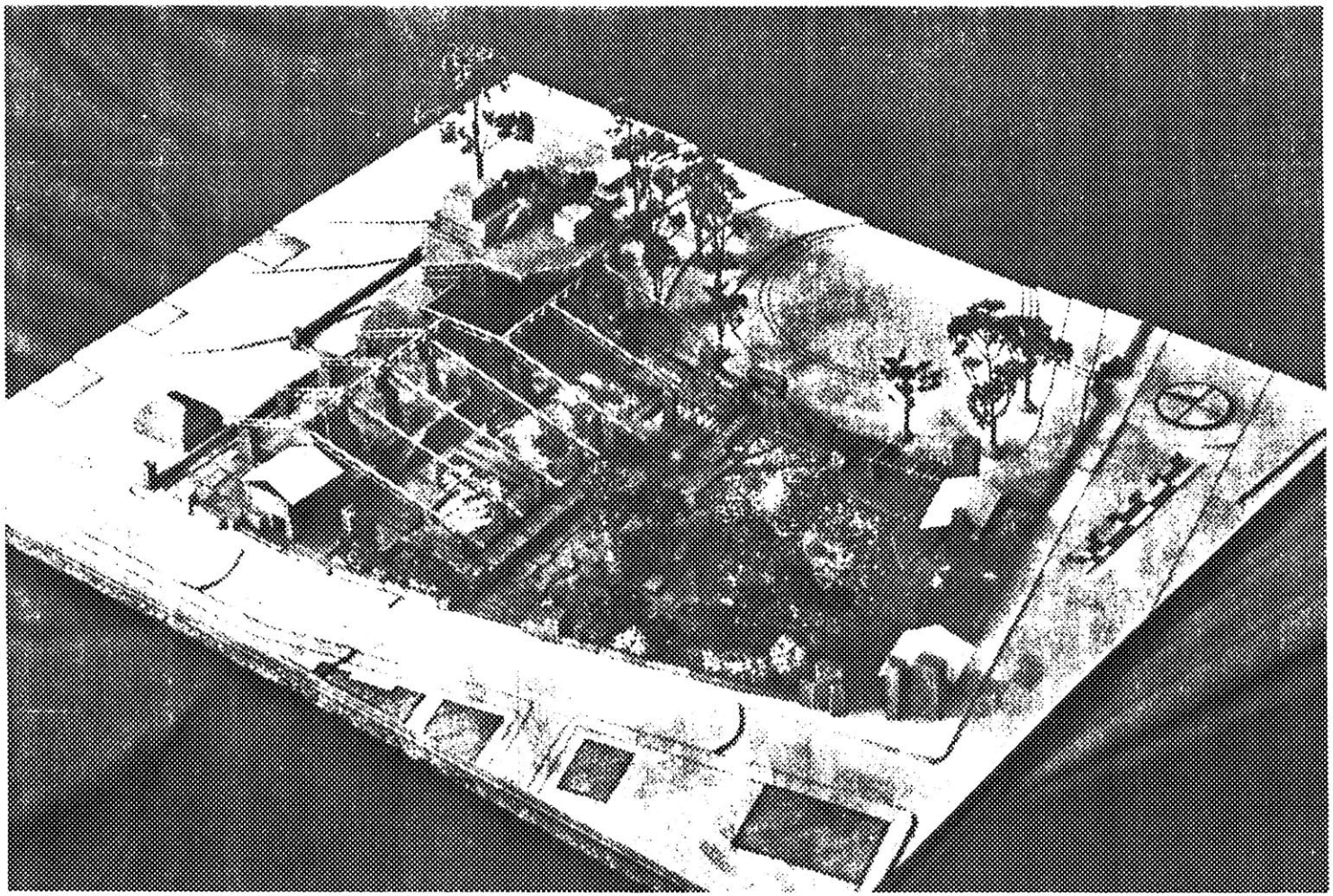


Site Plan





Wading Pool and Pavilion
Details of Site Sections



Study Model

CHAPTER VI

CONCLUSION

In this thesis, I have explored a personal approach to design. The main issue I have addressed is the relation between the unconscious processes in design which contribute intuitive energy and inspiration, and the conscious design structures which establish programmatic criteria, context, and abstract meaning. To manage the tension between these principles is one of my biggest challenges in design and in life.

I focussed on design associations as a means of exploring this tension, to develop it into a productive dialog. Associations represent a place of common ground between the unconscious and the conscious, between intuition and reason. They are valuable because they stimulate and respond to unconscious impulses, but they can also be given explicit structure and value without sacrificing that potency. Their inherent ambiguities and multiple meanings prevent them from becoming stilted or rigid. And, importantly, they come from real experience—in spite of the most abstracting analysis, they keep their sensory basis.

Associations provide the metaphors which help to translate formal intuitions into design ideas and to describe and record these ideas. In this way, ideas can be communicated with meaningful depth, since they address various levels of perception. Much of this design relies on the use of associations to invest form with meaning, to

...the bad poet is usually unconscious where he ought to be conscious, and conscious where he ought to be unconscious. Both errors tend to make him "personal."

—T. S. Eliot,
from Tradition and the Individual Talent

This is the humanism of architecture. The tendency to project the image of our functions into concrete forms is the basis, for architecture, of creative design. The tendency to recognise, in concrete forms, the image of those functions is the true basis, in its turn, of critical appreciation. (Scott)

sustain its intuitive complexity, and to describe and record these qualities.

Design with associations addressed my own need for an engaging, humanistic process. Many times, it provided a catalyst to draw me into the project. Putting this potential into practice proved troublesome, however. My first difficulty was in recognizing the value of the associations I uncovered, to deliberately bring them into the design. This proved to be a delicate challenge, especially during the first stage of the design, the sketch exercise.

The initial programming and site design were controlled by structured and abstract thinking. The data and diagrams did not have a sense of form, and my figure-drawing exercises did not spontaneously inspire a design. I was treating them as separate and optional, thinking vaguely that associations were a tool to be applied only at certain points. I planned to produce a sketch design from the siting and program studies, and then to enhance it with a set of figure-associations. But the result of that attempt was an elaborate, rationalized diagram, without formal identity, without life. I was not able to enliven it by imposing associations on it; instead, it became more elaborately sterile. Later, I came to see this overworked diagram as a dead-end in the design process, a result of my unwillingness to commit my early intuitions to form. I have not included it in this thesis.

However, I built the gesture model during that same time. Significantly, I produced it out of frustration at the constricted diagram sketch, in a moment of desperate, liberating play. I needed to give shape to an emerging feeling that the building's core was a bony mass enclosing a deep pool. This model's significance cannot be overstated, because of its strong form. While building it, I recalled the human figure, relating it to the essential elements of the earlier diagrams. I worked quickly and loosely, carving and breaking the plasticene with little attention to scale or details, or to the program.

The model simply and powerfully expressed a sense of anatomy, but to me it represented a lapse in my foreseen process, and I did not recognize its significance until long after I had built it. This was in spite of others' admiration of it and my own repeated, if reluctant, references to it. Finally, it was impressed upon me that *here* were the qualities I was seeking, the armature of the design, and the assertion for which I had been groping elsewhere.

This model was the key to the design and to my exploration of intuitive associations in design. My main work for the thesis was to maintain a sense of its gesture and the intuitions which it embodied while developing it as a building. As I pursued this in the exploration, development and inhabitation phases, I rediscovered its importance at each step. Doing this, I worked with associations in a personal way, balancing the tensions inherent in an associational process in order to give more value to intuitive

impulses. I have not been in the habit of honoring my intuitions in this way, and it was difficult work.

The gesture model experience served as a paradigm for the rest of the thesis. But contrary to my initial hopes, it did not resolve the tension between intuitions and abstract judgement. They both make essential contributions to design, and I found that I needed to maintain them and actively mediate between them. The tension is a condition of productive design, not to be avoided or resolved. With time, I became more focussed and confident in this, but not without lapses. Project requirements inexorably imposed themselves on my design thinking, and when they did I found that my intuitive involvement became lost. This was also true with the building's programmatic and structural needs. These reasoned imperatives easily pre-empted and devalued the gesture's impulse; design drawings, when interpreted only programmatically, tended to become progressively more rigid. A similar effect resulted from my predilection for abstraction—as, after describing the symbolic significance of the design, when I found it very hard to re-initiate a constructive, hands-on, sensory involvement. With this loss of emotional energy, the design lost initiative, and the project's requirements went unmet.

The problem, then, is that judgement can vitiate the intuitive impulse before it has a chance to develop into a viable expression. That impulse is essential for design: it is irreplaceable, and it cannot be added or imposed at a later time. The inhibiting effect of judgement must be controlled while the impulse finds formal expression. This is the role of associations—to culture intuitive responses in a context which is receptive to them. The associations do not replace design structures or immobilize them. Rather, they provide a common object, accessible to both judgement and intuition, and engaging both, and preventing direct interference between them.

Active judgement, like intuitive energy, is necessary in all aspects of design, whether it be in project planning or in effective rendering. It is the active equilibrium between these complementary principles which leads to the necessary design tension. In spite of this, my task throughout this thesis has been to make a place for unconscious, intuitive processes.

My need to deliberately assert the intuitive aspect of associations, to give it precedence over judgement, is a response to my habitual assumptions about the role of the program in design. I often found myself assuming that a properly programmed set of design requirements could direct the design, either replacing intuitive energy entirely or prescribing its role in the design. This assumption was repeatedly proven wrong, as elaborate statements of intent

led to inhibited initiative, and the design became dogmatic and lost inertia.

When I recognized this compromised state of affairs, the best strategy was to start over with associational exercises such as life-drawing or narration to draw out intuitive responses. I discovered that even slight intimations, when explored, led to productive insights. It is in ambiguities that possibility and design are found—they are essential to design. At times it was sufficient to do anything, without preconception, and to pursue whatever clues emerged. The excitement of this continual discovery drove the design. I had to learn this attitude of facilitating, being led, paying attention. It was most effective when I could call on experience and judgement just enough to prepare what I needed to do the work at hand, to then immerse myself in it and, finally, to recognize and deliberately make a place for evolution of the design.

One result of this more informed process was a state of concentration, of focus. I came to see this as the necessary condition for satisfying design, as the real design work could only be done by a designer using all of his faculties. This concentration was similar to that required in figure drawing, to keep one's eyes on the model, or in narrating an experience, to maintain a mood. This is not a rigid focus, however: it can be flexible and playful, allowing exploration and experimentation. An underlying lesson of

the thesis lay here, in learning how to achieve and maintain this focus.

The figure and the landscape are inspiring associational references. They evoke strong intuitive connections because of our early and ongoing experiences with them. These experiences have very specific sensory associations which defy abstraction, keeping them vivid and relevant. Some part of them always relates to the design, bringing to it an intuitive understanding. In addition, the special interrelations of figure and landscape provide insights into other problems. At various times in the project, these relations became metaphorical for the tension between intuition and reason, between self and other, for the development of the individual from infancy through adulthood, or for the progressive development of the Swimming Club design itself. These insights contributed to a sense of wholeness in the design process, and to an architecture of humanism, composed of understandable elements.

Figure drawing was an excellent way to stimulate these associations. As a discipline, it is well established and understood, so it is easily initiated. At the same time it is flexible enough to adapt and apply—with its initiative—to design exploration. I used this to advantage, to engage in formal free-association, to illuminate intransigent design problems, or to release frustration with the design. It exercised the expression of intuitions and developed my

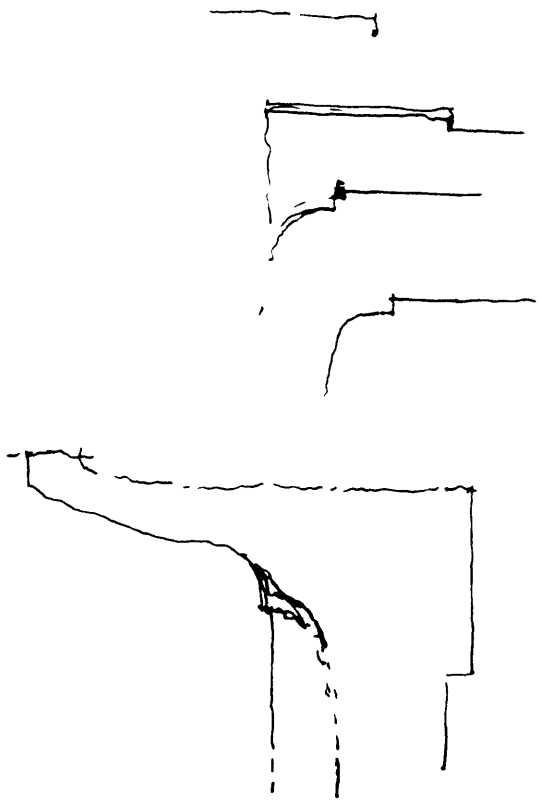
sensitivity to them. Although figure drawing started as an exploration of singular, self-like associations, it finally extended to the landscape, establishing a new level of sympathetic understanding of it.

The narrations in this thesis are like figure drawing in being a means of eliciting associations and discovering meaning in form. Memory provides a broad range of relevant experiences to explore. By narrating some of these, it was possible to bring landscape references into the design in a way that the figure could not do. Experiences cannot be wholly abstracted, and they therefore bring sensory and emotional cues with them. These strong impressions were closely related to their settings, and they could be extended to the design landscape. Some part of their associations always related to experience of environment. Narration is also like figure drawing in that it gave me a familiar activity, easily initiated. It helped to maintain initiative and imagination in the written parts of the project.

While I was immersed in the design process, my original project plan often lost its sense of relevance. In retrospect, however, I can see that it was a good plan. But at each step, I felt the need to put the original plan into question and to painstakingly reinvent it. The surprising result of this constant reinvention was a sequence very much like the one I had originally envisioned, albeit greatly protracted. This confirmed an insight which I had already

seen: In spite of hesitation and doubt, I had a good grasp on the essential process. In this way, my project planning was confirmed as well as my design intuitions.

With experience in this process come confidence and a willingness to follow hunches. I have come to see associations as part of this personal process of exploration. Ultimately, this was expressed in the design—from a process of exploration, adaptation and inhabitation, came an assertion of intuitive form. The Swimming Club asserts the place of the individual in the landscape. Instead of being simply, passively subject to it, the individual transforms it, taking a dynamic role in it. The column and cantilever embody this transformation. They are not opposed to it or subject to it; instead, they assert in it a place for significant form.

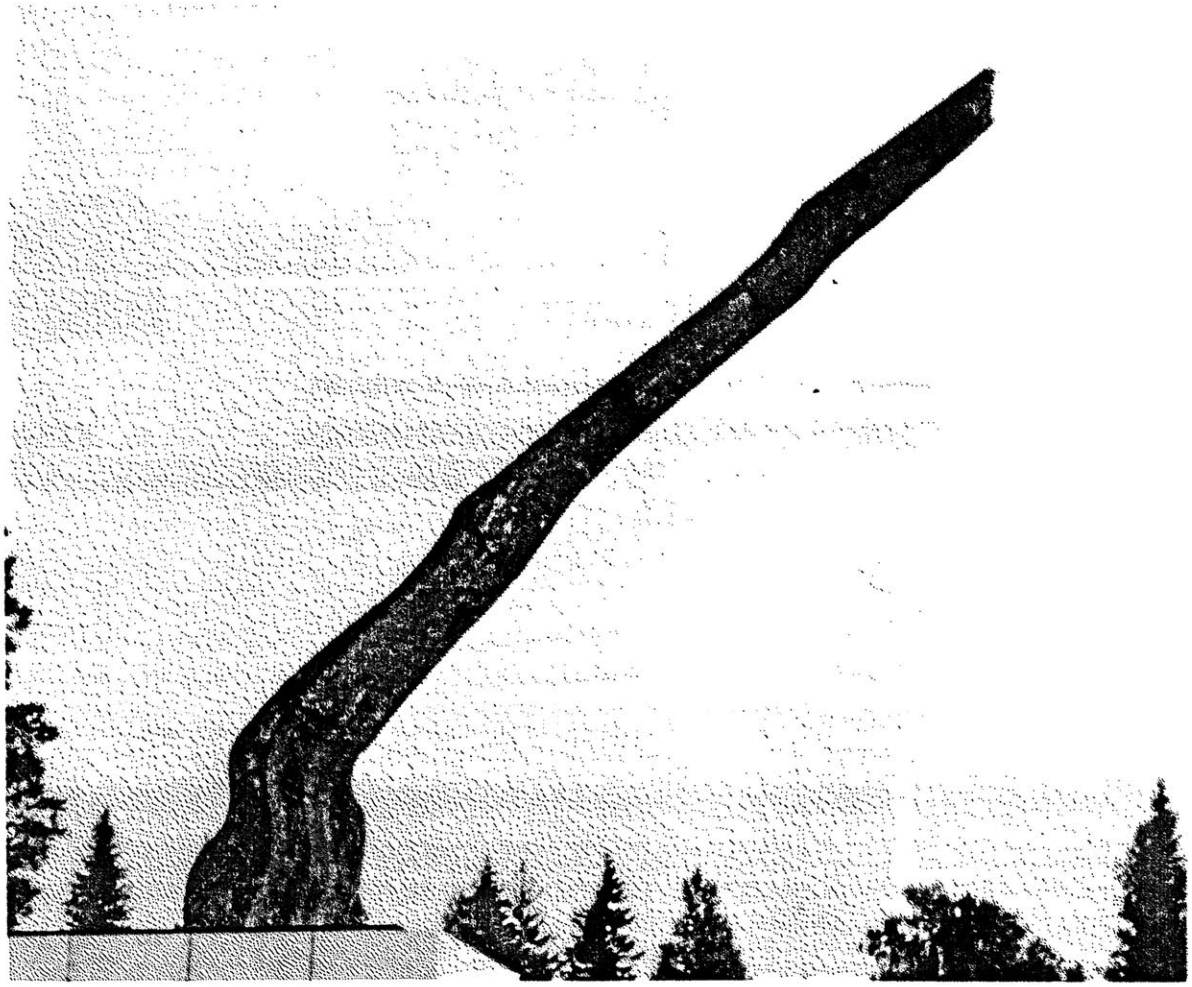


Cantilever Study

While finishing this thesis, I sorted through my notes to be sure I wasn't forgetting anything important. To my dismay, I found a large volume of sketches, design explorations, open-ended observations, ideas, and questions. By now they have lost their sense of relevance, and seem to be nothing more than intriguing musings.

The project has lasted far longer than I ever thought possible. This is largely because of my focus on personal design issues, which came to include much of my emotional life. This wider personal exploration is vital to me, and the thesis is an ideal vehicle for it. But, it has often diverted my energy from the thesis proper to a broader personal exploration, with only indirect significance for the final work, and often at its expense. Nevertheless, the exploration is an important, necessary, integral part of the thesis.

This personal inquiry has not been laid to rest by the thesis, however. The questions and explorations have shed much light on issues close to me, but to be honest I must realize that those issues are a lasting part of me, and that to explore them will occupy a lifetime. In fact, I now believe that they are central to all humanist design. I could never go back to this project (and I wouldn't want to), but I am confident that it has set a positive direction for me for a long time to come. I am grateful for the opportunity to undertake this project, and proud of the steps I have taken here.



A War Monument in the Forest of
Suomussalmi, Finland
Alvar Aalto (Fleig)

Aalto, Alvar; Alvar Aalto, Band I 1922-1962, Karl Fleig, Co-Editor. 1963, Les Editions d'Architecture Artemis, Zürich.
-Collection of Aalto's complete works.

Aalto, Alvar; Sketches, Göral Schildt, Ed. 1978, M.I.T. Press, Cambridge.
-Expressive drawings with an acute sense of the anatomy of buildings.

Accademia Internazionale di Scienze e Tecniche Subaquee Ustica; La Grotta dell'Accademia e il Complesso Sotteraneo della Pastizza nell'Isola di Ustica, Quarterly No. 2, June 1989.
Documentation of underwater cave exploration on the Italian island of Ustica.

Bloomer, Kent C., and Moore, Charles W.; Body, Memory, and Architecture, 1977, Yale University, New Haven.
-A review of various aspects of body-image theory in architecture.

Brand, Millen, and Tice, George A.; Fields of Peace: A Pennsylvania German Album, 1970, Doubleday, New York.
-A thoughtful observation of Pennsylvania farms.

Dawes, John; Design and Planning of Swimming Pools, The Architectural Press, London.
-Swimming pool design specifications with a wide range of imaginative solutions.

Debaigts, Jacques; Schwimmen im Garten, 1973, Verlag Georg D. W. Callwey, München.
-Collected examples of domestic swimming pools in garden settings.

Fabian, Dietrich; Bäder, 1960, Verlag Georg D. W. Callway, München.
-German handbook on swimming pool construction and planning. Extensive Illustrations.

Grilli, Peter, and Levy, Dana; Furo: The Japanese Bath, 1985, Kodansha International LTD., Tokyo.
-Entensive essay on history, culture, construction and use of Japanese bath, amply illustrated.

Hajian, Paul; The Essence of Splace, 1982, M. Arch. Thesis, Massachusetts Institute of Technology, Cambridge.
-A playful and observative study of the landscape of a water-filled quarry transformed into architecture.

Jellicoe, Susan and Jeffrey; Water: The use of Water in Landscape Architecture, 1971, St. Martin's Press, New York.
-A broad survey of garden pools and fountains, with perceptive discussions.

Klinghardt, Karl; Türkische Bäder, 1927, Julius Hoffmann, Stuttgart.
-Extensive documentation of public baths in Turkey.

Konya, Allan and Burger, Alewyn; International Handbook of Finnish Sauna, 1973, John Wiley & Sons, New York.
-Thorough treatment of culture, practice, and construction of the sauna.

Moley, Christian; "La Place de l'Eau dans l'Espace Domestique," Architecture & Comportement, Vol. 3, No. 2, March 1987, Lausanne.
-Study of mundane and symbolic uses of water in domestic architecture.

Myer, John and Margaret; Patterns of Association, 1978 First draft manuscript, Cambridge.
-An exploration of associations suggested by a series of landscapes.

Myer, John R.; "Whiteface: A Pattern of Association," Places, Vol. 3, No. 2, 1986, M.I.T. Press, Cambridge.
-A study in communicating the important qualities of a series of pools in a mountain stream.

Myer, John R.; "Patterns of Association: Juxtaposition and Analogues," Places, Vol. 4, No. 2, 1987, M.I.T. Press, Cambridge.
-A study of the nature of certain kinds of metaphor and their role in design.

Perkins, Philip H.; Swimming Pools, 1978, Applied Science Publishers LTD, Essex, England.
-Guide to technical aspects of swimming pool design.

Richer, Paul, and Hale, Robert; Artistic Anatomy, 1971, Watson-Guptil, New York.
-A thorough reference for figure-drawing.

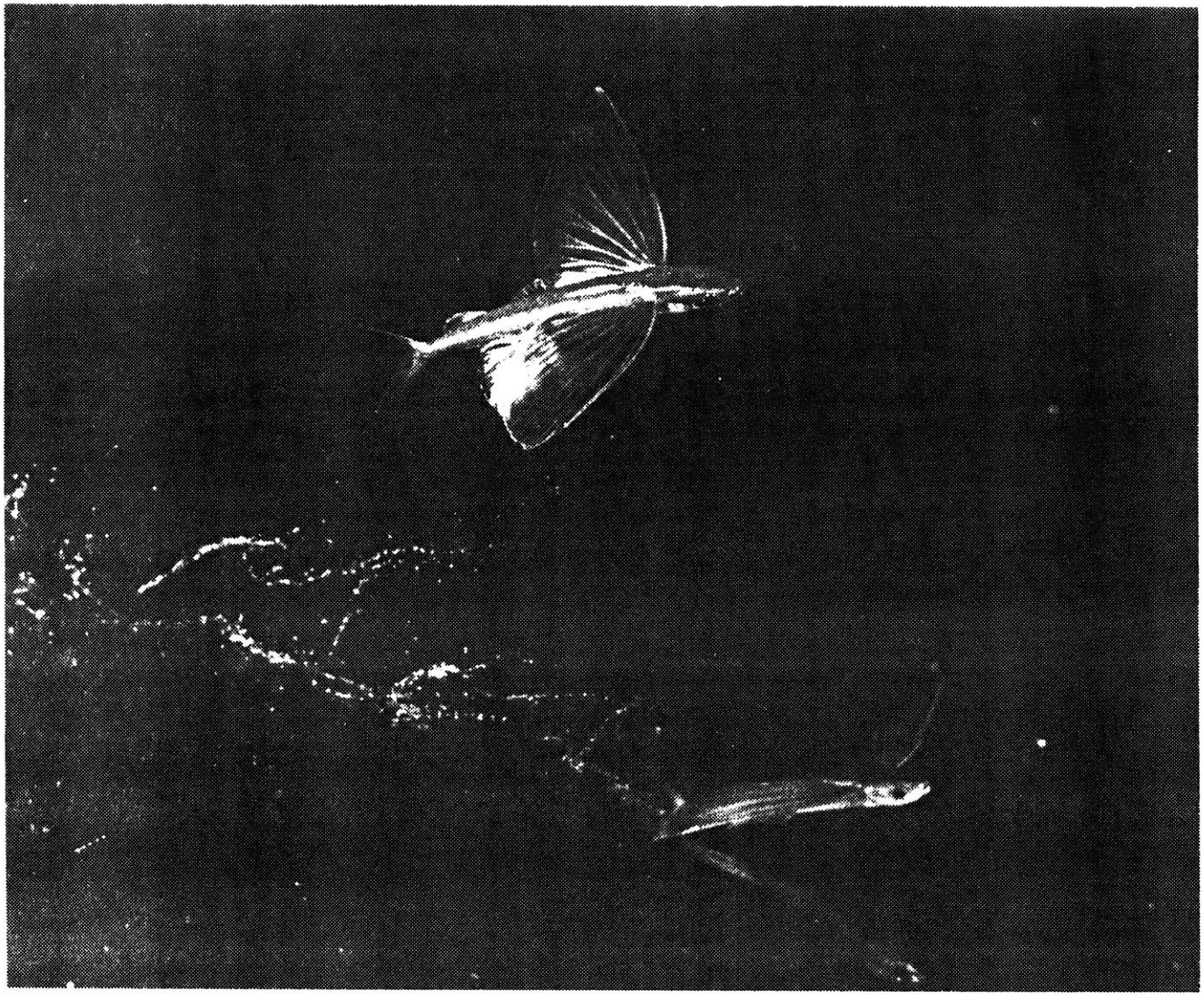
Scott, Geoffrey; The Architecture of Humanism, (1914) 1974, W. W. Norton, New York.
-A far-reaching essay on human characteristics and values in architecture.

Shalaby, Imam Mohamed; Bathing Facilities in Relation to Town Planning, 1964, Federal Institute of Technology, Zurich.
-Doctoral thesis includes documentation and categorization of a wide range of public water-related facilities.

Sloan, William Henderson; Form Generation through Filmed References: Charles River Baths, 1977, M. Arch. Thesis, Massachusetts Institute of Technology, Cambridge.
-Study of the built form of a bath house on the river's edge. Includes extensive bibliography.

Steichen, Edward; The Family of Man, 1955, Museum of Modern Art, New York.
-Compassionate images of humanity, as a reference and as an objective.

Tuna, Atilla; Bursa Yeni Kaplica: The Yeni Kaplica Bath at Bursa, 1987, Istanbul.
-Documentation of a public bath in Turkey.



Flying Fish off Catalina Island
Dr. Harold Edgerton