THE ROYLSTON STREET REDEVELOPMENT PROJECT ———— BOSTON

THESIS

David Gosling
B.A.(Arch). University of Manchester. 1956
Associate Royal Institute of British Architects. 1957

Submitted in partial fulfillment of the requirements for the
Degree of Master of Architecture at the
Massachusetts Institute of Technology

Signature of Author

School of Architecture, Massachusetts Institute of Technology. July 1958

Accepted by

Lawrence B. Anderson
Head, School of Architecture, Massachusetts Institute of Technology.
ABSTRACT

With the erection of the Prudential Centre on Boylston Street, Boston, certain radical changes are likely to be effected. Not only will the Centre draw workers from all over Metropolitan Boston, but even more important, it is hoped that the scheme will attract people to live in the city. The Centre may thus become a catalyst, causing far-reaching redevelopment schemes in Boston.

The City Planning Board realises that the very presence of the Prudential Centre will cause surrounding land values to rise. A survey was prepared for the redevelopment or renewal of the adjacent property on the opposite side of Boylston Street. This was the original impetus for the thesis study.

The thesis does not, however, merely comprise a self-sufficient redevelopment project. It attempts to be more far-reaching in scope. It is felt that most redevelopment projects never really acknowledge their environment. Here the object is not only to satisfy the functional requirements of housing, shopping and traffic, but also the visual requirements of integration and relationship with surrounding spaces. The project therefore acts as a visual breakdown between the gargantuan scale of the Prudential Centre and the human scale of the Back Bay terraces.

In satisfying the functional requirements, an object of primary concern was to create an environment which would be safe for both motorists and pedestrians and yet retain the liveliness of a crowded downtown street. The proposal for an upper level series of squares and pedestrian ways is designed to enable people to walk freely from one district to another, unhampered by vehicular traffic. The project also attempts to provide a solution for medium rental housing in cities. The actual planning of the housing units are designed to give the greatest possible combinations and variations from a basic plan.

The redevelopment project aims to provide a centre which is organically
alive - to which the citizen automatically gravitates and where the visitor on entering, will have a sense of having arrived.
216 Beacon Street,
Boston 16, Massachusetts.

July 18th, 1958.

Dear Dean Pietro Belluschi,

School of Architecture and Planning,
Massachusetts Institute of Technology,
Cambridge 39, Massachusetts.

Dear Dean Belluschi,

I herewith submit my thesis report entitled "The Boylston Street Redevelopment Project" in partial fulfillment of the requirements for the degree of Master in Architecture.

Respectfully,

David Gosling
ACKNOWLEDGEMENTS

I would like to express my appreciation to the following individuals for their advice and assistance in the preparation of this thesis.

Dean Pietro Belluschi
Professor Lawrence Anderson, Head of the department of architecture
Professor Herbert Beckwith, chairman of the thesis committee and members of the thesis committee
Professor Eduardo Catalano
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Sidnor Hodges - City Planning Board - preliminary research

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Nishan Bichajian for his assistance in the production of photographic material

Robert Harvey Studios, Boston - photographs of the Back Bay Centre

Photoprint illustrations have been taken from the following:

A greater Fort Worth
Architectural Review

Le Corbusier - Oeuvre Complete - 1952 - 1957
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INTRODUCTION

"In viewing the environment with its roads, bridges, buildings, vegetation, paving and so on, there are two ways of looking...the associational and the objective. That is to say that the front door can be home or a rectangle of color. As far as the urban scene goes it is nearly always the former, hardly ever the latter. There is no art of ensemble, no terminology to isolate and communicate our feelings." (Gordon Cullen)

A street is necessarily lineal in structure, but it should be considered as a series of related sequences — the whole having a coherence and unity yet each sequence having its own individuality.

There are thus two ways of regarding the Boylston Street development. The first is as a necessary and valid architectural redevelopment of the five Boylston Street blocks opposite the new Prudential Centre.

There is a second aspect, which, though it depends on the first for its final appraisal, cannot suffice on that alone. The street itself should become an interrelated and continuous sequence of space and buildings. A redevelopment project such as this, should then attempt some sort of integration with the surrounding areas, so that the immediate townscape may become a coherent whole.

The thesis will cover both aspects. On the one hand, an outline residential plan of the five blocks will be presented as an architectural study. This will not be isolated in its context. There will be the
the equally important study relating the redevelopment project to the existing and future conditions of Boylston Street as a whole. This report deals with the present and future importance of Boylston Street.
ECONOMICS

The recent announcement of the $100,000,000 project by the Prudential Company should result in a startling change in the Boston skyline within the coming five years. This project may well be the forerunner of other great developments which can transform an important city. Such a project can become a catalyst which will inspire other organisations to invest in anticipation of the great growth in trade.

It is natural that such a large business centre should be located within the city, not outside it. The matter of communication is important. Labour and the market must be accessible. The office, situated in Boston will become the centre of its New England activities.

The project will commence late this year and it will take over five years to complete. In the administrative complex there will be 1500 people. About 500 will come from New Jersey, in a supervisory capacity.

In addition to the office tower a large hotel will be built. Boston is a convention city, but is losing its importance as such. The present hotel facilities in Boston are far from adequate, and out of the twenty major hotels, six were built prior to the turn of the century and there have not been any built for 28 years.

Six apartment blocks are planned. It is hoped to encourage the executive class to live within the city rather than some twenty miles out in the suburbs. There are probably many people who would prefer to remain in the city if they could find a suitable apartment.
FINANCE

The rest of the country has been growing at a tremendous rate during the past ten years. Boston has been sinking slowly and now rapidly towards physical and financial bankruptcy. It has been estimated that in order to be competitive, Boston must have a tax rate in the order of $150 per thousand of assessed valuation. Assuring an $85 tax rate for 1957, would have meant a reduction of $35 per thousand before there was a chance of attracting new investment capital. There are several ways this might be attained. Broadening the tax base by the creation of new valuations. A million dollars in valuations affect the tax rate by five cents. Therefore over a billion dollars in new construction (70% of assessment formula of $700 million new valuations) would be required to broaden the tax base sufficiently to reduce the tax by $35/thousand. The Prudential scheme will achieve over 10%. Thus, as has been remarked previously the centre may well become a catalist. Here, in Back Bay, Boston may see the first tangible results of true urban renewal.
TRANSPORTATION

In the 10 years since the end of World War II, automobile registrations have increased 50% - transit traffic has dropped 50%. The resultant street crowding has become such that cities everywhere have turned to highway construction for relief. But while construction of this sort is needed, it can only provide a small portion of the 'person-trips' to central areas. This factor is becoming a vivid realization in many places. Expressways are excellent collectors of traffic in suburban and outlying areas. But, when they reach the downtown section, the problem of dispersing the greatly increased vehicle volumes becomes virtually insurmountable. Surface streets cannot at present deal with the hordes of vehicles that an expressway can deposit on them during rush hours. The exit ramps just become blocked. The critical point is always the intown terminus.

Every city is now contemplating expanding its transportation system. It is absurd to believe that rapid transit, designed along principles established before the day of the automobile, can compete fairly with the 1958 passenger cars.

It is possible that people could travel as far as the boundary of the downtown area - leave their automobiles in underground parking lots such as those provided in the new Prudential Centre - and use the MTA subway for rapid transit below the surface and at street level the ways might be converted once more to greater pedestrian use.

In Chicago, there is in operation an experimental four car rapid transit train with top speeds of 80 mph. In Toronto, the subway has demonstrated conclusively that fast comfortable trains can operate at an extremely low noise level in attractive, clean, comfortable
dry and well-lighted surroundings.

Rapid transit should become the backbone of the transportation system.

The problems are worse in central areas of cities than in most other areas. Tremendous urban losses have been attributed to traffic and accident conditions of central city areas. The health of retail areas of cities is directly dependent upon accessibility and the trend has been increasingly towards private vehicle travel. Recent studies have shown that many of the large cities have not shown a marked increase in retail or other business activity in central areas for the last ten or twenty years. Yet in the same time the metropolitan population may have doubled or trebled. This is causing great alarm and city officials are beginning to fear that central areas might not be able to compete favourably with regional shopping centres.

Experts agree that what is needed is an integrated approach to the problem, so that mass transportation will take its place together with the development of new roadway facilities, including expressways and off street parking as a component of an integrated system of transportation. No city can afford to neglect its mass transportation facilities, and this form of transportation is especially important to the retail businesses in the central areas of cities.

It might be profitable to experiment with no parking in the downtown area, giving the streets over to moving vehicles and pedestrians and then proceed to build such necessary off street parking facilities as must be provided and at the same time to increase and improve the mass transportation facilities.

The increasing preference for automobile travel is, however, obvious.
Flexibility, availability, privacy, lack of crowding and social prestige. Rapid transit has advantages. Speed, safety and cheapness. It is, however, uncomfortable, noisy and crowded. No single course of action can by itself solve the traffic problem. A basic solution requires a programme of 100,000 additional off street parking spaces, both within the borders of the downtown area and at mass transportation terminals. A re-investigation of the entire system of one way streets and the traffic signal system in downtown Boston seems a fundamental issue. Lewis Mumford's theory that the quickest way to move a crowd of a hundred thousand people from Boston Common would not be either private automobile nor mass transportation, but rather making each person walk on foot! The pedestrian will achieve his goal quickly if he is unhampered by vehicular traffic. A superficial solution to the Boylston Street problem is to transform the street into a pedestrian mall. As such, the idea is unrealistic. It is suggested however, that primary consideration should be for the pedestrian shopper and inhabitant. If people using this area were to park there cars in the off street facilities immediately upon entering and then proceed on foot or underground by MTA cars, then a partial solution has been achieved. A better proposal would be to segregate pedestrian and vehicular traffic (physically but not visually) This may be attained by creating different levels for the different forms of traffic. The modernization and reorganization of the subway system beneath Boylston Street, with an additional station at the entrance to the Prudential plaza would complement the proposal. The detailed nature of this design is discussed later.
Summary of the causes of decentralization in Boston.

The identifiable causes influencing the deterioration of the downtown area.

1. Traffic congestion
2. Difficulties of the pedestrian
3. The tax situation
4. Rapid transit or other transportation difficulties
5. Excessive land values
6. Decay of 'closed-in' areas
7. Excessive drainage of population from the city
8. Nuisances such as smoke and noise
9. Unsightliness such as billboards and overhead signs
10. Vacant lot parking and permits for sidewalk crossing for cars
11. Effect of high buildings with no regard for surrounding air spaces
12. Ribbon development
13. Faulty zoning regulations with respect to business areas
14. Poor terminal facilities for various forms of rapid transit

These recommendations have been made. That large parking facilities be maintained on the edges of the business district - with continuous rapid transit service running from these facilities throughout the area. New methods of advertising and display, properly integrated into the visual scene. Adequate zoning so that the business office area is defined. The creation of a homogenous retail business area.

The city as a whole should be planned with special emphasis on the creation of liveable neighbourhoods, each with its local centre. Suburban areas, dependant on the city for major income, should make their appropriate contribution to the costs of the entire metropolitan area.
Economic Boston is a physical peninsula. It may be classified as an island surrounded as it is on three sides by water and hemmed in on the fourth by a barrier of parks and railroads. It is from this fourth barrier or wall that Boylston Street commences and leads into the heart of the city. Boylston Street is one of the several important life arteries of the city, as opposed to mere transportation arteries.
STATISTICS

The Back Bay area (from a survey of Boston neighbourhoods, Oct., 1953)

Note: a total number of 15 neighbourhoods were selected — each subdivided to make an overall total of 64 areas. These were then listed in order of importance according to the various surveys.

Below are given the results of the survey of the Beacon–Commonwealth area, which was a subdivision of the Back Bay region.

The following are the 15 neighbourhoods selected.

Back Bay, Brighton, Charlestown, Dorchester North, Dorchester South, East Boston, Hyde Park, Jamaica Plain, North End, Roslindale, Roxbury, South Boston, South End, West End, Roxbury.

1950 population

Beacon–Commonwealth : 19,105 - No. 55
Charlestown : 31,334 - No. 64
Kerry Village : 463 - No. 1

1950 population - foreign born white

Beacon–Commonwealth : 13.4% - No. 8
Franklin Park : 33.4% - No. 64

1950 population - non-white population

Beacon–Commonwealth : 0.6% in 1940 0.8% in 1950
Lower Roxbury : 61.2% in 1940 71.8% in 1950

Number and percent of population under 5 years of age

Beacon–Commonwealth : 433 ; 2.3%; No. 8
West Roxbury : 3,246 ; 15.8% ; No. 64

Number etc. Population 5 - 13 years

Beacon–Commonwealth : 467 ; 2.4% ; No. 7
Hyde Park : 4,171 ; 14.4% ; No. 64
Population 14 - 19 years
Beacon-Commonwealth ; 1,453 ; 7.6% ; No.53
Charlestown ; 3,663 ; 11.7% ; No.64

Percent of dwelling units with one or more persons per room
Beacon-Commonwealth ; 12.3% ; no.32
Old Harbor Village ; 36.1% ; no.64

Percent of population in different residence in 1950 than 1949
Beacon-Commonwealth ; 33% ; No.64

Median contract monthly rents
Beacon-Commonwealth $77.01 ; no.3
Beacon Hill $79.08 ; no.2
North End $21.49 ; no.64

percent of dwellings owner occupied
Beacon-Commonwealth ; 10% ; no.12
Belle-vue - Mount Vernon ; 73% ; no.64

Median income in 1949 of families and individuals
Beacon-Commonwealth ; $1,606 ; no.64
Brook farm ; $4,506 ; no.1

Median school years completed by persons 25 years of age and over
Beacon-Commonwealth ; 12.9 years ; no.2
North End ; 8.0 years ; no.64

The object of this abstract from the surveys was to ascertain the type of population resident in the Back Bay area. It seems that the population is predominantly of the student class. It is discussed later whether it is likely that any further residential development
in the area would cater for the student population.

Building Accommodation in Boston Back Bay business district
(survey: 1953 Boston City Planning Board)

Selected functional area characteristics.
The most distinguishing feature in each case is the relative predominance of use, varying as it does from one type of area to another.

Highest ratio of predominance is that for the three office areas—office space accounts for an average of 79% of all accommodation. For the four retail areas—retail trade space accounts for 68% of the total.

The net building bulk density for the survey represents an average of 5.3 sq ft super of accommodation for every sq.ft of lot area. Higher than average densities are to be found in the office areas—the ratio is 6.2 average rising to 10.0 in parts (The John Hancock Building and the New England Mutual Company are exceptionally large establishments. The addition of the Prudential Centre will materially increase the office accommodation density. (The actual gross superficial areas have not been published)
Distribution of Gross Accommodation. By type of use, by sub district, and by functional areas. In thousands of sq.ft.

<table>
<thead>
<tr>
<th>Type of Accommodation</th>
<th>Survey Area</th>
<th>Downtown</th>
<th>Back Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Accommodation</td>
<td>54,250</td>
<td>45,070</td>
<td>9,180</td>
</tr>
<tr>
<td>Residential</td>
<td>880</td>
<td>500</td>
<td>380</td>
</tr>
<tr>
<td>Vacant</td>
<td>2,750</td>
<td>2,420</td>
<td>330</td>
</tr>
<tr>
<td>Total occupied</td>
<td>50,620</td>
<td>42,150</td>
<td>8,470</td>
</tr>
<tr>
<td>Office Space</td>
<td>19,960</td>
<td>15,370</td>
<td>4,590</td>
</tr>
<tr>
<td>Retail</td>
<td>8,240</td>
<td>7,130</td>
<td>1,110</td>
</tr>
<tr>
<td>Consumer Service</td>
<td>6,120</td>
<td>4,210</td>
<td>1,910</td>
</tr>
<tr>
<td>Wholesale</td>
<td>6,800</td>
<td>6,700</td>
<td>100</td>
</tr>
<tr>
<td>Manufacture</td>
<td>7,120</td>
<td>7,040</td>
<td>80</td>
</tr>
<tr>
<td>Public Utilities</td>
<td>830</td>
<td>740</td>
<td>90</td>
</tr>
<tr>
<td>Institutional</td>
<td>1,550</td>
<td>960</td>
<td>590</td>
</tr>
</tbody>
</table>

(AREA DISTRIBUTION OF GROSS ACCOMMODATION) - Percentage Distribution

<table>
<thead>
<tr>
<th>Type of Accommodation</th>
<th>Survey Area</th>
<th>Downtown</th>
<th>Back Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Accommodation</td>
<td>100</td>
<td>83</td>
<td>17</td>
</tr>
<tr>
<td>Residential</td>
<td>100</td>
<td>57</td>
<td>43</td>
</tr>
<tr>
<td>Total non-residential</td>
<td>100</td>
<td>84</td>
<td>16</td>
</tr>
<tr>
<td>Vacant</td>
<td>100</td>
<td>88</td>
<td>12</td>
</tr>
<tr>
<td>Office Space</td>
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<td>77</td>
<td>23</td>
</tr>
<tr>
<td>Retail</td>
<td>100</td>
<td>87</td>
<td>13</td>
</tr>
<tr>
<td>Consumer</td>
<td>100</td>
<td>69</td>
<td>31</td>
</tr>
<tr>
<td>Wholesale</td>
<td>100</td>
<td>99</td>
<td>1</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>100</td>
<td>99</td>
<td>1</td>
</tr>
<tr>
<td>Public Utilities</td>
<td>100</td>
<td>89</td>
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<tr>
<td>Institutional</td>
<td>100</td>
<td>62</td>
<td>38</td>
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TRAFFIC ANALYSIS

(Statistics from the Cordon Count: Downtown Boston, 1927, 1932, 1938, 1954.)

Total traffic: 7 am to 12 midnight
(half-hourly counts)

<table>
<thead>
<tr>
<th>Street</th>
<th>1954</th>
<th>1938</th>
<th>1932</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boylston Street</td>
<td>22,339</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storrow Drive</td>
<td>21,627</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longfellow Bridge</td>
<td>10,611</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Park Square</td>
<td>18,011</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comparison of summaries of inner cordon counts 7am - 12 midnight

<table>
<thead>
<tr>
<th>Street</th>
<th>1927</th>
<th>1932</th>
<th>1938</th>
<th>1954</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boylston (inbound)</td>
<td>10,161</td>
<td>10,488</td>
<td>11,909</td>
<td>22,339</td>
</tr>
<tr>
<td>Longfellow Bridge</td>
<td>7,725</td>
<td>10,727</td>
<td>14,721</td>
<td>10,611</td>
</tr>
<tr>
<td>Park Square</td>
<td>5,974</td>
<td>10,604</td>
<td>11,055</td>
<td>18,011</td>
</tr>
</tbody>
</table>

Total Persons entering and leaving downtown area 7am - 12 midnight

<table>
<thead>
<tr>
<th>Year</th>
<th>1927</th>
<th>1932</th>
<th>1938</th>
<th>1954</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,656,953</td>
<td>1,652,898</td>
<td>1,542,146</td>
<td>1,486,590</td>
</tr>
</tbody>
</table>

The disturbing feature about these figures is the steady decline in the number of persons entering downtown Boston.

Inner Cordon pedestrian count

<table>
<thead>
<tr>
<th>Street</th>
<th>1932</th>
<th>1938</th>
<th>1954</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boylston</td>
<td>25,918</td>
<td>16,470</td>
<td>26,088</td>
</tr>
<tr>
<td>Washington</td>
<td>34,838</td>
<td>23,346</td>
<td>14,211</td>
</tr>
<tr>
<td>Tremont</td>
<td>49,370</td>
<td>30,917</td>
<td>18,800</td>
</tr>
</tbody>
</table>

Boylston Street is the only important shopping street in Boston which has shown an increase in pedestrian traffic over the years. This is all the more remarkable since the total number of pedestrians in the downtown area has shown a decline.

In 1932 the total was 130,273 in 1938: 85,453 in 1954: 76,117.
VISUAL ANALYSIS

Included at this stage of the report is a verbatim extract from Professor Lynch's report on the Public Image of Boston. It was felt that this was pertinent to the study.

"Boston is symbolized by the Boston Common, by the State House... and by the view across the Charles River from the Cambridge side. In addition to these three symbols, there are several other vividly describable elements, particularly Beacon Hill, Commonwealth Avenue, the Washington Street shopping and theatre district, Copley Square and Back Bay.

The major Back Bay Streets are parallel to the river line and Massachusetts Avenue is perpendicular. Very often, Huntingdon Avenue is also felt to be parallel to the same set of streets, even though it runs into Copley Square. It is not always clear that Copley Square lies on the line of Boylston Street, but many people realise that Boylston Street intercepts Tremont, though not all of them can project the former beyond the Public Gardens." (Actually the visual image of Boylston Street concludes at the Public Gardens.)

"For most people, Back Bay is a sharply bounded region, edged by Beacon Street on one side, and by Boylston Street on the opposite side. Copley Square is visually attached to this area. It can be easily described and identified by many people."
A purely pedestrian area (occupying part of the present main exhibition concourse) flanked on the west by Government buildings and on the east by cafes. As at present Whitehall Court, across the river, provides the fourth wall of the enclosure brought more sharply into focus by the raised terrace which cuts out the intervening river. It is proposed to keep the Regatta Restaurant on the river front.

The two drawings on this page show the contrast of scale aimed at in this area. The cheerful and intimate nature of the cafes on the one side and the lofty, sculptural effect on the other.
HOTEL ZONE

Entering the site from York Road at what is now the Chicheley Street entrance to the exhibition there will be a courtyard flanked on the left by a garden and on the right by hotel ancillaries such as grill room, ballroom and shops. The courtyard will be a drive-in for hotel traffic but with pedestrian priority. Interest at eye level (the lack of which renders so much of London a bore) is thus provided by garden, paving, shops and restaurants. The exit from this square in the direction of the river is, as at present, a concealed narrows (see page 81) but is accentuated by providing a covered way in the form of a tunnel running between hotel and public house. This preserves the feeling of enclosure and at the same time emphasizes the point of exit.
Fort Worth will not change overnight. Element by element of the master plan will be added over a period of years. That Fort Worth can accomplish its goal step by step, without disruption of its present and future activities, is clearly illustrated by the following four maps.
A Hypothesis

"Motion in space can be grasped if its reality is perceptible through the senses. Motion, accelerated to high speed, changes the appearance of the objects and makes it impossible to grasp their detail. There is clearly a recognizable difference between the visual experience of a pedestrian and a driver. The difference produced is by the changed perception caused at various speeds, vision in motion. This was proved by Jean Carlu, the French poster designer, in 1937. The one poster, made by Toulouse Lautrec was made around 1900, was moved at 6mph - the speed of a horse and buggy; the other, a contemporary poster was moved at 50mph - the speed of an automobile. Both posters could be read easily. The Toulouse Lautrec poster was moved to a speed of 50mph and at this speed was only a blur. The implications are obvious. The artist, architect, advertising man, the planner must count with the quickly moving vehicles requiring a new orientation towards spatial organisation and communication."

L.Moholy-Nagy

City planning can only succeed if the need for a coherent whole is recognized. The cause of the problem is the automobile, fluidity of communication. We can take the following steps:

Regard the automobile as an evil which simply debases town and country.

Redesign the city as a place fit for automobiles to live in. This is the obvious course and the really fatal one.

Try to harness the potential fluidity to redeem the town and country.

It is this last course, the most difficult, which should be the planners' intent. The main street and the town centre are no longer suitable
for arterial traffic. The centre belongs to the people on foot; the arterial roads belong to the traffic. They are mutually exclusive and to operate successfully they must be separated. To aid the flow of traffic whilst at the same time destroying the centre is no answer.

The future of shopping is in embryo, but whatever that future may hold in store, the corridor street — where two lanes of traffic crush the shopper against the shop windows — is unlikely to be a constituent part of it. The recognition is growing that shopping is a form of purposive loitering conducted at walking pace and on foot, and in the American supermarket the shopper is becoming increasingly accustomed to quit his car in order to walk the planned plazas and promenades. The peace of mind that accompanies pedestrian velocities, circulation on the scale of man, is conducive to better merchandising, both from the vendors' and the purchasers' angle.

Centres should be created, urban foci, that will attract the small specialist retailers, who together, can provide balanced merchandising; they will attract the motorized and bus-borne shopper, and provide them with good cause to change down to foot pace velocities.

The interlace is commercially and psychologically vital. The corridor street is the lowest form of life amongst shopping centres, and the pure pedestrian precinct is the highest form of death. The corridor street causes the automobile to crawl, the pedestrian has no circulation, no peace of mind. The pure pedestrian precinct isolates man.

The shopping centre of the future must provide the pedestrian with a circulation of his own, but not isolated from the main arterial
circulation of his town. A good example of this (if one discounts the somewhat insipid architecture) is the Stow at Harlow New Town in England, where the two speeds of pedestrian and vehicular traffic have been successfully integrated in the visual and physical sense. The shopper must be able to savour the mechanical hustle he has left behind; to appreciate his special privileges of random, low speed meandering he must remain conscious of the high speed, precisely oriented flow of traffic. The major problem arises over the visual and functional aspects of the parking lot. The accumulation of a large number of static automobiles around the shopping promenade would merely isolate it from the traffic flow.

ADVERTISING

Outdoor advertising in a shopping centre can be not only rewarding in the commercial sense but aesthetically so. It can be used to create a live core of the city. This is in direct contrast to the present school of thought which looks on it at best as a necessary evil to be banned wherever possible or emasculated in the name of good taste. This negative attitude has arisen from confused thinking. Advertising is rightly condemned as an abomination in the rural landscape. That does not mean that it must be outlawed in a man made landscape. Here it can bring vitality.

The shopping centre, the market place, the entertainment areas are the right places for advertising. It is appropriate. It gives a sense of Place. Buying, and selling, entertainment, gaiety, advertising. Purists cannot separate them and art them up. Illuminated sky signs, giant lettering, neon signs, shop signs, posters are all part of a
robust modern way of life and can add color, movement and surprise both at day and at night.

Publicity run riot can smash architecture or townscape. The advertiser does not care, the planner must. The planner must decide where sky signs, facade signs, neon and flood lights shall go and relate them to buildings in an imaginative overall scheme of brightness zoning at night. This will be attempted in the project. In certain places such as blank end walls, giant full facade height signs lit at night, will shock and excite by sudden incongruity of scale. Illuminated sky signs, in addition to their immediate impact will pinpoint the heart of the town from a distance. Lettering should be controlled and disciplined to fit structural grids. Any signs projecting from the face of the building should be at right angles to it. Illuminated vertical lettering should be encouraged to give interest as an opposing interest to the horizontal.

CHANGE OF LEVEL

Variations in the level of the ground occur either directly, as a result of the contours of the site, or artificially, arising out of the needs of the planner. Boylston Street illustrates both aspects. There is the gentle, natural gradient of the street from Massachusetts Avenue down to Copley Square. This gives the psychological impression of travelling "down" into town. The other aspect is the necessity for parking garages at street level. The roofs of these garages form pedestrian squares and promenades above street level adding to the visual excitement. Every place has its datum line and one may be on it, above it, or below it. To be above produces a feeling of authority and privilege; to be below produces feelings of intimacy and protection.
these sensations imply a very direct relationship between the observer and his environment. Objects acquire significance according to their relationship.

CLOSURE

The word closure may be differentiated from Enclosure by contrasting travel with arrival. Closure is the cutting up of the linear town system into visually digestible and coherent amounts whilst retaining the sense of progression, which is totally lacking in the present visual scene. Closure is not the closing of a vista, but rather the articulation of movement. A building or wall which creates closure will generally provide a feeling of anticipation. Closure is effected by some irregularity or asymmetry of layout whereby the path from source to goal is not automatically revealed as in a gridiron plan. This irregularity divides the route into a series of recognizable visual statements each one effectively linked to the other. Progression is rendered interesting by the subdivisions which are human in scale, the provision of incident, the sense of revealing and identification. It is the aim in this project to incorporate a series of related pedestrian ways and squares following the general lines stated above.

"The centre of the town is what the mind and heart are to the man, and a town would not be a town without a heart of some sort...in an old town which has grown organically one finds the centre by searching for the place where the town's heart can be sensed beating...in a new town, a designed town, one goes to the site of the heart as indicated on plan and listens to ascertain whether it can be heard to beat." (Gordon Cullen)
The traffic flow within Back Bay Center will be so complicated it is difficult to present in two dimensions. In three dimensions it may be very simple indeed, for traffic experts point out that any oversimplified plan solution usually leads also to oversimplified traffic jams.

The first complication is a railroad tunnel (see section) which slashes diagonally through the site, bisecting it up to a 30' level above water level. This tunnel divides the subterranean parking into two wedge-shaped slices in plan. The site also has a slope; to fit it, the designers stacked two parking levels on one side of the railroad tracks, and three on the other. Automobiles will enter the parking spaces from the ring road, which flows clockwise around the periphery of the site. This road is designed to move traffic at a safe 15 mph speed, 15 mph faster than adjacent city streets, and there are seven entrances and seven exits to this ring road from city traffic. From the ring road there are ten entrances and exits to garages. The architects are considering a shuttle service for shoppers from parking places to the escalators.

In reading the traffic plan (below), left) the important thing is to remember that the ring road varies in level. Where it crosses over the railroad tunnel (red dashes) it has to rise. The difference in elevation is as much as 17', but grades do not exceed 8%/6.

The advantage of this downstairs parking is that it decreases to 50'0 the maximum path which shoppers must walk from parked cars. In flat parking the last arrival would probably have to walk 960'.
"In America also there is a movement to reduce the chaos of large cities. One of the most important projects in this direction was the new Back Bay Center proposed for Boston. It was only for the use of pedestrians (6,000 cars parked underground). As a consequence the center no longer faced the street. This urban center will never be built. It was unfortunately replaced by a less than mediocre apartment house project because of so-called "vested interests", and under pressure of politicians who had no understanding of what Boston could have gained by such a community center for a great city and what it has now lost". (S. GIEDION)

The original scheme, presented in 1953, was and probably still is one of the most advanced concepts in urban redevelopment. The main pedestrian circulation areas were on a raised platform above the level of Boylston Street. Here shops, stores, office buildings, convention hall, and a large hotel were interrelated around covered walkways and outdoor plazas. Autos and trucks were given convenient routes in and out of the center as well as necessary terminal facilities, but the outstanding thing about the entire development was that the pedestrian came into his own again. With this approach to redevelopment, the urban shopping pattern could be moulded into an ideal pattern. This scheme showed what cities could be if they were rebuilt from the core out. And yet, for all the internal excitement of the scheme, there was a direct relation to the surrounding districts. Boylston Street would have been an interesting and
diverting route, with tempting glimpses into the plaza, between the buildings and under the arcades.

The later Prudential scheme, produced in 1957 and 1958 was disappointing. The contrast is obvious and unfortunate. Once again, the scheme is raised on a platform above the level of Boylston Street, with underground parking facilities. Above this level, any similarity with the original scheme ends. Here, we are to be faced with five widely spaced apartment blocks, 386 feet high, placed in a quasi-symmetrical layout. A hotel of the same height is placed at the opposite end of the scheme. The focal point of the project is a huge tower, 800 feet high. Such a skyscraper in New York would be large (the Seagram Building is about 40 storeys high). In Boston this height is ludicrous. At the front and rear of this tower are grandiose sunken plazas, flanked by two storey shops. The visual relationship of these shops to the tower would seem to be unsatisfactory. The scheme, however, does not appear to be related to the surrounding streets. One will only see the truncated form of the tower and apartment blocks from the Back Bay streets. It thus repeats the fault of Boston's other skyscraper - the John Hancock Building. Whilst not questioning the excellent commercial value in terms of Boston's economy - in terms of visual city-scape it is something of a failure. It is a formalistic design, providing only an oppressive void for the pedestrian.
THE REDEVELOPMENT PROJECT

General Considerations

It has been discussed previously that the erection of the proposed Prudential Center must have a rejuvenating influence on the area and the city as a whole. The Prudential Center itself includes a large, high rental housing scheme, designed to attract the executive class to live in the city. It is suggested by members of the Boston City Planning Board and others that this large redevelopment scheme will cause further redevelopment beyond its immediate boundaries.

After an extensive survey of the upper part of Boylston Street, it was obvious that the existing property along the street opposite the Prudential site is becoming increasingly obsolete. In the opinion of Sidnor Hodges, a city planning officer, it is inevitable that the series of street blocks bounded by Massachusetts Avenue, Hereford, Gloucester, Fairfield, Exeter and Dartmouth Streets and by Boylston and Newbury Street, will be cleared and redeveloped as a mixed housing and shopping scheme. It seems improbable that this property can remain extant on the completion of the Prudential Center, with the resultant enormous increase in land values.

The importance of these five blocks as a redevelopment area is further strengthened upon examination of the present commercial trends in Boston. The retail centre of Boston is now located in an area of 70 acres, less than 1% of the total land area in the crowded downtown area, using Washington Street as its backbone. Because it is surrounded
by the financial district, well consolidated office and publishing districts, the Boston Common etc, there has been no outlet for the natural expansion required over the years. As a result, the normal Boston shopping day is one of extreme congestion, with shoppers pouring over into the streets, which are barely wide enough for the cars alone, non-existence of adjacent parking facilities and, in general, chaotic conditions which have been instrumental at least in part, in the trend toward suburban shopping centres. Expansion within the area being impossible, the retail district has already begun to move west, leaping the Common, along Boylston Street and Newbury Street in the direction of Massachusetts Avenue. At present, these stores are comprised mostly of exclusive shops and fashion services, but eventually this must become a broader, more comprehensive type of shopping area.

At present this shopping area extends as far as Copley Square. Between Copley Square and Massachusetts Avenue, there is on the one side the railroad yards (Prudential Centre Site) and on the other side a heterogenous collection of wholesale merchants, dealers, offices, commercial schools and small shops. The general tendency is a marked depreciation in the quality of development towards Massachusetts Avenue.

The resulting redevelopment.

Under the discussion of the present land use pattern of the area, it was discovered that there was an increasing trend towards the
development of Back Bay into a student residential area. Theoretically any future housing development should follow this trend. In reality, the erection of the Prudential Center would make any such development impossible. The resulting high land values of the redevelopment area suggest a form of development designed to give maximum rental returns.

Thus a large portion of the redevelopment must be commercial, providing not only consumer shops for the residential development in this area and the adjacent Prudential project, but adequate provision for the expansion of the luxury shops of Newbury Street and Boylston Street. It was mooted in the Prudential plans that a large restaurant would be built. This idea has been abandoned.

In view of the large number of office workers who will be employed in the office tower, the provision of restaurant and cafe facilities also seems possible. A further commercial possibility is the formation of an entertainment centre in some part of the scheme. There is a small nucleus of cinemas and bars on Massachusetts Avenue serving a densely populated area. An entertainment centre in this scheme would cater for the residents in the redevelopment area, the Prudential Centre area and the residents in Back Bay generally.

The residential development must necessarily be of a medium-high rental nature. It is not intended to duplicate the luxury apartments of the Prudential scheme, but to make provision for the numerous office workers and their families employed in the Prudential building. There should be an effort to give individuality to the
dwellings.

The third important factor in the scheme is the provision of adequate parking facilities. It is illogical to assume that the residents of this area will be able to use the Prudential parking facilities. Not only will the Prudential facilities be in full use during the daytime, but the mere necessity of cross traffic along Boylston Street would create chaotic traffic conditions.

City Planning Board Proposals.

It should be mentioned at this point that the City Planning Board of Boston have prepared a tentative redevelopment study for the area under consideration. Briefly, the proposals in this scheme were to abolish Newbury Street between Massachusetts Avenue and Dartmouth Street and create an overall block between the street at the rear of the Commonwealth Avenue terraces and Boylston Street itself. In each street block residential apartments are provided, varying in height from 6-8-12 storeys, with parking garages and shops at ground level. The scheme would still be bisected by Exeter, Fairfield, Gloucester and Hereford Streets. The type of apartments provided in this scheme were of a high rental type, comparable to those in the Prudential scheme. The other important feature of this scheme is the rebuilding and enlarging of the MTA and bus station, which is set back from Massachusetts Avenue, to provide better circulation and turning space for the buses.

The new traffic circulation proposals of the City Planning Board do not materially affect this project. The cross streets of Exeter,
Fairfield, Gloucester and Hereford still remain one way in alternating directions. This factor has been recognised in the design of the parking garages.

The most interesting feature of the plan is the proposal to abolish Newbury Street above Copley Square. Whilst this seems a radical and perhaps drastic step — this change is fairly logical. Newbury street is not a main thoroughfare in itself and its real importance is in the lower section — between Copley Square and the Public Gardens. Here the most expensive shops and restaurants in Boston are situated. Above Copley Square, the property materially degenerates. The City Planning Board is of the opinion that this property is in need of renewal or entire clearance.

Traffic

One of the major problems in this area will be the greatly increased volume of traffic on the completion of the Prudential Centre. Though the Prudential Centre has been planned with parking facilities for 5,000 – 6,000 cars and an additional ring road, Boylston street at its present width will only just cope with the increased volume of traffic. It is this factor that indicated a need for separate parking facilities on the opposite side of the street. There would be small object in attempting to rely on the Prudential facilities alone, necessitating cross circulation of traffic.

Aesthetic considerations.

A visual problem in the redevelopment project is the satisfactory relationship with the Prudential Centre. Two critical factors are established. There is the problem of scale. The design proposals
for the Prudential Centre ignore the surrounding environment. For economic reasons it was necessary to build extremely high buildings, out of all proportion to the surrounding buildings in the area. Thus the adjacent redevelopment is extremely important. The buildings in the redevelopment area must act as a visual breakdown between the gargantuan concept of the Prudential scheme and the very human scale of the 19th Century Back Bay terraces. It would be foolish therefore, to merely create a development project of the same scale as the Prudential, since this would anihilate the very character of Back Bay. On the other hand, to merely reproduce the same scale of the terraces, would be to lose any visual dominance in the scheme.

There is, too, the problem of levels. It is proposed in the Prudential Centre plans to raise the whole project on a platform some 18'0"" above street level, with parking beneath this platform. Thus, on this side of Boylston Street, there will be a long continuous wall. Obviously, if the pedestrian areas of the Prudential Centre are to be linked with the pedestrian areas of the redevelopment project, then the latter too must be raised above street level. The necessity for providing additional parking areas on this side of Boylston Street has already been discussed. Executed in the literal sense, this proposal would transform Boylston Street into a continuous and dismal canyon. The problem here is to create variety and interest at street level, not only for people in vehicles going along Boylston Street, but for the occasional pedestrians. The alternative solution would be to omit the platform in the redevelopment project, though this would fail to solve the functional problems of parking and cross
circulation for pedestrians. Moreover, since the platform in the Prudential scheme seems inevitable, then it is logical to accept this and attempt some form of integration.
THE ARCHITECTURAL PROGRAMME

Taking into account these previous considerations, the redevelopment project evolves into three distinct sections.

1) Parking Facilities. These will be preferably at street level or below street level to serve the residents and shoppers in the scheme.

2) Shopping. There is considerable opportunity for commercial expansion in the area. The first proposals for the Prudential Centre included a comprehensive shopping centre which contained among other things a large restaurant. This has been radically reduced in size, though the architects state that they consider it will now be inadequate. Thus, if only to provide adequate shopping facilities for the residents in the Prudential scheme, some provision should be made in the redevelopment project.

Moreover, the Prudential Centre is bound to attract large crowds of workers and shoppers from all over Metropolitan Boston, and there is this possibility that the area may become the commercial centre of Boston.

In this section of the programme various types of commercial development are indicated. There should be consumer shops for the residents in the redevelopment area and the Prudential area. These would include drug stores, cleaners, grocery stores, supermarkets etc. Another type of commercial development would be in the form of speciality and fashion shops and perhaps a department store. This would cater for the shopping crowds coming into Boston as well as for the office workers in the area. Again, restaurants and cafes are desirable.
3) Residential Development. It has already been discussed how there is a great need for additional housing in the area. The luxury apartments of the Prudential scheme are designed to attract the executive class, and encourage a return to city dwelling. If this idea succeeds, then one could well provide medium rental family accommodations in the redevelopment project for the office workers in general. To make this venture succeed financially, a minimum density of 100 persons / acre is desirable.

There is also a fourth possible type of development. Since the redevelopment area is bounded by the densely populated Back Bay area, the Fenway and the New Prudential Centre, there is a good basis for the provision of an entertainment centre. At present, the entertainment centre of Boston is situated downtown, between Boylston and Tremont Streets. In this area, such facilities as community centres, a theatre, pubs, cafes and night clubs could form an interesting nucleus in the scheme, serving several areas.
SOLUTION

Visual. The major visual problem is to relate the redevelopment project to the surrounding areas. The first step is to raise the project on a platform, with parking beneath. This must then be integrated with the Prudential scheme. The two platforms on either side of Boylston street will be linked at intervals by pedestrian bridges - generally 18'0" above street level. The redevelopment project will be divided into five street blocks - each block linked at platform level by pedestrian bridges - and there will be an upper level promenade along Boylston Street.

In the 1st block, between Massachusetts Avenue and Hereford Street, will be the remodelled MTA and bus station. Access from Massachusetts Avenue will be through the MTA station and directly onto the platform. At this level will be shops and a youth centre. The 2nd block, between Hereford and Gloucester Street will also have shops at platform level and a nursery school will be provided.

The most important block visually will be the third block between Gloucester and Fairfield Street. The Plaza of the Prudential Centre will be linked with a plaza in this block by two pedestrian bridges and a theatre will be planned on the axis of the Prudential tower. The bridges will lead directly across the plaza to Commonwealth Avenue, where the terraces will be broken, forming a small garden at street level on Commonwealth Avenue. This block will be the most exciting - containing cafes, clubs and so forth grouped round a square. At night, a planned lighting and advertisement scheme is designed to attract people from the surrounding areas. The 4th and
5th blocks will have greater emphasis on fashion and speciality shops and this is especially applicable to the 5th block where there will be an attempt to continue the atmosphere of lower Newbury Street. The platform in the 5th block will not be carried across the complete width of the block, but a small plaza at street level will be formed round the Old South Church, with ramps up onto the platform.

In each block openings will be formed in the platforms onto garden courts at street level. This is to provide interest at platform level, to break the monotony of the paved surfaces, and also to create interest at street level, especially in the cross streets of Hereford, Gloucester, Fairfield and Exeter. Diversity at street level will also be obtained by introducing car showrooms, gas stations, and the lower floors of department stores. The blank walls of parking garages will be avoided wherever possible.

The only major break in the Commonwealth Avenue terraces will be the garden at the rear of the entertainment block, providing direct access to the Prudential Centre. At certain other points along Commonwealth Avenue, pedestrian bridges will be formed through breaks in the terraces, linking the Back Bay area with the redevelopment project and the Prudential Centre.

The housing scheme in the redevelopment project will not be in the form of monotonous single slab blocks, but continuous blocks forming internal squares in each street block. The housing units will be raised on pilotis, with the shops and cafes at platform level beneath, and with horizontal access "streets" at each alternate floor.
Vertical access will be strategically placed and will be continuous from the parking garages up. In a former stage of the project design, it was planned to have a totally continuous system of housing units across the five blocks. Visually, this proved too overwhelming. It is proposed therefore, to effect continuity in the street blocks by making the housing units form enclosures. They are so planned, however, to avoid very close proximity and consequent loss of privacy. Along Boylston Street the housing units will be parallel to the street in relatively short lengths. The major unifying element in the project will be the platforms and promenade.
ACCOMMODATION

The Accommodation may be summarised thus:

Street Level.

Parking:

Columns on a 30'0" module. Alternate 30'0" wide access ways and 30'0"x 30'0" parking lots (3 cars/lot)

According to the 1958 NADA figures, the largest overall dimensions of an American car is 229" overall length (Lincoln Continental) and 81" overall width (Mercury, Imperial).

The average is 213" overall length and 78" overall width.

Thus a space 10'0" wide x 30'0" long should be adequate for the largest cars. It should be stressed that this area does not include turning or maneuvering space, which is allowed for in the 30'0" wide one-way traffic lanes. The parking will be at two levels. In the lower part of Boylston Street, there will be a parking garage at street level and one above street level. In the upper part of Boylston Street there will be a parking garage at street level and one above street level. (see sections)

In the first Block (Mass Avenue and Hereford St) 170+170 cars

second block 148+160

third block 180+180

fourth block 200+200

fifth block 120+120
ACCOMMODATION

Street Level

Block 1 (Mass Ave and Hereford St)

MTA and Bus Station (remodelled) including
bus parking area 60,000 sq ft
Police and Fire Station (remodelled) 15,000 sq ft

Block 2 (Hereford St and Gloucester St)

Car showrooms (max. 80' depth) three at 8,000 sq ft
one at 4,000 sq ft

Block 3 (Gloucester St and Fairfield St)

lower floor of restaurant 5,600 sq ft
lower floor of community centre 9,200 sq ft
lower floor of club 2,500 sq ft

Block 4 (Fairfield St and Exeter St)

lower floor of department store 30,000 sq ft
shops or showrooms (max. 80' depth) seven at 4,000 sq ft

Block 5 (Exeter St and Dartmouth St)

fashion shops (max. 80' depth) three at 4,000 sq ft
offices 4,000 sq ft

Also at street level: Vertical access units (staircases and elevators)

300-400 sq ft

service elevators to shops 400-500 sq ft
ACCOMMODATION

Platform level

1st Block
- MTA Station and offices: 40,000 sq ft
- consumer shops, tenants stores etc: 15,000 sq ft
- Youth centre: 10,000 sq ft

2nd Block
- Nursery School for tenants children: 15,000 sq ft
- consumer shops, tenants stores etc: 20,000 sq ft
- Pub, Cafe: 8,000 sq ft

3rd Block
- Theatre (site area): 36,000 sq ft
  (floor area): 52,000 sq ft
- Community Centre (2 floors): 7,500 sq ft
  + 7,500 sq ft
- Night clubs, cafes, pubs etc: 10,000 sq ft
- Dance Hall: 7,000 sq ft
- small club cinema: 3,500 sq ft
- Main Plaza including clock tower and viewing platform: 30,000 sq ft

4th Block
- Department store (upper floor): 10,000 sq ft
- Supermarket: 10,000 sq ft
- Speciality shops: 20,000 sq ft
- consumer shops: 8,000 sq ft
- cafe, restaurant († terrace): 6,000 sq ft

5th Block
- Art Gallery: 5,000 sq ft
- Fashion shops: 8,000 sq ft
- Booking, travel agencies: 5,000 sq ft
- Cafes: 3,000 sq ft
ACCOMMODATION

Upper Level

Housing

The precise accommodation in the housing blocks is discussed later.

Below is given an overall estimate of the accommodation and net densities.

Blocks 1, 2, 4 and half of 5 with boundaries taken mid-way across Boylston Street, and mid-way across the Old South Church plaza, are provided with housing. This gives a total approximate area of 900,000 sq ft. or approx 21 acres (94,760 sq ft).

The net accommodation in the housing blocks is given as 20 people total vertical height per 30'0" horizontal module (2/15' x 30' structural modules). The total number of horizontal modules is 130. Therefore the number of people accommodated in the housing scheme is 2,600. The net density will therefore be 124 persons/acre.
Structure.
The structural system is essentially simple. The whole project is planned on a 30'0" square module, with lesser modules of 180", 144", 108", 84", 72", 36", 18", 9", 3".
The parking garages which form the platform of the main structure are on a 30'0" column grid of reinforced concrete stanchions and beams, with infilling R.C. panels using high tension steel. These columns continue through the slab at selected intervals to form the pilotis of the housing units. At the base of the pilotis is a ring beam which supports the alternate pilotis of the housing units, thus forming a 15'0" X 30'0" structural frame. The pilotis support transverse precast structural beams for the shops etc. These latter are of lightweight frame construction using lightweight decking between beams. The frame of the housing units is in situ reinforced concrete using high tension reinforcement steel. The vertical shafts for the elevators, fire escape stairs and main ducts are in situ reinforced concrete and are independent of the main structure. The bridges across Boylston street linking the platforms of the Prudential Centre and the redevelopment project are precast post tensioned beams. The choice of a precast system is to avoid any serious interruption in traffic flow.
item which is one of the keys to financing, and the key to the liberation of the mother of the family. At ground level, in a real “green belt”, are “the sports that belong near the home” (football, basketball, tennis, bathing, strolling, etc.). The primary schools are accessible by means of the pedestrian paths, excluding vehicular traffic. Nurseries are on the roofs of the Unites; the primary schools, the gardens for botanical studies and the juvenile workshops are located in the green.

... Here is something that has been voted for by a well informed municipal council, animated by civic pride—thus preparing the transformation essential for modern urbanism: the exodus of large cities and the beginnings of a linear industrial city. (“Les 3 Etablissements Humains”, Ascoral)
Plan d'un couple de deux appartements types pour famille de deux à quatre enfants.
Les deux appartements sont répartis sur trois niveaux de plancher.
Au niveau intermédiaire passe la rue intérieure donnant accès à gauche à l'appartement type supérieur dont le niveau supérieur passe au-dessus de la rue intérieure, à droite à l'appartement type inférieur dont le niveau inférieur passe sous la rue intérieure.

A pair of apartments, each for a family with 2 to 4 children, distributed on three different levels. Both apartments have their entrance on the interior corridor at intermediate level. The higher level of the apartment to the left reaches above the interior corridor throughout the whole depth of the building. The lower level of the apartment to the right lays accordingly beneath the interior corridor.

Plan eines Wohnungspaares für Familien mit zwei bis vier Kindern. Die beiden Wohnungen sind auf drei Etagen verteilt. Die innere Strasse liegt im Mittelgeschoss (10); links Zugang zur Wohnung 'Type supérieur', deren obere Etage sich oberhalb der Strasse befindet; rechts Zugang zur Wohnung 'Type inférieur', deren untere Etage unterhalb der Strasse liegt.
Housing at Hulme, one of the seven-storey maisonette blocks, showing the north (proposed) and side elevations of one of the same blocks and side elevation of block of two-storey flats.
THE HOUSING PROJECT

This thesis examines the design of the housing units in greater detail than other aspects of the scheme. The original impetus for the design of the redevelopment project was caused by the discovery of the urgent need for additional housing in the area. The whole scheme is dependent upon the satisfactory resolution of this section of the problem. Thus the presentation of the thesis is in two sections. The major section deals with the redevelopment project as a whole, and its satisfactory visual and three dimensional integration into this part of Boston, and the minor study is a detailed analysis of the housing requirements.

The established criteria for the housing design are:

1) Medium rental apartments.
2) Both family and single apartments.
3) Greatest possible variety in internal planning.
4) Greatest possible number of combinations from basic plan.
5) Access on alternate floors only to give greater privacy.
6) A fixed structural grid of 15'0" X 30'0"
7) Apartments to be two storey, using complete depth of block on alternate floors.

PLANNING

With the exception of one housing block, the apartments are planned as ten storey blocks.

Each block is raised on pilotis with the ground level (1st floor) left free for shops, entrance halls, elevator and duct shafts, play areas and covered walks.

The internal planning of the blocks has been influenced by Le
Corbusier's designs for the Marseilles and Nantes-Rez Unités, and also by the London County Council's designs for the slab blocks at Hackney.

Access is at alternate floors (3, 5, 7, 9th floors), and elevators stop only at these floors. Emergency staircases open at every floor.

There are four basic types of apartments, though these plans allow modifications and combinations.

The Access system is in the form of very wide balconies or 'streets'. Entrance to the apartment is from the street, through a small entrance porch, protected by a screen. None of the apartments have windows overlooking the 'street'.

At 3rd floor level are single apartments (type D) (1 or two persons).

At this level is a kitchen and dining area. There are internal stairs down to a bedroom, living area and bathroom. Balconies are provided at this level (2nd floor). At 2nd floor level the apartment occupies one 15'0'' wide structural bay and the total depth of the block.

At 5th floor level the plan is more complex. (the middle five floors - 4, 5, 6, 7, 8 are composed of interlocking units). Access at 5th floor level alternates into type A (2/3 persons) and type B (3/4 persons).

In type B, entrance is into a kitchen and dining room, occupying a 15'0'' bay and internal stairs leading down into a living area, three bedrooms and a bathroom. At this level (4th floor) the apartments occupy the full depth of the block and two 15'0'' bays. Access at 5th floor level into type A is into a kitchen and large living/dining area, and internal stairs up into two bedrooms and a bathroom (6th floor), occupying the full depth of the block and one 15'0'' bay.

At 7th floor level, access is into type A apartment with internal
stairs DOWN into bedrooms and bathroom, occupying one 15'0" bay at 6th floor level. At 7th floor, then, the pattern reverses. Also at 7th floor level is access into type B apartment, with internal stairs UP into living space, bedrooms and bathrooms (8th floor) at 8th floor level, type B apartments occupy two 15'0" bays. At 9th floor level access is into type D apartments with living area and kitchens at that level and internal stairs up to the 10th floor with bedroom bathroom and living area.

It is possible to alternate or substitute type C apartments for type D, without any other radical planning change. In type C access at 3rd and 9th floor levels is onto a garden terrace with stairs down (2nd floor) or up (10th floor) into an apartment occupying the full depth of the block and one 15'0" structural bay and containing a bedroom living area, kitchen and bathroom.

Balconies have been provided wherever possible, even though this adds appreciably to the cost. As well as providing a necessary form of sun protection, they also provide weather protection during the winter, situated as they are, in an exposed position.

STRUCTURE

Note: Since the author is not well acquainted with American building practice, the materials and methods described below are applicable to British practice.

The structure, which has been mentioned previously is a simple reinforced concrete frame with structural bays of 15'0" X 30'0". As far as possible this is the only major "wet" or in situ construction. The use of a precast prestressed frame would be prohibitively expensive. The balconies
and their supporting structure will be precast concrete members with a fairfaced finish. Floor units are 6 or 7" precast Seigwart beams spanning 15'0" between beams. External wall units will be prefabricated with extruded aluminium frames and sandwich panels formed of 1" plasterboard, 2" cavity, 3" holoplast panel faced in a neutral finish. A more expensive, but more permanent finish, would be an additional 1/4" roughcast glass external panel. The object in using such expensive materials is to reduce maintenance costs to a minimum. An alternative to the holoplast/glass panels would be the use of more economic precast concrete panels. Windows will generally be 1/4" plate glass in extruded aluminium frames with horizontal sliding sashes. Balconies will be formed of precast concrete beams with aluminium sub-frames and 1/4" wired glass. Internal staircases will be 3" reinforced concrete and cantilevered from the 9" cavity wall (precast concrete interlocking slabs). The 9" party wall will be supported on the transverse beams of the main frame at 30'0" bays. The roof will be 3 ply bitumen felt with spar finish, 3" lightweight screed laid to fall, 1" cork insulation on precast 6 or 7" seigwart beams.

Expansion joints will be provided at every 8th structural bay.

FINISHES.

Floors will be 1/4" Dunlop vinyl thermoplastic tiles in the apartments. These will be laid on screed on a 3/8" Fiberglas insulating quilt, laid between the screed and the precast floor beams. Internal partitions are 3" breeze block or prefabricated timber frames of plasterboard, blockboard and glazing. Ceilings will be fibrous plaster on the soffits
of the precast beams. Bathroom's and WC's will be entirely tiled in Pilkington's Vitrolite. Externally balconies will have a 2" Paropa paving surface on the concrete slabs. The 'streets' or access balconies will have 3" asphalt laid to fall or 2" paropa paving. The gable walls of the housing blocks will be 8'9" X 3'0" braced precast concrete slabs externally, 3" clinker blocks, 3" cavity, 3" internal clinker blocks. The necessity for external painting is avoided wherever possible.

SERVICES

Drainage. All vertical stacks are 4" diameter. The 4" horizontal drain increasing to 6" after two stacks have been collected, runs, falling at 1 in 80 above a false ceiling under the 2nd floor to a duct next to the elevator shaft. From here it descends to ground level (parking garages). WC'S, baths and basins are anti-siphoned, into a 2" vent pipe. kitchen sinks are not anti-siphoned.

Rainwater. Balconies are drained by 2" copper pipes. These are joined above the false ceiling under the block and run into the duct by the elevator shaft.

Cold water. The main rises in a duct by the escape staircases to the storage cisterns on the roof. Branches run in the false ceiling and risers go up each duct wall to serve kitchen sinks.

Ordinary cold water supply is run in the roof duct and descends in the duct wall serving basin, bath and WC.

Hot Water. Hot water from a ring main enters a booster chamber by the elevator shaft. The heating main rises from the pump chamber to the roof and runs along the roof in a duct. At every other duct
wall a descender runs down to serve gilled tubes in convector casings beneath the windows. The hot water primary flow also rises to the roof, runs in the duct and descends every duct wall to serve the coil in the indirect cylinder of every apartment. Ventilation. Two systems are provided for the internal WC's and bathrooms and for drying cabinets. The bathrooms and WC's have an extract of 750 cu ft an hour. Air is extracted into a 6" X 2" shunt duct and then into a commonrising duct which increases in size up the block. These are collected in an increasing sized horizontal roof duct. The horizontal duct rises into a ventilation chamber above the elevator motor room. The drying cabinets have a similar system but with a fresh air inlet at the bottom. Boiler House. Three oil-fired burners rated at 12,000,000 BTU's each are provided in a central boiler house in each street block. The heating method is a low pressure accelerated return system. Flow and return run side by side. The pipes are steel tube with welded joints, buried in the concrete site slab.
CONCLUSION

The main objective of this thesis has been to relate a comprehensive development project to its adjacent and often complex areas. In this particular instance, there was an additional complication in the existence of an adjacent redevelopment project. This latter design has virtually ignored the existing visual character of the area and thus the thesis design attempts to act as an intermediary balance. It has to act as a breakdown between the human scale of Back Bay and the 'heroic' scale of the Prudential Centre. It has been an attempt to design a 'rejuvenating' neighbourhood, designed to attract people back into the city in search of shopping, entertainment and, above all, dwellings. It has been to demonstrate that the pedestrian may be completely at his ease without banning the car from downtown areas, that there can be a separate system of vehicular and pedestrian traffic and still retain the liveliness of a downtown shopping street.

The major difficulty experienced in the execution of the design was the satisfactory relationship of the traffic circulation at street level, the shopping at a platform level and the housing above. The housing in its continuous slab form might tend to become oppressive, if proposed on any large scale.

The final goal aimed at is to achieve a sense of Place, habitat, which is to be found in many smaller towns, but rarely in the large city.

The centre should then be organically alive, to which the citizen automatically gravitates and where the visitor on entering, will have a sense of having arrived.
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BIBLIOGRAPHY. continued


Note: the reference works are listed in the order in which they were used during the preparation of the report and design.
Boylston Street - downtown direction

view at entrance from Mass Avenue

view at junction of Hereford

view at junction of Gloucester

view at junction of Fairfield

view at junction of Exeter