Converting Mill Buildings into Housing:
Ways of Working with Brick Walls

by

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B.A., Goddard College
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of the requirements for the
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Submitted to the Department of Architecture on May 15, 1981 in partial fulfillment of the requirements for the Degree of Master of Architecture

ABSTRACT

The mill buildings of New England add a unique dimension to the heritage and identity of the region. Today some of these buildings continue to function as the site of industry, others have been converted to commercial or residential uses, and quite a few have been left to decompose.

This thesis proposes some alternatives for converting 19th century mill buildings to residential use. It examines mills of brick bearing-wall construction with respect to their organization and materials, and looks critically at several contemporary mill conversions.

It then concentrates specifically on showing how the exterior brick wall can be transformed in order to make decent places to live out of buildings designed for a very different purpose - industrial production.

Thesis Supervisor: Edward Allen
Title: Associate Professor of Architecture
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3
Acknowledging . . . .

the mill builders and mill workers of 19th century New England
Donna Louise Harris
Edward Allen
Joel and Thelma Pressman
William Barton Rogers and his offspring

...... clay, granite, spruce, and slate
Introduction

One steamy July afternoon in 1977, while living in the central Vermont town of Montpelier, I was told by some friends about an abandoned mill over on the north branch of the Winooski River by the north end of town. Deciding to take a look, I wove my way through the small downtown business district, out past the doctors' offices and schools and nursing homes, to the fringe of houses beyond which the rolling fields and hills began.

There I found a sizeable mill complex perched on the bank of the Winooski, including a
mill pond, dam, sluiceway, three substantial brick buildings of various sizes, and several wooden-frame storage buildings. It was the site of the Lane Mfg. Co., a business which had manufactured portable saw mill machinery used by loggers all over the world. The company had been in operation from just after the Civil War to shortly after World War II.

Fascinatedly, I spend several hours wandering around the complex, taking pictures and making drawings. The major buildings of the mill sat right along the river, with finely arched windows that looked out through a screen of alders to the gurgling water below. A small wrought iron footbridge spanned 50' to the houses on the other bank, allowing pedestrians to cross the river and walk through the mill complex underneath the overhanging building. The group of mill
buildings themselves made a comforting, contained area which was visually connected to houses and hills beyond.

Venturing inside the three-story main building, I was struck by the variety and richness of sensation within. Each floor was a huge space, punctuated intermittently by massive wooden columns connected by heavy steel hardware to even larger beams. In the basement, enormous gray granite foundation slabs showed the watermarks of past spring floods. On the upper floors, the thick brick walls provided a strong feeling of shelter yet admitted much light. Underfoot, ancient hardwood floors with murky stains suggested a bustling time gone by. And from the roof, one could see out over the town.

This wasn't my first afternoon spent in a deserted edifice -- I've always been intrigued by buildings whose time has gone, or whose original

Dutchess Co. print cloth mills Wappingers Falls, N.Y., 1889.
purpose has been superseded. But my experience that day led me to think about what it would be like to salvage that ruin-to-be, and make it into a dwelling for people.

Settlements in New England often developed around bends or level changes in rivers because such places favored the harnessing of the power of the water to do work. In the 18th century, animal hides were tanned, flour was ground, and timber was sawn in buildings erected on the water's edge which served the neighboring farms. The buildings were often wooden, the enterprises family-owned, and the product usually was sold locally.

But by the early 19th century the scale of industrial operations had changed. Multi-story buildings, often hundreds of feet long, built of massive
masonry walls and fire-resistant internal framing, served regional markets and employed hundreds, sometimes thousands of workers. Whole cities grew very quickly around sites which were unpopulated a decade before; Lawrence and Lowell, Mass., for example, grew very rapidly in the first few decades of the 19th century solely on the bases of their industrial might. Later in the century, the invention of the steam engine allowed industries to be located without regard to the river as their source of power, and the railroad expanded the market for the mills' goods.

At the height of the Victorian age, hundreds of mills occupies the landscape of New England, often very gracefully. But by the early twentieth century, a cheaper labor pool and the opportunity to build more up-to-date buildings led many
industries to relocate in the South. By the end of World War II, textile production in New England had plummeted even more drastically because many products were being made more inexpensively by industries overseas.

The physical legacy of this era, however, remains with us and, I believe, contributes significantly to our sense of our past. Many towns in New England are strongly affected by the presence of the hulking brick giants of a time gone by. Often these mills comprised the economic lifeblood of the settlement, employing a good number of the inhabitants and consequently giving a unique identity to a place.

In the past ten years, many of the mills which would have been demolished or would have continued to rot have been restored and converted to some new use. The trend towards re-use is not confined to mills, of course, nor is it prompted solely out of a desire to retain historic continuity. Mills often are profitable to re-use because the buildings and the land they occupy have usually depreciated greatly in value and housing -- the most popular re-use -- is always in demand.
Stair towers:

Durfee Mills, Fall River, Mass.

mill, Crescent St. Waltham, Mass.
My interest in industrial buildings and in the re-use of buildings in general led me to a number of investigations during the course of the last four months. I visited quite a few mills in Vermont, New Hampshire, and Massachusetts to acquaint myself with both buildings that were still in operation and buildings that had been transformed to new uses. I also visited a number of newly converted buildings in the Boston area of construction similar to the mills.

These visits, combined with photographs, sketches, and library research, led me to the focus of my work this semester -- how to convert mill buildings to housing by doing more than installing new window sash. Most of the mill conversions I saw, unlike the Boston waterfront conversions, did very little to change the form of the building so as to create the qualities.
which one might desire in a place to live.

Undoubtedly, the main reason why mill conversions are often so minimal in their extent of change is that imaginative solutions usually cost more money than standard ones. The usual conversion scheme, therefore, is quite simple. As few as possible new openings are made in the brickwork for new doors or windows. Rarely is anything added to the existing exterior walls, such as places to be outside but still connected to the building -- bays, balconies, porches, patios, for example. Internally, the feeling of massiveness and strength created by the heavy timbers, planking and hardware is usually eliminated.
by burying all structure beneath gypsum board. Ceilings are dropped from 11'-12' to 8'. Old hardwood floors are topped with concrete and vinyl tile. The mill is subdivided lengthwise to make windowless, narrow, double-loaded corridors with nearly identical units on either side. Most of what was wonderful about the old mill is gone in the process.

The result is a building whose interior is indistinguishable from any low-cost housing project built in the last decade. The conversion architects I spoke to placed the blame on the fire codes,
the cost, or the desire to maintain the historic facade of the building unblemished.

I believe the mill buildings were designed for industrial purposes, and that when the use of the building changes, the form of the building must necessarily change to accommodate that new use. Being too precious about preserving the original form can result in badly serving the new users. Consequently, in the section that follows, Part II, I've explored a range of changes to a typical mill building. Some are fairly conservative, making few changes in the exterior wall. Others

A typical English spinning mule for wool or fine cottons.
CONVERTING MILLS INTO HOUSING......

Scheme #1

Premises:
1. A Narrow Bldg. (30'-45'); Natural Light Reaches Everywhere
2. No New Space Need Be Built

......Take Existing Shell......and Add
2. Attached Corridors.....to Make
Many Identical 1-Storey Units

The Motel Approach
(Minimal Change)
E.G., Lane Shops, Mont., Wt

Comments:
* Porches Too Narrow to Inhabit
* Porch Level Impinges on Privacy
* Ground Space Not Clannable
* Columns and Beams Hidden in Walls; Character of Mill Lost
* All Units Spatially Very Similar; All 1 Level
* No Collective Space
cut out parts of the wall or add onto it or expose the foundation.

My intention was to give these converted buildings some of the qualities of private row-housing or apartments in which the inhabitants have a connection (physical and psychological) to the ground, the weather, and their neighbors. Hopefully, these converted mills could offer a gradient of privacy and enclosure to the people who would live in them. On either side of the brick bearing wall is the zone where many of these changes happen.

Allendale Mill, Centerdale, R.I. (HAES); a typical mill in terms of span dimensions and construction methods; the stair tower is detached from the body of the mill to slow down the vertical movement of fire.
CONVERTING MILLS INTO HOUSING ......  
SCHEME # 2

TAKE EXISTING SHELL .....  
ADD 1 ATTACHED CORRIDOR  
TO MAKE 2-STOREY UNITS  
WITH INTERNAL STAIRS  

Row House Type

1 Unit

NEW ENTRANCE PORCH

COMMENTS

* More privacy by using 2 levels
* Porches of usable size
* Lawn/Garden space easy to claim
I chose the Lane Mills, which I spoke of in the beginning of this introduction, as a prototype from which I would work. The Lane Mills now contain fifty units of elderly housing, whose construction I witnessed over an 18-month

Boston, Mfg. Co. Mill, Waltham, Ma.; there is little about the exterior of the building to indicate it has been converted to housing; it looks prison-like.

Mill, Charles St, Waltham, Ma.; only three bays wide, this building gets wonderful light inside.
Converting Mills into Housing
Scheme #3

- More use of total volume
- More connection to ground
- Lots of spatial differences between different units

1- or 2-storey units with individual entrances;
Use of basement; sunken garden;
Patio adjoining

"Duplexes"

Section A
2 units

Section B
1 unit

Basement Plan

Second Fl. Plan

Stairs for unit above
Sunken patio
period. I'm glad the building has been salvaged and that it provides a place to live for many elderly people in Montpelier ... but it is intriguing to speculate on how it might have been done differently. I've tried to start to do that in this thesis.

Rubble foundation wall, mill, Watertown, Ma.

Wall detail, Boston, Mfg. Co. Mill, Waltham, Ma.;
Converting Mills into Housing
Scheme #4

Central Lobby and Internal Public Stairway
1 or 2-Storey Units

Apartments or Condos
Time Table of the Holyoke Mills,

To take effect on and after Jan. 3d, 1853.

The standard being that of the Western Rail Road, which is the Meridian time at Cambridge.

<table>
<thead>
<tr>
<th>Time Table of the Holyoke Mills</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MORNING BELLS.</strong></td>
</tr>
<tr>
<td>First Bell ring at 4.40, A. M.</td>
</tr>
<tr>
<td>Second Bell ring in at 5, A. M.</td>
</tr>
<tr>
<td><strong>YARD GATES</strong></td>
</tr>
<tr>
<td>Will be opened at ringing of Morning Bells, of Meal Bells, and of Evening Bells, and kept open ten minutes.</td>
</tr>
<tr>
<td><strong>WORK COMMENCES</strong></td>
</tr>
<tr>
<td>At ten minutes after last Morning Bell, and ten minutes after Bell which &quot;rings in&quot; from Meals.</td>
</tr>
<tr>
<td><strong>BREAKFAST BELLS.</strong></td>
</tr>
<tr>
<td>October 1st, to March 31st, inclusive, ring out at 7, A. M.; ring in at 7.30, A. M.</td>
</tr>
<tr>
<td>April 1st, to Sept. 30th, inclusive, ring out at 6.30, A. M.; ring in at 7, A. M.</td>
</tr>
<tr>
<td><strong>DINNER BELLS.</strong></td>
</tr>
<tr>
<td>Ring out at 12.30, P. M.; ring in at 1, P. M.</td>
</tr>
<tr>
<td><strong>EVENING BELLS.</strong></td>
</tr>
<tr>
<td>Ring out at 6.30,* P. M.</td>
</tr>
<tr>
<td>* Excepting on Saturdays when the Sun sets previous to 6.30. At such times, ring out at Sunset.</td>
</tr>
</tbody>
</table>

In all cases, the first stroke of the Bell is considered as marking the time.

Wall elevation; mill, Crescent St., Waltham, Ma.

Sign from Holyoke Mills, Holyoke, Ma.
Sites Visited

MILLS
- Vermont
  - Montpelier
  - Bridgewater
- New Hampshire
  - Manchester
  - Lebanon
- Massachusetts
  - Lowell
  - Billerica
  - Newton Lower Falls
  - Waltham

CONVERTED BUILDINGS:
- Boston
  - Commercial Wharf
  - Mercantile Wharf
  - Prince Spaghetti Bldg.
- Cambridge
  - Garage (Harvard Square)
  - West St. Condominiums
The Lane Mills

This topographic map shows the location of the Lane Mills, Montpelier, Vt. The characteristics of the Lane buildings were typical of most of the mills I visited. I used drawings made by the architects (New England Partnership, Montpelier, Vt.) of the Lane Mills' renovation as a basis from which to make my own diagrams and drawings, which are found on succeeding pages.
**Physical Characteristics of Nineteenth Century Mills:**

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Lane Manufacturing Co. Montpel ier, Vermont Main Building</th>
<th>Lane Manufacturing Co. Montpel ier, Vermont Small Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE BUILT</td>
<td>1870-1890</td>
<td>Italianate</td>
</tr>
<tr>
<td>STYLE</td>
<td>Italianate</td>
<td>Italianate</td>
</tr>
<tr>
<td>FOUNDATION</td>
<td>Granite slabs</td>
<td>Granite slabs</td>
</tr>
<tr>
<td>MATERIALS</td>
<td>Brick</td>
<td>Brick</td>
</tr>
<tr>
<td>THICKNESS</td>
<td>24&quot; @ ground; 16&quot; @ roof</td>
<td>12&quot;</td>
</tr>
<tr>
<td>NUMBER OF STORIES</td>
<td>3 (incl. habitable roof)</td>
<td>2</td>
</tr>
<tr>
<td>PITCH</td>
<td>Steep, intersecting gables</td>
<td>Shallow gable</td>
</tr>
<tr>
<td>STRUCTURE</td>
<td>Trussed</td>
<td>Trussed</td>
</tr>
<tr>
<td>OVERALL DIMENSIONS</td>
<td>51' x 136' x 46'</td>
<td>30' x 85' x 25'</td>
</tr>
<tr>
<td>VERTICAL CIRCULATION</td>
<td>In projecting pavilion</td>
<td>Internal stairs</td>
</tr>
<tr>
<td>RELATION TO WATER</td>
<td>Parallel to Winooski River</td>
<td>No direct relation</td>
</tr>
<tr>
<td>COLUMN SIZE &amp; MATERIAL</td>
<td>10&quot; dia. wood</td>
<td>8&quot;-10&quot; dia. wood</td>
</tr>
<tr>
<td>COL. SPACE-WIDTHWISE</td>
<td>15' (4 aisles)</td>
<td>8' O.C. (4 aisles)</td>
</tr>
<tr>
<td>COL. SPACE-LENGTHWISE</td>
<td>12' O.C. (approx.)</td>
<td>12' O.C.</td>
</tr>
<tr>
<td>BEAM SIZE</td>
<td>12&quot; x 12&quot;</td>
<td>10&quot; x 12&quot;</td>
</tr>
<tr>
<td>SPANNING SUPPORT</td>
<td>Seg. brick arch (projecting)</td>
<td>Seg. brick arch (projecting)</td>
</tr>
<tr>
<td>SILLS</td>
<td>Granite</td>
<td>Granite</td>
</tr>
<tr>
<td>SASH SIZE</td>
<td>Double-hung, 9/9</td>
<td>Double-hung, 6/6 (3' x 5')</td>
</tr>
<tr>
<td>STRUCTURE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FINISH SURFACE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2" subfloor
1" hardwood
## A Few Examples and Some Generalizations

<table>
<thead>
<tr>
<th>Faulkner Mill North Billerica, Mass.</th>
<th>Talbot Mill Billerica, Mass.</th>
<th>GENERALIZED CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1886</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italianate/Queen Anne</td>
<td>Greek Revival/Italianate</td>
<td></td>
</tr>
<tr>
<td>Granite slabs</td>
<td>Granite slabs</td>
<td>Brick</td>
</tr>
<tr>
<td>Brick</td>
<td>Brick</td>
<td>Brick</td>
</tr>
<tr>
<td>24&quot; @ ground; 16&quot; @ roof</td>
<td>20-24&quot;</td>
<td>30&quot; @ base-12&quot; @ top of wall</td>
</tr>
<tr>
<td>Shallow gable</td>
<td>Moderate gable</td>
<td>Flat to 45° gable</td>
</tr>
<tr>
<td>Truss</td>
<td>Trussed</td>
<td>Truss or simple support</td>
</tr>
<tr>
<td>55' x 136' x ?</td>
<td>70' x 210' x ?</td>
<td>30'-90' wide; 60'-400' long</td>
</tr>
<tr>
<td>Stair towers with winders</td>
<td>Front tower with winders</td>
<td>Attached towers or pavilions</td>
</tr>
<tr>
<td>Along canal/mill pond</td>
<td>Parallel to River</td>
<td>Parallel to water</td>
</tr>
<tr>
<td>8&quot; dia. wood</td>
<td>8&quot; dia. wood</td>
<td>Wood: 6-10&quot;Ø, cast iron:4-6&quot;</td>
</tr>
<tr>
<td>26' O.C. (2 aisles)</td>
<td>16' O.C. (4 aisles)</td>
<td>Generally 20' O.C.</td>
</tr>
<tr>
<td>12' O.C.</td>
<td>12' O.C.</td>
<td>Generally 10'-14' O.C.</td>
</tr>
<tr>
<td>12&quot; x 16&quot;</td>
<td>12&quot; x 16&quot;</td>
<td>Generally 10'-14' x 12'-16'</td>
</tr>
<tr>
<td>Seg. brick arch (flush)</td>
<td>Seg. brick arch</td>
<td>Granite lintel or brick arch</td>
</tr>
<tr>
<td>Granite</td>
<td>Granite</td>
<td>Granite</td>
</tr>
<tr>
<td>Double-hung, 12/12</td>
<td>Double-hung, 12/12</td>
<td>Double-hung 6/6,9/9,12/12</td>
</tr>
<tr>
<td>4&quot; x 10&quot; planks</td>
<td>4&quot; planks</td>
<td>4&quot; x 10&quot; planks on beams</td>
</tr>
<tr>
<td>1&quot; thick hardwood</td>
<td>1&quot; hardwood</td>
<td>1&quot; thick hardwood</td>
</tr>
</tbody>
</table>
New stairs, porches, balconies, and patios are added to the existing building. Each section shows two units, the upper unit entered by means of a covered exterior stair. The lower units have a double-height space in the rear facing south.
Eroding the Wall

Removing parts of the masonry wall allows one to get back in under the building but still be outside, as if in a cave. The wall provides support but no longer total closure from the weather. Lower masonry walls could be tied in to the bearing wall to make outdoor spaces that could serve as private places for the living units inside. My drawings try to provide outdoor space for all the units.

West St. Condominiums, Cambridge, Ma., A small industrial building whose second story walls are partially carved out to accommodate an inset balcony.

Newport, Casino, Newport, R.I., McKim, Mead, & White, 1881. The main entrance is set back just slightly from the brick wall, while the balcony and cross-gable protrude out over.
Minimal change in this scheme; the building contains six units, three on each story, with three former window openings converted to entrances for two units each. The entrances are back inside the wall. New porches have been added to make another zone of transition.
Memorial Hall, N. Easton, Ma., H. H. Richardson, 1880's. An inviting entry arcade over which the main assembly room is located.

Spinks House, Greene and Greene, 1909. A reciprocity, as in the Newport Casino; the entry is indented and protected, the balconies jut out.
An attempt to make a sequence of increasing enclosure as the building is entered: up three steps to a brick walled porch, then under a trellis, then under a protective roof, and finally inside. . . .
Out Over the Wall

Sometimes it's easier to add something light to the wall than to change the load-bearing part itself. In Vermont, the apartment dwellers experience the soothing sounds of the river and are cooled by it. In Rhode Island, each dormer becomes a special place, unique in size and fenestration.

Apartment building, Montpelier, Vt.; the bank of the river is also the foundation wall.

"Stick style" house, Newport, R.I., 1880's.
Here the drawing shows one unit occupying all floors. On the rear side, a shed-roofed addition (a greenhouse or eating area?) moves down to a porch and then to the ground.
Greene and Greene's buildings took advantage of a mild climate to make a variety of outdoors spaces connected in some way to the body of the house. One feels protected and exposed at the same time.
I've exposed four feet of the foundation to allow the basement to become habitable space in at least part of the living unit. The downstairs units become potentially double-height, and new entries and windows are made below the existing window openings. Downstairs is a patio; upstairs, a balcony supported on brackets is reached through door openings extended down from the old window openings.
Furness' chimney reaches down and dissipates delicately into the rubble wall. The dimension of the chimney's lower brickwork relates to the spacing of the railing baluster on the two decks and to the brackets in the eaves. One porch is over and under parts of the building; the other just hangs in space.
Two upper units & three lower units. New concrete lintels frame lower entrances; concrete patios with low brick walls.
In the drawing to the left, as in the one on the previous page, the basement has been made into habitable space by making new door openings through the foundation wall.

Unlike the drawing on the previous page, where access to the upper floor is internal, access is gained here by means of external stairs and covered porches. By so doing, the porches at the ground become the domain solely of the lower units instead of being shared.

Projecting roof deck, Commercial St., Boston, (Waterfront area)
Patios below with trellises or roofs; stairs and porches above.
To capture sunlight, the rear wall has been opened up. Highly glazed sunrooms project out onto decks supported by low brick walls which claim some backyard. In this scheme, the building is divided into three two-story units.
Instead of using a light-weight material like wood or sheet metal to build a projecting bay, Furness defies convention by employing brick and hangs the bay on limestone brackets. The projection shields the entrance overhead.

Hockley House, Philadelphia, Pa., F. Furness.
Two units with a shared entry. The lower unit has a double-height space on the south side which helps get sunlight more deeply into the unit. The kitchen adjoins a sunken patio. The upper unit utilizes the trussed roof space and has a dormer to give it, also, spaces on different levels.
Spatial Variety

One of the opportunities that mill buildings afford is the possibility of making changes in the existing floor structure so as to create differences in space, light, and privacy inside and outside the building. In the drawing to the left, the right-hand side of the first floor has been dropped 4' to grade, and the basement has been excavated 2' to make a usable 7-1/2' kitchen height. A bedroom might be over the kitchen, but in other places the room might be a full double height, 16'.

Living room, Blackman House, Groton, Ma., Maurice Smith, 1963.
NORTH-SOUTH SECTION

Some reasons for excavating

46
Down into the Ground

The drawings and pictures on the next few pages are of buildings which, in one way or another, have reached out into the earth beyond their main structural walls. In so doing they extend their range, increase the variety of kinds of places to inhabit, and really fit themselves to their site.

North elevation, Blackman House, Groton, Ma., Maurice Smith.

Dwelling at Shaker Community, Sabbathday Lake, Me. Note sunroom extension at side.
1/16" = 1'-0", NORTH ELEVATION
Sometimes sites which change in elevation lend themselves to getting at the ground so as to make use of that change. The out-of-doors becomes a part of the dwelling.
NORTH-SOUTH SECTION: porch and sunroom
Blacker house.
Above: South elevation with outdoor entrance to basement billiard room;

Pasadena, Ca., Greene & Greene.
Six units total. The three lower units, which are double-height, are entered at grade via individual porches. The upper units are reached by climbing a covered stairs, walking along a covered exterior corridor, and then climbing 3' to separate entrances past individual decks.
Perambulatories

The next few pages illustrate the idea of moving up vertically on the outside of the building to a second level, from which access to privacies is gained. If the way up and the way across are generous enough in size, they can also provide transitional, semi-public places on the path from the street to the living room.
$\frac{1}{16''} = 1' - 0''$. North-South section of elevation on preceding page; the 3' rise between the walkway and the individual porches provides more privacy for the units.
By placing the vertical access outside the building's body, the possibilities are multiplied for varying degrees of connection with the weather and with people passing by.

Shipley School, Bryn Mawr, Pa., F. Furness.
Detached vertical access. This plan correlates to the elevation and section on preceding pages.
Rhawn House, Philadelphia, Pa., F. Furness.
Some ideas of how to increase light and access within the wall plane.
In the Plane of the Wall

This section shows some examples of how changes might be made within the plane of the wall to increase light inside the building, to help define entry areas, to provide greater ventilation and connection to the world outside, and to distinguish differences in use.

In the lower row of sketches to the left, I've tried to make larger openings by using the existing arch form over a larger span.

Gatehouse detail, Philadelphia Zoo, Philadelphia, Pa., Furness
NORTH ELEVATION, using new arched openings.
In the drawing to the left I've made use of some of the sketch - playing of the preceding drawing by placing the new form in the wall. The large arch occurs at one of two places - either to make an entry or a large window.

Plate 10 (left). One of three windows, Avery Coonley Playhouse, Riverside, Illinois. 1912. Leaded glass, wood frame, 86½” x 28” (219 cm x 71.1 cm) each. (Lent by The Metropolitan Museum of Art, New York; Purchase, Edward C. Moore, Jr.; Gift of Edgar J. Kaufmann Charitable Foundation Fund, 1967)

Entrance, Gamble House, Pasadena, Ca., Greene & Greene.

1/16" = 1'-0", LARGE OPENING STUDIES
These are sketches for opening up a large swath of wall, using fixed glass, opening sash, perhaps colored glass, and some opaque panels (maybe of wood). The span, 15', is determined by the distance between two existing openings. The arch becomes too shallow to be used to support a span of this dimension, so I've used a concrete lintel.
NORTH ELEVATION: new window openings using reinforced concrete lintels.
Once again, I've employed some of the sketch windows on the actual elevation. The arch rhythm is destroyed but the building perhaps receives greater light and the fenestration is more useful.

In the photographs of Commercial Wharf, also a massive bearing wall building, it's evident that the wall has been radically altered. The changes seem to be determined largely by use - the first floor opened up the most (retail), the second a little less (office), and the upper floors unchanged (residential).
Commercial Wharf, Boston, Ma.

West St. Condominiums, Cambridge, Ma.
Roofs

The photographs on these two pages show some methods of using roof space both pitched and flat, which was formerly unused. At Commercial Wharf, 1 and 2-story additions are added to the pitched roof. Sometimes a deck is cut into the roof.

At the condominiums in Cambridge, the flat roof becomes a deck with just a trellis overhead that could later become more protective.
Conclusion

Scratching the surface......

...that's what it feels like after 4 months of playing with brick mill walls. I believe I have at least demonstrated some renovation possibilities and pointed out some references, I waver between feeling the proposals are either too timid or too unrealistically extravagant.

Several possibilities come to mind when I think of what this thesis would lead me to explore next. At the small scale, it would be interesting to see how one would go about detailing the changes in the brickwork itself---that is, how are new arches or lintels actually made or installed, what might new sash and doors look like.

At the intermediate scale, I'm tempted to take these changes in the zone of the wall and project their impact back inside the building---that is, to design different kinds of housing units within the shell.

At a larger scale, I'd like to work on the question of how to add to mill buildings in a major way--how to make entire new pieces that would connect to the existing buildings, what would be suitable in terms of scale, material, new openings, detailing, etc.
Ultimately, it would be instructive to work with a real place, such as the Lane Mills, at the site scale and integrate the many lessons into a proposal for one place........
Photographic Credits

1. Page 5-(upper right) Dunwell, p. 107
2. " 7- Dunwell, p. x
3. " 8- Robert Peabody Brown
5. " 14- HABS, p. 94
6. " 15- Dunwell, p. 10
7. " 17- HABS, p. 140
8. " 23- Dunwell, p. 94
9. " 31- Current, p. 21
10. " 35- , p. 73
11. " 37- O'Gorman, p. 54
12. " 43- , p. 40
13. " 51- Current, p. 52
14. " 55- O'Gorman, p. 176
15. " 57- , p. 46
16. " 59- , p. 105
17. " 61-(left) O'Gorman, p. 170
    (right) Current, p. 60
BIBLIOGRAPHY


