MIT Boathouse Proposal - A Study of Referential Components.

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ABSTRACT

The guiding proposition of this thesis is that components in a place can equal more than the sum of their parts. Through interactions among a range of sizes, the physical elements in a design are perceived as defining experiences beyond their locale. For example, in a larger context, views and direction of movement may be expressed in the physical form of a particular detail. Smaller elements may be deployed on several levels, being sensed as a discrete unit, complete in itself, while also referring to the “whole” through a shared geology of forms.

The design of a new MIT Boathouse, as well as a study of Carlo Scarpa’s use of details, investigate this dynamic of size relationships.
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INTRODUCTION

A few years ago I enrolled in a rowing class at the MIT Boathouse. Once on the river, I began to experience the city in a unique way. The river became a vast public place, I was in full view of two city edges, yet I was inwardly focused, private. The sound of the oars skimming the water juxtaposed with the sounds of cars, planes, general urban hum, enabled me to sense a unique wholeness of urban place I have found nowhere else. Perhaps having to move and balance in the boat forced me to remain aware of myself. This experience simultaneous with the mix of sounds and familiar views from a new perspective brought new insight to the river’s role in the urban landscape. I think sensing the place as a “whole” came about through the singular activity of rowing in relation to the multiplicity of the city.
This thesis investigates what makes a place whole, more than the sum of its parts. It explores the use of details as elements that define territory through their relationship to other sizes in a place.

The work of Carlo Scarpa is used as a reference. His use of form and detail is discussed in regard to size relationships in building.

The topics are collections of illustrations, quotes and descriptive text referring to the given investigations however both the text and design drawings are not sequential since the process of investigation was not a linear path. At the end of the study the final design drawings are grouped with an index of other relevant design information within the chapters.

The design is a proposal for a new MIT boathouse.
<table>
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<th>PROGRAM</th>
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<tbody>
<tr>
<td>boat storage</td>
<td>5000 sq ft</td>
</tr>
<tr>
<td>boat repair</td>
<td>500 sq ft</td>
</tr>
<tr>
<td>Nautilus/exercise ergometers and rowing</td>
<td>3000 sq ft</td>
</tr>
<tr>
<td>machines</td>
<td>1500 sq ft</td>
</tr>
<tr>
<td>crew team practice tank</td>
<td>1000 sq ft</td>
</tr>
<tr>
<td>locker rooms m/f</td>
<td>2000 sq ft</td>
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<tr>
<td>three offices</td>
<td>500 sq ft</td>
</tr>
<tr>
<td>classroom</td>
<td>500 sq ft</td>
</tr>
<tr>
<td>waiting/display area</td>
<td></td>
</tr>
<tr>
<td>social area</td>
<td></td>
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<td>mechanical</td>
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The boathouse is used by several teams at MIT as well as for health and fitness classes. Individuals also use the exercise facilities and institute boats. Achievements are displayed and social activities occasionally take place in the building.

**Rack Spacing**

- Single and double: 2 racks 8'-0" apart.
- Four-oared: 3 racks 8'-0" apart.
- Eight-oared: 3 racks 18'-0" apart or 4 racks 12'-0" apart.

Racks are 6'-0" high for daily use, higher for long term storage.

**Racing Shell or Gig Racing**

- 5'-0" to 12'-0" in 6" incr.
- 4'-0" to 6'-0" in 3" incr.
- Double paddles are 8'-6", 9'-0", 9'-6" paddles.
- Sweep oar 12'-0" to 12'-6".
- Scull oar 9'-6" to 9'-10".
PERCEPTIONS OF THE EXISTING LANDSCAPE

The Cambridge side of the Charles river is defined by a series of edges. The edge of the campus and the city, Memorial Drive is an edge or divider, and most important to this study, the bank of the Charles river. All these edges seem to reinforce the direction of the river without maintaining any dynamic relationship between them or shared territory. Unlike the Boston side of the river where one has the opportunity to move beyond the edge of the city onto the esplanade, and look back from where one's come, the articulation of the Cambridge riverscape is not interactive spatially. Its power as a place seems to come from movement in one direction and the "edge" as an overlook. The benches placed between the jogging path and the footpath are the only places to stop, however they seem more temporary than a place one
might seek out for more than a little while.

The retaining wall, approximately four thousand feet in length has less of an impact on the spatial definition of the landscape than one might expect. Pedestrians walk on it. There is no possibility to move along or be next to it where the granite and the water define a more private realm.

The view of Boston and the Harvard Bridge are prominent elements in the landscape. The proximity of the high-rises to the river define the open territory of the water while the bridge acts as a kind of measuring stick for the width of the river.
Aerial photograph of site
The Landscape is directional, 
with movement of water, 
people, cars. There is no place 
to stop only small places to rest, 
benches just off the path.

This edge of the Charles has no collective place. 
The river is the collective place only inhabited in the mind's eye.

I am stopped at the edge with no substantial barrier except for gravity. Once beyond the edge -in a boat- associations change. Sound reflects inward unlike the sound of traffic that we try to shield ourselves from with selective deafness.

Paths define this edge, the constant cars, swift-moving people, and the constant river.
I have several times seen pedestrians lean over the rail to look back at the retaining wall. As they lean they try to cross the edge and quickly experience the place defined by the wall and the water.

Section through Cambridge edge of the Charles River looking West

Opposite page:
Retaining wall seen from the Harvard Bridge with MIT in the background
The massive granite wall is walked on, not along. Its texture, assemblage has no real impact on the path. People know of its nature by viewing it while on the Massachusetts Avenue bridge.
Rowing near the wall, or sitting on the dock of the boathouse, the wall behaves more like a wall, defining territory, separating. On the path, where most people experience it, its contribution to the definition of the space is the level change from it to the water.
I find I can experience the wall in a similar way as I do the bridge, a place to walk on, look over. To sense the greatness of both, referring to their length and structure, I must be next to them.
Opposite page:
View towards East along the river edge

View of the Harvard Bridge structure
The horizon, overscored with misty accent marks, seems to be printed in small letters, of darker or lighter ink depending on the light.

What lies closer gives me no more pleasure than a painting,

What lies still closer, no more than a sculpture or architecture,

As to the reality of things right up to my knees, like food, a feeling of real indigestion.

Until finally, everything sinks into my body and flies out through my head, as though through a chimney open to the sky.

From The Voice of Things
by Francis Ponge
View from the site looking East
Diagram of site influences
SITE ORGANIZATION

The form of the building and site plan is developed from angles, site-lines and basic geometry found in the existing landscape. These responses to the site structured the form of the building and the development of details. While they were seriously considered throughout the design development the attitude towards referencing the implied geometry in the existing site has been one of suggestion rather than an enforced system of rules.
Scarpa seemed to use geometry as an organizer of volumes of space at all sizes in his buildings. In my study of his work it became clear to me that details are used to reinforce the definition of space structured by geometry.

Section through chapel, Brion Tomb

Preliminary site study I.
Opposite page:
Geometrical study of site relationships

Preliminary site study II.
Detail of proposed landscape
Details in the Site Plan

In Scarpa's work, the details sometimes are used to define territory. I worked with this use of detail in developing the site plan. A few of the details proposed in this way relate to larger influences important to the site that were not necessarily nearby or even fully visible from the site. The configuration of the proposed landscape east of the building, for instance, refers to the angle that is a secondary path system in the west campus. Students usually walk to and from dorms in this manner in spite of the campus plan that is strictly parallel to the river. This diagonal movement is received at the entrance of Building Seven, however, there is no other terminus for this secondary direction within the campus. The path is referred to in subtle ways with diagonal crosswalks and worn lawns, and is built into Baker House dormitory. The boathouse, part of the institute, lies at the end of this direction of movement. The geometry of the proposed site plan incorporates this angle as a reference or tie back to the institute.
Site study
The church steeple in the nearby village is used as a component in structuring the territory of the cemetery.

During the site analysis I discovered a displaced piece of granite retaining wall. While it was only off-shore about ten inches, that small dimension was enough for me to cross the edge of the water. This became an important reference for a detail in the site plan. In my plan a small piece of ground is displaced from the landscape. From this site detail a view through the boathouse to the familiar public crossing of the Harvard bridge to Boston would be visible.
This granite rock along the edge of the river west of the retaining wall allows me to step away from the land completely and cross into the realm of the Charles. In this landscape it is the only place where an individual can move beyond the edge. For this it is a significant detail.

Opposite page:
Detail of retaining wall

Displaced granite block along sloping edge of the Charles River

Sectional sketch
Getting to be a few inches from the water makes me aware of the sound water makes, the smell—not altogether bad even though the Charles is filthy. There is a flirtatious threat of getting splashed by the wake of a boat.

Along this edge, lower than the retaining wall and the traffic, I feel more focused. The water and its qualities prevail over the rush of traffic. I realize why I go over to the Boston side of the river when I want to be alone. There, the land moves out beyond the edge of the Charles and one is allowed to be separate from much of the urban landscape. The association is with the water and with oneself.
Opposite page:
Site plan with footprint of building
The Influence of Boats on the Site Configuration

The boathouses along the Charles are organized to store the boats perpendicular to the direction of the river. This allows for easy loading of them into the structure. In contrast, MIT's existing boathouse stores the boats parallel to the direction of the river. In this building's case parallel storage does not work well because boats cannot be carried into the building from the parking area. There is a lack of space to turn them 90 degrees either inside or near the building. The important advantage to storing the boats parallel to the river is the placement of the launching dock out of the main territory of the river. A rower has a chance to become oriented to the river and the boat before entering the open space and traffic of the Charles.

Diagrams showing perpendicular and parallel boat storage and launching
Opposite page:

*Thomas Eakins: Turning the Stake.* 1873

(Watching crew practice at dusk.)

The team is stepping into the boat. I am remembering how my weight moves the shell the instant I make contact. I move in a different way when I'm down on the water. This makes me think of the boathouse and dock as a kind of threshold between moving on land and moving across water.

The sounds I am hearing are mostly conversations at the water, muffled instructions through the bullhorn. The joggers and people walking home from work take special notice of the activity in the river.

The views I am seeing are small safety lights at each end of the shells and the high-rises in the...
background. They light before the sky is dark, and look quite fragile for a few moments, equaling their reflections on the water.

Rowing event on the Charles River
Below me, always below me is water. Always with lowered eyes do I look at it. It is like the ground, like a part of the ground, a modification of the ground.

It is bright and brilliant, formless and fresh, passive yet persistent in its one voice, gravity; disposing of extraordinary means to satisfy that vice-twisting, piercing, eroding, filtering.

This vice works from within as well: water collapse all the time, constantly sacrifices all form, tends only to humble itself on the ground, like a corpse, like the monks of certain orders. Always lower—that could be its motto; the opposite of excelsior.

From The Voice of Things
by Francis Ponge
Opposite page:

Thomas Eakins: John Biglin in a Single Scull. 1873
THE BUILDING PROPOSAL

The site of the boathouse is almost a non-site in that there is little land to build on. The building must be built completely over the river unlike most of the other boathouses along the Charles, which have more land to engage. Instead of proposing a structural system that was appropriate simply to the needs of the building my intention for the structure was to have it respond to the site, relating beyond the building, while working efficiently to solve the specific problems of building over water.

The system is a concrete primary structure with steel secondary. My intention for the concrete was to make it the "site" in that it would be the element most permanent, from which the building was supported. The steel sits on the concrete, never touching the water. The direction of the concrete beams is parallel to the river.
Preliminary diagram of concrete structure
The beams were initially intended as a transformed piece of the retaining wall, displaced two stories high.

The building's connection to the site relies in the concrete structure and the proposed new landscape. The building is secured to the site through both its connection to this piece of ground and the concrete primary structure. More solid in nature, the small tower that sits on the land is meant to be the stable piece of the building from which the more open structure is attached.

In the evening and in certain light the main portion of the building would be like a pavilion or screen in that the structure and the boats would clearly be seen from the Cambridge side of the river. I imagine from Boston the building and its reflection would be a prominent marker of the institute on the edge of the river.
Opposite page:
Study model of structural system

Preliminary sketch illustrating relationship between “concrete as site” and human scale
Opposite page:
Study model

Detail of study model
Surfaces and Screens

*Crew shells in storage*
Boating event on the Charles River
Considering surfaces and screens in relation to building on the water makes me aware of the ambiguity that occurs sometimes between these physical elements. The water, for example, is most often seen on this site as a highly reflective surface however when in a boat or close along the edge of the river one can see through it - it behaves as a screen to the pebbles near the bank or to the fish that are surprisingly visible.

The boathouse proposal aims to work with an ambiguity of surface and screen through its use of materials. The concrete and steel structural system make up a fairly simple frame in which the crew shells would be visible, contributing to the composition of the screen. The main concrete beam would be seen in silhouette, behind the closure. The glass closure system would have little reflection on the north side which faces Cambridge therefore a view
through the building is likely. From the north side of the building a pedestrian would be able to see through the relatively dark interior beyond to the reflective surface of the river. The small tower, however, is an opaque surface on this side of the building. On the south side, the boathouse would remain a surface through the day, becoming transparent in the evening.
This page and opposite page:
Study of wall section and moveable awnings
Carlo Scarpia’s surfaces and screens seem to be interdependent design elements. Most often, in the photographs I have come across, his most beautifully detailed screens always have a surface nearby on which a shadow is cast or reflections are visible.

Scarpa’s screens are created by an addition of parts while the surfaces and solid elements in his work have a reductive quality. In fact, I believe his working method was simultaneously additive and subtractive. Surfaces are sometimes carved into; blurring the figure-ground relationship at all sizes in his designs. In other cases the geometry is left untouched as complete circles, rectangles and triangles, often juxtaposed with the recursive forms.
Opposite page:
Details for the Brion Family Tomb, illustrating the "additive and subtractive" nature of Scarpa's work

Francesco Dal Co,
*Carlo Scarpa The Complete Works*, p. 61.

Carlo Scarpa: Brion Tomb,
window detail

Francesco dal Co,
Preliminary perspective illustrating “addition” of planes

Opposite page: Site plan study in additive and subtractive form making
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Note: All photographs and drawings in this document are by the author unless otherwise noted.
The Pleasure of the Door.

Kings do not touch doors. They know nothing of this pleasure: pushing before one gently or brusquely one of those large familiar panels, then turning back to replace it - holding a door in one's arms.

... the pleasure of grabbing the midriff of one of these tall obstacles to a room by its porcelain node; that short clinch during which movement stops, the eye widens, and the whole body adjusts to its new surrounding.

With a friendly hand one still holds onto it, before closing it decisively and shutting oneself in - which the click of the tight but well-oiled spring pleasantly confirms.

From *The Nature of Things* by Francis Ponge
CONCLUSION

In raising the question, "What makes a place more than the sum of its parts?" it has become clear to me that "wholeness" does not mean "complete". Perhaps one aspect of what makes a place feel whole is the participation of the individual in the place. In drawing, for example, a figure may be only partially drawn, however, the viewer is able to sense the whole subject through a kind of participation with the drawing. Each viewer imagines the incomplete portion of the figure in his or her own way.

In defining spaces individuals can have a similar role in understanding and engaging the places we inhabit. In the boathouse proposal I experimented with this idea as I composed the site.

Throughout most of this study I addressed the question "what makes a building whole?". Since Scarpa has been used as my primary reference the analysis of his work was, for the most part, aimed at finding out what made a Scarpa building whole. It has become apparent to me that Scarpa was not interested in making his buildings into places that felt "whole" as buildings, rather it seems he was interested in making buildings as a part of the "place as a whole". His details are most often photographed as artifacts, out of context and sequence. Therefore, it is difficult to illustrate his use of details in relation to the whole. In spite of their partial documentation I have developed an understanding of his use of details and form from writings about him and by studying his sketches. He was reluctant to write about his theories, therefore, we only have second-hand information and a few transcripts from lectures. I have never been to
of his buildings, therefore, most of my opinions about him are speculative. While many books have been published on his work, theories about him and his work are few. Most books are filled with beautiful color prints of his sketches and photographs of buildings. Essays describe his work and the events around it without actually discussing the decisions made about form. Carlo Scarpa’s work is difficult to analyze in the way we do other architects’ such as Wright’s or Kahn’s, since the complexity of form cannot easily be reduced into diagrams. Scarpa’s use of structure does not give insight to his method of designing because the degree to which it is either generating form or being generated by form is unclear.

The design theories and working method of Carlo Scarpa remain elusive to me. Scarpa’s details seem to be used to give information about the place, set up a view toward something else, or emphasize a change in materials. While I have gained an understanding of his use of details in relation to the whole I believe the complexity in his work leaves much open for interpretation. I am sure my readings of his work will change as I change and become more experienced in the process of designing.
In the work of Carlo Scarpa
“beauty”
the first sense
Art
the first word
Then Wonder
Then the inner realization of
“form”
the sense of the wholeness of
inseparable elements.
Design consults Nature
to give presence to the elements.
A work of art makes manifest the
wholeness of “form”
the symphony of the selected
shapes of the elements.
In the elements
the joint inspires ornament, its
celebration.
the detail is the adoration of nature.

Louis I. Kahn

from Carlo Scarpa. The
Complete Works
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