Short title

THE CLUSTERING OF SKYSCRAPERS

THE CLUSTERING OF SKYSCRAPERS WITH SPECIAL REFERENCE TO MONTREAL

by

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PREFACE

I wish to thank the people who gave me of their time during the summer of 1964. Charles Blessing, Director of Detroit's City Plan Commission, called my attention to the clustering of skyscrapers so pronounced in Detroit and showed me his photographic slides that demonstrate this phenomenon and emphasize its importance. Sam Spatter, of the Pittsburgh City Planning Commission staff discussed with me the planning problems of the Golden Triangle and George Anderson, of the same staff, discussed the problems of urban design. In Toronto, K. Davies, of the Metropolitan Planning Board gave me a general view of the transit planning there, and G. Fryer, of the City of Toronto Development Corporation, introduced me to the aims and problems involved in revitalizing that city's central area. In Chicago I had the opportunity to talk about transportation planning with J. J. Howes of the staff of the Chicago Area Transportation Study and, through Mr. Howes' generosity, to receive a copy of the Study.

To the planning departments of the various cities I am indebted for the base maps needed for the preparation of my diagrams showing the clustering of skyscrapers. Also, to these departments I am indebted for the printed information which they supplied me, especially to the Philadelphia City Planning Commission and the City of Toronto Planning Board. In both cases the publications were of unusually fine quality and of thorough scope.

I wish to express my gratitude to the staff of the library at McGill University for their help and their understanding and accommodations to my particular needs, to Mrs. Thomas Lyons for her diligence and dispatch in the preparation of the typescript, to my wife for her invaluable suggestions toward the clarity of my thinking as it is recorded here, and lastly to Professor Harold Spence-Sales for the help, the guidance, and the inspiration which have contributed so much toward the completion of this writing.

The choice of facts presented, the viewpoint taken, any opinions whose sources are not otherwise indicated, and the errors that may appear are my own responsibility.

INTRODUCTION

All experience combines the esthetic, visual experience with other levels of experience -- from the philosophical level to the practical level of how to find one's way around.[1] Thus, I have considered a broad range of information relating to the clustering of skyscrapers. The confrontation of a person with an object or an event will always involve:

1. The individual person.
2. The object or event to which he must adapt.
3. The environment which includes the individual, the object or event, and everything else that exists.[2]

The individual person's mental reaction to objects and events may be resolved into three components:

1. The affective component, concerned with the individual and the significance of the object or event to him.
2. The esthetic component, concerned with the individual's awareness of the uniqueness of the object or event.

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1 Philip Thiel, "A Sequence-Experience Notation for Architectural and Urban Spaces," Town Planning Review, XXXII (Apr., 1961), 45.

2 Iredell Jenkins, Art and the Human Experience (Cambridge, Mass., 1958), p. 14.

3. The cognitive component, concerned with the relationship between the individual, the object or event, and the environment.[3]

The affective component of one's reaction to urban spaces relates to the meanings which people associate with such spaces. These meanings are:

1. Circulation: the practical concerns of movement through spaces.
2. Use: the current activity taking place within spaces.
3. Association: past, present, or future relationships of events, personalities, or activities with spaces.
4. Expression: the quality, character, or feeling of spaces.
5. Philosophy: philosophical intimations or implications of spaces.[4]

Considered as it relates to the esthetic component of mental reaction to experience, a city may be viewed as an assemblage of solids and voids arranged in a rather loose pattern upon a floor, which may be a level surface or an irregular one having its own bumps and hollows. The relationship of solids to voids is basic; the variety of voids is as important as the qualities of

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[3] Ibid., pp. 17, 18.

[4] Thiel, p. 46.

the solids. The handling of voids is, in fact, one of the main aspects of urban design.[5] It is interesting to note the biological, or evolutionary, importance of the esthetic component, which lies in the fact that its distinguishing feature of imaginative apprehension aids the survival of the individual by stressing the uniqueness of each object or event so that he will not confuse that object or event -- that is, the reality with which he is confronted -- with ideas in his mind developed from previous experiences with similar objects or events. If the individual reacts to the ideas in his mind rather than to the uniqueness of the reality he is confronting, and if these ideas and the reality do not correspond closely, then his reaction may be inappropriate enough to jeopardize his chances for survival.[6]

The cognitive component, concerned with the relationship between the individual, the object or event, and the environment including them all, is generally based upon the assumption of order in the world.[7] Physical order in the world usually comes about because man consciously strives to create that order; people consciously invent physical things and give them forms in response

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[5] Gordon Logie, The Urban Scene (London, 1954), p. 20.

[6] Jenkins, pp. 32, 33.

[7] Ibid., pp. 28, 29.

to the functions which they are expected to fulfill. This process is that of design.[8]

I have begun this study with the consideration of the development of the skyscraper as a building type in Chicago and with the early development of the city itself, which resulted in the clustering of skyscrapers there. I have continued the first part of this study with a few notes on the important functions of large cities in our world today. Then I have proceeded to the specific concerns of the nature of the central business district, the related problems of urban traffic and uses of urban space, some solutions offered for these problems, and ideas about various kinds of urban forms, present and future. My emphasis here is strongly on the affective component of mental reaction to experience -- circulation, use, and association.

In the second part of this study I have considered five North American cities which represent a variety of metropolitan forms and populations: Detroit, Pittsburgh, Philadelphia, Toronto, and Montreal. During the summer of 1964 I visited all of them and obtained the data needed to map the clustering of skyscrapers. For the purposes of this study I have defined skyscrapers as all buildings ten stories or more in height. On the maps I have identified the locations of all skyscrapers, I have

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8 Christopher Alexander, Notes on the Synthesis of Form (Cambridge, Mass., 1964), p. 1.

placed then in two categories as to age -- before 1945 or 1945 and later, and I have identified them as to use. The classification as to age is a logical one, and not a difficult one to establish. The Second World War caused a long cessation in construction activity, and there were few buildings of contemporary architectural design before the war and many built after it. As an architect, my knowledge of building construction, materials, and architectural history has given me a reasonable claim for accuracy, although an occasional insurance company office building in traditional disguise may have thwarted me. Obtaining locations and heights of buildings was a matter of perserverance, I have set up eight categories of building uses. Governmental offices make up one category. A second category comprises all other offices and commercial uses, two activities which frequently are intermixed within buildings. For the same reason, manufacturing and warehousing are placed in the same category, for in central business locations, these uses often share the same building. Post office structures, in spite of their name, I have classed as warehousing, along with customs buildings, for the office functions involved are generally secondary to the shipment of goods. The remaining categories are hotels, apartments, hospitals, schools, and parking.

My original intent as I traveled to the five cities was to survey urban form and urban growth but I found that I was witness to a rebirth of the cities which I walked through in a new and different form. Out of the old urban tissue new buildings

were arising to new heights with new dimensions of urban spaces between them. I was curious to know how these new developments came about and, when I made a study of each of these cities, I was moved to consider this aspect of their planning as well as what their present and future plans were. In most cases, new growth did not come immediately after the Second World War, but only after a determined effort on the part of private or government interests to encourage central business district construction again.

In his State of the Union Message in January, 1965, President Johnson emphasized the size and the extent of American urban problems: "I propose that we launch a national effort to make the American city a better and a more stimulating place to live....An educated and healthy people require surroundings in harmony with their hopes. In our urban areas the central problem today is to protect and restore man's satisfactions in belonging to a community where he can find security and significance. The first step is to break old patterns...."[9] As I recall my observations of these five cities, I realize that here the breaking of the pattern has begun.

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9 "The New Architecture of U. S. Cities", by the Editors of Saturday Review, XLVIII (23 Jan. 1965), 15.

PART I GENERAL CONSIDERATIONS

EARLY CLUSTERING OF SKYSCRAPERS

GROWTH OF CHICAGO

When tall office buildings appeared in the larger cities of this continent in the 1870's and 1880's, the clustering of skyscrapers had begun. Although architects in New York had made early experiments with the new building type, the development of the skyscraper into its true form occurred in Chicago.[1] Let us see how this came about.

Community life began in Chicago with the arrival of immigrants attracted to the town after the defeat of the Black Hawk Indians removed the threat of attack in the region.[2] When the town was incorporated in 1833, its population was 350;[3] by 1850, 30,000; and by 1870, 300,000. Many factors were associated with such rapid growth: the opening of the Mississippi valley prairies to intensive agricultural exploitation; the resulting establishment of such related activities as grain milling and storage facilities, the grain exchange, financial institutions

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1 Thomas H. Creighton, American Architecture, (Washington, 1964), p. 12.

2 Bessie Louise Pierce, "Chicago," Enclyclopaedia Britannica (1964), V, 480.

3 Ibid., p. 483.

to lend money, and the meat packing industry; the Civil War boom in the manufacture of farm machinery and the development of the new industries of oil production and refining during this time; and the growth of the coal, cement, and lumber industries in the surrounding region.[4,5] The city was rapidly transformed from a canal to a railroad center. Ten trunk lines were focused on the city by 1856, only eight years after the first railroad had entered it; and with this importance as a railroad center, the leading industries of the city changed to car repair, car building, milling of iron rails, and boiler construction.[6] By the 1870's Chicago had become a manufacturing center and a central city through which much of the wealth of the middle of the continent flowed.

SITE OF THE CITY

Economic factors influenced the growth of Chicago, but so did the peculiar conditions of its site. Writing for Harper's Magazine in 1891, Montgomery Schuyler, journalist and

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4 Carl W. Condit, The Chicago School of Architecture, (Chicago, 1964), pp. 14, 15.

5 Christopher Tunnard and Henry Hope Reed, American Skyline, (New American Library Edition, New York, 1956), p. 90.

6 Ibid., p. 93.

architectural critic, has given us this amusing, but nonetheless discerning, description.

> To begin with a paradox, the feature of Chicago is its featurelessness. There is scarcely any capital, ancient or modern, to which the site supplies so little of a visible reason of being. The prairie and the lake meet at a level, a liquid and a plain of mud that cannot properly be called solid, with nothing but the change of material to break the expanse....In point of fact, Chicago is of course explained by the confluence here of two branches of the Chicago River. These have determined the site, the plan, and the building of the town... Streams, however sluggish they may be, so they be themselves available for traffic, operate an obstruction to traffic by land; and it is the fact that for some distance from the junction, the south fork of the river flows parallel to the shore of the lake, and within half a mile of it, which establishes in this enclosure the commercial centre of Chicago. Even the slightest obstacle interposed to traffic by the confluent streams, bridged and tunnelled as they are, has sufficed greatly to raise the cost of land within this area, in comparison to that outside, and to compel here the erection of the towering structures that are the more characteristic and the most impressive monuments of the town.[7]

THE GREAT FIRE OF 1871

The occurrence of the Great Fire was both an accidental and an inevitable factor influencing the development of the city. No one knows how the fire began. Two thirds of the buildings in the city were of wood frame construction -- recall that the balloon frame was invented in Chicago.[8]

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7 Montgomery Schuyler, American Architecture and Other Essays, William Jordy and Ralph Coe, eds. (Cambridge, Mass., 1961) I, 246, 247.

8 Henry-Russell Hitchcock, Architecture: Nineteenth and Twentieth Centuries, (Baltimore, 1958), p. 240.

The larger commercial buildings of the central area, though built with brick outer walls, had wooden floor and roof construction supported on timber or cast-iron columns. The chances, then, that such a conflagration would not occur were most unlikely. In forty-eight hours, fire almost completely destroyed the central area. A few of the buildings had iron beams, but in temperatures above 3,000° Fahrenheit the so-called fireproof construction of the larger buildings failed, and the molten iron of their structural members spread the fire wherever it flowed. However, in the next twenty years, when two and nine-tenths billion dollars (at 1963 prices) were spent to reconstruct Chicago, opening great opportunities to architects and forcing them to develop a new form and technique of building which would resist fire and which would place a large rentable floor area on a small and expensive site.[9]

DEVELOPMENT OF THE SKYSCRAPER

Before the introduction of the elevator, building height was limited by the "powers of ascention of the human leg." No hotel guest nor paying office tenant would climb higher than five stories. After the elevator removed this limitation, several factors related to the structure of taller buildings then limited building height. As buildings rose higher exterior masonry walls had to be thickened at their lower levels in order to support the increased weight of

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[9] Condit, pp. 18, 19.

masonry. Interior masonry partitions -- it was thought necessary to build these of masonry -- had to be thickened in the same way, and the taller buildings required more elevator shafts to serve their larger number of offices. Walls, partitions, and shafts used up an increasingly large proportion of the lower levels of the lower levels of buildings as they were then constructed, and the area so used was therefore not available for earning rental income. A point of diminishing economic returns then limited building height.

At the same time, however, hollow tile and terra cotta were being developed, first, as a means of fireproofing iron and steel structural members and, secondly, as a means of constructing fireproof floor systems to span between iron and steel beams and fireproof partitions. Although utilized extensively for the portions of buildings within the envelope of exterior walls, these advances contributed nothing more for almost ten years, when the next step was taken: the erection of a sturcture in which the weight of all the floors and walls was transferred, story by story, to the steel skeleton. Masonry wall thicknesses could then be no thicker than required for one-story construction. William Le Baron Jenney was the first to take this step in his design for the Home Insurance Company, built in 1884. The weight of most of its exterior walls rested upon the structure of its

iron and steel skeleton.[10] The next step, the reduction of both the area and the weight of the exterior walls to a minimum, was accomplished by Burnham and Root in their Reliance Building of 1894-95, where terra cotta serves to fireproof the steel structure and to keep out the weather. The rest of the exterior walls is glass.[11] The Home Insurance Company Building, the Reliance Building, and their successors are skyscrapers in modern form.[12] Their structure is a skeleton framework and the weight of their walls is transferred story by story to this structure.

SUMMARY

Several factors have led to the clustering of skyscrapers in Chicago: economic factors which caused the city to develop as a regional center and a manufacturing center; technical advances in building construction and mechanical equipment, which made the construction of taller buildings possible; and a constructed site, which made the clustering of skyscrapers necessary. "The skyscraper multiplied economically the usefulness of a small ground area to such an extent that man was, as a

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10 Schuyler, II, 427-429, 431.

11 Hitchcock, p. 245.

12 Ibid., p. 242.

result, able to transact business readily, economically, and conveniently."[13]

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13 John D. Randall, A Guide to Significant Chicago Architecture of 1872 to 1922 (Privately printed, 1958), p. 11.

THE IMPORTANCE OF LARGE CITIES

AS BRAIN CENTERS

Why do people come to the centers of large cities in such numbers that tall buildings must be built to house their activities? Writing about his "City of Tomorrow," Le Corbusier offers, in his own visionary and intuitive idiom, the explanation that the skyscrapers which he would place at the center of this city of his would contain the brains of the city, of the whole nation, and would symbolize the careful working out and organization upon which all activity would be based. Within these buildings would be concentrated apparatus for abolishing time and space -- telephones, cables, and wireless; banks, business offices, and the control of industry; finance, commerce, and specialization.[1]

AS CENTERS OF CONTROL NETWORKS

A quarter of a century has passed since Le Corbusier wrote of his "City of Tomorrow," and one wonders if tomorrow might not be hard upon us. Today the Japanese are facing with probably a greater urgency than most other people the problems

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[1] Le Corbusier, The City of Tomorrow and Its Planning, (London, 1929), p. 187.

of physical planning for large cities and are seeking to understand why such cities grow and what functions they perform. A group under the architect Kenzo Tange states that the activities of government, politics, finance, and production control -- which they refer to collectively as economic circulation -- have become more important than production. Economic circulation has come to be centered in cities whose population is of the order of ten million people, and the Second Industrial Revolution, now in progress, will increase the tendencies toward concentration. The many relationships between the multitudinous activities which comprise economic circulation are vital to its effectiveness and are almost completely dependent upon communication. Large cities contain an invivible communications network which has been produced by the technological revolution. People come to such places in order to be connected to this network. Thus Tokyo, for example, may be described as a hugh pivotal organization for the purpose of controlling everything in Japan -- values and ideals included -- and for linking Japan with the rest of the world.[2]

If Tokyo, then, can be described as a control center for Japan and a link with the rest of thw world, one may infer that smaller cities contain to lesser degrees and in various different

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2 Kenzo Tange and Associates, "A Plan for Tokyo, 1960," Japan Architect, XXXVI, (Apr. 1961), 10, 11.

combinations the various activities of economic circulation and act as control points for smaller areas of land and linkage points with other areas beyond their own.

OTHER BIOLOGICAL ANALOGIES

Speaking generally about modern cities, Oscar Handlin justifies our extending the analysis of Tokyo to cities of smaller population. He says that the modern city "... has become the heart, the brain, perhaps only the digestive system, of that great leviathan, the modern state."[3] In a similar vein, Robert Le Ricolais observes that the forum of today's city is not a plaza, but a nervous system which enables each citizen to come in contact with others and to conduct his business in the most efficient manner possible.[4] The communications network centered in large cities, then, explains their importance.

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[3] Oscar Handlin, "The Modern City as a Field of Historical Study," The Historian and the City, ed. Oscar Handlin and John Burchard (Cambridge, Mass., 1963), p. 2.

[4] Robert Le Ricolais, "An Aerial Mass Transit System," Journal of The Royal Architectural Institute of Canada, XLI (Apr. 1964), 61.

THE CENTRAL BUSINESS DISTRICT

PRESENT ACTIVITIES

The central business district of a city is best defined by the types of activities for which the space within the district is used. This was the conclusion which Murphy and Vance reached after investigating, in addition, other methods which made use of such information as land values, shop rents, volume of trade, population, vehicular traffic flow, and the counting of pedestrians. Land values do not reflect building height nor building value; shop rents and volume of trade do not reflect office use; the absence of resident population, which is typical of central business districts, is also typical of industrial areas; vehicular traffic flow may reflect the policy of a particular town to allow vehicles not destined for the central business district to pass through it, or conversely, of not routing them around it; and pedestrian flow may include people not destined for the central business district, such as factory workers on their way home.[1]

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[1] Raymond E. Murphy and J. E. Vance, Jr., "Delimiting the CBD," Readings in Urban Geography, ed. Harold H. Mayer and Clyde F. Kohn (Chicago, 1959), pp. 422-426, 428.

The activities whose main concentration occurs within the central business district are, generally speaking:

1. The retailing of goods and services for a profit.
2. The performance of various office functions.[2]

On this basis it was possible to list the various types of specific activities which are considered not to represent central business district uses of space. They are:

1. Permanent residences, including apartment houses and rooming houses.
2. Governmental and public functions, including parks and public schools as well as establishments carrying out more directly city, county, state, and federal governmental functions.
3. Churches, fraternal orders, colleges, and other organizational establishments.
4. Industrial establishments, except newspapers.
5. Wholesaling.
6. Vacant buildings and vacant stores.
7. Vacant lots.
8. Commercial storage.[3]

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[2] Ibid., p. 429.

[3] Ibid., p. 431.

By identifying the areas in a city where non-central business activities take place, one may obtain in the residual area a precise indication of the area taken up by the central business district.

It must be noted, however, that in actual fact all of the non-central business district activities do occur in various degrees and in various mixtures within central business districts, but their main concentrations do not occur here; and that they are considered to be either opposed to central business district activities, as in the case of permanent residences or industrial installations, or to be neutral, as in the case of governmental establishments.[4]

DEFINITIONS

Central business district will be used in this study to denote that portion of a city in which, first, the predominant activities are the retailing of goods and services for a profit and the performing of various office functions, and in which, secondly, the eight non-central business district activities do not have their predominant occurrence. The central business districts of all cities then will contain substantially the same array of activities and will therefore be comparable as, for example, linear measurements in inches may be compared.

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[4] Ibid., p. 430.

Central area will be used to denote the central business district combined with certain adjacent areas. In each city the nature and number of these adjacent areas will be peculiar to that particular city; therefore, the central area of Toronto, for example, will not be comparable to the central area of Detroit, although their respective central business districts will be.

PREDICTIONS CONCERNING FUTURE ACTIVITIES

The physical planner is concerned with the future as well as the present, as may be seen by considering the nature of the development plans which he prepares. Such plans are flexible and continuously adjusted arrangement of guidelines in which the patterns and trends of work, housing, transportation, and location of city services are estimated in broad but carefully calculated predictions of future needs.[5] Therefore let us consider three predictions of the types of activities which we may expect to find in the central business districts of the future.

According to Robert A. Futterman, a longtime student of cities from the viewpoint of the real estate investor, the central business district of a healthy city will be devoted to offices, government establishments, retail trade, and entertainment.

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[5] Ada Louise Huxtable, "Call for a Master Plan," The New York Times, 13 July 1964.

Many of the small businesses now found in cheap central business district locations will have moved to vacated and cheaper suburban quarters, a tendency which will help to develop sub-centers around the larger cities.[6] Futterman adds governmental functions to the central business district of the future, an activity which Murphy and Vance, writing in 1954, did not include. However, they did not consider it to be opposed to central business district activities, but neutral with respect to them.[7]

More recently, the editors of Architectural Forum have hypothesized that future central areas (they use the undefined term downtown center) will contain fewer kinds of activities, mainly shopping, offices, hotels, entertainment, cultural facilities, and living accommodations.[8] Here we have agreement with either Murphy and Vance, or with Futterman, or with both, as the separate items are considered, except that a new activity seems to be added: permanent living accommodations in or near the central business district, inhabited by people who will be wealthy and childless. The editors do not predict the return of the middle class. Here we have an activity predicted which is definitely

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6 Robert A. Futterman, The Future of Our Cities (New York, 1961), pp. 113, 114.

7 Murphy and Vance, p. 430.

8 "Downtown's Dramatic Comeback," Architectural Forum, CXX, (Feb. 1964), 99.

excluded by Murphy and Vance from the central business district itself. In the light of this exclusion, let us accept the qualification that living accommodations may be expected in the central area, as we have defined it.

A third prediction, published in Urban Land, holds that retailing activity in the central business district will decrease relatively and absolutely and will eventually consist only large department stores and furniture stores offering a greater selection of merchandise than stores in outlying locations; specialized smaller stores in need of the sales of a metropolitan area for their support; and stores serving the daytime working population of the central business district. Offices will be the main source of growth of the central business district, especially for the activities requiring many female clerical workers, such as headquarters types of operations. Regional headquarters cities will have more concentrated central business district growth than secondary cities, whose offices will tend to increase the size of suburban centers. New residential apartments will appear in or near downtown -- we may say in the central business districts and in the central area -- to the greatest degree in cities which are either very large, are regional headquarters, or are sector-shaped (here because the desirable suburbs are too far away).[9]

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[9] "The Future Function of Downtown Districts," Urban Land, XXII (Feb. 1963), 6.

This prediction calls our attention to the fact that retail trade and offices will remain the principal activities and that the increase in the number of offices will account for most of the growth. We may assume that the office functions of government are to be included. In its mention of residential apartments in or near the central business district, this prediction reinforces and clarifies the prediction of the editors of Architectural Forum in suggesting an activity excluded by Murphy and Vance.

FUTURE ACTIVITIES WHICH WILL LEAVE

Futterman predicts that many small business which are now occupying cheap quarters in the central business district will move to vacated suburban locations, which will be cheaper. Moves of this type will tend to hasten the development of sub-centers around the larger cities, a development already begun in New York's Brooklyn, Jersey City, and Newark, in San Francisco's Oakland and Berkeley, and in Kansas City, Missouri's, Kansas City, Kansas.[10] The editors of Architectural Forum predict that warehousing, manufacturing, and distribution will leave central areas and, we assume, central business districts,[11] where, according to Murphy and Vance, they constitute variant uses of the space. The prediction from Urban Land also holds

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10 Futterman, p. 113.

11 "Downtown's Dramatic Comeback," p. 99.

that distribution and wholesaling activities will leave the central business district, and manufacturing too, except for publishing and printing. Increased traffic congestion is given as the principal reason.[12]

OTHER CONSIDERATIONS

Two of the predictions mention the provision of facilities to accommodate traffic. Futterman notes that an expressway ring, garages, and rapid transit would be included in the central business district.[13] The editors of Architectural Forum, in greater detail, predict pedestrian walkways, bridges, and parks free of all vehicles except slow, short-distance public transportation, peripheral parking adjacent to the shopping core, and mass transit facilities.[14] These activities are not mentioned by Murphy and Vance, probably because, at the time of their research, such uses of space did not have their principal concentration within central business districts.

Future central business districts, according to the editors of Architectural Forum, should provide a varitey of experiences.

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12 "The Future of Downtown Districts," p. 6.

13 Futterman, p. 114.

14 "Downtown's Dramatic Comeback," p. 99.

The other predictions do not mention of this subject. The editors contend that the experiences of the success of "flashy" suburban shopping centers indicate that a similar type of environment would accompany commercial success in urban locations as well. In addition, the central business districts of the future should include such things as concert halls, basketball arenas, waterfronts with world's fair decor, and open spaces. All of these things would, they contend, also enhance success in retailing.[15]

CONCLUSION

We may conclude that the central business district of today includes spaces for the following activities:

1. Retailing of goods and services for a profit.
2. Performance of various office functions.
3. Hotels.
4. Entertainment.

In the future we are likely to see the following activities added:

1. Government establishments.
2. Cultural facilities.
3. Apartments.
4. Facilities to accommodate separated pedestrian and vehicular traffic, such as pedestrian walkways and bridges, expressways, and parking garages.

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15 Ibid., p. 99.

5. Slow, short-distance transit facilities and rapid transit facilities.

Certain activities will leave, while others will be represented by more specialized types, as, for instance, retailing, which will tend to be represented mainly by the larger department stores. Nevertheless, we will find much greater variety in the environment we now see.

TRAFFIC

COMMUNICATION

A most important aspect of a modern large city is that of a central control organization in the modern state -- its heart and brain, so to speak. There must then be appropriate channels through which this control may operate, something that will, to continue the biological analogy, function as a nervous system. These channels are, in fact, the communication and transportation facilities. By means of the communications system, some people are able to control other people: they are able to transmit information, influence, and orders to them. By means of the transportation system people and goods may move from one place to another. The "output" of one group may, then, become the "input" of another group, and the control organization is thereby able to function. For these reasons, the communication and transportation facilities are among the most crucial physical portions of modern large cities.[1]

PATTERNS OF GROWTH AND TRAFFIC

Tange stated that, as cities grow in size and population, more communication and more transportation take place.[2] The Chicago

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[1] Scott Greer, The Emerging City, Myth and Reality (New York, 1962), p. 40.

[2] Tange and Associates, p. 9.

Area Transportation Study stated that, as a city develops, more traffic is generated in proportion to the degree of development.[3] This directly proportional relationship between city growth and quantity of traffic has been taken to be axiomatic, a self-evident proposition. But this relationship is not axiomatic, for it is based upon an unstated assumption. Unaware of this assumption, we are greatly hampered in our ability to deal with the problems of urban growth. More properly stated, the so-called axiom would read: As cities grow in size and population along the present patterns of development, more transportation and communication take place. We must recognize that present patterns of development may change, or even be changed. If we should wish to guide development, we could deal with the traffic problem in ways quite different from what we have already used.

Albert Mayer has discerned the unstated assumption and has suggested that our urban traffic problems may, in effect, be the symptom of another problem, and that the difficulties with urban traffic may stem from the fact that we are trying to treat the symptom instead of the disease. The "disease," he points out, may be the fact that present patterns of development, which require that places of living, working, and recreation be located separate from one another, also require a large volume of transportation and communication

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[3] Chicago, City of, Cook County, State of Illinois, U. S. Department of Commerce, Chicago Area Transportation Study, I, (Chicago, 1959), 14.

between the separated places where these activities take place so that present cities can function. If future patterns of development can be evolved which, by means of a different spatial relationship of living, working, and recreation places to one another will enable us to reduce urban traffic, we will no longer be faced with the need to provide for volumes of traffic whose increase is inescapably connected with urban growth.

A helpful analogy may be drawn from the manner of dealing with the problems of floods. Early methods of flood control consisted of dikes and levees which, as greater floods broke or overflowed them, were carried more extensively up the rivers and built to greater heights. The floods became more severe because such methods left the waters with smaller channels through which to flow. Modern control methods take a different approach to the problem, working to diminish flood volumes by a variety of means: gully plugging, small dams and afforestation near river headwaters, and larger dams down water, all in addition to dikes and levees, but as a part of the total system. The concept of reducing volumes is central. It suggests concepts pertinent to traffic control.[4]

DEFINITION AND GENERATION OF TRAFFIC

The movement of people, of recorded information, and of goods for the purposes of communication generates traffic, as do

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[4] Albert Mayer, "Architecture as Total Community: The Challenge Ahead," Architectural Record, CXXXVI (July 1964), 160.

certain other forms of transportation. The term traffic in this study will be defined as it was in Traffic in Towns "to include the presence in towns of vehicles both moving and at rest."[5] The advantage of this definition lies in the fact that it interrelates the concepts of roads and parking facilities, which must be dealt with together in order that the communication and transportation needs of a modern large city may be met. The authors of Traffic in Towns go on to state that traffic is a function of buildings, because buildings are the places in which urban activities take place, and that a quantitative relationship between buildings and traffic may be obtained. In the Chicago Area Transportation Study a similar, but more general statement, is made. Travel within cities is the function of the kinds, amounts, locations, and intensities of the activities that generate the travel.[6]

The conventional reasoning, which requires various separate locations for the different activities of a large city, is well described in the Chicago Area Transportation Study. Industry must be placed near good transportation, businesses must be most accessible to their trading areas, and residences must be within their own particular type of favorable environment. A different kind of land is needed for each of these activities, each must be separated from the other, and people must then travel in order to move from one type

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[5] England, Minister of Transport, Traffic in Towns, (London, 1963) p. 38.

[6] Chicago, p. 13.

of activity to another.[7] The movement of persons and goods is necessary for separated land use areas to exist and to function.[8] We have built many cities along such lines. What has been accomplished? If desirable environment could be achieved for the different kinds of business, industry, and residence without lumping each of these in separated land use areas, if all of the activities of a city could be located in some different way, then we might be able to solve the traffic problem by preventing it from developing into a problem.

TRAFFIC AND LAND USE PATTERNS

Traffic and land use relate to one another in a different and less crucial way. By controlling the way in which land is used and the intensity of use, the efficiency of a transportation system can be preserved. The reciprocal relationship also holds. The locations of transportation facilities will determine to a great extent the pattern of land development; so the transportation system may be utilized as a means to obtain the desired quality of environment, be it for residential living or business productivity. We arrive, then, at the secondary objective of a transportation system. The prime objective is the obvious one of rapid movement of persons and goods within the limits of safety and economy.[9] The secondary

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7 Ibid., p. 13.

8 Ibid., p. 6.

9 Ibid., p. 2.

objective relates to an observation made by Alker Tripp that any town plan is, on inspection, found to be defined mainly by its road layout.[10] We may infer that the plan of a transportation system may determine the plan of a town subsequently built around that system. We have additional confirmation of the effects of the provisions for traffic within a town upon the environment in that town.

The layout of new cities and the adaptation of those which we have is a matter of design: that is, of actual layout and form of buildings and access ways to distribute traffic from one part of a city to another.[11] We may seek to reduce traffic flow by the design according to which we pattern and juxtapose the spaces in which the different activities take place or by accommodating a portion of the movement of persons on public transit, a method just beginning to be utilized although long realized.

AUTOMOBILES

We have become so use to the depredations of automobiles on the environment -- whose heinous effects may still be outweighed by their convenience -- that we are usually not aware of how serious the situation has become. We sacrifice safety to the needs of traffic

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10 Alker Tripp, Town Planning and Road Traffic (London, 1942), p. 37.

11 England, p. 31.

by accepting a far lower standard of safety from traffic deaths and injuries than we do in most other aspects of our civilization. We allow noise from vehicles to interfere with conversation, teaching, and other communication based upon sound; to lower office efficiency; to interfere with the enjoyment of towns and countryside; and to violate the privacy of our gardens. We take for granted the poisonous fumes and odors and harmful carbon dust generated by the internal combustion engine. Seas of parked cars flood all available urban land, destroying the view and staining the pavements with oil, and the larger-than-human-scale structures of highways and overpasses vitiate the scale of the urban landscape.[12]

Let us take the term <u>environment</u> to mean, as expressed in <u>Traffic in Towns</u>, a place free from the dangers and nuisances of motor traffic. This concept will be closely related with free pedestrian movement. Let us take the term <u>accessibility</u>, that is, ease to access for vehicle users, to mean the ability of vehicle users to move from one part of a city to another, or beyond, reasonably quickly, safely, directly with pleasant view, and with the opportunity to park their vehicle close to the final destination. We can then state that the main problem in the design of a city is to make large numbers of buildings accessible to large numbers of vehicles in a manner that achieves a satisfactory standard of environment.[13]

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12 Ibid., pp. 19 - 22.

13 Ibid., pp. 39 - 40.

TRAFFIC IN THE "CITY OF TOMORROW"

New York is an absurdity, Le Corbusier has commented, because the skyscrapers have increased the density of population excessively, but the necessary approaches to the buildings have not been provided.[14] Traffic becomes severely congested, and mobs of transit passengers elbow one another in constricted spaces. Intensive use of land requires generous provisions of means for moving people about. Le Corbusier was probably comparing the absurdity of New York with the rationality of his plan for a large city, the "City of Tomorrow," conceived in the 1920's, in which extensive provision for the movement of people was an integral part of the plan. Vehicular traffic is separated into three types: heavy traffic and loading is accommodated below ground level, the complex network of ordinary traffic is placed at ground level, and arterial traffic is raised overhead upon a rectangular grid of elevated roads with approaches spaced approximately every half mile. Streets, which accommodate ordinary traffic at ground level, are also laid out in a rectangular grid, and the distance between the streets in this grid is based upon the distance between subway stops, which is taken at four-hundred yards. Le Corbusier considered that four-hundred yards was a distance which people would be willing to walk, and one which related well to the speed of subway trains. The subway system

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[14] Le Corbusier, p. 184.

provides a network to serve the city, a suburban one-way loop, and a system of lines to provincial points, with each type of service at a different underground level. All systems converge in a station at the center of the city, and each skyscraper serves also as a subway station. In addition, the central station carries an "aerodrome" on its roof.

VOLUME OF TRAFFIC

Le Corbusier made complete provisions for traffic and transit in his hypothetical city, and he relates these provisions well to the rest of the plan. We would object to the aerodrome location today but as a field for helicopter taxi service, it might be satisfactory. We should object strongly to another feature of the plan, that would be a major shortcoming under the conditions of urban life today. The ordinary traffic of the 1920's, which would have proceeded at a stately pace and in discrete volume along the ground-level network of streets, would not have threatened the safety of pedestrians as they walked from the spacious, park-like open spaces on one side of the grand boulevards to the spacious, park-like open spaces on the other side. Under present traffic volumes, the degree of safety would not fall within civilized limits. Traffic control lights, reducing the speed of travel and, reportedly, ill thought of in urban France, would be necessary.

Beside the need, under present-day conditions, to make further provisions for pedestrians, a quantitative basis for the extent of the transit facilities and for the width, number, and spacing of streets and roads seems to be lacking. In the way that structural analysis of a building may alter the designer's original concept of its form, or even indicate that the original form is impractical or even impossible to construct economically, using the available materials and technology, so too a quantitative study of a scheme for a city may radically alter the form of the original plan. The development of quantitative understanding has come more recently. It would be interesting to know what information a quantitative analysis of the "City of Tomorrow," scheme would yield and what modifications would be indicated -- both under the conditions of traffic in 1920 and under those of the present.

Concern for pedestrians appears in 1942, along with some other new considerations, in the writing of Alker Tripp, who stipulated that road design should provide both for free and convenient circulation of vehicles and for the safety of both vehicles and pedestrians, and who suggested the following way of accomplishing these objectives. Classify roads into arterial, subarterial, and local, and make traffic considerations absolute for the first two classes, allowing no parking, no building frontages, and no pedestrians on them. On the third class of roads, the local ones, subordinate traffic to the needs of the fronting activities, of the

local population, and of pedestrians.[16] Within existing towns, arterial roads might be improved by the construction of two-deck arcades, which would separate pedestrians from vehicular traffic.[17] By constructing roads according to the proposed system of classification, many separated areas will be created by the paths of the arterial and subarterial roads, areas free of general traffic. Tripp names these areas precincts. Each one would have its own local road system and would be able to become a center of life and activity, free of noise and confusion. "We shall be getting back to Merrie England," he says.[18]

Although certainly having little desire to return to "Merrie England," Le Corbusier, in his 1945 plan for the rebuilding of the center of Saint Die, shows that he had also come to recognize the need to separate pedestrians from traffic. As in the "City of Tomorrow," the types of vehicular traffic are segregated, but not as extensively: an expressway through the city, a planned road system for slow automobile traffic, and some indication of provisions for trucks and unloading. A third system of circulation, which is always separated from vehicular systems and which crosses them by means of bridges or landscaped valleys which serve as underpasses, provides for pedestrians.[19]

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16 Tripp, p. 46.

17 Ibid., p. 68.

18 Ibid., pp. 75-77.

19 Willey Boesinger, ed., Le Corbusier: Oeuvre Complete 1938 - 46 (Zurich, 1950, Second Edition), pp. 136, 137.

More recently, Donovan Pinker has suggested that the vertical segregation within a city of pedestrian, transit, and vehicular movement from one another is the only solution of the traffic problem which will stand the test of time. The precinctual solution, which is horizontal segregation, is inadequate, he contends, for several reasons. There are few areas within a city which may be developed in a homogeneous manner, for economic and functional reasons; so there is no orderly way of arranging destinations so that horizontal segregation will function. Even the cost of constructing new streets of sufficient capacity to carry traffic around precincts would be excessive, let alone the fact that such a system if used for the central areas of cities, would use poorly a great deal of expensive land. Pinker's solution is to raise the pedestrians on walkways of their own fifteen feet above the ground, the level of the second floor; this is a cheaper and a more human solution, which still would allow for future construction of automobile grade crossings below ground level. Peripheral parking areas would serve to separate moving from stationary vehicles.[20]

ENVIRONMENT, ACCESSIBILITY, AND MONEY

The authors of Traffic in Towns carry Alker Tripp's notions forward and develop them, showing that the solving of urban traffic problems is similar to the solving of circulation problems within buildings. The network of roads functions like an arrangement of corridors, and the environmental areas may be compared with the

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20 Donovan Pinker, "Man Over Wheels-Downtown," Canadian Architect, VI (July 1961), 47-49, 52.

rooms which are served by the corridors.

> There must be areas of good environment -- urban rooms -- where people can live, work, shop, look about, and move about on foot in reasonable freedom from the hazards of motor traffic, and there must be a complementary network of roads -- urban corridors -- for effecting the primary distribution of traffic to the environment areas. These areas are not free of traffic -- they cannot be if they are to function -- but the design would ensure that their traffic is related in character and volume to the environmental conditions being sought. If this concept is pursued, it can readily be seen that it results in the whole of the town taking on a cellular structure consisting of environmental areas set within an interlacing network of distributory highways.[21]

Rough sketches of distributory highway systems are not difficult to devise; but when the details of road widths and intersections are calculated and the rough sketch modified accordingly, the result is apt to be a system which would use so much land, displace so many people and properties, and cause such serverance and disruption simply because of the widths of the roads themselves, that the original idea will be impractical solely on the basis of the amount of land required.[22] The preceeding observations are given in the form of a principle or law:

> Within any urban area as it stands the establishment of environmental standards automatically determines the accessibility, but the latter can be increased according to the amount of money that can be spent on physical alterations.[23]

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21 England, pp. 41, 42.

22 Ibid., p. 44.

23 Ibid., p. 45.

Although this principle is concerned with the improvement of existing areas, it applies as well to the design of new areas, although the expenditures would not necessarily be as great. In both cases the size of the primary road network is most strongly influenced by the number of private automobiles in the city which are driven to work. Conversely, if there is no restriction upon this peak-period use of vehicles, for purposes other than driving to work, then the proportion of persons who can drive to work is predetermined by the primary road network.[24]

ROLE OF PUBLIC TRANSIT

By North American standards the number of automobiles per thousand population in Great Britain is low, but that number is expected to double in the next ten years and to continue increasing after that time at a lower rate until it approaches the present North American ratio. In Great Britain the problem is urgent. There is, however, a general damand in both places for the unrestricted use of motor cars, and it is assumed that the greatest possible effort will be made in most cities to meet this demand. People who either do not own automobiles or whose automobiles cannot be accommodated on the road system, it is stated, must be taken to work on public transit.[26]

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24 Ibid., pp. 95, 96.

25 Ibid., p. 26.

26 Ibid., p. 95.

One may infer from Traffic in Towns that a city must solve its traffic problems by providing first for automobiles and other vehicles because the general demand requires that as many people be able to drive to work as the public budget and the standards of environment will permit. Such a state of affairs may be questioned. Many people would assert that, to the contrary, public transit should be favored in all but small cities, to the extent that the major investment in transportation should be in rapid transit virtually to replace the automobile, which is an efficient method of transportation in small cities only.[27]

How might a rapid transit system be built within an existing metropolis? Vertical traffic segregation is required. Observing how the Paris Metro has saved the city from traffic congestion for years, Robert Le Ricolais proposes an aerial type of rapid transit system to achieve the vertical segregation above, instead of below, ground level. A pattern of high towers would form masts to which the system would be moored and would also serve as interchanges and provide large volumes of usable building space together with automobile parking at their lower levels. The suspension system itself would consist of bridges spanning thirteen hundred feet and constructed of tension net tubes, pretensioned and following a parabolic profile. We can build such a system now.

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27 E. T. Rashleigh, "Observations on Canadian Cities, 1960 - 61," Plan Canada, III (1962), 64.

Such a transit system would serve to encourage the integration of existing, rather loose metropolitan tissue, rather than encourage the kind of disintegrative effect which highways have exerted upon cities, as they have on Los Angeles, for example.[28]

If a system of rapid transit is built to accommodate a part of the peak period (to and from work) movement of people, how may we be assured that this system will be used to such an extent that the roads will fill only to their planned capacity? Alker Tripp contended that the better the center city accommodations are made for traffic, the more traffic is attracted. Traffic congestion then becomes as severe as it was before the improvements were made, if not worse.[29] In the twenty years that have passed since he said this, the experience of more and more people will attest to the truth of his contention. If a road system is to carry the flow of traffic for which it is designed, and not the larger number which seem inevitably to fill it to the maximum level of inconvenience which the public will accept, then the public must either be prevented from exceeding or persuaded not to, exceed that design flow. Persuasion is more consistent with our attitudes in such matters, opening the theoretical, and perhaps practical, possibility that people might be attracted away from driving their automobiles to and from work by making the public transit system a faster, cheaper, and more pleasant way to make the daily trip.

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28 Le Ricolais, pp. 61, 62.

29 Tripp, p. 13.

A NEW PATTERN FOR URBAN GROWTH

The most far-reaching proposal would be Albert Mayer's: solve the traffic problem by developing policies which would operate to reduce the need for large volumes of traffic. A pattern of living and working locations arranged to eliminate traffic generation by mixing these activities rather than separating them, would be such a policy.[30] Although we would still have to accommodate traffic from portions of cities already built, we would not, at least, be adding to our problems as our cities grew. It is quite possible too, that the juxtaposition of working place and residence, in many cases, would be mutually less ogjectionable that our present patterns which place offices next to highways and residences next to highways.

SUMMARY

The conventional belief that more traffic is generated as a city grows is seen, upon examination, to rest upon the assumption that future growth will continue present urban forms. It may not and need not. The way large areas of different land uses are segregated from one another is responsible for the large volumes of traffic generated as people must move from one of these areas to another. Adopting patterns of mixtures of activities offers possibilities of controlling the volume of traffic flows. Traffic is defined to include

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30 Mayer, p. 160.

automobiles in motion and at rest. Automobile traffic and desirable environmental conditions are incompatible in most cities today.

Design for traffic should be based upon quantitative analysis of the traffic flow generated by buildings. A city should be designed for traffic as an architect designs a building, with areas of quiet environment separated from traffic as an architect separates rooms from corridors, types of traffic should be segregated -- in a city, pedestrians from wheeled traffic. The accessibility of an area to traffic is a function both of the standard of environment required and of the amount of money which may be spent to provide the needed roads and interchanges. Rapid transit may be provided to reduce the amount of automobile traffic for which a city must be planned. Traffic problems could be prevented from increasing, by planning urban growth so that workplaces and living places would not be far from one another.

USES OF URBAN SPACE

ACCOMMODATING CHANGES

Urban traffic problems, we have found, are closely related to the spatial pattern of urban activities -- land use. The common practices of zoning, which require large, separated areas for different activities, generate a flow of traffic between these areas in order for a city so zoned to function. Within the central business districts of most cities there is another circumstance closely linked to problems of traffic and land use: a pattern of streets and lots laid out for an original residential use of the land -- small lots, each with its own owner, and a street system designed to accommodate only light traffic. This early pattern of lots, streets, and land ownership persists when this land is put to central business use. Private builders usually find great difficulty in changing this pattern, for land assembly is a difficult and a costly job. As a result, the logical expansion of central business districts and central areas of cities is impeded by the dead hand of the past.[1]

Consider an example: the development of apartment buildings in an area of high population density such as is frequently found within the central areas of large cities. Apartment buildings

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[1] Rashleigh, p. 62.

are usually built in what has been a stable residential neighborhood. Since they require sites larger than most of the residential lots to be found in such a neighborhood, and since land assembly is a problem in itself, these apartment buildings usually displace first the old mansions, with their wide, deep lots. Building sites are selected for their individual merit, with no thought to the way in which the new buildings will relate to any over-all plan of the neighborhood, and the intrusion of new apartment buildings begins to destroy the desirable qualities of the neighborhood which brought the buildings there in the first place. Although the faults of high population density apartment areas are usually attributed to the fact that the buildings are designed to achieve a high density of population on lots designed for low-density occupancy, and to the additional complications of requirements for off-street parking,[2] these factors, it must be realized, are but a part of the problem. In more general terms, the problem is one of accommodating the old plans of cities to changes in usage.

The need to accommodate certain types of physical plants to changes in usage is well understood in our society. Industrialists and businessmen will replace a plant when it is no longer suitable for the functions which must be carried on in it. The dollar losses occasioned by an obsolete plant generate appropriate action. But when the matter under consideration is the physical plant of a city, a plant which is causing friction of space and movement to the

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2 Ibid., pp. 70, 71.

point where it is unhealthy, difficult, and expensive to operate, these same men will continue to recommend makeshift modifications that will not solve the problems. High taxes testify to persisting high municipal "production costs." Albert Mayer, in putting forth these views, suggested that we are dedicated to a point of view which he calls "giantism," so that we think that making something bigger also makes it better. We add to our cities in a makeshift manner, but think that we are improving them because they become bigger in the process.[3] (One might say, with apologies to Mies, that our attitude is one of "more is more.") The inconsistencies must be exposed. These principles, which apply to a part of the physical structure of a city -- the industrial plant, for an example -- apply as well to the whole physical plant of a city.

HUMAN NEED FOR A VARIETY OF EXPERIENCES

If the physical plants of cities could be made readily to accommodate themselves to changes in use, and if the interrelated problems of land use and traffic had been successfully solved, what would be the next thing that we should expect of urban environment? Again, we might look at existing cities to see what is lacking. Serge Chermayeff and Christopher Alexander would probably hold that what many cities need most is a way to provide variety in the daily experience of the people who live and work in them. Modern men and

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[3] Mayer, p. 161.

women need change. Their existence is ridden with monotony and anxiety, they have few of the opportunities which were available to people in pre-industrial societies to establish continuous personal identity with other people, things, and nature; and they have even lost the possibility of escape from the crowd into a place of privacy and rest.[4]

Speaking about the psychological needs for variety in our environment, Professor M. D. Vernon states that normal consciousness, perception, and thought can be maintained only in a constantly changing environment. Where there is no change, a state of "sensory deprivation" occurs; the capacity of adults to concentrate deteriorates, attention fluctuates and lapses, and normal perception fades.[5] The more nearly invariable the environment, the greater the deterioration. Experiments conducted at McGill University have investigated the effects upon people in five days' exposure to a completely homogeneous and unvarying environment. Boredom, restlessness, loss of mental ability to concentrate, and visual and auditory hallucinations were experienced. Upon release from their incarceration, the subjects of the experiment experienced impaired perceptions of their surroundings. Objects seemed blurred and unstable, straight edges

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[4] Serge Chermayeff and Christopher Alexander, Community and Privacy, (New York, 1963), p. 79.

[5] M. D. Vernon, The Psychology of Perception, (Harmondsworth, 1962), p. 183.

looked curbed, distances were not clear, and sometimes their surroundings seemed to move and swirl around them so as to cause dizziness.[6] Admittedly, the experiments were concerned with an extreme case, complete lack of change in the environment, and our cities at their worst do not provide as monotonous and environment. But the fact that, just as we have grown accustomed to the depredations of the automobile upon our surroundings to the point where we are virtually insensitive to these depredations, so it is probable that we have also grown accustomed to the monotonous condition of our urban environments to such an extent that we are insensitive to the degree of sensory deprivation which has occurred, to the extent to which the processes of normal consciousness, perception, and thought have been impeded.

Part of the responsibility for a monotonous environment in the central areas of many of our cities may lie in the fact that most municipal administrations have narrow ideas about the functions of central areas, which are not thought of as places to enjoy, to relax in, or to look at. There are, of course significant exceptions, in which the municipalities are the central coordinating influences in the central area. But generally, laissez faire development is allowed and public institutions are poorly located -- sometimes land costs alone dictate where they will be placed. Vantage points are seldom provided. Natural ones, from which one might obtain a view

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6 Ibid., p. 180.

of the city or of its surroundings are not taken advantage of. Contact with nature is excluded. For example, how many cities next to water take advantage of any view of the water? London, Ontario, has excluded its view of the river from the end of Main Street; St. John's Newfoundland, will block its view of the water's edge at each cross street when an elevated truck access road is completed,[7] and the central business districts of Toronto, Montreal, New York, and San Francisco might as well be sited in the midst of an endless automobile parking lot for all the advantage that they take of the interest and beauty of the water's edge near by. The utilization of vantage points is just one example of the problem. One suspects that the limited viewpoint of municipal administrations reflects a similar viewpoint on the part of the voting population to which they are responsible, and all may be closely related to sensory deprivation.

ORGANIZING URBAN SPACE

Oscar Handlin has identified the organizing of space within cities as one of the three central problems in urban history. The other two, the creation of order among the inhabitants of cities and the adjustment of the human personality to its new conditions,[8] are primarily the concern of other disciplines, whose solutions to

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[7] Rashleigh, p. 62.

[8] Handlin, p. 3.

these problems are important and bear upon the physical planner's work, but are not his direct responsibility. The solution of the first problem, the organizing of space within cities, demands that we deal with the ways in which urban spaces are used and with the intensity of land use, both the direct concern of the physical planner.

How would Le Corbusier organize space within cities? He has set forth the following four basic general principles:

1. Decongest the centers.
2. Augment the center densities.
3. Increase the means of getting about.
4. Increase the amount of park and open space.[9]

How can one augment center densities and at the same time increase the amount of park and open space? This population must be concentrated in tall buildings. In this way we can organize urban space so that we can have more people in the central areas and more open space too. Increasing the means of getting about, that is, improving transportation facilities, will decongest the centers.

A more detailed list of requirements is given by Anthony Downs in a paper entitled, "The Future Structure of American Cities," which was presented to the Conference on Transportation by the National Academy of Sciences in 1960.

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[9] Le Corbusier, p. 170.

1. Clear obsolete structures.
2. Enforce building codes to make slum ownership costly.
3. Police for personal and property safety
4. Redevelop large block residential areas the size of high-school districts.
5. Redevelop in homogeneous blocks competitive with the suburbs.
6. Provide cultural facilities for central cities which serve all of the metropolis.
7. Provide transportation facilities to encourage and serve high density residential areas.[10]

Handlin's identification of the organization of urban space as one of the three problems in urban history implies the problem of reorganization of existing urban space and the planning of growth so that new urban space will be properly organized. Le Corbusier's and Downs' solutions attempt to deal with one of the problems which we have noted, the persistance of old patterns of lots and streets in our central business district in spite of changes from their original use and the fact that this persistence occurs at the expense of logical expansion and appropriate reorganization of urban space. We might profitably follow both men's solutions, for, except for the fact that both mention transportation facilities, they treat of different aspects of the same problem, and their notions are not

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[10] Greer, pp. 203, 204.

contradictory of one another. The way to do the job, according to Rashleigh, is by comprehensive planning, the only way in which the central areas may be improved. The groundwork of uniform restraint offered by zoning bylaws is inadequate. We must emphasize not restraint but more detailed direction of the growth of cities. By direction it would be possible to establish a design theme for central areas which would link their various elements and to develop an organized pattern for expansion.[11]

COMPACTNESS

Compactness is important in cities. The authors of Traffic in Towns urge compactness for the following reasons:

1. It reduces the lengths of journeys.
2. It makes diversity of services possible, also diversity of interests and contacts, and allows a wider choice of housing, employment, schools, shops, recreation, and cultural pursuits.
3. It makes maintenance easier for such secondary activities as restaurants, specialists shops, and service industries, which need to have a large clientele nearby.

It is not a matter of deciding between high density residential areas and low density suburbs, both of which are desirable in cities. It

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[11] Rashleigh, p. 63.

is a question of either maintaining or abandoning the degree of nearness and compactness which seem to add greatly to the richness and variety of urban life.[12] Keeping compactness in cities is consistent with Le Corbusier's principle: "Augment the center densities." In Traffic in Towns the needs for compactness are merely stated more clearly.

MIXING ACTIVITIES

In addition to compactness, a mixture of activities in the central areas may also be desirable in order to obtain use of certain sites continuously through the day and the evening, to allow linkages in functions between different activities (linkages which cannot be forseen), or even for the purposes of visual contrast. A pattern of activities which often develops naturally in a mixture has the following form. Several establishments in which one type of activity is performed are grouped in a cluster, and around this cluster of unmixed activities, mixed activities grade outward from the center to a high degree of mixture at a distance. There is nothing in the principles of design for the use of land which requires all uses of any type to occur in only one location, nor is there anything which precludes mixtures of uses.[13]

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12 England, p. 31.

13 Kevin Lynch, Site Planning, (Cambridge, Mass., 1962), p. 29.

If a mixture is desirable, one then asks how a pattern of mixed activities should be laid out. What principles should be followed? In their book, Community and Privacy, Chermayeff and Alexander made some suggestions about land uses as they relate to privacy which might offer guidance if applied in a context wider than the authors intended. Two notions are offered, but we will not make use of both. The first, which we will discard, is that cities should be zoned into distinct and separate areas in order that the respective activities of these areas may be best served by their zones and in order that each zone may best express visually its respective activity.[14] Alan Temko rightly criticised this notion of separated zones as falling into the same error of rigid zoning committed by Le Corbusier. Such separation makes good sense in a house, Temko continues, but a "richly unpredictable intermixture of functions has been the glory of great and beautiful cities, and I for one, am not so ready as the authors to write them off, in total, as 'obsolete.'"[15] Chermayeff and Alexander's second suggestion, however, is the one to consider. A hierarchy of six domins of urban space is established, and the hierarchy is based upon levels of privacy, as follows:

1. Urban-public: highways, roads, civic spaces.
2. Urban-semi-public: special areas of public use under government and institutional controls, such

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[14] Chiermayeff and Alexander, p. 126.

[15] Alan Temko, "Things Are Getting Too Crowded, Too Mechanized, and Too Noisy." The New York Times, 13 Oct. 1963.

as public buildings, hospitals, theaters, service stations.

3. Group-public: meeting places between public services and public utilities, on one hand, and private property on the other, requiring joint access and joint responsibility, such as places for mail delivery, trash collection, control of utilities, access to fire-fighting equipment.
4. Group-private: residential units controlled on behalf of private or public interest for the benefit of the occupants, such as reception, service and circulation spaces; community gardens; playgrounds; laundries; storage.
5. Family-private.
6. Individual-private: a person's own room.[16]

As a corollary of this hierarchy of urban spaces we have a basic principle by which spaces of different levels in the hierarchy shall be interrelated: areas of different levels of privacy shall be connected by locks, in the sense of transition areas, to prevent the more private one.[17] Let us now extend the basis for this hierarchical system to include not only privacy but freedom from nuisance, the objective of rigid zoning as well. Let us also extend the notion put forth in Traffic in Towns that the solving of urban traffic

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[16] Chermayeff and Alexander, p. 129.

[17] Ibid., p. 206.

problems is similar to the solving of circulation problems within buildings -- extend this notion to include the solution of problems of providing the separations needed between different activities within a city as we handle the problems of separating different activities within the same building. The first extension, freedom from nuisance, can be established as a requirement for our new hierarchy. The second extension, with some reflection, will be seen to be true in many cases. The widely varying activities often housed within the same building -- an urban high school, for example, will contain classrooms, offices, machine and wood shops, custodian's living quarters, library, gymnasium, cafeteria, auditorium, clinic, store rooms -- with no violation of privacy for the respective activities nor presence of nuisance. The same thing may, with few exceptions, be accomplished within a city. Heavy industry is probably the only activity requiring separation from other activities. If we assume that we can extend Chermayeff and Alexander's hierarchy in the two ways mentioned, then we have a suitable standard for the way to go about mixing activities within a city. If we take one further step, if we seek to discover those particular mixtures of activities in which the elements augment each other, we will have a tool by which we can encourage new vitality within the urban scene.

APARTMENTS IN THE CENTRAL AREA

One mixture of activities which is frequently encouraged today is that of apartment buildings within central business districts

or within central areas. Clarence Randall makes an extreme case, perhaps, for such a mixture. If traffic problems in large cities are not solved, traffic congestion and delays on streets and expressways may frustrate people to the point where they may no longer drive an automobile for pleasure. Large companies may either move their plants and offices out of the centers of population to places close to their employees' residences or build central accommodations which will include living quarters for their employees in, say, the upper fifty stories of the company skyscraper.[18] Here we have the mixing of living accommodations and offices suggested as a way to cope with a traffic problem which has become too severe; the same mixing would, if done sooner, operate as Albert Mayer has suggested, to prevent excessive traffic congestion from developing.

There are more reasons for including apartment accommodations within the central areas of cities. One of these reasons relates to the central business district. Where cities have concentrated upon renewal of their central business districts and have done nothing to improve blighted residential areas nearby, the success of their rehabilitation efforts is endangered. These were the findings of a study made by the National Association of Real Estate Boards in connection with Grand Rapids, Michigan. The people whom the downtown

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18 Clarence B. Randall, "Industry: Incredible New Markets," The New York Times Magazine (9 April 1964), p. 89.

is intended to serve tend to lose confidence in the city and withdraw their support for urban renewal if the neighborhoods where they live are allowed to become blighted. In the light of these findings, the renewal program for Grand Rapids includes central area development along with central business district renewal.[19]

Would new central area apartments be successful? There are grounds to believe that they would be. The latent demand in the central area of Rochester, New York, for middle-income and luxury apartments was recently surveyed by Lee McCanne, director of civic development for the Rochester Chamber of Commerce, in a thesis submitted to Rochester University for a Master of Science degree. In this city of 318,000 people in 1960, there appears to be a demand for from six thousand to eight thousand living units, but only a part of this demand is immediate. McCanne surveyed four distinct population groups and found that many families want to live where they can walk to work, to stores, and to church and forget about owning an automobile. A market research study made in 1960, without supporting data, indicated that 1,200 to 1,800 units would be needed by 1975, but McCanne's findings indicate that twice that number could have been rented at the time of his survey, or as quickly as they could be planned and built. McCanne did not base his survey upon Rochester as it is today, but he asked the people whom he questioned to think of the city as it

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19 "Change of Focus in Urban Renewal," The New York Times, 13 July 1964.

might be when its Inner Loop, as its central area is called, is fully developed.

The responses of each of the groups in and around Rochester were as follows:

1. Persons already living in apartments scattered throughout the city: forty-three percent were interested, indicating a need for 3,300 units.
2. Store proprietors, business managers, professional persons -- all working within the Inner Loop: eighteen percent were interested, indicating 2,300 units.
3. Retired persons in single-family homes in the suburbs (people who built or bought there before retirement): thirty-three to fifty percent wanted to move back to the city. Taking forty-one percent as an average figure, 2,300 units are indicated.
4. Employees of Xerox Corporation now working within the Inner Loop (to obtain a statistical projection for skilled personnel working in the Inner Loop): forty-nine percent were interested, indicating 441 units.

The total demand was 8,341 Units, which, according to the statistical techniques appropriate to this survey, ought to be expressed as a probability of from 6,000 to 10,000 units.[20]

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20 Martin Shannon, "Survey Indicates Need for Midtown Luxury Apartments," Democrat and Chronicle, Rochester, N. Y., 21 June 1964.

We have, then, several reasons for planning central area apartments: reducing urban traffic, protecting investments in central business districts which have recently been renewed, and meeting a latent demand for this kind of accommodation in housing. An additional justification for apartments in central areas applies to housing throughout cities as well. Concerned with its own city, the New York City Chapter of the American Institute of Architects issued a report in 1964 which states:

> ...the movement of families to the suburbs must be moderated and middle-income families with children brought back in substantial numbers. The city needs the good social influence of these families, their buying power and their taxpaying ability. The city also needs to reduce the strain on its highway and rail facilities.

In order to bring these families back, the report recommends the following courses of action:

1. City residential neighborhoods must be made more competitive with the suburbs.

2. Public and private agencies must collaborate in defining more clearly the types of buildings and neighborhoods which will permit families to raise children in the city under healthy and safe conditions comparable with the suburbs.

3. Better arrangements of neighborhoods, blocks and housing must be planned to create environments which offer more than mere spartan utility, which have character and provide pleasure for those who live there.

As a means to accomplish its goals, the report suggests that the city commission an outstanding architect to design a "pacemaker" housing project, allowing him a free hand. The hoped-for result

would be to "shake loose the too rigid design formulae" now in vogue.[21]

SUMMARY

The persistance of present central business district street and lot layouts and patterns of land ownership, all originally established for residential use, impairs rational development and growth. An obsolete physical plant should be replaced, not added to in a piecemeal manner. The central areas of cities ought to provide their users with variety in their daily experience, for variety is a strong human psychological need. People's limited ideas concerning the functions of central business districts may be the main reason why they are usually so monotonous.

The organization of urban space is one of the central problems of urban history. Comprehensive planning is required; zoning is insufficient. Compactness and a mixture of land uses are desirable. Standards for mixture might be based upon privacy, nuisance, and desirable augmentation. Apartments in central areas would reduce traffic, increase patronage of central business districts stores, and bring back the healthy social influence of the middle and upper income families and their tax dollars. A study of Rochester, New York, indicates a strong laten demand for central area housing in that city.

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21 R. W. Apple, Jr., "Architects Criticise Haphazard Nature of Growth in the City," The New York Times, 13 July 1964.

URBAN FORM

EXPRESSION OF NEEDS

We are often inclined to attribute our present urban problems to the fact that our cities have grown too rapidly, but it might be said, with equal justification and greater clarity, that the problems are not those of too-rapid growth, but of attempting to cope with that growth by means of solutions which have been too small and too old fashioned.[1] In effect, we have been deaf to Daniel Hudson Burham's spirited call. We have made only very little plans.

Urban form today has its correlate in two popular mental images of the city: the city-in-the-parking lot, a collection of high-rise slabs and towers linked by multi-laned expressways; and the anti-city, a byproduct of urban disintigration, which scatters parts of the city through the countryside, destroying the very natural setting in search of which the scattering took place. The anti-city seems to be symptomatic of a design trend in our time toward randomness, accident, deformation and fragmentation.[2] The centralized city, however, will continue to be important as the location of central business district activities -- as we have seen

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1 Tange and Associates, p. 16.

2 Lewis Mumford, "The Future of Cities," Architectural Record, CXXXIII (Jan. 1963), 119.

in this study and according to many businessmen and prominent developers, such as W. A. Rouse of Baltimore, Webb and Knapp of New York, and the market analysists Larry Smith and Company of Washington, D. C. Technological and social changes may be expected to accentuate centralization, and unless we allow traffic congestion to strangle their operation as efficient functional groupings, compact centers will remain.[3]

Are the two urban forms reflected in the mental images of city-in-a-parking-lot and anti-city the appropriate ones for our civilization? Are they in truthfully representative of the people? Walter Gropius notes that planners and architects, who are now responsible for discovering new urban patterns to superimpose upon the chaotic fabric of our present cities, do not have the support of the people nor the power to make decisions. There is much in our civilization of which we can justly be proud; we must cease to be timid and sentimental and adopt a more constructive attitude. It is especially important for the average citizens to do this so that the planners and architects may give their attitudes order and form.[4]

One of the concepts that average people hold -- a concept which is, in certain ways, pernicious -- is that cities are disposable containers. This concept is harmful because it denies one

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[3] Pinker, p. 46.

[4] Walter Gropius, "Tradition and Continuity in Contemporary Architecture, Part 3," Architectural Record, CXXXVI (July 1964), 154.

of the most valuable functions of cities, their functions as the physical embodiment of a social memory linking the present, the usable past, and the desirable future.[5] On the other hand, the average person is aware of the importance of this function of cities, as the familiar dissatisfaction with the immediate results when new cities are built on virgin sites will testify. People find living in such cities unpleasant. What they fail to realize, however, is that the initial construction has provided them "only the skeleton which future times will fill in with live tissue and with the cultural humus that will give it (the city) its specific character."[6] Gropius goes on to say, "Loyalty and emotional bonds grow only from active long-term identification with a certain setting and no newly founded city ever started out with it at the beginning." In spite of their present shortcomings, it is the deed of founding such cities as Brasilia and Chandigarh that is important and it should be acknowledged with gratitude.[7]

Gropius's admonition to the average citizen is especially important. People in our time are apt to look on the urban forms around them as the ordered expressions of needs, the result of a process of response to pressures, and as an example of the general

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5 Lewis Mumford, "The Future of Cities," Architectural Record, CXXXIII (Feb. 1963), 125.

6 Gropius, p. 152.

7 Ibid., p. 154.

expression which defines form in these terms.[8] Horatio Greenough made a classical description of the process: "If there be any principle of structure more plainly inculcated in the works of the Creator than any other, it is the principle of unflinching adaptation of forms to function."[9] However clear the statement, its application to problems as complex as those of cities is not simple. We must first determine whose functions and whose needs are going to be expressed by the form. As we have seen, the functional needs that gave rise in the past to the street and lot layouts of most central business districts no longer correspond to present needs. We also know that the functional needs to be met by certain kinds of speculative building are generally those of quick sales and maximum return for minimum investment, needs generally incompatible with those of the people who will inhabit the buildings which the speculators have built or the neighborhoods in which they have built. We might analyze other aspects of the physical plants of cities and discover other examples in which the forms are unflinchingly adapted, perhaps, not to the functions of the people using the physical plant but to the functions, present, past, or future, of other people entirely. Such an analysis would further emphasize the importance that Gropius attaches to the need for the average citizen to adopt a more constructive attitude (perhaps he needs to be helped) and to express

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8 Chermayeff and Alexander, p. 114.

9 Ibid., p. 110.

his needs to the architects and planners who are shaping his environment. In conclusion, the form of a city ought to express the current needs of all of its population, not of only some of the particular interests or individuals in that population, the fulfillment of whose needs, contrary to the over-simplified economic and social theories of the past, does not of necessity serve the best interests of all.

SYMBOL OF IDEALS

Another problem concerning the form of our cities is the fact that, beside serving as an expression of our needs and functions and as a physical embodiment of our social memory, the form serves also as a symbol, or an expression, of the ideals of our way of life. Siegfried Giedion has asked what there is about our way of life that we should express and how we should symbolize this thing. He confesses his inadequacy to supply answers to either question, and he offers only the slight hope put forth in a statement by Jean-Paul Sartre: "We need today signs and symbols which spring directly from the senses without explanation."[10] It is probable, however, that the meaning of these symbols would be to us an inexplicable as their source, in the way that we see in modern painting symbols which are without explanation. Giedion suggests that

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10 Siegrried Giedion, "Historical Background of the Core," CIAM 8: The Heart of the City, ed. J. Tyrwhitt, L. Sert, et al. (London, 1952), p. 17.

we place matters in the hands of our great artists, who, he believes, would be able to create the artistic form appropriate to future phases of social development long before these phases occur. This is what Michelangelo did on the Area Capitolina: he developed in the Rome of the Counter-Reformation a symbol of the vanished liberties of the medieval republic.[11] It would be interesting to guess what such a symbol for our times would be. It might very possibly be little different from what some of our artists are already using and which we find incomprehensible because their message may tell us unpleasant things about ourselves that we are unable to admit. It is also possible, on the other hand, that some of our artists find the world so unpleasant that they have resorted to meaningless symbols rather than admit and portray unpleasant reality, rather than try to tell us how we should live in our world. If such is the case, Giedion's advice offers us little hope today. It may be impossible to build a city as a symbol of our ideals.

POSTCIVILIZED DECENTRALIZATION

The central areas of many of our cities are becoming decentralized and the pattern of their organization no longer is clear. "The skyscraper, born of land scarcity and the invention of the elevator, is all too often constructed where land is not yet in

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[11] Ibid., p. 25.

critical supply or where function is not improved by vertical organization."[12] In addition, city-scapes have lost their relationship to the surrounding country; they are unclear and frayed at the edges.[13]

Kenneth E. Boulding has projected these trends in a prediction of the disintegration of the "classical city," a term which he uses to mean the idea of a city as a well-integrated social organization with defined boundaries, whose people earn their livings by politics, production, and trade, and whose culture is sharply different from rural culture. We are entering postcivilization, a product of the development of science just as civilization was a product of the displacement of hunting and food-gathering by agriculture with its ability to accumulate food surpluses. In postcivilized cities there will be no need for the physical concentration now dictated by high costs of transport and by the need for personal contact. Perfected means of voice and visual communication will meet these needs. Stock exchanges and legislative assemblies, examples of the institutions of civilized man and civilized societies, may not survive even another fifty years. Even today rural areas are, by means of automobiles, made part of the cities. In farming, for example, there are as many part-time farmers as full-time. Part-time farmers are also factory workers in plants forty to fifty

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12 Chermayeff and Alexander, pp. 59, 60.

13 Ibid., p. 60.

miles from their farms. In this way the city has taken over the countryside; and both, as we know them, may disappear as the population spreads uniformly over the landscape. Individual households will be nearly self-sufficient, linked to every other place by efficient means of communication. There will be concentrations only in the case of certain manufacturing industries, which will be located near the source of raw materials, in many cases the oceans. For the luxury and pleasure of face-to-face communication, there may be occasional revivals of classical cities. Unequal distribution of wealth will be reflected by the fact that the poor will ride and the rich will walk. Already this tendency appears in the movement of the wealthy back to the centers of cities and in the development of the new society, postcivilized social forms will exist alongside civilized -- and even precivilized -- societies for considerable time.[14]

Boulding's prediction is startling, logical and a distinct possibility, but its probability must be questioned. It is based upon an assumption not stated. Recall how the axiom of the Chicago Area Transportation Study, which stated that as areas develop more traffic is generated, concealed the assumption that present trends would continue. Boulding's prediction conceals the very same assumption.

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[14] Kenneth E. Boulding, "The Death of the City: a Frightening Look at Postcivilization," The Historian and the City, ed. Oscar Hadlin and John Burchard (Cambridge, Mass., 1963), pp. 138, 139, 141-145.

It is prudent, of course, to examine predictions based upon the continuation of present trends, especially in our present society, which seems to be unconcerned about its goals. However, we may -- probably through planning -- modify the trends, so that Boulding's prediction would not then come to pass.

PLANNED PARENTHOOD FOR CITIES

Considering the form of our large cities today, Catherine Bauer Wurster concluded that we must urbanize the suburbs and humanize the cities. The cities need clarity of structure, and they need to express a strong sense of place.[15] Victor Gruen suggested that urban planners should aim for compactness, for cohesiveness, and to prevent urban sprawl; for separation of vehicles and people; and for the replacement of the present grid pattern of streets with a cellular or cluster arrangement.[16] To accomplish these goals, one might turn to Lewis Mumford's suggestion that we need to invent a new urban container -- that is, a new physical plant for cities -- which would contain many centers in order to serve the great range of human purposes and specialized functions brought together in modern cities,[17] and which would be capable of accommodating changing

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15 Catherine Bauer Wurster, "Architecture and the Cityscape," Journal of the American Institute of Architects, XXXV (Mar. 1961), 37.

16 Victor Gruen, "In Defense of the City..." Progressive Architecture, XL (July 1959), 119, 130.

17 Mumford, "The Future of Cities," (Jan. 1963), p. 119.

purposes and functions of the parts through time.[18] He has proposed a broad concept of a unified, coordinated environment, as have many people. His concepts for accommodating growth, however, are unusual. He would accommodate increased population in a manner which has its roots in the notions of Ebenezer Howard and might be described as "planned parenthood for cities." Mumford asserts that the size of cities ought to be limited by deliberate social intention according to the nature of the contents and the purposes of the plans of the cities, rather than be limited by such factors as natural obstacles, poor economic resources, or economic necessity. The population which would enlarge a city beyond its planned maximum should be directed to new cities, constructed for the purpose of accommodating population growth by means of a continuing colonization in a series of self-contained towns, each with a variety of occupantions (professional, industrial, and agricultural) which would serve to employ most of their populations.[19] Behind such thinking lie Mumford's opinions as a cultural and a moral philosopher.[20] He believes that the large cities of our time have become too large and that they should be grouped into smaller units so that people may learn, and pass on, the elementary moral loyalties of respect

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18 Mumford, "The Future of Cities," (Feb. 1963), p. 119.

19 Mumford, "The Future of Cities," (Jan. 1963), p. 121.

20 Christopher Tunnard, "The City and Its Interpreters," Journal of the American Institute of Planners, XXVII (Nov. 1961), 347.

for neighbor and reverence for life, learn them by means of active participation of the primary group of family and neighborhood.[21] Large cities, however, still have the desirable characteristic that they support a variety of activities necessary for full participation in our culture, activities which small cities cannot support. By means of a fast and efficient network of transportation and communication linking all cities, the advantages of both large and small cities could be made available to people regardless of where they might live, just as today we link by means of a power grid a large number of electrical generating plants so that their combined capacities may be utilized as needed to meet fluctuating demands as they arise in any part of the grid. Organized to make resources of information available to people in any locality, the inter-library loan system functions in a cimilar way. Linked by the network which Mumford proposes, urban living could possess the advantages of human community as offered by the small city and the cultural and economic advantages of the large city without the disadvantages of either.[22]

A CITY AS A SINGLE STRUCTURE

In analyzing the need for cities to provide a means to accomodate their growth, Norburu Kawazoe indicates that the capacities

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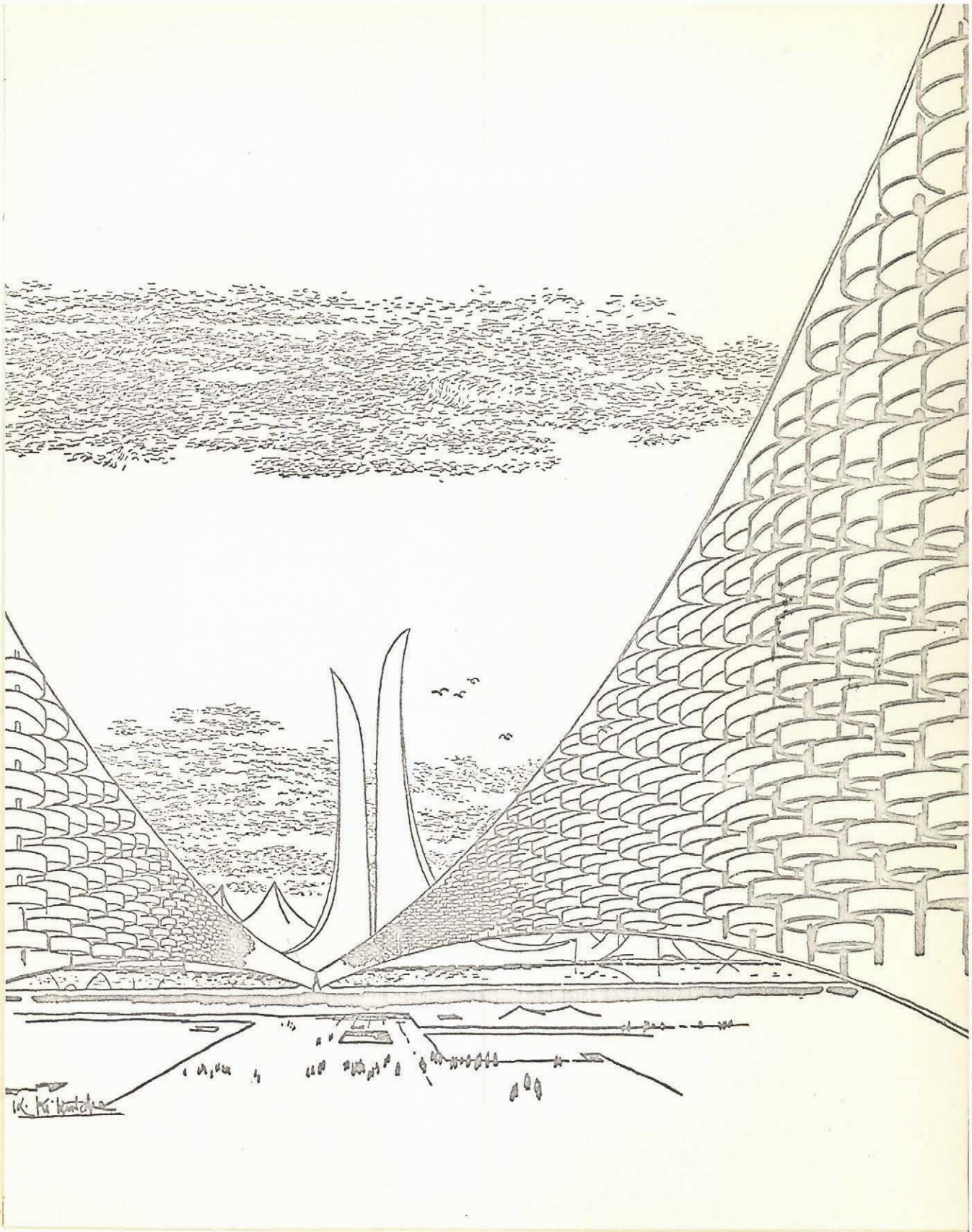
21 Lewis Mumford, The City in History (New York, 1961), p. 569.

22 Ibid., pp. 562, 565, 566.

for rapid change, mobility, and transformation are the distinguishing characteristics of our present cities and what is needed is not a master plan for them but a master program. All parts of such a program should be designed to accommodate freely intense metabolic changes and should develop a method to find order in the confusion of metabolic growth. (Kawazoe and other Japanese planners use the term metabolic to include the constant renewing of all nature and the life energy which accelerates the process.) Such a program should include:

1. A consistent system to be started now and followed to the distant future. One means of achieving consistency would be to distinguish between the parts of the physical plant of the city which would change greatly and those which would change least, allowing the changing parts to be constructed so that they could be freely attached and removed from the portions which would change little.
2. Consistent organization of space by means of the elements which have superhuman scale, such as expressways, superblocks, and large buildings.
3. The unity of art and the development of the massed images patterns of urban design, as the garden of nature contrasts with a man-made artificial flower garden.



KAWAZOE'S IDEA OF ARTIFICIAL LAND IN THE FORM OF A WALL-LIKE STRUCTURE WITH BUILDINGS ATTACHED TO ITS SIDES

NORBURU KAWAZOE, "THE CITY OF THE FUTURE," ZODIAC, IX (1962), 98.

4. The metabolism of civilization -- which includes the preceeding three elements -- and the metabolism of nature should both encourage city development.[23]

In designing the kind of master program which Kawazoe describes, one might think of a city as a large building, although not under one roof, where one removes the automobile before entering as, before entering a Japanese house, one removes his shoes. Artificial land in the form of a multi-level structure with roads and parking at the lower levels and sites for homes and other structures at the upper levels would solve the problems of providing for automobiles.

Linking these structures by means of multilevel highways which included utilities, would free the natural land. Another form of artificial land could be a wall with the necessary building spaces attached, like equipment, to it -- houses on one side and offices on the other, for example. Dwellings, stores, and offices could be commercially manufactured units, attached to the basic wall-like structure of the city. The artificial land functions as an urban connector, a structure of superhuman scale, organizing the structures of the scale of man's activities by linking them physically and visually. A third form of artificial land, one completely separated from the surface of the earth, is the basis for Keyonari Kikutaki's

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23 Norburu Kawazoe, "The City of the Future," Zodiac, IX (1962), pp. 100, 101.

floating industrial city with housing at its center and industry at its circumference and designed for a working population who would live in it part of the time and live ashore the rest of the time.[24]

LINEAR ORGANIZATION AND A SYMBOL

Percival and Paul Goodman proposed in 1944 a plan for the rebuilding of New York City in a linear form which would solve many of the traffic problems simply by the manner in which workplaces and living places were related to one another. At the middle of Manhattan Island and running its length, a strip was to be built which would contain all the business, light industry, and through traffic. The land on each side of this strip was to be developed into residential neighborhoods in parklike settings carried down to the shores of the island, where beaches would be developed for boating, bathing, and promenades. The present uptown-downtown traffic to work and back home again would, as a result of this plan, be done away with and replaced with short trips on foot across town, and the need to travel long distances to reach recreation areas would no longer exist because recreation would be close to home. The problem of traffic would have been solved by reducing the need for movement by providing a plan which imposed a logical pattern of activities and land uses upon the city -- in this case a linear pattern taking advantage of

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[24] Ibid., pp. 101, 104, 105, 111.

the geographical features of the site.[25]

A group of planners under the direction of Kenzo Tange has proposed a similar plan for Tokyo, but they do not propose to rebuild the city completely. They indicate the need for a shifting from the present radial-centripital pattern to a linear system of development; for the discovery of a means to unify organically the city structure, the transportation system, and urban architecture; and for the discovery of a new spatial order which would reflect the open organization and spontaneous mobility of present-day society.[26]

The last item, the need for a spatial order to reflect the character of present-day society, relates to the problem of urban form noted earlier in this study: the problem, stated by Siegfried Giedion, that the form of our cities did not seem adequately to symbolize the ideals of our way of life. Tange and his associates suggest that in the way in which the cathedral was the symbol of Western medieval civilization, so the transportation system may be taken as the symbol of the metropolis of our time.[27]

Allowing the urban transportation system to be the symbol of Tokyo as a modern city, then it is logical that the system be made the dominant element in the urban form. A linear system is proposed because it allows a minimum time for intercommunication between the

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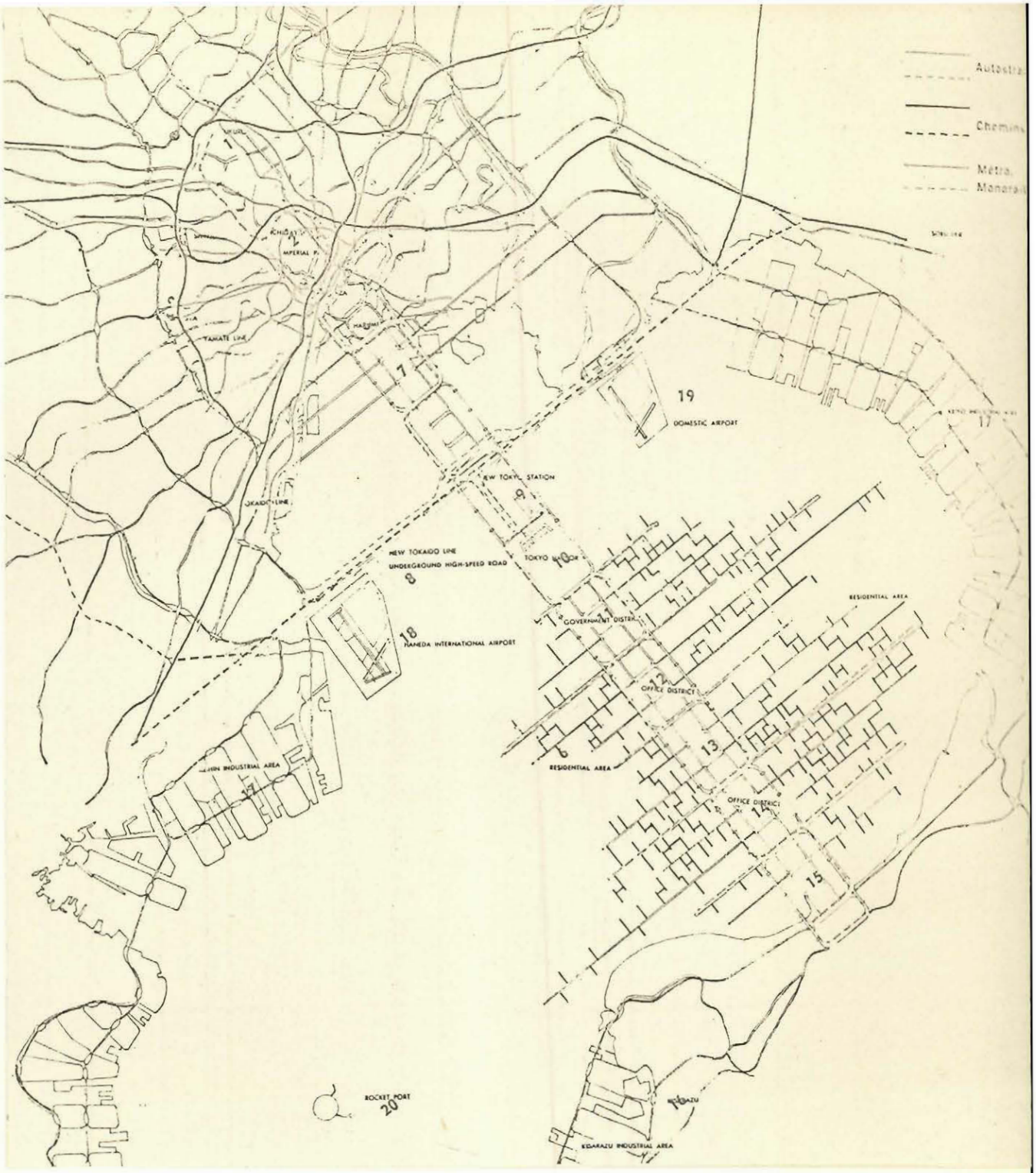
25 Percival and Paul Goodman, "A Master Plan for New York," New Republic, CXI (20 Nov. 1944), pp. 656-659.

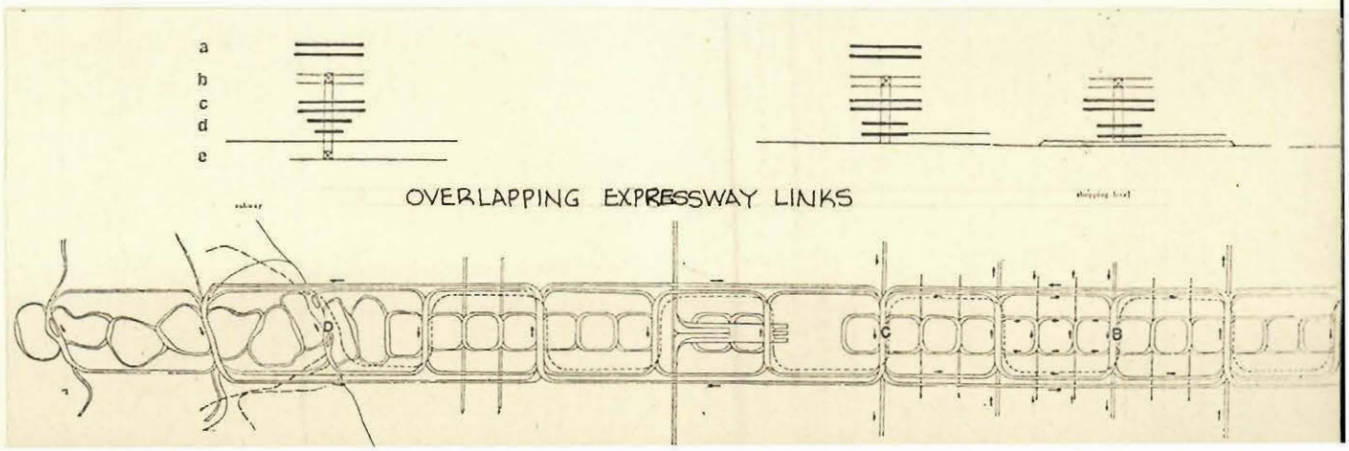
26 Tange and Associates, p. 16.

27 Ibid., p. 18.



PLAN FOR THE GROWTH OF TOKYO ALONG A LINEAL TRANSPORTATION AXIS OVER TOKYO BAY. KENZO TANGE AND ASSOCIATES.

L'ARCHITECTURE D'AUJOURD'HUI, XXXII (OCT. 1961), 52.



points along its length. The system should be made up of overlapping expressway links accommodating three different speeds and of parking facilities. Present expressways are sharply limited in their ability to carry volumes of traffic by the capacities of their interchanges. The undending link system, overcoming this shortcoming, would consist of three levels accommodating three different speeds of traffic, with parking facilities accessible from the lowest level. This link system would maintain a steady flow of traffic, and the total volume of traffic accomodated would range from ten to thirty times that of the same road with conventional interchanges. Such a system would also allow the construction of its links one by one to accommodate growth as it occurred.[28] The smallest links would be square in shape, two-thirds of a mile on a side.

Coordinated with the highway system, a pattern of building cores five hundred to eight hundred fifty feet high would be laid out along the highway in a grid of squares six hundred sixty feet on a side. The cores would contain elevator shafts, ducts, pipes, and wiring for buildings of from ten to twenty stories, which would be suspended between pairs of cores with walls of the buildings acting as tresses. The scale and spatial arrangement of the buildings would relate well to the variable flow of automobile traffic. The artificial ground below the lowest level of the expressway would

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28 Ibid., p. 18.

serve as the sites for shopping facilities, auditoriums, and other buildings -- all at what we think of today as human scale -- small streets for pedestrians, and plazas for crowds. The system creates a functioning link between the major structures of cities, which are generally ones with a greater life span, and private homes and other minor structures, which, like other articles of daily living, last for a shorter time and are often changed.[29]

TWO ARCHITECTURES

Considering in a general way the qualities necessary for good contemporary urban form, Louis Kahn believes that we should make a distinction between the architecture of roads and other structures for automobile traffic -- "viaduct architecture," he calls this -- and the architecture of man's activities. Viaduct architecture is brought into cities from outlying areas and should, after entering, be more carefully made and more strategically placed with respect to the central area, should include the city piping services suitably housed in the streets, and should provide for the "stop and go" movement of busses and the "go" movement of automobiles. Expressways frame the city as rivers often do and must be accompanied by places for automobiles to park, analogous to the harbors of a river. Kahn proposes that the harbors for expressways ought to be very large

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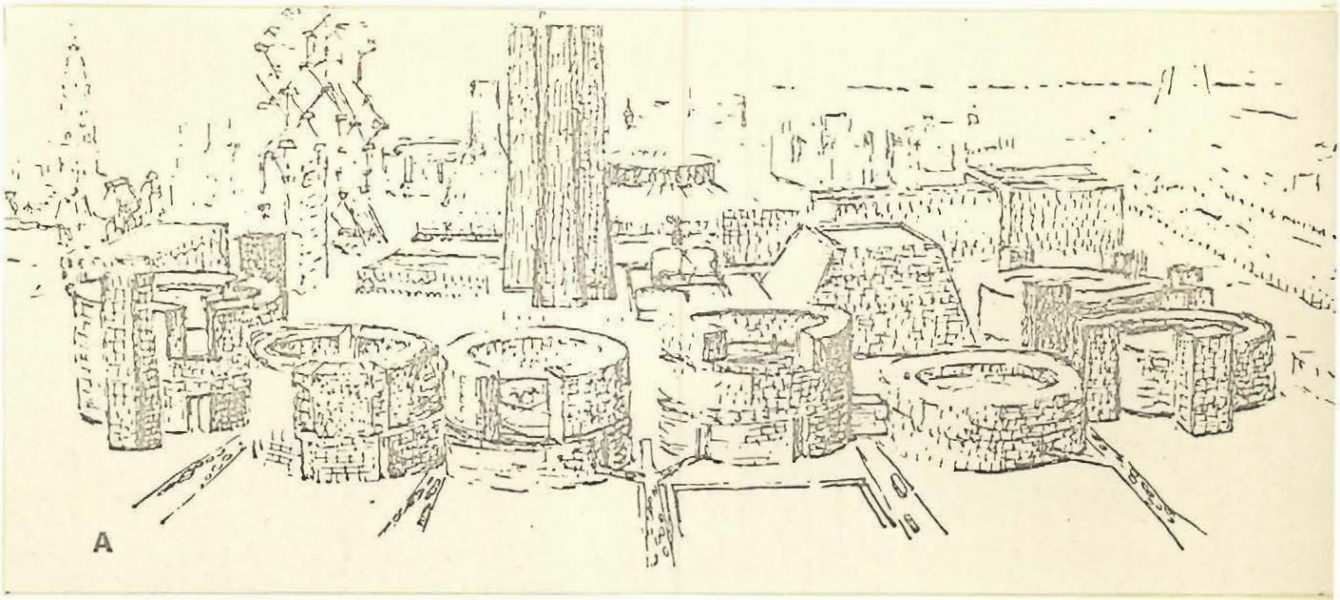
29 Ibid., pp. 28, 30, 32.



HARBOR STRUCTURES AROUND THE CENTER OF THE CITY
LOUIS KAHN'S PROJECT FOR PHILADELPHIA, 1957

"LOUIS KAHN URBANISTE", L'ARCHITECTURE D'AUJOURD'HUI XXXIII (DEC. 1962-JAN. 1963), 38.

William Form

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buildings whose core portions consist of parking facilities, whose periphery is occupied by hotels and department stores, and whose street levels are used for shopping centers. Placing the harbor structures around the city center expresses the protection of the city against the invasion of the motor car.[30]

The authors of Traffic in Towns urge us to think of buildings and access ways together as the basic material of cities. In the areas where pedestrians and vehicles must be separated, traffic should occupy the ground level below an elevated building deck, which would be a new "ground" upon which buildings could be erected.[31] This concept is similar to the artificial ground of the Japanese planners, which achieves a vertical separation of the architecture of man's activities from viaduct architecture. Kahn's thinking, on the other hand, is horizontal; his harbors surround the central area like fortresses, keeping fast traffic at bay. Tange and the authors of Traffic in Towns make use of the separation achieved by separate levels, a much more flexible system, to allow the penetration of traffic into the areas which need to be served.

SUMMARY

Unless traffic congestion becomes excessive, the trend toward centralization will continue. The wishes of more people must

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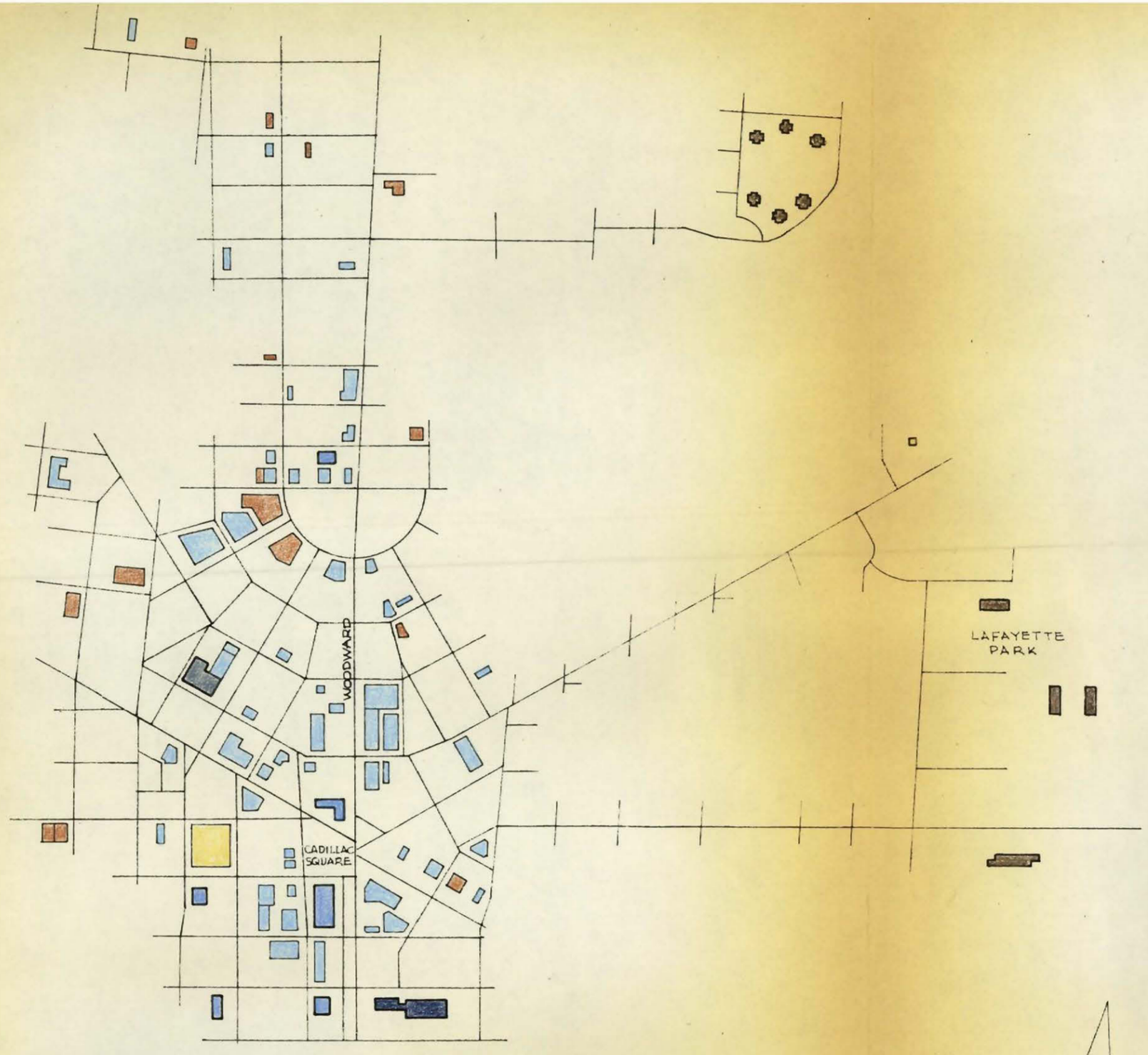
30 Vincent Scully, Jr., Louis I. Kahn (New York, 1962), p. 121.

31 England, p. 46.

be expressed to planners so that the resulting forms of cities may better serve the needs of a larger portion of their population than they presently do. The parts of cities which represent the heritage of the past must be preserved; cities are not disposable containers. When new cities are planned and built on virgin land, they are at first unpleasant for they need time to accumulate "live tissue" and "cultural humus." The form of a city also serves as a symbol of the ideals of its people.

If present trends toward decentralization were to increase, a form of complete decentralization is predicted -- "postcivilization." Mumford points out that a new urban container is needed, and he advocates "planned parenthood" for cities, with growth directed to self-sufficient satellites and with the limiting of the size of cities. Kawazoe proposes a concept of metabolic growth, artificial land, and the designing of cities so that one removes the automobile before entering as one removes his shoes before entering a Japanese house. Percival and Paul Goodman propose a lineal system for the rebuilding of Manhattan, Kahn suggests harbor structures for Philadelphia, and Tange proposes a lineal spine of transportation facilities and buildings for Tokyo, which might well become a symbol for the open organization and spontaneous mobility characteristic of our society.

PART II INVESTIGATIONS AND OBSERVATIONS



BUILT
1945 OR EARLIER | AFTER 1945

- COMMERCIAL & OFFICE (EXCEPT GOVERNMENTAL)
- GOVERNMENTAL OFFICE
- HOTEL
- APARTMENT
- HOSPITAL
- MANUFACTURING & WAREHOUSING
- SCHOOL
- PARKING

THE CLUSTERING OF SKYSCRAPERS IN DETROIT

SCALE 1" = 800'

W. L. SHANK 1964

follows second after p. 85

CLUSTERS OF SKYSCRAPERS. GRATIOT AREA REDEVELOPMENT PROPOSAL, LOWER RIGHT.
L. HILBERSEIMER, MIES VAN DER ROHE (CHICAGO 1956), P. 105

CENTRAL BUSINESS DISTRICT FROM THE SOUTH.
CIVIC CENTER BUILDINGS IN FOREGROUND.
CITY AND COUNTY BUILDING AT FAR RIGHT.
PERSONAL FILES.

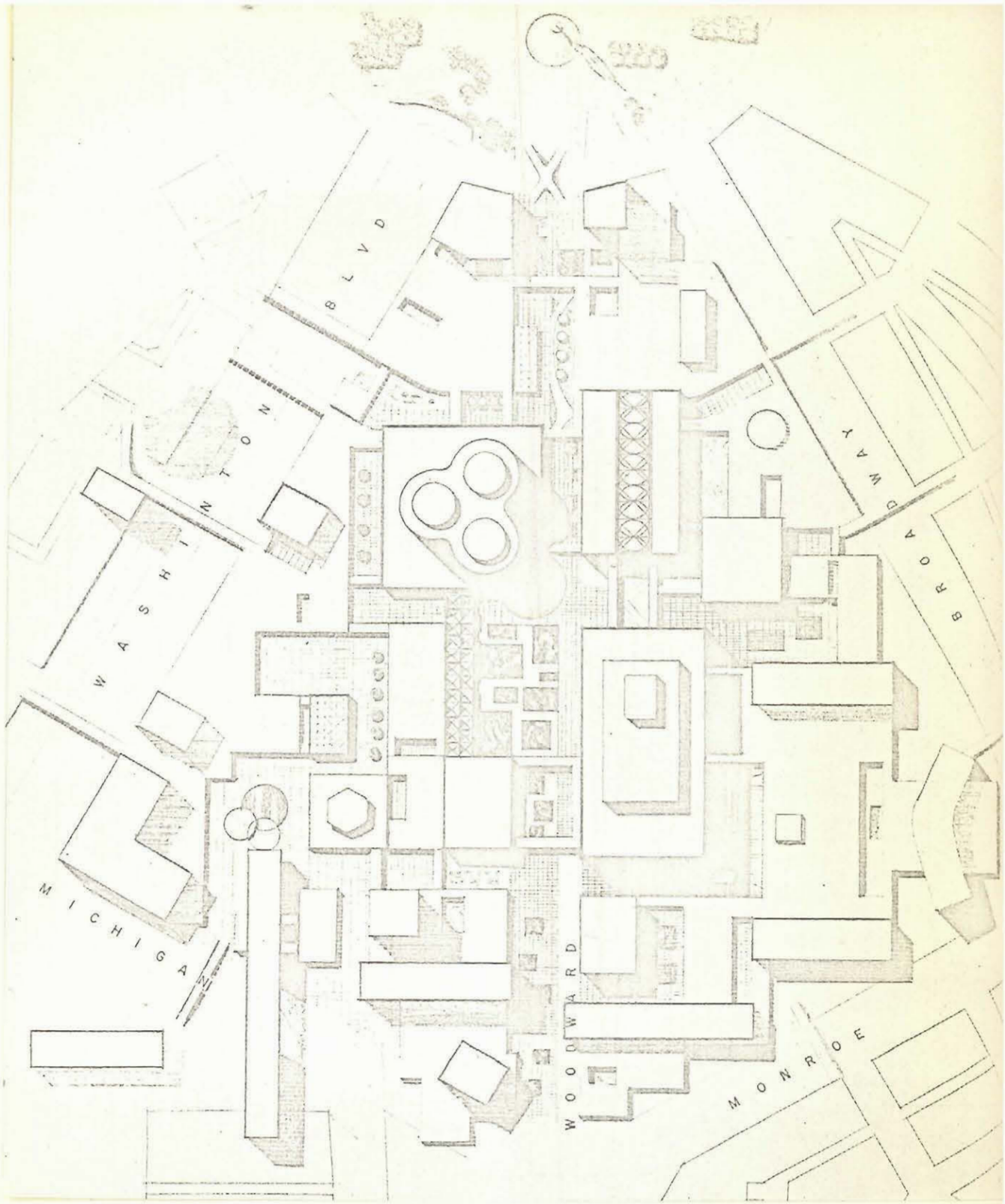
CENTRAL BUSINESS DISTRICT
FROM THE EAST

LAFAYETTE PARK

FIRST FEDERAL SAVINGS
NATIONAL BANK OF DETROIT
MICHIGAN CONSOLODATED GAS COMPANY
LOOKING NORTH ON WOODWARD AVENUE

DETROIT

Follows third after p.83



PROPOSAL FOR A NEW SHOPPING ENVIRONMENT FOR WOODWARD AVENUE

LOUIS G. REDSTONE, "REPLANNING DOWNTOWN DETROIT," JOURNAL OF THE AMERICAN INSTITUTE OF ARCHITECTS, XXXII (SEPT. 1959), 38.

DETROIT

EARLY PLANNING AND GROWTH

The street pattern of most of the central area of Detroit contrasts sharply with that of the rest of the city, which spreads for miles across that flat countryside in the usual rectangular grid. In the central area one sees the vestiges of a radial pattern, and one surmises that someone in the past tried to give this city a pattern of order on a grand scale. Such was the case. The man was Augustus Woodward, and a fire which burned all but one of the town's buildings was the occasion for a rebuilding along new lines. Strictly speaking, the ideas involved were not Woodward's own. He visited Washington in 1807 and either met Pierre Charles l'Enfant or encountered his ideas. Woodward lead the rebuilding, but, as the city grew beyond its original boundaries, his plan was abandoned.[1] Military roads one hundred feet wide were built in 1830 as spokes to the downtown hub. By 1877 other radial streets had been added, and the three-sided form of Grand Boulevard East and Grand Boulevard West had been charted around the city limits forming, with the Detroit River on the south, four sides of a quadrilateral. In the new areas of the city, a rectangular pattern of blocks was superimposed upon the radials.[2]

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1 Joe L. Norris, "Detroit," Encyclopaedia Britannica, (1964), VII, 316; New Pencil Points, XXIV (Dec. 1943), 54.

2 Architectural Forum, LXXXIII (Sept. 1945), 125.

By 1880 the city had become a railway center and an important Great Lakes port; by 1900 its character had changed so that it was primarily an industrial center specializing in chemical and pharmiceutical products, in iron and steel, and in iron and steel products. The population had grown from 46,000 in 1860 to 290,000 in 1900. At the turn of the century the automobile industry had been founded, and by 1920 it dominated the city's economy, although other industries remained strong. By this time the population had reached one million; and in 1960 there were 3.8 million people in the Detroit Standard Metropolitan Area, 1.7 million of whom were within the city limits.[3]

CIVIC CENTER

In 1944, even before the end of World War II, the site had been selected for the first important development in the central area after the war, the new civic center. Sixty years earlier the mayor of that time had suggested the same site, and it was still a logical one. It comprised fifty acres along the shore of the Detroit River at the foot of the city's main street, Woodward Avenue, with the commercial center only a few blocks to the north. The buildings then on the site were in poor condition, and the city already owned sixty per cent of the land.[4] By the year following the selection of

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[3] Norris, pp. 316, 317, 318.

[4] Architectural Record, CIX (Jan. 1951), 101.

the site, three plans were under consideration for the development of the civic center, all of which carried the concept of bringing together many government offices in a coherent group which would possess "a measure of dignity and character."[5] The first building of the complex to be completed was dedicated in 1950, the Veterans Memorial, to be followed by the linked City and County Buildings, twenty and fifteen stories in height; the Henry and Edsel Ford Auditorium, financed by the Ford Dealers of America and the Ford Motor Company; and the Cobo Convention Center and Exhibit Building.[6]

CENTRAL AREA RESIDENTIAL REDEVELOPMENT

At the same time that they were taking steps toward a new civic center, the people of Detroit were considering ways of ridding their city of the slums near the central business district. The previously-mentioned quandrilateral area delimited by the two Grand Boulevards and the Detroit River was, except for the small portion of it taken up by the central business district, either slum or blighted area.[7] Many of the houses were cheap wood-frame structures built for immigrants in the 1850's. This area corresponded generally to the extent of the city in 1910.[8] Influential people

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5 Architectural Forum, LXXXII (June 1945), 112.

6 Architectural Record, CIX (Jan. 1951), 101; and CX (Nov. 1951), 115.

7 New Pencil Points, XXIV (Dec. 1943), 55.

rose to lead the way: Walter Reuther, president of the United Auto Workers; Foster Winter of J. L. Hudson Company, the city's leading department store; Walter Gehrke, banker; and major executives from all of the large automobile manufacturers. They formed the Citizens Redevelopment Committee, which proposed to redevelop the slums surrounding the central business district into the highest quality of housing to rent, or to sell, for the same rents or prices as similar housing in the suburbs.[9]

The Gratiot Redevelopment Area, east of the central business district, was the first in which redevelopment was begun. The architects Yamasaki, Stonorov, and Gruen developed a plan which was to include 4,400 living units, 1,000 of which were to be Public Housing dispersed throughout the development in such a way as to avoid a ghetto of low-income families.[10] The sponsors of the project felt that many families who had moved to the suburbs because they could not find suitable homes nearer to their economic, civic, and cultural activities, would return to the central city if they could find there the kinds of homes and neighborhoods which they wanted, and the center of the city would gain new life and new sources of revenue.[11] A portion of the Gratiot Redevelopment Area has been built according to the plans developed by Mies van der Rohe, who modified the original plans. This area is called Lafayette Park.

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[9] Ibid., p. 117.

[10] Architectural Forum, CII (Jan. 1955), 9.

[11] Progressive Architecture, XXXVI (May 1955), 12.

Here six twenty-story apartment buildings will be built, spaced among rows of one-story and two-story town houses. Of the total site area of seventy-eight acres, four acres will be devoted to a shopping center, and eighteen acres will be given to a park and a new school.[12] Construction on some of the other portions of the redevelopment area has also been completed, and more is under way. This work has been planned by several different architects and is in keeping with the original purposes.

PRIVATE DEVELOPMENT IN THE CENTRAL BUSINESS DISTRICT

We have considered thus far two types of developments in Detroit. The first, the Civic Center, was conceived as a municipal expenditure for municipal needs and as "pump priming" to encourage the renewal of the central area of Detroit.[13] The second, the redevelopment of the residential areas near the central business district, was an effort to draw back into the central area the type of people who were moving to the suburbs. Redevelopment was greatly encouraged by the financial assistance offered by the federal government of the United States: payment of up to two-thirds of the net costs of acquiring, clearing, and disposing of slum areas for certain approved uses, and the granting

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12 Architectural Record, CXXVII (Apr. 1960), 170-3.

13 Architectural Forum, CVI (Feb. 1957), 123.

of mortgage insurance for loans to finance the purchase of property built in such areas.[14]

A third type of development is exemplified in the voluntary coordination given to the city by the National Bank of Detroit, whose new site was to be on the west side of Woodward Avenue, three blocks north of the Civic Center. Realizing that a new bank building on this site would encourage further private investment in the central business district, Mayor Albert E. Cobo also foresaw that a building on that site would most likely interfere with the plans of City Plan Commission Director Charles Blessing to carry the already-completed widening of the first two blocks of Woodward Avenue past the third block of Cadillac Square. If the widening were to be completed, the bank would have to give up a seventy-foot wide strip of land along the east side of its site. In addition, Mr Blessing wanted a forty-foot wide pedestrian esplanade, planted with two rows of trees, between the bank and the street, and he wanted a covered arcade behind it -- the arcade to be provided by the bank on its own property. If the total proposal were to be carried out, the bank would have to cede a third of its site to the city and devote to the public an additional eighth of its remaining ground floor area in the form of the arcade -- without compensation for the last eighth. All of this the bank did. It related its program

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[14] Raymond M. Foley, Albert M. Cole, and Detlef E. Mackelmann, "Housing," Enclyclopaedia Britannica (1964), XI, 177.

to the requests of the City Plan Commission and coordinated its land acquisition with the city in a straightforward and non-political manner. Recently its new building was completed, with pedestrian arcade and esplanade facing the widened portion of Woodward Avenue.[15]

What had been built stimulated further building development. The twenty-eight story "Yamasaki Gothic" shaft of the Michigan Consolodated Gas Company now faces the City and County Building across Woodward Avenue, adding 400,000 square feet of office space to the central business district, parking facilities below grade, and a dignified plaza at ground level for the enjoyment of the public.[16] A few blocks to the south of the National Bank building, the Detroit Bank and Trust Company has built a twenty-eight story structure containing 550,000 square feet of office space and adjoining their neo-classical building of the 1920's.[17] Across Cadillac Square from the National Bank Building the newly completed First Federal Savings Building, twenty-three stories high, adds some 300,000 square feet of office area.[18] Cadillac Square itself comprises all of the block between the latter two buildings.

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15 Architectural Forum, CVI (Feb. 1957), 123, 124.

16 Architectural Record, CXXVI (July 1959), 13.

17 Architectural Record, CXXXV (May 1964), 154.

18 Architectural Record, CXXXIII (April 1963), 202, 204.

REDEVELOPMENT IN THE CENTRAL BUSINESS DISTRICT

Looking at the eight hundred acre area making up the central business district in 1957, a group of thirty-five local architects who called themselves the Architects' Design Collaborative and who were working with the director of the City Plan Commission in a study of the central business district of Detroit made the following observations. A successful civic center and a sound central business district were interdependent. Quick action must be taken in the central business district if advantages were to be gained from the recently completed civic center. Four crucial problems were set forth:

1. The provision of facilities to bring large numbers of vehicles into the central business district and to park them.
2. The creation, by means of a large open plaza free of traffic hazards of an environment conducive to relaxed shopping, recreation, and the conducting of personal and government transactions.
3. Replacing with new buildings designed for modern needs the existing structures which had become obsolete.[19]

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19 Louis G. Redstone, "Replanning Downtown Detroit," The Journal of The American Institute of Architects, XXXII (Sept. 1959), 33.

First, let us consider vehicular access. It is interesting to note how our attitudes toward traffic problems have changed in twenty years, reflecting, no doubt, that our problems have also changed. In an article on Detroit appearing in a 1945 issue of Architectural Forum the opinion expressed on urban automobile traffic problems was that "an organized and efficiently functioning city is not a dream of the future, but an immediate possibility." An expressway transit plan had just been completed at this time, and it was thought to be a good solution to the pressing problems of traffic, although it did not take into account as many factors as does a master plan. This plan provided for expressways to carry mixed vehicular traffic and for separate routes for public conveyances -- trains, buses, and subways.[20] As we have seen in Traffic in Towns, the solution to urban traffic problems is still immediately possible if we can spend enough money on them and if we wish to endure the disruption involved, but our much larger present problems are proportional to our much larger population of automobiles which we must move about and which we must park.

The Architects' Urban Design Collaborative concluded that the solution of transportation problems was prerequisite to architectural and planning solutions. Statistical data had confirmed that poor accessibility for shoppers was a factor in the decline of sales in the central business district. Half of the

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20 Architectural Forum, LXXXIII (Sept. 1945), 125.

people who commute to this area drive to work, and of these eighty percent drive their own cars. Projecting the growth in the number of commuters which could be expected in twenty years, it was found that the entire area of the present central business district would be needed for parking alone, of all the cars were to be parked at ground level. This was too much area to devote to the automobile. The limitation of the number of automobiles was imperative. A new and imaginative solution to the transportation problem was suggested, a special monorail whose routes would be laid out on a radial pattern. In the outlying residential districts self-propelled capsules would collect commuters at numerous points throughout these districts, or in some cases the capsules might be collected at various stages along the way and be pulled by tractors. At certain terminal points the capsules would become monorail-borne components of a rapid transit system and would proceed at high speeds to their destinations in underground terminal points in the central business district. Here the capsules would again become self-propelled. People would reach their final destinations by walking or by means of moving walkways.[21]

With problems of transportation solved, shoppers must be encouraged to come to the central business district by providing new experiences and a stimulating shopping environment in the form of an open plaza which could be a "Town Square of Shopping" surrounded

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[21] Redstone, pp. 39, 41.

with landscape, fountains, gardens, newsstands, benches, cafes, moving walks and seats, elevated heliports, parking garages, and transit terminals. The plaza might be an air-conditioned structure containing many small shops.[22] Because open space creates such a strong contrast with the dense urban scene, open space might be used as an element by which the central business district might be organized, tying together what is now a chaotic group of sidewalks and buildings and providing the means for a person on the street easily to orient himself by taking position checks with an overall visual tie. New building construction should replace outmoded structures, but a complete rebuilding should not be planned; the retention of existing buildings which are sound and serviceable is an important way to preserve the identity and the distinctive qualities of this particular city.[23]

On a four hundred twenty acre site at the west boundary of the Gratiot Park Redevelopment Area -- the boundary nearest the central business district -- more downtown housing will be built according to the winning plans of an architectural competition held for this purpose. Unfortunately, the winning plans did not provide for the underground parking which the master plan did include and which would have offered Detroit the opportunity to demonstrate the best kind of a solution of the automobile-vs.-pedestrian problem.[24]

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[22] Ibid., p. 41.

[23] Ibid,, pp. 46, 47

[24] "Detroit Design: Cars Still on Top (Literally)," Progressive Architecture, XLV (August 1964), 52.

As a part of central business district redevelopment, the Civic Center Convention Mall Project is planned to extend the west end of the Civic Center site in an ell toward the north and to act as a green strip approach to the existing Convention Hall. The new mall would include open planted spaces, walks sheltered by canopies, underground parking for seven thousand cars below the whole site, a new garage which, with an existing garage on the site, will park twelve hundred cars, an office building, a recreation center, specialty shops, and a hotel.[25]

OBSERVATIONS

The person approaching Detroit from Canada, does not see the city until he reaches the customs station within it, for the route is through Windsor, whose own tall buildings screen the view of Detroit, and a tunnel takes him across the Detroit River. The first view of the city includes the white verticals of the Michigan Consolidated Gas Building and the City and County Building, flanking the entrance to Woodward Avenue only a few blocks away. On walking around with the central business district, one is impressed by how close the skyscrapers are and how they seem to crowd in upon one. The effect is dramatic; but in some respects, is no more than an effect -- one caused by the radial street pattern, which allows one

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25 Progressive Architecture, XLI (Jan. 1960), 117.

to see more buildings from almost any vantage point than could be seen in a city where the buildings were aligned on the usual pattern of a rectangular grid.

Except for the depressed expressways surrounding the central business district, which do not dominate the visual environment as does the "viaduct architecture" of the elevated type of expressway that is more often built, the site of the city is almost flat, so that the variations in the skyline are man-made. As you move any distance from the center of the city, the central business district cluster of skyscrapers is the principal feature above the horizon. There are, however, smaller clusters too. Along the axis of Woodward Avenue, about two miles to the north of the central business district, lies a smaller cluster formed by the new office buildings of several automobile manufacturers. Part of the way along this axis, about half a mile to the east and to the west of it, lie two or three clusters of public housing apartment buildings. And lastly, due east of the central business district, about the same distance away, lies the Gratiot Redevelopment Area including the tall buildings already mentioned.

The protection of this clustering character of Detroit's skyline is one of the concerns of Mr. Charles Blessing, Director of the City Plan Commission, who is striving to make people aware of the beauty with that of the flat-topped mountains of Monument Valley, Arizona, which rise from the level desert floor in a manner strongly

suggesting the clustering of skyscrapers as seen in Detroit and some other large cities. We respond immediately to the beauty of Monument Valley. We must realize that the silhouette of a great city can be just as much a source of beauty and inspiration. If tall buildings are allowed to appear in random locations, the beauty of the clusters will be lost.[26]

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[26] Conversation in June, 1964 with Charles Blessing, Director of the Detroit City Plan Commission.

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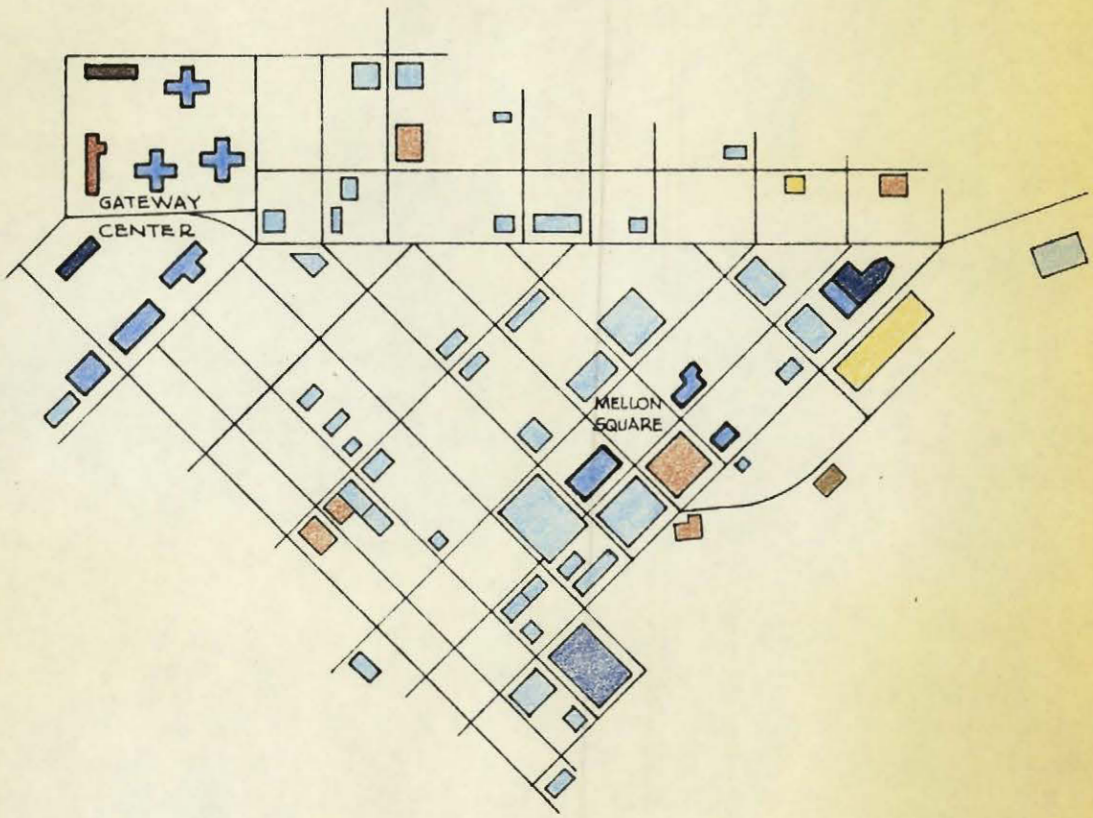

BUILT
1945 OR EARLIER — AFTER 1945

- COMMERCIAL & OFFICE (EXCEPT GOVERNMENTAL)
- GOVERNMENTAL OFFICE
- HOTEL
- APARTMENT
- HOSPITAL
- MANUFACTURING & WAREHOUSING
- SCHOOL
- PARKING

THE CLUSTERING OF SKYSCRAPERS IN PITTSBURGH

SCALE 1" = 800'

W. I. SHANK 1964

Follows second after p. 97

THE GOLDEN TRIANGLE FROM THE SOUTHWEST.

AERIAL VIEW.

VICTOR GRUEN, THE HEART OF OUR CITIES (NEW YORK, 1965), P. 180.

THE GOLDEN TRIANGLE FROM THE EAST.

GATEWAY CENTER.

MELLON SQUARE

PITTSBURGH

PITTSBURGH

EARLY GROWTH AND INDUSTRY

Pittsburgh's Golden Triangle lies in a beautiful wooded valley in which the Allegheny and the Monongahela Rivers join to form the Ohio, flowing on to the Mississippi in the west. Extensive settlement began in the city after 1763, when a peace treaty was concluded with the neighboring Indian tribes and a boundary dispute between the Virginia and the Pennsylvania colonies was ended. Pittsburgh's industrial development began shortly after settlement, when coal and iron were discovered in the nearby hills. An influx of European immigrants after the Civil War rapidly swelled the population. By 1900 the city claimed 322,000 people.

The city is an important industrial center, especially in steel. Natural resources are abundant and the location of the city is strategic. Originally there were plentiful sources of timber, clay for bricks, sand for glass, coal deposits, petroleum, and natural gas. There were, and still is, large supplies of water for industrial uses. Early dominance in the steel industry was aided by the nearby coal supply and the city's proximity to the iron ore deposits on the Great Lakes. Steel fabricating and machinery manufacture of mill machinery and heavy electrical equipment are important industries today. The city is a port of entry, a leading transportation center,

and a major inland exporter of manufactured goods to markets throughout the world. The total tonnage in the Pittsburgh engineering district in the late 1950's exceeded that in the Panama Canal. The population in 1960 of the Pittsburgh Standard Metropolitan Statistical Area was 2.4 million people, with 604,000 of them within the city limits.[1]

CITIZEN ACTION

Realizing in 1943 that virtually the only major new building construction in Pittsburgh since 1932 had been public housing, a group of the city's leaders became concerned for the future of the central business district and decided that steps for its improvement, or very survival, must be taken. They organized themselves into the Allegheny Conference, thinking of themselves as a citizens' group of expediters. In their membership they included such important business owners and executives as R. K. Mellon, Alan Scaife, Benjamin Fairless, and Andrew W. Roberts. The group was instrumental in effecting certain measures necessary to precede any work within the central business district itself: flood control and water pollution control,[2] and, in 1946, the solving of one of the most difficult problems, that of smoke control. Strict regulation

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1 Charles F. Lewis, "Pittsburgh," Encyclopaedia Britannica (1964), XVII, 973-5.

2 Architectural Forum, XCI (Nov. 1949), 59, 60.

of smoke production by all industrial and commercial establishments in the city began in 1946, and in the following year the ban was extended to include private homes, so that it is now illegal for any furnace or stove to produce smoke. Pittsburgh can no longer be accused of being a smoky city. In addition, federal highway funds were obtained with which to build highways to assure automobile accessibility to the central business district.[3]

GATEWAY CENTER

With these necessary preliminary measures under way, interest in building construction began to appear. In 1949 the Equitable Life Assurance Society began to investigate the urban redevelopment of the run-down area toward the point of the Golden Triangle and next to the central business district. The city had planned to develop this place in public housing. Andrew J. Eken, a builder of apartment buildings for insurance companies, and Robert Dowling, a successful real estate man, inspected the property and advised their client, Equitable, that the location was too far removed from any other housing in the city by the intervening area of the whole central business district, and that, instead of housing, Equitable should build office buildings in order to meet the shortage of office space in the city. They suggested placing

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[3] Ibid., LXXXV (Oct. 1946), 24.

these buildings each on its own two-acre, park-like site. The city at that time possessed an amount of office space that was less than the 5.7 million square feet contained in the nine buildings on Rockefeller Center's twelve and a half acre site. Eken and Dowling recommended the acquisition of the twenty-three acre site and the covering of only one sixth of its area with office towers to provide 2.25 million square feet of new office space. If the city would change its plans for public housing, it would be possible for the Urban Redevelopment Authority of Pittsburgh to acquire the site for a relatively reasonable price, paying only ten million dollars for it, or ten dollars per square foot.[4] The recommendations were followed, the city changed its plans, and the Redevelopment Authority acquired the site. Nine cross-shaped buildings were planned for it, the first three to be completed early in 1952.[5]

It is a rather curious fact that the concept of the cross-shaped skyscrapers widely spaced upon this site was the first realization of Le Corbusier's generation-old dream, but a realization brought about in a way which he probably did not foresee -- not by architects or urban planners, but by so-called practical men of affairs.[6] For almost two and a half years no professional architectural or planning services were used, during which time Eken and Dowling and Equitable developed the requirements and made basic

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[4] Ibid., XCI (Nov. 1949), 62.

[5] Ibid., XCI (Nov. 1949), 63, 65.

[6] Ibid., XCIII (Sept. 1950), 89.

design, and site layout.[7] Gateway Center, as the development came to be known, is architecturally somewhat uninteresting. The editors of Architectural Forum commented that architects and planners, consulted from the beginning of the project, could have contributed to make it something greater than the sum of its parts. Rockefeller Center, in many ways a similar problem, shows by contrast the successful results of the use of the services of an excellent firm of architects working with four practical, hard-headed building managers who were hired by the owner to represent him in the development of the design.[8]

MELLON SQUARE AREA

At the time that Equitable was negociating for its site, United States Steel Corporation and the Mellon Bank together were planning to build and occupy a forty-story building connecting with the existing Mellon Bank Building in the center of the central business district. But one of the deterring factors to the construction of new buildings in the central business district was the fact that, although the need for automobile parking facilities was recognized, the cost of providing them was excessive. Fairless, of United States Steel, and Mellon were hoping to get the city to

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7 Ibid., XCI, (Nov. 1949), 62, 63.

8 Ibid., XCIII (Sept. 1950), 89.

provide the needed parking space. It was known that the Aluminum Company of America was also planning to construct and occupy a large building in the same area.[9] More parking facilities would encourage construction of both structures. The problem was solved when three Mellon Company foundations donated a full block site for a garage and the money to landscape a plaza on it.[10] Two private companies leased the underground rights for thirty-eight years and in return have built, financed, and will operate during that time a six-level, underground public garage for one thousand automobiles. Upon expiration of the lease, ownership of the garage will revert to the city.[11] With automobile parking facilities assured, the construction of the United States Steel-Mellon Building began, and in 1951 the forty-story office skyscraper on the western side of Mellon Square was completed.[12] Facing this building the Aluminum Company of America has erected its thirty-story company office building boldly experimenting in the use of their product as an exterior cladding.[13]

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9 Ibid., LXXXIX (Sept. 1948), 14, 16.

10 Architectural Record, CXXI (Feb. 1957), 195; Architectural Forum, XCI (Nov. 1949), 112.

11 Martin Meyerson, Face of the Metropolis (New York, 1963), p. 96.

12 Architectural Record, CVIII (Sept. 1950), 192.

13 Progressive Architecture, XXXIII (Aug. 1952), 87.

PARKING GARAGES

The two skyscrapers facing Mellon Square and the three cross-shaped office towers in Gateway Center -- later buildings in this area took other forms -- constitute the first group of post-World War II buildings in Pittsburgh. Another development of importance was the construction of parking garages in the city. As a result of studies conducted by the Regional Plan Association in 1943, it became evident that there was a great need for parking facilities, not only for people working in the central business district, but for shoppers and for business callers as well, and by 1949 four large parking garages were under design. These were the first buildings of the new Pittsburgh Parking Authority, an agency of municipal government empowered to build and to operate parking facilities, to issue tax-exempt revenue bonds, and to acquire land by eminent domain. A total of six of these garages had been recommended.[14] By 1959 seven garages had been built, with a total capacity of 4,487 cars.[15]

LATER DEVELOPMENTS

Lower Hill makes up most of the third, or land, side of the Golden Triangle. Ninety-five acres of slums have been cleared

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[14] Architectural Forum, XCI (Nov. 1949), 70, 71.

[15] Lewis, p. 974.

from Lower Hill for redevelopment. On twenty of these acres a public auditorium, or arena, was completed in 1961, a four hundred fifteen foot diameter, retractable-roofed, domed structure for conventions, athelic events, and cultural programs.[16] At the southern end of Lower Hill, on a bluff, redevelopment is planned which will permit the expansion of the Duquesne University campus.[17] At the north-east, three fourteen- to twenty-story apartment buildings, the three containing together 935 units, are planned (one had been completed by the summer of 1964). They are within ten minutes walk of Mellon Square,[18] if one measures the time it takes for the down-hill walk from the apartments to the square and not the up-hill return.

At the very tip of the Golden Triangle and adjacent to Gateway Center, thirty-six acres have been certified by the city for redevelopment as a state park and major traffic interchange.[19] On the site of Gateway Center itself, three new office buildings have been built: one for the telephone company, one for the Commonwealth of Pennsylvania, and the last, a twenty-two story glass-clad structure with 400,000 square feet of rentable office space and with provisions for parking 750 automobiles underground.[20]

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16 Lewis, p. 974; Architectural Record CXXX (Nov. 1961), 167; Ibid., CXXV (May 1959), 250.

17 Lewis, p. 974.

18 Architectural Forum, CXI (Sept. 1959), 9.

19 Lewis, p. 974.

20 Architectural Record, CXXVIII (Sept. 1960), 214, 215.

Nearer to the original, cross-shaped towers a large Hilton hotel has been completed, and a slab-shaped apartment structure near it parallels the Allegheny River. Across the street from Gateway Center and connected to by means of a pedestrian bridge over the street, a new open site and a structure for International Business Machines Company has just been finished.[21]

ACCESSIBILITY

In Pittsburgh we may see some of the largest, oldest, and farthest advanced urban rebuilding in the United States. Between 1947 and 1957 one fourth of the central business district was rebuilt, but the problems of traffic were only made worse as the redevelopment was more successful. The new expressways also increase the problem. Frederick Gutheim observed that Pittsburgh's central business district now needs a reduction in street traffic and better public transit.[22] In 1964 the Allegheny Port Authority took over all public transit in the Pittsburgh metropolitan area and will coordinate transit services, which are now independently operated, in order to reduce duplication. Approximately 30% of the people coming into the central business district use public transit. The percentage probably is so low because the service is poor, the trolleys and buses are dirty, and transit firms have

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21 Architectural Forum, CXVII (Dec. 1963), 115.

22 Frederick Gutheim, "Projects Without Plans," Architectural Forum, CVI (Feb. 1957), 147, 148.

been reducing their services and shifting their financial assets to other holdings. Although the many tunnels and rights of way already built or existing would help reduce the cost of a subway installation, nothing other than surface transit is foreseen. Apparently, the hope is to provide improved public transit to the present conventional type in order to lessen traffic congestion and to continue the program of providing strategically-sited parking facilities to help offset the anomalous fact that the new expressways leading into the central business district can deliver automobiles faster than the street system and the parking facilities can absorb them.[23]

OBSERVATIONS

The clustered skyscrapers of Pittsburgh's central business district constitute a well-defined grouping covering all of the Golden Triangle except for the thirty-six acre park at the point. The rivers on two sides of the triangle define a sharp separation of the cluster, as do the park at the point and the large cleared spaces of the Lower Hill redevelopment area along most of the other landward side. The older portion of the cluster contains four new skyscrapers: United States Steel-Mellon, Aluminum Company of America, Porter (similar to Alcoa and in the next block), and the new Federal Building to the northeast. The newer portion of the cluster contains

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[23] Conversation in June 1964 with Sam Spatter and George Anderson, both of the Pittsburgh Planning Commission staff.

nine skyscrapers built since World War II, all but one of them within the two superblocks that make up Gateway Center, and the one remaining on a site adjacent to the Center. Pittsburgh's central business district, then, seems to be developing around two centers; we may describe its form as binuclear.

In the older nucleus one sees human activity all around. Shoppers, business and professional people, and office workers crowd the sidewalks of the narrow streets. Office buildings and a hotel cluster around Mellon Plaza and most of the large department stores are close by. The plaza has become the focus for this older nucleus. The plaza itself is a bit isolated from through pedestrian traffic, possibly because the walker must climb the total difference in elevation between the streets on opposite sides in one flight of steps, and because the traffic on the streets surrounding the plaza tend to cut it off from foot traffic. But the space is a rather quiet oasis amid the activity of a large city, sheltered from the wind by the tall buildings around it, and, a most important asset, a place from which one may get a better view both of the skyscrapers around it, and of some of those down neighboring streets a little farther away. This open space in the dense cluster of skyscrapers is extremely gratifying to see.

The more recently-built nucleus is a place of beauty. The open spaces between buildings are extensive and well planted, and in the more than ten years time since their planting the trees have grown to a size that will provide shade and will act as the

massing of forms that the landscape architects intended them to. There are also some very arresting vistas through some of the groups of buildings on to others beyond. All of these features have their merits in spite of the uninspired architectural design of most of the buildings and the less-than-successful site planning of the groups. But there is one fault that, given the program established by the owners of the development, no architect or planner could do much to combat. In terms of human activity, of something going on, the place is most uninteresting. There are restaurants on the ground floors of some of the buildings, but except for these, the atmosphere of the group is as formal and as dull as the old-fashioned front parlor. The liveliness of a little vulgar commercial activity would make the plazas into interesting spaces. People now must cross a busy street to reach the only department store near by, which is at one border of the site; or they must cross other busy streets to reach some small, rather run-down shops, some of which are grouped around an old public square, and all of which are interesting because there are people about. The old nucleus is a little less than half a mile away, too far for most people to walk during most of the year. In short, we must give the builders of Gateway Center full credit for one of the first open developments of clusters of skyscrapers, but we must also be aware of the fact that this development does not properly serve some of the human needs of the people who use it, and that it suffers on this account. It is isolated from the rest of the city

by the heavy automobile traffic which passes around it, and its two principal parts are isolated from one another by the traffic passing through. The omission of commercial activities within the plaza limits its appeal for human use, and the older nucleus remains the vital center of Pittsburgh in spite of all the advantages of Gateway Center.

Follows first article p. 110

SPRING GARDEN

VINE

LOGAN CIRCLE

JOHN F. KENNEDY BLVD.

FILBERT

PENN CENTER

CITY HALL

MARKET

CHESTNUT

RITTENHOUSE SQUARE

WASHINGTON SQUARE

BROAD

SOUTH

N

BUILT

1945 OR EARLIER	AFTER 1945	
		COMMERCIAL & OFFICE (EXCEPT GOVERNMENTAL)
		GOVERNMENTAL OFFICE
		HOTEL
		APARTMENT
		HOSPITAL
		MANUFACTURING & WAREHOUSING
		SCHOOL
		PARKING

THE CLUSTERING OF SKYSCRAPERS IN PHILADELPHIA

SCALE 1" = 800'

W. I. SHANK 1964

Second after p. 110

THE CENTRAL AREA FROM THE SOUTHEAST
PERSONAL FILES

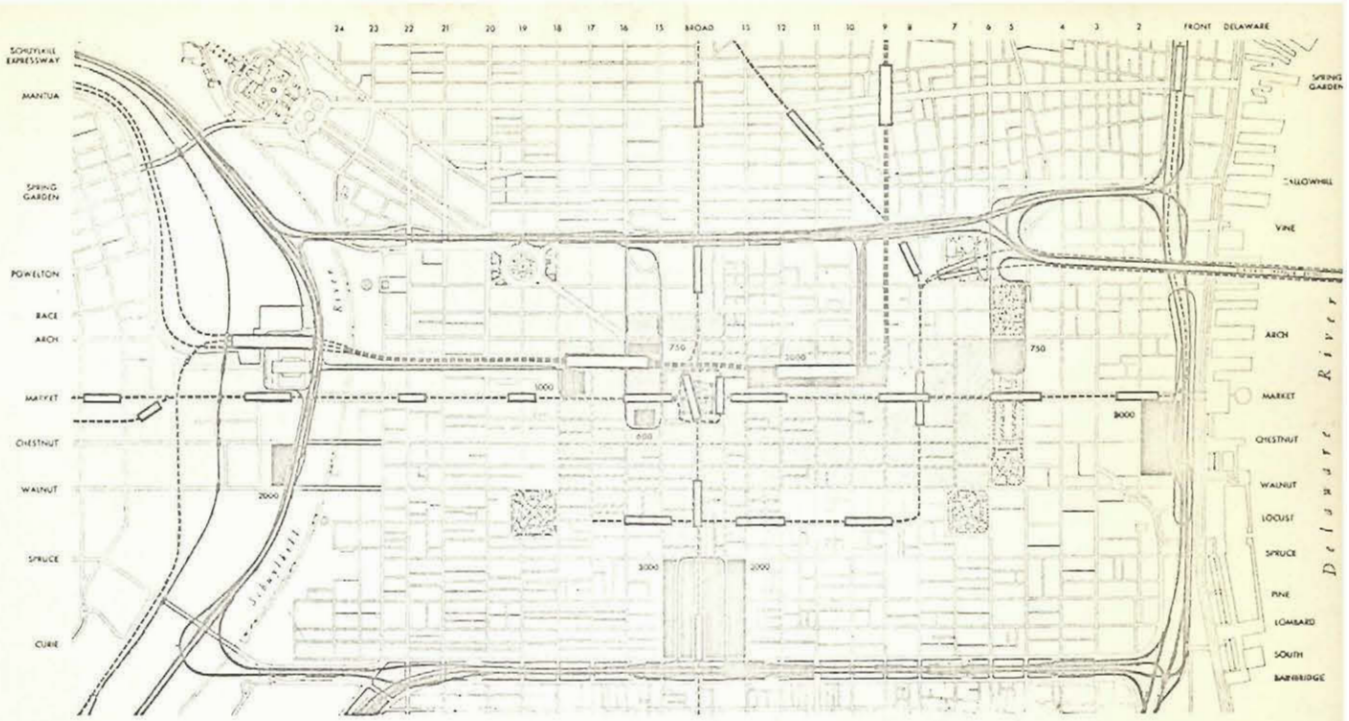
PENN CENTER. LOOKING WEST.

LOOKING SOUTH TOWARD THE TOWERS OF SOCIETY HILL

HISTORIC HOUSES AND A NEW APARTMENT HOUSE NEAR WASHINGTON SQUARE

TYPICAL ALLEY OF RESTORED ROW HOUSES.

PHILADELPHIA



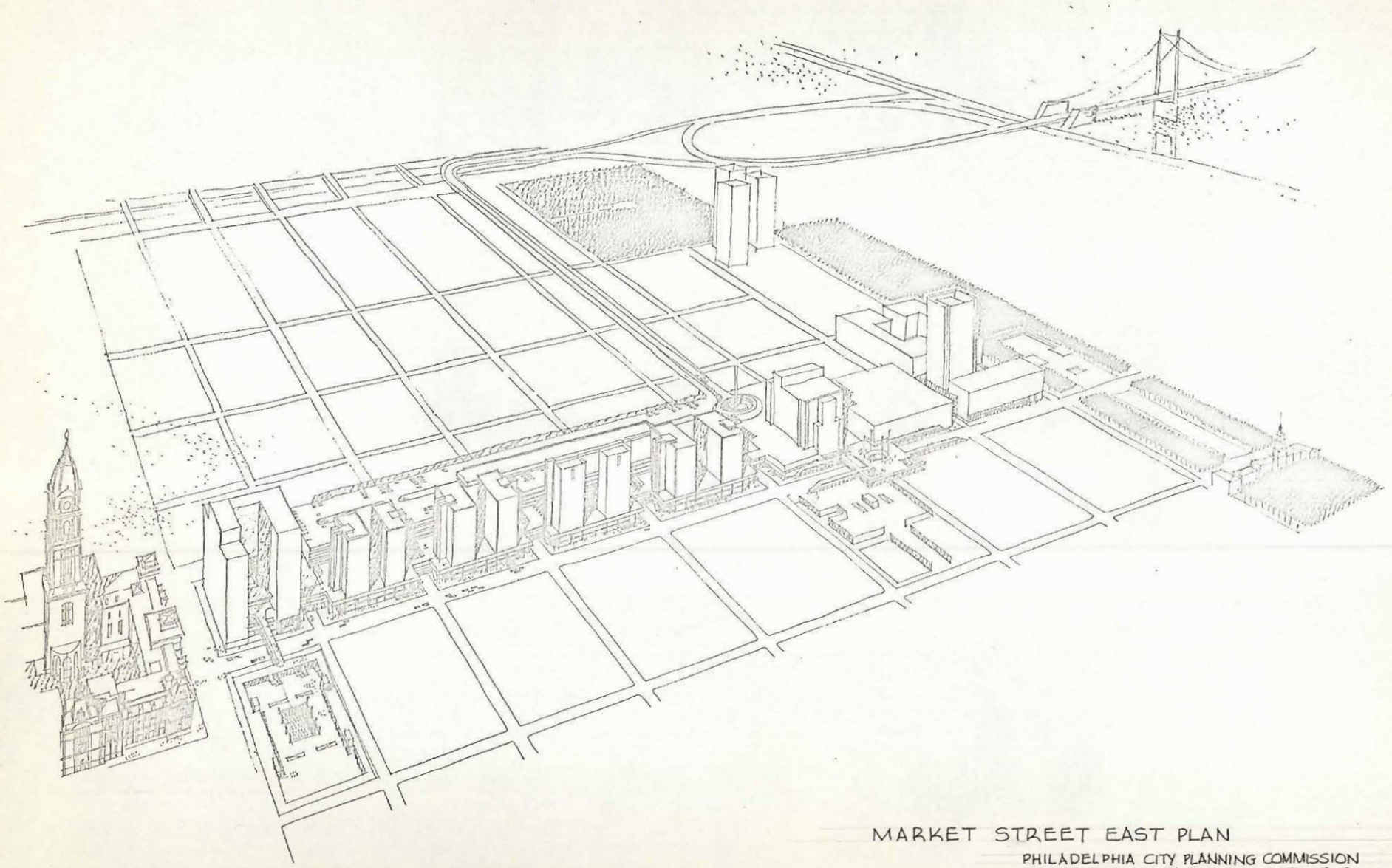
CENTER-CITY TERMINAL FACILITIES, as proposed by the City Planning Commission, 1960

JOHN RANNELS, "TRANSPORTATION PLANNING." JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS, XXVI (AUG. 1960), 194.

BROAD STREET
LOOKING SOUTH FROM CITY HALL TOWER

PENN CENTER
LOOKING WEST FROM CITY HALL TOWER

Third after p. 110 Phila.



MARKET STREET EAST PLAN

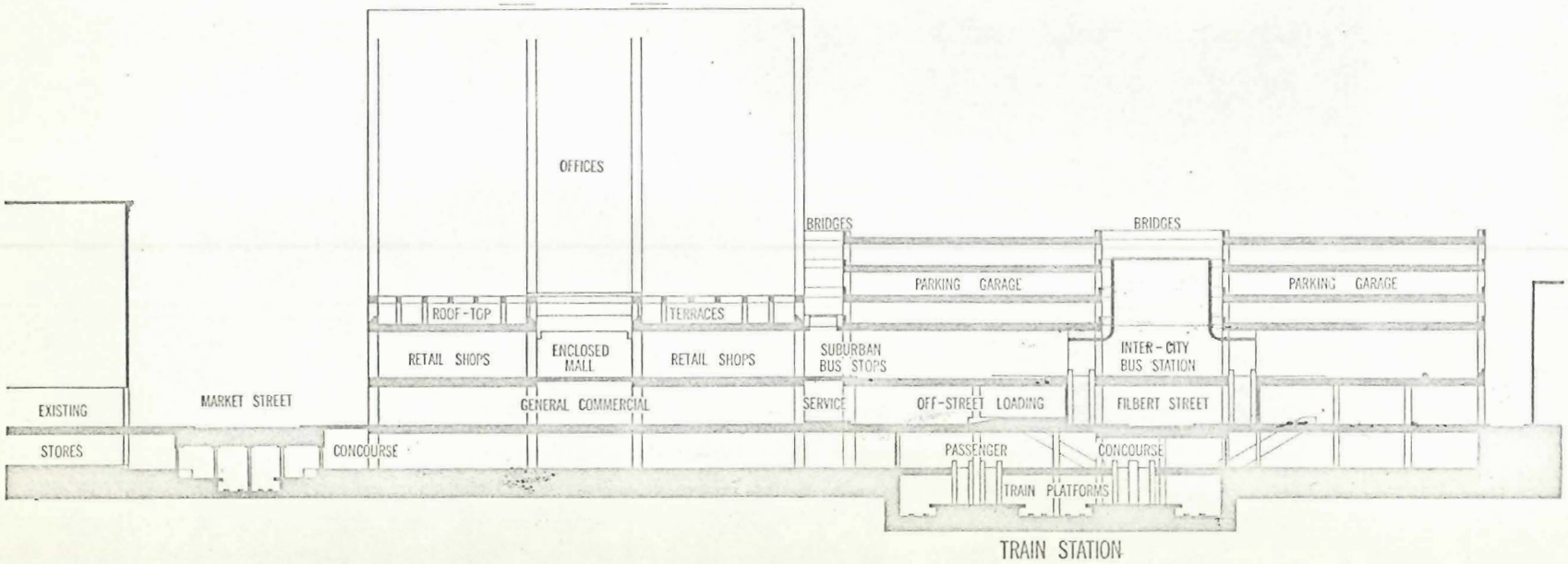
PHILADELPHIA CITY PLANNING COMMISSION
MARKET STREET EAST STUDY. FEB. 1963

Fourth after p. 110

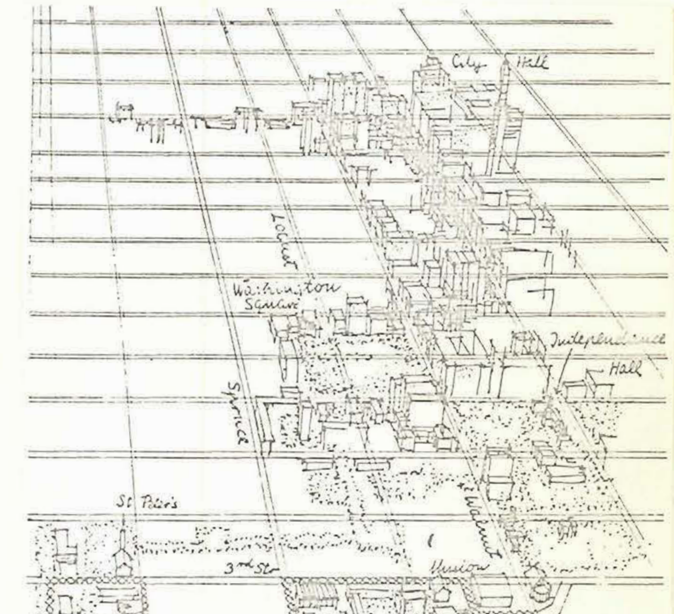
TYPICAL CROSS-SECTION

MARKET STREET EAST PLAN

PHILADELPHIA CITY PLANNING COMMISSION,
MARKET STREET EAST STUDY. FEB. 1963



TRAIN STATION



SOCIETY HILL (BOUNDED BY XXXXXX)

EDMUND N. BACON, "A CASE STUDY IN URBAN DESIGN," <u>JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS</u>, XXVI (AUG. 1960), 233.

PHILADELPHIA

FOUNDING AND EARLY GROWTH

William Penn instructed his surveyors to lay out Philadelphia in a regular and straight pattern of streets with spaces reserved for markets and squares, so that the city would be "a greene countrie town." Thomas Holme, Penn's surveyor general, followed these instructions.[1] Four public squares are symmetrically placed around a central plaza at the crossing of the two main axial streets, High Street (later renamed Market Street) and Broad Street. The central plaza was reserved for a market place, but was too far from the eighteenth-century center of the city. Markets developed instead along High Street, and later the central plaza became the site of the present city hall. High Street was laid out 100 feet wide, the residential streets 50 feet, and they were planted with trees after 1700 and paved with flagstones and bordered by brick sidewalks within the next fifty years, a novel sight which never failed to impress travelers, as did the orderliness of the street plan itself.[2]

The city grew rapidly, for the Pennsylvania Colony's policy of religious freedom and Penn's astute advertising of the

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[1] Russell Frank Weigley, "Philadelphia," Encyclopaedia Britannica (1964), XVII, 705.

[2] Tunnard and Reed, pp. 45-47.

colony's potential wealth attracted a large immigration from many different nations. The city became an early example of what later became known as the American melting pot.

The site of the city lies on a peninsula of land between the Schuylkill River on the west and the Delaware River on the east and about ninety miles from the Atlantic by way of the Delaware. The harbor is good, although navigation to enter the Delaware is treacherous in Chesapeake Bay.[3]

In the first half of the eighteenth centruy Philadelphia became a trade center, exporting the agriculture produce of the Pennsylvania region. Industrial development began in the second half of the century, and the city developed a flourishing trade with Europe, the West Indies, and with east-coast ports, especially with New England. Flour mills, paper mills, iron furnaces and forges, rum distilleries, anchor forges, glass works, and even a fire engine manufacturing plant appeared in the city or near by.[4]

Before and during the American Revolution Philadelphia was the headquarters for the Continental Congress, except during the season of the British occupation, and after the war was at different times the headquarters of the Congress of the Articles of Confederation. The Constitutional Convention was conducted in Philadelphia, and the city became the temporary capital of the United States until the seat

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[3] Weigley, p. 704.

[4] Ibid., p. 705.

of government was moved to Washington in 1800.[5] During these years, Philadelphia had become the financial capital of the country, remaining the site of the Bank of the United States until the 1830's. The city lost its commercial ascendancy to New York, which had a superior port and which developed a greater volume of trade upon the completion of the Erie Canal, and lost its cultural eminence to Boston and New York when the national capital was moved.[6] Philadelphia then became an urban regional center. It remained the second largest city in the United States until Chicago surpassed its population in 1890.[7]

During the eighteenth century the urbanized area of the city spread beyond Vine Street and beyond South Street, the original northern and southern boundaries across the peninsula.[8] By 1776 the population had reached 40,000 people, making Philadelphia, next to London itself, the largest city in the British Empire.[9] By this time the character of the city had changed. It was no longer a town of houses each spaced upon its ample plot, but a city of row houses facing one another along narrow streets.[10] During the mid-nineteenth

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5 Ibid., p. 706.

6. Ibid., p. 706.

7. Ibid., p. 707.

8. Ibid., p. 705.

9. Tunnard and Reed, p. 47.

10 Weigley, p. 705.

century a large influx of immigrants, mainly Irish and German, swelled the population, and this fact, combined with the flight of the upper social classes to the suburbs, gave rise to the control of the city's politics by a corrupt "machine."[11] In the early twentieth century Philadelphia grew faster than any other major city in the United States,[12] from 1.3 million people to 1.8 million between 1900 and 1920, an increase of thirty-eight percent. Later growth was slower, with the population of the city proper reaching two million in 1960, a decline of 100,000 from the 1950 census.[13] The population of the Standard Metropolitan Statistical Area, however, was 4.3 million in 1960, and increase of 18.5 percent over 1950, showing that growth was continuing, but in the peripheral areas.[14]

EFFORTS IN PHYSICAL PLANNING

Early planning efforts in Philadelphia began in the 1920's, when a citizens' planning movement was organized on the example of

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11 Ibid., p. 708.

12 Ibid., p. 704.

13 Donald Harris Kent, "Pennsylvania," Encyclopaedia Britannica (1964), XVII, 481.

14 Weigley, p. 704.

New York. A plan was prepared, but nothing further was done. Funds ran out, and the time was not right; the years of the depression had arrived. During these same years, however, other planning work was done under the relief programs of the federal government. Elaborate plans for large portions of central and south Philadelphia were prepared, and a great deal of research, even including an extensive origin-destination traffic survey, was completed.[15]

But the corrupt political machine still controlled the city government, even after a group of young Turks attempted to overthrow it in 1939. After their failure they decided to change their tactics and to espouse the cause of city planning as a non-controversial way to get some of the things that they wanted done. For this purpose they organized the Citizens' Council on City Planning, gained wide public support for their endeavors, and were able to convince the mayor himself that he should reorganize the defunct Planning Commission. This the mayor did. He even went so far as to appoint as chairman of the Commission the man whom the Citizens' Council had chosen, someone selected to give the movement a great deal of respectability and to supply the new commission with the largest budget for planning of any city in the country at that time. The first aims of the commission were certain necessary maintenance projects which would be assured of popular support, such as the

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15 David A. Wallace, "Renaissancemanship," Journal of the American Institute of Planners, XXVI (August 1960), 157.

Market Street subway, and urban research. In 1947 the Commission presented to the public the "A Better Philadelphia" exhibition, the purpose of which was the popularization of planning and the creation of an image of the future city. Between 1947 and 1955 an extensive housing survey was conducted to determine where redevelopment should be carried out, redevelopment planning was emphasized, and the basic outlines of the present program were laid out. By 1952 the political reform group had successfully defeated the old machine and had obtained for the city a home rule charter which gave the City Planning Commission a mandate to prepare a physical development plan. In 1955 the major emphasis was shifted away from redevelopment and toward comprehensive planning.[16]

The features of the "A Better Philadelphia" exhibition which related to the central business district were the following: development of the frontage of the Delaware River, including an expressway, a yacht basin, a wholesale center with an adjoining playground area; new public buildings -- a Museum of Natural History, a music academy, and a Federal Building (near Logan Circle); apartments near the Vine Street Bridge; the Pennsylvania Boulevard approach (later named after John F. Kennedy) to the Pennsylvania Railroad's Thirtieth Street Station, with new apartment and commercial buildings near by; offices and apartments with several different approach levels, on the land west of the city hall that was formerly occupied by the

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16 Ibid., pp. 158-159.

Pennsylvania Railroad's Broad Street Station, its trackage, and the infamous Chinese Wall that impeded the westward growth of the city for fifty years; and trees, malls, and other open spaces in the vicinity of Independence Hall.[17]

PENN CENTER

Penn Center, suggested in the "A Better Philadelphia" exhibition, marks the emergence of the new Philadelphia more than anything else yet built.[18] Perhaps the size of the project alone assures it of this degree of importance, It encompasses thirty acres, fourteen of which belong to the Pennsylvania Railroad. The rest is land certified by the City Planning Commission for redevelopment. Edmund Bacon, director of the City Planning Commission developed a plan for Penn Center. His plan included three slab-shaped office buildings placed with their long dimension running north and south across the site in order to avoid continuous shading of the ground. These buildings straddle a three-block long sunken plaza, which is open to the sky except at the places where it passes under the office buildings and where it passes under the intervening cross streets. The plaza, or concourse, would serve as a pedestrian link between the existing suburban railroad station to the west and the subway station under City Hall Plaza. An intercity bus terminal

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17 Architectural Forum, LXXXVII (Dec. 1947), 76, 77.

18 Meyerson, pp. 61, 63.

was also planned. One of the aims of the development was to draw people west from the present commercial center and to encourage commercial development to move west also. Adjoining the City Hall Plaza on the north a new municipal office building was to be built on Rayburn Square, and the old, inefficient city hall was to be razed, except for its tower. (Popular sentiment has saved the relic in its entirety.) In 1952 market analysts predicted that three million square feet of office space would be needed in the central business district by 1960. Penn Center would provide 1.6 million square feet of office space and 290,000 square feet of new retail commercial space. Pedestrian traffic, channeled through the sunken plaza, would make the site especially valuable for commercial use. An additional feature of the plan was to be an underground parking garage near Vine Street on the north to park 2,500 automobiles and to serve as a transfer point for freight, which would be removed from large trucks here and reloaded on small delivery trucks for underground routing along a delivery loop having peripheral access to the stores on the plaza.[19]

Bacon's plan was not carried out in its original form. Two other plans were proposed: one plan by Robert Dowling, the real estate consultant who advised the Equitable Life Assurance Society about Gateway Center in Pittsburgh and who was acting as consultant to the Pennsylvania Railroad, and the other plan by a developer who

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19 Architectural Forum, XCI (June 1952), 119, 120, 122.

was the head of a specially-formed syndicate. The full story of the negociations will probably never be known, but the results of them were that Dowling's plan was chosen by the railroad and the city as a compromise between the plan of the developer, which offered very little open space, and Bacon's plan, which left more open space than would allow the railroad to obtain the financial return which they required from the lease of their land. In Dowling's plan the two eastern blocks of railroad land each contain pairs of tall, slab-shaped buildings, their long dimension parallel to the length of the blocks, that is, east and west, creating a narrow, gorge-like space above a pedestrian esplanade and between the walls of the two buildings. This space would be in shade most of the year. The pedestrian concourse remains, but it is sealed under the ground, except for two penetrations to the surface in the form of small sunken plazas. The last building is also slab-shaped and is placed at the western end of the esplanade,[20] on the third block of the site, with its long dimension north and south. Thus five buildings replaced the three of the Bacon plan, and the average percentage of site coverage on the eastern two blocks is thirty-four. It was planned that there would be separate owners for four of the five buildings. The buildings shapes, heights, sitting, and column spacings were decided on before architects were hired.[21] Dowling seems to have conducted his efforts in Penn Center in much the

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20 Meyerson, p. 63.

21 Architectural Forum, XCVIII (Apr. 1953), 149, 150.

same way as he did in Pittsburgh a few years before. The construction of the first pair of buildings, on the eastern block of the site, was done for Uris Brothers. The first building was under construction in 1954,[22] earning for itself the distinction of being the first new office building to be built in Philadelphia in twenty years.[23] On Rayburn Square, north of City Hall Plaza, the Municipal Services Building, nearing completion in 1964, will be leased to the city under a lease-purchase agreement providing that the property revert to city ownership in twenty-five to thirty years. The lobbies of this building are open from the street level down to the level of the lower concourse and effectively relate the two. A large underground garage is included in this project.[24] The Transportation Building, which closes off the west end of Penn Center, was completed in 1957, an eighteen-story building housing the general offices of the Pennsylvania Railroad. A three-story parking garage for 1,000 automobiles above grade is placed slightly to the west of the Transportation Building, and a bus terminal occupies the intervening

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22 Architectural Record, CXV (May 1954), 176; Architectural Forum, CX, (May 1959), 7.

23 Architectural Forum, CIII (July 1955), 122.

24 Ibid., XCIX (Oct. 1953), 37; Edmund N. Bacon, "Downtown Philadelphia: a Lesson in Design for Growth," Architectural Record, CXXIX (May 1961), 144.

space. Loading platforms for the buses are placed underground. North of Penn Center and facing John F. Kennedy Boulevard, the Penn-Sheraton Hotel has been built, another slab-shaped building paralleling the boulevard.[25] To the west, two similarly sized and shaped buildings, both apartment houses, have been erected. On the middle block of the Center itself, a third building for Uris Brothers was built along the north side of the block, a slightly thicker slab this time, and then a building square in plan was placed on the southwest corner of the site, preventing the repetition of the parallel slabs and shady esplanade constructed on the eastern block. The square building will house offices for International Business Machines.

We have then, in Penn Center a new clustering of skyscrapers eighteen to twenty stories high, begun in 1952.[26] Within a dozen years seven new office buildings appeared, also a hotel, a motel, and three apartment buildings, all either within or close to Penn Center, a total of twelve new buildings. Each of these buildings includes a floor area many times greater than that contained in older buildings, each of these buildings occupies a much larger site for the building itself than did any of its counterparts among older structures, and each leaves part of its site unoccupied by the building, a condition entirely new.

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25 Architectural Record, CXVIII (Aug. 1955), 169, 170.

26 Meyerson, p. 61.

CENTRAL-AREA LIVING

Philadelphia has an old and viable tradition of central-area living. One cannot be in the city long before becoming aware of this fact, for one sees the historical brick row houses, in good condition, lining many of the smaller streets near the central business district, and one sees clusters of apartment houses and town houses in the area of Rittenhouse Square serving urban people of the higher income levels. The row houses and the persistence of the idea of living in the central area of the city have had a strong influence on Philadelphia.[27] In addition, one is impressed by the number of buildings built in the early and critical years of American history and located in the vicinity of Independence Hall, public buildings, row houses and tenements, as the early multiple dwellings were called. Considering the notions, forst, of preserving these historic buildings for the use and enjoyment of posterity and the present as well; secondly, of providing a harmonious setting for them; and, thirdly, of re-establishing in-town living in one of the oldest parts of the city, the City Planning Commission selected the Society Hill area for careful study in 1947. The result of this study was the Washington Square East project, combining high apartment towers and new row houses with the surviving eighteenth-century brick row houses so characteristic of Philadelphia. Assisting

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27 Wallace, p. 158.

in this effort, the federal government has set off a four-block area containing many historic structures, east of Independence Hall, as Independence National Park.[28]

Washington Square East was designed in the following way. The City Planning Commission, operating through the Redevelopment Authority, hired consultants to study the area in question and to determine how it ought to be redeveloped. Based on their study, competition conditions were drawn up and issued to interested developers. These conditions stated which buildings must be retained on the fifty-six acre site, how many new living units were to be provided (the number was 1, 476), how many parking spaces were needed, and the approximate locations of tall buildings, garden apartments, and row houses. The conditions also required a system of green walkways for pedestrian circulation through the area. The walkways were to provide a visual and functional link between the project and other areas of the city to be redeveloped, to be a theme carried throughout. An important consideration influencing design conditions was the desire to attract more middle and upper income families into the central area. Since so many people prefer individual homes with their own gardens, it was thought necessary to provide such living accommodations in this kind of an urban project, where the Redevelopment Authority could offset the usual deterrent of high land costs.

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28 Meyerson, p. 100.

Washington Square East consists of two separate areas, Society Hill and Washington Square. In order to base the competition solely upon the quality of the plan proposed, as it best carried out the aims of the Redevelopment Authority, the price of the land was fixed. The competition was held, and the contract for the development of Society Hill was awarded to Webb and Knapp, Incorporated, which had retained I. M. Pei and Associates as architects and planners. The Washington Square contract was given to the Thomas Jefferson Corporation, which later associated with Webb and Knapp and the Pei firm.[29]

Pei's design for the Society Hill portion of the project centers upon grouping of three thirty-story apartment towers placed away from the historic buildings. His design for the Washington Square portion included a group of two towers within a block of the square itself. All towers have their own underground parking facilities. A greenway system runs east and west, linking the two groups. New townhouses, two and three stories high and in scale with the old houses and churches, front on the greenway system. The verticality of the towers and the horizontality of the rows of town houses were expected to contract pleasantly with one another.[30]

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[29] Ibid., pp. 102, 104.

[30] Ibid., p. 104.

Other new housing has been built in the central area; for example, near Logan Circle four eighteen-story apartment buildings were built covering only fifteen percent of a triangular site and including parking for each unit and 25,000 square feet of commercial space.[31] In addition there have been many private efforts to rehabilitate slum areas. The American Friends Service Committee has been active in this work. One type of assistance they have offered involves arrangements whereby people may perform the labor to remodel units which they wish to buy and have the cash equivalent of their labor credited toward the down payment on their loan.[32] Other private efforts are rehabilitating many of the charming residential streets of brick row houses. Elfreth's Alley happens to be one of them, a small enclave whose size is such that it may be maintained by unaided private interests.[33] Iseminger Street is another example; only seven minutes' walk from the city hall, it was once a slum and is now a pleasant urban street.[34]

If one considers the large number of central area living accommodations already existing of at least standard condition and adds to that the number of new apartments and row houses and of rehabilitated old structures, it would appear that the future

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31 Architectural Record, CXXII (Aug. 1957), 306.

32 Architectural Forum, XCIII (Oct. 1950), 172, 175.

33 Architectural Record, CXXII (Aug. 1957), 306.

34 Architectural Forum, CIII (July 1955), 120.

vitality of Philadelphia's central business district and of the city as a whole, to the extent that these factors affect it, will be reasonably well assured.

MARKET STREET EAST

Up to this point we have considered mainly the recent past, what has been built since World War II. Let us now see what is planned for the future development of the central business district of Philadelphia. Here again we find that the City Planning Commission has laid out the guidelines of a plan, in fact, has been evolving this plan for a period of fourteen years. Certain general principles stand out. Automobiles and pedestrians are to be separated as much as possible. The two-dimensional means of separation achieved in Washington Square East by means of the greenways, a system adequate to a residential intensity of land use, would be inadequate in the central business district. Three dimensional means of separation will be used wherever possible. Pedestrians will be placed on concourses either above or below the level of the streets. Automobiles will continue to travel on the streets, but traffic not destined for the central business district will be routed around it. Chestnut Street will be an exception in that it will carry not automobile traffic but special trolley cars which will connect with underground parking garages at either end of the street. Lower level pedestrian superblocks,

such as already have been built in Penn Center, will extend axially north, south, and east of City Hall Plaza, connecting with the comparable system in Penn Center.[35]

The City Planning Commission anticipates that the metropolitan area of Philadelphia will grow from its 1960 population of four million people to six million in 1980. A quarter of the region's population are now employed in the central area of the city, which promises continued growth as a center for financial matters, business, and professional services if the physical structure of the city develops to meet the new demands which are placed uponiit.[36] the central business district now has two nuclei. One of them is the office concentration centered upon Broad Street, south of the City Hall. The second one is the department store concentration at Eighth and Market Streets. The average floor area ratio in the central business district is now seven. The floor area ratio in Penn Center is ten, and this is the ratio planned for the future western portion of the central business district, and a ratio of eight is planned for the eastern portion. The intensity of land use drops in the area between the two nuclei. In order to increase this ebbing ratio and to join the two nuclei, a new development is proposed along Market Street called Market Street East.[37]

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35 Bacon, p. 140.

36 Philadelphia Planning Commission, Center City Philadelphia (1960), p. 1.

37 Ibid., p. 3.

Returning momentarily to the central area as a whole, we find that certain provisions have been made concerning traffic. An expressway loop is proposed which will define the central area, bypass traffic not destined for it, and provide means of vehicular access through exits connected directly with a system of parking garages within the central business district. Traffic between garages and the expressway loop will not pass on the city streets. Subway service will be improved; certain subway stations will be rebuilt; present elevated transit lines will be replaced by new subway lines; the carrying capacity of the whole system will be increased, and more service to outlying areas will be added. The present rail commuter service will be brought into stations within Penn Center and within the Market Street East project.[38]

The Market Street East plan, completing the plan for the central area, will be a relatively small but intensely developed area. The plan is neither architecture nor planning as they are generally practiced, but is intended to be "a statement of a program to achieve planning objectives and a frame of reference within which the architect will function." Market Street East is a plan which is entirely the work of the staff of the Philadelphia City Planning Commission,[39] and is designed to bring shoppers into the heart of the main retail concentration of the city by means of public transit,

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38 Ibid., p. 8.

39 Bacon, p. 142.

commuter lines, and expressways. Provisions for mass transit will include removal of the New Jersey buses from Market Street by constructing a new bus terminal for them, rebuilding and rehabilitating the Market Street subway stations, and interconnecting the commuter lines of the Pennsylvania and the Reading Railroads. Automobile traffic will be accommodated by a parking garage for 3,000 cars, near to and paralleling the line of stores on Market Street and having its own direct access to the Vine Street expressway. Once people step off mass transit or out of their automobiles, they will proceed as pedestrians along a series of concourses which will carry them on different levels from Penn Center to Independence Mall. Seen in cross section, the project shows subway stations under Market Street opening onto lower level gardens connected by shopping concourses with the rail station to the north. The street-level shops are set back under building arcades, and at upper levels the shops open onto a continuous walkway. Freight loading for the shops is handled by off-street facilities on Filbert Street, which parallels Market Street one block to the north. The upper levels of the project are open to the bus terminal and to the parking garages.[40]

Louis Kahn, commenting on the preliminary studies of the Market Street East plan said that it is "viaduct architecture," and is of a scale large enough to subordinate the motor car as well as to make use of it. The form of Market Street East, he

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[40] Philadelphia City Planning Commission, pp. 20, 21.

said, gives the city a defining wall which, unlike Furness' old Chinese Wall, does not divide the center of the city, but purposefully defines it.[41] Another comment, concerned not with the form of the project but with the bases which determined this form, was made by David R. Wallace. He contends that the Planning Commission gives strong emphasis to design, to such an extent that they seem to ignor the need for research upon which to base their design. Market Street East, according to Wallace, is such a case, based upon inadequate research.[42]

Kahn and Wallace present opposite viewpoints, it would seem, but upon more careful thought it will be seen that each is speaking about a different topic. One is concerned with design and the other about the facts upon which design is based. The two concerns must be reconciled. The design of a city, or a part of one, must take into account the interplay of the generalizing effect of economic activities and the individualizing effect of geography, topography, and the many aspects of human behavior. All of these factors constitute the bases of an ecological approach to urban design. The ecological approach gives the designer the facts which he, through his creativity must utilize to arrive at urban form. The element of design, however, is one which cannot be added, nor can economic and social rationalizations justify

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[41] Scully, p. 41.

[42] Wallace, p. 170.

designs conceived upon other bases. One of the important goals to be achieved by the design for the central area of Philadelphia, however, is to create a strong visual image of the city so that people will be at home in it because they are able to find their way around easily and can therefore get to know the city. In the case of the central area, this image would be the circulation plan itself, as Kenzo Tange has suggested that the structure of the linear transportation system proposed for Tokyo might be a fitting symbol for the metropolis of our times. In these cases, the planner's task is to set up a basic, simple, and clear design framework which will adjust to the necessary changes and serve as a guide to future growth.[43]

OBSERVATIONS

In Pittsburgh one of the nuclei of the central business district centers is Mellon Square, but in Philadelphia, City Hall Plaza is the focus of several nuclei. The scale of the cityscape is larger in Philadelphia than in Pittsburgh, just as City Hall Plaza is about four times the area of Mellon Square. South of City Hall Plaza is the old clustering of skyscrapers in the vicinity of Broad Street, the financial center, where lots are so small that in most cases two or three buildings stand side by side to fill

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[43] Morton Hoppenfeld, "The Role of Design in City Planning, with Reference to Center-City Philadelphia," Journal of the American Institute of Planners, XXVI (May 1960), 98, 99.

the length of a city block. West of City Hall Plaza is the Penn Center cluster, whose buildings are so large that usually only two of them occupy a city block, and then not side by side, but with open spaces around them. North of City Hall Plaza a few tall buildings punctuate the first several blocks of Broad Street, and west of the Plaza, along Market Street, a scattering of office and commercial buildings begins at the Plaza, drops off, and appears again near Washington Square. The revitalization of this part of Market Street will be the work of the Market Street East project. These are the clusters centering on City Hall Plaza: an old cluster and a new one, both well formed, a sporadic cluster, and a proposed cluster.

To the west, toward Rittenhouse Square, a clustering of apartment skyscrapers constructed before World War II is receiving the addition of new buildings of the same type. In the east, near Washington Square, Hopkinson House on the square will group with the two thirty-story apartment houses planned nearby as part of the redevelopment of this area, matching the three towers now standing in the midst of the Society Hill development a few blocks to the east. Four cruciform apartments for public housing almost due south of City Hall Plaza and a group of four slab-shaped luxury apartments to the northwest complete the clusterings.

With its comprehensive outlook toward the problems of planning in its central area, and with the fact that in the near future there will be many examples of at least reasonably good planning solutions to modern urban problems, it seems to me that

Philadelphia has an excellent opportunity to maintain a good quality of environment in its central area and that the city will be successful in its attempts to continue to be the vital center of its urban region. A most important feature of Philadelphia's planning is the proper provision for transit and traffic. The solutions proposed for improving transit and for providing an expressway system with linked parking facilities, and the connection of these with an inviting, rational, and extensive system of pedestrian circulation, seem to have the qualities needed for the successful survival and continued pre-eminence of the central area. In addition, the extensive provisions for central-area living accommodations will preclude the development of traffic and transit problems. The element of caution, however, to be noted is indicated by the way in which this question will be answered: Will the facilities proposed serve the quantity of traffic and transit needs that will be developed? The key to Philadelphia's success seems to lie in the answer to this question.

FIRST after p. 155.

UNIVERSITY
YORK
BAY
YONGE
VICTORIA
FRONT
WELLINGTON
KING
ADELAIDE
LOMBARD
QUEEN
CITY HALL PLAZA
CARLTON
BLOOR

BUILT
1945 OR EARLIER | AFTER 1945

- COMMERCIAL & OFFICE (EXCEPT GOVERNMENTAL)
- GOVERNMENTAL OFFICE
- HOTEL
- APARTMENT
- HOSPITAL
- MANUFACTURING & WAREHOUSING
- SCHOOL
- PARKING

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THE CLUSTERING OF SKYSCRAPERS IN TORONTO

SCALE 1" = 800'
W. I. SHANK 1964

Second after p. 134.

CENTRAL BUSINESS DISTRICT
FROM THE SOUTHEAST

DOMINION BUREAU OF STATISTICS
CANADA 1963, (OTTAWA, 1963), P. 11.

CITY HALL

"THE COLONNADE"

LOOKING SOUTH ON UNIVERSITY AVENUE

AN ARCADE IN THE FINANCIAL DISTRICT

COURT OF THE WILLIAM LYON MACKENZIE BUILDING

TORONTO

TORONTO

EARLY SETTLEMENT AND GROWTH

Settlement of Toronto began in 1783, when it was established that the city would be the capital of the newly-formed province of Upper Canada. By 1820 the town had 1,250 people, and by the 1830's, increasing migration to the city had brought its population to more than 9,000. At this time, the importance of commerce had surpassed that of the administrative function. By 1885 the population had reached 120,000 people. During the second half of the nineteenth century, Toronto became the leading financial, commercial, and industrial center of the province of Ontario, and the center of a reoriented railway network. Today the city is the second-largest manufacturing center in Canada, location of a group of diversified industries: slaughtering, meat packing, printing and publishing, agricultural implements, aircraft, heavy electrical machinery, and a variety of iron and steel products. Toronto is also a leading trade and financial center, accounting for nineteen percent of the wholesale trade in Canada.

From 1885 to 1914 the city expanded by annexing neighboring terrirory. After 1914 ceased annexation. Its urbanized area to include several adjoining municipalities, and this condition led to many of the urban problems,[1] generally associated in recent years

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[1] Jacob Spelt, "Toronto," Encyclopaedia Britannica (1964) XXII, 303.

with rapid population increases after World War II and with fragmented, therefore ineffectual, structures of municipal governments. In the late 1940's and early 1950's, some of the local governments in the Toronto area found themselves unable to provide even the basic municipal services needed for an expanding population; for example, water supply and sewage disposal. The Ontario Municipal Board, under the chairmanship of Lorne R. Cumming, conducted extensive hearings and recommended in 1953 a federal type of municipal government for Metropolitan Toronto to deal with matters of common concern to the thirteen member municipalities which would comprise it.[2]

FIRST PLANNING AFTER WORLD WAR II

The site of downtown Toronto is flat, a sufficient curse in itself. The plan of the city was laid out as a rectangular grid of streets lacking anything of interest to relieve the dull sameness of the site, with no open spaces and no focal points. Most of the streets are of the usual width, the blocks are large, and what beauty which the lake front might have imparted has been precluded by the expressway and the broad band of railway tracks that intervene.[3]

Concerned with postwar development in 1944, the writers of a planning report on the City of Toronto recognized that much of

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2 Metropolitan Toronto Planning Board, Metropolitan Toronto 1953-1963, (1963), pp. 3, 4.

3 City of Toronto Planning Board, Plan for Downtown Toronto (1963), pp. 9, 10.

the city was obsolescent, that many of the open spaces which the city did have were poorly distributed, that development was indiscriminate, and that architecture was haphazard. The report recommended that the whole community, operating through a public planning agency, determine areas to be rebuilt, buy them, demolish run-down structures, and encourage private enterprises to undertake much of the rebuilding.[4] Significant here is the notion that the job of redevelopment was thought of as a project to be directed by the community through an agency of its municipal government, and that iniative for taking measures to improve conditions did not come from private individuals or groups, but from the municipal government itself. These events contrast with the way new development came about in Pittsburgh and the way central area residential redevelopment came about in Detroit. In these two cities, citizens' groups, acting outside of and separate from the municipal government, were the motivating force.

In 1949, a master plan for the city of Toronto was prepared, the seventh in forty years. One-third of the estimated cost of implementing this plan would have been devoted to improving transportation facilities -- street widening and arterials. Other features included the reconstruction of certain blighted areas, probably to be redeveloped as public housing projects, civic buildings, expansion of the public utilities system, parks and other public open spaces, and a

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[4] Pencil Points, XXV (Mar. 1944), 15.

recreation area on the Toronto Islands.[5] A year later, the Ontario Department of Planning and Development approved the master plan, the first time provincial approval had been gained for such a comprehensive plan.[6]

But by far the most significant occurrence affecting planning in Toronto was the creation of the Municipality of Metropolitan Toronto in 1954. The jurisdiction of the Metropolitan Toronto Planning Board includes not only the thirteen municipalities of Metropolitan Toronto, but in addition, thirteen surrounding municipalities, thus carrying out an advanced program of regional planning and of the control of development in an area of 720 square miles.[7] Within this area, however, the local planning borads may, in keeping with the federal spirit of the organization of the metropolitan municipalities, still formulate their own plans and amend official plans, providing they receive the approval of the Metropolitan Planning Board and of the provincial minister of planning and development.[8]

PLANNING COMPARED WITH PRIVATE DEVELOPMENT

The important decisions affecting the development of the central area of Toronto have been made more often by the agencies of

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[5] Architectural Record, CVI (Nov. 1949), 180.

[6] Ibid., CVIII (Nov. 1950), 210, 212.

[7] Metropolitan Toronto Planning Board, p. 16.

[8] Spelt, p. 303.

municipal government than by private individuals or private groups. For this reason, we should concern ourselves mainly with what the planners have done in Toronto, and with what their plans call for in the future. Private development has contributed, and shows signs of contributing more, but its contributions must be realistically evaluated. Let us look, for example, at the impressive management center which has developed along University Avenue, a street lined with prestigious office buildings completely separated from both the original financial center on Bay Street and from the retail shopping areas.[9] The development along University Avenue is important, but it has taken the same form as the uncoordinated commercial ribbon developments that blight the traffic arterials leading out of the older portions of many of our cities, a survival from the days of the linear transportation system and of laissez faire notions of economic development. Let us also look at a second example, the financial district itself, a tight clustering of skyscrapers, more than a third of which have been built since World War II. Most of the newer buildings have been constructed upon the same kind of small sites occupied by their older neighbors, and most cover nearly all of their sites, just as the older buildings did. A few significant exceptions exist, however. One of these is the William Lyon Machenzie Building at Adelaide, Lombard, and Victoria Streets, which is built around a ground-level plaza connecting with the street in the manner

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[9] Humphrey Carver, Cities in the Suburbs (Toronto, 1962), p. 71.

of Lever House and which gives up an exterior corner of its site to a landscaped plaza.

In a few other cases, new skyscrapers in the financial district are either set back slightly from the street or they devote a part of their ground floor to an arcade, but the setbacks are sized with an apparently overriding concern for thrift. Oddly enough, setbacks are generally the rule on University Avenue, where their slight addition to the great width of the street is hardly needed. Perhaps land was cheaper there.

THE SUBWAY SYSTEM

Since private development has, up to the present, not been the source of major changes in the central area of Toronto, let us consider what the community as a whole, acting through its planning departments, is doing. A prime requirement for the successful functioning of the central business district of a city, as we have seen, is ease of accessibility for the people who use it. Toronto has provided the most economical and the most important element in fulfilling this requirement, a subway system which is the backbone of the transit system for the entire metropolitan area. At is present stage of development, the subway is four and a half miles long, running north and south along the line of Yonge Street. It interlocks with the surface transit system and with a system of automobile parking lots, allowing some commuters to drive to the subway and park there. Most, however, reach it by surface transit.

The subway accommodates 39,000 people per hour during its heaviest use, compared to the 12,000 people per hour which the streetcars were able to carry. It takes sixteen minutes to travel the length of the subway, a distance which took fifty minutes travel time by streetcar. An interesting side effect of the construction of the subway system was the fact that there resulted a thirty-seven percent increase in the assessed valuation of the surrounding property. An increase of only twenty percent would have provided sufficient tax revenue to liquidate the cost of the subway. A later extension of the system is planned, running east and west along Bloor and Danforth Streets, and when this part is completed, it is estimated that one-third of the metropolitan population will be served by the system. A survey taken of subway riders at Eglinton showed that thirteen percent of them had formerly driven their automobiles to work. It is estimated, based upon this percentage, that on a normal business day the subway keeps 10,000 automobiles off the streets of Toronto.[10]

THE CITY HALL

The most striking building in the central area of Toronto is its new city hall with its two elegantly-curved, slab-shaped towers of unequal height and its large plaza. A world-wide architectural competition was held for the design. The municipality wanted a

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[10] Meyerson, pp. 135, 136.

distinctive building which would express its function as a center of municipal government and would express also the continuity of democratic traditions and community service, as town halls have in former times. These were the most important considerations of the competition and the basis upon which the winning design was chosen. The plaza, 600 feet by 900 feet in size, occupies approximately half the site, and a multi-level podium structure the other half, containing the portions of the building used by the general public. Offices are in the towers, and the circular council chambers are placed between the towers on top of the podium structure and partly surrounded by their curved forms. A garage under the square will provide parking for 3,000 automobiles.[11] The new square, which connects visually with the grounds of near-by Osgoode Hall and those of the new court house, will create an attractively landscaped open space of considerable size for public use. The new city hall, integrated in its placing and in its design with the old and new buildings around it, will give the central business district its first consciously composed grouping of buildings and the spaces essential to them.[12] There has been some criticism that the large size of the plaza may dispel pedestrian traffic. This may happen, but the merit of the total scheme, its coordination of all elements to form a powerful symbol of city and metropolitan government, offsets such smaller defects.[13] The

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11 Architectural Record, CXXIV (Nov. 1958), 12, 13, 312; Ibid., CXXVIII (Dec. 1960), 14.

12 City of Toronto Planning Board, p. 10.

weak point in the composition of buildings and spaces is the south side of Queen Street facing the plaza, exposing an array of dilapidated buildings which should be replaced by a structure harmonious with the total concept of the area. To this end the city proposed either to acquire the land and stipulate how any buyer may develop it, or to require that the present owners pool their interests in order to assemble all of the lots into one parcel so that the entire site may be redeveloped at one time, again in harmony with the city's requirements.[14]

PLANS FOR TRAFFIC AND FOR PEDESTRIAN CIRCULATION

Let us consider some of the important aspects of the most recent plans for the central business district, the 1963 Plan for Toronto, prepared by the City of Toronto Planning Board. In the years between 1956 and 1962, 4.2 million square feet of office space were added; it is expected that 9.5 million square feet will be added by 1980 and that retail floor space will increase by 850,000 square feet during this time, bringing the total of retail space up to 7 million square feet. The labor force employed in the central area is expected to rise from 145,000 people in 1962 to 190,000 in 1980. Whether or not the central area will be a more efficient, interesting, and attractive place then it now is will depend on popular determination

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[14] City of Toronto Planning Board, p. 32.

to make it so, which is an important force that can direct growth according to a plan devised for these ends.[15]

Means of getting people in and out of the central area are of primary importance. The present subway system, with the extensions which are now planned, functioning in coordination with the network of surface transit, can cope with the needs of the present metropolitan area, but the speed of such a system is insufficient to serve the people who will live in the more distant areas which will comprise the future metropolitan area. For these more distant commuters, fast service must be provided by railway lines. The present Union Station, at the lower edge of the central business district, would be available as a terminus and is well located for this purpose. Present railway tracks are also available and suitably located, reducing the customary difficulties to a minimum. If such a move is not taken, the percentage of people coming to the central business district by public transit, now seventy percent at the peak period, will drop, and the traffic congestion generated by increased use of automobiles for commuting purposes would be detrimental to the central business district and would cause traffic congestion on roads and highways over a wide area.[16] Some provisions for automobiles can and must be made, in spite of the fact that most commuters will be encouraged to use public transit.

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15 Ibid, p. 11.

16 Ibid, pp. 16, 17.

Some parking garages must be placed within the central business district for the small number of people who need their automobiles close at hand for business purposes, for the people who must make business calls in the central business district, for a certain number of shoppers, and for the patrons of the entertainment facilities in the area. The bulk of the parking, that which is provided for commuters, must be placed at the periphery -- south of Front Street, west of University Avenue, and east of Jarvis Street -- in order to prevent commuter traffic from hopelessly clogging the streets of the central business district.[17]

Within the central business district the main means of getting about is by walking, and herein lies the special attraction of this part of a city. Offices, stores, hotels, restaurants, bars, courts, and all the other varied activities are within walking distance of one another. This quality must be maintained for the health of the area. Toronto, however, suffers from severe congestion of pedestrian traffic during certain times of day. Since employment in the most congested area, that south of Queen Street, is expected to increase by forty percent in 1980, measures must be taken to cope with the problem. Some relief would be gained by developing pedestrian ways through the middle of the main blocks in order to provide alternate paths to the sidewalks. But such measures would offer only temporary relief. One satisfactory

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17 Ibid., p. 18.

solution to the problem would be the complete exclusion of automobiles from the central business district. But this solution would create other problems; some automobiles, as we have seen, must enter the area. Another solution would be the vertical separation of pedestrians and vehicles, which might be achieved either by raising the pedestrians on bridges, galleries, and roof decks, or by placing the automobiles in tunnels so that the streets would be left completely to pedestrians. Although the need for complete separation is not anticipated until 1980, it would be wise to decide soon on the means of vertical separation to be used at that time, so that buildings constructed in the time in between might include provisions for this system, thus reducing its ultimate cost.[18]

PLANS FOR THE FINANCIAL DISTRICT

With some degree of modesty, the City of Toronto Planning Borad describes the financial district as "not one of notable beauty, but rather of geometric practicality." The district, to its credit, however, is economically healthy. A forty-three percent increase in office space is expected by 1980, bringing the total to 18 million square feet. Some increase in the size of the area is expected, but it will remain compact in nature. Even though

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[18] Ibid., pp. 18-20.

present zoning bylaws will allow a floor area ratio of twelve times the area of land, the present average is only four and a half, and is not expected to exceed six in 1980, indicating that only half of the available land will then be built upon (assuming that most buildings provide the maximum floor area allowable). Considering that the maximum floor area ratio is high, perhaps unrealistically so, and that close spacing of tall buildings is to be discouraged in favor of open spaces around buildings, it is suggested that a floor area ratio of 9 be adopted with a bonus offered in the form of allowing a higher ratio for a building which leaves some of its site in open space. Such a system would encourage land assembly, because a larger site would be required to earn the bonus of a higher floor area ratio.

The proposed Toronto-Dominion Band and Cemp Investments development offers an opportunity for the encouragement of open spaces in the financial district. The open spaces within the development might profitably be integrated with others which might be planned in the adjoining blocks.[19] To be completed in 1967, the Toronto-Dominion Centre will contain two skyscrapers, one fifty-five stories and one forty-four, on a seven-acre site within the block bounded by King Street, Bay Street, Wellington Street, and York Street. Restaurants, shops, service establishments, and underground parking will be included. A landscaped plaza with fountains, sculpture, and

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19 Ibid., pp. 24-27.

seating areas will be used to set off the buildings.[20] If the open spaces in this development were combined with other plazas, beginning with one on the southeast corner of King and Bay Streets, which would include a new building, the heart of the financial district could be transformed into a handsome and impressive place. The plazas would give people the space around the tall buildings which is necessary so that the buildings may be seen. As it now stands, much of the financial district is invisible, its buildings closely lining the rectangular grid of streets. In order to direct the form of the future district, a development plan in the form of a sketch might be made and a review procedure established to aid developers and the city to work together so that the best interests of both might be served. Bonuses could be offered developers who come closest to achieving the objectives described in the sketch plan.

In addition to the need for shaping the emerging pattern of open spaces between buildings, the streets themselves must be developed attractively. Design concerns are important here also. If future wheeled traffic is to be placed underground, great opportunities will be available for street design.[21] If a system of overhead walkways for pedestrians is decided upon, the design program will be just as important, but the conditions will be much more

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20 Montreal Star, 11 Apr. 1964.

21 City of Toronto Planning Board, pp. 27, 28.

exacting and the possibilities as great.

PLANS FOR UNIVERSITY AVENUE

University Avenue may be expected to continue to develop along its present lines, as the grand avenue of European inspiration, the concept which underlay its planning in 1928. At that time regulations were established requiring unified and continuous building facades. But the avenue has not developed in this manner, for our buildings tend to stress their individuality. The regulations should be brought up to date, encouraging landscaped spaces around the buildings as in the financial center, trees should be planted to line both sides of the avenue to unify its appearance, and the dismal anticlimax at the southern termination of the broad street should be replaced by a suitable square lined with impressive buildings.[22]

PLANS FOR THE LOWER EDGE

The last part of the plans for the central area to be considered in this study is the development of the lower edge of the central business district, the south side of it in the vicinity of Front Street and down to Lake Ontario. Some of the buildings on Front Street are noteworthy and should be emphasized and preserved.

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[22] Ibid., pp. 34-36.

The street itself should be widened, given a center strip, and planted with trees to unify it, as was suggested for University Avenue. On the south side of Front Street, just east of Yonge Street, the O'Keefe Centre for the Performing Arts, donated to the city by O'Keefe Brewing Company as a public service,[23] could form a part of a comprehensive design for the St. Lawrence Center for the Arts, as proposed in 1962 by the City Planning Board. This center would occupy several blocks running in an arc from O'Keefe Centre northeast to St. James' Cathedral and St. Lawrence Hall. It was hoped that the Canadian Broadcasting Corporation would relocate their main studios and offices adjacent to the proposed center, on the south side of Front Street east of O'Keefe Centre, a location which would benefit the cultural life of the city and which might attract to the locality other broadcasters, the film industry, and related activities.

The major proposal for the lower edge redevelopment is an heroic attempt to recreate the link between the center of the city and the lake that existed before the intervening land was filled in and railroad tracks and the expressway built on it. This proposal includes construction of a series of parking garages above the tracks and the expressway, and a new and complete transportation terminal just south of the present Union Station. The roofs of the terminal and of the garages would be developed as landscaped plazas,

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23 Architectural Record CXXIII (Feb. 1958), 34.

reached from the foot of Yonge Street by escalator and offering to pedestrians a series of interesting and varied large-sized steps to take them from the financial district on to the lake front. Offices, hotels, and related facilities would be placed on the plazas, from which one would be able to enjoy a delightful view over the lake and the city.[24]

OBSERVATIONS

Toronto's skyscrapers are densely clustered in the financial center of its central business district, which is developed, as we have seen, on the older pattern prevailing before World War II. New skyscrapers were added after World War II, but almost without variation to the pattern. Toronto's central business district does not make an impressive grouping, as Detroit's does, although in many other ways there are strong similarities in the siting and the planning of the two cities. In Toronto, it seems, there are fewer places from which to see the skyscrapers, the cluster covers less ground and is not as tall: in extent, 2,000 feet east to west and 1,500 feet north to south, compared with 2,000 feet east to west and 4,200 feet north to south for Detroit: and in height, only eight buildings twenty stories or higher compared to twenty-two of this height in Detroit. There are, however, indications of

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[24] City of Toronto Planning Board, pp. 46-48.

change. The Toronto-Dominion project will include a fifty-five story and a forty-four story skyscraper, both higher than the present thirty-one story tower which has dominated the skyline since the days before World War II.

Like Detroit, however, Toronto has several separated clusters of skyscrapers, and each of these is much smaller than the main cluster. Almost a part of the financial center and just to the west of it is the linear cluster of University Avenue's management center. This new grouping is a similar development to Gateway Center in Pittsburgh and to Penn Center in Philadelphia, all new management centers which have grown up at a distance from the older, principle cluster of skyscrapers. But the similarity does not extend to the form of the groupings. Gateway Center and Penn Center are grouped around pedestrian plazas between the buildings and, to a degree, turn their backs on the vehicular streets. They lie in areas of horizontal separation of pedestrian and vehicular traffic (Penn Center includes vertical separation too), suggesting the precincts advocated by Alker Tripp. Toronto's University Avenue groups itself on the street, the means of vehicular access which, deceptively in our times, is not the means of access for most people, who may only use the street as a means to take their vehicles to the nearest parking place, usually some distance from their destination, and then must traverse on foot the distances of the street, which are scaled for motor transport. Other people use the subway system, and for them the great distances of the

street are of little interest. The street takes up much space and is inappropriately used except by vehicles passing through the area, a kind of traffic to be discouraged for its disruptive effects upon the activity to be conducted around it.

Farther to the north on University Avenue, about half a mile, a second clustering of skyscrapers begins: new office buildings and several hospitals. About a mile north of the center of the financial district, at Yonge Street and Carlton, a cluster of skyscrapers is forming close to a large department store. An office building, a hotel, and three apartment buildings comprise this grouping. Four to six blocks north, a number of tall apartment buildings, all built rather recently, are forming an irregular group. Just two more blocks north and about four blocks east of Yonge Street, on Bloor Street, is a cluster of two office buildings, a hotel, and apartments. One of the apartments, recently completed and called "The Colonnade," includes in its ground floor and first floor an extensive and most interestingly designed commercial development, even to a restaurant with a roof terrace where one may dine and overlook the people walking up and down the street of shops. The second floor of this building also includes a luxuriously appointed interior shopping mall, and offices and apartments occupy the floors above. The mixture of activities is designed in a manner to take advantage of the most interesting features of city life. The last clusters of skyscrapers are two groups of public housing apartment structures, closer to the central business district, some distance

east of Yonge Street on a line with the new city hall. In these developments, which are architecturally sound, children's play areas provide the only interest on the site.

One might be tempted to pass over Toronto as it now stands, for its central area, at least. There is little of great interest except the city hall. The excellently planned residential developments in the city's outlying districts have perhaps drawn people away from the center of the city. There also seems to be much less of a tradition of in-town living than one finds in Philadelphia, or than one sees being fostered in Detroit; but such centers are beginning to develop. The central business district, it seems to me, is at the threshold of its development along contemporary lines of planning. The central business district is economically sound. The rapid transit system to serve it is partly completed, and construction of the rest is continuing. Most important of all, both the metropolitan and the city's planning departments seem to have sound and comprehensive ideas on how the central area of the city should be directed in its growth and change. The new city hall will very likely encourage new development in the adjoining areas, and with proper guidance by the planners, such new development will change the form of the central business district. Since Toronto has a type of governmental structure perhaps best suited to deal with planning in the whole metropolitan area, it seems reasonable to expect many significant urban planning developments in this city within the near future.

First after p. 153

1T

1T

ATWATER

DOMINION SQUARE

MANSFIELD

McGILL COLLEGE

UNIVERSITY

BURNSIDE

ST. CATHERINE

PLACE VILLE MARIE (CNR.)

BEAVER HALL SQ.

BLEURY

DORCHESTER

(CNR.)

LAGAUCHETIERE

C.P.R. PROJECT

PLACE BONAVENTURE

(CNR.)

VICTORIA SQUARE

CRAIG

ST. JAMES

PLACE VICTORIA

PLACE D'ARMES

INSPECTOR

ST. LAURENT

BUILT

1945 OR EARLIER	AFTER 1945	
		COMMERCIAL & OFFICE (EXCEPT GOVERNMENTAL)
		GOVERNMENTAL OFFICE
		HOTEL
		APARTMENT
		HOSPITAL
		MANUFACTURING & WAREHOUSING
		SCHOOL
		PARKING

THE CLUSTERING OF SKYSCRAPERS IN MONTREAL

SCALE 1" = 800'

W. I. SHANK

1964

Second after p. 153

SKYLINE AND MOUNT ROYAL
FROM THE SOUTHEAST

CENTRAL BUSINESS DISTRICT FROM THE EAST

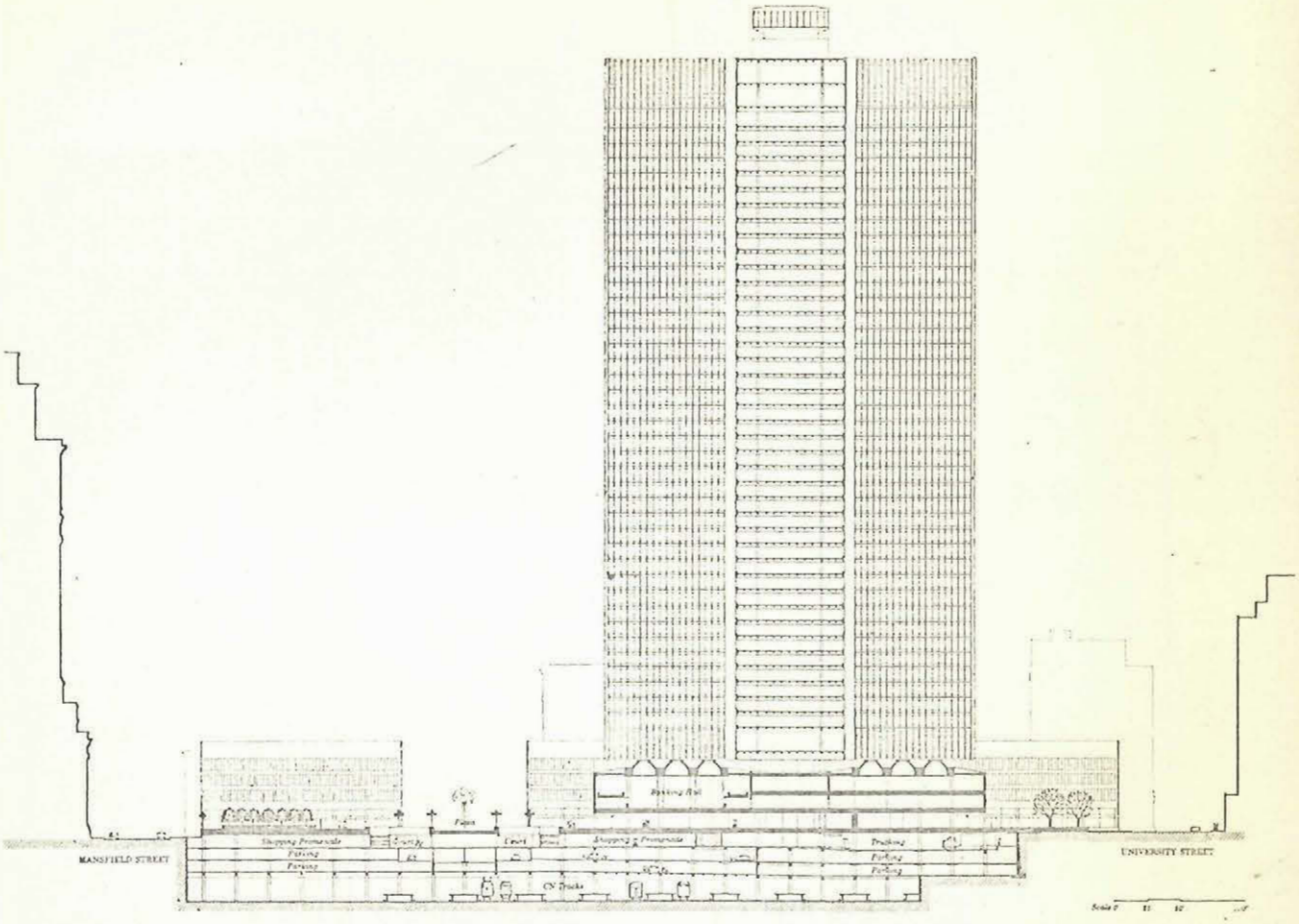
DOMINION BUREAU OF STATISTICS,
CANADA, 1963 (OTTAWA, 1963), P. 11.

SKYLINE FROM THE NORTHWEST.

PLACE VILLE MARIE

DORCHESTER STREET LOOKING
TOWARD THE CANADIAN IMPERIAL
BANK OF COMMERCE BUILDING

MONTREAL



SECTION THROUGH PLACE VILLE MARIE LOOKING NORTH

JONAS LEHRMAN, "PLACE VILLE MARIE : CRITIQUE TWO," CANADIAN ARCHITECT, VIII (FEB. 1963), 68.

MONTREAL

SETTLEMENT AND GROWTH

The "Association of Montreal" founded the Mission Ville-Marie de Montreal in 1642 at the shore of the St. Lawrence River near to the present location of St. Paul Street. The religious desire to convert the savages had inspired this group to come to the Montreal Island described in Jacques Cartier's narrative of his voyage of discovery in 1535. Recurring Indian wars plagued the early years of the colony, but the colonists grew in number from 196 in 1650 to 3,500 in 1710, and a complete system of fortification walls gave the settlement security from Indian attack by 1723. By 1750 the city had become the center from which exploration and trade -- especially fur trade -- were organized.

French rule ended with the Seven Years' War in 1759, after which the military commander of the city and many of the Canadian seigneurs were given transport back to France by the conquering British. The rest of the people remained, and the seigneurs were, so to speak, replaced by an influx of British traders, who were, a little later, augmented by British Loyalists from the United States.[1] Writing of his visit to North America in 1831, Alexis de Tocqueville described the French inhabitants of

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[1] Majorie Craven Bursa, "Montreal," Encyclopaedia Britannica (1964), XV, 770.

Lower Canada as the remnant of a nation lost in the midst of a new people, the "British race," identical with the people of the United States, who were moving in among the former masters of the country, becoming predominant in their cities, and corrupting their language.[2]

The "English race" was also developing Montreal. They introduced steam navigation on the St. Lawrence River, causing Montreal to replace Quebec City as the principal port on the St. Lawrence. The opening of the Lachine Canal in 1825 enabled ships to navigate the thousand miles of unimpeded water route from the Atlantic to Montreal and to proceed past the rapids to the inland regions. In 1844 the city became the capital of the two Canadas, until political riots and the burning of the houses of parliament led to the moving of the capital to more peaceful ground in 1894. In 1860 the Victoria Bridge was completed, establishing railway connections between Montreal and Boston, Portland (Maine), New York, Toronto, and Chicago. By the time of the Confederation, Montreal had become the metropolitan city of Canada with a population, in 1871, of 115,000. The importance of the city as a port was increased in 1959 by the completion of the St. Lawrence Seaway, facilitating navigation of large ocean-going vessels to the Great Lakes.[3]

In the early years of this century, Montreal was mainly a financial and commercial city, but it is changing to include industry. Located at the convergence of main transportation routes

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[2] Alexis de Tocqueville, Democracy in America. Vintage ed. (New York, 1954), I, 448.

[3] Bursa, p. 771.

and at the center of rich agricultural heartlands, the city now carries out three main functions: home of a large part of the commercial and financial institutions of the Canadian economy; the most important manufacturing center in Canada; and capital of the province of Quebec, which has become a new commercial, financial, and manufacturing power.[4] The main commodities shipped through the port of Montreal are grain and petroleum, and the harbor facilities are extensive. The manufactured products of the Montreal area are clothing, electrical apparatus, railroad wolling stock, and tobacco.[5] The rate of industrial growth in Quebec, according to provincial minister of industry and commerce Gerard Levesque, is one of the greatest anywhere in the world, and there was, in 1964, no sign of a decrease in the booming expansion.[6]

The central area of Montreal lies near the middle of the southeastern shores of the island. Growth has been more rapid than the layout of streets could handle, and the extension of the grid-iron layout of the central area has been blocked by disorderly subdivision. Also, an accident of geography, to quote A. Blouin, "que l'on appele pompeusement 'La Montagne," has blocked north-south development of the city.[7]

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[4] Claude Langlois, "Le Centre de Montreal et Son Evolution," Habitat, VII (Jan.-Feb. 1964), 14.

[5] Bursa, p. 771.

[6] Montreal Star, 12 May 1963.

[7] A. Blouin, "Etude d'urbanisme d'un Quartier de Montreal," L'Architecture d'aujourd'hui, XXVIII (Oct. 1957), xxv.

The population of the metropolitan area in 1961 was 2.1 million people, sixty-five percent of whom claim French-Canadian origin and twenty-two percent of whom claim English-Canadian. The population of the city proper was 1.2 million, sixty-eight percent French-Canadian and eighteen percent English-Canadian.[8]

PLACE VILLE MARIE

One can clearly discern in the Montreal skyline two magnitudes of skyscrapers. We have used the term skyscraper to describe buildings ten stories or more in height, the weight of whose walls is supported upon their structural frame. Let us further clarify this definition according to what our observations of Montreal so clearly point out by calling skyscrapers of from ten to twenty stories in height, and occasionally up to thirty, first-order skyscrapers. Such buildings are in the magnitude of the early skyscrapers. In fact, Burnam and Root's Manadnock Building, not a skyscraper because its brick walls bore their own weight, was built to a height of sixteen stories in the Chicago of the 1890's.[9] In the building boom of the years immediately preceeding the Great Depression, first-order skyscrapers occasionally rose in set-back form to thirty stories. Today's second-order skyscrapers visually

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8 Bursa, p. 770.

9 Hitchcock, pp. 245, 246.

dominate their older neighbors, rise to from forty to fifty stories, occupy a greater area of site for each building than the first-order skyscrapers did, and rise in simple verticals for the full height of their towers. The most significant recent development in urban design in Montreal is the Place Ville Marie, and the queen of the second-order skyscrapers in the city is, of course, the shining tower standing in the place.

The history of Place Ville Marie begins early in this century, when the directors of the Canadian National Railways realized the importance of the three blocks of railway land bounded by Cathcart, University, Craig, Inspector, and Mansfield Streets. Sir Henry Thornton held the following ideas as guideposts: that the three blocks must be developed according to one master plan and that the plan should take into account both the needs of the railway and the needs of the growing metropolis.[10] Unsuccessful attempts were made in 1913 and again in 1929 to develop the property. The 1929 plans included offices, retail space, and a new central railway station, but depression and war prevent their being carried out. By 1943, however, the railway station was built, and Jacques Greber, the French city planner who had designed Philadelphia's Benjamin Franklin Parkway, had been consulted. The results of the consultation included provisions for widening the bordering streets of the site and agreement by the railway to provide a plaza on the

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10 L'Architecture d'aujourd'hui, XXX (June 1959), 82.

axis of McGill College Avenue as a suitable visual termination for the street. In addition, it was planned that the avenue should be widened. By 1955 the railway had constructed two office buildings and was in the process of building a convention hotel, all on the middle block of the site, on which the station also stood. The heads of the railway at this time had decided also to complete the development of their property with a large urban center. The large, underdeveloped site in the heart of the city attracted the interest of William Zechendorff.[11]

After a Canadian subsidiary of Zeckendorff's New York firm of Webb and Knapp had been formed, the architect I. M. Pei prepared a master plan for the three-block site. On the railways approval of this plan, Webb and Knapp leased the four and one-tenth acre block of the site north of Dorchester Street, obligating themselves to develop the site within five years. The general lines of Rockefeller Center were to be followed, with the exception that Place Ville Marie, as the development was named, would reverse the trend toward decentralization for the benefit of the whole central business district.[12] On the two blocks south of Dorchester Street, complementary facilities were planned: two new office buildings, parking for nine hundred automobiles, and extensive transportation facilities which would make the area a general transportation center

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11 Jan C. Rowan, "Story of Place Ville Marie," Progressive Architecture, CXXIII (Feb. 1960), 124, 125.

12 Architectural Record, CXXI (Jan. 1957), 36.

for the metropolis and for all of Eastern Canada.[13] Two moving sidewalks, capable of transporting 7,200 people per hour in each direction, will run along the spine of the whole terminal area and will connect all three blocks.[14] This development of the southern two blocks was to be started after Place Ville Marie was completed.

The rate at which new office space had been added in Montreal after World War II had been an average of 250,000 square feet per year, or a total of three million square feet in the first twelve post-war years. Local business men were inclined to believe that this rate was rapid enough, but Zeckendorff did not. Large corporations usually require as much as 20,000 square feet of office space per floor in the newest and best-appointed types of buildings. Average floor areas in Montreal were only half of this size, and the accommodations did not meet the required standards of luxury. Zeckendorff decided that the main element of the Place Ville Marie should be a skyscraper to provide approximately one and a half million square feet of office space.[15] Along the north boundary of the site a long, low bank of shops was planned, and along the west boundary a twelve-story commercial building. A landscaped plaza was to occupy sixty percent of the area. Early plans included a line of shops on a mall at the side of the tower,

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13 L'Architecture d'aujourd'hui XXX (June 1959), 82.

14 Architectural Record, CXXII, (Nov. 1957), 36.

15 Rowan, p. 124.

but this arrangement was abondoned in favor of placing the stores on a promenade below the plaza.[16] Some shops were retained on the plaza level, however. The promenade includes 130,000 square feet of stores and restaurants and is accessible from the railway station, the existing hotel, and office skyscraper, and directly from the plaza by means of stairways entering four sunken courts. Two levels immediately below the promenade include parking for a total of 1,500 cars and roadways giving access to the hotel and the station. At the bottom level, below the two levels of parking, are the railway tracks. The plaza serves as a civic space and was to connect to the main shopping street of the city, St. Catherine Street, by a tree-lined mall.[17] The refusal of one of the property owners on McGill College Avenue to sell his building has prevented the construction of the mall.[18]

The planning of Place Ville Marie took three years, and although the designers attempted to incorporate in the preliminary solution all known and predictable factors and limitations, the economic necessities of satisfying tenants' needs required some modification in the final design when the major tenants had been obtained. But the architects held to their original concept and were able to preserve it. It is probable that the reason that

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16 Progressive Architecture, XL (Nov. 1959), 87.

17 Rowan, pp. 130, 131.

18 Architectural Forum, CXVIII (Feb. 1963), p. 83.

they were able to do so was that their design had been based upon valid real estate concepts and upon careful study of the real estate potentialities. Final designs were approved in 1958 and construction begun.[19] In that year, the Royal Bank of Canada had become the first major tenant. Since other Canadian investors were lacking, although Zeckendorff searched throughout the country for them, British interests were brought to fill the need.[20]

After construction had begun, a new and greater demand for luxurious offices developed to such an extent that two more second-order skyscrapers were designed and built, each providing more than half a million square feet of rentable area.[21] One of these buildings was the thirty-four story Canadian Industries Limited House, diagonally across the intersection of University and Dorchester Streets from the Place Ville Marie. The other was the forty-three story Canadian Imperial Bank of Commerce Building, also on Dorchester Street, on the third block west of the Place Ville Marie.[22] These three projects have added three million square feet of office space to the city of Montreal almost at one time, and have affected a noticeable shift of the center of the business district toward the northwest.[23]

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19 Rowan, p. 131.

20 Architectural Forum, CXVIII (Feb. 1963), 83.

21 Rowan, p. 134.

22 Architectural Forum, CVXIII (Feb. 1963), 83.

23 Rowan, p. 134.

THE MANAGEMENT CENTER

The tower of the Place Ville Marie, the Canadian Industries Limited House, and the Canadian Imperial Bank of Commerce Building, along the line of Dorchester Street, seem to describe the spine of a cluster of skyscrapers which makes up a management center different in character from the cluster of skyscrapers along St. James Street, which comprise the financial center.[24] This management center is similar to the ones we have seen in Pittsburgh, in Philadelphia, and in Toronto in the way that it is a separate cluster of buildings from the financial center. In form, Montreal's management center seems to follow the older linear form of grouping along a broad avenue, in the manner of Toronto's University Avenue. However, the plazas of the three new skyscrapers, especially that of the Place Ville Marie, announce the new concern of urban design: open spaces between buildings and separated vehicular and pedestrian access to groups of buildings. Some means of connecting the isolated new plazas with one another and with Dominion Square would be in order, so that people would be able to walk safely from one open space to the other. In the sense that it is composed of isolated developments, Dorchester Street is like the old shopping street, which was made obsolete by the use of the automobile and by the invention of a new way of grouping stores to meet the requirements of automobile transportation, the shopping mall. So for the same reasons, the office center, with its segregation

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[24] Carver, p. 71.

of vehicular from pedestrian traffic (Place Ville Marie is an example), has made the office street obsolete too.[25]

THE FINANCIAL CENTER AND PLACE VICTORIA

The second main cluster of skyscrapers in Montreal is that of the financial district, lining St. James Street from Victoria Square on the west to St. Laurent Boulevard on the east. Almost all of the buildings in this cluster were built before World War II, and all except one are first-order skyscrapers. The Place d'Armes, near the eastern end of the street, provides welcome open space in contrast to the narrow canyons of the street itself. Victoria Square, opening up the western end of the cluster, is surrounded by a few new first-order skyscrapers and the one second-order skyscraper, which faces the west side of the square, promising to change the character of the financial center as much as the Place Ville Marie changed the management center. Place Victoria is the name of the new development, which, at the time of its original planning, was expected to house the full facilities of Montreal's financial district within its towers; that is, the Montreal Stock Exchange, the Canadian Stock Exchange, several banks, brokers' offices, and other facilities related to the nation's financial life.[26] Place Victoria was designed as three fifty-one story

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[25] Norbert Schoenauer, "Place Ville Marie: Critique One," Canadian Architect, VIII (Feb. 1963), 57.

[26] Architectural Record, CXXXI (May 1962), 190.

skyscrapers rising above a common four-story base structure which would cover six levels of underground parking for 1,500 automobiles. The complex would have been the largest office complex in the world.[27] Later revisions in the plans resulted in a change to two towers instead of three. The structural work of the first tower had been completed to its full height in the summer of 1964, and the second was to be commenced upon completion of the first.[28]

SKYSCRAPERS TO BE BUILT SOON

In the first half of 1964, the construction of many skyscraper projects was announced. Plans to build Place Bonaventure on the third, or southernmost, block of the Canadian National Railways' property were completed, differing in some degree from what was planned earlier. Two million square feet of rentable area will be built, half of which will be a merchandising center with a series of permanent wholesale showrooms, meeting rooms, and auditoriums; and the rest of which will include a convention area of over 300,000 square feet, an integrated shopping mall with a wide variety of stores and shops, parking for a thousand cars, and a convention hotel with hundreds of guest rooms looking out over a winter garden with swimming pool, restaurants, and bars.

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27 Progressive Architecture, XLIII (Jan. 1963), 63.

28 Montreal Star, 13 April 1964.

All of these facilities will connect underground with Place Ville Marie, Central Station, the Queen Elizabeth Hotel, and other buildings on the three blocks of railway property. Another most important connection, a pedestrian passageway to link Place Bonaventure with Place Victoria, was under study.[29] The two developments will be diagonally opposite one another across the intersection of University and Craig Streets. The pedestrian passageway would, in effect, directly link a large part of the management center with a major portion of the financial center, for people would be able to walk almost half a mile from Cathcart Street south and then east to Victoria Square, safe from the hazards of vehicular traffic and protected from the rigors of the weather.

A new skyscraper will stand at the opposite end of the financial center from Place Victoria, a thirty-story court house scheduled for completion in 1967 to house the Superior Court, Court of Appeals, Bar Library, and various boards and commissions.[30] Two of the large department stores of St. Catherine Street are planning to construct large, new buildings there,[31] and Sir George Williams University at Burnside and Bishop Streets has undertaken a new

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29 Charles Lazarus, "$75 Million CNR Complex Over Tracks," Montreal Star, 13 March 1964.

30 Montreal Star, 14 April 1964.

31 Charles Lazarus, "Dorchester Sets Pattern For City," Montreal Star, 9 May 1964.

campus to be housed in tall buildings.[32] To the southwest of the management center, on Canadian Pacific Railway property which faces the southern edge of Dominion Square, two new buildings are planned: a thirty-eight story hotel and a twenty-story office building, both to be completed by 1967.[33]

At the western edge of what is usually considered Montreal's central area, a complex of buildings is planned which will create a cluster of skyscrapers where there are very few now. The new complex will be built in the form of a base structure fifty feet high covering eighty-five percent of the site and containing three levels of stores arranged around an air-conditioned, glass-domed arcade. Parking on circular ramps for 1,100 cars will be included, and moving sidewalks will link the development to bus and future subway facilities. The roof area of the base structure will serve for recreation facilities for residents of the thirty-story apartment structures which will be built on this roof. At the eastern end of the plaza an office building will be placed.[34]

These future skyscrapers, some merely proposed, some already under construction, indicate the pulse of skyscraper

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32 Walter Poronovitch, "Quebec Building Booms in Billions," Montreal Star, 7 March 1964.

33 Charles Lazarus, "$30 Million CPR Project, "Montreal Star, 14 May 1964

34 Charles Lazarus, "High-rise Plaza Criticised," Montreal Star, 11 May 1964; Charles Lazarus, "Westmount to Get $25 Million Plaza," Montreal Star, 1 June 1964.

growth in Montreal. A walking trip through the central area of the city confirms the degree of activity. Admittedly, the Exposition in 1967 may have precipitated a portion of the construction, for skyscrapers to be completed by 1967 must be commenced two or three years before that time. But such construction would not be underway if further economic needs did not exist.

TRAFFIC

Since each project of the large number of new buildings being added to the central area of Montreal is a separate entity, not a part of any development plan for the whole central area, one is justified in expecting that such apparently uncoordinated growth may lead to great congestion of traffic and transit facilities. Fortunately a subway system is under construction which will carry more than half of all passengers entering the central area during the rush hours at the rate of approximately 55,000 people per hour, thus reducing the vehicular traffic on the city streets in an area within eight miles of the center of the city. Farther than eight miles from the center it is expected that the subway system may not attract enough riders to justify the cost of its construction. The present suburban rail service carries 10,000 people per hour during the rush hours, and private passenger cars carry a third of the passengers traveling at this time of day. Combined planning of the subway, railway, and road systems has not

been done, although each may have been planned separately in a careful way. The City Planning Department holds the opinion that only testing in operation will determine how the total system will function.[35]

Harmful results of the lack of combined planning of the transit facilities have already occurred. When the subway was first planned, it included service through the Mount Royal Tunnel to the suburbs beyond, but this part of the proposed system was abandoned because of the expense involved. The present rail service on this line will be operating up to full capacity by 1966. Conversion to a mass transportation system capable of carrying 40,000 people per hour at peak periods is recommended so the system may meet the new demands which will be placed on it. Some means of raising the necessary funds for financing such a system must be discovered; cost sharing by the municipalities concerned is a possible answer to the problem.[36]

The only expressway construction planned within the central business district is the east-west stretch of the Trans-Canada highway, which will follow near the Canadian Pacific Railway's tracks, then drop into a 2,000-foot long tunnel from Mountain Avenue to University Street, and from the tunnel proceed

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35 City Planning Department of Montreal, Metropole: Les Cahiers d'Urbanisme No. 1, Jan. (1963) p. 41.

36 Montreal Star, 18 Apr. 1964.

in an open depression for the rest of its length.[37] The City Planning Department took great care of locating this expressway, with full knowledge that the effect of their work would strongly influence the future of the city, especially with respect to property values.[38]

Some very thorough study of the central area was done by I. M. Pei in the course of planning the Canadian National Railways site. Recommendations were made of the City Planning Department. Thirty percent of the traffic in the central business district was generated by vehicles forced by the bottleneck created by Mount Royal and the St. Lawrence River to pass through the central business district in order to reach destinations of the other side. An east-west expressway was recommended near the river to accommodate this traffic and to connect the Place Ville Marie and other points in the central business district with an island-wide expressway system. With such a system, the time required to travel from the central business district to Montreal airport would be reduced to fifteen minutes. In addition an elevated spur road was suggested to make a direct connection between Place Ville Marie and the east-west expressway, picking up other central business district traffic on its way.

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37 Gerard Dery, "Highway Strip Will Cost $75,600,000," Montreal Star, 10 April 1964.

38 Charles Lazarus, "Trans-Canada Highway Sidelight," Montreal Star 11 April 1964.

The east-west expressway is under construction, as already noted, but the spur connection is not.[39]

URBAN FORM

It is interesting to note various comments about recent tall buildings built in Montreal. In 1962, the Architectural Review commented: "The prospects of Montreal displacing Manhattan as the focus of new skyscraper development in North America are materially advanced by the announcement of the Place Victoria project."[40] The Montreal Star was quoted as stating that "Place Ville Marie is now to Montreal what the Vatican City has long been to Rome," and that the development had restored to Montreal the position of Canada's "home office city," which was about to be taken by Toronto.[41] Harry Cobb, Pei's designer and partner-in-charge of the Place Ville Marie said of it: "This is not a civic or institutional project but a commercial one. It seeks through its appearance to dignify the activity to which it is devoted, and in so doing should add prestige to the entire central city."[42] Another comment on Place Ville Marie, this one from Architectural Forum, holds that the most important aspect of this milestone in urban architecture is the sweeping change which

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39 Rowan, p. 126.

40 Architectural Review, CXXXI (Jan. 1962), 3.

41 Progressive Architecture, XLIII (Oct. 1962), 71.

42 Architectural Record, CXXXIII (Feb. 1963), 127-36.

it offered to change the face of a major North American city.[43]

The older skyscrapers constructed before World War II grouped in distinctly separated clusters: the financial center along St. James Street, and the two clusters of the newer business district, one centering around Beaver Hall Square and the other in the vicinity of Dominion Square.[44] The skyscrapers constructed after World War II along Dorchester Street served to join the two portions of this newer business district. The second-order skyscrapers of this group created the distinctive form of the skyline of Montreal as we see it today, the progression of skyscrapers in a line. As important, however, is what is about to happen on a line at right angles to Dorchester Street, the north-south linkage at lower and even subterranean levels that is developing between the complexes of buildings on the Canadian National Railways' property and those of the Place Victoria. This group of buildings and plazas thus linked may well form a new core to a unified central business district, a core conveniently placed between the newer and the older centers. Unlike Detroit, Pittsburgh, Philadelphia, or Toronto, Montreal's new skyscrapers are not being built to one side, but are centrally placed with respect to the existing older and newer clusters of skyscrapers.

In certain respects, Montreal bears a resemblance to Philadelphia. First, one may deduce from the large amount of new

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[43] Architectural Forum, CXVIII (Feb. 1963), 77.

[44] Harold Spence-Sales, The Heart of Montreal, (Montreal, 1956), p. 25.

apartment construction in Montreal's central area that many people want to live in the central area of the city. A second similarity is the presence of industrial and warehouse buildings which meet our definition of skyscrapers and which are close to the central business district -- west of Bleury Street and between Burnside and St. Catherine Streets. This is the furriers' manufacturing center. A third similarity that both cities have is the presence close to the central business district of many historic buildings, the cultural humus that Walter Gropius spoke of, which gives a city its specific character and which helps to provide some of the variety in daily experience that Chermayeff and Alexander think is so necessary in the urban environment.

Like Pittsburgh, Montreal is blessed with an inspiring site near the friendly brow of Mount Royal, whose height of some seven hundred seventy feet serves as a backdrop for the central area, but does not visually overpower its skyscrapers. Most important of all, however, one might say that the tradition of central area living and the possibility that the new core of the central business district will be at the hub of the until-now separated business centers of management and finance will insure a central business district alive with urban interest and activity.

CONCLUSION

In Part I, General Considerations, I have presented ideas associated with the clustering of skyscrapers: central business district activities, measures to accommodate traffic, and uses of urban space. These ideas are concerned with cities as they are and as they might be expected to become. In Part II, Investigations and Observations, I have presented studies of Detroit, Pittsburgh, Philadelphia, Toronto, and Montreal.

By listing the ideas present in Part I and comparing the present and anticipated conditions in each of the five cities against this list, I have attempted to show to what extent what has happened in these specific cities corresponds to general ideas about as they are cities now and cities as they may be expected to become. I have presented this information in the charts that follow.

In a statement following the charts, I have discussed their special reference to Montreal.

ACTIVITIES IN THE CENTRAL BUSINESS DISTRICT

	RETAILING OF GOODS AND SERVICES FOR A PROFIT	OFFICE FUNCTIONS	HOTELS	RECREATION
PRESENT				
Detroit	Yes	Yes	Several	Some
Pitts-burgh	Yes	Yes	Several	Arena
Phila-delphia	Yes	Yes	Many	Little
Toronto	Yes	Yes	Few	Some
Montreal	Yes	Yes	Yes	Some
FUTURE				
Detroit	Shopping concourse	Building under construction	In Convention Mall	Convention Mall, Shopping Concourse
Pitts-burgh	Yes	Yes	-	-
Phila-delphia	Market St. East	Yes	Yes	Waterfront
Toronto	Yes	Yes	Lower Edge	Waterfront
Montreal	Expansion of present stores	Buildings scheduled	CPR Project	Some; CNR Convention Center

ACTIVITIES IN THE CENTRAL BUSINESS DISTRICT

	GOVERNMENT ESTABLISHMENTS	CULTURAL FACILITIES	CENTRAL AREA LIVING
PRESENT			
Detroit	Civic Center	Few	Some
Pittsburgh	Yes	Arena	Very little
Philadelphia	Yes	Yes	Much, old and new
Toronto	Yes	Yes	Some
Montreal	Few	Yes	Many, old and new
FUTURE			
Detroit	No	Convention Mall	Gratiot area being built
Pittsburgh	Federal Building almost complete	at Arena area	Near Duquesne & near Arena
Philadelphia	City offices under construction	Yes	Society Hill & private buildings
Toronto	City Hall under construction	Cultural Center	Private Buildings
Montreal	Court House under construction	Expansion of Place des Arts	Much, private building

ACTIVITIES IN THE CENTRAL BUSINESS DISTRICT

	FACILITIES FOR SEPARATED VEHICULAR AND PEDESTRIAN TRAFFIC	SLOW, SHORT-DISTANCE TRANSIT FACILITIES	RAPID TRANSIT FACILITIES
PRESENT			
Detroit	No	No	No
Pittsburgh	No	No	No
Philadelphia	No	No	Yes
Toronto	No	No	Yes
Montreal	Some in Place Ville Marie	No	No; except suburban railway
FUTURE			
Detroit	Shopping concourse	Moving walkways	Perhaps
Pittsburgh	No	No	No
Philadelphia	Penn Center, Market Street East	Chestnut Street trolley	Improving Subway
Toronto	Planned for	No	Extend Subway
Montreal	Place Ville Marie to Place Victoria	Moving walkways	Subway under construction

MEASURES TO ACCOMODATE TRAFFIC

	LIVING ACCOMMODATIONS IN OR NEAR THE CENTRAL BUSINESS DISTRICT	MIXED URBAN ACTIVITIES	TRAFFIC ROUTED ARQUND ENVIRONMENTAL AREAS
PRESENT			
Detroit	Some	No	Yes
Pittsburgh	very few	No	Yes
Philadelphia	Yes	No	Yes
Toronto	Yes	Yes: "The Colonnade"	Yes
Montreal	Yes	Place Ville Marie	No
FUTURE			
Detroit	Yes	No	Yes
Pittsburgh	Yes	No	Yes
Philadelphia	Yes	Yes	Yes
Toronto	Yes	Yes	Yes
Montreal	Yes; not planned	West End Plaza	Expressway under construction

MEASURES TO ACCOMMODATE TRAFFIC

	DESIGN OF ROADS AND PARKING FOR MAXIMUM ACCESSIBILITY CONSISTENT WITH QUALITY OF ENVIRONMENT.	RAPID TRANSIT, SERVING TO REDUCE THE USE OF PRIVATE AUTOMOBILES.
PRESENT		
Detroit	Excellent expressways. Many garages.	No
Pittsburgh	Excellent expressways. Many garages.	No
Philadelphia	Excellent expressways. Some garages.	Yes
Toronto	Excellent expressways. Some garages.	Yes
Montreal	No expressways. Few garages.	No
FUTURE		
Detroit	Yes Under construction and planned.	Yes; monorail suggested capable of collecting self-propelled capsules.
Pittsburgh	Yes	No
Philadelphia	Market Street East	Yes, subway.
Toronto	Yes	Yes, subway
Montreal	No; only garages planned.	Yes, subway

USES OF URBAN SPACE

PRESENT				
Detroit	Civic Center Gratiot Area	No	Yes	-
Pitts-burgh	Gateway Center, Lower Hill	No	Two parts	Regional Plann Association
Phila-delphia	Society Hill	No	Several parts.	Yes
Toronto	No	No	Two parts	Yes
Montreal	Jeanne Mance	Place Ville Marie	Several parts	No
	URBAN RENEWAL TO REMOVE OBSOLETE BUILDINGS AND STREET AND LOT PATTERNS.	VARIETY AND MIXTURE OF ACTIVITIES	COMPACT CENTRAL BUSINESS DISTRICT.	COMPREHENSIVE PLANNING
FUTURE				
Detroit	Conention Mall	Yes	Yes	No
Pitts-burgh	Lower Hill	-	Yes	No
Phila-delphia	Washington Square	-	Yes	No
Toronto	No	Yes	Yes	Yes
Montreal	No	West End Plaza	Yes	No

USES OF URBAN SPACE

	PLANNING MEASURES INITIATED BY CITIZENS ACTION	PRESERVATION AND USE OF HISTORIC BUILDINGS AND SITES	APPRECIATION OF THE FORM OF THE CITY AS A SYMBOL
PRESENT			
Detroit	Citizens' Redevelopment Committee	No	As form, not symbol
Pittsburgh	Allegheny Conference	Yes	No
Philadelphia	Citizens' Council	Many	No
Toronto	No, by local government	No	No
Montreal	-	Some	Yes, of commerce
FUTURE			
Detroit	-	No	No
Pittsburgh	-	Yes	No
Philadelphia	-	Yes	No
Toronto	-	No	No
Montreal	-	Yes	Yes

USES OF URBAN SPACE

	LIMITING METROPOLITAN CITY SIZE DIRECTING POPULATION GROWTH TO SATELLITE CITIES WHICH ARE LARGELY SELF SUFFICIENT	CITY AS A LARGE PERMANENT STRUCTURE WITH EXPENDABLE PORTIONS ATTACHED	COMPLETE DECENTRALIZATION
PRESENT			
Detroit	No	No	Tending towards.
Pittsburgh	No	No	No
Philadelphia	No	No	No
Toronto	No	No	Slight tendency.
Montreal	No	No	No
FUTURE			
Detroit	No	No	No
Pittsburgh	No	No	No
Philadelphia	No	No	No
Toronto	No	No	No
Montreal	No	No	No

USES OF URBAN SPACE

	A STRUCTURE OF LARGE SCALE SERVING AS A UNIFYING ELEMENT OF URBAN DESIGN AND AS A SYMBOL OF THE CITY	ARTIFICIAL LAND ABOVE THE NATURAL GROUND TO FREE THE LATTER AS SPACE FOR VEHICULAR ACCESSIBILITY TO BUILDINGS
PRESENT		
Detroit	No	No
Pittsburgh	No	No
Philadelphia	No	No
Toronto	No	No
Montreal	No	No
FUTURE		
Detroit	Yes; shopping concourse structure	No
Pittsburgh	No	No
Philadelphia	Market Street East	No
Toronto	No	No
Montreal	No	No

SPECIAL REFERENCE TO MONTREAL

According to the charts, how does Montreal compare with the other cities studied. First, what does it lack with respect to activities in its central business district? Recreational activities and the lack of any planning for them in the future are most conspicuous. Of course, recreation is offered for sophisticated people in the form of restaurants, bars, and night clubs, and for the general public in the peculiarly urban pass time of watching the people on the crowded sidewalks. In Philadelphia and Toronto, however, we find plans to develop the waterfront areas. Such a development would be possible in Montreal, in spite of the fact that most of the waterfront is taken up with the activities of shipping. For just this reason, vantage points from which the public might observe these interesting activities could be provided and would certainly be popular. In San Francisco, for example, a large part of the fascination of going to the top of Telegraph Hill, which rises steeply only a few blocks from the waterfront, lies in the excellent view which it affords of the ships and shipping of the bay and The Embarcadero below.

Measures to accommodate traffic in Montreal seem more often to happen than to be taken. Living accommodations abound near the central business district, helping to keep to a minimum the flow of traffic to and from work, and the suburban development is small. The West End Plaza project will, on its completion,

provide a mixture of urban activities in one building complex such as we have seen in "The Colonnade" in Toronto. Such experiments are important in developing a means of reducing urban traffic, and of establishing a new form of urban environment. In office buildings, similar arrangements appear. Precedents in the mixing of urban activities have been established in Place Ville Marie and will soon be carried out in Place Victoria. Certain amounts of daytime traffic are here reduced. Expressway construction has only begun in the central business district, and the city streets are still assumed to constitute a satisfactory routes between expressways and parking garages. Other connecting links do not exist and are not planned. However, construction of a subway system will reduce automobile traffic, placing Montreal in a more favorable position in this respect than Pittsburgh, where surface transit will be depended upon, and Detroit, where only the beginning ideas of an excellent rapid transit scheme have been envisaged.

With respect to the uses of urban space, the interest developing in the preservation of Montreal's historic buildings is encouraging. These buildings will add variety to the urban environment and provide a source of interest that cannot be duplicated. New Orleans has long taken pride in its Vieux Carre, and it is pleasant to anticipate that Montreal's old quarters may soon be places pleasant to see and to live in as well. One

aspect of the use of urban space, however, whose absence is conspicuous in Montreal is comprehensive planning. No comprehensive planning is done by local authority or by private organizations. No examples emerged in my research of citizen initiative to secure planning measures, nor of government initative. In each of the other cities investigated in this study an example of such iniative was found. Since such examples are missing, I will venture the conclusion that if planning measures are taken in Montreal, they are taken as a result of the initiative of private business interests. These measures are small in scope, restricted to the site in which the particular business interest in concerned. It is quite possible that private interests have adapted to the lack of comprehensive planning just as they must adapt to other conditions of a building site. Perhaps the desire to concentrate mixtures of urban activities in such centers as Place Ville Marie and in Place Victoria is the solution that private interests have adopted to the problems that the numicipality is not solving with sufficient speed.

None of the cities shows any decisive evidence of any of the developments noted in the last two pages of the chart. These ideas indicate some possibilities for future urban forms. It is likely that all five cities will develop along different lines, but further clustering of skyscrapers, a trend of which we have traced the beginnings, will probably continue for the foreseeable future.

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