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Transit and the Polycentric City

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Transit and the Polycentric City

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ABSTRACT

The role of transit in aiding the implementation of regional land use plans that call for the creation of major diversified centers in the outer city is investigated. The polycentric city concept is defined and illustrated by reference to regional planning work in the Twin Cities of Minnesota and several other U.S. cities. Arguments for and against the concept are outlined and the results of a survey relating to the present status of the concept in 48 metropolitan areas are presented. An evaluation framework is developed and applied in visits to 14 American, two Canadian, and one English urban region. The most interesting work on this topic was found in Vancouver, B.C., and Toronto, Ontario. Other interesting work has been done in the Twin Cities and Denver. The results of the field work are summarized and 18 specific examples of noteworthy progress toward the development of outer city centers of significant scale are described. A discussion of the national potential for outer city centers is developed from several perspectives.

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Errors and omissions are, of course, the sole responsibility of the author.

Jerry Schneider
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TABLE OF CONTENTS

	Page
LIST OF FIGURES	iv
LIST OF TABLES	viii
PHOTO CREDITS	xi
EXECUTIVE SUMMARY	xii
I. INTRODUCTION	1
A. What is the Polycentric City Concept?	1
B. The Centers Map as an Element of the Regional Development Plan	4
C. Implementation Problems and Potentials	9
References	15
II. RATIONALE FOR AND AGAINST THE POLYCENTRIC CITY CONCEPT	16
A. Five Major Elements of the Rationale for the Concept	16
1. Consistency with Market Trends	16
2. Reduction of Travel Requirements	30
3. Housing Opportunity, Urbanity and Self-Sufficiency	37
B. Arguments Against the Polycentric City Concept	42
References	48
III. THE PRESENT STATUS OF THE POLYCENTRIC CITY CONCEPT IN THE UNITED STATES, CANADA AND OTHER SELECTED LOCATIONS	50
A. Results of the U.S. Survey of Large Metropolitan Planning Organizations	50
B. The Status of the Polycentric Concept in Fourteen U.S., Two Canadian and One English City	55
1. Description of Evaluation Framework	55
2. Descriptions of Activities in Individual Cities	64
a. Special Situation (Irvine, California)	65
b. Serious about Concept (Toronto, Ontario; Vancouver, British Columbia; Denver, Colorado; Miami, Florida; New York, New York)	73
(1) Toronto, Ontario	73
(2) Vancouver, British Columbia	96
(3) Denver, Colorado	114
(4) Miami, Florida	122
(5) New York, New York	125
c. Considered, Adopted, But Not Yet Taken Seriously (Washington, D.C.; Los Angeles, California)	129
(1) Washington, D.C.	129
(2) Los Angeles, California	134

Page

d. Considered, But Not Adopted (San Diego, California; Seattle, Washington; Houston, Texas; Chicago, Illinois) 136

(1) San Diego, California 136
(2) Seattle, Washington 144
(3) Houston, Texas 160
(4) Chicago, Illinois 168

e. Considered, Adopted, But Not Implemented (Minneapolis-St. Paul, Minnesota; Baltimore, Maryland; San Francisco, California; London, England) . 171

(1) Minneapolis-St. Paul, Minnesota 171
(2) Baltimore, Maryland 193
(3) San Francisco, California 199
(4) London, England 201

f. Never Considered (Atlanta, Georgia) 207

References 212

IV. PROBLEMS, PROGRESS AND POTENTIAL 216

A. Problems 216

1. Technical (Methodological) 217
2. Non-Technical (Political and Fiscal) 222

B. Especially Noteworthy Progress 224

1. Irvine Center, Irvine, California 224
2. Scarborough Town Centre, Scarborough, Ontario 224
3. North Yonge Centre, North York, Ontario 230
4. New Westminster, British Columbia (Vancouver Region) . . . 235
5. Burnaby Centre, Burnaby, British Columbia (Vancouver Region) 240
6. Villa Italia, Lakewood, Colorado 241
7. Denver Technological Center, Denver, Colorado 242
8. Anaheim, California 246
9. Bellevue Central Business District (Seattle Metro Area) . . 248
10. Greenway/Post Oak, Houston, Texas 253
11. Plaza del Oro, Houston, Texas 257
12. Schaumburg, Illinois 259
13. Oak Brook, Illinois 262
14. Southdale Major Activity Center, Minneapolis, Minnesota . . 263
15. Eden Prairie Center, Minneapolis, Minnesota 267
16. Croydon Centre, Greater London Region 271
17. La Defense, Paris, France 273
18. La Part Dieu, Lyon, France 279

C. Potential 279

References 291

APPENDIX A. PERSONS INTERVIEWED 293

LIST OF FIGURES

		Page
1.1	The Growth Shapers	2
1.2	The Linked Transit Center Concept	3
1.3	Three Alternative Spatial Distributions of Office/Retail Employment Clusters in a Large Urban Region	5
1.4	Map of Major Diversified Center Locations in the Twin Cities Region of Minnesota	6
1.5	Major Diversified Center Locations in Various Cities	8
1.6	Hierarchy of Urban Centers	10
1.7	Idealized Size-Location Pattern of Urban Centers	10
1.8	Present and Future Distributions of Office/Retail Activities for Different Policy Outcomes	11
1.9	Developer Decision-Making Environment	13
2.1	Dispersion of Total Employment, Observed and Forecast, Twin Cities Region of Minnesota	19
2.2	Total Population in 1970 and Forecasts for 1990, Twin Cities Metropolitan Area	20
2.3	Total Employment in 1970 and Forecasts for 1990, Twin Cities Metropolitan Area	20
2.4	Regional Share Change, 1970-1990, of Total Population and Employment, Twin Cities Metropolitan Area	21
2.5	Distribution of Employment in the Denver, Colorado Region	26
2.6	Total Population in 1970 and Forecasts for 2000, Atlanta Metropolitan Area	28
2.7	Total Employment in 1970 and Forecasts for 2000, Atlanta Metropolitan Region	28
2.8	Regional Share Change, 1970-2000, of Total Population and Employment, Atlanta Metropolitan Area	29
2.9	Population/Employment Ratio, 1970 and 1990, Twin Cities Metropolitan Area	39
2.10	Population/Employment Ratio, 1970 and 1990, Atlanta Metropolitan Area	39
3.1	Evaluation Framework for Case Studies	56

Page

3.2 Illustrations of the Idealized Major Diversified Center Developed by the Metropolitan Council 60

3.3 Plan View and Aerial View (Looking South) of Newport Center in Irvine, California 68

3.4 Irvine Center Location Map and Planning Concept Diagram 70

3.5 Irvine Center Stage I Shopping Mall Plan and Sketch of Overall Development Concept 71

3.6 Transportation and Activity Center Elements of Proposed Plan for the Urban Structure of Metropolitan Toronto, May 1976 . . . 75

3.7 Planning Areas of Metropolitan Toronto 75

3.8 Office Employment Concentrations in Metropolitan Toronto, 1974, in Thousands of Office Jobs 77

3.9 Alternative Future Employment Distribution Patterns Examined in Metropolitan Toronto 82

3.10 Office/Retail Employment at Proposed Centers in Metropolitan Toronto 84

3.11 Designated Metropolitan Centers and Office Parks 91

3.12 The Transit Development and Activity Center Elements of the Proposed Plan for the Urban Structure of Metropolitan Toronto . 93

3.13 Map of Regional Town Centres and Proposed Light Rail Transit Line in Vancouver, British Columbia 99

3.14 Vancouver Urban Form, 1976 and 1986 100

3.15 Present and Desired Mix of Activities of Regional Town Centres 106

3.16 Illustrative List of Regional Town Centre Activities 107

3.17 Regional Activity Centers and Denver CBD 118

3.18 Relationship Between Proposed Initial Rapid Transit Route and Major Activity Center Locations in Denver, Colorado, 1977 . . . 119

3.19 Activity Center - Transit Relationships Derived by the Regional Transportation District in Denver 121

3.20 The Relationship Between Transit Routes and Major Activity Centers in Dade County, Florida, 1978 126

3.21 Map of Proposed Centers for the New York Region 127

3.22 Existing and Proposed Major Activity Centers in the Central Puget Sound Region, 1977 147

		Page
3.23	View of Northgate Shopping Center & Vicinity, Looking South, 1977 .	150
3.24	View of the Southcenter Mall, Surrounding Office and Distribution Facilities, Seattle Region, 1976, Looking South	151
3.25	Aerial View of Houston, Looking East, 1978	162
3.26	Multiple Activity Centers Alternative for Houston	164
3.27	Map of Major Diversified Center Locations in the Twin Cities Region of Minnesota	178
3.28	Location of Major Regional Shopping Centers in Relation to MDC Locations in the Twin Cities Region, 1977	181
3.29	Transportation Subregions and Other Planning Area Boundaries Minneapolis-St. Paul, Minnesota	184
3.30	Relationships Between MDC Locations and Proposed Multimodal Transportation Terminal Locations in the Twin Cities Area . . .	188
3.31	Comparison of Intermodal Transfer Terminal Locations and MDC Locations in the Twin Cities Region	189
3.32	High Priority Transit Improvement Areas	192
3.33	Rail Transit Routes in Relation to Proposed Metrotowns in the Baltimore, Maryland, Region, 1977	197
3.34	Map of Major and Minor Strategic Centers for the Greater London Area, 1976	202
3.35	Transportation-Land Use Relationships in the Atlanta Region . .	210
4.1	Washington Square Shopping Mall Located South of Portland, Oregon, 1976	221
4.2	Scarborough Town Centre Site, Looking North, 1981	226
4.3	Plan and Perspective Views of an Illustrative Development Scheme for the Scarborough Town Centre Site	228
4.4	Illustration of the Proposed Pedestrian Concourse in Scarborough Town Centre	229
4.5	Illustration of a Development Proposal for the New Westminster Regional Town Centre	237
4.6	View of Present and Proposed Villa Italia Center, Lakewood, Colorado, 1978, Looking Northeast	243
4.7	Status of DTC Site, March, 1978	245

Page

4.8 View of the DTC Site, Looking North, 1976 246

4.9 View of the Bellevue Central Business District, Looking West, 1980 249

4.10 Status of Commercial Land Use in Bellevue, Washington, 1976 . . 252

4.11 View of Greenway Plaza in 1977, Looking East Toward Downtown Houston and Development Plan 254

4.12 Boundaries of the Plaza del Oro Site in Houston, Texas, 1978. . 258

4.13 Locational Diagram of the Greater Woodfield Area, Schaumburg, Illinois 260

4.14 View of the Greater Woodfield Area, Schaumburg, Illinois, 1976, Looking Northeast 261

4.15 View of the Southdale Major Activity Center, Looking North, 1980 265

4.16 View of the Southdale Major Activity Center, Looking South, 1981 266

4.17 View of the Eden Prairie Major Center Area, Looking East, 1975 269

4.18 Locale of the Eden Prairie Major Center Area, Looking North . . 270

4.19 Perspective View of Model of La Defense and Ground Level View in 1973 274

4.20 Model of Underground Road System for La Defense and Cross-Section Diagram 276

LIST OF TABLES

		Page
2.1	Forecasts for Population and Employment Distributions in Several Metropolitan Areas	17
2.2	Total Office Space, Central Area and Rest of Metro, 1964, 1974	22
2.3	Retail Floor Space, City of Toronto and Rest of Metropolitan Toronto, 1966, 1971	22
2.4	Population and Total Service Employment Distribution Trends, 1970-1995 - Baltimore Region	24
2.5	Activity Center Employment Levels, Observed and Forecast, Denver, Colorado	25
2.6	Trends in Non-Residential Building Activity, Nine-County San Francisco Bay Region, 1970-1976	27
2.7	Actual and Expected Population/Job Ratios	41
3.1	Overall Results of a 1978 Survey of 46 Metropolitan Planning Agencies in the United States	51
3.2	Responses from Individual Metropolitan Planning Organizations to 1978 Polycentric City Concept Survey	52
3.3	Composition of a Multifunctional Center as Suggested by Victor Gruen	58
3.4	General Description of Work Accomplished on Polycentric City Concept in Cities Visited as of 1978	66
3.5	Total Office Space, Central Area and Rest of Metro, 1964, 1974	76
3.6	Retail Floor Space, City of Toronto and Rest of Metropolitan Toronto, 1966, 1971	78
3.7	Employment Growth and Distribution Forecasts, Metro Toronto, 1974 to the Year 2001	79
3.8	Classification of Activity Centres	81
3.9	Proposed Office/Retail Employment Distribution, 1974 and 2001	83
3.10	Guidelines for a New Node	89
3.11	Factors That Will Attract Business and Government to Regional Town Centres	111
3.12	Population and Employment Forecasts for the Urbanized Portion of Dade County, Florida, for 1975, 1985 and 2000	124

		Page
3.13	Policies for Outer Suburban Centers	132
3.14	Population and Employment Forecasts for the Six-County Southern California Association of Governments Planning Region	135
3.15	Distribution of Retail Space and Office Employment in the San Diego Region, 1966 and 1972	137
3.16	Distribution of Retail Employment by Retail Area Type in the San Diego Region, 1966 and 1972	138
3.17	Activity Center Objectives in Relation to Problems With Current Trends	154
3.18	Policies Regarding Developments of Regional Impact	170
3.19	Action Recommendations for Implementing Policies Regarding Developments of Regional Impact (DRI's)	172
3.20	MDC Policies Developed by the Metropolitan Council in 1971	175
3.21	Travel by Transportation Planning Subregions, 1970	183
3.22	Travel by Transportation Planning Subregions, 1990	185
3.23	Estimates of Transit Capital and Operating Funds Needed for Plan Implementation	186
3.24	Transportation Policies That Have Implications for the Major Diversified Center Concept in the Twin Cities Region	187
3.25	1970 and Forecast Shares of Regional Employment (%)	198
3.26	Share of Office Space For Greater London Region, 1967 and 1974	205
4.1	Attributes of Eighteen Outer City Centers, August, 1978	280
4.2	The SMSA's Expected to be the Fastest Growing in the U.S., 1970-2000	281
4.3	Geographic Groupings of High-Growth SMSA's	283
4.4	SMSA's Expected to Grow by Less Than 50 Per Cent But by More Than 500,000 People, 1970-2000	284
4.5	States Having Five or More Regional Shopping Centers With More Than 800,000 Square Feet of Gross Leasable Area, 1976	286
4.6	Trends in the Number of Regional Shopping Centers as Compared with All Shopping Centers, 1972-76	287
4.7	Major Retail Center Data from the Census of Business	287

Page

5.1 Cities That Submitted Proposals For UMTA's Downtown People-Mover Demonstration Program 306

5.2 Primary Factors in the Final Selection of DPM Sites 307

5.3 Some Characteristics of Eleven DPM Projects in 1978 309

PHOTO CREDITS

Figure 3.3, page 68: The Irvine Company

Figure 3.23, page 150: Aerolist, Inc., Seattle, Washington

Figure 3.24, page 151: Aerolist, Inc., Seattle, Washington

Figure 3.25, page 162: Harper Leiper Studios, Houston, Texas

Figure 4.1, page 221: The Winmar Corporation, Seattle, Washington

Figure 4.2, page 226: Peter Mykusz, Borough of Scarborough, Scarborough, Ontario, Canada

Figure 4.6, page 243: City of Lakewood Planning Department

Figure 4.8, page 246: Denver Technological Center, Inc., Denver, Colorado

Figure 4.9, page 249: Aerolist, Inc., Seattle, Washington

Figure 4.11, page 254: Century Development Corporation, Houston, Texas

Figure 4.12, page 258: R. A. Liebrum and Associates, Houston, Texas

Figure 4.14, page 261: J. Emil Anderson & Son, Inc.

Figure 4.15, page 265: Bordner Consultants, Bloomington, Minnesota

Figure 4.16, page 266: Bordner Consultants, Bloomington, Minnesota

Figure 4.17, page 269: Bordner Consultants, Bloomington, Minnesota

Figure 4.19, page 274: Transportation Research News, No. 60, Autumn 1975

Figure 4.20, page 276: Transportation Research News, No. 60, Autumn 1975

EXECUTIVE SUMMARY

For the past twenty years or more, most of our large urban areas have been decentralizing rapidly and becoming less dense. Population and employment growth in the outer city has been very rapid and urban travel patterns have become more diffuse and less constrained to a few radial corridors. A polycentric urban structure is emerging that consists of several clusters of activity located some distance from the downtown of the region. The downtown has become only one of several destinations of importance in the region and in most cases its relative size is not expected to increase in the future.

Most non-rail transit systems are still oriented to serving only the downtown well in many of our large urban regions. Few have been reoriented to providing good service to non-downtown destinations. The result is that these transit systems are faced with the problem of serving a destination (downtown) that is declining (in relative terms) as a part of the total urban travel market. The structure of these monocentric transit systems no longer fits the polycentric structure of the urban region very well. Transit's share of the urban travel market cannot be expected to increase as long as it continues to focus on serving only one (downtown) of the several important destinations in the urban region.

The purpose of this report is to examine the role of transit in assisting the further evolution of the polycentric city. The basic idea is that a city that consists of several relatively high-density destinations can better utilize and support an areawide bus transit service than one which contains only one dominant destination. Such a transit service would consist of (1) good local service to a few centers of activity (including downtown), (2) good express service between centers and (3) good internal circulation service in a few high-density centers. Its form would be quite different from today's route structures which are predominantly radial to the region's downtown. This reorientation of transit service would support and complement part of regional development (or land use) plans in many of our large urban regions. These plans often designate several locations on a map that are suitable for development into major diversified centers (MDC's). These MDC's are like small downtowns and consist of offices, retail establishments, apartments and a wide variety of other activities. They are to have the density and diversity needed to support a variety of transit services over an 18-20 hour day.

The rationale behind the MDC concept is multifaceted. The polycentric urban form would reduce the travel requirements of the region, conserve energy and reduce air pollution. It would make an areawide transit system more economical. Some low income persons could find housing in such centers and greater levels of urbanity and self-sufficiency would come to the outer city. While many of these points have yet to be proved conclusively, they are widely believed.

Survey results show that the polycentric city concept is widely used by metropolitan planning agencies in the United States but in a fairly superficial way. The cities that have taken the concept most seriously are Toronto and Vancouver, B.C. In the U.S., Minneapolis-St. Paul and Denver are the most advanced although far less so than the two Canadian cities cited. Data from 14 U.S., two Canadian and one English city have been compiled and analyzed to define the status of the polycentric city concept. The cities included are Irvine, California; Toronto, Ontario; Vancouver, British Columbia; Denver, Colorado; Miami, Florida; New York, New York; Washington, D.C.; Los Angeles, California; San Diego, California; Seattle, Washington; Houston, Texas; Chicago, Illinois; Minneapolis-St. Paul, Minnesota; Baltimore, Maryland; San Francisco, California; London, England and Atlanta, Georgia. Eighteen specific sites where major diversified centers are currently emerging in the outer city are examined in these and a few other cities. Transit either is playing, or is expected to play, a major role in the development of nine of these projects while its role is not yet clear in the other nine. In most cases, transit services have been provided in advance of a well-developed patronage base and have contributed to the "shaping" of the form of the emerging center.

The creation of outer city centers is of the utmost importance to the future viability of areawide non-rail transit in our large urban regions. UMTA could do a great deal to stimulate and assist the development of outer city centers should it become its policy to do so. Some intervention in the operation of the urban land market will be necessary as the market is now producing a low-density and widely scattered set of activities and probably will continue to do so in the future. Both incentives and disincentives are needed to encourage some clustering of new and relocating activities into a few designated locations. Transit investments in the form of center-focused scheduled and paratransit services, outer city transit terminals and internal circulation systems can aid the emergence of outer city centers. These investments must

lead urban development decisions but will not, alone, be sufficient to cause the desired amounts of growth and density of development. A coordinated effort involving other federal and local interests will be required.

This report presents a balanced appraisal of the case for a reorientation of our non-rail transit systems in response to some fundamental and irreversible changes in the structure of our large urban regions. The polycentric city is the city of the future. If transit is to play an important role in this city, it must be reoriented to serve this emerging urban form. Revitalizing the central city is an important national goal. However, the transit needs of the much larger populations in the outer city must also be recognized and met during the 1980's and 1990's. Encouraging the development of dense and diverse outer city centers can assist the attainment of both goals and increase the economic viability of areawide transit as well.

The report contains four sections. Section I defines the polycentric city concept and describes the philosophy and methods used in the study. Section II evaluates the rationale (pro and con) for the polycentric city concept and presents some data that either support or refute this rationale. In Section III, the results of a national survey of 48 metropolitan planning agencies are presented together with the results of field trips and other investigative work in 17 cities. Section IV contains data on 18 specific sites, a discussion of technical and non-technical problems and some data on the potential size and scope of a national outer city centers program.

I. INTRODUCTION

A. What is the Polycentric City Concept?

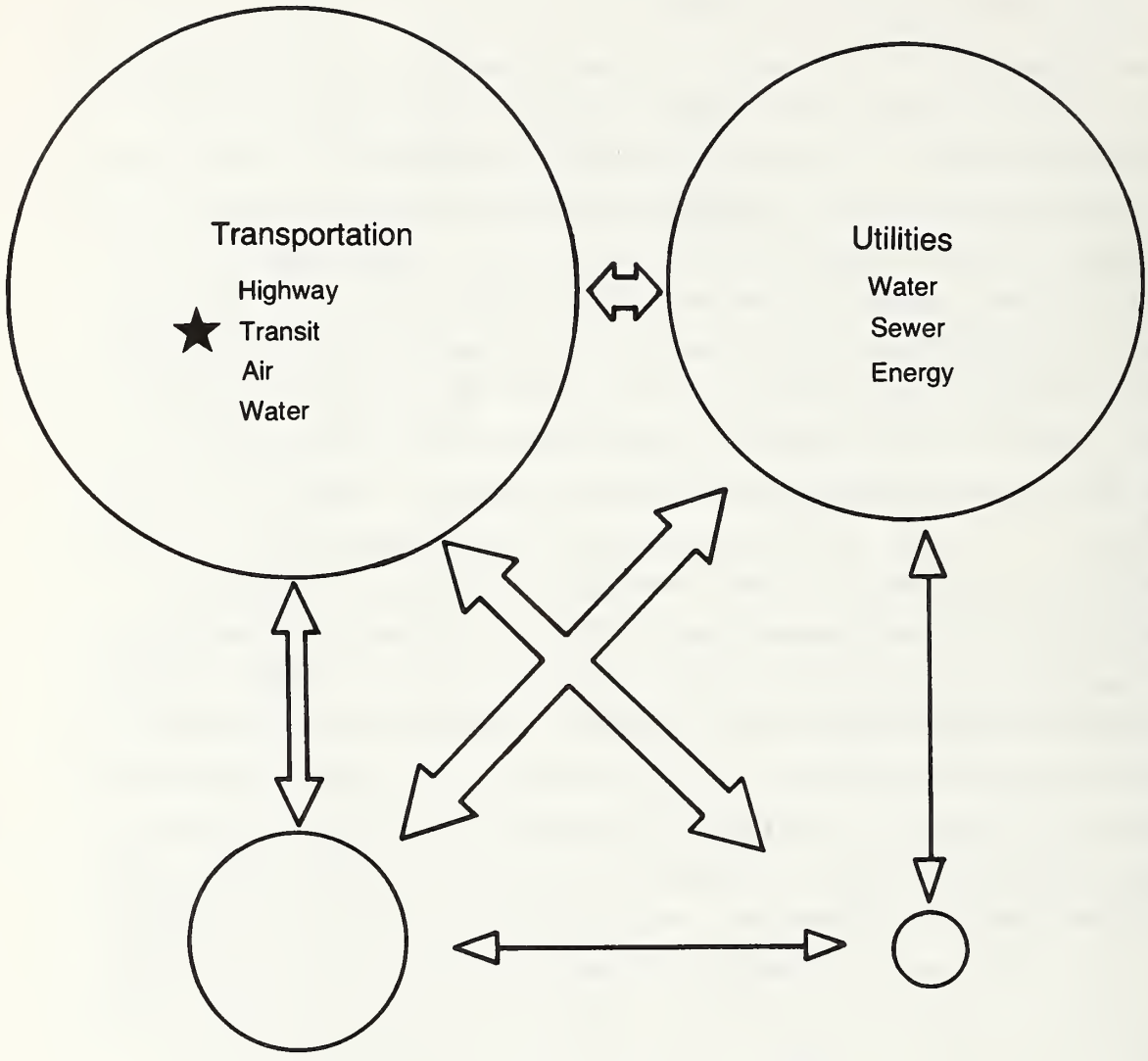
During the past ten to fifteen years, several large U. S. cities have adopted regional development plans that call for the management of the location and timing of growth. These plans express the interest of local government in preserving the utility of the heavy investments they have made in sewers, highway and other public facilities as well as their interest in keeping the cost of constructing new public facilities within reason. The theory that underlies these regional development plans is that if the local government can control the location and timing of four key types of public investments, then it will be able to shape the pattern of development in directions that offer the greatest benefit to society as a whole [1]. As shown in Figure 1.1, these "growth shapers" are (1) transportation, (2) utilities, (3) open space and (4) major activity centers. To date, transportation planning has received by far the most attention of the four. Water and sewer system planning has also been given substantial attention, especially within the past few years. Open space issues have been studied intensively in some areas but only a little in many other areas. The concept of major activity centers as a key growth shaping element of any regional development plan has been widely accepted by the planning profession but few serious studies designed to make the concept operational have been undertaken to date. As a result, most regional development plans include policies that describe support for the activity centers concept and some also include a map that shows their general location. But few include any material that is designed to indicate how the concept can be implemented.

The purpose of this report is to review the activity centers concept and to examine its relationship to the public transit part of the regional development plan (as indicated by the stars on Figure 1.1). It is widely believed that a city that has several relatively high density clusters of activity (i.e., the polycentric city) is better able to support a viable public transit system than one that has only one major center (i.e., the monocentric city). Figure 1.2 is an illustration of the way that such a transit system has been conceptualized.

If this is true, then ways to create the polycentric city need to be found before we can expect to have public transit systems in our cities that are both economical and efficient. At present, many American cities contain one large center (i.e., the Central Business District or downtown) and a very large number of small clusters of activity located in almost every part

Figure 1.1

The Growth Shapers



The area of the circle represents a rough estimate of the level of study and planning effort during the past 20 years.

The width of the arrow represents a rough estimate of the strength of the inter-relationship between shaping elements.

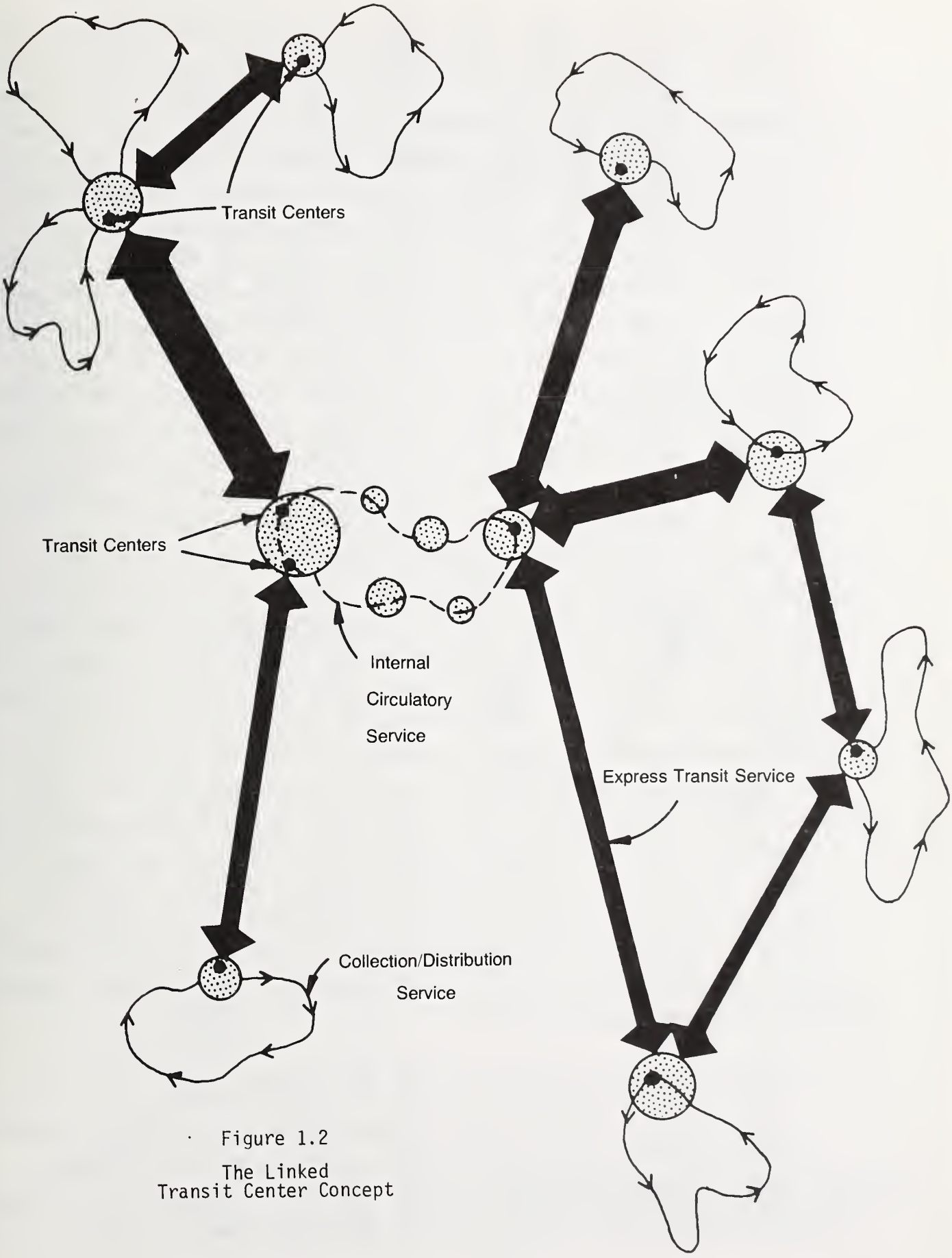


Figure 1.2

The Linked
Transit Center Concept

of the metropolitan region. This pattern of activity is extremely difficult to serve with public transit systems because the origin-destination pattern of trips is so diffuse and diverse. A polycentric city contains a hierarchy of centers, ranging from the downtown, which is the largest of the centers, to a few large regional centers, to community centers, to the small convenience neighborhood type centers. Given this type of urban form, it then becomes much more possible to design and operate a public transit system that can provide frequent and fast service that will lead to its efficient utilization. Figure 1.3 is intended to depict the basic differences between a polycentric urban form and the current situation in many American cities which do not have heavy rail transit systems. Cities which do have heavy rail transit systems can be considered to be evolving toward a polycentric urban form but they normally consist of one large center and a large number of small clusters around some (but not all) of the stations in the rail system as shown in Figure 1.3. Our focus in this study will be on those cities which do not now have nor reasonably expect to have a heavy rail transit system.

While the achievement of a viable public transit system has been an important reason for the inclusion of the major activity centers element in regional development plans, there are other reasons why cities have found the concept attractive. Expectations are that the creation of a polycentric urban form will (1) reduce the convergence and congestion problems associated with journey-to-work travel in a monocentric city, (2) reduce total travel and hence the transportation energy requirements of the city while also aiding the improvement of air quality, (3) provide places other than the central city for low income people to live, (4) provide "places" having some urbanity in suburban areas, and (5) make the outer parts of the city more self-sufficient. In some cities, the polycentric concept has been a response to high levels of traffic congestion (present and foreseen) in the central city. Still, this decongestion rationale is only one of several reasons why this concept is becoming so popular, not only in the U. S., but in Canada, Western Europe and Japan as well.

B. The Centers Map as an Element of the Regional Development Plan

Typically, the adopted regional development plan will include a map that shows the general locations of the major activity centers that are to be encouraged to develop further and become more dense. Figure 1.4 is an example of such a map. It was published in the Development Framework section of the

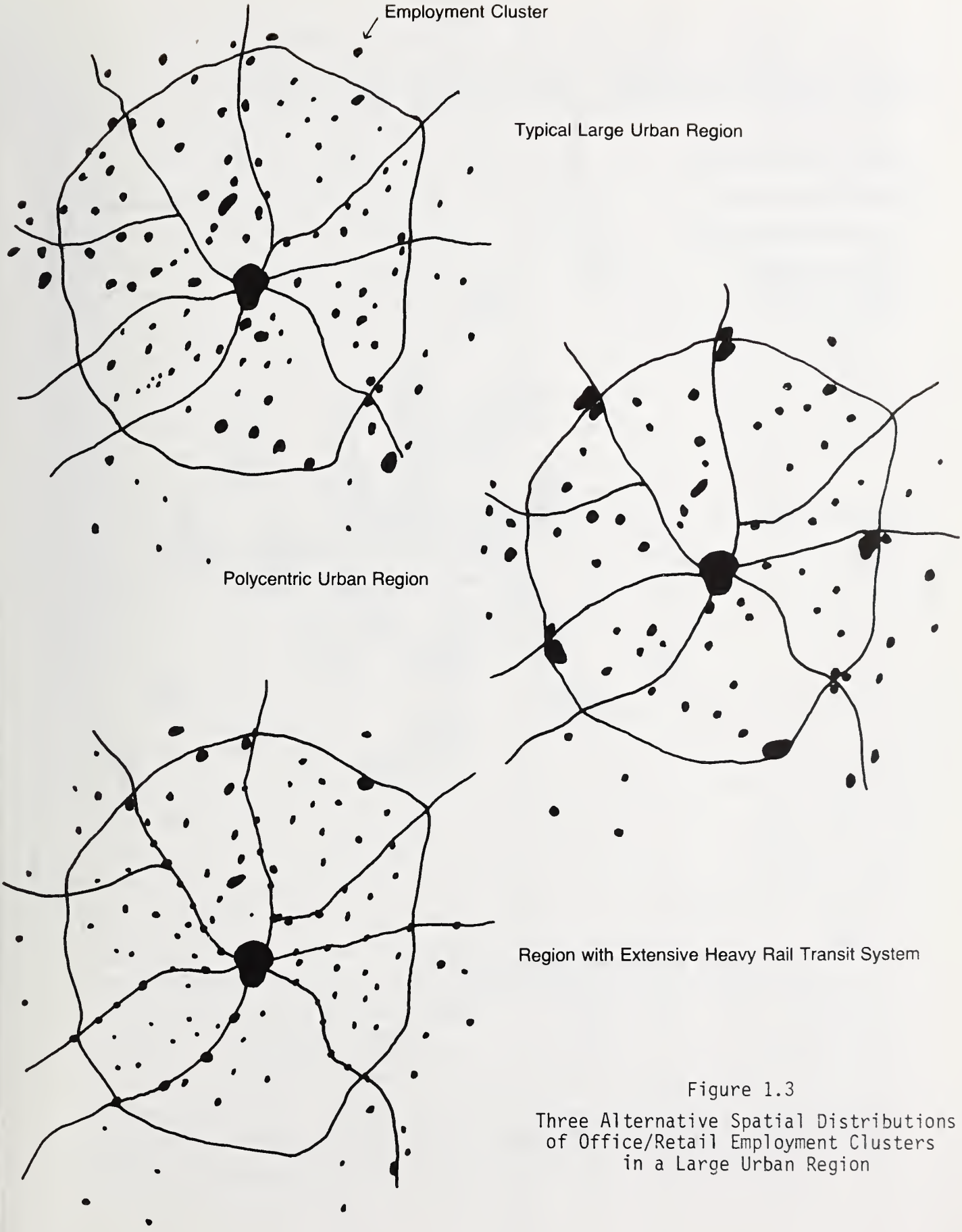


Figure 1.3
Three Alternative Spatial Distributions of Office/Retail Employment Clusters in a Large Urban Region

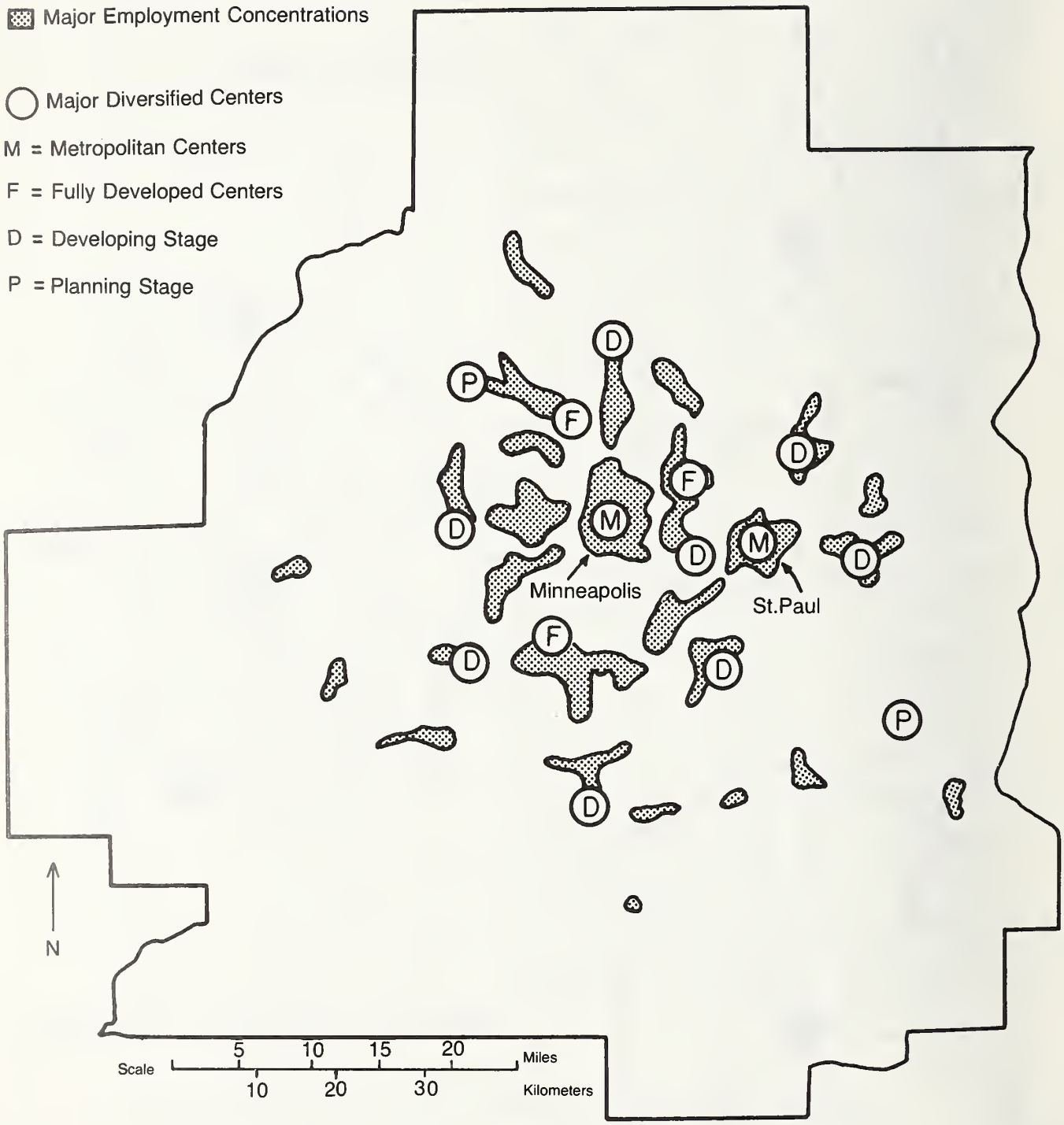
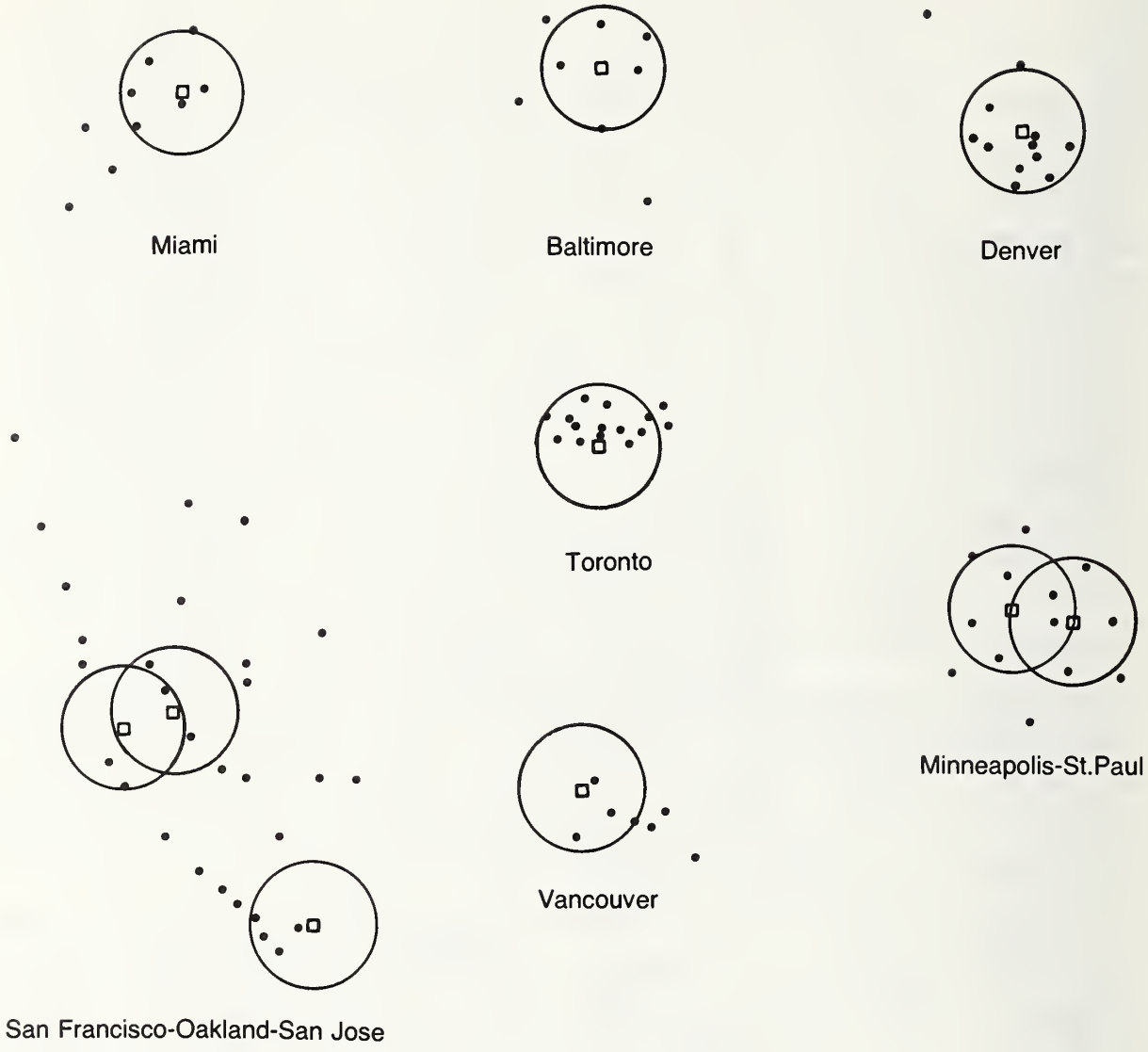


Figure 1.4

Map of Major Diversified Center Locations in the Twin Cities Region of Minnesota

Metropolitan Development Guide for the Twin Cities region of Minnesota in 1975. This map shows the locations of 15 Major Diversified Centers (MDC's) and classifies them into four categories that represent their current state of development. As can be seen in Figure 1.4, five of these locations were considered to be fully developed in 1975, eight were in a developing stage, and two were in the planning stage. The objective of this map is to encourage developers (both public and private) to choose these locations for new or relocated facilities by providing several incentives and disincentives (carrots and sticks) designed to make these locations more attractive than competing locations in other parts of the region. Figure 1.5 is a summary of the same kind of map taken from the regional development plans of several cities and reduced to a common scale. As can be seen, the locational patterns of the centers varies considerably between these cities. The spacing of centers is similar in all the American cities except Denver while the higher density Canadian cities show a tighter locational pattern. The locations shown on these maps were identified by the regional planning agency in each urban region as part of development of a land use plan for that region. Typically, a considerable amount of activity already exists at these locations but a few relate to areas that are presently vacant or used for agriculture or some other similar purpose.

The term "Major Diversified Center" (MDC) is often used to refer to the first and second ranks of a hierarchy of centers in an urban region. The downtown area is normally the largest and most diversified center in an urban region. Second level centers are normally called regional centers and many regional development plans define them as being miniature downtowns. These second level centers are viewed as "including a large concentration of retail, service, cultural, entertainment and office facilities located within a relatively compact land area; blended with high density residential development and certain kinds of manufacturing, warehousing and research operations" [2, p. 31]. The third level centers are normally called community centers and are much smaller and less diverse than the regional centers. The fourth level is the neighborhood center and it will often contain only a few shops and other convenience-type activities. For our purposes, it is the second level or regional center that is of most concern. These centers will be few in number and are typically targeted for several thousand jobs and residents. It is their location and growth over time that will have the greatest growth shaping influence



- ▫ indicates CBD's
- • indicates major diversified center location

The circles indicate 10 miles from the CBD.

Figure 1.5

Major Diversified Center Locations
in Various Cities

and contribution to the viability of public transportation in the region. Figures 1.6 and 1.7 illustrate the concept of a hierarchy of centers within a large urban region that many regional development plans are designed to achieve.

C. Implementation Problems and Potentials

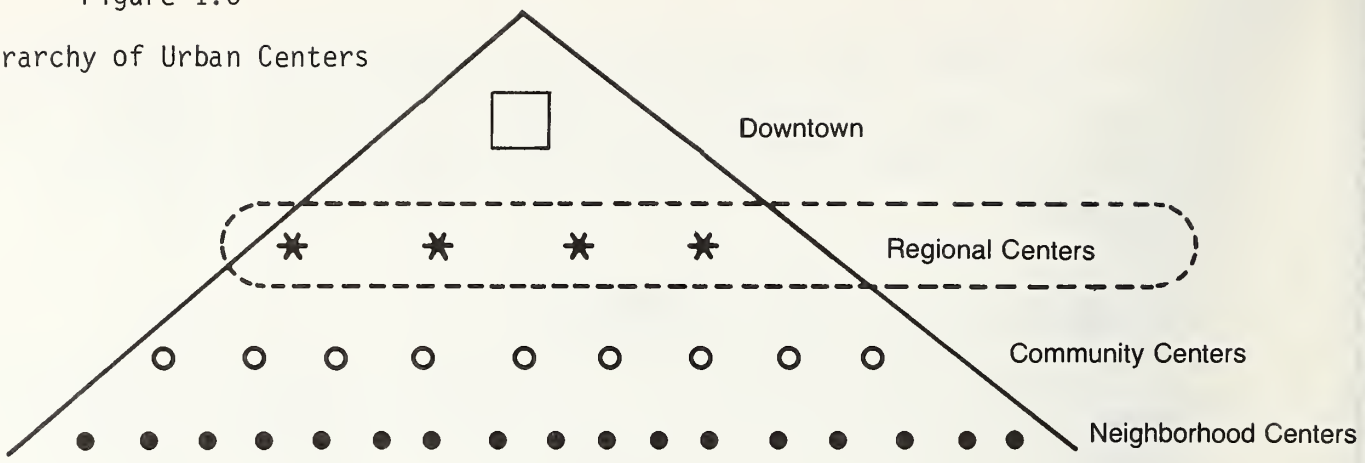
To accomplish the objective of getting much of the new growth and relocations to select MDC locations, a large number of developers will have to be convinced that it is in their best interests to choose such locations. To illustrate the problem (see Figure 1.8), suppose we have an urban region that has designated several MDC areas, some of which are fully developed and others which are not. Also shown (as is typical of any existing urban region) are many activities which are suited to MDC locations but are now located in a scattered pattern. These dots represent developers who have chosen locations along major arterials and other locations other than the MDC areas. Forecasts of growth and change will show that several new developments and relocations of existing activities can be expected to occur in the future. The regional planner's task is to find ways to guide as many as possible of these actions into MDC locations.

A "successful" implementation of a polycentric plan might look like the middle region shown in Figure 1.8. If the implementation efforts failed, the region would probably look more like the bottom diagram of Figure 1.8. Success in this case would be measured by the number (or size) of the developments that occurred in MDC locations as compared with those which occurred elsewhere. Certainly, success would have to be defined as attracting only some proportion of all development actions to MDC locations, as a one hundred per cent rate of achievement is not likely to occur in a pluralistic society such as that in the United States.

A basic assumption that has been made in this study is that the urban land market has produced and will continue to produce a land use pattern like that shown in the top and bottom parts of Figure 1.8 (i.e., a scattered or widely dispersed pattern). Some substantial intervention by public agencies in the operation of the urban land market will be required to achieve a land use pattern like that shown in the middle diagram of Figure 1.8. This intervention will need to include both incentives (carrots) and disincentives (sticks) to be effective. Further, it will have to be based on a substantial

Figure 1.6

Hierarchy of Urban Centers



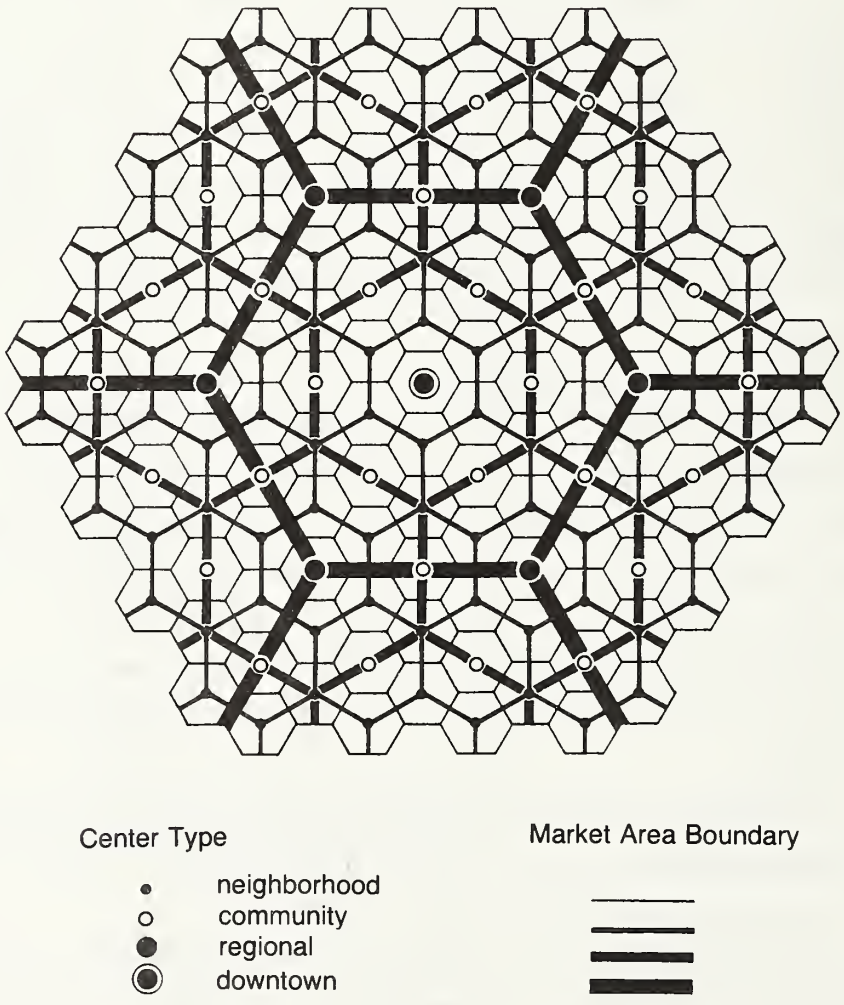
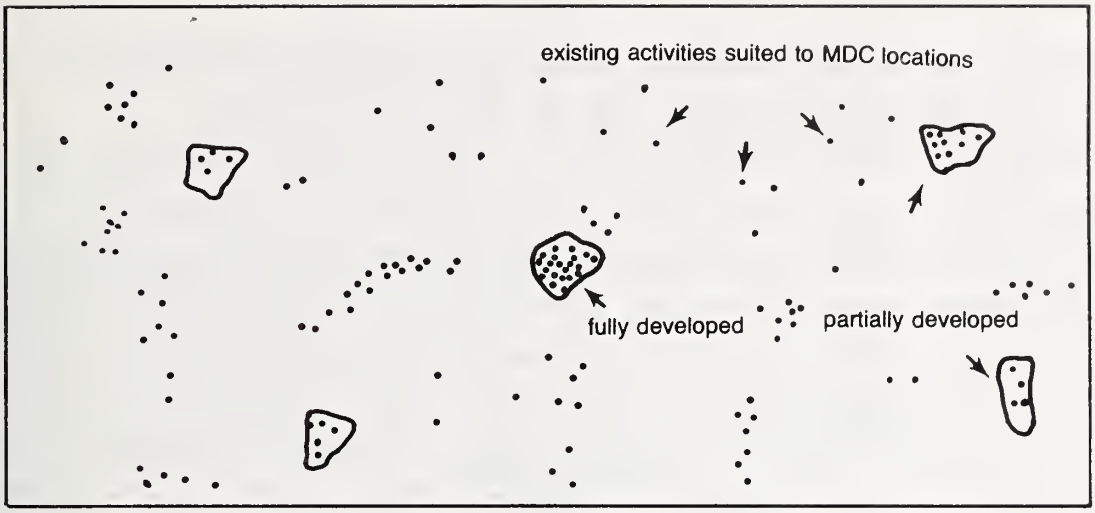


Figure 1.7

Idealized Size-Location Pattern
of Urban Centers

1979 Present Situation



1990 If MDC Policy is Implemented

1990 Failure of MDC Policy or no MDC Policy

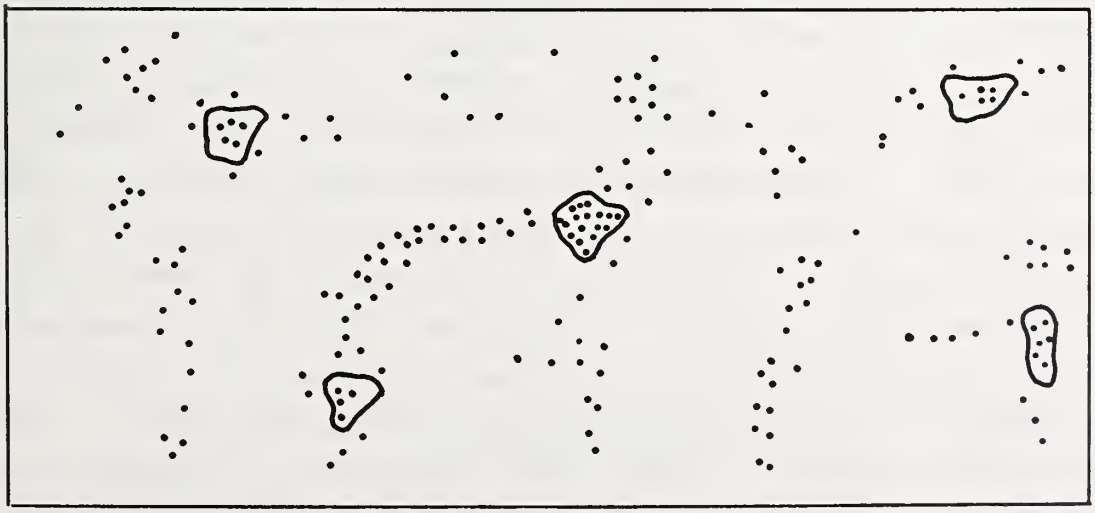


Figure 1.8. Present and Future Distributions of Office/Retail Activities for Different Policy Outcomes

knowledge of current and projected market conditions so that the carrots and sticks can be suitably scaled and applied in a timely fashion.

The approach taken in this study will be to review the rationale for the polycentric city concept and to focus on the problem of implementing it. A review of the strengths and weaknesses of this concept will be included by reference to the available (not too considerable) literature on this subject. Some attention will also be given to a very neglected and difficult topic--the location decision-making behavior of the developers who provide the physical space for the service employment and high density residential sectors of the economy. These developers include the private sector people who locate and build shopping centers, offices, hospitals and other medical care facilities, entertainment and cultural facilities, high-rise residential buildings, as well as those public officials who are responsible for the location of various types of public service facilities. These developers operate in a very complex environment as represented in a very simplified form in Figure 1.9. They are influenced by a large number of factors as they conduct the decision-making process that leads to the selection of a location for their particular development. The primary objective of this study is to identify the relative role and importance of transit access in the decision-making processes used by decision-makers in both the private and public sectors. As indicated in Figure 1.9, transit access is only one of several factors which strongly influence the developer's choice of location. Given the strong dominance of the automobile and highways in American cities over the last several decades, it is probable that transit access is currently a very low priority factor in the thinking of most developers today. However, we may conjecture that transit access will become increasingly important in the future as the cost of auto transportation rises due to increases in vehicle, fuel and other operating costs. As transit access increases in relative priority, it will make those locations that now have it (or are proposed to have it in the future) more attractive, all other things being equal, than those which do not have it now nor expect to have it in the future. Since transit investment decisions are largely determined by government, they may prove to be a powerful implementation tool to be used by the public to guide growth into locations that serve the public interest more satisfactorily. Our task is to identify the type and timing of transit capital investments and service improvements that would be most likely to encourage developers to select MDC locations.

What is the Relative Importance and Role of Transit Access?

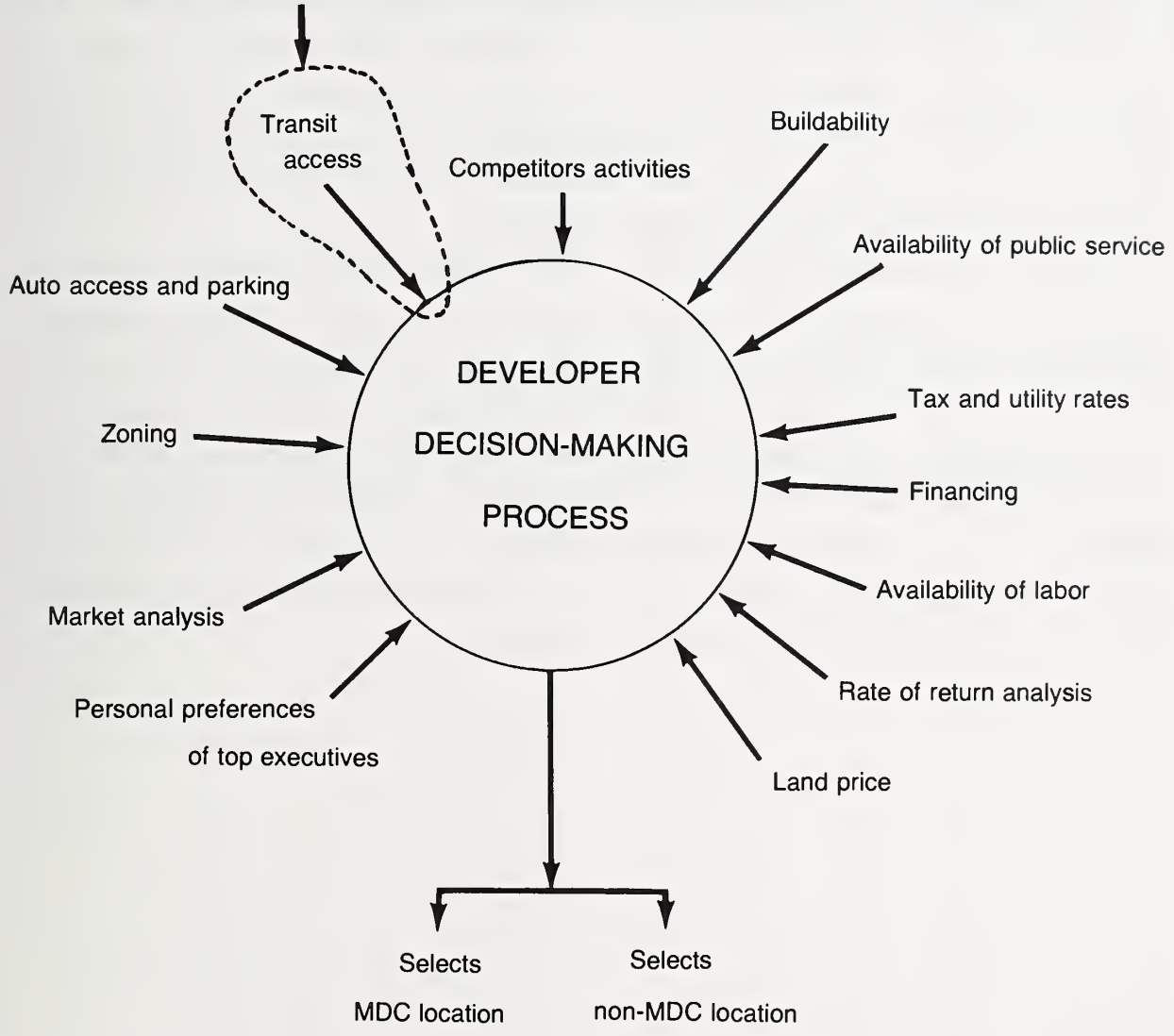


Figure 1.9

Developer
Decision-Making Environment

Data for the 1970-74 period indicate that the American city is continuing to decentralize as it did in the 1960's. Sternlieb and Hughes [4] have found that the central cities of metropolitan areas of one million or more have declined in population by 3.8% while their suburbs grew by 6.4%. A similar and even stronger relationship (0.3 - 11.5%) was found in metropolitan areas with less than one million people. In another study [3], the employment level in the central cities of ten large SMSA's between 1960 and 1970 was found to have dropped by an average of 10%. These are strong and long-standing trends and it is not likely that they can be reversed easily or quickly. Thus, those opportunities for shaping urban form that will exist in the 1980's and 1990's can be expected to be found in the outer city.

Part II of this report examines the rationale that has been put forth in various cities in support of the polycentric city concept. It also presents some of the arguments as to why a polycentric urban form should not be sought. Part III describes the present status of the concept in the United States, Canada and England, in general terms and then describes its status in 14 U.S., two Canadian, and one British city in relation to a comprehensive evaluation framework. Part IV provides a general summary of problems, progress and potentials of the polycentric concept and presents some descriptions of 18 areas that are evolving into major outer city centers.

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4. Sternlieb, George and James W. Hughes, "New Regional and Metropolitan Realities of America," Journal of the American Institute of Planners, Vol. 43, No. 3, pp. 227-241, July, 1977.

5. Texas Transportation Institute, A Mass Transportation Concept for Metropolitan Houston, TTI: Texas A & M University, College Station, Texas, 1974.

II. RATIONALE FOR AND AGAINST THE POLYCENTRIC CITY CONCEPT

A. Five Major Elements of the Rationale for the Concept

The reasons why a polycentric urban form is preferred by regional planners are normally not very well documented and supported by empirical evidence. Partly this is due to the fact that data on the location of employment were simply not available in many urban regions until the large regional transportation studies of the 1960's put such data sets together for the first time. In some cases, these initial efforts were repeated ten or so years later and this has provided some urban regions with their first look at the trends in the distribution of employment. The 1980 Census will provide a third data point probably about 1982 and these trends will be somewhat clearer at that time.

Some planning agencies have conducted special studies designed to produce data on the trends in the location of jobs within the region and some have produced forecasts of how such distributions are expected to change. Our objective in this section is to gather together what data are available and to see how it relates to the arguments that have been used by regional planners in their advocacy of the polycentric city concept.

1. Consistency with Market Trends

The rationale for the creation of major diversified centers that appears in regional development plans normally begins with a discussion of the trends in the location of people and jobs within the region. These trends usually indicate that there has been a rapid decentralization of both people and jobs from the central city of the region to the outer city. Furthermore, forecasts of the future overall distribution of people and jobs indicate that these trends are expected to continue at least until the year 2000. Table 2.1 shows the central city share of population and employment from a few cities, using both actual and forecast data. These data indicate that the majority of population and employment is now located in the outer city in most cases and that this majority is expected only to increase in the future.

Given these trends, regional planners argue that the creation of major diversified centers in the outer city is consistent with what the urban land market is already doing and that policies designed to implement the polycentric concept are only intended to "shape" or "better articulate" what the forces

TABLE 2.1

Forecasts for Population and Employment

Distributions in Several Metropolitan Areas

SMSA		Central City as % of Region (SMSA) % of Total Population	% of Total Employment
Minneapolis-St. Paul			
	1970	39	56
	1976	35	n.a.
	2000	26	35
Baltimore			
	1970	44	50
	1995	28	42
Washington, D.C.			
	1968	32	48
	1992	22	42
Atlanta			
	1970	34	54
	2000	15	35
Toronto			
	1974	35	49
	2001	31	45
Vancouver, B.C.			
	1971	42	59
	1986	33	46
Denver, Colo.			
	1970	57	43
	1980	53	47
	1990	47	53
	2000	46	54

that determine the nature of the urban land market are already producing. But, as mentioned previously, the high degree of clustering that is needed to create major diversified centers is not likely to be produced by the urban land market without some substantial intervention in the form of incentives, disincentives and direct participation from all levels of government. This "increased clustering" is the primary objective that the regional planners are trying to achieve and it will probably not arise naturally from the operation of the urban land market.

Figure 2.1 shows what the urban land market has done and is expected to do in the Twin Cities area of Minnesota. As can be seen, the dispersion of employment in this region has been and is expected to continue to be rapid and large in scale. In fact, the Twin Cities are apparently evolving into a Tri-Cities urban form as the Edina area southwest of the Minneapolis CBD is expected to contain more jobs in 1990 than central St. Paul contained in 1960. It should also be noted that the two CBD's share of total employment is expected to decline from 24 per cent in 1960 to about 13 per cent in 1990. In fact, some planners in the Twin Cities area believe that the forecasts for CBD employment are far too high and if they are correct, this figure could fall below 10 per cent by 1990.

Figures 2.2 and 2.3 show another way of examining the 1970 distributions of population and employment in the Twin Cities region in relation to the forecasts for 1990. One can clearly see that the great majority of population and employment growth is expected to occur in the outer city during this 20-year period.

The relationship between population and employment growth is shown in Figure 2.4, which gives the forecasted change in the regional shares of population and employment between 1970 and 1990. While these percentages are not large, they do show that the decline expected in the central cities is substantial in relation to the growth expected in the outer city.

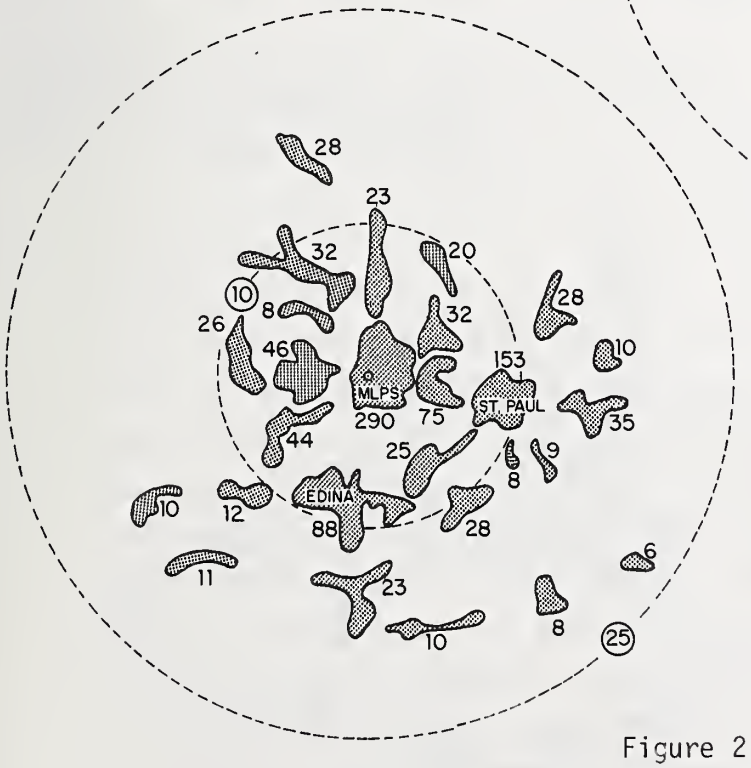
In the Twin Cities, a forecast of office space prepared in 1973 shows that CBD office space as a per cent of the total office space in the region is expected to decline from 26.4 per cent in 1970 to 18.8 per cent in the year 2000. In terms of jobs, CBD office employment as a per cent of total office employment is expected to decline from 20.9 per cent in 1970 to 15.1 per cent in the year 2000. These reductions are expected during a period when the total regional

1960

Total Employment 607,000
Mpls CBD Employment 88,000
St.Paul CBD Employment 56,000
Shown on map 365,000 or 60%
CBD's as % of total = 24%

1970

Total Employment 853,000
Mpls CBD Employment 93,000
St.Paul CBD Employment 59,000
Shown on map 641,000 or 75%
CBD's as % of total = 18%



1990 Forecast

Total Employment 1,331,000
Mpls CBD Employment 107,000
St.Paul CBD Employment 68,000
Shown on map 1,094,000 or 82%
CBD's as % of total = 13%

Figure 2.1. Dispersion of Total Employment, Observed and Forecast, Twin Cities Region of Minnesota

Figure 2.2. Total Population in 1970 and Forecasts for 1990, Twin Cities Metropolitan Area

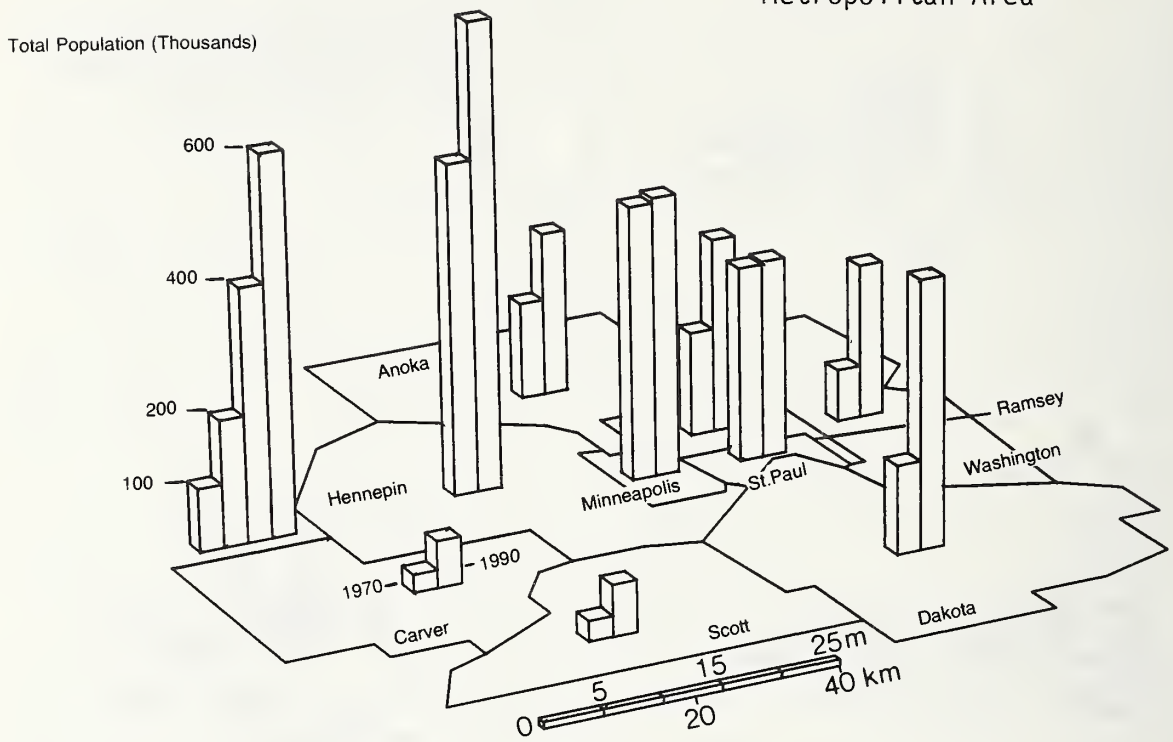
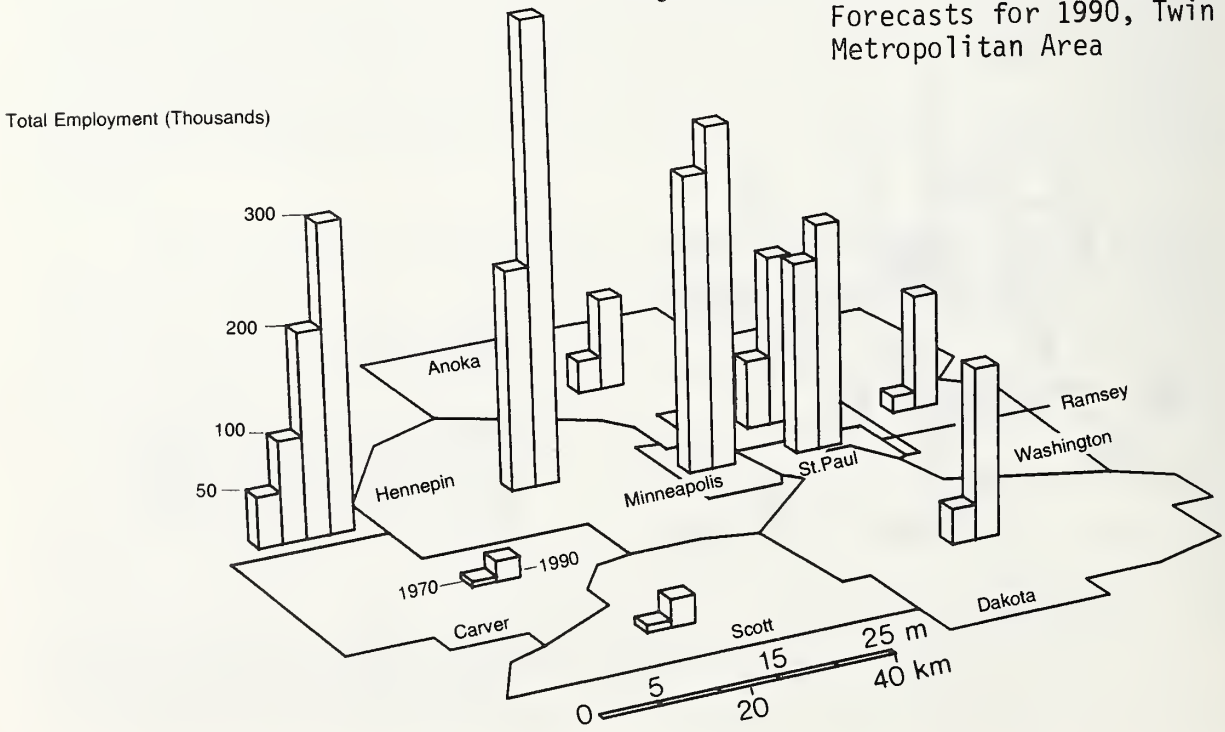


Figure 2.3. Total Employment in 1970 and Forecasts for 1990, Twin Cities Metropolitan Area



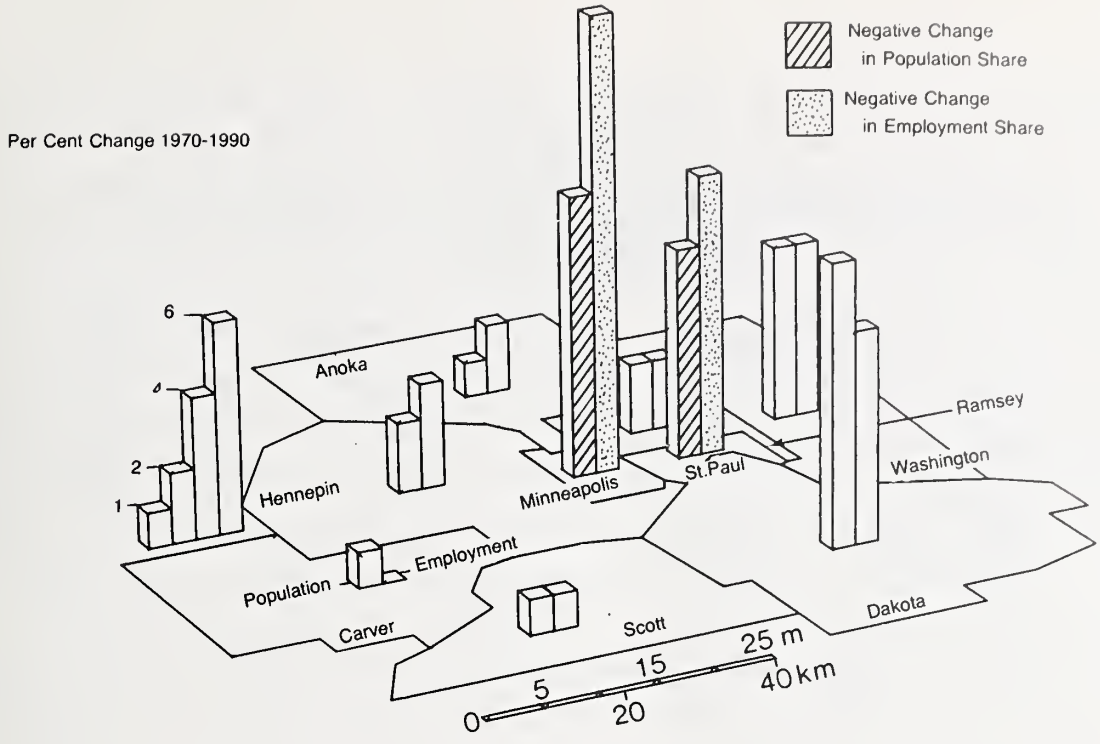


Figure 2.4 Regional Share Change, 1970-1990, of Total Population and Employment, Twin Cities Metropolitan Area

office space is expected to grow from 55.5 million square feet in 1970 to 105.7 million square feet in the year 2000, an increase of about 190 per cent [11].

While these broad trends are consistent with the polycentric concept, they do include several types of employment that are not suited to MDC locations (e.g., manufacturing and many types of warehousing activities). The major economic components of any MDC will be service employment activities, and these are primarily retail and office activities. Data on the trends in the location of retail and office jobs in our urban regions are very rare but some do exist. Table 2.2 shows how the shares of total office space have changed in the Toronto Metropolitan area between 1964 and 1974. These figures show that the central area was still the dominant location for office space in 1974 although its share of the Metro total has declined from 75 to 68 per cent in the ten years between 1964 and 1974. During the same period, office space in the rest of the Metro area increased by 205 per cent over 1964 levels. These figures indicate that some relatively strong trends toward the decentralization of office space are already well underway in Metropolitan Toronto.

Data for retail employment in Toronto are shown in Table 2.3. These data show that the City of Toronto's share of the Metro retail employment total

Table 2.2

Total Office Space, Central Area and Rest of Metro, 1964, 1974
(millions of square feet)

	Central Area	%	Rest of Metro	%	Total	%
1964	14.1	75	4.7	25	18.9	100.0
1974	30.8	68	14.4	32	45.2	100.0
Increase	16.7	64	9.7	36	26.3	100.0
% increase over 1964	108		205		140	

Source: Adapted from Table 2.1 [10]

Table 2.3

Retail Floor Space, City of Toronto
and Rest of Metropolitan Toronto, 1966, 1971
(millions of square feet)

	City of Toronto	%	Rest of Metro	%	Total	%
1966	15.3	50	15.6	50	30.9	100.0
1971	15.5	45	18.7	55	34.2	100.0
Increase	0.2		3.1			
% increase over 1966	1		20			

Source: Adapted from Table 2.2 [10]

declined from 50 per cent in 1966 to 45 per cent in 1971. If this rate of change is typical of a ten-year period, then it may be that the City of Toronto's share of the Metro total has declined by about 10 per cent between 1964 and 1974, or about 3 per cent faster than its share of total office space has declined.

In Baltimore, Maryland, service employment data for 1970 and forecasts for 1995 indicate similar trends are expected. Table 2.4 shows that the City of Baltimore's share of the total service employment in the five-county Baltimore region is expected to decline from 48 to 42 per cent between 1970 and 1995. The forecasts produced by the Baltimore Regional Council indicate that approximately 206,000 service employment jobs are expected to locate in the outer city in the Baltimore region during the 25-year period from 1970 to 1995.

In Denver, Colorado, a 1975 analysis of 13 major activity center locations showed that the Denver CBD's share of the total employment in these 13 locations is expected to decline from 46 per cent to 25 per cent by the year 2000 (see Table 2.5). This does not mean that the Denver CBD is not expected to grow. It simply means that nearly eight service employment jobs are expected to locate at the other 12 activity centers for every new job that locates in the Denver CBD. The Denver planners also expect that the proportion of total regional employment that will be in one of the thirteen activity centers in the year 2000 will be about 30 per cent, up 5 per cent from 1970. The distribution of total employment in the Denver region has been mapped and is shown in Figure 2.5. Unfortunately, the amounts of employment in each location have not been estimated so far. Building permit data from the nine-county San Francisco region for 1970-1976 also indicate a substantial upward trend in non-residential activity in the outer city as shown in Table 2.6.

Atlanta, Georgia, is an especially interesting case in that strong efforts to centralize economic activity in downtown Atlanta have received support from both the private and public sectors for many years. Still, the most recent forecasts prepared by the Atlanta Regional Commission [1] show that a significant decentralization of both population and employment is expected between 1970 and the year 2000. Figures 2.6 and 2.7 present these forecasts in graphic form so they can be more easily comprehended. Figure 2.8 summarizes the changes expected in the distribution of both population and employment by showing how the share of the regional total is expected to move during the 1970-2000 period. The decline of the central part of Atlanta (Central Fulton County) is about as spectacular as the cost of the rapid rail transit system that was designed, in

Table 2.4

Population and Total Service
Employment Distribution Trends, 1970-1995
- Baltimore Region -

Population (000)	Baltimore City	Rest of Region	Total
1970	906	1165	2071
1995	803	2015	2818
Growth	- 103	850	
% of total, 1970	44	56	
% of total, 1995	28	72	
Total Service Employment (000) (retail, service, office, government)			
1970	260	283	543
1995	357	489	846
Growth	97	206	
% of total, 1970	48	52	
% of total, 1995	42	58	
Population/TSE			
1970	3.48	4.12	
1995	2.25	4.12	
Change	- 1.23	N.C.	

Source: [13]

Table 2.5

Activity Center Employment Levels,
Observed and Forecast, Denver, Colorado

Activity Center	1970 Employment	2000 Employment	1970-2000 Employment Increase
Arvada	3,300	12,000	8,700
Aurora	500	24,400	23,900
Boulder	18,400	25,700	7,300
Cherry Creek	5,600	13,500	7,900
Denver CBD	61,100	86,500	25,400
Englewood	7,000	19,000	12,000
Federal Center	11,600	49,900	38,300
Littleton	2,800	9,500	6,700
Medical Center	10,800	19,900	9,100
Northglenn	3,700	12,000	8,300
South Colorado	4,100	18,000	13,900
Technological Center	1,800	32,400	30,600
Villa Italia	3,300	19,900	16,600
Total Employment in Activity Centers	134,000	342,700	208,700
Total Regional Employment	536,300	1,144,500	608,200
% of Regional Employment in Activity Centers	25.0%	29.9%	34.3%
% of Regional Employment in the CBD	11.0%	8.0%	
Total % of Activity Center Employment in the CBD	46.0%	25.0%	

Source: [7, Appendix VI-1]

Figure 2.5

Distribution of Employment
in the Denver, Colorado Region

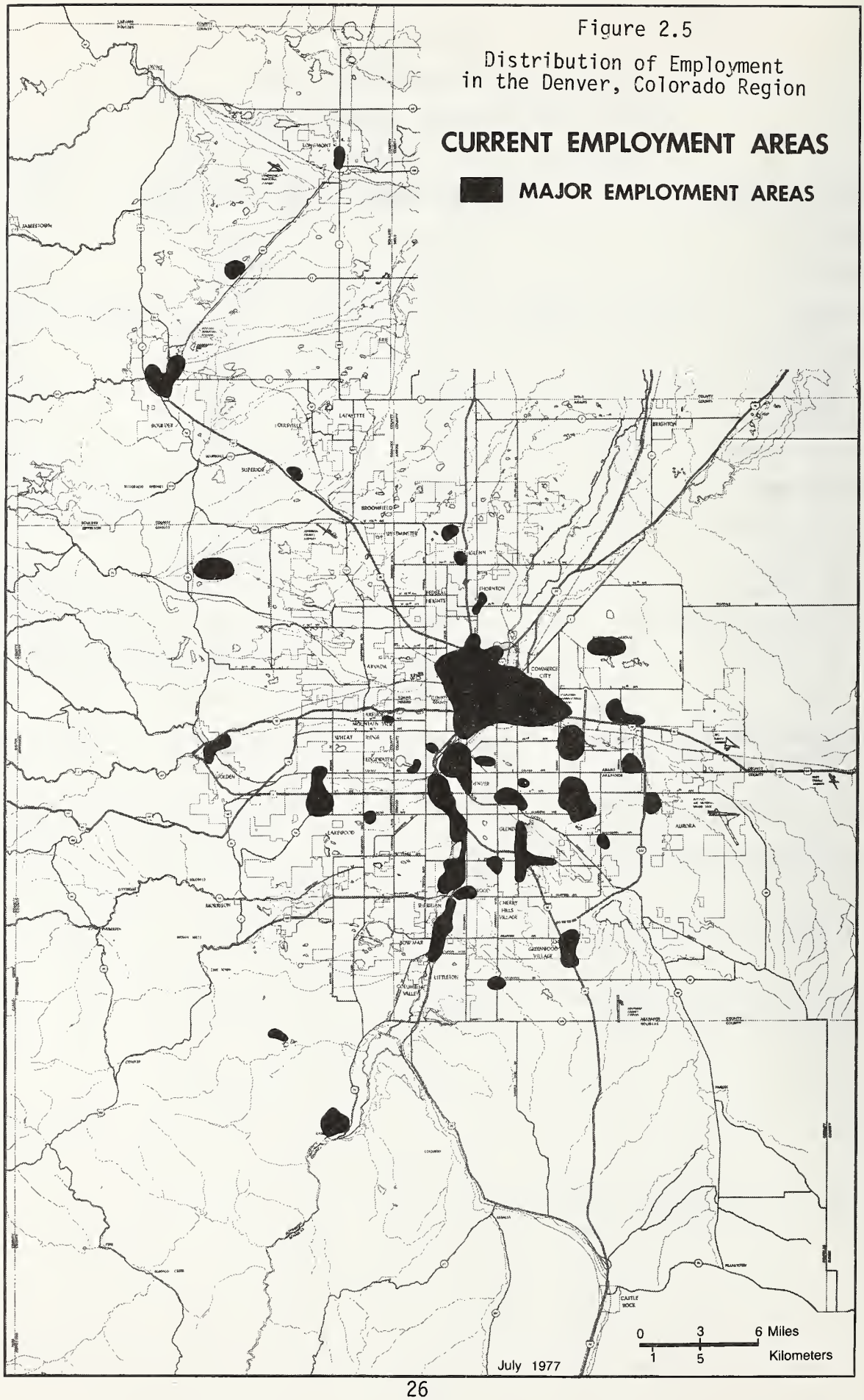


Table 2.6

Trends in Non-Residential Building Activity,
Nine-County San Francisco Bay Region
1970 - 1976

Year	Per cent of the value of all new commercial building permits		Per cent of the value of all other non-residential building permits	
	San Francisco and Oakland	Rest of Region	San Francisco and Oakland	Rest of Region
1970	38.8	61.2	33.2	66.8
1971	65.8	34.2	25.7	74.3
1972	21.2	78.8	14.0	86.0
1973	31.4	68.6	15.3	84.7
1974	22.7	77.3	11.8	88.2
1975	54.6	45.4	14.4	85.6
1976	29.8	70.2	18.4	81.6
Annual Average	37.8	62.2	19.0	81.0

New Commercial includes offices, banks and professional buildings, stores and mercantile buildings, service stations, hotels, motels and cabins, amusement and recreation buildings and parking garages.

Other non-residential includes churches and religious buildings, hospitals and institutional buildings, schools and educational buildings, residential garages, public works and utilities, and other miscellaneous N-R buildings.

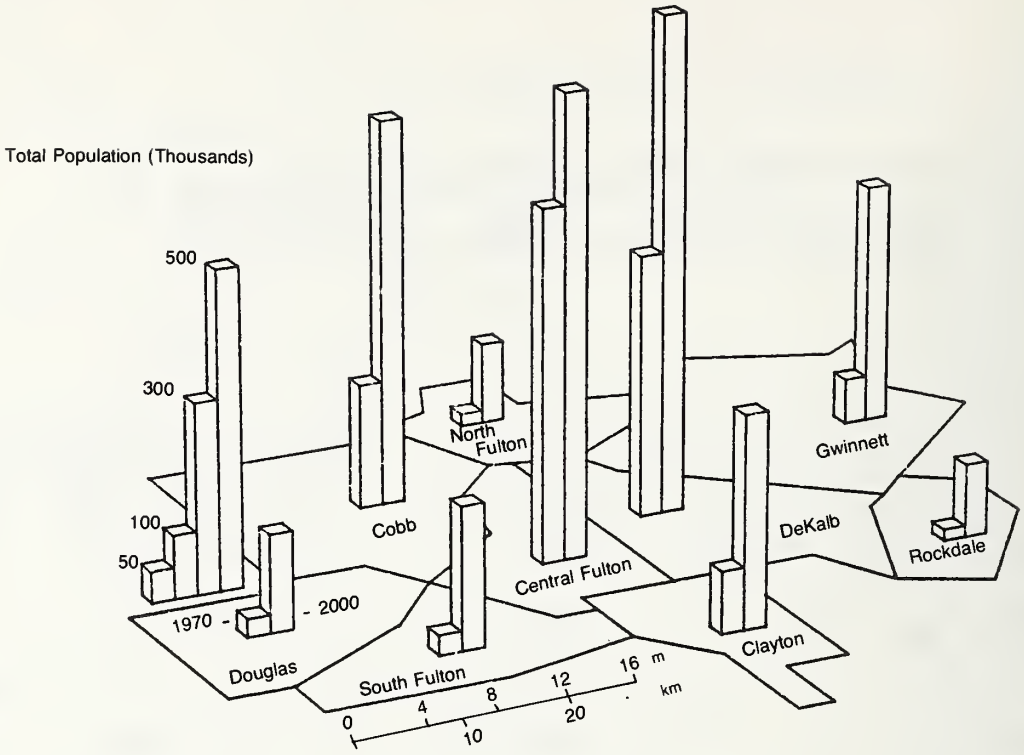


Figure 2.6. Total Population in 1970 and Forecasts for 2000, Atlanta Metropolitan Area

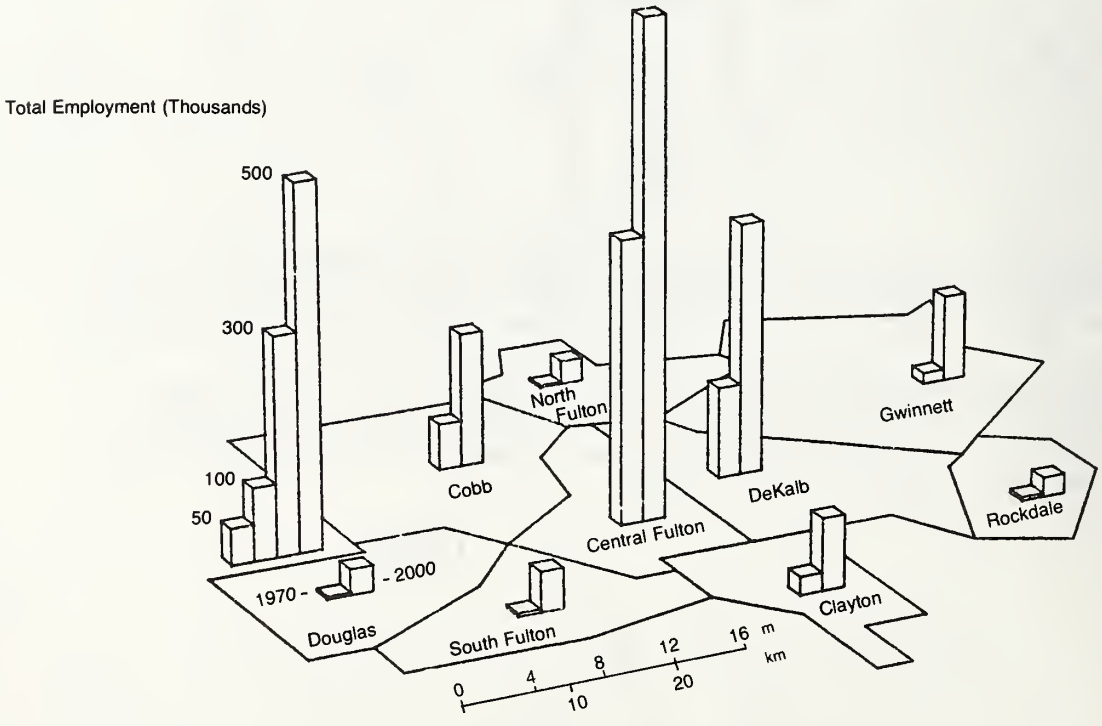


Figure 2.7. Total Employment in 1970 and Forecasts for 2000, Atlanta Metropolitan Region

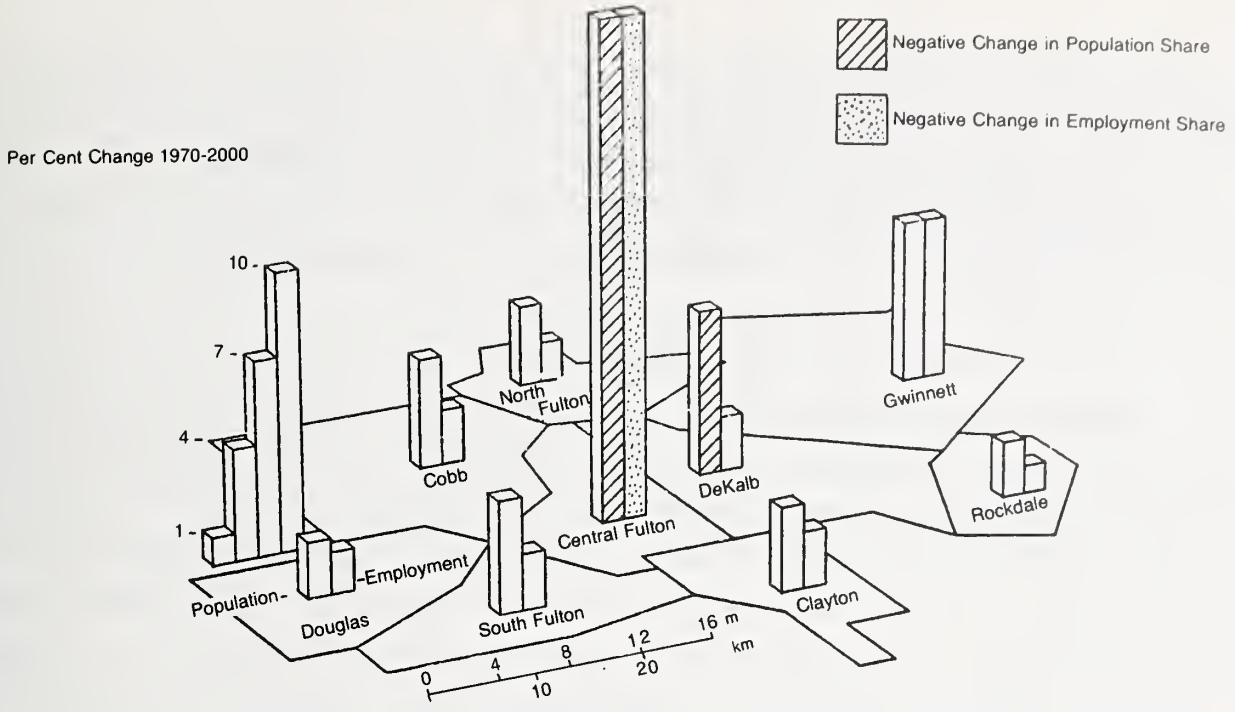


Figure 2.8. Regional Share Change, 1970-2000, of Total Population and Employment, Atlanta Metropolitan Area

part, to increase the concentration of economic and population density in central Atlanta.

Looking only at office space, Real Estate Atlanta states that there were 14.3 million square feet of office space in the Atlanta CBD and 16.3 million in the outer city in 1976. Thus, even in a city which is striving to be strongly monocentric, there appears to be more office space outside the CBD than within it. Unfortunately, no forecasts of office/retail space for the Atlanta region are currently available.

In Houston, Texas, data on the office space market show that between 1970 and 1977, the suburban share of the region's office space increased from 41 to 56 per cent. Data from the eight-county Chicago region show that Chicago's share of the region's retail employment dropped from 68 per cent to 42 per cent between 1954 and 1972, while retail sales dropped from 56 per cent to 40 per cent in the same period. Similar decentralization trends in other cities around the world are documented in a recent book by Peter W. Daniels entitled Office Location: An Urban and Regional Study [6].

Overall, it seems likely that office decentralization is not occurring quite as fast as retail, industrial, and population decentralization in many

American cities. However, the rate is still great enough to give some credibility to the claim of the regional planners that the polycentric concept is consistent with the trend of the market, which is locating large amounts of new retail/office space in the outer centers of our large urban regions.

2. Reduction of Travel Requirements

Another major element of the rationale for a polycentric urban form is that it would reduce the travel requirements of the city. It is argued that this reduction would produce several beneficial side effects such as (1) reduced congestion in the core, (2) improved air quality as a result of the reduced congestion, (3) fuel conservation because of shorter trips of all types, and (4) larger patronage levels on public transit systems, which would also save fuel and improve air quality. These arguments all depend on the assumption that people will, over time, adjust their residential or job locations so that they will live closer to work and the other activities to which they must travel to participate. There are no direct and straightforward methods available for forecasting the extent to which people would in fact behave this way if several large MDC's were to be created in an urban region. Several studies of this question have been conducted and most have concluded that the travel requirements of the polycentric urban form are less than those for the other urban forms that were investigated. These studies are extremely difficult to compare as they vary so much in the assumptions used and in the methods employed. However, they have been reviewed by Clark [5] and Rice [15]. Only a brief review of the findings of four of the most recent and comprehensive studies of this issue will be presented here.

Kydes, Sanborn and Carroll of the Brookhaven National Laboratory have developed a mathematical model that is designed to simulate the energy requirements of alternative urban forms [8]. In their model, the location of basic employment is given as is the transportation network. The model allocates all other types of land uses in relation to the given locations of basic employment activities according to a prespecified accessibility function. Then, it produces a forecast of work and shopping trip travel and these travel figures are converted into energy requirements using some transformation functions. The model has been applied to a test of three alternative urban forms for Suffolk County in the State of New York. The three form alternatives examined were

Urban Sprawl, Comprehensive Plan and Growth Centers. The Urban Sprawl and Growth Centers alternatives were intended to represent two form extremes while the Comprehensive Plan alternative was somewhere in between these two. The Growth Center alternative is the one that most closely resembles the polycentric city concept in that all new basic employment was allocated to four large centers and all new residential growth is constrained to be within six miles of these four centers. The model allocated service employment in relation to basic employment and residences but the authors do not describe the location or size of the clusters of service employment that resulted in any of the three cases. The model calculated the total amount of work and shopping trip travel required by each urban form alternative and produced the following energy equivalents:

	Transportation Energy Used (10^{12}BTU/year)	Per Cent Reduction from Urban Sprawl
Urban Sprawl	78.7	--
Comprehensive Plan	56.3	28
Growth Centers	53.4	32

The modelling procedure used to forecast where the people who lived in each of the growth centers would work and shop does not require that everyone would stay in his or her own city but it is constructed such that the vast majority of persons do so. The reasonableness of this behavioral assumption is not examined in any detail by the authors and it obviously has much to do with the impressive results obtained. If this assumption were relaxed, then the travel requirements of the growth centers alternative could rise substantially. The other major factor that has helped to produce the lower travel requirements for the growth centers concept is the fact that few people would have a work trip length of more than 6 miles with an average that is probably close to 3 or 4 miles. The length of the average shopping trip is probably much less than 3-4 miles. Under these conditions, it seems obvious that a large savings in transportation energy could be realized. But, if substantially fewer people lived, worked and shopped in the same community and if residences were more dispersed at lower densities, it is possible that the model would show that a much smaller

travel requirement reduction was likely to occur. One can only speculate that as the assumptions in the Brookhaven model are made more realistic, the travel energy savings might become less for alternatives to the urban sprawl form. Further investigative work along these lines is needed. The Brookhaven model does not include transit as a possible mode of travel and it would have to be modified before it could be very helpful to the question of defining the proper role for transit in aiding the implementation of the polycentric urban form.

Peskin and Schofer of Northwestern University have also developed a mathematical model for simulating the energy requirements of alternative urban forms [14]. This model is similar in concept to the Brookhaven model but is much more sophisticated and realistic in terms of its capabilities and representation of the operation of an actual city. The model includes both highway and transit transportation modes and produces a wide variety of measures of the travel and energy requirements of various urban forms. Three abstract urban forms have been examined: the Concentric Ring City, the One-Sided City and the Polynucleated City. As in the Brookhaven model, the location of service employment in each urban form depends entirely on the assumed location of basic employment. The authors do not provide any description of how basic employment was specified other than to state that approximately 53 per cent of basic employment was located in the CBD and the remainder was assigned to the next ring or subcenter. Three outlying centers and a CBD center were used to define the Polynucleated City but no information on their sizes is provided. One can infer that about half of the total employment is in the CBD with the other half divided equally among the three outlying centers.

In general, Peskin and Schofer found that the Polynucleated City required substantially less travel than the other two forms examined. The residents of the Polynucleated City were found to consume 57 per cent less gasoline for passenger travel than those of the Concentric City and 44 per cent less than those of the One-Sided City. Their average trip lengths were 30 per cent shorter than those in the Concentric City and 23 per cent shorter than those in the One-Sided City.

Another set of experiments was conducted to simulate the effects of converting an existing concentric form into a polynucleated form. Only one additional center was simulated and the results were less promising as per capita gasoline consumption increased by 3 per cent while the average work-trip length declined only 6 per cent. These results suggest that it may be difficult to

obtain the travel efficiencies of the pure polycentric urban form if one has to begin with a concentric ring city and modify it gradually over time.

Overall, the results of the Peskin and Schofer experiments lend some support to the notion that the polycentric urban form requires far less travel than other urban forms. Still, their results must be interpreted with caution because the land use model which they have used locates the residences of people close to where they work. The basic assumption used is that proximity to work is a major factor in the people's choice of a residential location. While this was true in the early 1900's, it has been less true since the 1960's as high levels of areawide accessibility and relatively low automobile travel costs have made proximity to work a factor of less importance to the residential location decision. Some further experiments using the Northwestern model, more realistic urban forms, and more realistic assumptions about the factors which influence the residential location decision would provide a more substantial basis for judging the travel reduction potential of the polycentric urban form.

In a third major study, Professor Ronald Rice examined the travel requirements of six urban forms in his doctoral dissertation research at the University of Toronto [15]. These six urban forms are abstract forms like those used by Peskin and Schofer, but are much more detailed. Their labels are (1) Central, (2) Homogeneous, (3) Multi-centered, (4) Radial Corridor, (5) Linear, and (6) Satellite. The multi-centered form contains a CBD and four outlying centers. The size of the centers is not given specifically although the proportion of total employment in the central city is only 45 per cent for the multi-centered form, which implies that the four outlying centers each contain about 14 per cent of the total employment in the region. Rice did not use a mathematical model to determine the land use configuration in each of the six urban forms, relying instead on urban form statistics from a variety of actual cities. Once these land use configurations were determined, he designed a two-mode transportation network to fit each form as efficiently as possible. He then calculated the travel requirements of each form using traditional travel demand and assignment models.

The results were that the multi-centered form produced the least number of person-hours of work trip travel and the shortest average work trip length of the six forms considered. The multi-centered form was 29 per cent better in person-hours of work trip travel and 22 per cent better in average trip length

than the next best form in each category (the centralized form). Comparisons of the non-work travel requirements of each urban form were not developed by Rice.

A fourth study was completed in 1976 by the Urban Transportation Development Corporation, Limited, for the Royal Commission on Electric Power Planning for Ontario, Canada [19]. The purpose of this study was to examine the way in which urban development and transport policies could influence the energy requirements of the Province of Ontario in the future. Two alternative scenarios were developed to represent fundamentally different policies with regard to urban development, transportation and energy utilization.

The first scenario (A) was designed to show the expected effects of a policy that limits investment in public transit, permits the continuation of scattered high rise and low rise development patterns and increases dependence on imported oil for automobiles. The second scenario (B) was designed to show the expected effects of accelerating investment in public transit systems, developing medium density urban forms coordinated with these transit facilities and decreasing dependence on automobile travel. The travel and energy requirements of these two alternatives were then calculated, using a rather extensive simulation procedure. The total daily vehicle miles of travel for the two scenarios was estimated to be as follows:

	Daily Vehicle Miles (10^6)		
	Scenario A	Scenario B	B/A (%)
Urban auto	71.5	54.6	76
Diesel bus	1.9	0.8	42
Electric transit	0.4	1.3	325
Total	73.8	56.7	77

These figures indicate that substantial transit investments that are backed up with appropriate urban development policies can produce substantial savings in travel requirements. When these travel figures are converted into energy requirements, the dollar savings are very substantial, approximately $76 million per year in 1990. When examined over the time period 1976 to 2020, it was estimated that the total energy cost of all modes of transportation during this period would be about $6.6 billion less if Scenario B were adopted (i.e.,

$34.4 billion versus $27.8 billion for Scenarios A and B, respectively). The public transit investment needed to implement Scenario B was estimated to be about $6.2 billion, which is very close to the estimated energy saving over the 1976-2020 time period. However, additional savings resulting from the reduced cost of serving a more compact urban form with utilities and roadways were estimated to range from $1.2 to $4.2 billion, making Scenario B quite cost-effective. A similar cost calculation for Scenario A was not included.

Four major recommendations are provided in the report:

1. That the Federal and Provincial Governments should place high spending priority on substitutions for oil dependence and immediately accelerate public transit investment
2. That all governments coordinate such transit capital investment with all public capital investment decisions that directly or indirectly influence long-range electric power demand and patterns of energy consumption
3. That the Federal and Provincial Governments adopt energy efficient urban forms as an explicit design consideration in their urban development investment decisions
4. That Ontario Hydro take the initiative in supporting urban development patterns that most efficiently utilize planned increases in electric generating capacity

The results of this study are consistent with those of the other three discussed previously. The urban form used to design Scenario B was derived from the polycentric concept plan for Toronto and includes several subcenters of substantial size, all having excellent access to the transit system. The report suggests that the presence of these subcenters will generate a "reverse flow" of transit riders, which will increase the utilization of the transit system greatly without increasing equipment, energy or manpower costs substantially. It also states that the design and building of energy efficient cities can only be done before growth occurs. This argument is used by the authors to justify their recommendation that a $4.7 billion front-end transit investment is needed in the 1976-1990 time period if the energy cost savings and dependency reductions desired are to be realized by 2020.

The scope of the benefit/cost analysis used in this study is broad and includes some secondary benefits that are normally not included in studies of this type. Since the comparative analysis of Scenarios A and B is not carried beyond the estimation of travel and energy costs, it is not clear just how A and B compare in overall benefit/cost terms. It seems likely that A would fall far short of B, based on the comparisons that are provided, but the study does not provide an estimate of this type. It also does not discuss the difficulty (and cost?) of the policies (and regulations) that would be required to get land use decisions coordinated properly with transit investment decisions, especially when they are programmed to lead urban development in desired directions. Still, this study does provide some further evidence that the polycentric city concept may be cost-effective when coordinated with substantial investments in public transit facilities.

Together, these four studies provide the most rigorous analysis of the transportation requirements of alternative urban forms yet conducted and they are unanimous in their conclusion that the polycentric urban form would require less travel than the other urban forms investigated. This does not mean that no further investigation of this issue should be conducted for it is still not known how well these conclusions drawn from abstract forms or from an extreme departure from an actual situation would hold when applied to a variety of large and diverse urban regions. These studies do provide some support for the intuitively derived notions of the regional planners that polycentric forms will require less travel and hence are more transportation energy conserving and less polluting of the air. Regarding congestion, Peskin and Schofer report that their polynucleated form had a congestion level index for the work trip of 1.125 compared with 1.511 and the 1.659 for the other two forms considered. Rice and the Brookhaven study have provided no results on this issue.

But will the polycentric city provide the kind of support for a public transit system that will make it viable and useful? Peskin and Schofer have calculated the per cent of all work trips on transit for their three forms as has Rice. These results are quite similar in that the proportion of work trips using transit was small in both studies for the polycentric form. Peskin and Schofer give a work-trip mode split figure of nearly 9 per cent while Rice's figure is just over 10 per cent. However, this figure is only for work trips and is highly dependent on the design and transit service level provided. It is not possible to determine how well the transit system was designed in rela-

tion to the various centers in both studies nor was information provided on the service levels provided for travel to and from the centers. This question needs to be investigated in a much more extensive manner as it is very central to the issue of transit system viability in the polycentric city. The methodological approach used by both Peskin-Schofer and Rice is adequate to determine the true potential for achieving a high level of transit system use for a polycentric urban form. Several interesting studies of this type have been developed by Systan, Inc. and Multisystems, Inc. [2], [3], [4], [17] but they, unfortunately, have used uniform distributions of population and employment so the effects of alternative urban forms on travel requirements cannot be determined from their results.

There are several other studies that have addressed the question of the relationship between urban form and travel requirements and not all of them have concluded that the polycentric form is the best from a transportation minimization point of view. Good reviews of these studies are included in two doctoral dissertations by Rice [15] and Clark [5].

3. Housing Opportunity, Urbanity and Self-Sufficiency

The remaining arguments used to justify the adoption of the polycentric urban form concept can be grouped into three main categories: (1) provision of places other than the central city for low income people to live, (2) provision of places having some urbanity in the suburbs and (3) making the outer parts of the city more self-sufficient. These three objectives are not easily analyzed in that they deal with non-quantifiable or socio-psychological issues which are not readily simulated with mathematical models. Still, they constitute an important part of the rationale for the polycentric urban form and appear in nearly all regional development plans. The key parts of these arguments will now be briefly discussed.

The social goal of dispersing the low income population in an urban region has been accepted in most large urban regions as being of paramount importance to the future viability of the central city. While the benefits that people can derive from living in neighborhoods with "their own kind" are generally recognized as being substantial, it is also clear that very large concentrations of low income people tend to produce very inadequate living environments. These notions lead to the concept of a "dispersed but clustered" pattern as being pre-

ferred for all types of income groups but particularly for those in the lower income ranges. The major diversified centers concept can contribute to the achievement of this objective if the provision of housing for low income people is included in the development plan for the center. Such housing could be subsidized from the values created by the development of the center. Designing such housing into a center would avoid many of the problems that have been encountered by public agencies trying to locate low income projects in the residential portions of suburban areas. The activities that constitute such a center need a certain number of lower level employees and they would find the task of filling these jobs and maintaining a low turnover rate much easier if some portion of the housing built in the center was designed for low income people. The major beneficiary of such a policy would be the central city as it could expect to begin to see some real prospects for a decline in its share of the regional total of low income people as the implementation of a polycentric concept progressed.

Many critics of the outer city have noted their lack of urbanity and this is obviously something that a major diversified center can address directly. The term urbanity seems to be synonymous with the presence of good pedestrian spaces where one can find reasonably large numbers of people almost any time of the day. The major diversified center is intended to be a compact, convenient and integrated cluster of facilities and service. It would also be a place that offers a variety of social, economic, cultural and recreational opportunities to its users. Its vitality would be derived from the drawing together of people of different ages and socio-economic backgrounds in a compact urban setting. Basically, what these ideas are saying is that downtowns are good, people need them and so they should also be created in the outer city. Of course, there are people who do not wish to see downtown come to the outer city but it is not known how numerous these people may be.

Self-sufficiency is an old idea that is again gaining attention as the prospect for even higher prices for transportation energy threatens the viability of the low density outer city. Most parts of the outer city are still quite dependent on the central city and other parts of the region for jobs and many types of goods and services. This dependency can be measured in part by the population/job ratio which shows the relationships between the number of people living in an area and the number of jobs located in that same area. Past

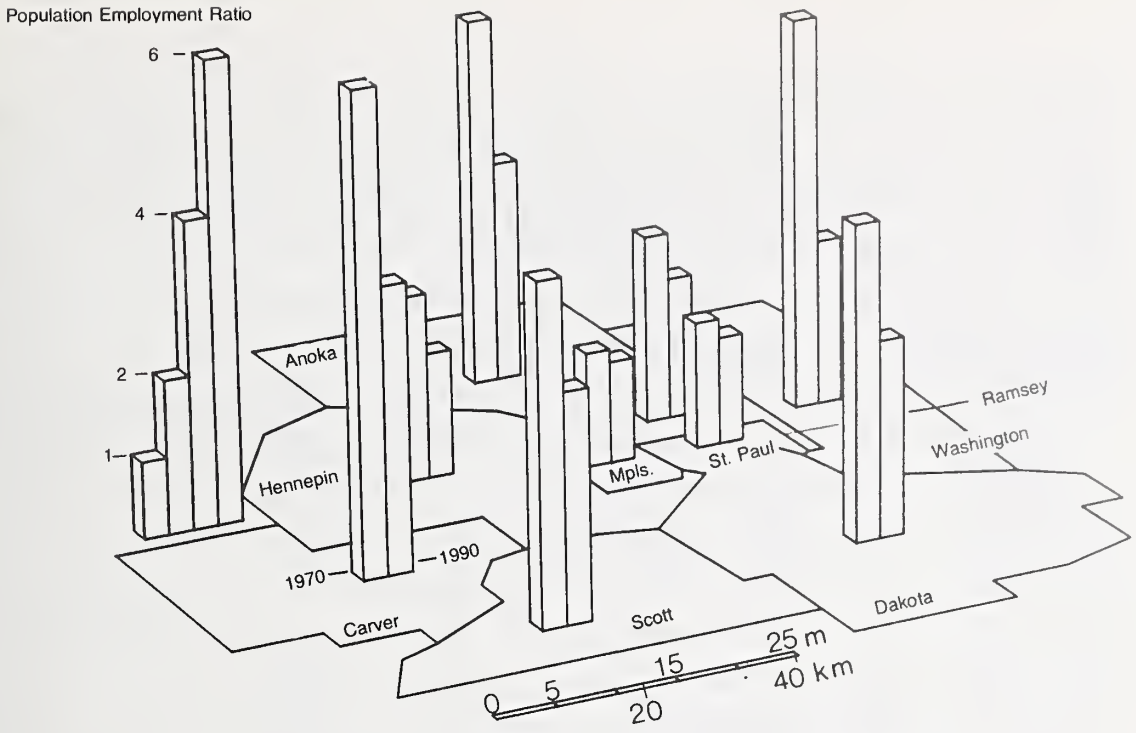


Figure 2.9. Population/Employment Ratio, 1970 and 1990
Twin Cities Metropolitan Area

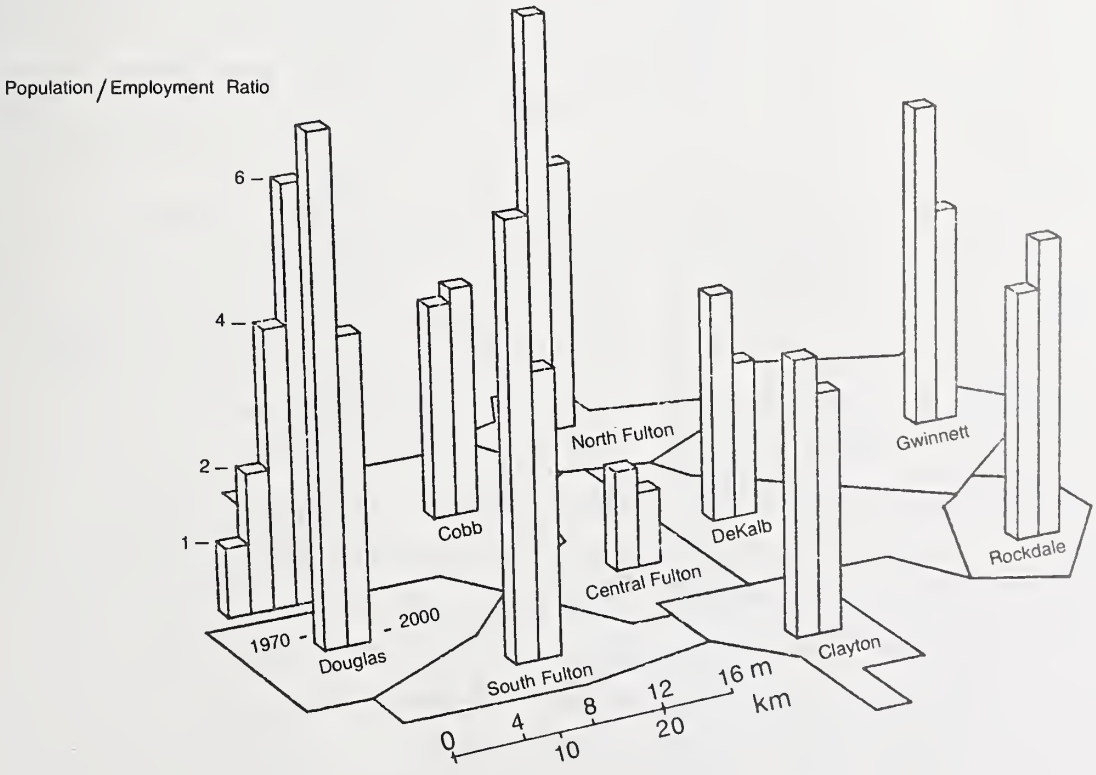


Figure 2.10. Population/Employment Ratio, 1970 and 2000
Atlanta Metropolitan Area

statistics indicate that about forty per cent of the population are members of the labor force so a population of one hundred people will contain about forty people who are employed. If a geographic area has a population/job ratio of 100/40 = 2.5, then it will contain about the same number of jobs as there are workers in that area. Areas that have population/job ratios of about 2.5 are considered to have a good balance of people and jobs. Areas with ratios much greater or less than 2.5 are unbalanced and quite dependent on other areas.

Figure 2.9 shows the geographic distribution of the population/jobs ratio in the Twin Cities region of Minnesota for 1970 and as forecast for 1990. As can be seen, these ratios are expected to fall sharply in the outer city during this period of time while also declining slightly in the two central cities. Most of these ratios will be close to or less than 2.5 by 1990 if the forecasts prove to be generally valid. Figure 2.10 shows the population/job ratios for Atlanta as derived from forecasts prepared by the Atlanta Regional Commission. Here we see two areas where the P/J ratio is forecast to rise somewhat while it is falling rather sharply in all other areas (except Central Fulton County where it is already very low). Only two of these ratios are expected to be less than 2.5 in the year 2000 while three will be greater than 3.0 and four will be greater than 4.0 in the year 2000. This means that there will be a very substantial demand for travel in the Atlanta region in the year 2000, only some of which will be able to use easily the extensive rapid rail system now under construction.

Table 2.7 shows some past and projected population/job ratios for several cities. These data show that the outer city P/E ratio is expected to fall below 2.5 in two of the five cities for which data are available while the central cities are also becoming much more job intensive than in the past. These scattered data show that many outer cities are probably now very close to having a P/E ratio of 2.5 and that this ratio is expected to move toward or below this level during the next two or three decades. These data suggest that the outer city is expected to develop a more balanced relationship between their resident labor force and the availability of local jobs. To the extent that this simple measure is a good indicator of self-sufficiency, these ratios also suggest that the outer city is expected to become more self-sufficient while the central city becomes less self-sufficient due to its declining population/job ratio. Faster population growth or slower employment growth in the central city

Table 2.7

Actual and Expected Population/Job Ratios

		Central City	Rest of Region
Minneapolis-St. Paul			
	1970	1.54	3.03
	2000	1.36	2.07
	Change	- 0.18	- 0.96
Baltimore			
	1970	2.01	2.58
	1995	1.45	2.61
	Change	- 0.66	+ 0.03
Atlanta			
	1970	1.53	3.39
	2000	1.01	3.03
	Change	- 0.52	- 0.36
Toronto			
	1974	1.50	2.62
	2001	1.29	2.36
	Change	- 0.21	- 0.26
Vancouver, B. C.			
	1971	1.71	3.42
	1986	1.63	2.85
		- 0.08	- 0.57
Average Change (5 cities)		- 0.33	- 0.42

would keep its P/E from declining and improve its self-sufficiency. A strong effort to implement a polycentric city concept would probably not do much to alter these long-term trends in either the central city or the outer city unless the scale of the effort was very much larger than the modest efforts now proposed in many urban regions. In essence, it appears that the goal of self-sufficiency for the outer city is well on the way to being achieved by the urban land market and that the adoption of a polycentric city policy would probably only accelerate these long-term trends slightly if at all.

These are the main arguments that have been made in support of the adoption and implementation of the polycentric city concept. Persons interested in more detail along these lines should refer to two excellent documents produced by the Metropolitan Council in the Twin Cities of Minnesota [12] and the Greater Vancouver Regional District in Vancouver, B. C. [18]

B. Arguments Against the Polycentric City Concept

The arguments that have been developed by opponents of the polycentric city concept are not normally documented in the regional development plans but they are mentioned in some cases. First and foremost is the argument that attempts to implement the polycentric city will kill the downtown by taking away its growth potential (if it has any) or accelerating its decline (if that is already in progress). This concern has produced an excellent series of studies of this issue in Toronto but little work has been done on this topic elsewhere. In Toronto, the two proposed outlying centers would be only about one-tenth as large as downtown Toronto by the year 2001 if Toronto's polycentric plan was implemented in a totally successful way. A threat to the downtown of this scale may not seem significant but it can be magnified by the press and the political process to very high and emotional levels. The data and forecasts that are available show that the downtown is now only one of several centers in a metropolitan area and that it is expected to decline in relative size in the next twenty to thirty years. Still, it looms very large in psychological and political terms and so this is an issue that will need to be studied in much more depth than it has up until now. A recent report on this topic by Weiss and Burby, entitled City Centers in Transition, is an example of the type of study that has addressed some of these questions [20].

A second set of criticisms relate not so much to the desirability of creating large and dense outlying centers but to the feasibility of doing so. Property owners in outlying centers are rarely organized into development

associations or boards like one finds in most downtowns. These people do not show up at public hearings to advocate a further clustering of activity into centers and so both the planners and elected officials involved have not given the issue a high priority. The owners or developers of large shopping centers have also not chosen to advocate policies that would produce relatively dense clusters of activity in outlying areas. In some areas, transit agencies have recognized their vital interest in having such clusters emerge but few have chosen to work directly for policies that would encourage clustering to take place. This general lack of an organized, effective and vocal constituency for the polycentric concept has been largely responsible for its relative lack of priority and study.

Other feasibility issues relate to the actual implementation problems that would have to be solved in order to provide the incentives and disincentives needed to get developers to choose locations in areas designated as major diversified centers. One obvious problem is land speculation. Once an area is designated as a major diversified center, speculative activity can be expected to drive the price of land up sharply. As long as there is an excess of land available in other locations that are suitably zoned (or can be so zoned), these higher prices will impede the densification and diversification of the center. This problem can also have an opposite effect if the persons holding the land cannot afford the higher holding costs that come with increased prices and must either develop it or sell it to someone else who can absorb the higher holding costs involved. Techniques for preventing such speculative price increases have been developed and tried in Canada and will be discussed later in this report.

The land assembly problem is another difficulty that critics use to argue that is is not feasible to shape the market so that it will produce high density clusters. The ownership patterns in outlying centers have rarely been documented but what data are available suggest that large numbers of owners and small parcels are more common than few owners and large parcels. This may mean that some type of public development corporation might be needed to assist the conduct of the land assembly task. Exceptions might be those cases where a large regional shopping center owned or controlled sufficient land around its periphery to undertake the management and development of a large multi-functional center itself.

Air quality questions are another source of doubt about the feasibility of implementing the polycentric concept. As long as the development plans for such centers are very automobile-oriented, they will run into great difficulty in terms of their projected violation of local air quality standards. The standards which exist today (if strictly enforced) effectively prohibit the creation of any additional large-scale auto-oriented clusters of activity in any part of the urban region. Unless auto emissions become much cleaner or unless these centers provide much less parking and much more transit than is currently accepted as standard practice by both planners and developers, one cannot expect to see such centers emerge anywhere in the urban region. In fact, one can only expect to see a much greater number of small clusters, each of which is small enough to get under the air pollution standards, proliferate on the urban landscape. The fact that they will, when added up, produce unhealthy air in many parts of the region, is apparently of little concern to those responsible for this aspect of the public's health.

Another type of criticism that is somewhat more abstract but still worth considering has been set forth by Professor Jack Lessinger in an article entitled, "The Case for Scatteration," published in the Journal of the American Institute of Planners [9]. Lessinger argues that a scattered pattern of development (characterized by housing of several different ages) allows for growth with self-renewal, while a compact development form (built up all at one point in time) forecloses these opportunities for self-renewal. He sees the gradual filling in of an area (scatteration) as providing flexibility in urban development. A major assumption behind this reasoning is that the rate and level of deterioration is uniform for large, compact areas. He also assumes that a scattered development pattern will more or less uniformly mix new development in with those parts of the old development worth saving. Another part of his argument is that since very large run-down areas are much harder to renew than small run-down areas, compact development makes renewal more inevitable and more difficult.

Lessinger's scatteration theory can be used to argue that we should not build any additional downtowns, particularly not in short periods of time because then in thirty to fifty years we will have a large renewal problem on our hands. Certainly, the history of urban renewal efforts in the United States to date provides little confidence in our ability to undertake and

successfully conclude large-scale renewal efforts. Furthermore, the market has produced and probably will continue to produce a scattered pattern of retial, office and apartment buildings in the outer city as long as the supply of properly zoned land is far in excess of what the market needs in the near term. Large-scale downzoning is probably not politically possible in the outer city, so other measures would have to be found to prevent a continuation of past scatteration trends. Since the creation of major activity centers may have to run counter to existing market trends, it is important to realistically assess the advantages and disadvantages of the creation of such centers. Toward that end, a recent test of Lessinger's scatteration theory is helpful and is discussed next.

Lessinger specifically examined the Washington, D.C. metropolitan area to test his scatteration hypothesis. He developed a grid-cell map which indicated whether each cell was compact or scattered, based on information from historical maps. He also developed a map which showed housing conditions (units deteriorated and without a private bath), based on the 1950 Census. He then overlayed these two maps on each other to find the gross relationship between compaction-scatteration and housing quality. He found that compact old areas had significantly worse housing conditions than scattered old areas. In keeping with his hypothesis, he assumed that this relationship could be explained by the rate of dispersion over time. It should be noted that he did not actually test the idea that scatteration facilitates renewal, but only found a correlation between the type of development pattern and housing quality. He infers that the causal factor must be whether or not the development form is scattered.

Though much discussed in the literature, his theory has remained untested until recently. As the subject of a Master of Urban Planning thesis at the University of Washington in 1978, Melody McCutcheon tested the Lessinger theory of scatteration [10]. The study area involved in her research was King County, Washington, which was the site of some of the first settlements in the northwest portion of the United States. For the first half of the study she replicated Lessinger's methodology, but then later extended it through the statistical manipulation of 1970 Census data. Her basic conclusion was that Lessinger's scatteration theory did not accurately explain existing

housing conditions in King County. Most of the compact areas had no housing problem, while scattered areas had significant or severe housing problems. This is particularly the case in scattered rural areas, which tend to have the worst housing quality problem. However, even when just examining the urbanizing portion of the County, the Lessinger theory failed to explain variations in housing quality. In fact, the relationship between compaction-scatteration and housing conditions was nearly opposite to that which would be predicted by the scatteration theory. In general she concluded that the historical pattern of development was not conclusively related to housing quality.

After obtaining this result, a number of other factors were examined to determine the causes of housing quality variation. It was found that several factors other than scatteration were the key determinants of housing quality. These factors are the age and value of the housing units, the socio-economic status of housing dwellers, and the characteristics of the general residential area.

In addition to these empirical results, she reviewed the urban development literature to determine if the in-filling process of development would occur as Lessinger assumed it would. It was found that the rate of in-filling is so slow in suburban areas, that land lies vacant for decades, not merely for years. Because of the lengthy time period involved, it becomes almost impossible to economically provide services to such a scattered development pattern. If the initial construction of the public facilities is adequate only for the beginning pattern of scattered development, then additions to the capacity when in-filling later occurs are likely to be quite expensive. However, if the scale of the public facilities anticipates the later in-filling, then the substantial excess capacity which exists until the in-filling occurs is likely to be very expensive too. The contention is widely supported in the literature that a compact development pattern makes the provision of services much less expensive than would be the case with scattered development. The conclusion which follows from her literature review is that in-filled development will not occur at the rate assumed by Lessinger, and that scattered development requires a much more costly provision of public services. This latter point has been instrumental in the recent decade in the formation of policies supporting compact development by a number of state and local governments.

In summary this test of the Lessinger theory of scatteration indicates that the validity of the theory is open to doubt. The possible creation of large-scale blight in the future should thus not stand as a deterrent to the establishment of major activity centers in the next twenty years.

A final set of criticisms relates to the fact that this topic has not been the subject of very many in-depth studies either by academics or practicing planners and their consultants. Consequently, the literature on this issue is very scanty and extremely scattered among a large number of fields. What does exist has rarely been pulled together and reviewed in a coherent manner and a great deal of semantic and definitional confusion exists that needs clarification. Developer location decision-making is poorly understood and appears to be lacking in analytical rigor for the most part. It does not lend itself readily to ex post facto analysis as the reasons why certain decisions were made are normally impossible to reconstruct given the reluctance of the participants to divulge what many consider to be trade secrets. While this report will attempt to make some modest progress in pulling together what is known (or believed) about this topic, it is evident that the existing knowledge base is very limited and that this criticism is quite valid.

In summary, we find that there are some strong and valid arguments on both sides of the issue. Our purpose is not to try to resolve all of these questions for that would take much more time and resources than are available to us. We will assemble the available information on these issues and draw some conclusions and recommendations for action that are tailored to fit the state-of-knowledge on this topic. As stated previously, our point-of-view will be one of assessing how the use of transit might help to overcome some of the problems raised by the critics of the polycentric city concept.

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III. THE PRESENT STATUS OF THE POLYCENTRIC CITY CONCEPT IN THE UNITED STATES, CANADA AND OTHER SELECTED LOCATIONS

A. Results of the U.S. Survey of Large Metropolitan Planning Organizations

In order to ascertain the present status of the polycentric city concept, a survey of regional planning agencies in urban regions having a population of 500,000 or more was undertaken in April, 1978. The survey was also distributed to selected regional planning agencies in less populous regions in order to sample the use of the concept among smaller regions. Some information on this topic has also been obtained from Canada and abroad. Results from the survey and other sources are discussed in this section.

The questionnaire was quite short and simple and was designed primarily to identify those metropolitan planning organizations (MPO's) which are most interested in the polycentric city concept. A similar questionnaire was distributed to 46 MPO's in early 1977. However, since several MPO's were in the process of updating their land use plans or preparing new land use plans, the survey was repeated in 1978.

The U.S. Department of Housing and Urban Development (HUD) requirements state that agencies wishing to receive federal funds for comprehensive planning after August 22, 1977, must have completed a satisfactory land use plan [2]. HUD's requirements regarding the land use element of the regional plan are relatively straightforward. They call for a land use element that includes "studies, criteria and implementing procedures necessary for effectively guiding and controlling major decisions as to where growth shall and shall not take place." Furthermore, HUD has placed a major emphasis on the specification of the location and timing of growth as a necessary part of an acceptable land use plan. Clearly, any attempt to meet these requirements must include some resolution of the polycentric city issue. The survey was designed to provide a rough measure of the status of the polycentric city concept by obtaining responses to several questions about this issue. The results from 46 of the 48 MPO's that serve populations greater than 500,000 are discussed below. Table 3.1 is a tabulation of the responses obtained from all 46 MPO's, and individual responses are presented in Table 3.2.

First, it can be seen in Table 3.1 that most of the MPO's have or are in the process of preparing land use plans. Thirty-six of the responding 46 MPO's stated that they presently have a land use plan which has been adopted. Of the

TABLE 3.1

Overall Results of a 1978 Survey

of 46 Metropolitan Planning Agencies in the United States

1. Does your agency presently have a land use plan which has been adopted?

Yes	78%	(36 responses)
In process	15%	(7)
No	7%	(3)
	100%	46

2. If answer to 1 is "yes" or "in process," does (or will) this plan include a map which indicates the locations of areas which are encouraged to develop into "major diversified centers" (MDC's)?

Yes	56%	(24)
No	44%	(19)
	100%	43

3. If answer to 2 is "yes," does the plan indicate the desired size or composition (mix of activities) at each location at some future time?

Both size and mix	54%	(13)
Size but not mix	17%	(4)
Mix but not size	0%	(0)
Neither size nor mix	29%	(7)
	100%	24

4. If answer to 2 is "yes," does the plan include a strategy or action plan for implementing the MDC concept?

Yes	75%	(18)
No	25%	(6)
	100%	24

5. If answer to 4 is "yes," have any local agencies in your region proposed some type of development plan for any of these MDC locations? If not, do any intend to prepare such plans?

Have prepared	67%	(12)
Have not prepared	11%	(2)
Intend to prepare	17%	(3)
No response	5%	(1)
	100%	18

	LAND USE PLAN	YEAR(S) OF ADOPTION	MAP OF MDC's INCLUDED	SIZE INCLUDED	MIX INCLUDED	ACTION PLAN	LOCAL AGENCY PLANS PREPARED	LOCAL AGENCY PLANS INTENDED
NEW YORK	YES	'77	YES	YES	NO	YES	YES	-
CHICAGO	IN PROCESS		NO	-	-	-	-	-
LOS ANGELES	YES	'76	NO	-	-	-	-	-
PHILADELPHIA	YES	'69, '78	YES	NO	NO	NO	-	-
DETROIT	YES	'77	NO	-	-	-	-	-
BOSTON	NO	-	-	-	-	-	-	-
SAN FRANCISCO	YES	'77	NO	-	-	-	-	-
WASHINGTON, D.C.	YES	'77	YES	YES	YES	YES	YES	-
DALLAS	YES	'73	NO	-	-	-	-	-
ST. LOUIS	YES	'77	NO	-	-	-	-	-
PITTSBURGH	IN PROCESS		YES	YES	YES	NO	-	-
HOUSTON	NO	-	-	-	-	-	-	-
BALTIMORE	YES	'78	YES	YES	YES	YES	YES	-
MINNEAPOLIS	YES	'75	YES	YES	YES	YES	NO	YES
CLEVELAND	YES	'78	NO	-	-	-	-	-
ATLANTA	YES	'75	NO	NO	NO	NO	NO	-
SAN DIEGO	YES	'77	YES	YES	YES	YES	-	YES
MIAMI	YES	'78	NO	-	-	-	-	-
MILWAUKEE	YES	'66, '78	YES	YES	NO	YES	YES	-
SEATTLE	YES	'77	YES	YES	YES	NO	-	-
DENVER	YES	'73, '78	YES	YES	YES	YES	YES	-
CINCINNATI	YES	'78	NO	-	-	-	-	-
TAMPA	YES	'77	YES	NO	NO	YES	YES	-
BUFFALO	YES	'70	YES	NO	NO	YES	YES	-
KANSAS CITY	YES	'77	NO	-	-	-	-	-
PHOENIX	YES	'78	YES	NO	NO	NO	-	-
INDIANAPOLIS	IN PROCESS		YES	NO	NO	YES	NO	NO
NEW ORLEANS	YES	'73, '77	YES	YES	YES	YES	YES	-
PORTLAND	YES	'76, '77	NO	-	-	-	-	-
COLUMBUS	YES	'72	NO	-	-	-	-	-
HARTFORD	YES	'78	YES	YES	YES	NO	YES	YES
SAN ANTONIO	YES	'77	NO	-	-	-	-	-
SACRAMENTO	IN PROCESS		NO	-	-	-	-	-
MEMPHIS	YES	'78	YES	NO	NO	YES	-	-
DAYTON	YES	'73	NO	-	-	-	-	-
ALBANY	IN PROCESS		YES	YES	YES	YES	YES	-
TOLEDO	YES	-	NO	-	-	-	-	-
OKLAHOMA CITY	YES	'76	YES	NO	NO	NO	-	-
NORFOLK	NO	-	-	-	-	-	-	-
SALT LAKE CITY	IN PROCESS		NO	-	-	-	-	-
NASHVILLE	YES	'77	YES	YES	NO	YES	NO	NO
JACKSONVILLE	YES	'78	NO	-	-	-	-	-
SYRACUSE	YES	'77	YES	YES	YES	YES	YES	-
OMAHA	IN PROCESS		NO	-	-	-	-	-
RICHMOND	YES	'75	YES	YES	YES	NO	-	-
YOUNGSTOWN	YES	'74	YES	YES	YES	YES	YES	-

TABLE 3.2 Responses from Individual Metropolitan Planning Organizations to 1978 Polycentric City Concept Survey

remaining ten MPO's, seven stated that they are in the process of preparing a land use plan, and expect adoption in 1978 or 1979. Three MPO's (Boston, Massachusetts; Houston, Texas; and Norfolk, Virginia) stated that they are not preparing a land use plan.

The next four questions dealt specifically with the polycentric city concept. First, we asked if a map showing the location of areas proposed to develop into major diversified centers either was or was expected to be included in the land use plan. Of the 43 MPO's having or preparing land use plans, 56% responded yes, and 44% responded no. This indicates that about half of the MPO's have taken the first step toward establishing the polycentric city concept in their areas. Next, we asked those MPO's which have a map indicating the location of desired major diversified centers if the plan describes the desired size or composition of each center at some future time.

These results indicate that 17 MPO's have taken or expect to take the second step of including some projections or targets in the plan as to the size and location issue. A total of 13 MPO's have addressed the issues of both size and mix of activities at each designated location for a center. Of the 24 MPO's that have mapped the centers elements of their plans, about three-fourths have addressed the issue of mix.

A fourth question asked those MPO's that have or expect to include a major diversified centers element in their land use plans if they would also include a strategy or action plan for implementing the MDC concept. Seventy-five per cent of these MPO's responded yes; 25% responded no.

The fifth question asked those MPO's with action plans if any local agencies in the region had done or intended to do any type of development plan for any of the major diversified center locations. Sixty-seven per cent responded that local agencies had done this work, 17% responded that local agencies intended to do detailed plans, 11% responded that no local agencies had done the plans, and 5% did not respond.

Finally, those agencies whose land use plans do not contain a major diversified centers element were asked to give the major reasons responsible for this position. Responses to this question were quite varied. Several agencies stated that there was too little growth in their jurisdictions to warrant such a policy. Others pointed to the political difficulty of selecting growth areas, noting that their land use plans are general and not site-specific. Many MPO's responded that their policies on future growth are no more specific than stating that growth should take place within the urban services area.

Responses were received from 43 MPO's from regions with populations below 500,000. Of these, only nine stated that they have a map indicating the locations of areas which are to be encouraged to develop into major diversified centers. These regions are Charlotte, North Carolina; Tulsa, Oklahoma; Knoxville, Tennessee; Memphis, Tennessee; Worchester, Massachusetts; Grand Rapids, Michigan; Nassau-Suffolk Counties, New York; Buffalo, New York; and Greensboro, North Carolina. In other regions, reasons stated for not applying the concept ranged from the rural nature of the surrounding region to the youth of the agency. A number of MPO's stated policies of encouraging growth near transportation corridors, while several mentioned that they projected only enough growth to support one center.

In summary, the survey results indicate that about three-fourths of the 46 largest MPO's in the nation are currently in the midst of either updating an existing or preparing their first land use plan. The polycentric city concept is being used by more than half (24) of these MPO's as indicated by their inclusion of a map showing the location of several major diversified centers in their land use plan. About half of these MPO's (13) have or expect to deal with the question of the size and mix of activities at these MDC locations. About half of the MPO's claim to have addressed the issue of implementing their MDC elements but no evidence of any substantial work of this type was found in our review of the regional development plans we were able to obtain. Most MPO's definitely preferred to leave the detailed development planning of MDC's to the local governments having jurisdiction over the particular sites. Overall, we can conclude that a majority of MPO's are using or expect to use the polycentric city concept in their land use plans by including a map showing general locations for a few major diversified centers. Many fewer appear to be interested in going further into the questions of the most desirable number, size and mix of activities at these locations or the especially difficult questions of implementation and detailed development planning. Still, it should be noted that many MPO's are preparing a land use plan for the first time and it is perhaps unrealistic to expect them to get too deeply into a topic that has received little attention from federal agencies and the academic community to date. Unlike transportation, utilities and open space, major activity centers have yet to attain any spotlight time (with the exception of existing downtowns). The survey results show this to be the case, but since they do not identify any trends it will not be clear until some future time whether the MPO's will take the polycentric city

concept more seriously or less so. The identification of this trend should be a matter of great importance to the Urban Mass Transportation Administration of the U.S. Department of Transportation.

Canadian cities were not included in this survey but two have been visited during the course of this study. They are Vancouver in British Columbia and Toronto, Ontario. Both are far more advanced in their thinking and action in this field than any large American region we know about at this time. Vancouver is probably one to two years ahead of Toronto in terms of the extent and depth of its action program, which is designed to implement the Regional Town Centres element of its Livable Region Plan, adopted in 1975 by the Greater Vancouver Regional District.

These survey results were used to plan the field work for this study, which involved visits to 12 U.S., two Canadian, and one British city. This field work was supplemented by a review of documents from several other cities as well as from some foreign countries. Together, these results provide a cross-sectional view of the state-of-the-art in the field of major activity center planning and should be helpful in formulating some realistic land use policy guidelines for the Urban Mass Transportation Administration.

B. The Status of the Polycentric Concept in Fourteen U.S., Two Canadian and One English City

The evaluation framework used in the comparative assessment of the status of the polycentric city concept in the 17 cities is given in diagrammatic form in Figure 3.1. This evaluation framework includes all of the elements that any significant study of the polycentric city concept should include. It has been derived largely from the pioneering major diversified centers study conducted in the Twin Cities in 1970-71. As mentioned previously, only Toronto and Vancouver have conducted studies in every area included in the framework with the Twin Cities and Denver being the only American cities that have done anything close to what the Canadians have done in this field. We now turn to a discussion of the evaluative framework elements.

1. Description of Evaluation Framework

Element 1. Definitional Investigations

The clearest exposition of the MDC concept is one published by the Metropolitan Council of the Twin Cities in 1971 entitled, Major Diversified Centers: Policies, System Plan, Program. The definition of an MDC used in this study is as follows:

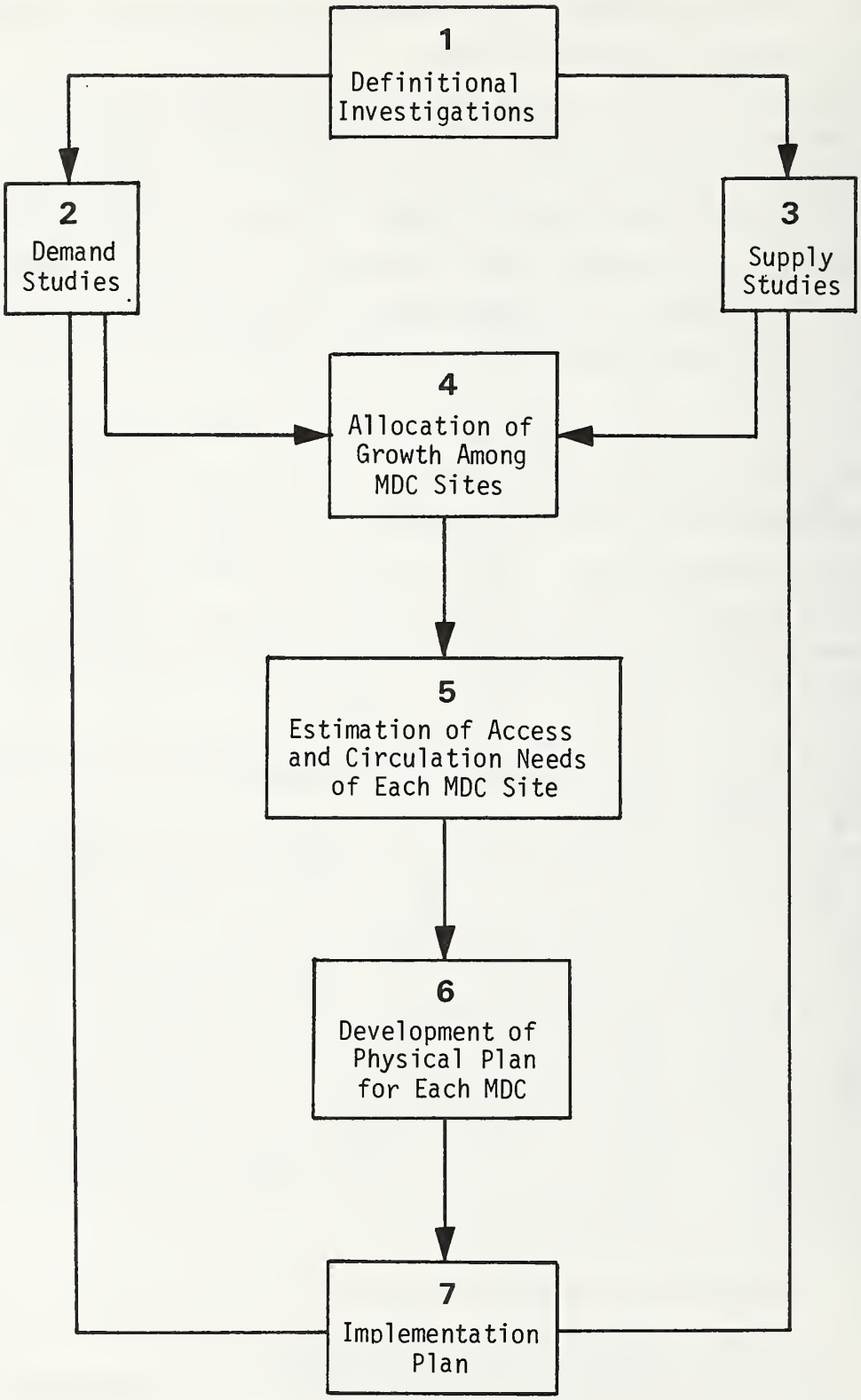


Figure 3.1.
Evaluation Framework for Case Studies

> "...a large concentration of retail, service, cultural, entertainment and office facilities located within a relatively compact land area; blended with high density residential development and certain kinds of manufacturing, warehousing and research operations..." [41, p. 31].

This definition includes existing downtown areas as well as partially developed or emerging activity centers in suburban or fringe locations. No comprehensive and detailed list of suitable activities for an MDC is included in the Metropolitan Council document and no guidelines were provided as to the appropriate size or mix of activities in an MDC. No guidelines were proposed for drawing boundary lines that would delimit MDC locations nor were any minimum standards proposed that would define the activities a center must have to qualify for an MDC designation. Thus, the terms "large" and "relatively compact land area" were left rather vague by the Twin Cities planners as was the identification of the type and mix of suitable activities.

Another study which addresses the definitional problem was published in 1973 by Victor Gruen and is entitled, Centers for the Urban Environment: Survival of the Cities [1]. Gruen uses the term "multifunctional centers" to mean roughly the same thing as an MDC. He provides no concise definition of this term but does state that a multifunctional center should:

> "...combine as many urban functions of the 'center-conforming' type as possible in a concentrated and land-conserving manner, counteracting the tendencies toward fragmentation, sterility and waste of time and energy..." [1, p. 97].

Further, Gruen provides a fairly detailed list of the activities that should be present in a truly multifunctional center. These are given in Table 3.3. This listing is the best starting point for a more comprehensive and detailed definition of the MDC concept known to us at present. Nothing more elaborate than this has been found in any of the cities visited.

Gruen sets forth several other notions of importance to this task. He concludes that the shopping centers (which he personally has had so much to do with) are unifunctional failures and should be evolved into or replaced with multifunctional centers as soon as possible. He strongly advocates multi-level vertically-oriented centers built on a ground level platform that separates transportation functions from pedestrian functions. Gruen wants to:

> "...place a maximum amount of enclosed space serving human activities on a minimum amount of land...to shorten the distances between the various functions to such a degree that we will minimize the waste created by enforced mobility..." [1, p. 98].

TABLE 3.3

Composition of a Multifunctional Center
as Suggested by Victor Gruen

A. Primary (human) functions
   1. Residences
   2. Education
      a. Pre-school education
      b. Primary schools
      c. Secondary schools
      d. Specialized schools
      e. Universities
   3. Culture
      a. Theaters and concert halls
      b. Museums and art galleries
   4. Entertainment
   5. Leisure Time Activities
   6. Sports
      a. Outdoor sports
      b. Indoor sports
   7. Health Services
   8. Employment
      a. Public administration
      b. Private administration
      c. Non-disturbing industries
   9. Retail Trade and Personal Services
   10. Professional Activities
      a. Medical
      b. Legal
      c. Architectural
      d. Engineering
      e. Others
   11. Eating and Drinking Facilities
   12. Artists' Studios

B. Primary (human) communications
   1. Pedestrian areas
      a. Enclosed and climatized
      b. Open and protected
   2. Vertical Communications
      a. Escalators
      b. Elevators
      c. Stairways
      d. Ramps

C. Secondary and Supporting Functions (mechanical services)
   1. Public Transportation
      a. Terminals and stations
      b. Reserved rights-of-way
   2. Goods Transportation
      a. Delivery roads and docks
      b. Conveyor belts
      c. Service corridors
   3. Individualized Transportation
      a. Roads
      b. Parking
   4. Utilities
      a. Mechanical rooms
      b. Space for utility lines
   5. Waste Products
      a. Storage
      b. Maintenance rooms
      c. Incinerators

Source: [1, p. 105]

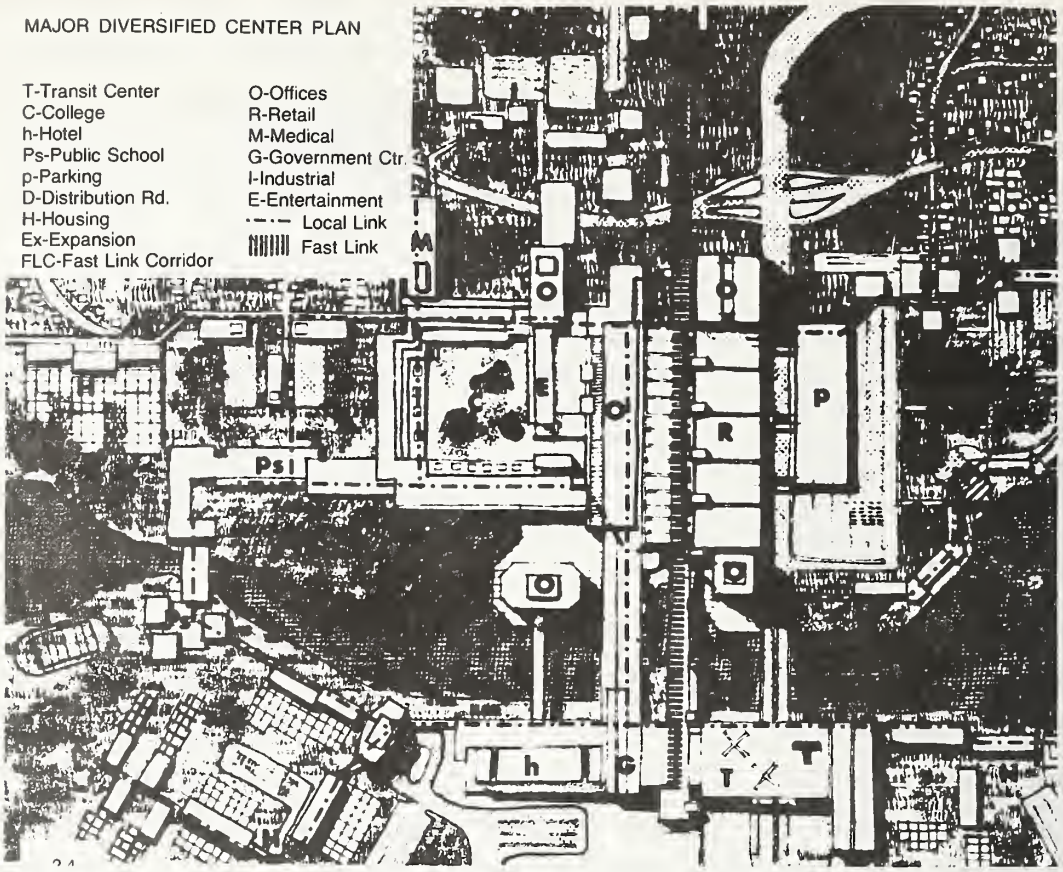
He also argues that the creation of large multifunctional centers establishes those conditions which make public transportation practical and economically feasible. If public transportation is provided, it will, according to Gruen, widen the possibilities of programming the development of a center because public transportation characteristically has surplus capacity and built-in flexibility. In summation, Gruen states:

> "If we want to create meaningful urban communities, if we want to make a significant contribution to the solution of the environmental crisis, we must stem the tide of sprawl, and fight against compartmentalization and ghettoization of the urban organism. We must create integrated multifunctional centers which will offer us a sense of identification, ease of human communication, the possibility of the exchange of goods and ideas--in other words, places which have the virtue of urbanity. These qualities can only be achieved if we also accept the need for multifunctional use of land" [1, p. 102].

Part of the task of trying to define what something is must refer to the "why" it is desired and Gruen makes a substantial case for the creation of multi-centered urban structures in the last chapter of his book. He also provides numerous examples of centers that have been built (and proposed) around the world that he feels qualify for the multifunctional label. For the 14 case studies of multifunctional centers that he presents, half (seven) are located in the United States. Of these seven, he found that three have been completed, two were underway and two were not yet started in 1973. Part of our task will be to discover other projects which were not identified by Gruen but which may represent good examples of the multifunctional center concept in action.

The MDC report of the Metropolitan Council of the Twin Cities did include some illustrations of what they envisioned an outlying MDC might be like when fully developed. Two of them are included here as Figure 3.2. These graphics indicate that the Minnesota planners and Victor Gruen are really talking about the same thing although the MDC concept may be interpreted as being more horizontal (i.e., somewhat more spread out) than Gruen's vertically-oriented, platform-based, multifunctional center concept.

Another very important aspect of the definitional problem is one of getting some overall dimension on the problem. It should be clear by now that not all types of employment and residence are suited to MDC locations. In fact, probably only a minority of all a region's jobs could be located satisfactorily in such centers. Data from the Twin Cities area suggest that only about 20 to 25 per cent of all jobs in the Twin Cities area are presently



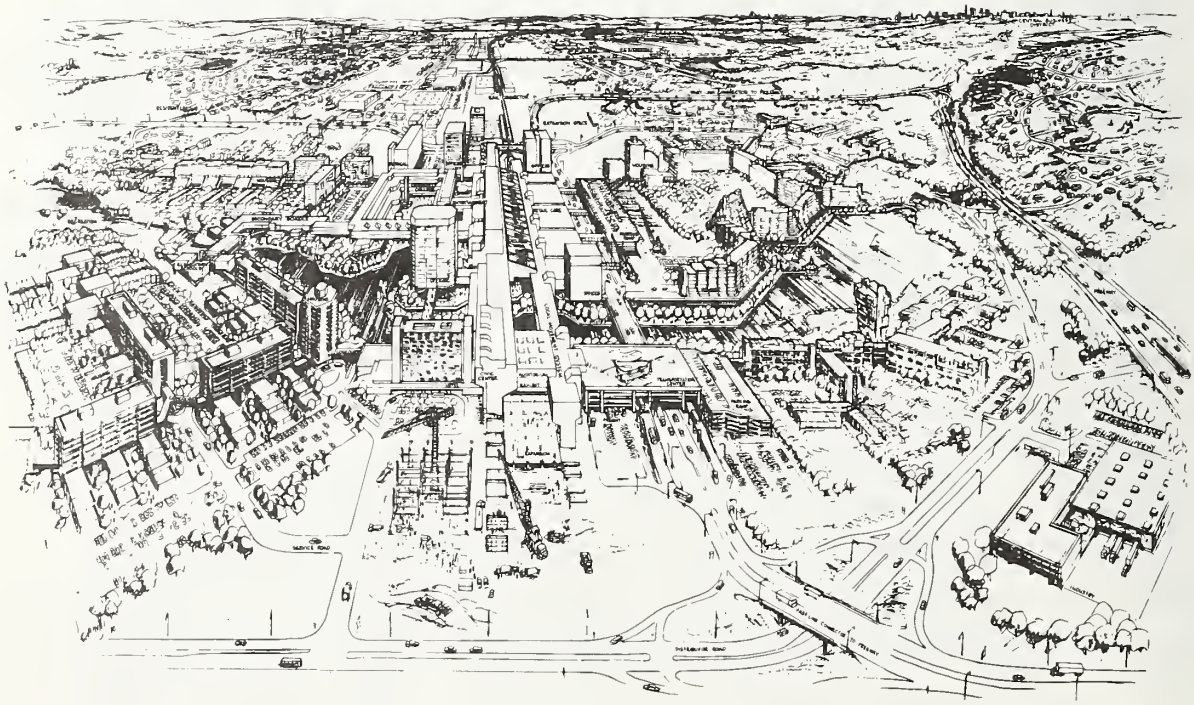


Figure 3.2 Illustrations of the Idealized Major Diversified Center Developed by the Metropolitan Council

located in the 15 MDC locations that have been identified. While it is true that the service sector of the economy is now (and is expected to continue to be) the fastest growing sector of the economy, even a highly successful implementation effort would not be likely to raise this present proportion by much more than ten to 15 per cent over a 20 to 30 year period. Therefore, it is important to realize that any implementation effort would be aimed at only a small fraction of the total development action in a large urban area and that the changes that would result from a successful effort are not likely to be large in relation to the total pattern of growth and change in a large urban area. These findings are confirmed by studies in Toronto that show that only 26% of the total employment in the metro area is currently located in the 16 centers which have been identified in their planning work. Furthermore, if their plan is implemented exactly as it has been set forth, this proportion would rise to only 34% by the year 2001. Data from Denver indicate that about 25% of the region's employment was located in 13 activity centers in 1970 and it is projected that this figure will rise to 30% by the year 2000.

Element 2. Demand Studies

A second element in the framework is called demand studies. Any sound MDC plan must be based on a thorough study of the demand side of the service employment sector in the region. Such studies should be component elements of a larger study of the regional economy that is designed to produce forecasts of growth and change in all sectors of the economy. Since service employment is primarily population-serving, its growth will often be derived from population forecasts for the region in large part. Once this has been accomplished, the service employment sector can be examined to develop forecasts of the share of total service employment that could logically be expected to locate in MDC's.

Element 3. Supply Studies

Studies of the present mix and interaction pattern among the activities in existing MDC or emerging MDC locations are needed to establish some sense of the current relationship between supply and demand as well as to provide estimates of the type and quantity of growth and change that may be appropriate at various MDC locations. Studies of this type for existing downtown areas have been conducted but few relate to the overall service employment

pattern in a large metropolitan area. However, it is not difficult to specify what information should be gathered by such a survey. The survey should basically inventory all MDC-type activities that are currently located in the region and should include information about the size and interaction patterns of each of these activities. Clearly, some of these activities will not be located in existing or potential MDC locations. In such cases, information should be gathered on the factors that could induce activities to consider seriously relocating to an MDC location.

Once such an inventory is complete, a study should be made that would lead to the estimation of some minimum standards for the composition or mix of activities in various MDC locations. Such standards would be useful guidelines to planners in estimating the highest priority needs of existing and potential MDC's. This is not to say that every MDC ought to be a carbon copy of some idealized structure developed by a planning agency. The basic idea here is that there may be some minimum set of activities that every MDC should have and beyond that the development of each MDC should be planned in as flexible a manner as possible to allow for as much identity-building and specialization as the market will support.

Another important component of the supply side studies must relate to the analysis of developer behavior. A simplistic diagram of the environment within which a developer must operate was given previously in Figure 1.9. An important part of any MDC study should be to probe much more deeply into this aspect of the MDC planning process.

Element 4. Allocation of Growth Among MDC Locations

Once the basic dimensions of demand and supply have been forecast, the problem becomes one of allocating growth (if any) to various MDC locations such that demand and supply will be well-matched and so that the public interest will be well-served in the future. As discussed previously, some type of mathematical model is probably needed to generate and evaluate the very large number of feasible allocation plans that would satisfy the basic demand equal supply constraint. Moreover, an evaluation framework is needed to aid the selection of a particular size-location growth pattern from among the many alternatives that are feasible.

Element 5. Derivation of the Access and Circulation Needs at Each MDC Location

As should always be the case, the access and circulation needs of an area should be derived from some notion about how the community wishes that area to be developed. If we assume that the planners have successfully completed Elements 1-4, then, and only then, can serious transportation planning work be conducted on a reasonably rational and solid basis. The basic problem to be solved by the transportation planner is to take each MDC location, together with an inventory of their present composition and site characteristics, forecasts of the quantity and type of growth that can be expected to occur during a given period of time, information about the market area of the MDC's and information about how various developers make their location decisions and then devise an MDC transportation plan that can be used to aid the formulation of a physical development plan for each MDC. This development plan should be prepared by a multi-disciplinary team so that the multi-functionality objectives advocated by Gruen can be properly built into the design process that will produce such a plan.

Element 6. Development of a Physical Plan for Each MDC

Once the transportation needs of each MDC have been estimated, this information can be integrated into the larger MDC development planning process. As mentioned previously, this planning process should be performed by a multi-disciplinary design team so that the diverse needs of Gruen's multi-functionality concept can be adequately addressed. What is envisioned here is a study that would produce a development guide or framework that generally specifies the types of activities that are most needed, the range of locations where they would best fit in, and other physical planning considerations regarding the size and height of building together with concepts for providing a maximum of amenity. Especially important would be the circulation element of the plan that would indicate the type of auto, walking, transit and other modes of access to be provided. Estimates of the desired rate of development and an overall staging concept should also be an important part of such a plan.

Element 7. Implementation Plan

Once a development guide has been prepared for each MDC, attention should be focused on the problem of implementing the development concepts that it contains. A major question here relates to determining when the various types of transit service proposed should be implemented. If transit is to become a big incentive (carrot) in the implementation process, then it will have to be provided in advance of the time when it can be expected to be fully utilized. In other words, some considerable excess capacity may have to be provided initially when the longer-range prospect indicates that it is advisable to do so. Clearly, this kind of strategy involves some risk in that if developers do not act in accordance with the development plan, the public may be left with a costly transit facility that is little used. Special attention should be given to the problem of assessing the components of this risk and investigating various ways that it might be minimized. Risk minimization is normally achieved by: (1) developing plans from a sound analysis of supply and demand factors, (2) providing relevant information on the market and suggestions as to how it can be used by the developers who are making location decisions and (3) providing a variety of incentives and disincentives to encourage the desired response from both the private and public sectors.

2. Descriptions of Activities in Individual Cities

The 17 cities that are reviewed (15 were visited) were selected to represent a spectrum of experience with the polycentric city concept and be geographically representative as well. They have been grouped into six categories that define, in general terms, the current status of the polycentric city concept in the regional planning activity of each urban region. These categories and the cities that have been placed in each are as follows:

a. Special situation

   Irvine, California

b. Serious about the concept

   Toronto, Ontario
   Vancouver, British Columbia
   Denver, Colorado
   Miami, Florida
   New York, New York

c. Considered, adopted, but not yet taken seriously

   Washington, D.C.
   Los Angeles, California

d. Considered, but not adopted

San Diego, California
Seattle, Washington
Houston, Texas
Chicago, Illinois

e. Considered, adopted, but not implemented vigorously

Minneapolis-St. Paul, Minnesota
Baltimore, Maryland
San Francisco, California
London, England

f. Never considered

Atlanta, Georgia

Table 3.4 shows the status of the planning for the polycentric city concept in the 17 cities included in this review. These ratings are very subjective and general. They will be explained in more detail in the following sections of this report. Table 3.4 indicates that the most substantial work in the polycentric city concept has been done in three American and two Canadian cities. Atlanta was included to provide a broader perspective on the issue than could be obtained only by looking at cities that have shown some interest in the concept.

a. Special situation (Irvine, California)

Irvine is a special case in that it is a very large scale new city that is now in the process of being constructed on a large site in Orange County, California, just south of Los Angeles. Irvine is a city that is being built on open land that was formerly used for agriculture and ranching. Development planning began in the 1950's with the first major development being a new campus for the University of California. A 1,000 acre tract was selected in 1957 and a new campus has been built which currently has an enrollment of close to 10,000 students. Following this initial action and some small residential developments, a general plan for the development of the 35,000 acre southern sector of the Irvine ranch was developed and adopted in 1964. The primary goals of the plan were to:

> "represent the highest and best use of the land, to preserve natural amenities and to allow for ecological balance and human satisfaction. Planners envisioned a city of residences, offices, shopping centers and industrial facilities; a city with an infrastructure (roads and utilities) sized for an eventual population to avoid the tearing up of roads and replacement of utilities common to unplanned municipalities, and a city of unusual beauty." [3]

TABLE 3.4

General Description of Work Accomplished on

Polycentric City Concept in Cities Visited as of 1978

Type	Urban Area	Study Element: Definitional Investigations	Demand Studies	Supply Studies	Allocation Studies	Access and Circulation	Development Planning	Implementation Studies
1	Irvine	S	S	S	S	S	O	O
2	Toronto, Ontario	O	O	O	M	S	M	M
	Vancouver, B.C.	S	S	S	M	M	O	O
	Denver	S	S	M	N	M	M	M
	Miami	M	M	M	N	S	S	S
	New York	S	S	S	N	S	O	S
3	Washington, D.C.	S	M	M	M	N	N	N
	Los Angeles	M	M	M	N	N	N	N
4	San Diego	M	O	N	N	N	N	N
	Seattle	S	M	M	M	N	N	N
	Houston	M	N	M	N	O	O	O
	Chicago	M	M	M	N	N	N	N
5	Twin Cities	S	S	S	O	S	M	M
	Baltimore	S	S	S	O	S	M	M
	San Francisco	M	M	M	N	N	N	N
	London, England	S	S	S	N	N	N	N
6	Atlanta	N	N	N	N	N	N	N

Key

O - outstanding work done

S - substantial work done

M - minimal work done

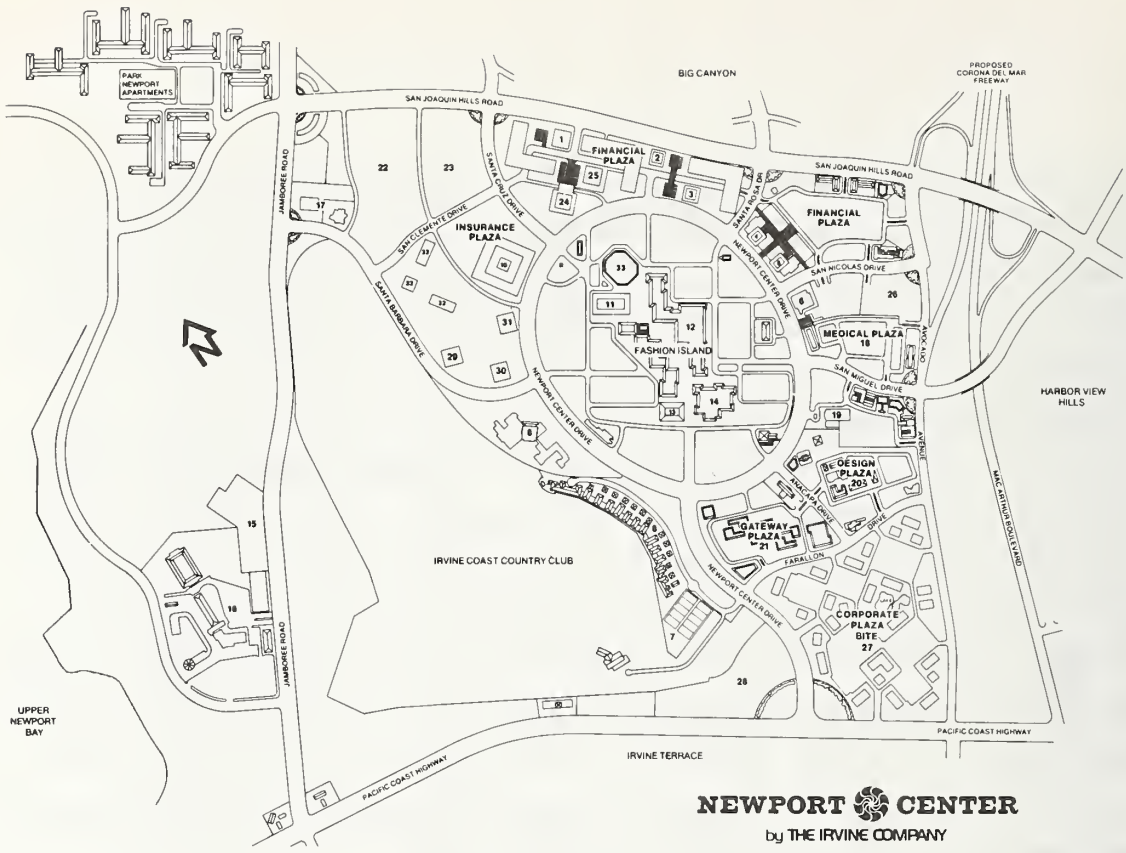
N - nothing done

The main planning concept used was that of laying out a series of villages, each made up of neighborhoods, having their own commercial, recreational, and educational facilities. This physical planning concept was intended to provide the residents with a feeling of identity and a home within a larger urban complex.

A large office/industrial park was laid out next to the Orange County Airport and, under the auspices of the Irvine Industrial Complex, has become the location of approximately 29,000 jobs. Two other major centers were included in the initial plan. The first one, Newport Center, is about one-half developed at present and construction is expected to begin on the second, Irvine Center, in the fall of 1978. These two centers are very close in concept and scale to the major diversified centers proposed in 1971 by the Metropolitan Council of the Twin Cities. A brief description of each of these centers will show how the MDC concept is being applied by the Irvine Company, which both owns and is the developer for both sites.

Newport Center was conceived as the "downtown" not only for the southern sector of the ranch but also for the entire south coast of Orange County. It is expected to become a 622-acre complex of high-rise office buildings, medical centers, hotels and other commercial facilities clustered around a regional shopping mall. The original development plan for the site was developed by architect William Pereira and called for an "intermixed center" with a series of malls radiating from the center of the site. Lining the malls were to be office and retail structures, and apartments extending beyond the ring road. A greater concentration of retail activities was planned for the central part of the complex while roadway, office and residential space would predominate in the outer areas. This site plan would have necessitated some relegation of parking to peripheral locations.

This innovative design was rejected by the Irvine Company because its leasing agents felt that the project would lease more quickly if a conventional shopping center were built at the center of the site. Figure 3.3 is a diagram of the physical plan that was finally adopted for the site and an aerial view of the center as it exists today. The Irvine Company reports that there were 9,000 jobs located at the center in 1977 and that 19,250 jobs are expected to be located there when it is fully developed.



EXISTING DEVELOPMENT

1. Wells Fargo Building
2. Avco Building
3. Union Bank Building
4. Security Pacific Building
5. Bank of America Building
6. Great Western Building
7. Balboa Bay Tennis Club
8. Granville Apartments
9. Marriott Hotel
10. Pacific Mutual Building
11. Broadway
12. Penneys
13. Buffums
14. Robinson's
15. John Wayne Tennis Club
16. Newporter Inn
17. Police & Fire Facilities
18. Medical Plaza
19. Edwards Cinema
20. Design Plaza
21. Gateway Plaza

FUTURE DEVELOPMENT SITES

22. Low-rise office site
23. Low-rise office site
24. High-rise office site
25. High-rise office site
26. High-rise office site
27. Corporate Plaza site
28. Low-rise office site
29. High-rise office site
30. High-rise office site
31. High-rise office site
32. High-rise condominium site
33. Neiman Marcus site

LEASING OPTIONS

1. Office space in existing new buildings
   a. Wells Fargo Building, high-rise with harbor views. (Bldg. #1)
   b. Gateway Plaza, low-rise with views and free parking (#21)

*2. Ground lease and build your own building.

*3. Ground lease and we'll build-to-suit.

*Interim space in existing buildings may be arranged while your building is under construction

SERVICES

1. Space planning assistance by our in-house team, if desired
2. Employee relocation program.
3. On-site management to serve you.

Figure 3.3

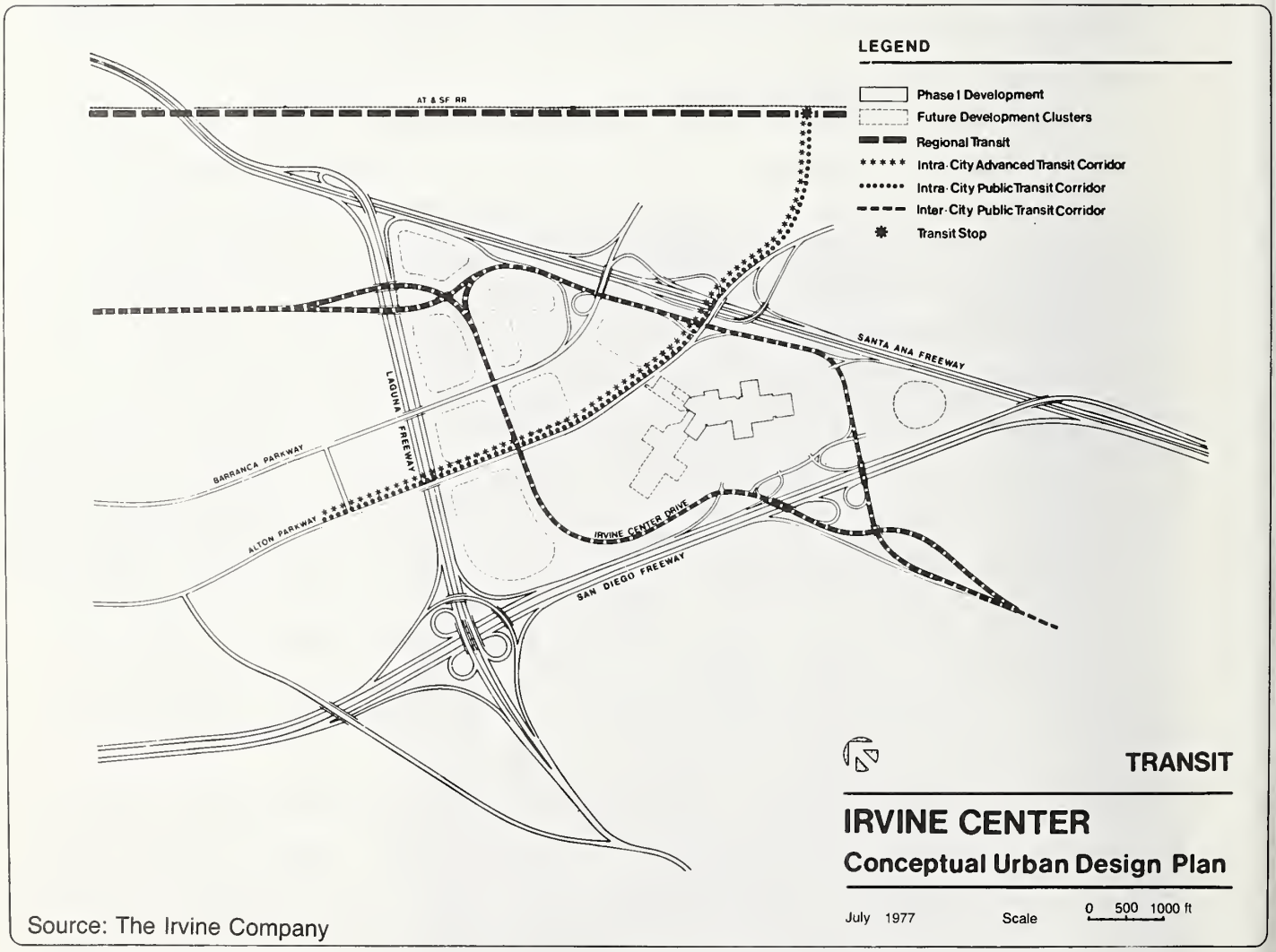
Plan View and Aerial View (Looking South) of Newport Center in Irvine, California

Newport Center obviously lacks physical integration and is not designed to encourage pedestrian activity. To get from an office building to the retail mall, one must walk to Newport Drive, cross six lanes of traffic, and then walk on a sidewalk through the very large parking lot that surrounds the shopping mall. As a result, there probably are numerous short auto trips between the various parts of the center that are contrary to energy conservation and air quality objectives.

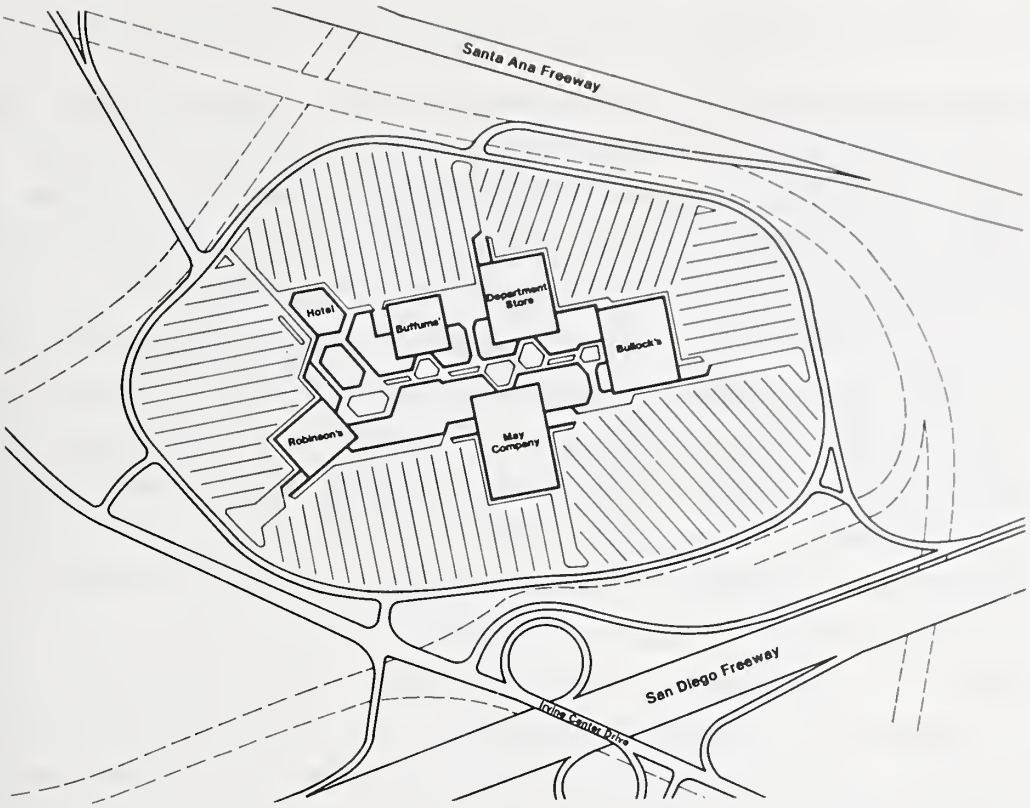
The primary mode of access to and circulation within the center is the automobile. Transit service is provided by the Orange County Transit District and they estimate that the monthly patronage to and from the center is over 200,000 rides. No information is available as to how this patronage is split between shopping trips, work trips and other trips. While Newport Center was designed primarily for ease of auto access, circulation and parking, it could be evolved into a more dense, more integrated center with good transit access without great difficulty.

Irvine Center is the next major commercial/office/industrial complex being planned by the Irvine Company. It will be located a few miles south of Newport Center about midway between Los Angeles and San Diego as shown in Figure 3.4. The planning for Irvine Center appears to be aimed toward a somewhat greater degree of physical integration than Newport Center, although the separation of activities and ample provision for the automobile is still very evident. This complex is expected to contain the world's largest shopping complex and will include some 8 million square feet of total floor space when completed. The site is 470 acres and is bounded by freeways on three sides. Figure 3.4 shows the general concept that is being used to guide the physical development plan for the site and a description of the initial $80 million shopping mall that will be constructed in 1979-80 is shown in Figure 3.5. An artist's conception of how the center might look when fully developed is also shown in Figure 3.5. The Irvine Company estimates that there will be approximately 550,000 people living in the market area served by Irvine Center in 1990 (up from 300,000 in 1979).

Phase I of the development will include a two-story shopping mall anchored by the five major department stores and a 350-room hotel. When it opens in 1980, the mall will contain more than 100 mall stores, shops and restaurants along its climate-controlled walkways. Ultimately, as Phase II doubles its size, the mall will stretch a quarter of a mile, with eight department stores and more than 200



· Figure 3.4 Irvine Center Location Map and Planning Concept Diagram



IRVINE CENTER

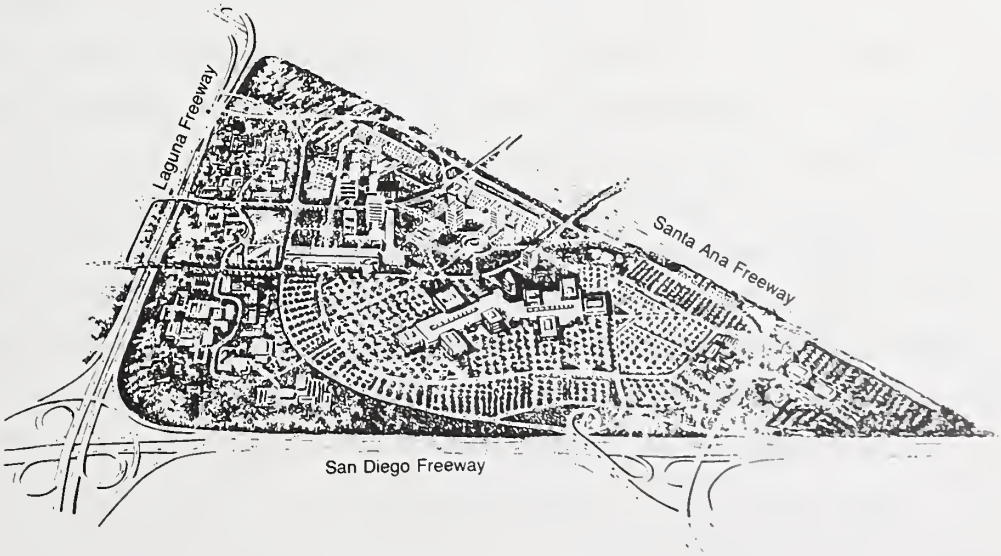


Figure 3.5 Irvine Center Stage I Shopping Mall Plan and Sketch of Overall Development Concept

mall stores. Office and apartment buildings are planned for other parts of the site. Internal roadways will be divided into one-way arterial parkways which will encircle the Center's building complexes. The one-way circular pattern will accelerate traffic flow and improve access to various sectors of Irvine Center, allowing only right hand turns from the perimeter.

The site is directly adjacent to a major stop on the proposed high-speed transit system serving the Los Angeles-San Diego corridor. At this time, it is not known when this service may come into being but a link between this station and the Irvine Center complex could significantly increase the transit accessibility of the center. As shown in Figure 3.4, both inter-city and intra-city transit corridors are being included in the plan so that a variety of means of transit access will be available.

Eventually, the development may include Tivoli Court, which is billed as an architectural and commercial innovation. It would have an array of restaurants, theaters, concert areas, recreational attractions, meeting rooms, cultural attractions and lounge areas to meet a variety of demands. It would be expected to become a major feature of night life in Orange County and would help Irvine Center become a dynamic focal point for interrelated commercial, business, civic recreational and cultural activities. The concept is in keeping with the notion that the more services and attractions offered in one central location, the greater the benefit, both economically and personally, for both the merchants and patrons of the center. In essence, it is being designed to bring "downtown" to the outer city in a more highly evolved form. The Irvine Company estimated in 1977 that when fully developed, Irvine Center would contain approximately 19,000 jobs. This means that Newport and Irvine Centers would be about the same size in terms of number of jobs when fully developed. They would be substantially smaller than the centers being proposed in Toronto (i.e., 30,000 - 40,000 jobs) but then they are being located in a much less dense area. The Taubman Company of Detroit purchased Irvine for $337 million in 1978 and the new owners will undoubtedly make some changes in the plans developed by the Irvine Company. What these changes will be is currently unknown.

The other centers which have been built or are planned in Irvine are much smaller and are designed as convenience centers for the residential areas that have been constructed so far.

b. Serious about concept (Toronto, Ontario; Vancouver, British Columbia; Denver, Colorado; Miami, Florida; New York, New York)

(1) Toronto, Ontario. The polycentric city concept has been examined quite extensively in Metropolitan Toronto. This work has been accomplished by the Planning Department of the Municipality of Metropolitan Toronto during 1975 and 1976. The main product of this effort to date is a document called Metroplan: Concept and Objectives, which was published in May 1976 as a part of their effort to develop a plan for the urban structure of Metropolitan Toronto. This publication was designed to provide a basis for public discussion of land use concepts and objectives prior to the adoption of an "official plan" late in 1978. The fundamental concept of the proposed plan, expressed in physical terms, is to create a multi-centered urban structure. These multiple centers would be linked together by the transit system and commercial employment and higher density housing would be concentrated to the greatest extent possible in the designated locations. The rationale for the proposed plan is stated as follows [8, p. 4]:

1. It relieves the pressures for development now on the downtown core and concentrates the dispersed commercial enterprises into a manageable number of development nodes that can be effectively serviced by Metropolitan Toronto.
2. It ties together new employment opportunities and housing in a way that provides increased opportunity for people to live in close proximity to their jobs.
3. It broadens and enriches the economic and social base of the area municipalities by encouraging a range of activities that traditionally are found only in the Downtown.
4. It reinforces the transit system, and provides for improved mobility for everyone throughout Metropolitan Toronto.
5. It helps to ensure that services provided by both private and public agencies are accessible to the total population.

A diagram of the transportation and activity center elements of the proposed plan is shown in Figure 3.6. The designated centers include the Downtown, two major outlying centers and 13 intermediate centers. As can be seen, all but three of the 16 centers included in the plan are to be provided with direct transit access. At present, only eight of these 16 locations have direct transit access.

The plan proposes that the Downtown remain as the dominant focal point for the Toronto region and continue to be the primary location of government,

corporate head offices, financial and other major institutions, retail trade and other activities. It would also maintain its pre-eminent position in the artistic and cultural life of Metropolitan Toronto. Two major outlying centers are proposed, shown as S (Scarborough) and NY (North Yonge) in Figure 3.6. It is proposed that each of these centers accommodate between thirty thousand and forty thousand office/retail jobs by the year 2000. They are to be developed as more than concentrations of commercial activity by becoming focal points for government services, culture and entertainment. They would offer many of the services now found only in the Downtown. In addition, thirteen intermediate centers are proposed that would have employment concentrations of between five thousand and ten thousand office/retail jobs by the year 2000.

In developing this plan, the planners in Toronto have conducted a substantial set of inventory, analytical and forecasting studies that have provided them with a solid basis for the development of their proposed plan. Much of this work is reported in a January 1976 document entitled, The Central Area and Sub-Centres [7], prepared by the Long Range Planning Division of the Planning Department of Metropolitan Toronto. A brief review of the key parts of this analysis will now be presented.

The major issue addressed in the study was the future of Downtown Toronto. As of 1974, there were about 360,000 jobs located in the central portion of the City of Toronto. About 150,000 of these jobs were located in the area defined as the "core" of the Downtown (see Figure 3.7). A major concern was the ability of the transportation system to support the further growth of this area. The subway system is presently operating at near capacity levels and the highway system serving the Downtown is quite congested during much of the day. It would be very expensive to increase the capacity of either the transit system or the highway system and so the question of limiting the further growth of the Downtown has become a key issue. Studies were made that showed that the subway and surface transit system could carry even greater volumes if operated even more intensively than now. The Metropolitan Toronto Transportation Plan Review concluded, in 1975, that the "committed" transportation system could accommodate a level of 435,000 jobs (plus or minus ten per cent) in the central Toronto area. Projections indicate that it is unlikely that the maximum employment in the central area would go beyond 460,000

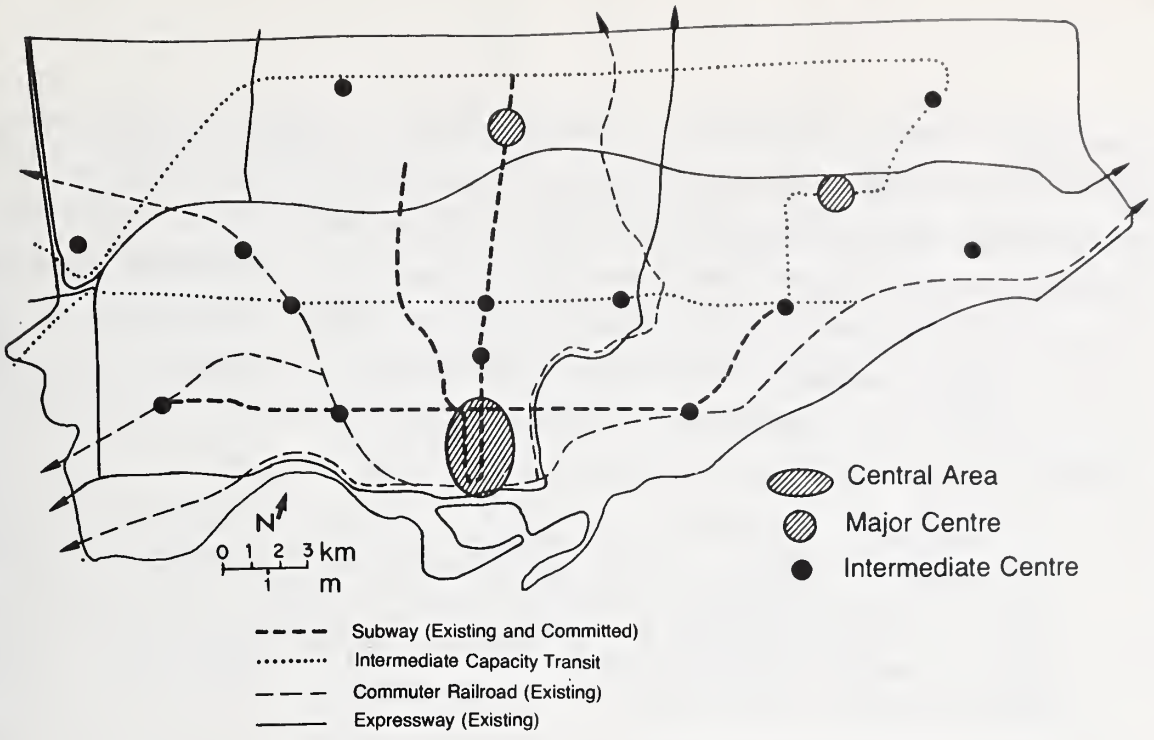


Figure 3.6 Transportation And Activity Center Elements of Proposed Plan For the Urban Structure of Metropolitan Toronto, May 1976

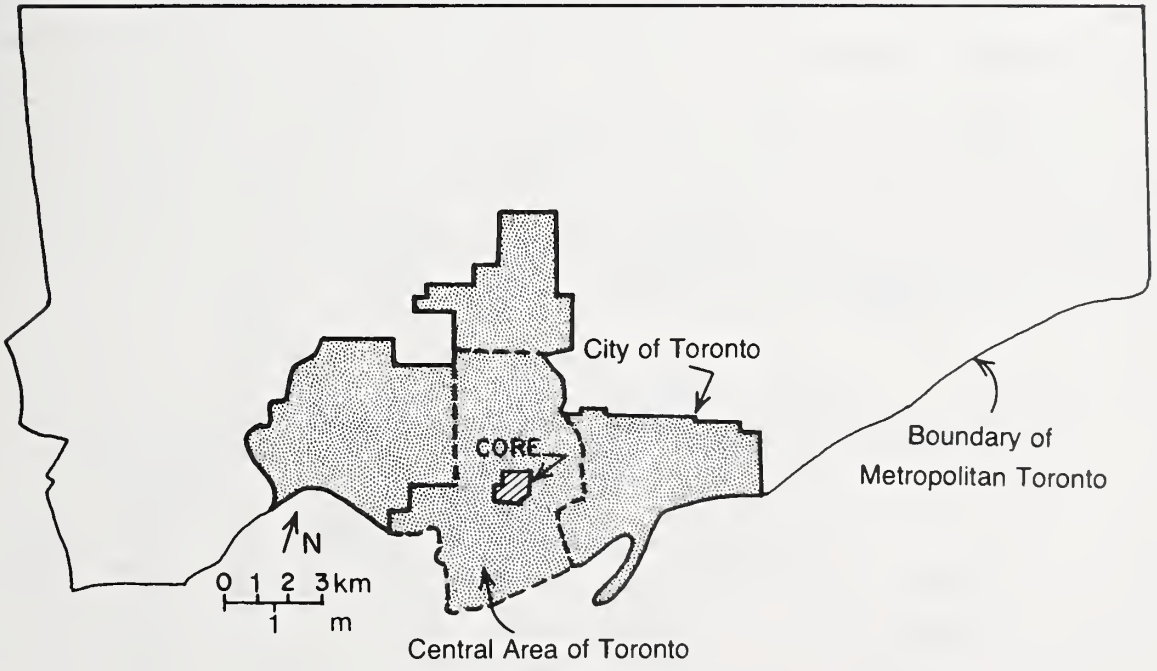


Figure 3.7 Planning Areas in Metropolitan Toronto

jobs before 1986. Therefore, it was concluded that there would not be any major problems with respect to the ability of the transportation system to accommodate an employment growth of up to 100,000 new jobs in the central area by that time. However, the capacity of the transportation system to accommodate this quantity of growth was only one of the concerns that the planners addressed. Other impacts of the further growth of the Downtown were identified in a series of studies called the Central Area Plan Review undertaken by the City of Toronto. In broad terms, these impacts were defined as:

> "... increasing congestion for users of both public and private transportation, a tendency towards specialization with a resulting lack of diversity in the Downtown, the disruption of residential areas, a decline in environmental and aesthetic quality and a number of related social concerns dealing primarily with issues of housing type and the adequacy and availability of social services." [7, p. 10].

Much of the reaction against the further growth of the central area has been directed at the increase in office development that has occurred in recent years. The planner's response to these conditions has been to examine ways that office growth in the central area could be slowed in the future so as to prevent the overuse of the transportation system and the further loss of Downtown housing. The main issue thus became "centralization" versus "decentralization" and the planners proceeded to analyze the benefits and costs of these two options.

A first step in the analysis was the development of data on past trends in the service sector of the economy of Metropolitan Toronto and its environs. It was found that both the central area and the rest of Metropolitan Toronto (see Figure 3.7) have experienced substantial growth in office space between 1964 and 1970. The growth figures are shown in Table 3.5.

TABLE 3.5

Total Office Space, Central Area and Rest of Metro, 1964, 1974
(millions of square feet)

	Central Area	%	Rest of Metro	%	Total	%
1964	14.1	75	4.7	25	18.9	100.0
1974	30.8	68	14.4	32	45.2	100.0
Increase	16.7	64	9.7	36	26.3	100.0
% Increase over 1964	108		205		140	

Source: Adapted from Table 2.1 [7]

As can be seen in Table 3.5, the central area was still the dominant location for office space in 1974 although its share of the Metro total declined from 75% to 68% in the 1964-74 period. During the same period, office space growth in the rest of Toronto increased by 205% over 1964 levels. These figures indicate that some relatively strong trends toward the decentralization of office activities are already well underway in Metropolitan Toronto.

The location of office activity in Metro is tending toward a dispersed but clustered pattern as shown in Figure 3.8. Some of the outlying office employment is housed in high-rise buildings although low-rise office buildings are much more numerous in most locations.

Data for the retail employment sector were also examined. Table 3.6 shows that retail employment trends show more decentralization than do office trends in that the City of Toronto's share of the Metro total declined from 50% in 1966 to 45% in 1971. If this rate of decline is typical of a ten-year period, it may be that the central city share of Metro's retail employment declined by about 10%. As might be expected, much of the 1966-71 retail growth occurred in shopping centers as opposed to strip retail. In 1966, about 34% of all retail space in Metro was located in shopping centers. In 1971, this figure had risen to 40%.

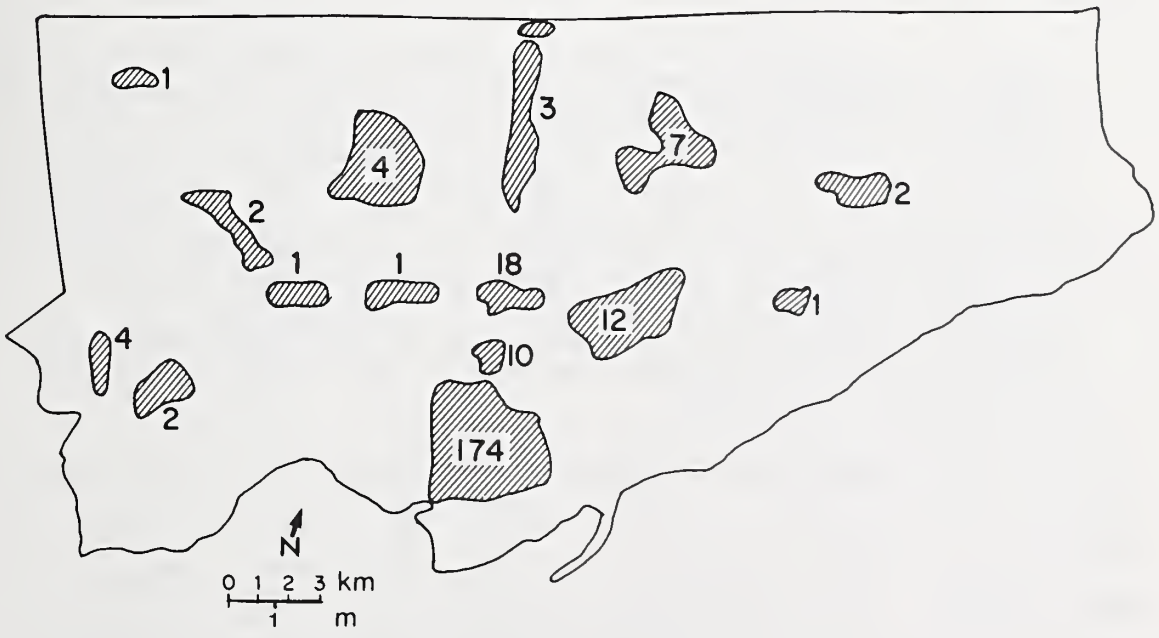


Figure 3.8 Office Employment Concentrations in Metropolitan Toronto, 1974, in Thousands of Office Jobs

TABLE 3.6

Retail Floor Space, City of Toronto and
Rest of Metropolitan Toronto, 1966, 1971
(millions of square feet)

	City of Toronto	%	Rest of Metro	%	Total	%
1966	15.3	50	15.6	50	30.9	100.0
1971	15.5	45	18.7	55	34.2	100.0
Increase	0.2		3.1			
% Increase over 1966	1		20			

Source: Adapted from Table 2.2 [7]

Data from other parts of the service employment sector were unavailable but substantial evidence of growth in hotels, cultural and entertainment facilities and institutions in outlying areas was also found.

Together, these inventory studies showed that an increasing proportion of service employment activity is locating in the Metro suburbs. Since the service employment sector is expected to be the fastest growing sector of the economy, the location of this new growth was identified as a key public policy issue to be addressed by the land use plan. This concern is succinctly expressed by the planners as follows:

> "If in the future the tendency toward scattered suburban service sector development is permitted to continue, then the potential to provide a high level of Metropolitan services and local amenities would be severely reduced. The very large number of emerging small centres and office strips would be weak and would not provide the broad range of activities required, as a focus either for business and institutions or the local community. These centres would be difficult to serve by public transit with the result being an increased reliance on the automobile for suburban travel. An important objective will, therefore, be to distribute and organize suburban development in order to improve its future amenity and efficiency." [7, p. 29]

With this perspective in mind, the next task was to develop some projections of the growth of the service sector of the economy to provide a basis for developing some ideas regarding its spatial organization. Two major forecasts were developed. One was based on assumptions that a "centralization" policy was adopted. The other was developed using assumptions consistent with the use of decentralization-type policies. The results of these two forecasts are shown in Table 3.7.

TABLE 3.7

Employment Growth and Distribution Forecasts

Metro Toronto, 1974 to the Year 2001

Decentralization Option

	Increase in Office and Retail Employment	% Total	Increase in Total Employment	% Total
Central Area	95,000	36	103,000	24
Rest of Metro	168,000	64	330,000	76
Total	263,000	100	433,000	100

Centralization Option

Central Area	200,000	57	243,000	52
Rest of Metro	150,000	43	225,000	48
Total	350,000	100	468,000	100

Source: Figure 4.4 [7]

These projections indicate, first of all, that a substantial amount of economic growth is expected during the 1974-2001 period and so the question of where this growth should be located is definitely non-trivial. Secondly, under either option, a substantial amount of growth in the office and retail sector is expected to occur outside the central area of Toronto (i.e., decentralized = 168,000; centralized = 150,000). When dealing with this amount of growth, the creation of outlying centres becomes a possibility regardless of the type of overall strategy that is finally adopted.

With this perspective in mind, the next task was to examine all existing outlying centres to determine which of them had the most potential for accommodating substantial quantities of growth during the 1974-2001 time period. Initially, some 65 locations were considered as potential centres. These locations were then screened and 24 were selected to see which possessed the attributes needed to become a major office/retail cluster. The following criteria were used in this evaluation process [7, p. 86]:

1. Availability of vacant land
2. Potential of existing uses for redevelopment
3. Existing road and public transit access

4. Accessibility to Downtown
5. Extent to which central area type activities were already locating in the same area
6. Compatibility of sub-centre development with adjacent land uses
7. Current municipal development policies

Next, the planners considered the needs of both public and private land developers and examined each area from these two viewpoints. From this analysis, the 24 locations were classified into four categories: high development potential (11), medium development potential (5), low development potential (4), and special cases (4). The eleven areas with high development potential were then examined in great detail while the medium and low potential areas were examined in a somewhat less intensive manner. These investigations produced a substantial base of knowledge upon which to develop some planning concepts regarding the selection of a limited number of growth centers. To supplement this knowledge of existing conditions, the planners commissioned a background study entitled The Potential Distribution of Service Industries which was designed to probe more deeply into the location decision-making behavior of the service industry. A large number of interviews were conducted as part of this study to develop information on the past behavior of developers and users of office/retail space so as to aid the selection of growth centers that would be consistent with market trends.

Three classes of activity centers were defined as shown in Table 3.8 (adapted from Figure 6.1 [7, p. 105]). Each of the 24 locations was examined to determine to which of these three classes (i.e., major centre, district centre and local centre) it should be assigned. It was then determined that about 100,000 of the total new growth in suburban office/retail employment could be considered to be "available" for the structuring of development according to a particular development concept. At this point, the planning problem became one of allocating these 100,000 jobs such that the public interest is maximized. Seven different allocation concepts were formulated and evaluated as follows: (1) Downtown emphasis, (2) bi-modal (Downtown and one other major centre), (3) hierarchy of centres, (4) corridor emphasis, (5) dispersion, (6) dispersed but clustered and (7) regional decentralization. These concepts are illustrated in Figure 3.9. Each was examined in some detail. The hierarchy of centres concept was found to be most satisfactory and was the basis

TABLE 3.8
Classification of Activity Centres

1. MAJOR CENTRE

Basic Function

These centres represent the main central cores of the respective municipalities. They are designed to serve at least the total municipality in which they are located. Movement to them is usually of a comparatively long distance either by private car or public transportation.

Examples of Activities

Offices: Private: Major office buildings. Governmental: Local (perhaps main municipal offices), provincial and/or federal.
Institutional Activities: Health and welfare services; major libraries.
Retailing: Major shopping centre with large department stores and food stores.
Business and Personal Services: Banks, post office, restaurants, etc.
Cultural and Entertainment Activities: Movie theatres, restaurants, etc.
Size: Office Employment: approximately 10,000-40,000 square feet
Retail: 400,000+ square feet of gross leasable area*

2. DISTRICT CENTRE

Basic Function

These centres fall somewhere between those serving regional and those serving local needs. They are not designed to serve a complete municipality, yet they are larger than local in terms of their service area.

Examples of Activities

Offices: Private: Perhaps one or two major office buildings with other office space on second floors, etc. Governmental/Institutional: Branch health and welfare offices; branch libraries.
Retailing: Moderate sized shopping centres, junior department stores, food stores, etc.
Business and Personal Services: Banks, restaurants/coffee shops, cleaners, etc.
Size: Office Employment: approximately 5,000-10,000 square feet
Retail: 150,000+ square feet of gross leasable area*

3. LOCAL CENTRE

Basic Function

These centres are to provide for local needs and services. They would normally be reached by short auto trips or on foot.

Examples of Activities

Offices: Private: Medical, dental, and legal services based on local practices; insurance and real estate, etc.
Retail: Convenience stores
Services: Cleaners, hair care, etc.
Size: Office employment: approximately 1,000+
Retail: 50,000 square feet of gross leasable area*

*From The Dollars and Cents of Shopping Centres, 1969; Washington, D.C., Urban Land Institute, quoted in: Shopping Centres, 1971; Ontario Association of Ontario Land Economists.

Source: Figure 6.1 [7, p. 105]

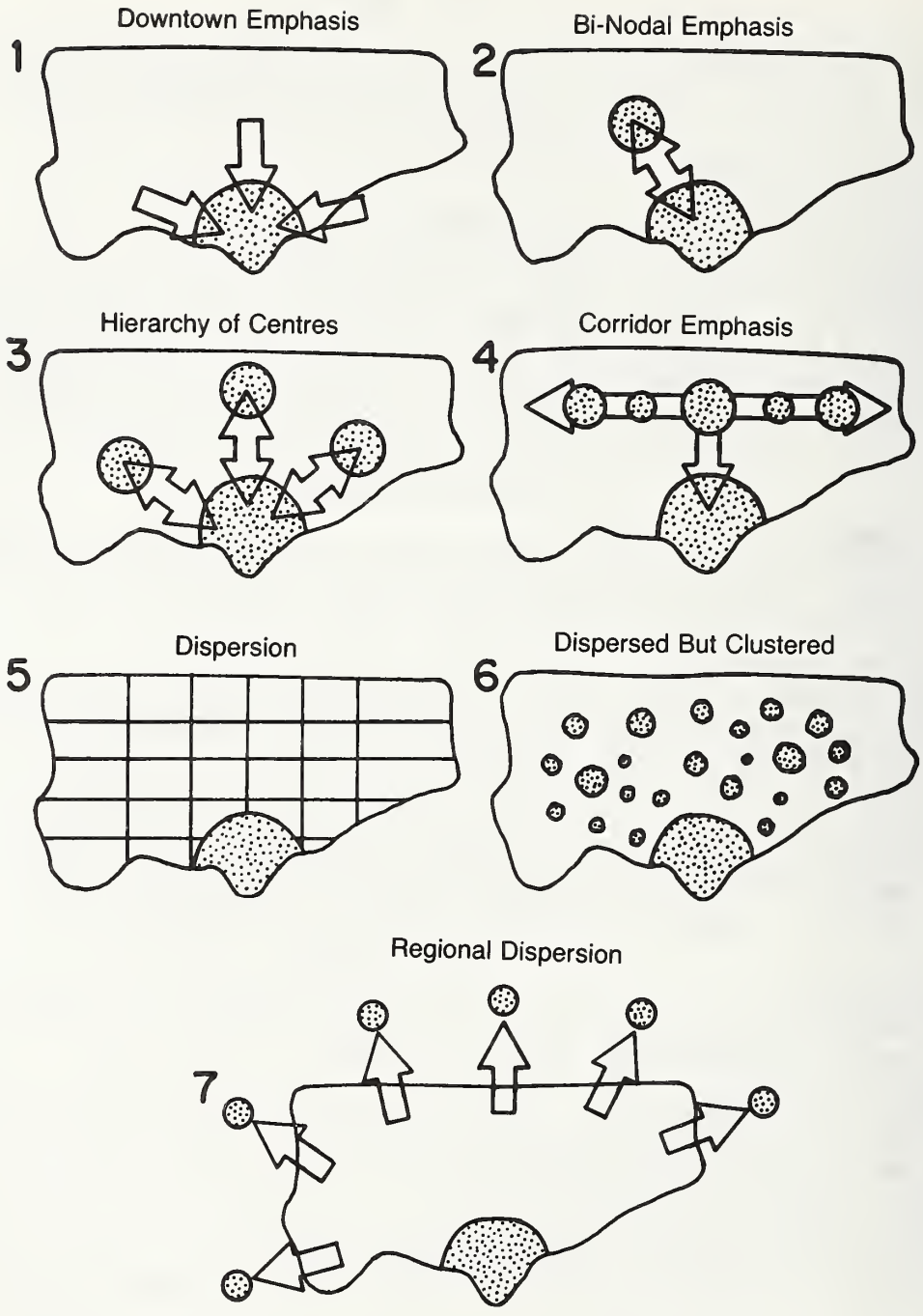


Figure 3.9 Alternative Future Employment Distribution Patterns Examined in Metropolitan Toronto

for the proposed plan that was published in May 1976 [8]. This plan calls for the establishment of two large outlying centres together with thirteen district centres. The Downtown would continue to grow but at a slower rate than has been experienced in the past.

Overall, the plan does not call for a radical restructuring of the present office/retail employment distribution in Toronto for the year 2001. As shown in Table 3.9, if the plan is achieved, the Downtown would still be the largest office/retail centre in the region as the two new major centres would be only about one-eighth or one-ninth as large. Still, to achieve the growth objectives in the two major centres will require a 648% growth over a 27-year period, which is far in excess of what would normally be expected in the absence of a strong public policy supporting and encouraging such growth to take place. The 1974 distribution and the allocations of the growth of office/retail employment among the thirteen centres that are proposed in the plan are shown in Figure 3.10.

TABLE 3.9

Proposed Office/Retail Employment Distribution, 1974 and 2001

	1974	% Total	2001	% Total	% increase over 1974
Central Area	210,000	77	318,000	63	151
2 Major Centres	10,800	4	70,000	14	648
13 District Centres	53,400	19	120,000	23	225
Total	274,200	100	508,000	100	185

Source: [7, p. 89]

The final section of the study discusses the various ways that a multi-centered urban structure for Metro Toronto can be achieved. The principles of implementation that were developed are as follows [7, pp. 131-132]:

1. Number. Since there are limits to the number of activities that would find it appropriate to locate in sub-centres, it is important to ensure that individual locations do not suffer undue competition in attempting to attract central area types of activities. Therefore, the total number of major centres designated for development should be small.

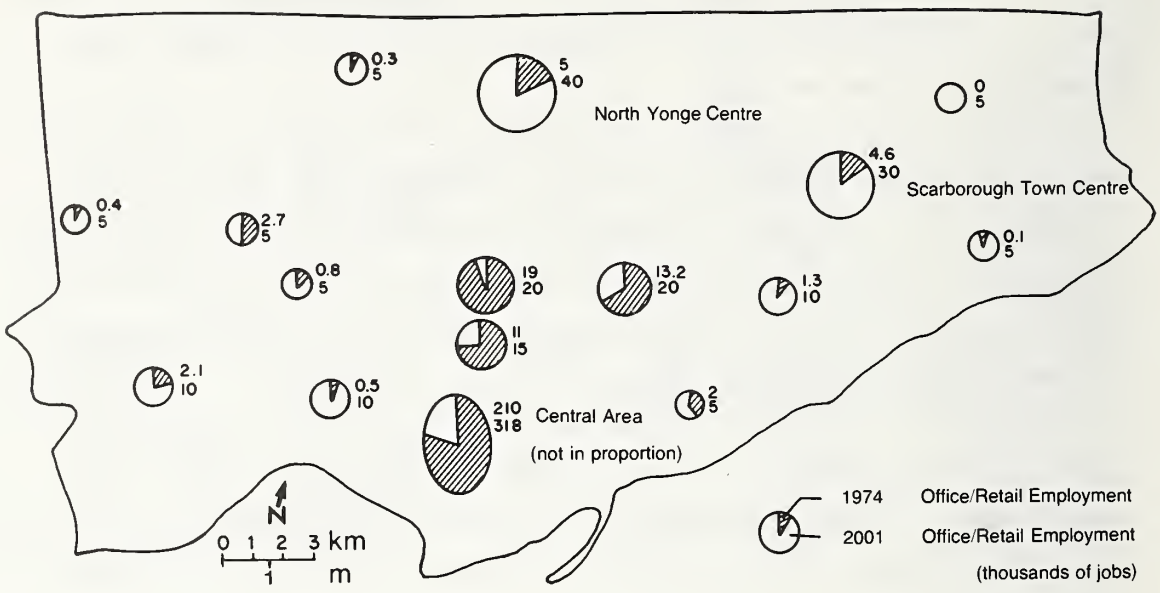


Figure 3.10 Office/Retail Employment at Proposed Centers in Metropolitan Toronto

2. Size. A minimum or threshold size of employment should be established for major sub-centres so that they have an influence on travel patterns and are capable of supporting a range of amenities and services. Reaching a threshold size means that a centre then has momentum to continue developing even when faced with strong competition from other locations.
3. Uses. While size will vary with respect to the particular characteristics of individual locations, each major centre should generally include offices, educational facilities, community services (such as shopping and banking), cultural and recreational facilities, and some health services. Given a significant residential component compatible with the expected employment range of each particular centre, its threshold size in terms of employment could be reduced. The availability of housing also influences the location of certain types of activities that prefer to remain close to residential

areas in order to have proximity to a labour pool and adds a measure of vitality to the centre.

4. Accessibility. A major requirement for sub-centres to grow in central area functions is high quality transportation service between the sub-centre and Downtown. This is important in order to support interaction between businesses. Designated centres should also be tied into the overall transportation network so as to permit the centre to take advantage of its surrounding market or catchment area.

5. Transportation Focus. Closely tied to the provision of major transportation facilities is consideration of the supporting feeder network. In order for the designated sub-centres to develop as a focus for the local community it is desirable that the transit system locally be tied into and integrated with the major system at sub-centres. Both major and minor centres as designated would thus become transportation foci of "local transit" systems.

6. Density. An implication of both the concentrated form of development and the transportation requirements of sub-centres is that the densities of development be such as to support a wide range of central area functions and the necessary improvements to the transit system. While densities will vary according to the characteristics of particular sites, in general it will be desirable to concentrate most development within walking distance of public transit. Therefore, the densities of development will need to be higher than normally experienced in the suburbs. Higher densities are also most important to clearly demonstrate the economic opportunity of centres when contrasted with the very significant amounts of land which are commercial but outside of centres.

7. Restrictions. Apart from designating and supporting only a small number of major centres, it may be necessary to ensure that developments in other locations do not prejudice the growth of these centres. A weakness of both the Metropolitan and Area Municipality plans has been that they did not foresee the quite large amounts of office development that occurred on land designated for industry which permitted offices. The result has been the scattered pattern

of office development that now exists in many industrial areas, particularly those well served by highways. While the core area of Toronto often receives a great deal of attention in terms of discussions on imposing restrictions on office development, it may be equally (if not more) important to introduce policies which would limit office development in suburban areas outside the designated sub-centres. One possibility would be for office development on suburban industrial lands to be permitted only when ancillary to an industrial function on the site, so as to encourage growth at the designated centres.

These principles were then applied to the specific locations that were proposed as major centres. It was recognized that there are both direct and indirect approaches to implementation and that both types of approaches would have to be pursued in order to achieve the growth objectives for these centres. The direct approach utilizes the powers of local government to regulate the use of land through zoning and other regulatory practices. It also includes the direct investment of government in facilities that provide part of the infrastructure needed by the centres (e.g., transit, schools, community centres, etc.). The indirect approach is more persuasive in concept and consists primarily of providing information to developers and others who make the actual location decisions for new developments or for relocation actions. While many of the implementation concepts discussed are peculiar to the Metro Toronto situation, some have general applicability and are as follows [7, p. 150-151]:

1. Through intergovernmental liaison, the regional agency can communicate its objectives to other levels of government that possess powers which can be used to influence the distribution of central area functions.
2. Development of data which can describe the development potential of each of the designated sub-centres including items considered to be of greatest interest to potential developers.
3. Establishment of an agency which would act as a central coordinating or clearinghouse to aid and advise firms who are seeking a location within the region.
4. Formation of a committee, made up of a variety of people, which would be responsible for encouraging and coordinating the development of sub-centres.

5. Establishment of a metropolitan company which would be responsible for the development of major sub-centres. The responsibilities could include the purchase of land and subsequent planning and development of centres.

The lack of specificity regarding the implementation feasibility of the multi-centered concept has been vigorously addressed by John Sewell, an alderman from the City of Toronto and a member of the Metropolitan Council. Sewell, in an article in the Globe and Mail [10] suggests that the Metropolitan Government help to assure the success of the multi-centered concept by constructing office buildings in the new Scarborough center itself. These buildings would be leased at low rates for about five years to provide an extra incentive to service activities to locate there and at normal (market) rates thereafter. He suggests that this investment would pay for itself in 20 years and would therefore not cost the taxpayers anything. Sewell contrasts this "direct" approach to implementation with what he calls the "indirect" approach. The indirect approach involves the construction of a transit connection between the current Toronto subway system and the Scarborough Centre site. He claims that this expensive transit connection will do little to aid the growth of the Scarborough Centre and is not the best way to invest scarce public funds in support of a decentralization policy. Instead he argues that:

> "Transit will be required from residences to the new offices, and in Scarborough this would involve bus lines radiating out from the Town Centre to all residential areas in Scarborough. The first and most direct link would not be to the downtown." [10]

Sewell suggests that the Metro Council spend up to $20 million a year for the next five years to achieve decentralization in a direct fashion. He states that the money should be spent to build office space exactly where the plan says it should be built. This would, in his opinion, be much less risky than using public funds to construct a downtown transit connection in the hope that it would induce private developers to construct the desired office buildings in the desired locations at the desired time.

An additional report on Toronto's decentralization plan has recently been published. This report is from the Committee on Decentralization, which was created by the Toronto City Council in May, 1977. The Committee studied the demand for office space in certain locations, the factors involved in decisions

about office space locations, and planning strategies which could be used to shape the location of office space. In assessing current office space and users, the Committee found four distinct office space configurations: the downtown, the node (or sub-centre), the office park, and dispersed development. The findings of the Committee report [4] will be described below.

There were three principle areas which the Decentralization Committee focused on. These were the criteria for a successful centre, the role of governments as space users, and the potential of office parks as centre sites. Regarding the criteria for the creation of successful nodes, the Committee formulated a list of twelve inter-connected guidelines which will hopefully be used in the development of the Scarborough and North Yonge sites (see Table 3.10). The guidelines address such issues as the size and mix of developments, auto accessibility, densities, and the proximity of housing. In the second area of findings, the Committee expressed the idea that large scale occupancy of centre sites by government might be detrimental. It was found, for example, that many companies feel that governments as office space users are "undesirable" neighbors. The consensus seemed to be that governments were not a magnet for other office users, and that if government uses were dominant, some businesses could be expected to locate elsewhere. This conclusion is counter to the views held by the Scarborough Centre planners.

The third set of findings of the Committee report relates to the potential of office parks as centre sites. Their survey revealed that in the last decade suburban office space users expressed a strong preference for office park locations, instead of nodal locations. Given that this preference exists which is contrary to the Metroplan policies, the Committee suggests that improving office parks (by making them have some of the features of a centre) may be the best way to implement the decentralization policies. Though they think it is unlikely that office parks could ever become nodes, the Committee did conclude that some improvements can be made to existing and planned office parks which would bring them more into line with the Metroplan objectives.

These results were incorporated into the most recent version of the Toronto plan [9] in the form of a revised centers map and a map of designated office parks (see Figure 3.11). By comparing the previous centres map (Figure 3.6) with the most recent centres map (Figure 3.11), one can see that the number of intermediate centres has been reduced from 13 to 7 by elimination of some locations. Otherwise, the two maps are identical. The new of-

TABLE 3.10

Guidelines for a New Node

Certain guidelines should be followed to encourage a successful node. These guidelines are set out below, and do not require individual elaboration. These guidelines consitute a package - that is, they are cumulative rather than separate.

1. The comfort and convenience of the pedestrian is of paramount importance in the design of the node. Space designed at a human, pedestrian scale, minimizing and/or eliminating physical and psychological barriers within the node is preferred. Building facades at the street level should be continuous, and streets designed so that the pedestrian can perceive that crossing from one side to another is both easy and safe.

2. A wide range and number of services is desirable and perhaps necessary to help make the node relatively self-sufficient for office workers. Services should include a variety of eating establishments and retail stores, plus entertainment, recreation and personal services. Hotels provide useful amenities for businessmen and employees. The larger a node, with more varied and numerous services, the more it is a magnet: the reverse is also true.

3. Residential densities, greater than normal suburban densities, will be required adjacent to the node to help support a wide range of services. This could be in the form of relatively dense house form buildings (at densities of at least 50 persons per net residential acre) or in the form of higher density apartment structures. It is important to provide a catchment area of residential uses that will rely on the services offered in the node. Success in creating a node is more likely in a location which already has a catchment area of residential uses supporting a range and variety of existing services.

4. A straightforward street system is required for a successful node, with many short blocks, and streets forming the basis of an easily understood public space system. As well as a good internal movement system, the node will demand streets which link up with an arterial road network.

5. A compact node is much more likely to be successful than one that is spread out. Compactness implies that new construction is on land as close as possible to existing development. Since surface parking lots detract from compactness and thus pedestrian amenities, parking should be encouraged above or below grade.

6. Good auto access is required in all directions since the private car is used for many business trips to other parts of the Metropolitan area, and is required when there is more than one destination in a

(continued)

particular trip. Transit is required for many employees, and the modal split will increase in favour of transit as the node grows. A node has a greater chance of success if it is in the middle of an active trading area, rather than at its edge.

7. A successful node requires adequate land designated for office development, yet not so much that the node is not compact. Success is most probable if a nodal location is chosen where there are existing retail and service uses, where there is a good base to build on.

8. Office space densities in the node should be set at a level high enough that sites developed early in the life of the node will not need to be redeveloped for at least 30 years, and also high enough that at the 20,000 employee level the node will be relatively compact. Perhaps no density limitations should be set to ensure the development of a successful node: in fact, it is probably important to require "as of right" density at a minimum of 4.0 x coverage.

9. Nodal development is incremental, and as it reacts to a changing and political economic climate, is spasmodic, reaching maturity in a minimum of one decade, and more probably over a twenty year period.

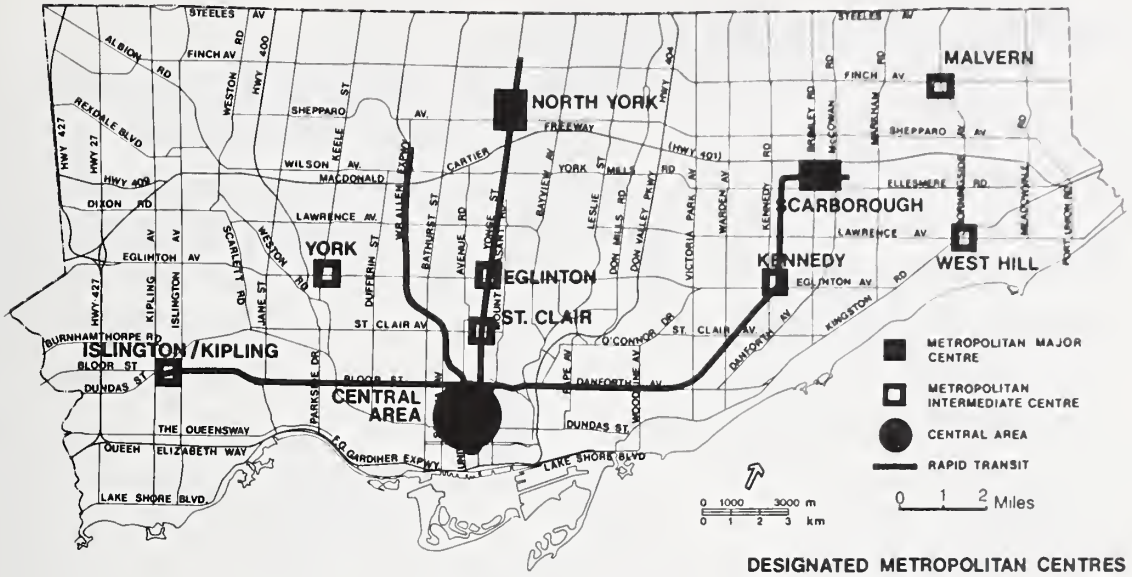
10. The proximity of housing serving executives and/or the location of social facilities serving executives will help to ensure that the node will become successful.

11. It is important that residents, politicians and planners have the understanding of the elements of a successful node and a very positive desire to create a successful node. If neither quality is present, or if nodal development is agreed to only reluctantly, it is possible that qualifications will be imposed that severely limit the opportunities for nodal development.

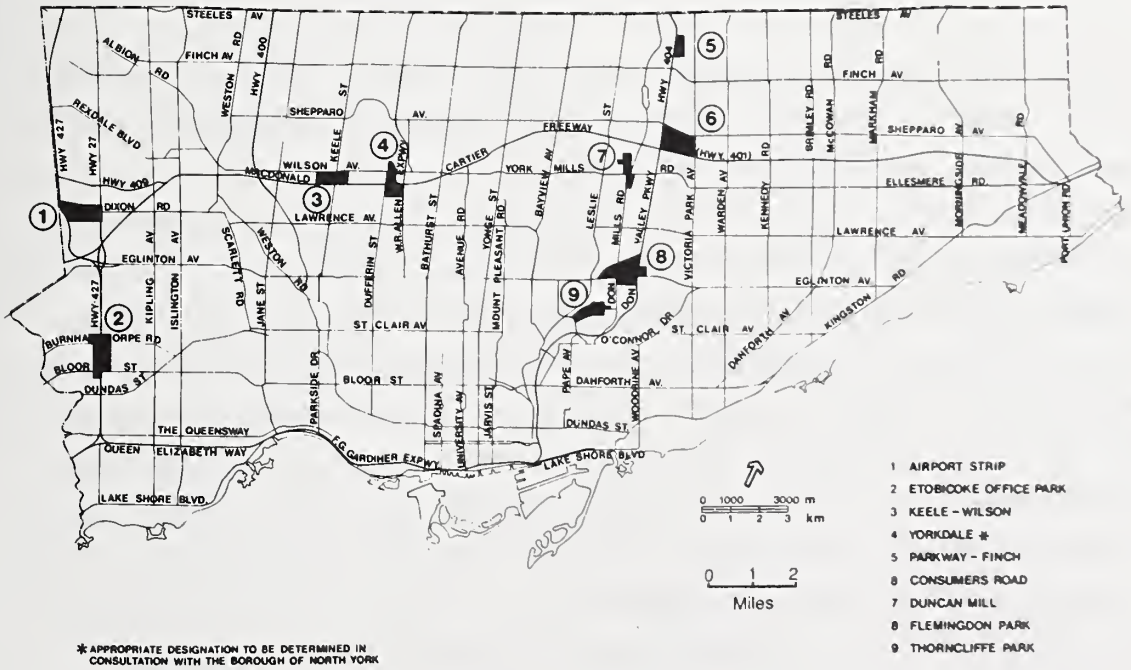
12. None of these guidelines can really stand alone. The successful node is a combination of the factors set out above.

Source: [4, pp. 12-13]

Figure 3.11 Designated Metropolitan Centres and Office Parks



DESIGNATED METROPOLITAN CENTRES



* APPROPRIATE DESIGNATION TO BE DETERMINED IN CONSULTATION WITH THE BOROUGH OF NORTH YORK

DESIGNATED METROPOLITAN OFFICE PARKS

fice park map recognizes the size and importance of several existing concentrations of office activity.

Assessment of the Proposed Toronto Plan

As discussed previously, the Toronto plan has been developed in a very rigorous and orderly fashion. As unusually good set of background studies were undertaken and the data on existing conditions and past trends that were developed is more extensive and detailed than is typically found in many American regional planning agencies. In essence, the Toronto planners have an excellent knowledge bases upon which to develop the concepts which led them to recommend the selection of a multi-centered land use plan. Their data show that the operation of the urban land market has produced strong decentralization tendencies within the service employment sector that are likely to continue for some time into the future. The proposed plan does not counter these trends, it suggests only that they can be "shaped" to the benefit of all concerned. In the absence of any plan designed to guide the location of service employment activities, the market would probably continue to produce the same highly dispersed and scattered patterns that it has produced during the past twenty to thirty years. The Toronto plan would attempt to constrain the operation of the market by guiding a high proportion of location decisions into one of its nineteen centres. Obviously, both incentives and disincentives will be required to accomplish these objectives and they have yet to be worked out in detail. This would be done after the plan is adopted officially, an event that is expected to occur in the Fall of 1978.

The role of transit in creating the two new major centres is thought to be of great importance by the Toronto planners. One of the new centres (North Yonge) already has an operational subway station located in its midst. The other new centre (Scarborough) is not presently connected to the Toronto subway system. However, as shown in Figure 3.12, the subway is being extended toward Scarborough and a substantial feasibility study has just been concluded that examines the idea of connecting Scarborough to the Toronto subway with a light rail transit (streetcar) line [5]. There is considerable difference of opinion in Toronto about the wisdom of providing this transit connection between Scarborough and Downtown Toronto so early in the evolution of the new Scarborough Centre. There is also considerable controversy about other aspects of the transit development strategy that has been proposed to help implement the multi-centered land use plan.

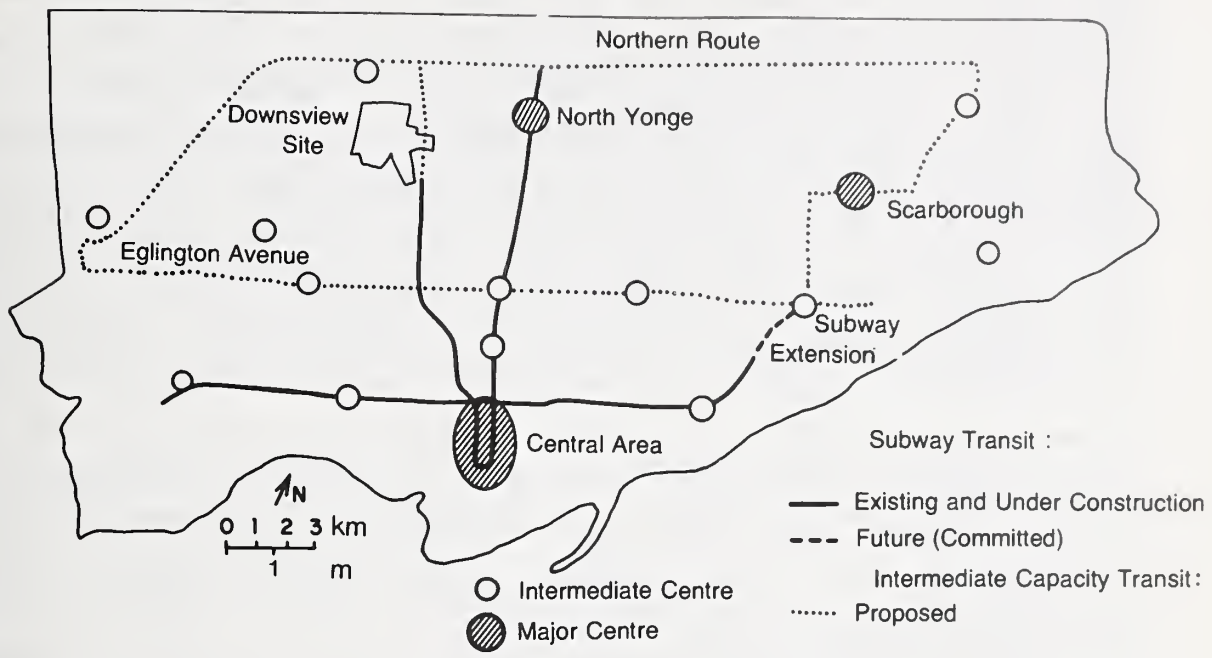


Figure 3.12 The Transit Development and Activity Center Elements of the Proposed Plan for the Urban Structure of Metropolitan Toronto

Opponents of the proposal to build a light rail transit line soon between the Scarborough Centre and the outermost subway station argue that it would tend to inhibit or slow the growth of the new center. Why would people want to locate in Scarborough when they can ride rapid transit to Downtown Toronto in relative comfort? Others point out that two transfers would still be required to reach Downtown Toronto from Scarborough and that the trip would be so long and inconvenient that the availability of this transit service would not detract significantly from the growth potential of Scarborough vis-a-vis Downtown Toronto. The basic question seems to be: should local transit service, focused on the new Scarborough Centre, be constructed prior to a link with Downtown Toronto? Opinions on this question vary widely and it is still in the process of being examined by a variety of persons.

A second major issue concerns the provision of a new major east-west transit line along Eglinton Avenue. This line would not be a subway but would be an intermediate capacity transit service (e.g., light rail transit or some type of automated guideway transit). The line would connect four district

centres located along Eglinton Avenue across the middle of the Metro area. Opponents of this line argue that its effect on the development potential of these district centres would be minimal as two are already on the subway line and all can only grow through redevelopment of existing land uses (a difficult task because of neighborhood opposition). They also contend that it would cost about 10 times more than another east-west transit line that has been proposed in the northern part of the Metro area. A more northerly line would have a much greater effect on guiding growth into the North Yonge and Scarborough Centres. It would also provide an east-west connection to the Downsview site which has the potential of becoming a large activity center if the airport presently located there is abandoned at some later time. Here is a case where a leading transit investment could have a very substantial payoff in terms of shaping land use in the rapidly growing northern part of the Metro area. This issue is presently being vigorously debated and probably will not be resolved for some time yet.

The question of when and how to connect the North Yonge and Scarborough Centres to each other with transit service does not appear to be of major concern to the Toronto planners at the present time. However, those who favor the early implementation of the northern intermediate capacity transit line favor an alignment that would connect these two centres at the earliest possible time. Their feeling is that such a connection would encourage each centre to grow more rapidly than would otherwise be possible. However, no studies of this question have as yet been undertaken by the Toronto planners to the best of our knowledge.

The transit issues raised above are essentially staging questions and have not received much attention as yet because the Toronto planners feel it would be premature to do so until the land use plan has been officially adopted. When it is, then these questions will probably become key elements of the work program of the Planning Department of Metropolitan Toronto.

In general, our assessment of the Toronto planning effort is that it is exceptionally solid work and appears to have an excellent chance of being adopted and implemented. The role of transit in the implementation of the plan is considered to be very important but the staging of the extension of the present system has yet to be worked out. The light rail extension to the proposed new major centre at Scarborough is now under construction and may be

followed by the new east-west line along Eglinton Avenue. Other priorities have been suggested that would provide a focused transit service on the new Scarborough Centre and would give a new east-west transit line in the northern part of Metro top priority. How and when to connect the two proposed new major centres would then become a major issue requiring detailed study. These transit staging questions and their relationships with the land development staging questions will constitute the core of the implementation strategy for the plan and are yet to be examined in any great detail. When the time comes for this investigation, the Toronto planners will have to break new ground once again as there is little experience available to guide the study of these difficult questions.

In summary, the Toronto planners have conducted a planning process that satisfies our evaluation framework very well. They have developed definitions of centers that are reasonably clear and unambiguous. They have prepared forecasts of demand that show that approximately 160,000 retail/office jobs are likely to be locating outside of the Downtown during the 1974-2001 period. A regional economic model was not used to prepare these forecasts but the procedures used are probably adequate until such time as a more rigorous technique can be developed and applied in the region. The supply side of the issue has been rather thoroughly investigated with extensive field work and studies of developer perceptions and location behavior. The allocation of the available retail/office employment to particular sites was accomplished on a judgmental basis and lacks the rigor that could be obtained by using an allocation model of some type. An examination of the development potential of the two major new centers was conducted in a fair amount of detail by the Metro planners and, in the case of the Scarborough Centre, in great detail by local planners. There is still much micro-scale planning work to be done on all the other centers before a clear picture of the actual development potential of these other centers can be defined. Implementation problems have not been rigorously examined as the planners do not wish (or have not been directed) to dig into these issues until a plan has been adopted and has the force of law behind it. While this strategy is a logical one in many ways, the feasibility of implementing the multi-centered plan in Toronto has not been studied in depth as yet and is still an open question. However, if the plan is found to be "desirable" and is adopted in late 1978, it seems very likely that a variety of

implementation actions will occur, given the competent and effective way the Metropolitan government works in the Toronto region.

(2) Vancouver, British Columbia. In March of 1975, the Greater Vancouver Regional District (GVRD) published a plan, called The Livable Region 1976/1986, that was the culmination of a series of studies that began in 1971. This plan sets forth a five-part strategy for managing growth in the Greater Vancouver Region. These strategy elements are as follows:

1. Achieve residential growth targets in each part of the region;
2. Promote a balance of jobs to population in each part of the region;
3. Create Regional Town Centres;
4. Provide a transit-oriented transportation system linking residential areas, Regional Town Centres and major work areas;
5. Protect and develop regional open space.

The third element of this strategy directly calls for the creation of a polycentric city while the second and fourth elements directly support the Regional Town Centres concept. Elements one and five are also supportive although in a less direct manner.

Later in the year (July, 1975), the Greater Vancouver Regional District adopted several resolutions designed to get the Regional Town Centres strategy underway. These resolutions express the determination of the GVRD to see some action regarding the polycentric city concept. They are as follows [13]:

Be it resolved that:

1. The Regional Board adopt the concept of developing Regional Town Centres and establish the following priorities for regional support:
   a. Downtown New Westminster and Burnaby Metro Town be brought to self-sustaining size, by 1980;
   b. Choose a location for a Regional Town Centre in the northeast sector as soon as possible, and create the preconditions by 1986 for self-sustaining size and quality to be attained;
   c. Create the preconditions by 1986 for an eventual self-sustaining Regional Town Centre in North Surrey;
2. The Regional Board agree to participate in the preparation of Regional Town Centre plans with the Municipalities concerned;
3. The Regional Board direct staff to prepare an Action Program for Regional Town Centre development including the following:

a. Prepare amendments to the Official Regional Plan to designate Regional Town Centre reserves and arrange for the Regional Town Centre plans to be incorporated in the Official Community Plans of the affected Municipalities;

b. Investigate appropriate action to ensure that speculative land price increases in Regional Town Centre reserves do not prevent full development of each Centre;

c. Estimate the need for and size of a revolving fund for advance assembly of key sites in planned Regional Town Centres;

d. Develop procedures and agreements to bring about government office decentralization to Regional Town Centres;

e. Monitor growth and change in various employment categories in each part of the region and the supply and usage of commercial and industrial lands;

f. Define measures to encourage office and cultural facility development in Regional Town Centres and to control the rates of growth in Downtown Vancouver, Broadway and other centres;

g. Investigate the form of management to be established for each Regional Town Centre and the respective roles of private enterprise, the public sector, senior governments, the local Municipality and the Regional District;

h. Request the director of regional development to report on the work program and budget for preparation of the Action Program set out above.

These resolutions are supplemented by the following statement, which captures the essence of the rationale for the Regional Town Centres strategy in Vancouver:

> "A fundamental purpose of the Regional Town Centres Program is to help balance population and employment in the various part of the region by decentralizing jobs to suburban municipalities. This objective has become even more important since the time of the Board's resolution. In the face of serious shortages of money and energy for transportation, we can no longer afford to transport growing numbers of people from suburban homes to downtown jobs. Therefore, we must either get Regional Town Centres started as a way to bring jobs, shopping and leisure activity closer to home, or suffer a serious decline in the accessibility of these activities to residents of the region." [13]

Seven locations for Regional Town Centres are identified in The Livable Region plan and they are shown in map form in Figure 3.13. Several other locations were examined but their potential for development was considered to be beyond the ten-year time horizon of The Livable Region Plan (LRP) (i.e., 1986).

Figure 3.14 shows a perspective drawing of Vancouver's polycentric city concept in relation to the present situation and also shows the rather restricted natural setting that limits the urban form of Vancouver in so many ways.

Vancouver's downtown is currently the workplace of over half of the region's employees and is expected to continue to be the dominant activity center in the region for the foreseeable future. It has experienced rapid growth and increasing density during the past few years and the resulting traffic congestion and deteriorating air quality in the downtown have been major factors in the evolution and acceptance of the Regional Town Centres concept. Continuation of past trends in office growth in downtown will

> "...mean more Vancouver neighborhoods disrupted by downtown-destined cars, trucks, and transit movements. It will also mean tearing down and rebuilding about 40 per cent of downtown Vancouver. In the process, it will be virtually impossible to prevent buildings from getting bigger and the downtown from becoming dehumanized by an over-concentration of office towers." [14, p. 19]

Instead, the plan calls for a policy of discouraging office development in the downtown and in other parts of the City of Vancouver so as to encourage new offices to locate in Regional Town Centres. This, it is argued, will allow Vancouver to preserve and enhance the amenities of its downtown. It is also acknowledged that Vancouver must actively participate in the Regional Town Centres program by actively discouraging office growth outside the CBD but within the city or there will be little chance for the Regional Town Centres to get started.

The proposed Regional Town Centres are to be created by concentrating a substantial portion of all future office and other types of service employment, major new cultural, entertainment and educational facilities in a few centers which can serve the major growth areas of the region. The Regional Town Centre is envisioned to be like the downtown of a small city. It would have virtually everything one needs on a day-to-day basis. It would be small enough

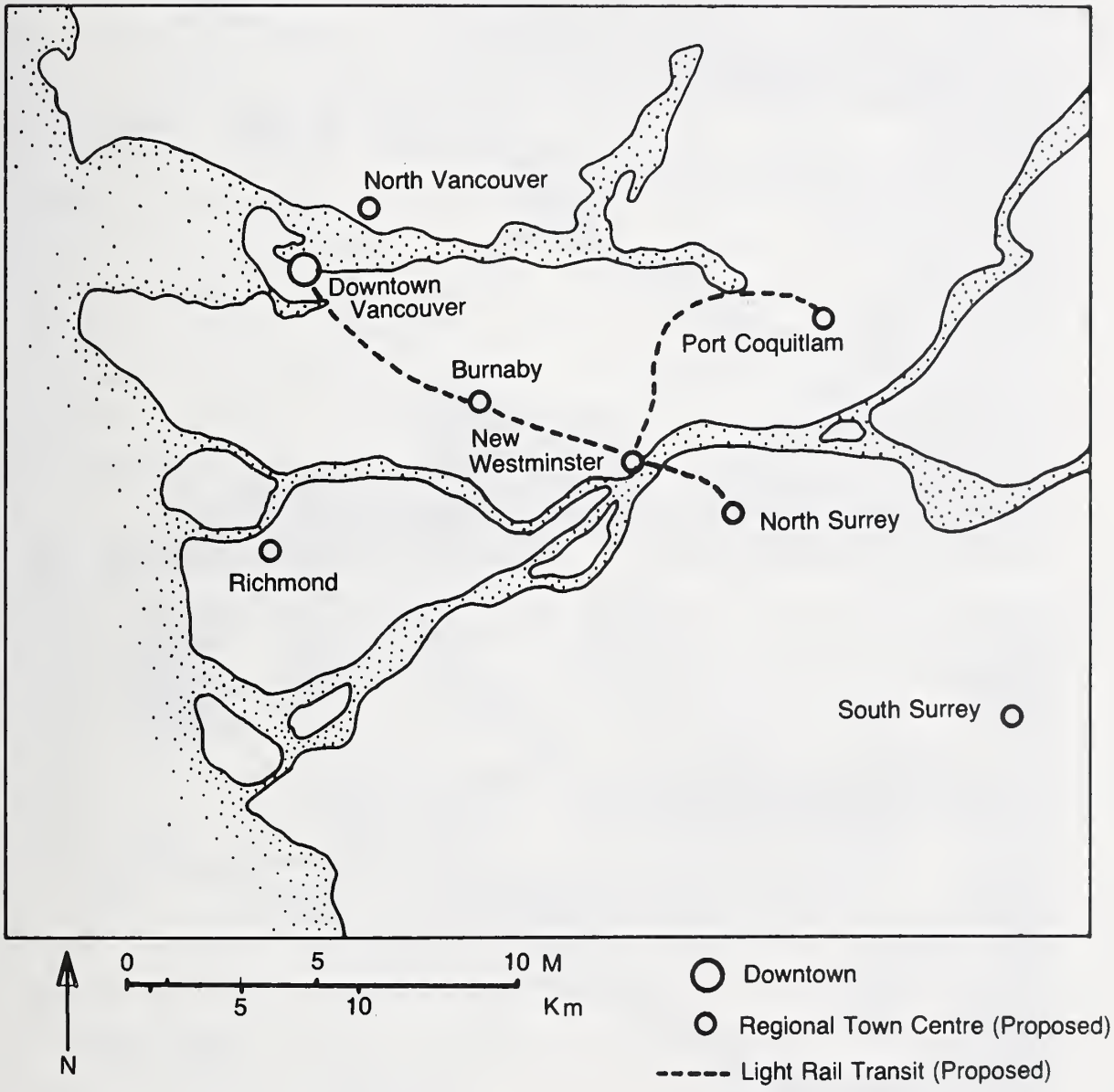


Figure 3.13

Map of Regional Town Centres
and Proposed Light Rail Transit Line
in Vancouver, British Columbia

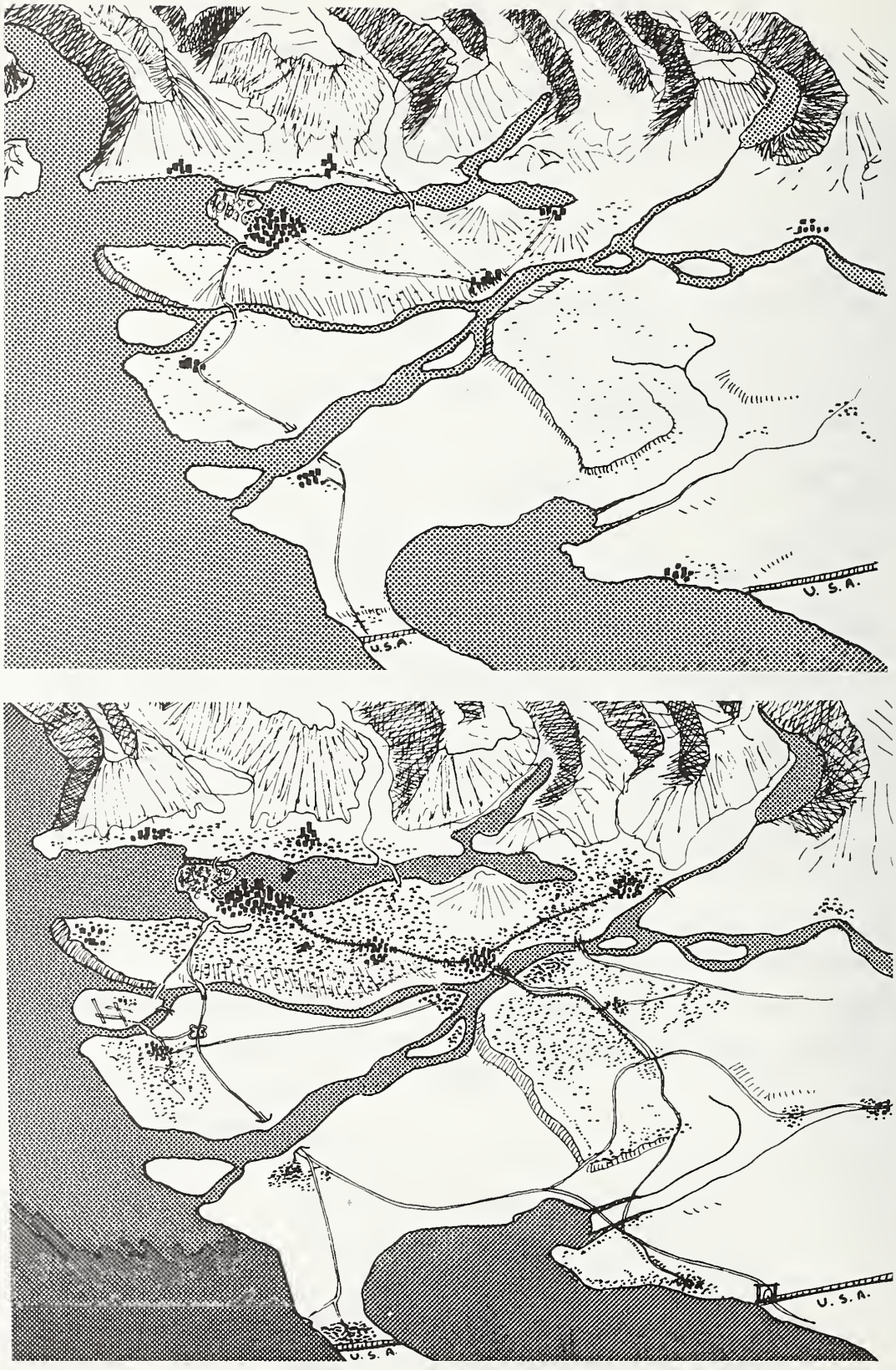


Figure 3.14 Vancouver Urban Form, 1976 and 1986

so that it is possible to know and be known by local merchants, but large enough to provide libraries, health clinics, theatres and perhaps a community college. Some lawyers, insurance agents and other services would also be found in these centers.

No specific sizes are suggested for the seven sites mapped in the plan but it is suggested that each Regional Town Centre have at least one million square feet of office space, gross annual retail sales in the order of $50 million and be able to draw audiences of several hundred to the theatre or other cultural events. This scale can serve a population of approximately 100,000 to 150,000 people. At this scale, the planners argue that the Regional Town Centre can become virtually self-sustaining and continue to grow on its own, attracting considerable office employment and other activities without special incentives or promotion. However, they also estimate that a population of 200,000 - 300,000 will be required to provide the complete range of activities that they wish to see in each RTC.

In addition to size, the Vancouver planners also argue that quality and character are essential characteristics for Regional Town Centres. These attributes are defined as consisting of (1) a strong pedestrian orientation, (2) a widely varied but balanced mixture of activities and (3) a human scale where people do not feel "boxed in" or without sunshine and views. Other characteristics mentioned include many features that appeal to people's senses such as a variety of shapes, textures, colors and movements to catch the eye, vegetation of all types, the smell of a bakery, fish market, or coffee shop and a contrast of noisy and quiet places.

At present, two of the seven Regional Town Centre sites are being intensively studied to determine their market potential and answers to other feasibility questions. These two are Burnaby and New Westminster, located about seven and twelve miles from downtown Vancouver, respectively. In the northeast sector of the region, competition between three contenders has now been narrowed. Though the site has not yet been formally designated by the GVRD, it is widely believed that Coquitlam will receive the designation if there is to be a Regional Town Centre in this area. Coquitlam has apparently won out, because they are proceeding to develop a 1 million square foot regional shopping center. A fourth RTC in North Surrey has also not yet been firmly located by the local government for the southern part of the region. The pro-

posed RTC's in South Surrey, Richmond and North Vancouver have not yet been examined intensively.

The planners have estimated that significant developments in Regional Town Centres can and should be underway by 1986. However, they note that forecast growth rates are such that only two or three of these centers can be expected to become self-sustaining in ten years, even if most new development is focused there.

The planners note that the Regional Town Centres concept is not new in the Vancouver Region as it was part of the Official Regional Plan adopted in 1966. They also note that:

> "Regional Town Centres have not happened so far just because they are a policy, nor will they happen in the future without a concerted Action Program. The Action Program is needed to concentrate major business and cultural development in the designated Regional Town Centres and to discourage it in other locations." [14, p. 21]

The Livable Region Plan suggests that the Regional Town Centres should be connected to downtown Vancouver with a light rail transit line at the earliest possible time (see Figure 3.13). The intention is to have a first link between Vancouver and Burnaby in operation before the end of 1987, with a later extension to New Westminster. Preliminary studies have shown that an existing railroad right-of-way is suitably located to connect downtown Vancouver with both the New Westminster and Burnaby RTC sites. Current estimates are that approximately $200 million would be needed to construct a light rail line from downtown Vancouver to the four RTC sites by 1986. Others in Vancouver say it would cost much more than this. Nearly all persons interviewed stated that it is very unlikely that very much light rail transit will be built in Vancouver by 1986 due to the difficulty of obtaining the funding required.

The issue of which jurisdiction will be responsible for constructing and operating the LRT system is currently uncertain, due to pending legislation at the Provincial Government level. This legislation would establish a Transportation Authority for British Columbia which would have responsibility for all transportation needs in the region. Until this legislative issue is resolved, any Provincial Government role in the study of an LRT system has been ruled out. Nonetheless, in 1978, the GVRD began a $300,000 engineering study

to examine the first link of a LRT system between downtown Vancouver and Burnaby. The first phase of the study (establishing the exact right-of-way) is expected to take 8 months, while the timing of the second phase of the study (engineering work associated with the first link) is not yet determined.

Most of the people interviewed in Vancouver stated that any new transit investments should be designed to foster the growth of the Regional Town Centres at New Westminster and Burnaby by making it easier to reach them from their surrounding areas. Most felt that it would be unwise to begin construction of a light rail transit line in downtown Vancouver, extending it outward to the RTC's over time. Instead, they felt that good transit service to the New Westminster and Burnaby sites would help stimulate their rapid growth and should be given priority over investments designed to improve the accessibility of downtown Vancouver. Even though there is not much support in the region for LRT to downtown Vancouver, the City of Vancouver is lobbying to have the LRT system begin within its downtown, and planners in the region note that the City's desires have substantial weight in the GVRD. All things considered, it seems likely that any light rail transit system that is undertaken will begin in downtown Vancouver.

The planners most closely associated with the planning of the Burnaby and New Westminster Town Centre sites stated that they felt that these centers would get underway even if no transit investments were forthcoming simply because the market potential and political support factors were so favorable. Still, the development planning that has occurred in these two locations is including provision for substantial light rail facilities should such investments become possible during the next few years.

Before assessing the Vancouver effort according to our evaluation framework, it is important to examine how the political and economic climate has changed in the last few months. Of primary importance is that the forecasts of population and economic growth, prepared in 1975 for the year 1986, are now considered to be too high. Results from the 1976 Census of population are now available, and it is clear that such results have surprised GVRD and Vancouver planners. The population growth which occurred in the region was only about one-third of what was projected. The 1976 population of the City of Vancouver represents a 3.8 per cent decline from the 1971 population, or almost 35,000 less than the Planning Department had estimated for 1976. Also important has been a pronounced shift in the average household size. The current size is 2.45, whereas the forecast was for a household size of 2.62.

Hand-in-hand with the relatively slow growing population is a down-turn in both the national and provincial economy. High levels of inflation are occurring alongside increases in employment. The forecasts for jobs in the region are in the process of being revised downward. The planners believe that because of the slowdown in the region's growth, there is only a limited potential for commercial development anywhere in the region. There is much evidence that the region's commitment to the Regional Town Centre program has weakened considerably as a result of changes in the economic, and hence, political, climate.

Some of the problems which are now occurring will be described briefly. To start within the outlying municipalities, it is generally true that there is a deterioration in the commitment to the RTC program. One problem is that owing largely to decreasing household sizes, none of the municipalities are able to achieve the population targets to which they originally agreed. This situation has tended to foster pessimistic expectations for the RTC program. Only in New Westminster and Burnaby are plans proceeding on the development of specific Regional Town Centre sites. Even in Burnaby, though, the original intention of making significant efforts toward establishing a centre by 1986 have been postponed. Previous goals are currently being reassessed, and the municipal attitude now seems to be more long-range and gradual in orientation. Burnaby now sees the creation of a Town Centre as an evolutionary process which may not be completed until past the year 2000.

The City of Vancouver has also indicated that its support of the Livable Region Plan is wavering. The City Council of Vancouver has shifted politically to the right, and there is now a great deal of conflict over the need for slowing down office growth in Vancouver. This conflict has grown with economic hard times, lower than expected economic and physical growth, and increased competition amongst the municipalities in the region for what growth (and tax base) is now expected. Though the City still officially supports the RTC concept, it has increasingly seen the decentralization of office space as a threat to its continued vitality. Some planners believe that regardless of the GVRD Plan, the City of Vancouver will work towards increasing employment in its downtown area.

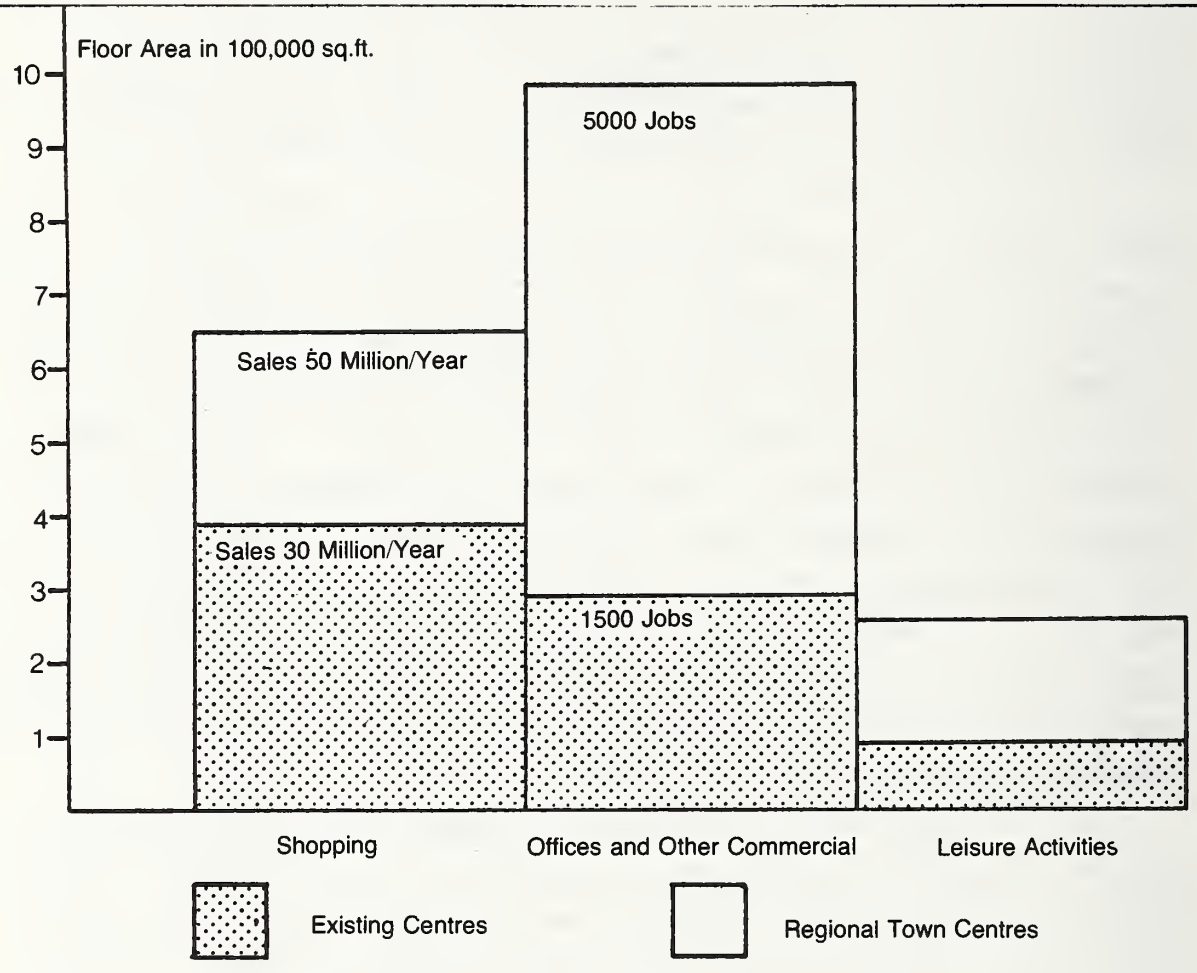
Given the changing nature of the commitments to the Regional Town Centre program, the role of the GVRD has also been changed. The GVRD has initiated a

re-examination of the concepts of the Livable Region Program, and it is not yet clear what conclusions they will draw. One direction in which they may be heading is to de-emphasize the importance of office decentralization from downtown Vancouver. Instead emphasis may shift toward making the two already designated RTC sites as attractive as possible. It is hoped that such a shift in orientation will make the program more politically attractive.

The final issue which arises in this overview of the Vancouver situation is whether or not the GVRD actually has the political resources to make the Regional Town Centre concept work. All of those interviewed (including the GVRD) indicated that the GVRD does not now have the political strength to make the program work. One problem is that the GVRD does not have control over the two key elements of the plan, which are the transportation function and the location of office space. The only real tools which the GVRD has are to encourage cooperation and to rely on "moral suasion." Neither of these are effective in a time of economic difficulty and disagreement over the fundamental concepts of the region's plan. If there were a common municipal perception of mutual benefit from the program, then at least some planners believe that the GVRD would have the strength to make a growth management program operate in the region.

With this overview of the Vancouver situation in mind, we will now assess the GVRD effort in terms of our evaluation framework. First, how well has the GVRD defined the concept of a Regional Town Centre (RTC)? As indicated above, a good deal of attention has been given to the description of the qualities a Regional Town Centre should strive to achieve. A narrated slide-tape show which runs about 30 minutes has been developed by the GVRD to help explain the RTC concept. It is very qualitative and quite effective. A general description of the size and mix of activities of a typical RTC in quantitative terms has been developed to show how a typical suburban cluster of office/retail/apartment activities could evolve into a RTC. This discussion is best summarized by the graphic of Figure 3.15, which shows a desired size and mix of activities in a RTC as compared with a typical existing center in the outer city. The GVRD also has prepared an illustrative list of activities that are and are not suited to RTC sites, as given in Figure 3.16.

Figure 3.15 Present and Desired Mix of Activities of Regional Town Centres



On the demand side of the question, it is clear that both the City of Vancouver and the GVRD have conducted the special studies needed to develop the forecasts that provided some support for the policy recommendations of the Livable Region Plan. As explained previously, these forecasts were based on projections of fairly high economic growth, and thus no longer appropriately describe what the region will face in the future. Nonetheless, the results of the studies will still be described below, so as to indicate the kind of planning framework which was developed in the region. An effort will be made to indicate the current information wherever possible.

Figure 3.16 Illustrative List of Regional Town Centre Activities

Some Major Regional Town Centre Activities

- Business and Government Offices
- Art, Music, and Dance Studios
- Hotel and Convention Facilities
- Department Stores
- Commercial Services (such as lawyers, accounting, insurance, printing and office supply)
- Main Banks and Financial Institutions
- Community Colleges
- Vocational Training
- Larger Museums and Exhibition Halls
- Sports Centres
- Theatres
- Social Services (such as welfare, doctors' offices, and day care centres)

Some Activities NOT Appropriate for Regional Town Centres

- Industrial Manufacturing
- Warehousing and Distributing
- Surface Parking
- Automobile Sales and Repair

Some Activities Appropriate for Regional Town Centres and Other Centres

- Markets and Shops
- Branch Banks
- Community Centres
- Smaller Museums and Exhibition Halls
- Meeting Halls
- Restaurants and Cafes
- Intown Housing
- Bowling, Bingo and Other Commercial Recreation

Source: Figure 2, p. 7 [14]

The first set of regional forecasts indicated that the service (tertiary) sector of the economy was expected to be the fastest growing (67 per cent increase) between 1971 and 1986 as compared with a decline in the primary sector of 18 per cent and growth in the secondary sector of 36 per cent. These forecasts were used to set "targets" for each of the sub-areas within the region. These targets were designed to produce a better balance between people and jobs by increasing the population of the City of Vancouver while reducing its employment growth. This meant that the City of Vancouver would gain about 7,000 more people than indicated by the continuation of past trends forecast but that its employment growth would be about 70,000 jobs less than the trend forecast. These jobs were allocated to other parts of the region and most of them were slated for RTC locations. This did not mean that the City of Vancouver would not grow in number of jobs but only that it would obtain a smaller share of regional growth in the future. The target for the City of Vancouver indicated a growth of 46,670 jobs between 1971 and 1981 while the total employment in the rest of the region was targeted to grow from 175,000 in 1971 to 348,000 in 1986 or 173,000 over this 15 year period. Overall, if the targets were achieved, the City of Vancouver's share of the region's total population and employment would have declined sharply.

Calculating the shares using the trend forecasts shows that the major thrust of the Livable Region Plan was to decentralize employment from the City of Vancouver into the outer city. Since about 60 per cent of the total employment in the Vancouver region was expected to be in the tertiary (service) sector by 1986, many of the jobs that would be locating in the outer city would be very well suited to a RTC location.

Other special studies looked at office and retail (commercial) space in the region [12]. These studies showed (and more recent studies have confirmed) that Vancouver is currently very centralized in terms of both office and retail employment. In 1975, there were about 20.7 million square feet of office space located in the Greater Vancouver region and about 82 per cent of this space was located in the City of Vancouver, about 75 per cent of this in downtown Vancouver. The amount of office space in downtown Vancouver has increased by 82 per cent since 1965 from 6.76 million square feet at the end of 1965 to 12.28 million square feet at the end of 1975. More recent studies indicate that there are approximately 13 million square feet of office space in the downtown peninsula as of December 31, 1976. This represents about 70 percent of

the office space in the City, and about 60 percent of the total office space in the region. Juxtaposing the 1975 and 1976 figures, it is clear that office space is increasing in downtown Vancouver, but even so there is a relatively significant drop in Vancouver's share of office space in the whole region. This is indicated by the five per cent decline in downtown Vancouver's share of total office space in only one year's time.

A survey of commercial space in the Greater Vancouver region in 1970 shows a much lower degree of concentration in downtown Vancouver. At that time, approximately 41 per cent of all commercial floor space in the Greater Vancouver Region was located in downtown Vancouver. Persons interviewed estimated that this figure has declined by three to five per cent since 1970 due to the construction of several large shopping center complexes in other parts of the region during the 1970-77 time period.

At present, there is a total employment of about 102,500 in downtown Vancouver. The previous forecasts had anticipated a rise in this figure to 163,000 by the year 1986. The RTC program of the GVRD had hoped to reduce this increase by about 38,000 so that there would be only 125,000 jobs in downtown Vancouver by 1986. The reallocation of 38,000 service sector jobs was one of the major objectives of the RTC program. Recent studies reveal that the target of 125,000 downtown jobs could almost be reached by the occupancy of office space in projects already built, under construction, or in final planning stages. Given the recent economic down-turn, however, the City of Vancouver is not expected to reach the target as much before 1986 as was originally thought.

On the supply side of the question, substantial inventory studies were conducted by both the GVRD and many of the local governments in the region. In addition, a very extensive permit system provided all governmental units with good information about what projects the private sector was planning and helped them monitor activities of this type. There has been no effort to allocate the expected growth in office/retail employment to specific RTC sites in the same manner as targets were assigned to the subregions which make up the GVRD. Therefore, there is currently no estimate available as to how large each RTC might be by 1986, although it has been recognized that it is unrealistic to expect that more than two RTC's could be of significant size by 1986.

Development planning of the RTC sites is the responsibility of the local governments. Substantial progress has been made at New Westminster, which will

be described in Section IV of this report. Progress has also been made in Burnaby for the "Metrotown" site. The Development Plan was adopted by the Municipal Council in February of 1978, though there is not yet an action program. The approved Plan indicates land use and population targets for 1996, though only briefly touches on possible implementation techniques for the concepts. Now that the Plan has been approved, more attention will be devoted to implementation issues and methods. The details of a public land assembly and development scheme are currently being drawn up for the Metrotown area. Even though formal government actions have not yet been taken, the planners report that there is considerable interest by the private sector in developing the site. It is reported that many projects that reflect the Metrotown development guidelines are either completed or underway. In fact the British Columbia Telephone Company has recently completed the first phase of a major construction project within the boundary of the Town Centre. The planners note that increases in land values have been minimal and have not been a constraint to development.

The question of implementation of the Regional Town Centres concept on an areawide basis has been of major concern to the GVRD, and some very substantial and interesting work on this topic has been accomplished by them. In 1974, a survey was funded by the GVRD to gather data from both private and public corporations about their locational requirements and preferences [11]. The companies included in the survey were the larger organizations operating in downtown Vancouver. It was felt that if these larger companies located some of their activity in a Regional Town Centre, other smaller businesses would soon follow. Interviews were arranged with the company officer most responsible for the location decisions of the firm. The results of this survey are summarized in Table 3.11 and show those factors which are most important to the attraction of business and government activities to the RTC sites.

These results were being used in the development of an Action Program designed to get the RTC concept implemented as quickly as possible. The GVRD recognized that developing RTC's would require the coordinated efforts of all levels of government. The scale of effort needed is estimated to be comparable to that of building a new town. It includes planning, management, site preparation and development at a scale that exceeds the capability of any single government or private development corporation. The Action Program that was formulated is described in Part V of Regional Town Centres: A Policy Report

TABLE 3.11

Factors That Will Attract Business And Government To Regional Town Centres

A CLEAR PLAN	• firm decisions about what a town centre should be • a master plan for the whole Lower Mainland region incorporating the proposed town centres • political backing at all government levels • definite statements as to transit routes, terminals, and interchanges • a relatively firm knowledge of tax structure
DEVELOPMENT INCENTIVES	• freedom from delay of construction plans • land assembly at government level • tax or financing concessions • a major commitment by government office users • economical land and rental costs • freedom from uneconomic restrictions on site configuration and design facilities • measures to stabilize a climate for investment • initial and continuing federal and provincial investment and support in terms of an economic base, land banks, serviced land, an infrastructure, and room for expansion
HOUSING	• provision of substantial housing within, or close by, town centres • greater allowable density concentrations of housing in town centres to make them economically feasible for developers • provision of high residential and commercial population in a town centre to attract retail businesses
TRANSPORTATION	• ease of automobile access • rapid transit between town centre and downtown • peripheral rapid transit between town centres and outlying areas • definite policy on transit routes, terminals, and interchanges
AMENITIES	• impressive setting, unique architecture, and landscaping • provision of variety shopping, entertainment, and cultural activities
BUSINESS CHARACTER	• a substantial banking, legal, accounting, and financial sector in town centres • establishment of auxiliary head offices in town centres • grouping of head offices of similar interdependent industries and related service businesses • should include both residential and commercial population • relative freedom to set hours of sale

Source: Figure 5, p. 22 [14]

[14] and is available from the GVRD. It calls for (1) efforts to reserve Regional Town Centre sites until plans can be prepared; (2) joint planning; (3) a land acquisition program; and (4) the establishment of a development management process. While some of the specifics of doing these various tasks are unique to the Vancouver region, they should be very helpful to any agency that wishes to develop an Action Program designed to get some outlying centers going.

Another major task that was identified was the need to develop a specific office decentralization program for the City of Vancouver. Vancouver adopted a policy of encouraging decentralization of new offices in its Downtown Plan, but a more specific program designed to implement this policy was not worked out. Incentives needed to be developed, a growth target set and a growth management program devised that would provide new and better procedures for approving office development applications. Other activities that have been identified include the development of information for developers both about downtown and the RTC sites and the creation of a marketing program that would help get this information out to the right people at the right time. A competitive process for dealing with office development proposals is also suggested. Proposals would compete with each other for approval, based on their design quality, until those approved had met the growth target. Proposals not approved could be resubmitted and reconsidered during the next phase of the program. Alternatively, the City could adopt a persuasive process whereby developers are asked to delay their application if construction is exceeding the target. The advantages of a direct management process are thought to include (1) determining a predictable rate of office expansion to assist business in planning their investments; (2) reviewing all development proposals according to the same rules; (3) providing an opportunity for developers to improve and resubmit their designs; (4) removing "hidden" reasons for delaying or rejecting projects; and (5) establishing a clear understanding of the relationship between approval or rejection of an individual project and the overall downtown growth rate.

Because of the change in the political and economic climate in the Vancouver region, little has been done recently to implement the RTC program. In 1976 three resolutions were passed by the Vancouver City Council which encouraged the Federal and Provincial Governments and the British Columbia Hydro Company (a transit system operator) to consider locating in Regional Town Centres. The only action taken since then by the City of Vancouver in support of the

program is the use of an informational letter which requires potential developers to consider alternative locations in Regional Town Centres. This letter explains the Regional Town Centres program, includes a map of the designed Centres, and asks for certain information from the developer as to why a decision was made to build offices in downtown Vancouver, as opposed to some Regional Town Centre site. This letter must be filled out by all office developers who seek to construct offices in the City of Vancouver. One of the stated purposes behind requiring this letter is that it will make developers aware of the Livable Region Program, and may lead to the consideration of Regional Town Centres as an alternative location. However, according to a planner in Vancouver, no developers have seriously considered or become interested in a RTC site as a result of this process, so far as is known.

As mentioned above, the requirement of a letter being filled out by all office developers is the only step which the City of Vancouver has recently taken toward implementing the RTC program. The only other action taken previously by the City which relates to the RTC program has also not been very supportive of the basic concepts of the program. Some downzoning of the downtown and Central West Broadway areas was implemented but has not been very effective. Offices which were to be discouraged on Broadway are beginning to appear in an area a few blocks to the north. A proposal to limit office growth in local commercial areas was defeated by the City Council in March of 1977 because of intense opposition and uncertain benefits.

In summary, the RTC program in Vancouver showed substantial promise of being successful until very recently. Excellent groundwork has been done by the GVRD and its consultants over a 5-year period. Recent shifts in political support and the economic growth of the region have seriously undermined efforts to get the Regional Town Centre program substantially in place by 1986. Nonetheless, the Muncipality of Burnaby is committed to the establishment of a Town Centre, even if it will take much longer than was originally envisioned. In addition, New Westminster has engaged in some original and so far successful planning efforts to revitalize a major section of its downtown area. More detailed information on the New Westminster location is included in Section IV of this report. Whether the remaining five designated Town Centres show as much promise remains to be seen. Without a commitment by the City of Vancouver to encourage the decentralization of office and retail activities, it seems doubtful that the Regional Town Centre program will make much progress by 1986.

(3) Denver, Colorado. The polycentric city concept has been a prominent organizing concept in the Regional Land Use Plan that was prepared and adopted by the Denver Council of Governments (DrCOG) in 1973. Since that time, numerous studies have been conducted that include the notion of major activity centers as being both desired and feasible, but no major studies have been conducted to date that focus squarely on the activity centers concept and its implementaton.

The Regional Land Use Plan that was adopted in 1973 included a map that showed 13 red dots (including downtown) that gave the general location of activity centers that were to be encouraged to grow and become more dense. This plan was revised in 1978 and the activity centers element of the plan was upgraded somewhat as a part of that process.

A 1976 memorandum prepared by the Denver Council of Governments staff reviewed the history of the activity centers concept in the Denver area and suggested some alternative approaches for the future [15]. This review examined the status of activity centers in terms of recent actions at all levels of government, outlined some alternative policies for activity centers and suggested the adoption of one alternative. It found that there had been little action with respect to the concept at any level of government, especially at the local level. The alternative that was suggested for adoption was that the new Regional Development Plan not include a map that shows the location of any major activity center. Instead, a set of guidelines and definitions would be included that would be used by the Denver COG to consider applications from its member local governments for a major activity center designation. If the application satisfied the guidelines and was accepted by DrCOG, then it would be placed on the map via a plan amendment process. In effect, this would set up a regional competition for the major activity center designation and would probably stir up considerable interest in the concept at the local level. As might be expected, this proposal was not greeted with enthusiasm by the member governments, who did not want to risk losing something which they do not presently value highly but which might become very valuable in the future.

When the activity centers concept was proposed by DrCOG, it was recognized that numerous actions, public and private, would be required to implement the concept. Most of these actions would be the responsibility of local governments and would include the development of activity center plans, changes in zoning to allow higher densities in centers while resisting other zoning up-

grading, and the provision of the necessary levels of utilities and urban services while withholding high levels of service to other areas. To date, some communities in the Denver region have adopted activity centers as part of their comprehensive plan but none has prepared specific development plans for activity centers. Some have made zoning changes within designated centers but none has specifically withheld zoning changes in other parts of their areas for the purpose of encouraging activity centers. Moreover, no special considerations have been given to the provision of utilities and urban services within activity centers.

A key element in the original activity center concept was transportation accessibility between and within activity centers. While minor highway improvements have been made around some designated center areas and additional bus service has been provided in the area of most designated centers, little else has been accomplished. Most importantly, the original intent to structure activity centers along a fixed rapid-transit system is, at best, uncertain given the refusal, in late 1976, of the Urban Mass Transportation Administration to provide funds for a fixed rapid-transit system in Denver. Local governments often tend to feel that the activity center concept is not viable given a lack of some type of fixed rapid-transit system.

In 1978, a revised Regional Development Plan was adopted [16] that contained six policy statements that relate to the regional activity center (RAC) concept. A map showing the location of these RAC's is also included and it is identical to the map in the 1973 Regional Development Plan. The RAC policies included are as follows:

RDP 17 - Regional activity centers are areas with an intensive mix of urban activities. Regional activity centers are multi-purpose centers in that they may include residential, employment, commercial, recreational, medical, cultural, governmental and educational activities. Each center should contain at a minimum significant levels of intense residential, employment and commercial activity. An activity center should cover a relatively small geographical area.

RDP 18 - The primary responsibility for the planning and implementation of regional activity centers rests with local governments and the private market. Local governments should facilitate the development of regional activity centers through actions consistent with adopted regional policy and criteria. Local actions should include:

(1) Adoption of the activity center concept and the specific designation of centers in the official comprehensive plan for the local jurisdiction.

(2) Preparation of specific plans and programs for the development of designated regional activity centers. Such plans and programs should define the geographic area, the types and levels of activities, the anticipated staging and timing of development, the general design characteristics, and required public and private actions for implementation.

(3) Provisions of adequate growth management tools to promote development of the activity center.

(4) Encouraging private market decisions which promote the development of activity centers.

RDP 19 - The Denver Regional Council of Governments should support local planning and development of regional activity centers through appropriate actions to:

(1) Incorporate the activity center policy as a major element in regional transportation planning and regional facilities planning.

(2) Provide urban systems funds to projects which increase the accessibility to and the mobility within activity centers.

(3) Encourage the provision of high levels of public transportation to activity centers.

(4) Encourage the provision of state and federal housing funds to projects within activity centers.

(5) Provide technical planning assistance to aid local governments in the planning and implementation of activity centers.

(6) Continuously monitor and appraise the development of designated regional activity centers.

RDP 20 - The DrCOG has designated 12 regional activity centers which have the potential to become centers of intense, multi-purpose regional activities. The designated centers should be periodically evaluated by the DrCOG in cooperation with local governments to determine if these areas are in fact developing as regional centers, and still remain as viable elements of the regional plan. Non-viable centers should be deleted from the regional plan.

RDP 21 - New regional activity centers should be added to the regional plan if it can be demonstrated that they are consistent with regional policy

and criteria. The designation and location of additional activity centers should be based on the following criteria:

(1) A regional activity center should be located in an area which has an existing nucleus of activity and which has the potential for developing into an intensive multi-purpose center as defined.

(2) The site of a regional activity center should be accessible by major thoroughfares and should be served by high levels of public transportation service to the center and within the center.

(3) Regional activity centers should be located such that adverse impacts on the environment are minimized.

(4) Regional activity centers should not be located in close proximity to each other such that they compete for a limited amount of high density activities.

(5) Regional activity centers should be located in areas which can be most effectively provided with high levels of urban services and utilities.

(6) The designation of regional activity centers should be based in part on the market potentials for such centers.

(7) There should be a demonstration of local commitment to the successful development of the center.

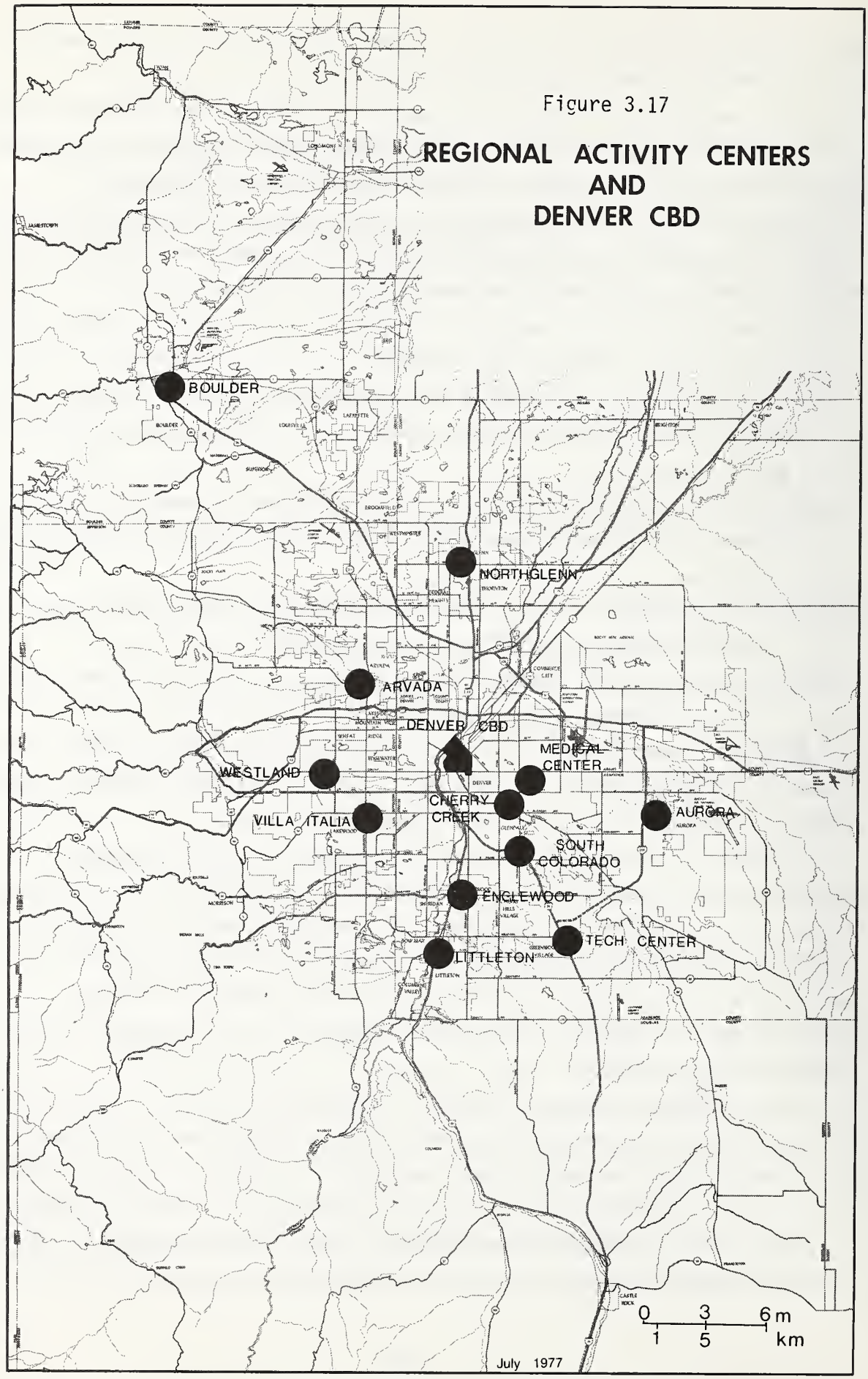
RDP 22 - Subregional and community activity concentrations should be encouraged to develop within the region as long as they do not detract from or compete with regional activity center development.

In addition to these policy statements and RAC map (see Figure 3.17), the 1978 RDP also includes some text that discusses definitional, designation and implementation problems. It suggests that local governments, in cooperation with the DrCOG, conduct studies to define the structure of their RAC and the specific local and regional actions required to implement the concept in their area. Further, it suggests that private developers and landowners be involved in this planning process.

Transit planners from the Regional Transportation District (RTD) in Denver have strongly supported the activity centers concept and have continually urged DrCOG to take the concept more seriously. The initial segment of the regional rapid transit system that was developed by RTD includes 14 stations, of which seven are located in or adjacent to one of the 13 activity centers designated in the 1973 plan. Figure 3.18 shows the location of this initial

Figure 3.17

REGIONAL ACTIVITY CENTERS AND DENVER CBD



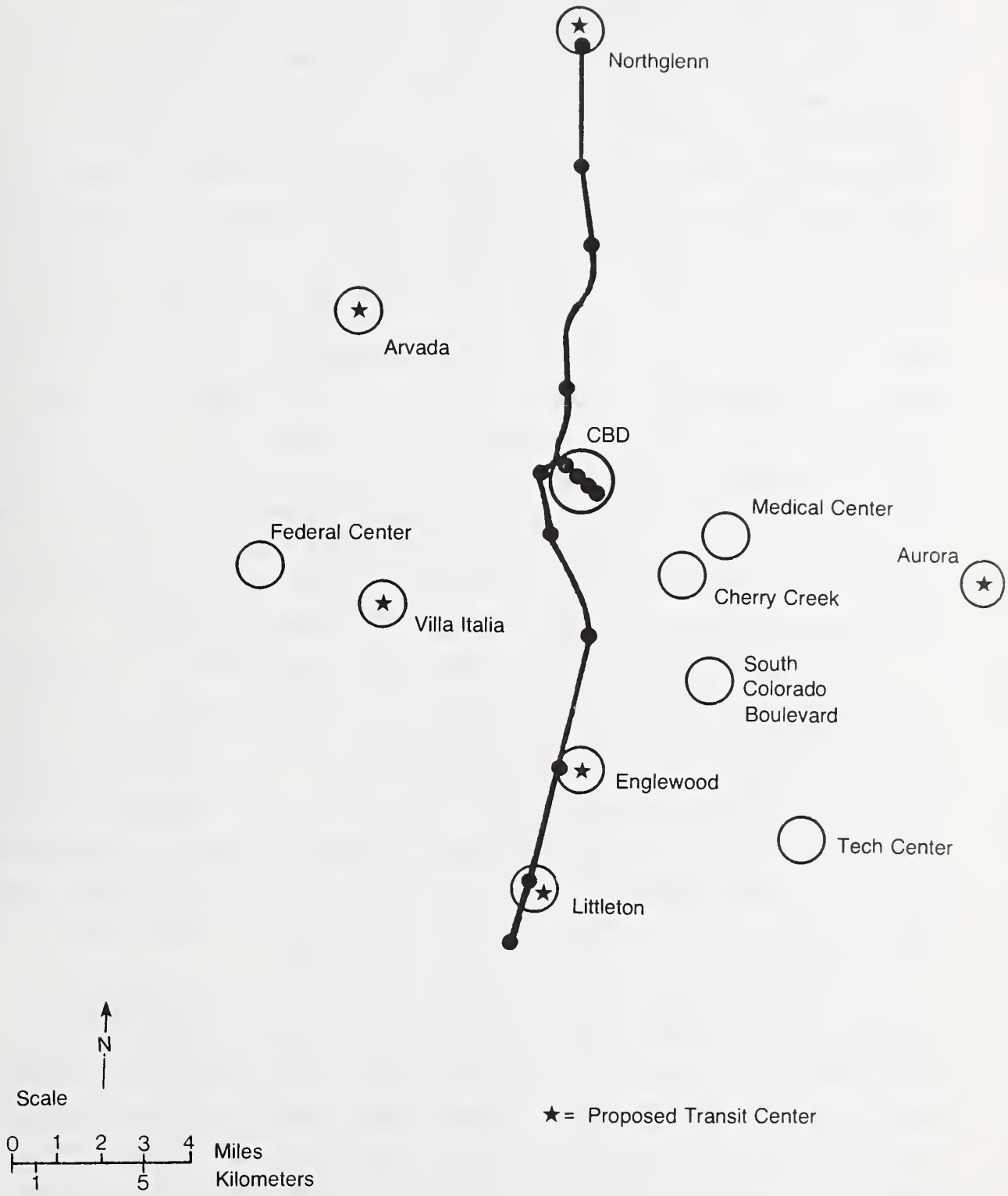


Figure 3.18. Relationship Between Proposed Initial Rapid Transit Route and Major Activity Center Locations in Denver, Colorado, 1977.

transit line and its stations in relation to 12 of the 13 centers (Boulder, Colorado, is the 13th center and is off the map to the north).

RTD has examined the activity center concept more closely than any other transit agency in the country. Two of their recent reports include guidelines for providing service to and within major activity centers [17][18]. They have also developed some interesting theoretical constructs that define their expectations regarding the impact of the development of activity centers on the travel requirements in the region. Figure 3.19 shows one of these constructs. It is not based on empirical evidence but does represent the best professional judgment of the RTD planners. It states that the number of persons who live in an activity center and work elsewhere will decline as the size (and presumably the diversity) of the center increases. This inverse relationship is one that has been observed in new towns, both in England and in the United States. A second notion, also judgmentally derived, is also shown in Figure 3.19. It is based on the idea that higher densities permit higher levels of transit service and that the better the transit service is, the greater will be the proportion of people who use it. While the shape of these curves can be argued, their overall trend is certainly reasonable.

The RTD planners further argue that large activity centers will need to be connected to other activity centers with a line haul service. This is because they will be large and a high proportion of their residents would use transit for travel to locations outside their area. Their conclusion is that fully developed activity centers will require three types of transit service: (1) between the center and its surrounding residential areas, (2) between the center and other centers and (3) circulation within the center itself. Given this conclusion, it is easy to understand why RTD sees the development of activity centers as such an important part of its future.

In 1978, the RTD devised a proposal that calls for the construction of a transit mall in downtown Denver and six transit centers in the outer parts of the region (see Figure 3.18 for the locations of the transit mall in downtown Denver and the transit centers). These transit centers would be connected to the downtown transit mall by express bus service. The preliminary RTD estimate is that about $13 million will be needed to construct the transit terminal facilities in these six outlying centers in 1979 and 1980. These transit centers are being located so as to be focal points for the further development of the land in their vicinity as well as to relate as closely as possible to

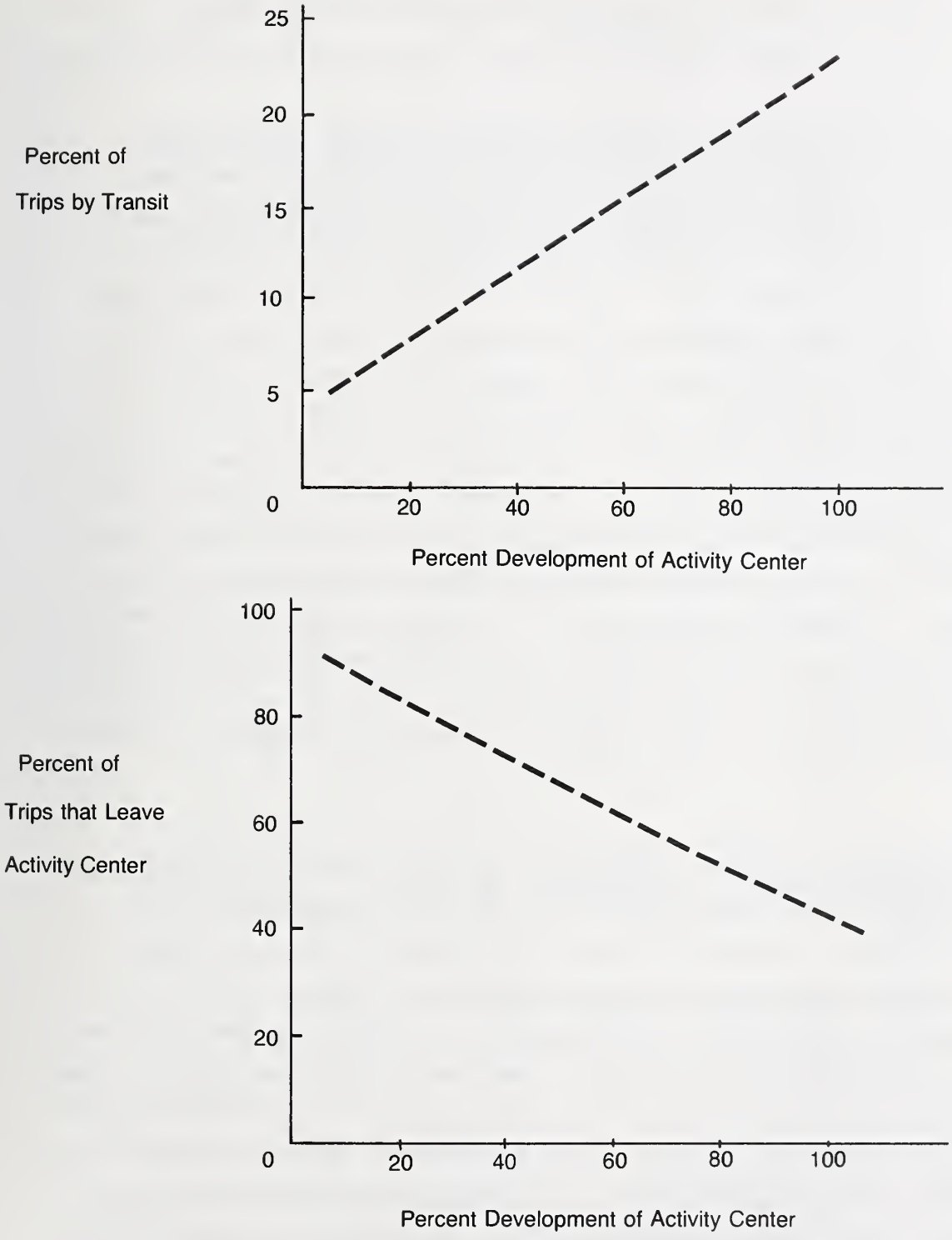


Figure 3.19 Activity Center--Transit Relationships Derived by the Regional Transportation District in Denver

existing commercial, office and residential buildings. It is not yet known if these centers will be built as proposed but if they are, the experience gained by the RTD should be of great utility to other cities which have also been considering this concept.

At present, there are several areas in the Denver region that are consciously trying to become major diversified centers in the sense that this concept was originally defined in the Twin Cities. One is the Denver Technological Center (DTC), which is located about 10 miles (20 minutes) southeast of the Denver CBD (see Figure 3.17). The DTC is an 850-acre site that began as an office park several years ago. At present, it is the location of about 200 business firms in 40 buildings and is growing rapidly both in size and in the diversity of the activities that are locating on its site. It is a low density area with lots of free parking, wide roadways and one-, two- and three-story buildings. There are about 4,500 employees at the DTC at present, and this figure is expected to rise to about 14,500 by 1985. Another large office park, Greenwood Plaza, is located across an interstate freeway from the DTC, and it currently employs about 2,000 people. Together, these two areas have the potential to become a major diversified center of substantial scale. A second area is located in suburban Lakewood, near a large regional shopping center. More detail on the current situation in both these areas is provided in Section IV.

(4) Miami, Florida. The polycentric city concept is an important part of the Comprehensive Development Master Plan for Metropolitan Dade County [19]. This plan was published in March of 1975 after having been adopted in two parts, in 1974 and 1975. The section on activity centers defines two types of centers: specialized and diversified. Locations for both types are presented in map form for two points in time, 1985 and the year 2000. A three-level hierarchy of centers is shown on the map, defined as regional, metropolitan and sub-metropolitan. No size or mix forecasts or targets are provided and no description of the present status of each designated location is given. In 1985, one regional center (downtown Miami) and seven metropolitan diversified centers are shown. In the Year 2000 map, one regional center and nine metropolitan centers are shown.

The text of the plan contains definitional and illustrative material plus the general criteria that were used to designate the locations shown on the map. The rationale that is included is quite similar to that used in other cities:

> "The ideal diversified activity center would represent all the most essential urban qualities and functions arranged to provide people with the greatest opportunity and freedom for intimate contact with the city and the ability to enjoy it at one's own pace. To attain these qualities in a compact and limited space, great foresight and selectivity should be exercised."

The criteria used to define diversified centers are very general and do not distinguish between the regional, metropolitan and sub-metropolitan centers. It is stated that "the distribution of activity centers in Dade County should form the basis for the overall land use pattern in the region" [19, p. 47]. It is also stated that these centers, and their surrounding development, should be interconnected by a variety of transportation facilities, particularly rapid transit. Implementation of the activity centers concept is discussed very briefly and consists essentially of a description of a review process that would give those living adjacent to an activity center the opportunity to participate in the process of planning for the evolution of these areas.

The mass transit section of the Comprehensive Development Plan includes only a very brief reference to the activity centers concept:

> "Transit facilities and services should support the shaping and staging of redevelopment, development and intensification of the central business district, existing and planned major activity centers and their surrounding neighborhood."

Except for some general comments about encouraging development around rail rapid transit stations, the plan contains no specific guidelines or ideas about how transit investments could be used to shape the development pattern of the region.

Forecasts of the distribution of people and jobs for the urbanized portion of Dade County were developed as a part of the Miami Urban Area Transportation Study (MUATS) conducted during the late 1960's and early 1970's. These forecasts indicated that very rapid growth was expected between 1975 and the year 2000, 261% in population and 265% in employment. These forecasts did not indicate any substantial change in the spatial distribution of people and

jobs in the region and, in this respect, are different from similar forecasts in other comparable regions. Table 3.12 shows the relationships between the Central city and the rest of the region that was described by these forecasts.

TABLE 3.12

Population and Employment Forecasts for the Urbanized Portion of Dade County, Florida, for 1975, 1985 and 2000

	Percent of Regional Total					
	Population			Employment		
	1975	1985	2000	1975	1985	2000
Central Miami	29	27	26	44	45	45
Rest of Region	71	73	74	56	55	55

Source: Miami Area Urban Transportation Study, 1969

These MUATS forecasts have since been revised downward significantly. The current projections for the 1975-2000 period indicate a growth of 43% in population and 76% in employment for Dade County, certainly a drastic cutback from the earlier forecasts. The current forecasts also include revisions in the spatial distribution of people and jobs in 1985 and 1990. The employment shares of Table 3.12 remain about the same but the population shares have been revised downward for Central Miami (26 to 23% in the year 2000) while rising from 74 to 77% in the rest of the region.

In summary, it must be concluded that the activity centers component of the Comprehensive Development Plan for Dade County consists of little more than some red dots of different sizes on a 1985 and year 2000 map. The basic inventory work that is needed to describe the existing situation and to use as a basis for establishing trends and preparing forecasts has not yet been accomplished by the Dade County planners. The classification of centers that has been developed is not well-defined and no rationale has been provided for two and only two sub-metropolitan centers evolving into metropolitan centers during the 1985-2000 time period. No site planning studies have been conducted for specific center locations except those that coincide with possible rail rapid transit stations. These station area studies were not begun in

earnest until September 1977. No specific implementation strategies have been developed other than the review process which is part of the overall planning process in Dade County.

Despite this general lack of substance in the element of the plan that relates to diversified activity centers, there are some prospects for the further development of several of the activity centers specified on the plan map. Miami is now committed to the construction (beginning in late 1978) of a 20.5-mile heavy rail transit system with longer-range plans for a 51-mile heavy rail system supported by 34 miles of priority bus routes. The magnitude of this project is very great and may influence regional land use trends to a significant extent. Figure 3.20 shows the location of the rail transit route in relation to downtown Miami and the nine metropolitan centers that were designated on the year 2000 map in the Comprehensive Development Master Plan. As can be seen, only one (Dadeland) of the eight outlying metropolitan centers is to be served directly by the initial 20.5-mile segment of the rail rapid transit system. Two additional centers would be connected in the larger 51-mile system but five metropolitan centers would be served only with bus transit in the year 2000. These locations will be competing with about 19 rail rapid transit station areas for the new development that is expected to locate somewhere in the region between now and the year 2000.

As Miami proceeds with the development of its rail rapid transit system, the issue they will face will be the same as that which has confronted Baltimore, Washington, D.C., Atlanta and San Francisco previously. If one has a large number of transit station areas and tries to get high density development to take place around most of them, the objective of creating a few large activity centers in the outer city must be abandoned. Miami now appears to be heading in the direction of creating a large number of small transit station centers rather than the large diversified metropolitan centers specified in their master plan. The results of the station area planning studies will strongly influence the course and speed of this trend but they are not yet available for review.

(5) New York, New York. In 1968, the Regional Plan Association published The Second Regional Plan: A Draft for Discussion [24] that made major use of the polycentric city concept. As shown in Figure 3.21, 27 locations were selected for major diversified centers outside of Manhattan. A hierarchy, specified in terms of the amount of office employment in each center, was also

Figure 3.20 The Relationship Between Transit Routes and Major Activity Centers in Dade County, Florida, 1978.

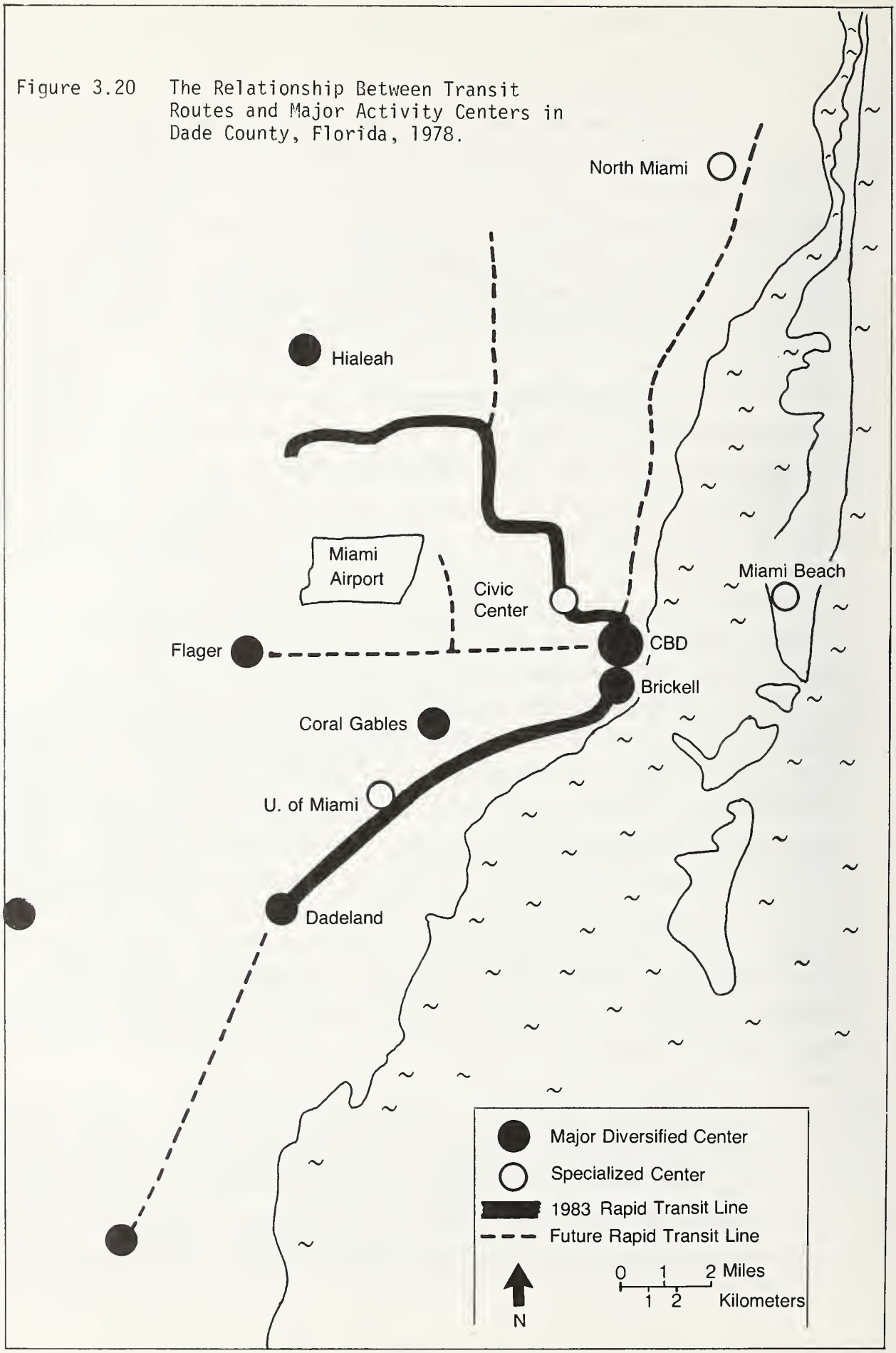


Figure 3.21 Map of Proposed Centers for the New York Region, 1968

formulated and mapped. Three locations were selected as top priority for action (Jamaica, downtown Newark and downtown Brooklyn) and development plans were prepared for these locations as well as two centers in Patterson, New Jersey and the Mitchel Field area in Nassau County on Long Isaland. These publications are among the very few that have been done in the United States and are good examples of how we can deal with the problem of revitalizing and increasing the size and density of an existing but stagnant and deteriorated activity center [20], [21], [22], [23]. Of these four publications, that dealing with Jamaica Center is the most fully developed and has had the most impact. Shortly before it was published, the Greater Jamaica Development Corporation was established (in 1967) to facilitate the development of downtown Jamaica into a regional center of higher education, office employment, government, hospital services, major retailing and the arts. The Corporation's founders were business, civic and community leaders and it is now governed by a Board of ten Directors and twenty-seven members. It currently has a full-time staff of ten. In 1977, the Regional Plan Association reaffirmed its highest-priority support for the development of Jamaica Center. RPA noted that its goals of building a strong transportation network, retaining jobs in the City, strengthening a racially and economically integrated community and improving educational and job opportunities for low-income and minority families are now among the foremost goals of this country.

Despite some initial successes and strong support from New York City, the Jamaica Center concept is currently facing a very difficult situation. A total of $188 million dollars of public investment has been attracted to the Center since 1967 (mostly, about 70 per cent, for a new subway service). But during the last five years, there has been a general exodus of office and retail activities to other, more outlying, locations. The subway line which was supposed to be complete in 1978 is now expected to be completed in 1982-83. York College, a branch of the City University of New York, has not yet been authorized to proceed with the construction of its main building, which has been designed and ready for construction since 1975. This building is the center piece of the overall development concept and has been designed and located to insure a favorable impact on retaining the downtown's existing commercial activities and to enhance prospects for successful marketing of sites in the Office Development District. This year

(1978) is crucial for the development of the Office Development District. A large government office building is being sought as the initial developer and it is hoped that one can be found this year. Overall, after about eleven years of effort by the Greater Jamaica Development Corporation and a long list of other supporting groups, the success of the Jamaica Center concept is still not assured.

More success has been recorded in two other centers in the region. Most successful has been the effort by the Stamford (Connecticut) Area Commerce and Industry Association. A $300 million dollar downtown renewal project has been initiated and has been quite successful to date. Activity in the White Plains Center has also been notable. These two experiences indicate that it is easier to revitalize an existing center when it lies in a relatively affluent part of the region. Some activity has occurred recently in Patterson but the opportunity to utilize a large military airfield to create a major deversified center in Nassau County on Long Island has apparently been lost. Four plans for Nassau Center have been prepared since 1967 but very little has been constructed to date.

In summary, the "centers" concept is still alive in the New York region and has been applied successfully in Stamford. Some success has been experienced in White Plains; Jamaica and Patterson are struggling to get some revitalization going. The Nassau Center idea is apparently not going to be implemented in the near future. No information is currently available on the status of the other 22 centers mapped in the Second Regional Plan of the Regional Plan Association. According to RPA officials, the general lack of growth in the region has been the biggest single factor in the current lack of area wide interest in the centers concept. Still, the RPA experience gained to date should be of interest to planners in other, faster growing, parts of the nation.

c. Considered, adopted, but not yet taken seriously (Washington, D.C.; Los Angeles, California)

(1) Washington, D.C. The polycentric city concept was an important feature of the Policies Plan for the Year 2000 published by the National Capital Regional Planning Commission in 1961. This plan defined several urban form alternatives and then identified a "radial corridor" (also known as "wedges and corridors") form as a preferred alternative. Within these corridors, major centers were identified, some in undeveloped locations and

others at existing suburban centers. Described as a "kite-flying" exercise by some, the plan was nonetheless seriously entertained and succeeded in arousing widespread discussion throughout the region and in high federal circles [25]. Believing that a rail rapid transit system would be needed to meet twentieth-century needs, the plan proposed that the strategic location of large federal employment centers in the transit-served corridors would lead to an orderly growth of regional town centers. Such concepts were then just emerging as in the plan for Reston, Virginia. Freeways would be planned to reinforce the new patterns created by mass transit. The routes of the transit system allowed for easy access to the central city while at the same time, the communities along its right of way could sustain independent commercial, employment and residential functions as far as forty miles away. In the wedges between the urbanized radials, vast open spaces totaling 300,000 acres would be preserved to assure the integrity of the plan.

Essential to the realization of the plan was the construction of the rail rapid transit system. The centers to be located in the corridors were to be major diversified centers in the same sense as the term was later used in Baltimore and the Twin Cities. The Year 2000 Plan won the endorsement of President Kennedy and made a powerful impression on the long-range planning of the National Capital Planning Commission, the park and planning agencies in the suburban counties as well as the co-sponsoring National Capital Regional Planning Council, forerunner of the present Council of Governments. Decisions to locate several Federal facilities in outlying locations were strongly influenced by the plan during the early 1960's even though no decision about rail rapid transit had yet been made.

Following the publication of the Year 2000 plan, attention was focused on the District of Columbia itself. This resulted in the publication of the "Proposed Physical Development Policies for the District of Columbia" in 1965. It reversed the notion that new Federal employment centers should be located in the outer city, and proposed instead that they be located within the boundaries of the old L'Enfant City. Part of the rationale was, of course, the revitalization of the downtown as a compact central employment area and commercial center.

A still stronger environmental, community and social context was given in the Proposed Comprehensive Plan for the National Capital in 1967. This

plan gave a great deal of attention to three elements--land use, highways and park and recreation elements. While it was criticized for its inattention to several other topics of importance, it was adopted in 1968 and was an important initial step in securing the adoption of other elements in the Comprehensive Plan at later dates.

The regional planning functions, which since 1952 had been executed by the National Capital Regional Planning Council, were transferred in 1966 to the Metropolitan Washington Council of Governments. The COG, because of the way its members are selected from local governments, quickly developed a strong tendency to refer many planning matters to local jurisdictions for resolution. Thus, the treatment of the proposals of the Year 2000 Plan were deferred to local jurisdictions who had neither the interest nor resources to do much about them.

In 1968, after some 20 years of study, a 98-mile rapid transit system was finally approved and construction was initiated in 1969. The routes selected in this plan are highly similar although not identical with those published in the Year 2000 Plan in 1961. Planning for the development of the areas around the rail rapid transit stations began late and coordination between Metro and other regional and local land use planning agencies has been weak [27]. However, the station area planning effort was greatly accelerated in 1976 and is now coming together rather nicely because of the coordinative efforts of the WASHCOG. Development plans for several station areas are now complete and others are quite far along.

Most recently, WASHCOG published the Metropolitan Growth Policy Statement [26] which was adopted by the Board of Directors in October of 1977. Part II of this publication deals with Growth Center Policies. Four kinds of centers are identified: 1) The Metropolitan Center, 2) Transit Centers, 3) Outer Suburban Centers and 4) Rural Centers. Only the outer suburban centers are of direct relevance to their study. The one page of policies which relate to these centers is reproduced as Table 3.13. None of the policies are very different from those included in other documents of this type. Since these outer suburban centers have no Metro rail station, it is stated that transit service should be provided between them and the Metro rail transit station and that other non-auto modes should be encouraged for circulation within the suburban centers. WASHCOG has not designated location for any outer suburban centers as yet but Rockville, Maryland repre-

TABLE 3.13 Policies for Outer Suburban Centers

Outer Suburban Centers are those locally planned communities, such as new towns or corridor cities (outside the Metropolitan Center) which might not have large mass transportation capacities in the forseeable future, but which offer desirable locations for future development. Many of the characteristics of Transit Centers are shared by Outer Suburban Centers: both types of centers should be the focus of substantial employment and residential growth, both offer opportunities to prevent continued sprawl in the region's conservation areas, and both types of centers should be the target of public investment to provide adequate public service system capacities.

1. Channel significant expansion in planned employment and residential development into Outer Suburban Centers. This policy should be supported by actions to:

   a. Encourage balance between employment and residential opportunities within each center.

   b. Provide public services required to support the planned growth of the centers.

   c. Preserve locally desired characteristics of existing communities and institutions within the Outer Suburban Centers.

2. Preserve and protect existing community values and institutions within Outer Suburban Centers. This policy should be supported by actions to:

   a. Limit the expansion of these centers beyond limits which are clearly outlined in regional and local plans in order to protect surrounding Conservation Areas from encroachment by high-density development.

   b. Develop innovative approaches and techniques for the protection of historic sites and places within these centers.

3. Provide public services and promote investment in Outer Suburban Centers to provide a positive stimulus for development and to enhance the attraction of such centers. This policy should be supported by actions to:

   a. Address each center in metropolitan plans for water and sewer systems, as well as in the Long-Range Transportation Plan and the five-year Transportation Improvement Program.

   b. Ensure sufficient developable land within the expansion limits of each center to provide room for growth and to provide market flexibility.

(continued)

Table 3.13 (continued)

4. Provide transit service between Outer Suburban Centers and the Metro system suited to the unique characteristics of each center; emphasize the use of transit, bicycles, jitneys, shared taxis, etc., within the centers to reduce reliance on private automobiles.

Source: [26, p. 15]

sents the type of location they are thinking about. It seems probably that WASHCOG will eventually designate 3-5 outer suburban centers as part of their overall growth management program. It is clear that these areas will be competing directly with various Metro rail station areas for the available office-retail growth in the region. How the developers will sort out the strengths and weaknesses of these two types of locations will largely determine the future economic viability of both the Metro rail system and the outer suburban centers. Given the huge inventment in transit that Metro represents, it seems likely that strong efforts will be made to attract developers to rail transit station area locations. It seems doubtful that over 2 or 3 large outer suburban centers (i.e. 30-50,000 jobs) can also be developed during the same time period, unless most developers decide to give first preference to locations with excellent auto access and parking and a reasonable connection to the Metro rail system. This is a choice that is now being made but it will be several years before we know what the relative attractiveness of transit centers and outer suburban centers is to office-retail developers in the Washington region.

(2) Los Angeles, California. The polycentric city concept has been an important attribute of several planning studies in the Los Angeles region in the past few years. In 1970, the Concept: Los Angeles plan was approved by the City of Los Angeles Planning Commission and was subsequently adopted by the City Council in 1974 [28]. This plan identifies the locations of 56 centers (37 in the City of Los Angeles) and includes a map showing their locations with red dots approximately 1 1/2 miles in diameter. Each center is named and all are shown as having a rapid transit station as a dominate feature. No hierarchy of centers has been identified on the map or in the document and there is little text that deals either with the definition of a center or with the implementation of the concept.

The polycentric city concept was also an important feature of the Southern California Regional Development Guide [30], adopted by the Executive Committee of the Southern California Association of Governments in 1972. This document includes a SCAG 90 Land Use Plan map on which "urban centers" are designated with pink circles of various sizes. There is little text in the document that explains what the mapped circles are intended to represent but the implication is that a polycentric city is the preferred urban form for this six county region that was projected, in 1972, to have

a population of more than 21 million in 2020. A continuing decentralization of both population and employment is forcast in the Regional Development Guide as is shown in Table 3.14.

TABLE 3.14

Population and Employment Forecasts for the Six-County Southern California Association of Governments Planning Region

	1980		1990		2000		2020	
	% Pop.	% Emp.	% Pop.	% Emp.	% Pop.	% Emp.	% Pop.	% Emp.
Los Angeles County	66	72	62	69	60	66	56	61
Rest of Region*	34	28	38	31	40	34	44	39

*Includes all of Ventura, San Bernardino, Orange, Riverside and Imperial Counties.

Source: SCAG, Regional Development Guide, 1972, [30].

If this type of decentralization were to occur in this region, then there would be ample opportunity to "shape" growth into centers in various locations. However, there is little indication in the SCAG Regional Development Plan that there will be any regional scale effort to do so.

More recently, Los Angeles County has published (in 1978) a Preliminary General Plan [29], intended for review and discussion in anticipation of hearings before the Los Angeles Regional Planning Commission. The plan includes several maps, one of which is the Urban Form Policy Map. It identifies three major types of elements: 1) a system of multipurpose and special purpose centers, 2) major urban corridors and 3) a regional core district, in addition to other form-giving features such as transportation routes and open spaces. Multipurpose urban centers are defined as locations that "serve two or more major functions for all of, or a major portion of the metropolitan area. A three-level hierarchy of multipurpose centers is specified as follows:

Level 1 Multipurpose Center. Provides two or more major functions for all of the metropolitan area and contains a major concentration of high rise buildings. It is the principal focus of the regional transportation network and the major regional employment center.

Level 2 Multipurpose Center. Provides two or more major functions to a substantial part of the metropolitan area. It contains, or is expected to contain, a significant amount of floor space in high rise buildings and is a major regional employment center located on or near the regional transportation network.

Level 3 Multipurpose Center. Provides two or more major functions to a substantial part of the metropolitan area, but does not contain a significant amount of floor space in high rise structures. It need not be located on the regional transportation network and may not be a regionally significant employment center.

Obviously, there can be only one Level 1 center (i.e., downtown Los Angeles) in this scheme. The planners designated and mapped 14 unnamed Level 2 centers and about 26 Level 3 centers. Eighteen of these 40 centers were identified as high priority centers primarily because they were located in or near revitalization areas shown on the General Development Policy Map. These are locations where the planners feel that the investment of public funds is needed to stimulate the investments of the private sector. Beyond this, the plan offers little text on the subject of implementation and there are few analytical results that support the policies put forward. Still, the Los Angeles County planners have defined and mapped a hierarchy of multipurpose centers in their region and that is something that no other large urban region in the United States has done so far, to the best of our knowledge.

d. Considered, but not adopted (San Diego, California; Seattle, Washington; Houston, Texas; Chicago, Illinois)

(1) San Diego, California. In San Diego, the Comprehensive Planning Organization has examined the polycentric city concept in some detail but it is not currently a part of any adopted plan. The future of the downtown part of San Diego is the dominant regional issue at this time and a very large part of the planning activity in the region has been oriented to exploring ways to increase the growth and density of the downtown. However, the Comprehensive Planning Organization, the regional planning agency for the San Diego region, has funded one excellent study of the demand side of the activity center concept as it might be applied in their region. This study produced a working paper [31] in early 1976

but no follow-on studies have yet been undertaken. Other than this, some substantial effort has been devoted to the examination of the use of a major activity center circulator system (people-mover) as a way of enhancing the development potential of downtown San Diego. Both of these studies contain material that is relevant to our topic and they will be briefly reviewed.

San Diego is a very dispersed city at the present time. Table 3.15 shows that the central part of the region declined sharply in terms of its share of retail and office employment between 1966 and 1972 and the planners in the region feel that this trend has continued to the present time.

TABLE 3.15

Distribution of Retail Space and Office Employment in the San Diego Region, 1966 and 1972

	1966		1972	
Retail Space	$ft^2 \times 10^6$	% total	$ft^2 \times 10^6$	% total
Central San Diego	7.63	42	7.96	31
Rest of Region	10.51	58	17.66	69
Office Employment	No.	% total	No.	% total
Central San Diego	77,100	55	102,500	50
Rest of Region	62,900	45	102,500	50
	140,000		205,000	

Source: [31]

The Comprehensive Planning Organization has also conducted an inventory that shows the distribution of retail space in different types of locations. These data (see Table 3.16) show that the region's CBD's lost ground during the 1966-72 period in relation to other types of commercial areas. This trend suggests that the market is producing some further concentration of retail activity in regional centers primarily at the expense of the eleven CBD's in the region. Strong political pressure is being exerted to counter this trend but it is still too early to tell how effective it will be in slowing the growth of the regional centers.

TABLE 3.16

Distribution of Retail Employment by Retail Area Type
in the San Diego Region, 1966 and 1972

Type of Area	1966 No.	1966 % Total	1972 No.	1972 % Total	Change 1966-72
CBD's	36,529	48	44,301	41	-7
Regional	12,949	17	21,123	20	+3
Community	14,292	18	20,539	19	+1
Specialty	4,683	6	5,727	6	--
Freestanding	1,586	2	2,217	2	--
Strip Commercial	3,602	5	5,014	5	--
Auto Only	3,112	4	7,660	7	+3
	76,753	100	106,311	100	

Source: [31]

These data also provide a measure of the proportion of the regional employment that is located in CBD's and regional centers. In 1966, the figure was 13 per cent and it rose to 14 per cent by 1972. This is somewhat lower than similar figures for Toronto and Minneapolis-St. Paul and again indicates the very dispersed nature of the San Diego region. If the San Diego region were to adopt an activity centers policy, it could probably be expected to increase the proportion of office/retail employment in CBD's and regional centers by only a few per cent over the next 20 years and even this much "success" would leave 75 per cent or more of the employment in the region in other non-center locations. The problem of designing an areawide transit system for such an urban form is very formidable.

The major activity centers study designed by the Comprehensive Planning Organization is an excellent example of the kind of work that a regional planning agency needs to do in order to formulate a major activity centers element for its regional plan that is substantive and credible. The study design contained the following major elements:

1. Definitional studies designed to develop a classification for existing and proposed centers.
2. Identification of the location requirements of various elements of the private sector. This study was oriented to specifically identify the relative importance of zoning and utility rates, access, labor, financing, resources, support industries, market areas and tax rates. Particular attention was given to identifying the labor force requirements of industries, commercial activities and services.
3. Review of manpower training programs and how they could contribute to decisions on the location and timing of major activity center decisions. Development of locational characteristics for activity groupings that would be most conducive to reducing unemployment in the region and which would help achieve a better balance of jobs, housing, skills and services within the community.
4. Determine the characteristics of a pattern of activity and industrial centers that would do the most to help achieve air quality objectives and describe the extent to which such a pattern is likely to reduce pollutants.
5. Evaluate the effect of various patterns of activity and industrial centers on regional transit ridership and auto congestion, total auto travel and job accessibility for low income areas. Explore and evaluate prototypes of new concepts for multi-use centers in conjunction with transportation facilities.
6. Review the relationship between local plans, policies and the location and development of activity and industrial centers. Describe how public policy on zoning, utilities, taxation and other discretionary programs serve to attract developers to center locations. Investigate the effects of permitting mixed uses in activity and industrial centers, the effects of down-zoning and the surpluses of land which should be maintained to keep land values reasonable and to allow choice in site selection. Investigate the special problems and opportunities of land proposed for redevelopment and the effects of potential new centers, as provided for by local plans, on existing centers. Identify the costs and other effects on local jurisdictions of "fiscal zoning" (the individual competition for high revenue yielding development) and describe the fiscal equity or inequity of any alternative, or recommended distribution of centers.

7. Identify past trends with respect to the following questions:
   a. Is there a trend toward more of the region's services and employment being provided through large-scale planned centers as opposed to individual operators and entrepeneurs?
   b. Is there a trend toward relatively few, larger centers or toward a greater number of scattered centers?
   c. Is there a trend toward more specialized or multi-use balanced centers?
   d. Is there a movement of jobs and services to new suburban areas, older suburban areas, or urban core areas?
   e. What are the effects of local plans and policies, especially down-zoning?
8. Develop a methodology which can be used to forecast the locations of activity centers and related basic and local serving employment. Use the methodology to forecast the number and location of various kinds of centers that could be expected to develop given the implementation of various types and levels of performance standards.
9. Prepare a set of policies which describe a recommended pattern of activity and industrial centers. These policies will describe the general location, scale, composition and timing of the future centers. These policies would be based on a synthesis of local and regional plans, economic and air quality objectives and the requirements of the private sector. They will also describe the relationship to regional transportation facilities.
10. Describe those steps that can be taken by local and regional public agencies to achieve the recommended distribution of activity and industrial centers. Evaluate a number of new techniques that could be used to improve the public and private decision-making process for future industrial and activity center development. Include tax base sharing programs, legislative measures or sub-regional growth allocation guides for commercial and industrial development.
11. The following products were to result from the study:
    a. Policies, standards and a map that describes where activity and industrial sites should be located, which can be used to evaluate proposed developments in terms of size, location, composition, and access requirements. These recommendations should be compatible with the ability of the private sector to develop and operate local plans and ordinances, air quality objectives, regional policies and the Regional Transportation Plan.

b. A methodology for forecasting the location of activity and industrial centers and related basic employment which incorporates factors found to be important in the course of this study.

c. Forecasts of basic employment and total employment related to centers.

d. Recommendations on the relationships between various kinds of existing and proposed centers identified in this study and various modes of transportation describing what types of centers benefit from fixed guideway service, from freeway access and how sensitive various centers are to the location of terminal facilities.

e. Recommendations for implementation using the tools that are currently available. This includes the responsibility of local jurisdictions for land use planning and zoning. It also includes the responsibility of regional agencies in planning and providing facilities for urban development.

f. Recommendations for implementation using new tools that could contribute to achieving a desirable distribution of activity and industrial centers. This could include cooperative efforts by local jurisdictions on a subregional or regional basis, tax or other revenue sharing techniques.

g. Profile of the region's employment force as well as characteristics of the unemployed.

Unfortunately, this study program has not yet been implemented by the CPO with the exception of Element 2, which deals with the estimation of the locational requirements of the private sector. This element was conducted by a consultant and the findings cast considerable doubt about the feasibility of implementing the activity centers concept in the San Diego region. Some of the key findings from this report [31] are as follows:

1. Commercial and industrial activity centers in the San Diego region have in the past and will continue in the future to develop in a relatively decentralized pattern. The region has few agglomerations that have developed to density levels that are high enough or which contain a sufficiently rich mix of complementary uses so as to generate the type of highly magnetic attraction that would encourage new uses to cluster adjacent to and within existing activity centers.
2. The land use and transportation systems that have been evolving together in the region are not and will not be transit efficient. The nature of these systems will make it very difficult for transit to be competitive with the automobile.

3. The decentralized land use pattern that has been encouraged by a highly developed freeway system, by the ready availability of the private auto, and by relatively large amounts of vacant land cannot be changed merely by superimposing a rail transit system on the region. While transportation is an important determinant of land use patterns, it is not the sole one. If the land use pattern is to be changed, transportation changes must be accompanied by zoning and capital budgeting policies that facilitate new and redeveloped agglomerations around transit stations in areas where there is a strong market for such a rich mix of uses.
4. Zoning and the many other land use powers are becoming increasingly important determinants of activity center development. The present relative scarcity of large, appropriately located and zoned sites for the development of new agglomerations along with the relatively weak magnetism of existing activity centers will tend to encourage continuation of freestanding and strip-type development.

These rather pessimistic results suggest that the prospects for creating large activity centers in the low density and highly decentralized San Diego region are not sufficient to warrant the full scale study of the issue that was originally contemplated by the planners at the CPO. Thus, no major activity center element is currently expected to emerge from the regional planning process in the San Diego region. Still, the study design is an excellent one and should prove helpful to planners in other regions who expect to conduct similar studies in their own areas.

The future of transit in the San Diego region is presently undecided as a light rail transit proposal was recently rejected by the recently created San Diego Regional Transit Development Board. As this issue is reworked, the activity center question is bound to emerge once again and may become an important element in the transit development strategy that is evolved by this new agency.

The other study of interest in the San Diego region is the Center City element of the General Plan for the City of San Diego. This element addresses the role of transit in attracting substantial quantities of new development to downtown San Diego. This work has been done by the Planning Department of the City of San Diego and represents a rather detailed look at how transit could be used to shape and encourage the growth of this rather underdeveloped part of the region.

An urban design concept was developed for the Center City and then a transportation system was designed that would both enhance and make the urban design concept viable [32]. The transportation system was designed to link the major activity nodes within the Center City area and was conceived as a small scale collector-distributor system. It was designed to accomplish the following objectives:

1. Provide easy access to all areas of Center City from peripheral parking facilities.
2. Provide easy access to all areas of Center City not served by regional transit.
3. Provide for mobility within Center City for residents, shoppers and businessmen requiring movement about Center City to conduct their business.
4. Reinforce and enhance the feasibility of achieving the urban design concept developed for Center City.
5. Allow flexibility for street closures so as to maximize development potential through consolidation of land parcels.

The plan that was developed was conceptual only and was not specific as to technology or guideway and station locations. The illustrations developed are similar in nature to the Downtown People-Mover concepts that have been developed recently in a number of cities around the country. It is likely that further work on this activity center concept will have to await the results of the transit study now being conducted at the regional level by the San Diego Regional Transit Development Board.

In summary, the activity centers study design developed by the CPO was excellent but an initial feasibility study produced such negative results that the full study has not been carried out. This study design is remarkably similar to those actually implemented in Toronto and Vancouver and goes beyond these two studies in terms of its inclusion of a methodology for forecasting the most likely impacts of alternative patterns of activity centers and evaluating, in a comparative framework, their relative strengths and weaknesses. This was to be done using the extensive computerized modeling system that has been developed by the CPO. The one part of the study that was done did not examine how a shortage of gasoline might impact the land development pattern in this very auto-oriented region. Should such a shortage develop, San Diego would be one of the most vulnerable areas in the country because of its high level of dependence on the

automobile. Unless something of this nature occurs, the prospects for the development of several large regional centers in the region are not bright. A more likely pattern is a large number of small centers, only one of which (the San Diego CBD) has any prospects of attaining a size that would enable it to be called a major diversified center.

(2) Seattle, Washington. The polycentric city concept has been a part of the regional planning scene in the Seattle region since the early 1960's, when the Puget Sound Regional Transportation Study was being conducted. In this study, two major land use alternatives were developed, called Plan A and Plan B. Plan A represented a continuation of the dominance of the central cities of the region (Seattle, Tacoma, Bremerton and Everett) while Plan B called for the creation of several other large outlying centers. Plan B was preferred by the planners in the region who saw it as being consistent with market trends and the desire of the residents of the region for preserving large amounts of open land within the urbanized parts of the region. However, Plan B was demolished by the Mayor of Seattle and others as being too contrary to the desire of the downtown development interests to encourage the further growth and density of Seattle's downtown. As a result, the Regional Transportation Plan was designed to serve a land use plan that included large amounts of employment growth in the Seattle downtown and other portions of the City of Seattle while large population increases were assumed to occur only in the outlying areas of the region.

The figures used to represent this land use plan produced very large increases in commuter volumes on all segments of the transportation system and resulted in the "need" for several new freeways and other major highway facilities. The same land use plan was also used in two transit planning studies that led to two votes on a rail rapid transit system that was designed primarily to serve Seattle's downtown. The rail transit plan was voted down twice (once in 1968 and once in 1970) and the issue of continued rapid growth in Seattle's downtown was prominent in both elections.

The early work of the Puget Sound Regional Transportation Study was formalized and extended by the Puget Sound Governmental Conference, which produced an Interim Regional Development Plan (IRDP) that was adopted in 1971. This plan was based on an aggregation of local plans that were modified to fit some overall regional growth estimates. The IRDP and the regional forecasts used to support it continued to call for large quantities of employment growth in the City of

Seattle and large population increases in other parts of the region. This produced particularly large increases in 1990 commuter volumes across Lake Washington as the residents in the outer city travelled into the City of Seattle for work. These land use forecasts were used as the primary justification for a proposed new floating bridge across Lake Washington that is now estimated to cost more than 800 million dollars for a little more than 6 miles of facility (i.e., about 133 million per mile).

The IRDP has been the subject of extensive criticism since its adoption. Critics particularly noted that the urban land market was producing a land use pattern that was much more similar to the Plan B concept than the Plan A concept which was very similar in concept to the adopted IRDP. Yet, the IRDP was retained for six years and has only recently been replaced with a new document, entitled Goals and Policies for Regional Development, adopted in February, 1977 by the Puget Sound Council of Governments. This document is intended to be a formal expression of regional concerns, problems, goals, policies and procedures for resolving issues to be considered in the development of more detailed subregional policies, standards, criteria and implementation measures which, taken together, will constitute a new Regional Development Plan.

Policies regarding activity centers are included in this document and are as follows [33]:

Goal

It is in the public interest to concentrate regional service, shopping, employment, governmental, recreational and cultural activities in existing centers where necessary investments in transportation and public services have already been made.

Policies

1. Promote revitalization of the older and declining urban parts of the region.
2. New economic activities should be encouraged as a first order of preference to locate in existing centers, and as a second order of preference to group into new centers, rather than locate in dispersed, stripped or isolated areas.
3. New centers for economic activity should occur where it can be shown that:
   a. The locational requirements associated with a particular activity limit its location within existing centers.

b. Major transportation, energy and environmental benefits, including a reduction in commuting time, can be derived from a new center located outside existing centers.

c. It will be located near residential areas which will include housing opportunities for persons expected to be employed in the new center.

d. It will generate revenue adequate to pay for public costs, both direct and indirect, associated with the new center.

4. Locally oriented shopping and service activities should be located as determined by local plans.

Together, these policies constitute an effort to stem the decline of the central city and reduce the high public costs of scattered development by channelling jobs and other activities into existing centers which have underutilized facilities and services. Another section of this document deals with transportation policies but none of the 16 policies included address specifically the issue of using transportation investments to encourage the growth of activity centers. The definition of activity centers that is used mentions this relationship only minimally:

> Activity Centers: Focal points of urban activity which include a concentration of jobs, shopping, offices, business, recreation, and service functions usually with a highly developed transportation network serving and connecting one or more centers.

The document also contains a section on the procedures for its application, interpretation, evaluation and amendment. Implementation of the activity centers policy is not given any special attention in this part of the document.

During the time when the IRDP has been in effect, two regional shopping centers have been built and three others proposed in the region. The locations of the existing and proposed regional centers is shown in Figure 3.22. The three proposed centers have generated considerable controversy and one (Bothell) has apparently been defeated for the time being. Neither the IRDP nor the more recent Goals and Policies for Regional Development included a map showing the desired locations for major activity centers in the region and so the developers have encountered great difficulty and delay in trying to get their projects approved and built on locations of their own choosing. The Puget Sound Council

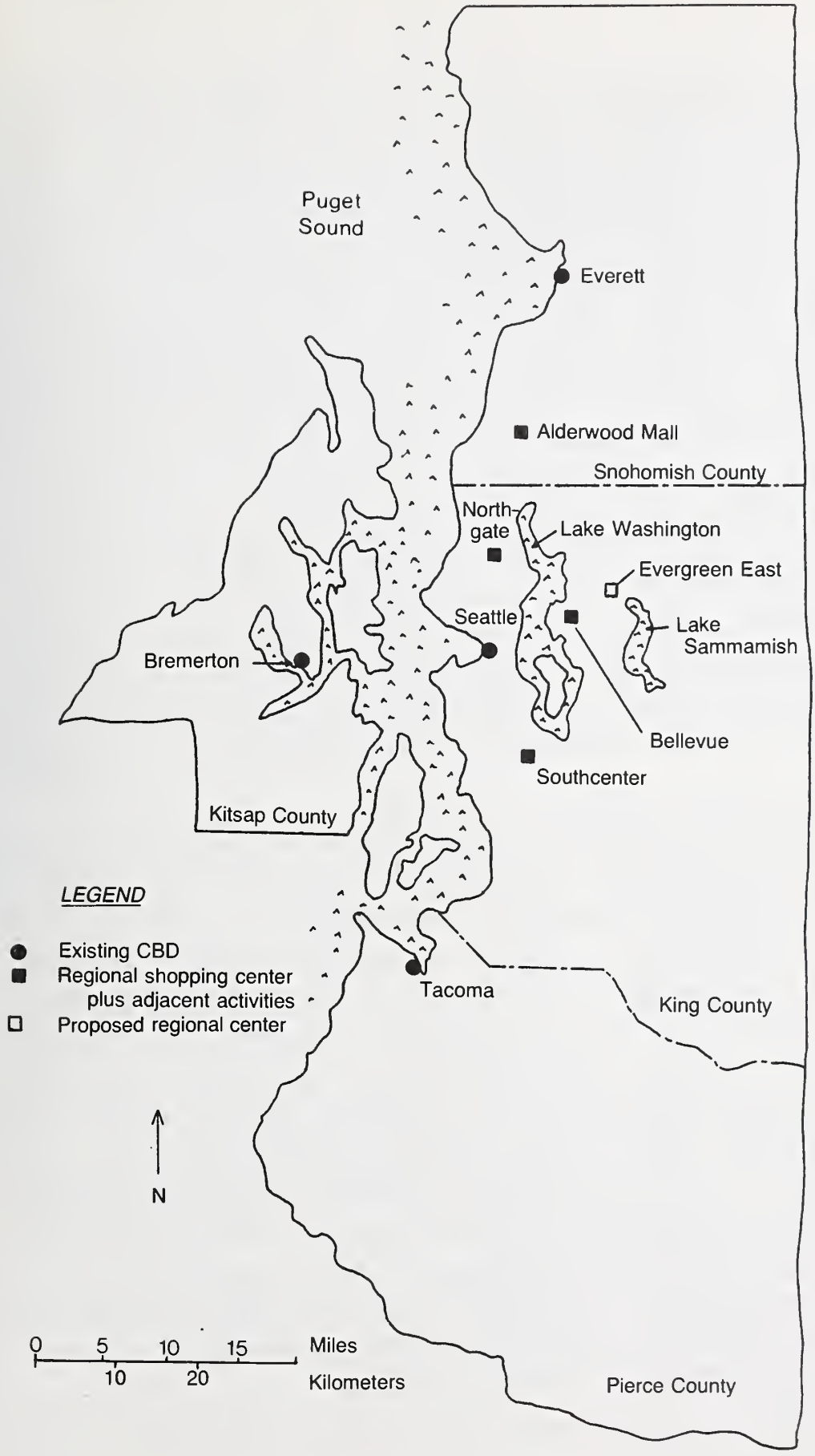


Figure 3.22 Existing and Proposed Major Activity Centers in the Central Puget Sound Region, 1977

of Governments has undertaken one inventory study of location of retail and office space so the trends in the spatial distribution of these two key components of an activity center's policy are not currently known. Rail transit planning in the region has been focussed almost entirely on moving people to and from the Seattle CBD during peak periods and little attention was given to the concept of using transit investments to encourage the growth of centers other than downtown Seattle. However, in 1972, a very innovative transit plan was developed that called for a bus rapid transit service that would connect several activity centers in the region with a high-speed freeway flyer service. The concept was one of developing an areawide transit service that would enable people to use bus rapid transit for a wide variety of trips. Normally, one would use a feeder service to the nearest activity center, then transfer to a freeway flyer bus going to another activity center and, perhaps, transfer again to another feeder service to get to a destination in that local service area. This two-transfer concept of providing service for a wide variety of trip purposes was viewed as making the bus much more competitive with the automobile. The plan also called for the development of 25 park-ride lots and several freeway flyer stops to supplement the basic service concept and make it even more useful.

As of 1978, few elements of this plan have been implemented and the structure of the transit system remains pretty much as it was in 1972 when the plan was approved by a vote of the people and implementation was initiated. A few park-ride lots have been built, some new express service added to downtown Seattle (some with intermediate stops) and one freeway flyer stop has been constructed. However, the major preoccupation of the transit agency is still the provision of service to downtown Seattle and little progress toward the center-oriented collector-distributor and connector services that were in the plan approved by the voters in 1972 is expected in the next few years.

At present, there are three existing downtowns, one emerging downtown, two existing and two proposed regional shopping center complexes that have some potential for retaining or acquiring a scale and mix of activities sufficient to be designated as a second-level major diversified center in the Central Puget Sound region. The three downtowns are Tacoma, Everett and Bremerton, all of which are in a state of decline.

The emerging downtown is located in Bellevue, an affluent community located about 8 miles east and across Lake Washington from Seattle. The Bellevue Downtown Development Board has recently completed a framework plan for this area that they hope will assist it to grow and become more dense. To the south of Seattle, a regional shopping center called Southcenter is attracting numerous other activities to its vicinity and this area is beginning to exhibit some of the characteristics of a major diversified center. The same thing is happening around the Northgate Shopping Center located about seven miles north of downtown Seattle. The Northgate Shopping Center was constructed in 1953 (the first of its kind in the nation) and has attracted a considerable amount of complementary development to its vicinity over the past 24 years. Today, it has most of the characteristics of a major diversified center but lacks some of the benefits that could have been obtained with good planning for the area. Traffic congestion and air pollution are both major problems in the Northgate area today (see Figure 3.23). The Southcenter mall (see Figure 3.22) is rapidly developing similar problems (see Figure 3.24). A third large development, Alderwood Mall (see Figure 3.22) is now under construction on a large vacant site, much of which will not be used in the initial development of the center and its parking areas.

A proposed regional shopping center, called Evergreen East (see Figure 3.22) would include both retail and office buildings on a large site near the center of an area that is expected to contain some 250,000 people by 1990. This proposal is very controversial and has been challenged in the courts by both public agencies and private citizens. If it goes ahead as currently planned, it could become the core of a major diversified center serving a large and affluent population in the 1980s.

Together these eight locations constitute a set of existing and emergent major diversified centers that are well-located and could serve as the basic structure for a polycentric urban form in the Central Puget Sound region. The one big question that has yet to be answered is: Will public policy be developed and applied in such a way as to encourage these eight centers (and perhaps a few others) to grow and become more dense or will no incentives and disincentives be provided to shape the market in this direction?

During 1978, the polycentric concept has been examined more intensively in King County, the most populous of the four counties which make up the Central Puget Sound Region. The King County Subregional Council, through its

Figure 3.23. View of Northgate Shopping Center and Vicinity, Looking South, 1977

Figure 3.24 View of the Southcenter Shopping Mall, Surrounding Office and Distribution Facilities, Seattle Region, 1976, Looking South

Growth and Development Committee, has developed a set of Activity Center policies which have been discussed extensively and which are slated to become an element of the Subregional Plan for King County. This plan is expected to be adopted in late 1978 and will be one of four county plans that together will provide guidance for the further urbanization of the Central Puget Sound Region.

While still in process, the King County effort has developed some interesting materials that are worth examining. The definition of an activity center that has been developed is quite similar to the one developed initially in the Twin Cities and is as follows:

> "Activity centers are focal points of urban activity which include a concentration of jobs, shopping, offices, business, recreation, and service functions, usually with a highly developed transportation network serving and connecting one or more centers." [34]

Following this definition, a statement of purposes and objectives was developed that offers some additional detail:

> Purposes and Objectives
>
> The activity centers element of the King Subregional Plan is a cornerstone of its proposed growth management strategy. It is a counterpart to the plan's restraints on sprawling development. The activity center strategy offers positive incentives to attract and maintain urban growth in selected locations.
>
> Specific objectives of the activity center element may be summarized as follows:
>
> 1. To conserve land and neighborhood cohesion by providing a strong alternative to commercial decentralization.
>
> 2. To encourage recycling and enhancement of existing urban and suburban centers, rather than letting them become obsolete.
>
> 3. To strive for a balance between the location of jobs, shopping concentrations and residents, in order to relieve pressure on transportation facilities.
>
> 4. To cluster compatible urban activities at densities high enough to justify capital investments in pedestrian amenities and good transit service.
>
> 5. To conserve energy by consolidating destinations, reducing vehicular trips between related activities.

These five objectives are consistent with those normally used in regional development plans and cover no new ground. The King County Subregional Council (KCSRC) next showed how these five objectives relate to the problems in the way urban activities are being distributed. These relationships are presented in Table 3.17 and they describe situations that are also common in other cities of comparable age and size (e.g., Denver and the Twin Cities). This analysis is followed by six policy statements, each of which are followed by some policy implementation guidelines. These items are as follows:

Activity Center Policies

Policy #1 A map designating activity centers shall be adopted by the Subregional Council and its member governments

Policy Implementation Guidelines

A map of Subregional Activity Centers indicates the general locations of the several types of activity centers. The hierarchy is described as follows:

Primary Metropolitan Centers -- the largest, most accessible of the centers.

Secondary Metropolitan Centers -- highly accessible centers of employment and commerce serving a trade area of 150,000 people or more; total non-manufacturing employment of 20,000 people or more, at a density of 60 employees per acre or more.

Urban Districts -- e.g., Seattle's Broadway and University Districts, serving a mixture of specialized regional functions drawing people from the whole region, and general convenience or entertainment functions of population living in high-density dwellings adjacent to the centers. Intra-city and regional transportation access by public transit should be very strong, to preserve pedestrian linkages and take advantage of transit user concentrations.

Suburban City Centers -- the business districts of suburban cities which provide a localized market and commercial area with additional employment.

Rural Town Centers -- self-sufficient trade and service centers for rural residents, the size will vary with location and trade area.

Special Purpose Centers -- e.g., Sea-Tac Airport and vicinity, attractions of high volumes of traffic for special purposes, not pedestrian oriented.

TABLE 3.17

Activity Center Objectives in Relation to Problems with Current Trends

Activity Center Objectives	Problems with Current Trends
1. "...providing a strong alternative to commercial decentralization."	Dispersion of Retail and Office Activities: jobs and shopping locations are dispersing in King County. Regardless of public policy advocating "urban centered" development, local government zoning ordinances and an automobile-dominated transportation system have fostered outlying shopping centers and low-density office development. Adjacent neighborhoods have been threatened by commercial developments and arterial street efficiency suffers from the multiple accesses to dispersed businesses.
2. "...enhancement of existing urban and suburban centers..."	Vitality of Suburban City Centers Threatened: elaborate plans to revitalize suburban central business districts are operating at a disadvantage. The excess of commercial zoning over land actually needed for that purpose and the profits that can be reaped from a commercial rezone divert private capital away from refurbishing existing city centers, especially in the older suburban cities. Large outlying sites in single ownerships, easily accessible by automobile, are more attractive than the typical obsolescent suburban downtown. Traffic congestion in the older centers, largely unalleviated by transit, renders them progressively less functional.
3. "...a balance between the location of jobs, shopping and residents..."	Growing Distances Between Residence and Job Locations: PSCOG's "208" allocation of population and employment indicated that almost half of the 134,000 new jobs expected in King County by 1990 would locate in various parts of Seattle, while only about 16% of the 239,000 population growth would occur there. Substantial commuting pressures in addition to existing ones are implied by these figures. The remaining 74,000 or so jobs locating elsewhere in King County would probably be too dispersed to offer many people a chance to minimize distance between home and job, or to have good transit connections between them.

(continued)

Table 3.17 (continued)

Activity Center Objectives	Problems with Current Trends
4. "...urban activities at densities high enough to justify capital investments in pedestrian amenities and good transit service..."	Existing Suburban Centers Not Dense Enough: newer suburban cities are spread out to allow free automobile access and parking to individual offices and businesses. Outlying shopping centers are located and sized chiefly for convenience of people in automobiles.
5. "...conserve energy by consolidating destinations..."	Dispersal of Destinations: outside the Seattle CBD and a few unique concentrations of activity such as the University District, the tendency has been to separate retail and office locations, and to separate both of these from residential uses, thus increasing fuel consumption.

Source [34]

The map indicates designations of what centers are expected to be in place by approximately the year 1990.

When adopted, these designated centers shall become the foci of major retail, office and selected other urban activities.

Clustering of complementary activities shall be encouraged in and around identified activity centers in preference to scattered or stripped locations (local convenience activities, however, should be in close proximity to neighborhoods).

Policy #2 Existing urban and suburban centers shall become the basis for activity center location before the year 2000.

Policy Implementation Guidelines

The existing centers designated on the map are believed to have enough existing capacity and/or redevelopment potential to accommodate major concentrations of retail, non-manufacturing employment and other high-intensity uses expected by the year 2000. No major new centers will be needed before then.

Rehabilitation or redevelopment projects in designated centers shall be given the highest priority for public investments that stimulate retail and office development.

The public sector, through land use regulation or capital investment, should discourage duplication or dispersion of activities (retail, cultural, institutional) that will damage a designated center's competitive position within its service area.

Policy #3 Activity centers shall be located and developed in a manner that encourages a wide variety of housing choices highly accessible to the centers.

Policy Implementation Guidelines

This policy may be implemented in a variety of ways, depending on type of center, existing development in and near the center, community attitudes, etc. The central idea is to promote opportunities for closer ties between residential locations and employment/shopping locations.

Housing and job location choices should be diversified in King County, through deliberate public encouragement of decentralized employment locations that are large and concentrated enough to warrant good transit service to and from diverse kinds of housing areas.

Local option shall guide housing densities adjacent to designated activity centers.

Policy #4 Circulation systems investments relating to activity centers shall give priority to pedestrian and public transit access.

Policy Implementation Guidelines

Public investment in transportation facilities and services providing safe and convenient movement to, within and between existing activity centers should be given a higher priority than expansion of entirely new transportation facilities into outlying areas.

Local jurisdictions will control peripheral development of uses that detract from integrity or ease of access to a designated center.

Policy #5 Centers shall be planned and designed to consolidate transit destinations and promote pedestrian/local transit connections within them.

Policy Implementation Guidelines

Interpretation of this policy will vary according to type of center. High-rise buildings interspersed with low-intensity uses may in some cases work as well as a large number of medium-intensity uses.

Communities receiving public investments to encourage activity center development will adopt plans and land use regulations that foster sufficient mixtures, quantities and concentrations of activity to justify the public investments.

Whenever feasible, employment concentrations in activity centers should be convenient to other urban services, to reduce the daily travel requirements for:

a. employees to shopping and services;
b. accessibility to business--supporting services.

A community's highest residential densities should be located in and/or near an activity center, connected to it by suitable pedestrian or transit routes.

Policy #6 Local governments shall provide incentives to private investment in activity center development, to relate to public investment programs.

Policy Implementation Guidelines

Public measures to facilitate land assembly will be devised within designated activity centers.

Development permit processes will be simplified and expedited within designated activity centers.

The final section of this proposed RDP section on activity centers dealt with the problem of designating secondary centers and making the concept operational. The following sequence of activities has been proposed:

Proposed Sequence for Designating and Implementing Secondary Centers

The steps required to make the concept operational could be as follows:

By June 1978

1. Define purposes.

2. Adopt and "test" criteria for location and development of secondary centers.

3. Adopt activity center concept and general policies as part of subregional plan.

4. Outline transit and other supportive impact studies needed.

5. Begin more rigorous data collection to describe characteristics of potential centers.

After June 1978

1. Utilize new population and employment forecast data generated in subregional plan formulation.

2. Rigorously analyze demand for possible center locations--interview potential users of centers (both private and public sectors) and determine center characteristics most attractive and/or acceptable to them.

3. Careful analysis of potential center locations to estimate comparative feasibility. Work with cooperating jurisdictions if possible. Narrow down the list of "candidates."

4. "Test" alternative patterns of secondary center designations (with and without computer modeling assistance). How do alternative allocations of employment and commerce affect transit operation, public infrastructure costs, intraregional transportation requirements? How much public and private investment is required? What are general effects on natural environment? On community values?

5. Based on these tests, narrow the list of candidates down further, but maintain a contingency list in case some candidates fail to come through.

6. Begin negotiation with jurisdictions that would sponsor center development. Ascertain community acceptance, and local government's willingness to assure necessary basic conditions to justify the regional incentives offered.

7. Provide public incentives to designated centers

   -- funding priority to provide the necessary access and other conditions

   -- regulatory provisions, to foster compact development of compatible land uses within the center, and restrict excessive competitive zoning elsewhere in the jurisdiction.

8. Monitoring and assistance in site design and development.

The materials developed by the KCSRC to date (June 1978) represent a good effort to make the polycentric concept operational and if these materials are adopted without major change, King County will have taken a major step in this direction. In this case, the elected officials are being asked to adopt a set of policies before any detailed analysis of the applicability of the concept to their area has been accomplished. This approach is very different from all the other areas that have looked at the concept somewhat seriously (i.e., Baltimore, Minneapolis-St. Paul, San Diego, Toronto and Vancouver) in that fairly detailed studies of the supply and demand sides of the issue were conducted prior to the formulation and adoption of policies. If the proposed policies are adopted, the staff would probably conduct these studies during the next few years.

The unique aspect of the KCSRP work to date is its use of a five-level hierarchy of centers and the identification of the location of each of the centers on a map. The mapping of the centers has been a somewhat controversial issue but is seen by some as essential to the communication of the meaning of the concept to the readers of the plan. Overall, if the plan is adopted in its present form, it will be the most specific in the nation. Its durability will depend on the results obtained from more detailed analyses of the correctness of the many assumptions that were made in this process of formulating the activity center policies.

A large-scale transit study designed to define the post-1980 transit needs of the region began in the Fall of 1977. It contains two elements that will focus on assessing the transit needs in two centers (downtown Seattle and downtown Bellevue). No examination of the way transit could serve the other centers is presently planned, so far as is known.

The Seattle region is now in an excellent position to develop a polycentric urban form if it wishes to do so. Transit investments could play a significant role in any action program that was designed to concentrate additional growth and density in these eight locations. The land use planning activities of the four counties included in the region and the local governments which presently include these centers will largely determine how much emphasis is to be given to achieving such an objective.

(3) Houston, Texas. Houston has been called a "city of centers" and it is, perhaps, the closest thing to a polycentric city, in being, in the United States today. It is also the only city in the United States where the transit needs of a wide variety of non-CBD activity centers has been intensively studied. The Rice Center for Community Design and Research has conducted both studies and they will be briefly described in this section. First, a few general comments are needed in order to acquaint the reader with the overall situation in Houston.

Houston has been growing at a very rapid pace since 1900, doubling its population every 20 years since that time. It has achieved the status of a leading international business center and is regarded by some as the energy capital of the world. In 1973, there were only five foreign banks with representatives in Houston. In 1977 there were 34. It has attracted large foreign real estate and manufacturing investments and the Port of Houston is now second only to the Port of New York in dollar volume of foreign trade handled. The Texas Medical Center and the Lyndon B. Johnson Space Center are also important contributors to the economy of the city. Twenty-four of the 25 largest oil companies are either headquartered in Houston or have a major division located there. Houstonians are very interested in growth and their city has experienced a great deal of it in the past two decades. It is also an unzoned city and there is little formal planning by the public sector of the type that one finds in most American cities of this size. Houston's urban form is an expression of the actions of a large number of developers working in a relatively free market

situation. To the extent that this is true, one can argue that Houston's polycentric urban form was produced by the market with little or no help from any planning agency.

Trends in the distribution of office space in Houston give some notion of how this market is working [35]. In 1970, Houston had a total of 21.6 million square feet of net usable office space. By 1977, the downtown area alone had almost 21.8 million square feet completed, 2 million more scheduled for completion and 5 million more in various stages of planning or construction. Outside the downtown, the development of office space has been even faster. In 1977, 27.7 million square feet of office space was available in non-CBD areas and another 6.3 million is scheduled for completion in 1978. Since 1970, the suburban share of the region's office space has increased from 41 to 56 percent. The suburban office space is highly concentrated in the West Loop-Greenway area, located about six miles west of the downtown. Approximately 56 percent of the region's office space is located in this general area. Class A office space in downtown will probably rent for $10-13 per square foot in the late 1970's while similar space in the suburbs will rent from $8-9.50 per square foot. Figure 3.25 shows the West Loop-Greenway area in the foreground and the downtown area in the background. The West Loop-Greenway area is also the location of the Galleria Shopping Mall and numerous other retail activities.

The most comprehensive examination of the possibilities for the future urban form of Houston was published in March 1978 by the Rice Center for Community Design and Research. Entitled Growth Options for Houston [37], it was designed to investigate five alternative futures for Houston's urban form. The five alternatives examined were as follows:

1. Trends. Continuation of existing conditions and present city policies into the future.
2. Energy Crisis. A severe shortage of fossil fuels was simulated by the computer model through the increase in the importance of accessibility.
3. Inner City Growth. City policies were selected which would encourage population and employment growth in the inner city.
4. Multiple Activity Centers. Eight areas in Houston's suburban fringe were selected for future development of satellite cities. Policy sets were developed which would encourage population and employment growth in these centers.
5. Corridors Development. Six major transportation corridors were selected for the future development of high concentrations of population and employment growth.

Figure 3.25. Aerial View of Houston, Looking East, 1978

The study began by estimating that only about 30 percent of the growth that is expected to occur out to the year 2000 was amenable to "shaping" or control and that this amount was only 15 percent of the total urban region in the year 2000. A growth allocation model was developed to produce forecasts of total population, households, multi-family and single-family housing units, the acreage in eight types of land uses, and total employment for each of eighty-five study areas (zones) in the region. No attempt was made to measure the "performance" of each alternative and so no quantitative comparisons among the alternatives were developed. No recommendations as to which alternative might be preferable were offered. The report concludes that the Trends alternative is the most likely future because it represents a continuation of a "business as usual" approach to the development of the Houston region. The other alternatives were considered to be less likely because of the enormous effort required of governmental decision-makers and the radical shift in public urban growth policies that would have to occur.

The Multiple Centers alternative that was examined is of most interest to this study. Eight locations were chosen, seven of which were at the intersections of the yet-to-be-built beltway and major radical freeways. The eighth location is adjacent to an outer loop-radial freeway intersection (see Figure 3.26). With one exception, the locations chosen are approximately 20 miles from downtown Houston in areas that are at the very fringe of today's urbanized area. The centers were allocated 30-60,000 employees by the model and this work force attracted between 60 and 100,000 residents to each area served by a center. The impact on downtown was not found to be very great as the model forecast a CBD employment level of 211,000 for the Multiple-Centers alternative as compared with 234,000 for the Trend alternative which had the highest CBD employment forecast. The report states that subsequent transportation analysis of the Multiple Centers alternative validated the claim that the number of trips between sub-areas is less and that work trips are generally shorter, but no figures of this type were included in the report.

Overall, the Growth Options report does not attempt to define the most preferable future urban form for Houston but does provide five alternative growth forecasts that result from alternative sets of public policies. The Multiple Centers alternative does not now have any greater status than any other alternative and it appears that a continuation of present practice will continue to dominate the urban development scene in Houston for some time to come. Adoption of an urban form concept is not an event that is likely to occur in Houston.

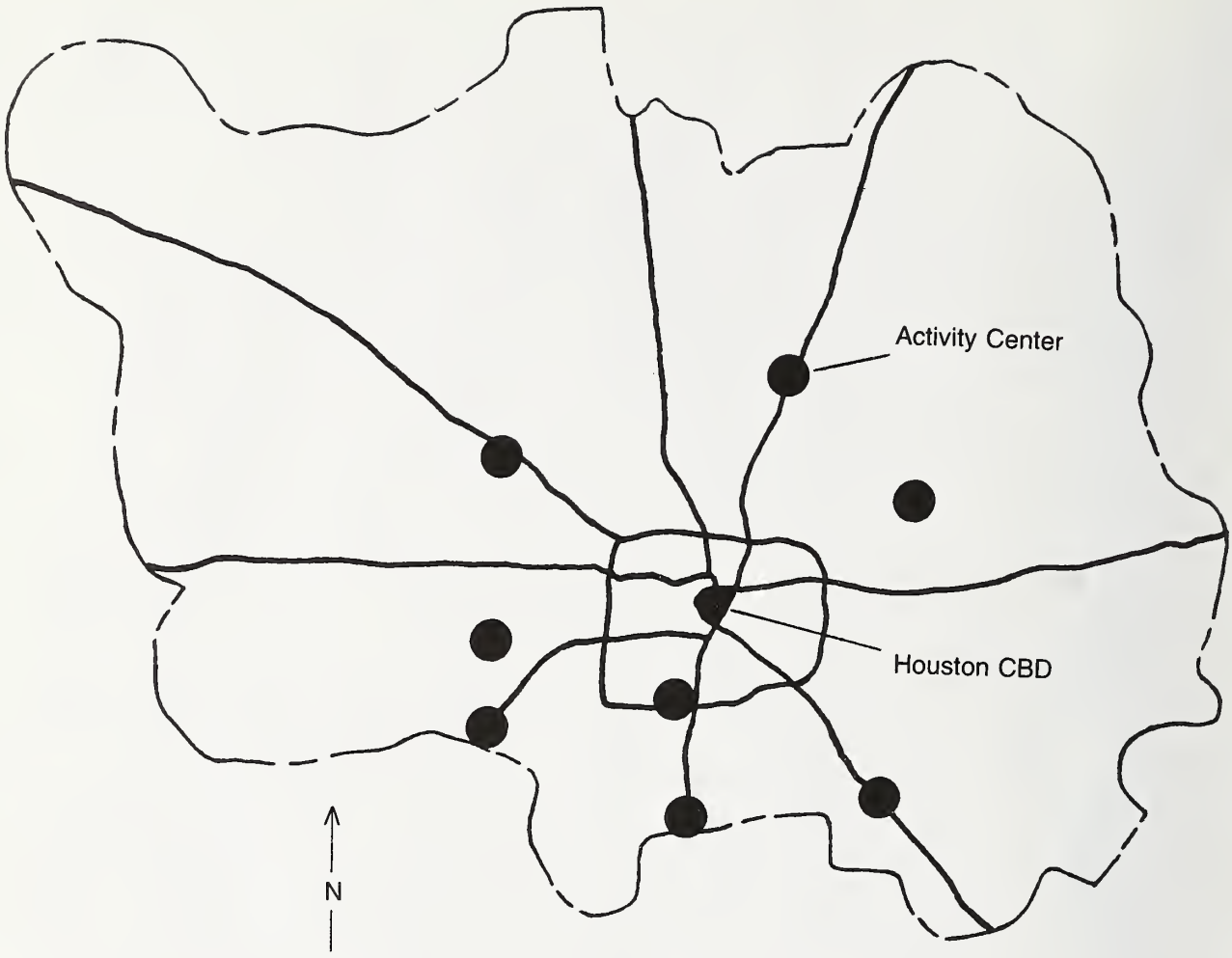


Figure 3.26 Multiple Activity Centers Alternative for Houston

The Growth Options study was preceded by another study of the activity center concept that is of particular relevance to our topic.

In September of 1975, the Rice Center for Community Design and Research concluded a study of twenty-three activity centers in the Houston area, under contract to the City of Houston [36]. The purpose of this screening study was to identify a few top priority activity centers for a further analysis of their transportation needs and opportunities. A wide range of activity center types was included and no attempt was made to classify them or cast them into a hierarchy of any type. Seventeen of these 23 activity centers were classified as "destination" centers while the other six were called origin (primarily residential) centers. Of the 17 destination centers 12 appear to have (or are heading toward) the characteristics of a major diversified center. Geographically, all but one of these 12 centers are located west of the Houston CBD. Data on the characteristics of these 12 activity centers show that in 1975, eight contained less than two million square feet of space in buildings, three contained between two and five million square feet while the other two were 5.5 million and 12.5 million square feet in size. Altogether they contained about 34.6 million square feet in 1975, which can be compared to the 21.8 million square feet that were present in the Houston CBD in 1977.

The Rice Center developed data on the characteristics of all 23 activity centers with a framework which was designed to help them identify areas that had a high need for transit service. This framework addressed four issues and included the following variables:

1. Mobility Needs
    a. Resident population
    b. Households with no car available
    c. Persons over 65 years old
    d. Persons under the poverty level
    e. Current bus riders
    f. Current level of bus service (buses/hour)
2. Ridership Potential
    a. Total population (residents, employees and visitors)
    b. Building square footage
    c. Size in acres
    d. User density (total population/acre)
    e. Transit origins
    f. Transit destinations
    g. Internal trip volume

3. Regional Role (access plus distribution)
    a. Total population
    b. User density (total population/acre)
    c. Proximity to transit corridor
    d. Parking surplus/deficit
    e. Current level of service-in-kind
4. Internal Role (circulation)
    a. Internal trip volume
    b. Internal trip length
    c. Current level of service-in-kind

Together, these data represent the most detailed inventory of the characteristics of outer city centers that has been conducted anywhere in the United States. They provide only part of the information base that would be needed for a comprehensive study of these centers and their existing and potential role in the region.

Once these data were collected, the centers were compared statistically, using a z-score technique, and then ranked according to their average score. A transit needs assessment was then conducted and the centers were prioritized according to their relative importance for further transit-oriented studies. Four centers emerged in the top priority category as a result of this process and only two of these (treated as one large complex because of their proximity) were of the major diversified center type. This complex was given top priority and was the subject of a subsequent study. Three other destination centers of a mixed use type were given a high rating in the secondary category and the remaining seven centers were judged to be too small at present to be a focal point for transit service.

The area that was given top priority in this initial study is known as the Greenway/Post Oak area. It is located about six miles west of downtown Houston and is adjacent to two freeways. This area contained about 18 million square feet of building space in 1975, had an employment level of about 66,000 persons, and a resident population of about 21,000 people. It also contained some 43,000 parking spaces and covered nearly 3,000 acres. Included in this area are several high rise office buildings, a large shopping mall (the Galleria), several hotels and other activities. Congestion in this area is the worst in all of Houston yet substantial additional growth in the retail, office and apartment sectors is anticipated. At present, the people who work in this area

are often unable to get around the area for lunch or noon-time shopping because of the traffic congestion. The morning and afternoon rush hour traffic congestion is also quite severe and quite likely to grow worse in the future. Clearly, it will be difficult to accommodate additional growth in this area unless some effective transit service is introduced and used both for access and circulation within the area. A more detailed description of this area is included in Section IV of this report.

In August of 1978, the voters in the Houston region approved a proposition to establish a Metropolitan Transit Authority to serve a 540 square mile area. A one cent sales tax was authorized that will help to fund a $1.3 billion dollar transit development program. One of the major objectives of the development program is to initiate more express routes and special services to provide easier and more efficient access to the area's major activity centers. Houston's bus fleet is expected to grow to 1500, from the present 420, by 1988 and a number of exclusive transit lanes are expected to be in service by that time.

There are a number of other interesting large scale projects that are in process in Houston that will, if built as planned, contribute substantially to the polycentric nature of this city. Plaza del Oro is a 544 acre site that is located about six miles south of downtown Houston adjacent to two freeways and the Houston Astrodome complex. It is bounded on the north by the huge Texas Medical Center complex. Plaza del Oro is a subsidiary of the Shell Oil Company. A master plan has been prepared for a phased development of the largely vacant site and office buildings, apartments, commercial and medical facilities are anticipated. A "city within the city" is envisioned that will include broad expanses of park-like greenery mingled with both high and low rise buildings. Several parcels of land have already been sold and several large developments are now in progress.

A second major development that is underway is the Woodlands, located about 25 miles north of downtown Houston. The site consists of about 20,000 acres, of which 3000 have been allocated to commercial uses. A 1995 population of 150,000 is anticipated with a local employment base of nearly 40,000. The site plan is very similar in concept to that of Columbia, Maryland. It consists of several villages surrounding a Metro Center. Development has been slower than anticipated. In August of 1976 there were about 1400 people and 1000 jobs in the Woodlands and slow growth has occurred since that time. The Woodlands was not one of the eight locations included in the Multiple Centers alternative

in the Rice Center's Growth Options study but it appears to be a good example of the type of center they were thinking about.

Another series of large scale development projects are being undertaken by the Friendswood Development Corporation, a subsidiary of the Exxon Corporation. Most of these development projects are primarily residential in nature but some also involve some mixed use projects of substantial size. All are located about 15-20 miles from downtown Houston and all are on or very close to a major radial freeway. One of their projects, Clear Lake City, is located about 20 miles southeast of downtown Houston. In 1976, it had a population of more than 23,000, some 160 retail and service firms and about 22 office buildings on the site.

In summary, it seems clear that the real estate market in Houston is producing a polycentric urban form that is somewhat more pronounced than has been observed elsewhere in the United States and Canada. This is due, in part, to the availability of large tracts of land which are owned by large corporations interested in developing them as intensely as possible. A second factor of importance is the extensive freeway system that was constructed early in the city's history and the high degree of mobility that the people of Houston have become used to. Congestion is now a major factor which is influencing location decisions and the initiation of a new large transit development program will offer the hope of some relief to this problem in the future. Houston's transit planners have realized that downtown is not the only destination of importance in the region and have proposed some transitways that are not radial to downtown. Still, it will be some time before it will be possible to determine the degree to which some of the outer city centers will grow. There are a large number of competing sites and it seems reasonable to expect that only a few of them will reach the 30-40,000 employment level by the year 2000. It is possible that the newly established Metropolitan Transit Authority will seek to encourage the growth of those centers it intends to serve with transitways so that they will become more dense and supportive of transit. If they do this, then the degree of polycentricity can be expected to increase in Houston in the 1980-2000 time period.

(4) Chicago, Illinois. The polycentric city concept was initially utilized in a report entitled Diversity Within Order published in 1967 by the Northeastern Illinois Regional Planning Commission [39]. It describes a staff proposal for the future growth and development of the six-county Northeastern Illinois Metropolitan Area. It was never approved or adopted by the Commission but did serve

to elicit widespread discussion and comment. The plan recommended by the staff was called the Finger Plan. This plan was compared with two alternatives, the Multi-Town Cluster and the Satellite Cities Plans and was found to be slightly superior to both. Major activity centers were a prominent part of all three plans and the definitions used were quite similar to those used later in the Twin Cities and Baltimore. A map showing the generalized locations of about 30 centers is included in the plan but no hierarchy is used. Many of the centers are on rail commuter lines radial to the Chicago loop although some are quite far from these existing rail lines. So far as is known, the Finger Plan was never taken seriously in the Chicago region and has had little, if any, influence on the pattern of development that has taken place since 1967.

The data that do exist for the Chicago region indicate that a substantial decentralization has taken place in recent years. A report entitled "1970 Land Use: Background to the Year 2000 Transportation Plan" [38] documents some trends in the spatial distribution of population and employment in an eight-county region. It shows that the population of the City of Chicago, as a percent of the total population in the region, declined from 65 percent in 1950 to 44 percent in 1970. This declining trend has probably persisted into the 1970's. Manufacturing employment in Chicago was 65 percent of the regional total in 1954 but dropped to 43 percent by 1972. Wholesale employment followed the same trend, dropping from 86 percent of the regional total in 1954 to 64 percent in 1967. Retail employment in Chicago dropped from 68 percent in 1954 to 42 percent in 1972 while retail sales dropped from 56 percent in 1954 to 40 percent in 1972. There is no evidence available that suggests that these trends have not continued into the 1970's. It is probable that most of the employing activities that located outside of the City of Chicago formed a very scattered pattern although there is no evidence to confirm or deny this assertion.

In 1975, the Northeastern Illinois Planning Commission (NIPC) began a major effort to prepare a regional land use plan. A first draft was produced in November 1977 which contains conservation and development strategies for a six-county area [40]. The polycentric city concept is not recognized explicitly in this document. Instead, a section entitled "Developments of Regional Impact" is included which generally covers this topic. A hierarchy of centers is not defined and no attempt to map the locations of centers of any type is included in this plan. However, eleven policies are stated, any of which could have a direct relationship to planning for major diversified centers (see Table 3.18 for a listing of these policies).

TABLE 3.18

Policies Regarding Developments of Regional Impact

1. Plan and regulate the location and timing of developments of regional impact (DRI) so as to be supportive of regional and local plans.

2. Evaluate thoroughly the various methods of coordinating developments of regional impact for their feasibility of application in northeastern Illinois, and formulate an acceptable approach.

3. Utilize existing developments of regional impact to the maximum practical extent and provide new ones only where a significant additional need can be clearly demonstrated.

4. Base any system to manage developments of regional impact on a regional land use development and conservation policy which recognizes that new development may detract from the viability of mature and developed communities.

5. Where public funds are concerned, give priority to projects which support developments of regional impact in mature communities over projects which support DRI construction in newly developing areas.

6. When new developments of a regional impact are constructed, coordinate municipal and county plans, codes, and ordinances in order to encourage appropriate land uses around, and transportation services to, developments of regional impact.

7. Since developments of regional impact are largely that product of private sector initiative, involve experts from the private sector in the development of a DRI management approach so that the resulting mechanisms will encourage appropriate development and not serve as an economic liability to the region.

8. Encourage local planning agencies to assume an aggressive role in establishing a planning framework for DRI location and planning coordination.

9. Encourage the location within the central area of the City of Chicago of new major developments which serve the entire region.

10. Review DRI proposals in order to identify possible environmental and/or socio-economic impacts prior to the granting of construction or other required permits by municipal, county, state, or other jurisdictions.

11. Achieve a balanced distribution of community impacts resulting from developments of regional impact through the adoption of intergovernmental agreements, regulations, taxation policies, or other appropriate devices.

Source: Regional Land Use Policy Plan (First Draft), Northeastern Illinois Planning Commission, November, 1977 [40].

The prologue to the policy statement expresses the philosophy that underlies the DRI concept. It is as follows:

> "DRI policy cannot be separated from the overall growth and land use policy for the region. Coordination of fiscal resource distribution between the older and newer areas of the region must go hand in hand with policy formulation regarding the construction of new DRIs or the maintenance of existing ones. Furthermore, any DRI regulation or management strategy should consider from policy and procedural points of view, how modifications to existing DRIs might be addressed. This is of critical importance to the overall regional growth strategy of maintaining the viability of mature communities.
>
> Various alternatives exist for the implementation of a DRI review process in northeastern Illinois. They range from voluntary local efforts (possible through the use of intergovernmental agreements) to a state review system, similar to that being used in Florida. Any review process for dealing with proposed DRI activities should not act as a deterrent to desirable new growth. Therefore, a management framework for considering DRIs should act in such a manner that review activities are consolidated and simplified rather than made more complex, time consuming and unnecessarily restrictive." [40]

A review of these policy statements shows that they have much in common with those in other cities and none are wholly unique. However, the word "regulate" is used in the first policy statement and this is unique relative to the materials we have reviewed. Together, these policy statements represent a careful approach to the problem but one that does not directly grapple with it.

NIPC has also developed 14 action recommendations that relate to implementing the 11 DRI policy statements of Table 3.18. They are shown in Table 3.19. They again indicate that NIPC wishes to move gingerly toward the establishment of a process that will allow them to be heavily involved in influencing the location and timing of DRIs which certainly will include major diversified centers as a category when more fully defined.

At present, there are at least two good examples of emerging major diversified centers in the Chicago region. One is Oak Brook and the other is Schaumburg, Illinois, site of the very large Woodfield Shopping Mall. Both of these areas will be described in more detail in Section IV of this report.

e. Considered, adopted, but not implemented (Minneapolis-St. Paul, Minnesota; Baltimore, Maryland; San Francisco, California; London, England)

(1) Minneapolis-St. Paul, Minnesota. The multi-centered city concept has been more intensively investigated in the Twin Cities area of Minnesota than in any other metropolitan area of the United States. As part of its initial effort

TABLE 3.19

Action Recommendations for Implementing Policies
Regarding Developments of Regional Impact (DRI's)

Easily Accomplished

1. NIPC should continue to evaluate alternative DRI management techniques for their feasibility of application in northeastern Illinois, with emphasis on assignment of roles and responsibilities, determination of standards and criteria, and development of procedures for adoption and implementation.

2. The Illinois Department of Local Government Affairs and NIPC should jointly establish a task force, involving experts from the private sector, to evaluate DRI management techniques, procedures, criteria, and standards.

3. NIPC should determine additional ways that the concern for developments of regional impact could be included in an overall regional growth and redevelopment strategy, including methods of allocating public resources and methods of coordinating DRI management policy with the regional forecasting process.

4. NIPC should encourage the establishment of intergovernmental agreements for the coordination of planning and land use management in the vicinity of proposed developments of regional impact.

5. NIPC should develop and provide information to local units of government to improve the planning and management capabilities of jurisdictions potentially affected by developments of regional impact.

6. NIPC and the counties should undertake studies to determine what constitutes regional impact for possible types of developments of regional impact and develop criteria comparable to those used in Florida (indicated below are examples).

   Attractions and Recreation Facilities

   - parking for more than 2,500 cars
   - more than 10,000 permanent spectator seats

   Shopping Centers

   - more than 40 acres of land
   - more than 400,000 square feet of gross floor area
   - parking for more than 2,500 cars

   Office Parks

   - more than 30 acres
   - more than 300,000 square feet of gross floor area

   Industrial Plants and Industrial Parks

   - parking for more than 1,500 cars
   - site of more than one square mile

   Residential Developments

   - more than 2,000 dwelling units

(Continued)

TABLE 3.19

(Continued)

7. Methods should be developed by the county planning agencies and/or NIPC which provide incentives for the full utilization and expansion of existing developments of regional impact and for the clustering of compatible intensive land use activities.

Requires Moderate Effort

8. The City of Chicago should increase its effort to provide incentives for the location of developments of regional impact at appropriate sites within the city.

9. Municipalities and counties should adopt uniform procedures and criteria for the planning, location, timing and impact assessment of developments of regional impact in a manner supportive of municipal, county, and regional plans and policies.

10. Consideration should be given to the establishment of a regional DRI management mechanism involving counties, municipalities, and other appropriate agencies with NIPC in a major advisory capacity.

Requires Significant Effort

11. The State of Illinois Departments of Local Government Affairs and Business and Economic Development should consider ways of coordinating, on a statewide basis, developments of regional impact with regional planning policy.

12. Private sector developers should be encouraged to voluntarily submit preliminary plans for developments of regional impact to NIPC, the appropriate county or counties, and affected local jurisdictions for review and comment.

13. Municipalities and counties should consider entering into agreements with NIPC for the purpose of determining the consistency of proposed developments of regional impact with regional plans and policies.

14. The Illinois Department of Transportation, Division of Highways, should grant transportation funding, permits, or other approvals related to developments of regional impact in light of a review for consistency with regional plans and policies provided by NIPC, with direct input from affected local governments.

Source: Regional Land Use Policy Plan (First Draft), Northeastern Illinois Planning Commission, November, 1977. [40]

to prepare a Metropolitan Development Guide in the early 1970's, the Metropolitan Council prepared a publication entitled Major Diversified Centers: Policies, System Plan and Program. This document was then adopted by the Metropolitan Council in February of 1971 and became an official part of the Metropolitan Development Guide for the Twin Cities Region [41]. More recently, it has been superceded by a new Development Framework chapter for the Metropolitan Development Guide which was adopted in 1975. Elements of the Transportation chapter of the Development Guide, adopted in July, 1976, also deal with the issues raised by the major diversified centers concept adopted initially in 1971. The purpose of this section is to review these three and other key documents and then to assess the approach being used in the Twin Cities with regard to the role of transit in the implementation of their multi-centered land use plan.

The initial publication, Major Diversified Centers: Policies, System Plan and Program was developed in 1970-71 to make more explicit the Metropolitan Council's desire to guide the location of service employment activities into a few high density centers within the region. It consists of three parts. Part I contains the long-range policies that were designed to insure the proper planning of the development of Major Diversified Centers (MDC's) in the region. The text in this section discusses a wide range of problems associated with the development of new centers or the expansion or reworking of existing centers. Part II contains the MDC plan. It describes elements of the system that now exist, announced or planned increments and long-range location and site proposals. Part III specifies the elements of the action program needed to implement the plan.

The detailed rationale for the MDC plan is given in the text that accompanies the twenty-nine policy statements included in Part I. The major headings under which the policy statements are grouped are: (1) choice and convenience; (2) the future of the downtowns; (3) older commercial areas; (4) coordinating MDC development; (5) traffic congestion around centers; and (6) distribution of property tax revenues. The rationale is substantive, comprehensive and sensitive to the political problems that could be expected to arise from certain elements of the business community. Table 3.20 is a listing of the twenty-nine policies which together define the major elements of this rationale.

These policies provided the framework for the development of the system plan in Part II. The essence of Part II is a map which shows the location and class of sixteen MDC's within the 7-country area served by the Metropolitan Council. The classes used were as follows:

TABLE 3.20

MOC Policies Developed by the Metropolitan Council in 1971

1. Develop major diversified centers by clustering regional shopping, service, cultural, entertainment, governmental and high density residential facilities.
2. Identify existing and potential major diversified center locations and encourage each center to develop new and expanded functions as its tributary market expands.
3. Plan for the integrated development of centers, including in such planning provision for transportation and pedestrian circulation within the major center with service to nearby employment centers and residential areas.
4. Provide fast-link transit terminals in major diversified centers, and provide local public transit facilities to the tributary area for those who cannot or choose not to use an automobile.
5. Encourage the implementation of long-range comprehensive plans for downtown development in Minneapolis and Saint Paul by the respective governing bodies and the private sector.
6. Encourage the involvement of citizen groups, both public and private, to promote and monitor downtown development for each of the downtowns.
7. Integrate urban renewal type activities with other downtown development.
8. Provide for development of private or public parking authorities that will operate in accordance with the local comprehensive plan.
9. Coordinate street and highway development, auto and truck movements, parking, transit facilities, and pedestrian movement facilities into comprehensive downtown circulation systems for each of the two downtowns.
10. Develop improved vehicular-pedestrian movement systems tailored to the specific needs of each of the two downtowns.
11. Expand the skyway pedestrian systems.
12. Experiment with forms of pedestrian shelter techniques in the downtowns.
13. Develop a metropolitan transit system capable of moving large numbers of people to and from the downtowns with speed, comfort, and convenience.
14. Undertake to provide a metropolitan thoroughfare system that will divert non-downtown traffic away from the immediate vicinity of the downtowns.
15. Provide facilities that will allow specialty and service-oriented businesses to continue their operations in downtown areas.
16. Encourage the rehabilitation of older buildings in the downtowns.
17. Develop a substantial number of new housing units for rent and sale (e.g., condominiums and cooperatives) at a variety of price levels and forms in and near the downtowns.
18. Establish environmental control programs that will deal with the specific air, noise, and odor pollution problems encountered in the downtown areas.
19. Encourage development of plans and programs to deal with older commercial developments.
20. Rebuild select commercial locations where market analysis indicates strong future potential for neighborhood retail-service centers.
21. Utilize all urban renewal and development tools to redevelop older commercial areas.
22. Redevelop obsolete commercial development to whatever uses appear most feasible and desirable.
23. Develop long-range comprehensive plans that deal with the staged development of major centers and their supporting public services.
24. Locate major diversified centers where they are compatible with local natural resources, and manage center growth to protect important natural features.
25. Coordinate development of major diversified centers with metropolitan and local capital improvements programming.
26. Provide a variety of housing types, including rental housing and housing for sale, both in diversified centers and near them.
27. Locate major centers so that entrance points will occur at least 1/2 mile from freeways and expressways, and provide access to the site from several roads.
28. Discourage the development of centers, irrespective of size, in or in close proximity to the quadrants of interchanges.
29. Erect signs on major thoroughfares that clearly identify the location of major centers through the use of commonly-understood terms.

Type	Number of Locations
Central city downtowns	2
Fully developed centers	3
Intermediate stage of development	8
Early stage of development	3
Total	16

Some general discussion is included concerning the overall demand for space for service employment activities and the overall supply of such space. But, no specific demand forecasts are included and no results of the inventory work needed to describe the existing supply of space were included in this report. These data were developed, however, as inputs to a mathematical model which was used to identify the locations most suited to the growth of retail space used for selling shopping goods. The results from the model were used to aid the selection of sixteen MDC locations from a larger number of candidate locations. The remainder of Part II is devoted to design considerations and consists largely of sketches of an ideal physical configuration for a MDC. These sketches relate primarily to the design of a new MDC on open land although one can infer what changes in some existing center would be needed to enable it to approach the ideal configuration.

Part III deals with the problem of implementing the MDC plan. It is very brief and consists of seven short-range objectives that are to be used to guide the work program of the Metropolitan Council. They are as follows:

1. Assist local governments and private interests in coordinating the development and redevelopment of major diversified centers.

2. Direct the planning and staging of metropolitan shaping elements such as sewers, open space, transit, and thoroughfares toward furthering the development of those major diversified centers in the Council's plan.

3. Undertake additional research on center composition, staging, land acquisition, and infrastructure relationships.

4. Examine the spatial and functional relationships between major diversified centers and industrial centers.

5. Collect and make available pertinent social, economic, land-use and ecological background data necessary for making intelligent decisions on center planning and development.

6. Give further consideration to the role of metropolitan fiscal policy on major diversified centers planning and development.

7. Evalute the need for additional metropolitan-level controls in implementation of the major diversified centers plan.

As of August 1976 little progress had been made toward the achievement of these seven objectives. Since the adoption of the MDC concept in 1971, a number of other issues have dominated the work program of the Metropolitan Council staff so completely that little additional work on the MDC concept has been accomplished since 1971. These other pressing issues and the way in which they have dominated the work program of the Metropolitan Council are well described by Reichert [44].

During the 1971-76 period, these other studies have been conducted as part of the process of updating the Metropolitan Development Guide. They provided the basis for the Development Framework chapter of the Guide, which was adopted in 1975. This new chapter incorporates (and so supersedes) the 1971 MDC chapter. It includes a map that shows the location and classification of fifteen MDC's (see Figure 3.27) which, with the exception of the Jonathan New Town location are identical to those included in 1971. The classification terminology was changed slightly. Locations previously termed "intermediate centers" are now called "developing" and "early stage centers" are now termed "planning stage." Instead of twenty-nine policy statements regarding MDC's, there are now only four, which are as follows [42]:

Policy No. 3 - Regional shopping, employment, cultural, entertainment and high density residential facilities should be clustered in centers convenient to the metropolitan transportation system.

Policy No. 8 - Maintain two strong diversified Metropolitan Centers comprising the central business districts of Minneapolis and St. Paul and the residential, commercial and institutional areas around the central business districts. This policy shall be supported by actions to:

a) Make the Metropolitan Centers into living and working centers to encourage more families to live there by developing medium and high density housing for a full range of incomes, providing recreational open space, and maximizing use of skyways and transit for movement within the centers.

b) Maintain and strengthen employment and services by attracting institutions, office space, personal and professional services, retailing, regional cultural and entertainment facilities and accommodations facilities within the Metropolitan Centers.

c) Improve the environmental quality of the centers by preserving the scenic and recreational assets of the river and river front and provide increased opportunities for people to enjoy them. Maintain air, water and noise quality within state and federal standards.

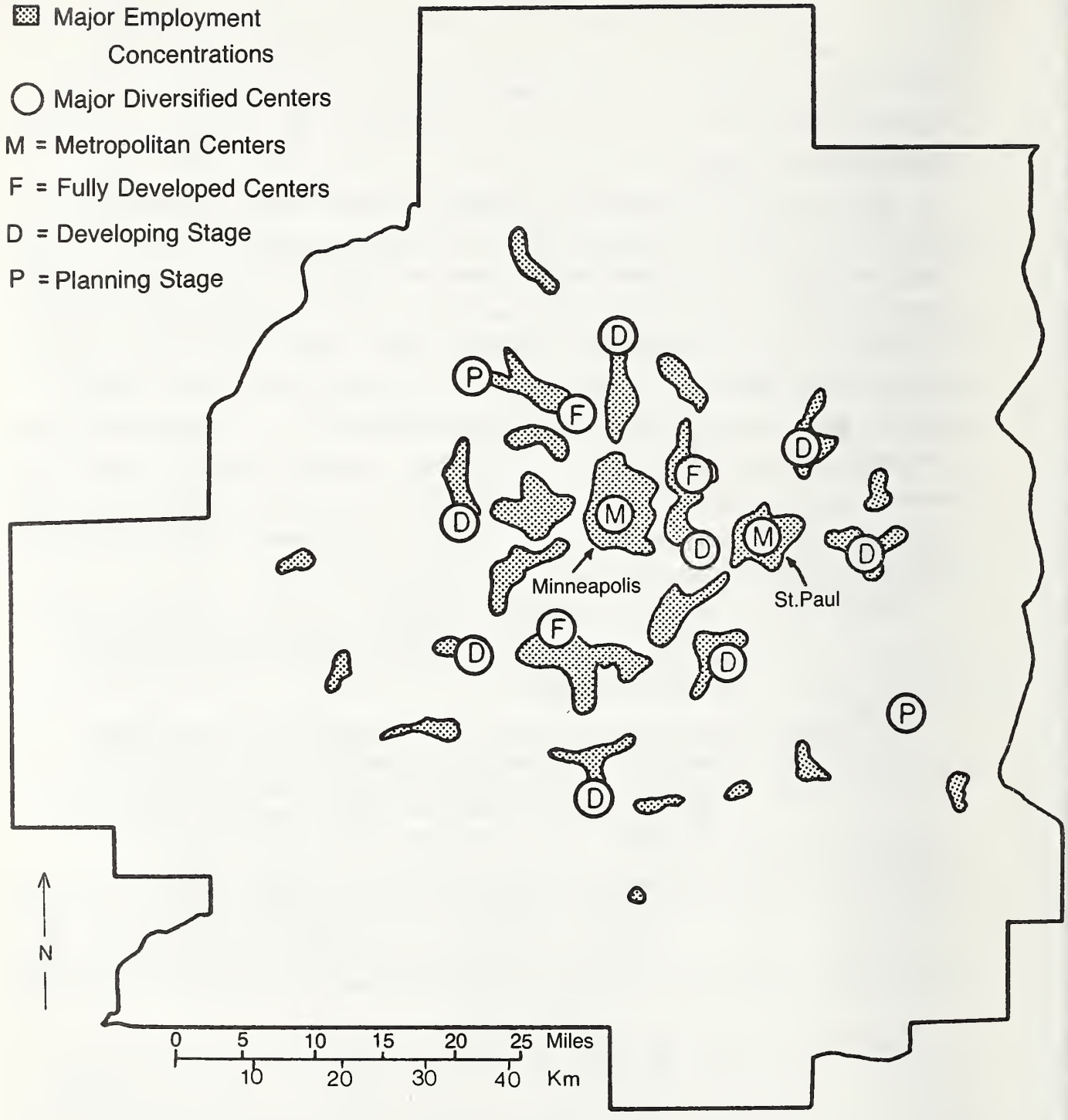


Figure 3.27 Map of Major Diversified Center Locations in the Twin Cities Region of Minnesota

Policy No. 11- The development pattern should promote less reliance upon automobile transportation. The development of multi-purpose diversified centers to serve subregional shopping and service needs should be facilitated to reduce travel. A more balanced distribution of employment concentrations in relation to population should be encouraged to reduce the length of work trips and increase the use of transit.

Policy No. 12e-Business activities should be located in major diversified centers, community retail and service centers and planned industrial parks. Major diversified centers should be developed through a clustering of regional shopping, service, cultural, entertainment, business office, governmental and high density residential facilities in concentrated, highly accessible locations. The centers should be designed for good pedestrian mobility and should encourage walking in place of vehicle trips. Where major activity centers have already developed in a spread out or disconnected pattern, joint public-private programs should be developed to plan transportation systems to link the activity centers together so that the entire sub-area may function as a single major diversified center.

Although there are now only four policy statements that relate to MDC's directly, each is really a collection of several policies and together these four cover nearly all of the concerns included in by the previously adopted twenty-nine policy statements. Perhaps the major difference between the new and old policies is that the newer policies are more general. In particular they are less specific about the transportation aspects of the MDC concept as much of this material has been shifted to the Transportation chapter of the Metropolitan Development Guide (which will be reviewed next).

The major feature of the Development Framework chapter is the Urban Services Area concept and the policies that are designed to implement it by containing growth within a defined boundary over the next several years. The establishment of the boundary for the USA has been a difficult task and implementing the concept also promises to be difficult. It involves the coordination and integration of a large number of diverse actors and activities and is fairly controversial in some circles. This effort has dominated the scene and is the primary reason why the less controversial and market-consistent MDC planning and implementation effort has not received much attention. As a result, it has become less, rather than more, specific over time.

The current status of the MDC concept in the Twin Cities cannot be determined by looking only at the Development Framework chapter of the Metropolitan Development Guide.

The Metropolitan Council planners feel that the developers "have gotten ahead of them" in terms of their moving into MDC locations before any detailed site planning work had been accomplished. This is due, in part, to the fact that the MDC plan was consistent with the way the market was moving in the late 1960's and was designed only to "shape" or "focus" existing market trends on a few particular locations rather than to counter or reverse those trends in any significant way. Therefore, the MDC concept has not been controversial and has been very well accepted by the developers of large retail facilities and to a lesser extent by developers of office, apartment and public facilities.

Figure 3.28 shows the location of the regional shopping malls in the Twin Cities in relation to the MDC location first mapped in 1971. Southdale, located about eight miles southwest of downtown Minneapolis, was the first enclosed shopping mall built in the country and it opened in 1956. Three other large malls (Midway, Brookdale and Rosedale) were constructed prior to 1971. The planners undoubtedly knew where the Northtown Mall would be located so their 1971 plan included an MDC location at the Northtown site. Then, in 1974, two large malls were opened at MDC sites. Ridgedale was the fourth large mall which featured the Dayton-Hudson Company while, on the other side of the region, the Sears-Roebuck Company was the major actor in the creation of the Maplewood Mall. Sears has also been the sponsor of the Eden Prairie Mall which opened in 1976, again at an MDC location. The Burnsville Center was recently built and opened in 1977, and Dayton-Hudson has announced plans to construct the Wooddale Mall for a 1979 opening. If the Wooddale Mall is constructed as currently planned, there will be a major regional shopping mall in operation at twelve of the fifteen MDC locations by 1979. Dayton-Hudson has acquired a site in the "developing" MDC site just south of the St. Paul CBD but is awaiting a decision on the construction of a segment of an interstate freeway before finalizing their plans for their site. Nothing is presently planned for the two MDC sites indicated as being in the planning stage in Figure 3.27. Another site that was included in 1971 was dropped in the 1975 plan as the new community at Jonathan (located northwest of Eden Prairie) has not materialized as expected.

It is clear that the location decisions of the major shopping malls in the Twin Cities have conformed to the MDC plan very closely. Moreover, there have been no large regional shopping malls built in non-MDC locations. The Dayton-Hudson Company did acquire a large site east of the St. Paul CBD before the MDC plan was adopted. This site was not included on the MDC map and was located beyond the Urban Services Boundary adopted in 1975. Although the

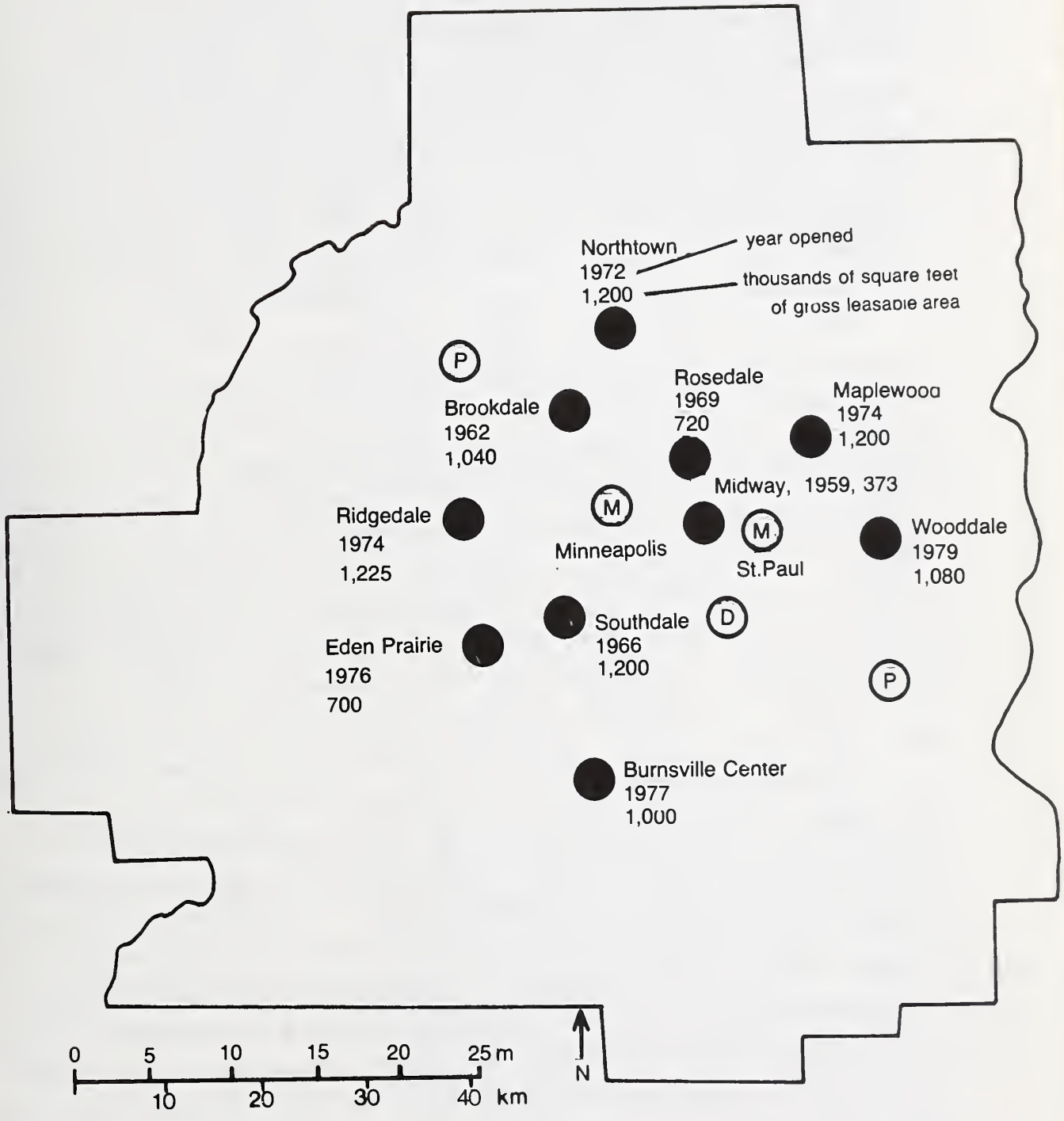


Figure 3.28. Location of Major Regional Shopping Centers in Relation to MDC Locations in the Twin Cities Region, 1977

final disposition of this site is still undetermined, Dayton-Hudson has recently devoted its eastside activities to the development of a large shopping mall at the Wooddale site which is on the MDC plan. There are many factors which together have produced these shopping mall decisions in MDC locations. The MDC plan prepared by the Metropolitan Council is one of those factors but it is impossible to determine how important the plan was in shaping these decisions. It does seem quite likely that the developers were willing to conform to the plan as a way of making the process of getting the necessary approvals for their projects much easier than would otherwise be the case. In this sense, the plan indicates those locations which offer the least risk to a developer in terms of getting the project approved, built and in operation quickly.

The "success" of the MDC concept in guiding the location decisions of shopping center developers does not mean that major diversified centers are being created in these MDC locations. There are no data available on the location of office, apartment and public facilities in these MDC locations that would allow one to determine if the MDC locations have captured a significant proportion of the growth or relocation of these activity types in relation to competing non-MDC locations. A loose clustering of MDC-type activities is occurring in the area around the Southdale Shopping Center and this area is getting to be nearly as large as the St. Paul downtown in terms of number of jobs in the area. The potential for the development of an MDC at the Eden Prairie site is currently quite high but little activity of this type is underway at the Ridgedale site. Data on other MDC sites are currently unavailable.

The Transportation Section of the Metropolitan Development Guide also has a number of significant things to say about the MDC concept as it is viewed in the Twin Cities region. The Transportation Section is the most recent addition to the Metropolitan Development Guide. It was adopted in 1975 and published in July of 1976 [43]. This chapter sets forth a policy-oriented framework for the further development of the transportation systems which serve the Twin Cities region. It represents an update of two earlier chapters, adopted in 1971 and 1972, and represents a resolution of a number of years of debate over the region's need for an areawide rapid rail transit system. The development of this type of mass transit system is no longer an objective in the Twin Cities. Instead, primary emphasis has been given to finding ways to more efficiently utilize the existing system and to provide transit service tailored to the particular needs of subregions.

Figure 3.29 shows the twelve subregions that have been used as a basis for preparing this transportation plan in relation to the Urban Service Area Boundary and the boundary of the seven-county Twin Cities region. Subregions 1 and 2 are the central cities of St. Paul and Minneapolis, respectively, with the central business districts of each city shown with hatching.

The analyses of 1970 travel patterns in the region showed that over 50 per cent of all daily travel stayed within these twelve subregions. This means that most people shop, do personal business, receive health care, recreate and are entertained on a daily basis fairly close to where they live. The figures for 1970 are shown in Table 3.21.

TABLE 3.21

Travel by Transportation Planning Subregions, 1970

Trip Orientation	Home-Based Work (000)		All Other Trips (000)		Total (000)	
	Number	%	Number	%	Number	%
To CBD's	192	18	219	6	411	8
Within subregions	402	37	2415	62	2817	57
Between subregions	487	45	1265	32	1752	35
	1081	100	3899	100	4980	100

Source [43, p. 27]

Moreover, the forecasts for travel in the region in 1990 indicate that non-CBD oriented travel will be 94 per cent of all travel in the region, up from 92 per cent in 1970. The 1990 figures are given in Table 3.22.

This analysis of travel patterns on a subregional basis has caused the transportation planners to think very differently about how their overall system ought to evolve. A very extensive highway system is already in place that provides a high level of accessibility to those who own autos in nearly all parts of the Urban Service Area. However, the transit system

> "...is almost entirely oriented to taking people to and from the Metro Centers, and, therefore, does not serve these subregional trips." [43, p. 6]

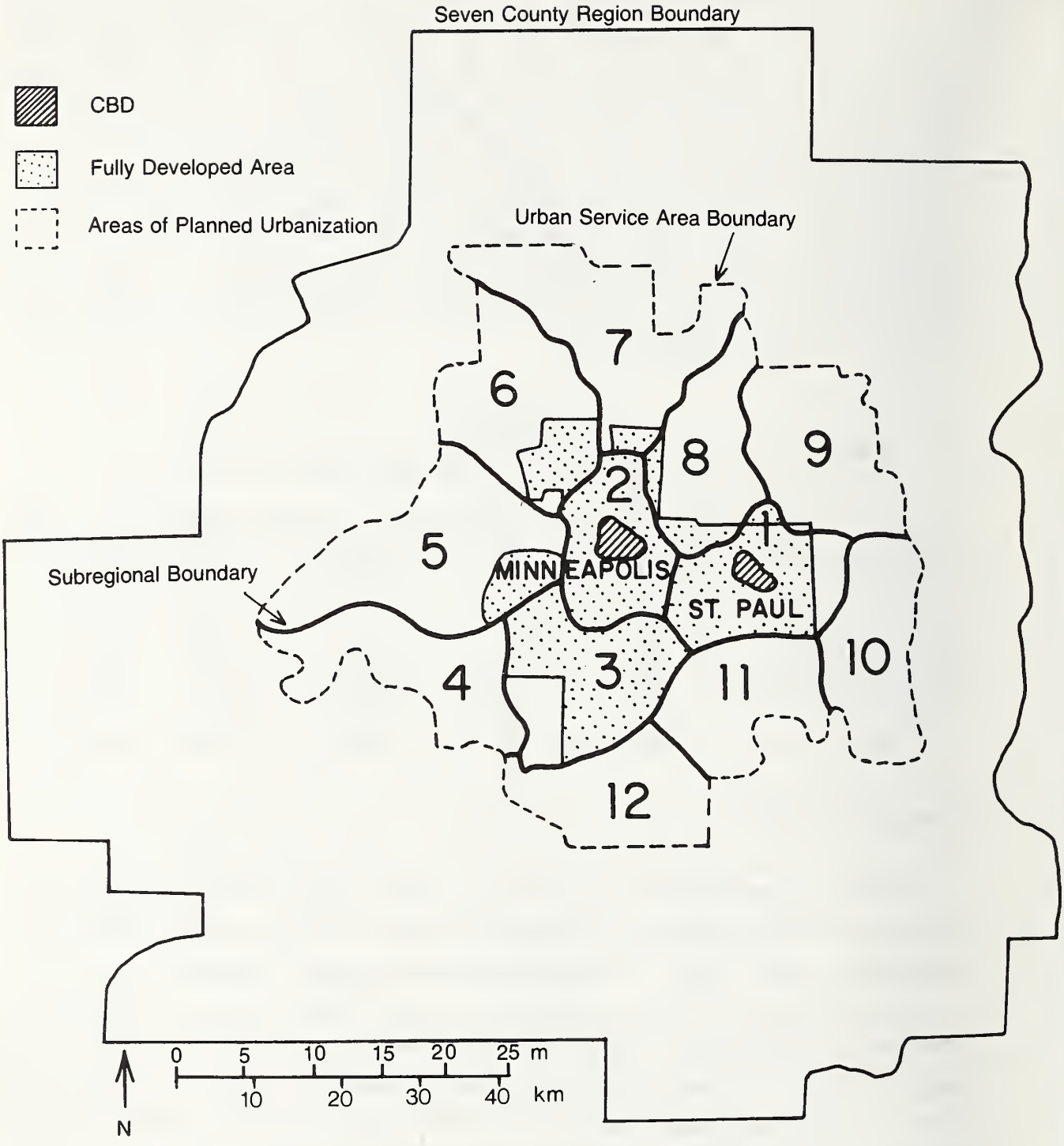


Figure 3.29. Transportation Subregions and Other Planning Area Boundaries Minneapolis-St. Paul, Minnesota

Their response to this situation is best summarized by Policy 23, which states:

> "Equal emphasis should be placed upon transit service and investment within subregional areas and to and within the Metro Centers." [43, p. 6]

TABLE 3.22

Travel by Transportation Planning Subregions, 1990

Trip Orientation	Home-Based Work (000)		All Other Trips (000)		Total (000)	
	Number	%	Number	%	Number	%
To CBD's	230	13	310	4	540	6
Within subregions	640	36	4000	56	4740	52
Between subregions	890	51	2930	40	3820	42
	1760	100	7240	100	9100	100

Source [43, p. 36]

The intent of this policy is to allocate approximately one-half of the total transit resource to providing improved transit service for trips within each subregion and the other half to improving the service between the subregions and the Metro Centers. This amounts to a moderately radical departure from previous transit planning studies in the Twin Cities which were almost wholly oriented to moving people to and from the two Metro Centers.

An examination of the capital and operating costs of implementing the plan (see Table 3.23) shows that Policy 23 has been more than met. More than half (57 per cent) of the total planned capital investment in transit has been allocated to the improvement of subregional service while the annual operating costs of the subregional service outweigh the express service component by about 6:1. The total annual cost of the subregional service is expected to be about four times that of the express service to the Metro Centers. These figures indicate that the provision of transit service within the subregion would be costly and would involve a significant reversal of past transit funding practices which have been heavily oriented to providing corridor-type service to and from the downtowns.

TABLE 3.23

Estimates of Transit Capital and Operating Funds Needed for Plan Implementation

	Millions of Dollars			
	Subregional Service	% Total	Express Service to Metro Centers	% Total
Capital Costs				
Total (1976-1990)	$104.3	57	$78.8	43
Annual (1990)	15.2	61	9.9	39
Operating Costs				
Annual, 1990	82.8	86	13.9	14
Total Annual Cost, 1990	98.0	80	23.9	20

Source: Adapted from Table 18 [43, p. 68]

What is the relationship of this new subregional emphasis to the MDC concept as it has been defined in the Twin Cities area? The policies contained in the Transportation plan partially answer this question. Those which are relevant are given in Table 3.24.

It is significant that 15 of the total of 46 policy statements in the transportation plan deal directly with the centers concept. Policies 20, 22 and 27 are probably the most significant with regard to the relationship between the MDC concept and the transit development plan. Policy 20 calls for the development of transit services that are focused on MDC locations; Policy 27 suggests that multi-modal terminals should be built in MDC locations; and Policy 22 states that express service should connect the MDC's to the Metro Centers. These policies are amplified by a map which shows the location of seventeen intermodal transfer terminals (including the two Metro Centers). These terminals are labelled as being "conceptual" only. Their locations are shown in Figure 3.30 in relation to the MDC locations contained in the Development Framework chapter of the Metropolitan Development Guide. A numerical comparison of these two sets of locations is given in Figure 3.31.

It is clear from Figures 3.30 and 3.31 that the transportation planners' thoughts about focusing transit service on MDC locations is largely but not

TABLE 3.24

TRANSPORTATION POLICIES THAT HAVE IMPLICATIONS FOR THE MAJOR DIVERSIFIED CENTER CONCEPT IN THE TWIN CITIES REGION

Policy 4. Emphasize better management of the area's transportation resources by encouraging public institutions, agencies and governments, and the private sector (developers, employers, consultants) to coordinate and integrate the number of parking spaces provided within and around major activity centers, and provide for the safe movement of pedestrians through parking areas.

Policy 5. Provide transportation service to community activity centers and the Metro Centers that is responsive to the special needs of the young, elderly, and physically and economically handicapped living in the metropolitan area.

Policy 6. Transportation planning and investment should provide for the efficient movement of goods--including consideration of truck routes, intermodal terminals, efficient distribution systems, and the incorporation of goods movement systems into the design of major activity centers.

Policy 12. Transportation facilities should be planned and designed to promote and serve land-use and development that is consistent with the Development Framework chapter of the Metropolitan Development Guide.

Policy 20. Focus transportation services upon major activity centers to encourage patterns whereby people live, work and shop within subregions in order to reduce private auto travel and fuel consumption.

Policy 21. Promote shorter trips and the reduction of auto driving by:

a. orienting subregional, multi-passenger and shared-ride service toward major activity centers

b. providing quality, convenient multi-passenger and shared-ride transit, commensurate with the demand, to the major activity centers from their subregional area

Policy 22. Provide all-day express transit service to the Metro Centers from the subregional major activity centers with priority access and movement along the freeways, expressways, and other major traffic corridors.

Policy 23. Equal emphasis should be placed upon transit service and investment within subregional areas and to and within the Metro Centers.

Policy 26. Encourage pedestrian movement within major activity centers by clustering entertainment, hotel, high-density residential, retail, office, and convenience services to utilize common parking areas, and by separating pedestrians from all vehicles.

Policy 27. Integrate transportation terminals within major activity centers for public transit, taxis, airport service and shared-ride transit, including information booths, schedules, etc. The terminals should be attractive, climatized, convenient, and clearly signed.

Policy 33. Provide safe bicycle access to major activity centers and provide storage facilities.

Policy 39. Provide high quality, convenient multi-passenger transportation service to community and employment centers.

Policy 41. Provide good access to major activity centers such that the safe and efficient operation of the metropolitan highway and transit systems is maintained.

Policy 42. Provide circulation/distribution systems for major activity centers to accommodate vehicular and pedestrian movement; the system should be compatible with adjacent residential development.

Policy 44. Ensure accessibility to the urbanized area by providing scheduled public transit or para-transit service between the freestanding cities and the nearest major center or Metro Center.

Source: [43]

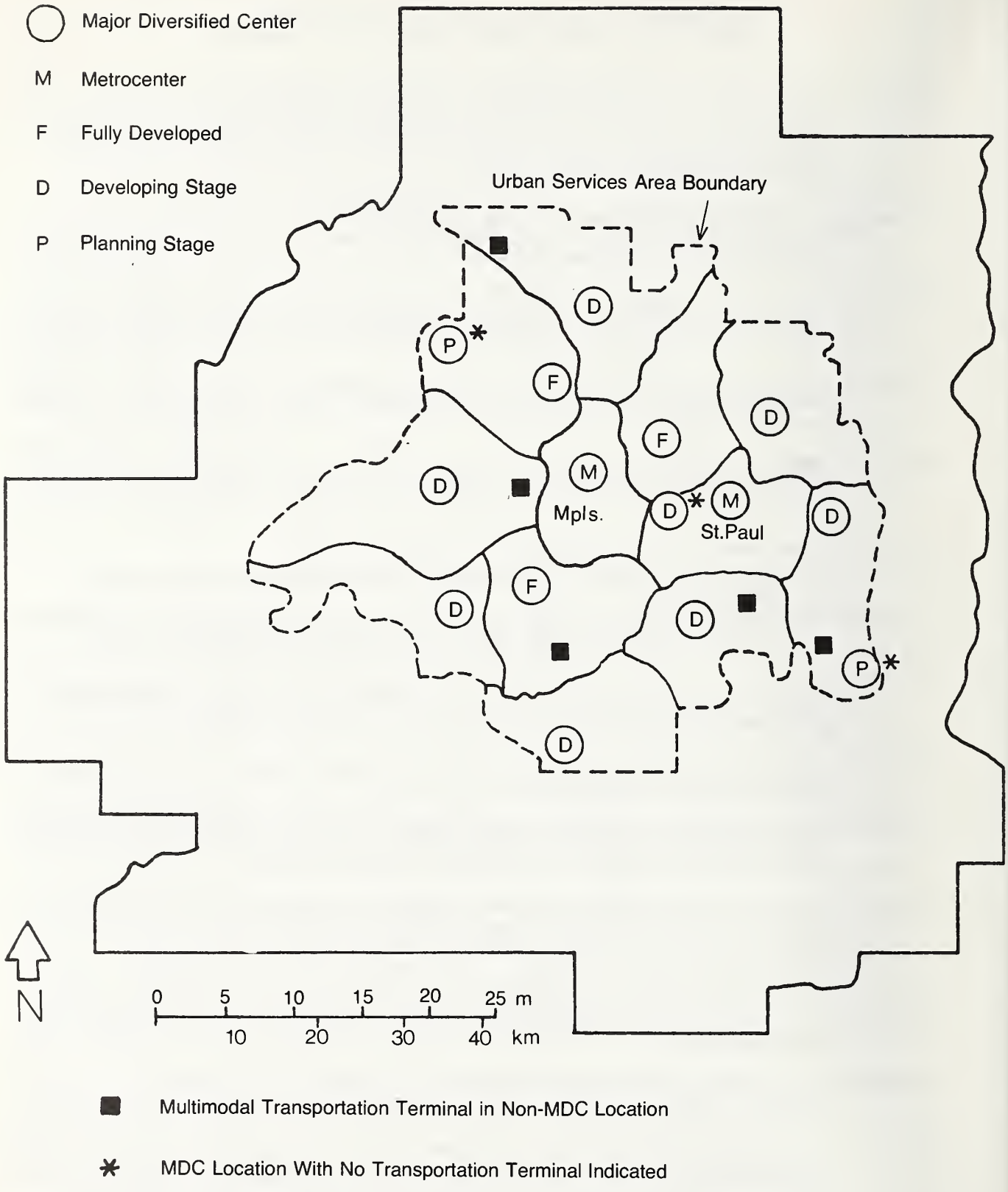


Figure 3.30. Relationships between MDC Locations and Proposed Multimodal Transportation Terminal Locations in the Twin Cities Area

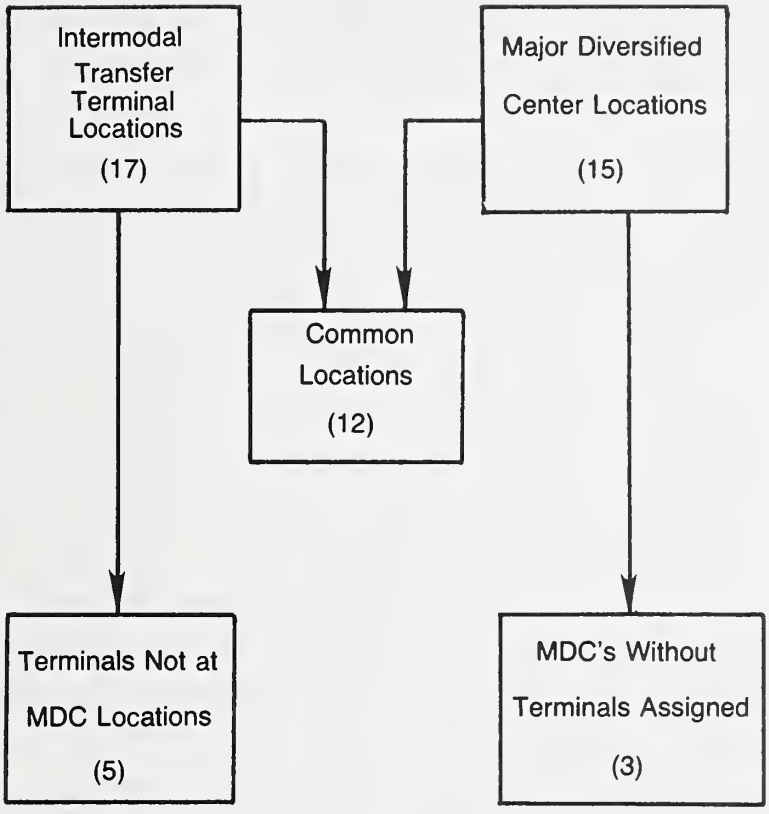


Figure 3.31. Comparison of Intermodal Transfer Terminal Locations and MDC Locations in the Twin Cities Region

totally consistent with the land use planners who developed the MDC locations. The intermodal transfer terminal concept has been left quite vague in the plan and so a strict comparison of the two concepts is really not appropriate at this point in time. Further study of the implications of Policies 20 and 27 have been included in the 1977 Unified Work Program of the Metropolitan Council which is currently underway. These studies will assist the clarification of the relationships between the subregional transit and the MDC concepts during the next few years.

The transportation plan has also been prioritized and the way in which this has been done provides an important set of clues as to the status of the MDC concept in the region and the projected role of transit in implementing it.

The priorization of the regional transportation plan was accomplished with the use of a set of "policy indicators." These policy indicators were designed to provide a means of measurement for assisting in determining which subregion or portion of the system is deficient in transportation services relative to the goals and policies of the Plan. Two types of policy indicators were devised. One dealt with the performance of the transportation system in relation to some desired levels of performance and the other dealt with the impact that various transportation improvement actions could be expected to have on the likelihood of achieving various non-transportation goals contained in the Metropolitan Development Guide. These policy indicators were used to determine the priority of the two types of transit service improvements included in the Plan: (1) express transit service from subregions to the Metro Centers and (2) transit service within each subregion.

Nine Development Framework Indicators categories were developed, one of which (Major Employment Concentrations) relates to the MDC concept directly. The sub-indicators under this category were as follows:

Major Employment Concentrations		Priority Points
a.	Projects which serve Metropolitan Centers	2
b.	Projects which serve Fully Developed Area	1
c.	Projects which serve employment concentrations which are in the developing stage	1/2
d.	Projects which serve employment concentrations which are in the planning stage	1/4
e.	Projects which serve no developed or designated employment centers	0

The point system used here gives a very heavy weight to the existing downtowns in the two central cities. Since only 5 of the 15 MDC locations included in the plan are in the Fully Developed Area, one can conclude that any transit projects that are designed to encourage the growth of the ten outlying centers will not receive enough points to give them any significant priority in contrast to those projects which serve the downtowns or locations in the Fully Developed Area.

Ten transportation policy indicator categories were developed but none related directly to the MDC concept. One category is indirectly related and that is: Subregional Size of Employment in 1970. This means only that subregions that had a large number of jobs in 1970 are considered to be of higher priority for transit investments than those which did not.

Overall, it must be concluded that the MDC concept did not play a significant role in the determination of the prioritization of the transportation plan. The reasons for this are not clear but they probably stem from the general lack of priority and attention that the MDC concept has received in the Twin Cities during the past six years. The Plan gives high priority to the development of express transit linkages from subregions 3, 5, 6, 7, 8 and 11 to the Metro Centers (see Figure 3.32). It also gives high priority to the development of better transit service within subregions 1, 2, 3, 5, 6, and 7 (see Figure 3.32). These latter subregions include the two central cities but the other four are all located in the higher income areas to the west and north of Minneapolis.

The use of transit investments to aid the growth of MDC's has not yet been explicitly considered by the transportation planners in the Twin Cities. For this reason, the staging issue of whether to connect the subregional center to the downtown first or to provide subregional transit service focused on the subregional center first has not yet been raised. The priorities assigned to subregions (see Figure 3.32) indicate that both types of improvements will be conducted simultaneously in subregions 3, 5, 6, and 7. Regions 8 and 11 are supposed to get express links to the Metro Centers but no local service focused on their MDC locations. This seems rather strange because both are expected to grow significantly between 1970 and 1990 and their growth provides the opportunity to use transit to encourage a clustering of the retail/office growth

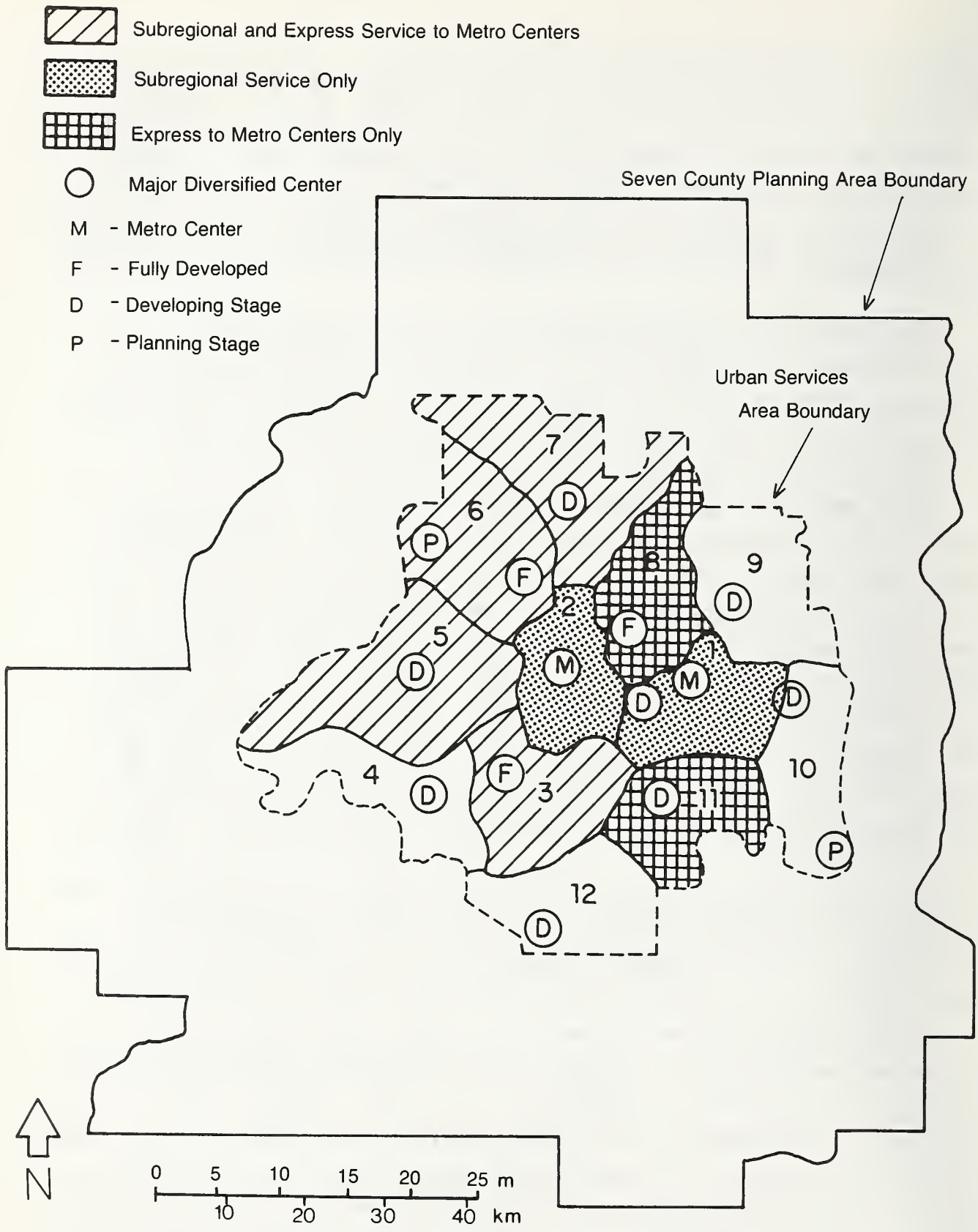


Figure 3.32. High Priority Transit Improvement Areas

in the MDC locations. Subregion 11 contains an MDC location classified as developing while subregion 8 contains an MDC location classified as fully developed (see Figure 3.32). Of the non-central-city subregions that have top priority for subregional transit improvement (subregions 3, 5, 6 and 7), two have MDC locations classified as fully developed, one contains a developing MDC, and one contains both a developing and a planning stage MDC (see Figure 3.32).

Is it logical to assume that if one provides both an express transit service from an MDC to a Metro Center and a subregional transit service focused on the MDC, it will be more likely to grow than if it had only one or the other transit service? Or will the pull of the Metro Center (exerted through the provision of the express service) cancel out the localized clustering pull of the subregional service? To examine this question, one must think about the effects of differentially improving the transit accessibility of two competing locations. If this accessibility is increased by the same amount in both locations, one can assume that they will retain the same relative locational advantage they now have. If one or the other transit service provides more accessibility, then one or the other location will gain a comparative advantage over the other. Thus to answer these questions, one must (1) know what the present accessibility levels in each location are and (2) estimate how these accessibility levels would change given the provision of particular types of transit improvements. This type of analysis has not been done in the Twin Cities and so these questions must remain unanswered. However, if the subregional transit is to be focused (Policy 20) and terminal facilities provided (Policy 27) and the express service to Metro Centers is to be provided from MDC's (Policy 22), then it seems likely that these questions will have to be analyzed in the very near future.

(2) Baltimore, Maryland. Baltimore investigated the polycentric city concept in some detail during the preparation of its first regional development plan. This plan, adopted in 1967, called for the creation of "metrotowns" as a response to the "formlessness" of the sprawling, unplanned development that

was occurring in the region at that time. The metrotown concept called for the concentration of development around strategically located suburban "downtowns" to create more compact and densely populated communities. Two basic objectives were cited: (1) provide as much diversity as possible in living and working opportunities, as well as in community services, and (2) provide convenient accessibility from the residential areas to centers of service and employment. Metrotowns were to contain concentrations of population--100,000 to 200,000 persons each--at higher densities than are typical in suburban communities. They were to be connected with each other and with the "metrocenter" (i.e., downtown Baltimore) by means of a regional transportation network. At their cores would be found centers of government, commerce, education, religion and recreation. Individual metrotowns, deployed radially and in a series of rings around the central city, would encompass 15,000 to 25,000 acres of land each and would be located in areas where heavy growth was anticipated. Whenever possible, they would be defined at their outer limits and separated by major open spaces, serving to give each metrotown an identity.

A map showing the general location of twenty-three metrotown centers was included in the 1967 plan. Red circles of different sizes were used to indicate the general size of each metrotown center but no specific size forecasts were included in the plan. Implementation concepts included in the planning work were as follows [46]:

1. Review of all public and private actions of regional import for consistency with the area-wide plan;
2. Utilization of public works, public facility and transportation planning to structure and direct growth;
3. Complementary use of land use and regulatory mechanisms with public works and facility programming and development;
4. Coordination of tax and assessment policies with area-wide plan;
5. Regional review of those federal programs (implemented by the public and private sector) affecting the regional development pattern;
6. Creation by the state of a State Development Corporation (or corporations) to facilitate the public acquisition of land and development of metrotowns and their centers;

7. Encouragement of private participation in metrotown development through careful and select application of land use controls, public provision of water and sewer facilities as well as transportation linkages and the use of tax districts;
8. Immediate acquisition of strategic nodes and control points is essential to the development of initial metrotowns. Such acquisition could be undertaken by the above-mentioned Development Corporation, counties, participating municipalities and private developers;
9. Direct public acquisition of land to be utilized for recreation purposes;
10. Reservation of land intended for future development through combined use of low intensity zoning, control of development rights, compensable zoning, and the programming of water, sewer and transportation facilities.

The development of the metrotown planning concept was supported by some good analytical work that involved the study of the market potential for the metrotown centers and the use of a mathematical model for determining high potential metrotown center locations and allocating growth among them. This work was the first of its kind in the nation and was quite influential in the development of a similar set of studies in the Twin Cities area a few years later.

The next plan for the Baltimore region was adopted in 1972 as part of a five-year update cycle. This plan was called a General Development Plan for the Baltimore Region [45]. The metrotown concept was included in this plan but its role as an important element was very much reduced. The development framework of this plan included four sections: (1) open space, (2) sewerage, water and solid wastes, (3) transportation and energy transmission and (4) housing. Activity centers were not even mentioned in the table of contents. Three new elements (health, criminal justice and education/libraries) appear in this plan and this is probably one of the reasons why activity centers were downgraded as an important element in the regional development framework. Still, the plan includes some text on activity centers toward the end of the document that reads much like the text in the 1967 plan. And, the map included in the plan identifies (with black dots instead of red) two types of centers: sector and town/community. Sector centers are of a region-serving scale and nine

(including downtown Baltimore) such centers are shown on the map (see Figure 3.33). One of these centers is the Town Center of the new town of Columbia, Maryland. In general, the locations for the sector centers coincide quite closely with the locations for the metrotowns shown in the 1967 plan. There is no substantial discussion of any implementation strategy or action plan to create sector centers in the 1972 plan. The transportation section does include a recommendation that a $1.8 billion transit system is essential to "encourage investment and development at key activity centers" but these activity centers are not listed, located or prioritized in the plan.

Since 1972, work has been underway at the Baltimore Regional Planning Commission to prepare the 1977 General Development Plan. During this period of time, a substantial effort has been put into the revitalization of downtown Baltimore by an especially energetic mayor and funding for an initial segment of the regional rail rapid transit system (part of the 1967 plan) was obtained. This rapid rail line will connect downtown Baltimore with a corridor located northwest of the downtown. It will not reach the Owings Mill sector center (see Figure 3.33) as it was decided that extending the line so far out would inhibit, not encourage, the revitalization of downtown Baltimore. In fact, any idea that does not, in some way, relate to the revitalization of downtown Baltimore is not likely to receive much attention given the current political situation in the Baltimore region. Although the 1977 plan for Baltimore is not yet complete, it is not expected to give much attention to the metrotown concept that first appeared twelve years ago.

Figure 3.33 shows the rail transit routes that were included in the 1972 plan in relation to the sector centers. As can be seen, the intention was to connect the sector centers with downtown Baltimore with only two, quite distant, exceptions (Columbia and Annapolis). The Owings Mill route is now under construction but will initially be only about half as long as is shown on the map of Figure 3.33. Planners interviewed at the Baltimore Regional Planning Commission still think the metrotowns idea is a feasible and desirable concept for the Baltimore region but it is something that is not possible to advocate now because of the current political climate. While evidence of progress on the renewal of downtown Baltimore is quite visible, the RPC forecasts for the future of the region do show that decentralization is expected to continue at a rapid pace through 1990 (see Table 2.4). If metrotowns do emerge in the

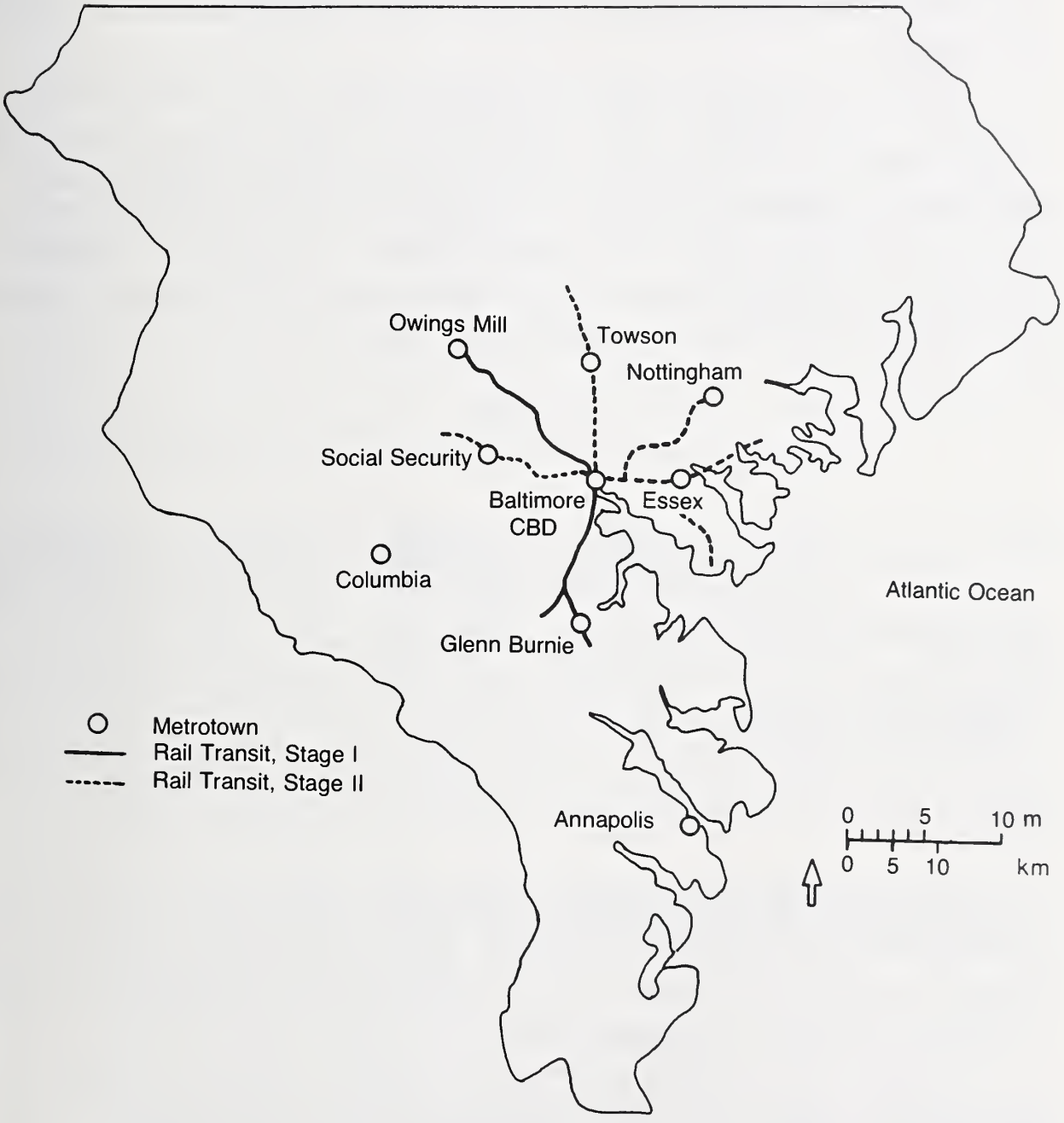


Figure 3.33. Rail Transit Routes In Relation to Proposed Metrotowns in the Baltimore, Maryland Region, 1977

outer part of the Baltimore region (as one is doing in Columbia) it will not be because the RPC planners have pushed hard for the metrotown concept. Rather, it will be the result of the operation of the market for land suitable for office, retail and apartment complexes and all the factors which influence that market.

Baltimore's desire to rebuild its downtown area into a large and very dense center will require a large improvement in transit accessibility. Any future starts on their rapid rail system will probably be designed to help achieve this objective as long as the present political group stays in power. Yet forecasts produced by the RPC show that the City of Baltimore's share of regional employment is expected to decline in all tertiary employment categories between 1970 and 1990 as shown below in Table 3.25.

TABLE 3.25
1970 and Forecast Shares of Regional Employment (%)

	Retail		Service		Office		Government	
	1970	1995	1970	1995	1970	1995	1970	1995
Baltimore City	48	41	53	40	64	58	43	41
Rest of Region	52	59	47	60	36	42	57	59
Change, Rest of Region, 1970-1995	+7		+13		+6		+2	

Source: [47]

In absolute terms the forecasts show that 206,000 new jobs in these four tertiary sectors are expected to locate in the rest of the region during this twenty-five-year period compared with 97,000 in the City of Baltimore, a ratio of about 2:1 in favor of the outer city.

If half of these 206,000 new jobs were to locate in one of the eight sector centers in the outer city, this would increase the employment in these centers by an average of about 26,000 each. Such an increase would represent a major step toward the eventual implementation of the metrotowns centers concept. However, if primary attention is given to the development only of rapid rail transit station areas, it seems unlikely that metrotown centers of any

substantial size will evolve in the Baltimore region in the near future. A committment to the rapid rail transit system (i.e. a large number of small centers located at transit stations) is basically incompatible with a metrotown type of concept. Baltimore has chosen the former course of action, at least for now.

(3) San Francisco, California. The polycentric city concept was an important element of the Regional Plan, 1970-1990, for the San Francisco Bay Region that was prepared and adopted by the Association of Bay Area Governments in July of 1970 [48]. The organizing concept used in this plan was termed the "City-Centered Bay Region" and it called for the accommodation of future urban growth within the existing communities in the region. The concept was defined by a very generalized map and a series of statements. Excerpts from this text are as follows:

> "All communities are organized around one or two major community centers. In most communities, these centers include the central business district and functionally related contiguous areas. Designed on a relatively large scale, they have a center of stores, offices, institutional and cultural activities, with surrounding educational institutions, entertainment centers and sports and convention facilities. In general, community centers are highly accessible from all parts of the community and region. Those found in outlying communities are developed to improve local conditions and counter congestion in large metropolitan centers. Community centers influence patterns of regional population growth and urban development by providing a nucleus to attract uses and facilities that would otherwise be widely dispersed."
>
> "Within the planned communities, employment opportunities are diversified and convenient to residents, resulting in shorter home-to-work trips. Housing of various types, designs and prices is located close to major employment centers."
>
> "Densities are highest near major transportation interchange points and around community centers."
>
> "Future rapid transit service should connect all major community centers of the metropolitan Bay Region so that no transfer is required to move from one center to another. The development of high-standard intra-city mass transit systems in all metropolitan communities, linked to the regional rail rapid transit system (BART) also requires high priority at all governmental levels."

The map included in the Regional Plan document included 32 red dots which defined the general location of the city centers that were to be encouraged to grow. All but two of these locations are shown as being served by a greatly extended BART system as well as by the extensive highway system in the nine-county Bay Region. The plan also includes some general statements about the various ways of implementing the city-centered concept and they are quite similar to those included in plans discussed previously. There is virtually no trend data included in the plan to support its various policy statements and no assessment of the city-centered concept in relation to past trends is provided.

Since the plan was published in 1970, the BART system has moved much closer to a fully operational level and some initial findings from the BART Impact Study have become available. Current indications are that the development around outlying BART stations has been very slow and various reasons for this situation have been suggested. Further studies of this issue are currently in process and will add considerably to our limited knowledge of the response of the urban land market to the development opportunities available at different types of rail rapid transit stations.

The land use planners at ABAG are currently in the process of updating the 1970 Regional Plan and they expect to publish a new document before the end of 1978. Present indications are that the city-centered concept will be deemphasized considerably and no map showing the location of major activity centers will be included in the new plan. As has been the case in Baltimore and Washington, D.C., the emphasis will be on getting the BART station areas developed as quickly as possible so that the system can attract more patronage and become less of a burden on the taxpayers of the region.

The most recent population and employment projections for the Bay Area region [49] indicate that the three counties that contain the three major cities of the region (San Francisco, Oakland and San Jose) are expected to capture a large share of the new jobs but a much smaller share of the new residents of the region between 1975 and 1990. Two base case projections were made. Base Case I uses a high growth estimate and Base Case II uses a low growth estimate for the region. In Base Case I, Alameda, San Francisco and Santa Clara Counties are expected to receive 71 per cent of the new jobs but only 32 per cent of the new residents added to the region. In Base Case II,

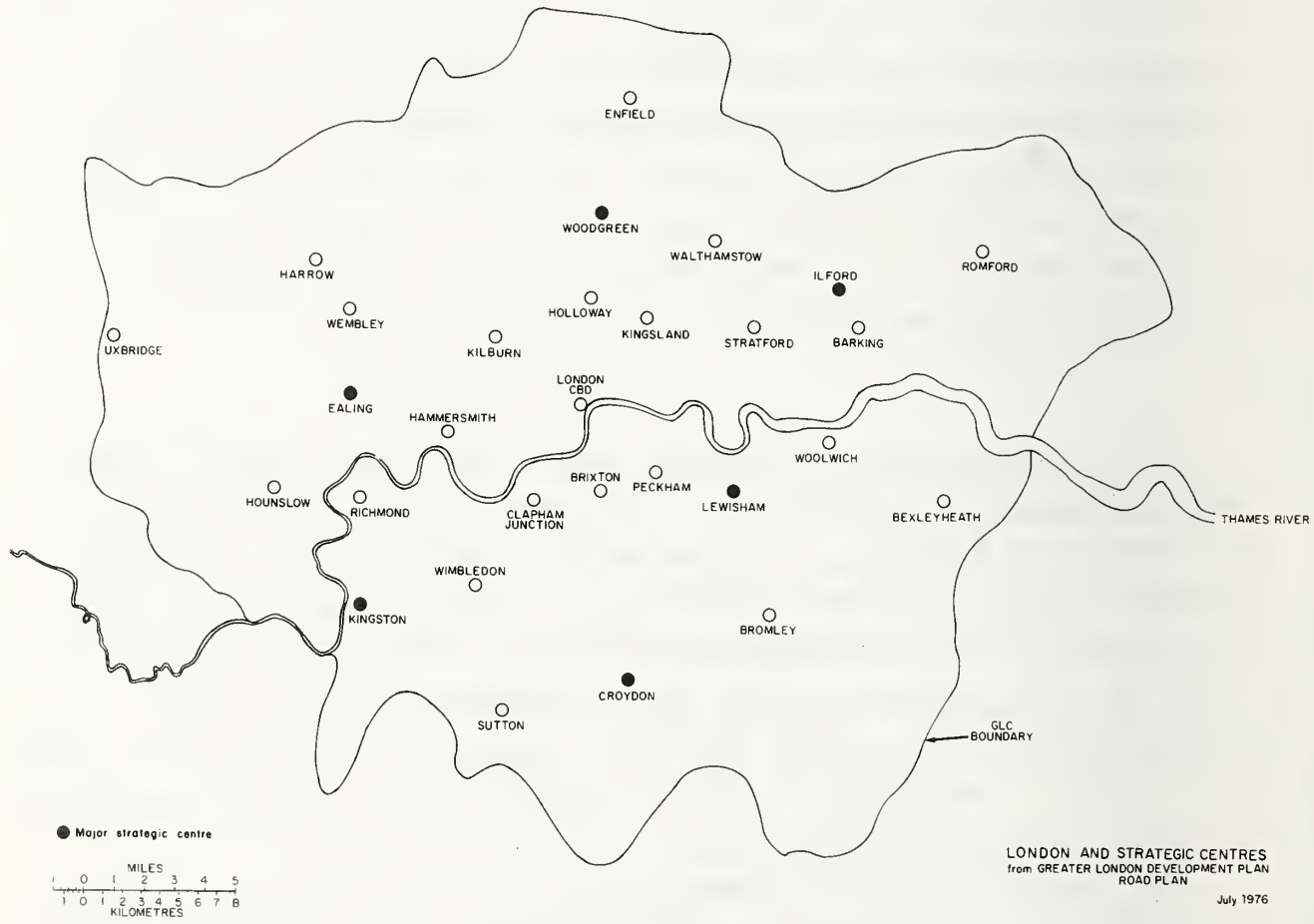
the comparable figures are 74 per cent and 50 per cent. In both cases, these projections indicate an increase in the centralization of employment in the three central city counties while the majority of the new residents continues to disperse into the other six counties. Still, the 15-year growth increment expected to be added in the region is so small relative to the existing situation that the overall distribution of population and employment in the region will be about the same in 1990 as in 1975 in either Base Case I or II.

These projections indicate that about 157,000 new jobs are expected in the six counties that make up the other city in Base Case I, and the figure is 96,000 for Base Case II. At present, ABAG has no specific ideas about how government ought or might shape the location and timing of this growth within the Bay Region. Perhaps when the new Regional Plan is published by ABAG, some policies that deal with this issue will be included. One can only conjecture that, in order to make BART work better, ABAG will suggest that some strong efforts be made to get as large a proportion as possible of these new jobs to locate adjacent to existing rapid rail stations.

(4) London, England. The Greater London Council published the Greater London Development Plan [50] in 1976 and it marks a new stage in metropolitan wide planning in England. This plan, called a structure plan, is a statutory development plan as required by the Town and Country Planning Act of 1971. The Act specifies that the development plan for Greater London shall be prepared first, to form a framework for the 32 Borough plans which will follow. As the Borough plans are developed, there then will be an iterative process in which local plans are tested as to their fit to the regional plan and adjustments or amendments are made as necessary.

Section 8 of the Greater London Development Plan deals with Strategic and Shopping Centres. Initially, the GLC planners identified 28 Strategic Centres, six of which were further designated as Major Strategic Centres. These were mapped as shown in Figure 3.34. The designation was done mainly on the basis of the volume of retail sales in various areas in 1961. When two or more centres in any one Borough had a similar sales volume, other factors were analyzed. All the centres were existing town centres and no priority was assigned Major Strategic Centres over Strategic Centres. Most (25 of 28) of

Figure 3.34 Map of Major and Minor Strategic Centres for the Greater London Area, 1976



the Strategic Centres were designated as preferred locations for office development and most (25 of 28) were also designated as major transportation interchanges. However, 20 locations not in centres were also so designated.

The plan was reviewed by the Secretary of State for the Environment in early 1976 and he found the distinction between Major Strategic Centres and Strategic Centres to be unsupportable. The plan was moderated to remove this distinction before it was published and so the final map shows only the location of 28 Strategic Centres. GLC planners noted that the plan was reviewed by a government that was controlled by the Tory Party while it was prepared when a Labour government was in power. Part of the motivation for eliminating the six Major Strategic Centre designations probably relates to some fears on the part of various conservative government officials that the viability of Central London was threatened by such a concept.

The Plan notes that the volume of retail sales in London's Central Area was £382 million in 1961, almost one-fifth of Greater London's retail sales in that year. The Strategic Centre with the highest sales volume in that year was Croydon with about one-fifteenth that amount. Outside Central London, 12 centres had sales of more than £10 million and 43 had sales of between £3.5 and 10 million in 1961. There are no comparable data on the distribution of office employment between Central London and the outer city centres in the Plan. However, office growth in Central London began to be seen as a problem during the later 1950's. A 1963 White Paper found an increase of 32 percent over pre-war office floorspace in Central London. Each year new floorspace was being provided for at least 15,000 new office jobs in the central area alone, and in only a decade, 150,000 people had been added to the daily peak-hour travellers into Central London. In 1964 the Location of Offices Bureau (LOB) was established to encourage decentralization of private-sector office firms. Also in that year the "Office Development Permit" was established as a regulatory device to carry out the decentralization program. This Permit is essentially a license to apply for "planning permission" and is a means of imposing conditions on office development. There is no appeal or compensation for refusal of a permit. In addition, applicants are currently required to show that a move outside London and the Southeast is not practicable, and there is a severe restriction on speculative office building in London.

There are several incentives which the Government can manipulate, in addition to the Office Development Permit and the activities of the LOB. Since

1972 Government subsidies have been available to encourage manufacturing employment to re-locate in "assisted areas," in order to strengthen those areas with a weak economic base. In 1973 new incentives were added to encourage service industries to move to assisted areas, with the particular intention of encouraging office employment in these areas. Two new incentives which were added at that same time are as follows:

1) A grant of 800 pounds per employee who is moved with his or her work (normally up to 50 percent of the number of new jobs created), and
2) A selective grant towards the cost of rent at the new location for up to 3-5 years.

The planning process behind this regulatory framework is worth exploring. Attention was first paid to the trends in office employment, office floorspace, and the characteristics of Central London firms over the past twenty-five years. Studies were carried out on the rate and location of office growth during this period. As of 1971, two-thirds of London's commercial office floorspace and half its total office employment were in Central London. It was found that most of the establishments in the commercial office sector were small, with 70 percent of them employing under ten people each.

Looking at the larger region, data for 1967 and 1974 indicate that Outer London and the rest of the SE Region have increased their share of the region's office space at the expense of Central London. Table 3.26 shows that Central London's share of the regional total of office space dropped by eight percent in this seven-year period while the outer parts of the region gained by the same amount. Passenger traffic into Central London during the morning peak has declined from 1,230,359 in 1961 to 1,085,648 in 1973, a 12 percent drop in 12 years. This decline is probably mostly due to the decentralization of office employment during this period.

The last set of preliminary studies done as part of the decentralization program involves the decision of firms to leave Central London. There is a trend toward increasing difficulty in accommodating small firms. Property owners are finding it more advantageous to let entire buildings on single leases, rather than split them into individual suites for letting purposes. As a result small firms are having problems in finding adequate space in Central London, and such small offices particularly rely on the close contacts available in the Central area. This was identified as an area which would need continual monitoring. Finally, trends in office rents and staff costs in the Southeast were researched, and figures were developed which compared rent and salary costs by region of the country.

TABLE 3.26

Share of Office Space for Greater London Region, 1967 and 1974

	Commercial Office Floorspace (millions of square feet)		Share of Regional Total (%)	
	1967	1974	1967	1974
Central London	82.1	98.7	55	47
Rest of Inner London	12.1	17.6	8	8
Outer London	19.7	34.4	13	17
Rest of SE Region	36.3	57.7	24	28
	150.2	208.4	100	100

Source: [51, Table 5]

The second phase of the planning process towards decentralization was to develop forecasts of office employment. These forecasts were made both for employment and for office construction, and for rent levels throughout England. The present economic down-turn in Great Britain will probably mean that less decentralization from Central London will occur than was originally hoped. However, the long-term trend is for the costs of "doing business" in London to soar, which will provide the momentum for increased re-locations to other areas of the country. Such dispersal pressures are likely to increase as the economy is strengthened. Office jobs are expected to provide 30 percent of all occupations by 1981.

The third part of the planning process was to identify the constraints which firms face when considering a move. The principal areas of investigation included the supply of mobile jobs, the extent of the labor supply in assisted areas, the short and long-term costs of a move, the availability of office premises in outlying areas, and the problem of reduced communication with increased distance from Central London.

The final aspect of the planning process was the investigation of policy instruments needed to bring about the decentralization program. In addition to the controls previously mentioned, there were five possible Government measures which were considered for the purpose of encouraging a greater movement of firms out of the Southeast. These additional instruments were: (1) a control on the amount of office floorspace occupied by a firm; (2) reactivation of powers under a 1966 Act to control by license buildings other than housing or factories; (3) a building levy or tax on additions to office stock in the area of control;

(4) annual taxes on the number of office workers employed by a firm in the control area, and (5) annual taxes on the floorspace occupied by firms. It was concluded that building licensing or a building levy would have little merit as instruments of a relocation policy, and that any form of increased taxation would be too massive in relation to the objectives. It was finally determined that relying on the Office Development Permit would be the most efficient and effective policy instrument.

The program of office decentralization from Central London has been in effect for several years now. Given the economic down-turn and the lack of new office construction it is difficult to accurately assess the success of the program. However, it has been observed that the activities of the LOB are at least moderately successful and have helped create a favorable climate for decentralization through their publicity and so a closer look at the LOB activities is appropriate.

Since its establishment in 1963, LOB's efforts have resulted in some 130,000 jobs outside Central London, which is perhaps half of the office jobs moved in the period. Less than 15 percent of the moves were greater than 80 miles from Central London, although there are recent indications that firms may be willing to consider longer distance moves. In terms of size of move, about 50 percent of the firms moving had less than 25 employees, while 10 percent of the moves involved firms with over 200 employees. With regard to the destination of firms re-locating, about 40 percent of the LOB-assisted moves have only been to the London suburbs, and the great majority (84 percent) have remained within the Southeast part of England. In general the activities of the Location of Offices Bureau have been found to be efficient and effective. The independence of the LOB from the Government is seen as being one reason behind its success. Another factor is that LOB's activities involve no restrictions on the office market, but are only an attempt to reduce or redirect demand for space in central London.

Another interesting aspect of the office decentralization program is the on-going research effort to evaluate the effectiveness of the program. The LOB has conducted a case study of 20 firms who have made the decision to decentralize. Detailed studies were made of the reasons behind the move, the location decision, any incentives provided by the firm to encourage its employees to also make the move, and the advantages and disadvantages to the firm in its new location. The balance of the firms involved in the case study looked upon their recent move in a positive way, particularly because of considerable savings in rents and salaries upon leaving Central London.

This review of the London experience with decentralization indicates a well-developed planning process, including the creation of reasonably strong regulatory tools with which to implement the program. Though the success of the Government policy is difficult to evaluate because of slowed economic growth, it is thought that Government actions have at least partially slowed the concentration of offices in the Central London area. The real test of the policies and regulations will occur in future periods of economic growth. Since the London program is so much more well-established than any in the U.S., it will be important to monitor the future operation of the decentralization program.

f. Never Considered (Atlanta, Georgia)

The Atlanta region has been included in this study to represent the situation where a conscious effort is being made to prevent the development of large regional centers in the outer city. Atlanta, perhaps more than any other city in the United States, is trying very hard to develop a large and dense downtown area. The main tool that is being used to assist the achievement of this objective is a rail rapid transit system that is now under construction. This system is focused on the downtown area and is expected to be a major factor in encouraging its further growth and densification.

A Regional Development Plan (RPD) for the Atlanta Region was published in 1976 by the Atlanta Regional Commission (ARC) [52]. It is the result of about two years of work by the ARC and provides a framework that is intended to serve as a guide for the Atlanta Region's growth for the next 25 years. The RDP is basically a policy-oriented document that contains facts and forecasts for the seven-county region as a whole and for its many parts. It also includes a map that shows the expected distribution of population at several points in time together with key natural features and major transportation facilities. The expected distribution of employment is not shown in map form but forecasts of total employment for 34 subregions for 1980, 1990 and the year 2000 are included in the RDP. As indicated previously (in Table 2.1) the City of Atlanta's share of the region's population is expected to decline from 34 per cent in 1970 to 15 per cent in the year 2000 while its share of total employment is expected to drop from 54 to 35 per cent. Viewing them another way, the forecasts indicate that the City of Atlanta is expected to obtain about a four per cent share of the region's two million new people between 1970 and the year 2000

while attracting about 22 per cent of nearly one million new jobs. The forecasts thus indicate that the outer city will attract about 24 new people for every new person in the City of Atlanta and about five new jobs for every new job in the central city. The Atlanta CBD is expected to grow from 93,614 jobs in 1970 to 173,311 in the year 2000, an increase of 85 per cent. This CBD growth represents 63 per cent of the total employment growth in the City of Atlanta during this 30-year time period. Viewing it another way, the another way, the CBD growth is about eight per cent of the region's total expected employment growth and in the year 2000, the CBD is expected to contain approximately 11 per cent of the region's jobs.

The RDP does not include any policies that deal specifically with the concept of major diversified centers in the outer city. Three policies that deal with the general topic are as follows:

(i) Established commercial centers should be maintained or rehabilitated, where possible, to remain economically productive and provide service to nearby residential areas.

(ii) New commercial facilities should be concentrated in suitably located and well-designed centers, compatible with adjoining development and accessible to their respective market areas.

(iii) Central Atlanta should remain the region's largest and most intensively developed business center, accommodating activities that cannot be as well located elsewhere: in government, business and professional services, finance, retail trade and entertainment and the arts.

The term "development centers" is used to refer primarily to the station areas that are part of the development of the rail rapid transit system being constructed by the Metropolitan Atlanta Rapid Transit Authority (MARTA). Approximately 41 stations are expected to be included in the MARTA rail system and a series of Transit Station Area Development Studies are well underway. These transit station areas are to be developed as extensively and as densely as possible and this outcome is viewed as being critical to the success of the MARTA system. These station areas will be competing with other locations in the region which have very good auto accessibility as the freeway system in place in the region is quite extensive. There is now a large number of office parks,

industrial parks and shopping centers in the outer city. The relationships between these locations and the rail station areas are shown in Figure 3.28. As can be seen, only a few office and industrial parks are located near a rail station area and the relationship between shopping center locations and the rail station areas is even less close on the average. These two maps are not included in the RPD but have been developed by overlaying maps that are in the RPD. The relationships shown on these maps lead to the conclusion that the MARTA station areas were not often located in ways that could easily serve the existing office, industrial and retail complexes in the outer city.

In the future, office space developers will be faced with essentially two location options: a MARTA station area or an existing office park. There is probably substantial vacant land in the several existing office parks, so few new office parks will probably be established in the 1980's and 1990's. The choice might boil down to five to ten MARTA stations versus some 15 to 20 office parks. Developers will probably prefer those locations that offer both good auto and transit access. If this is true, then only those few MARTA stations which also have good auto accessibility will attract much office development. Therefore, one might expect that a few large activity centers could emerge in the outer city adjacent to those stations that possess high levels of both auto and transit access. The competition between the office and industrial parks and the rail station areas for a share of the office/retail building market will be interesting to watch as it could be a major factor in the long-run success or failure of the MARTA system.

The station area studies that have been done in the Atlanta region are good examples of the type of detailed site planning that needs to be done for major diversified centers in cities that are not planning to construct a rail rapid transit system. One of these station area studies deals with a large suburban shopping center complex that has apartments and office buildings located adjacent to it [52]. This area appears to have potential to become a major diversified center but no plans of this scale have been developed as yet nor are any intended so far as is known.

If all of the 41 MARTA station areas were to be densely developed with office, retail and apartment buildings during the next 23 years, could they absorb all of the expected growth in these sectors during this time period?

Major Shopping Centers and Office and Industrial Parks in Relation to Major Freeways and Rapid Transit Stations in the Atlanta, Georgia Region, 1977

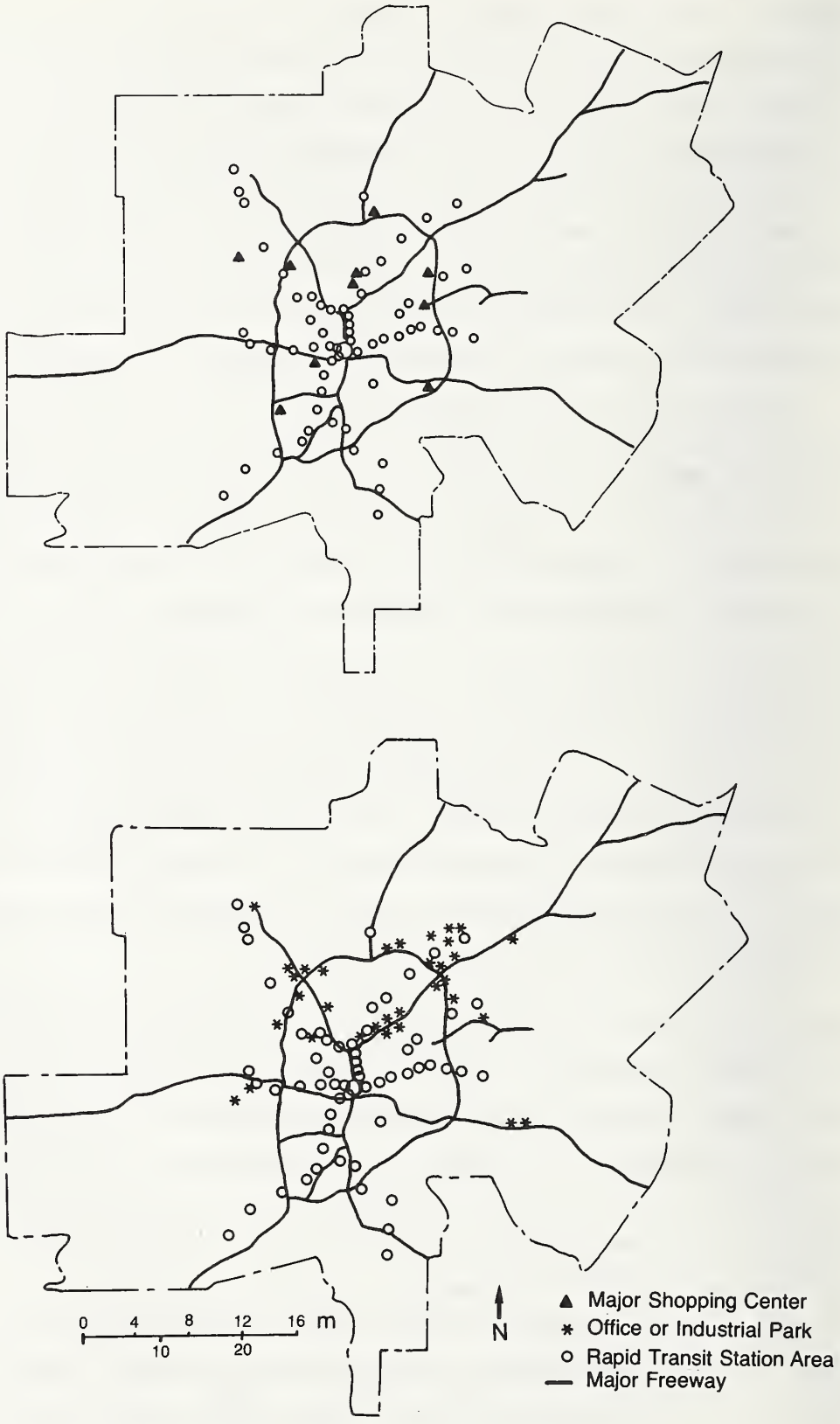


Figure 3.35. Transportation--Land Use Relationships in the Atlanta Region

No estimate of this type could be found among the planners and others interviewed in Atlanta but all did agree that the station areas must attract a large proportion of the available growth in these sectors if MARTA is to attract the patronage it needs to become economically viable. The market potential and absorption studies needed to answer these questions do not appear to have been done as yet either by MARTA or ARC and so this issue is still very much in question.

In summary, the ARC forecasts show that a further rapid dispersal of both people and jobs in the Atlanta region is likely between now and the year 2000. A rapid rail system is being constructed that is designed primarily to serve a CBD area which is expected to contain about 11 per cent of the region's employment in the year 2000. The other 89 per cent of the jobs will be located in a large number of small clusters scattered throughout the region. Some of these clusters will be oriented to a rail transit station and they may grow to a considerable size. Others will continue to be auto-oriented and they will probably remain relatively small. The size distribution of centers in the year 2000 will depend largely on the competition between office and industrial parks, shopping centers and the rail station areas for the new growth that is expected to be locating in the region. Prime locations for major diversified centers in the outer city have not been identified by the regional planning agency. If they occur, they will be the creatures of the market forces in the region and their pattern may or may not be equitable and efficient from a societal point of view. Only time will tell.

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IV. PROBLEMS, PROGRESS, AND POTENTIAL

In this section, we will summarize the major problems that remain to be solved before significant progress can be expected toward the creation of polycentric cities in the United States. Then, a brief review of several of the most promising efforts to develop major diversified centers in the U.S. and Canada will be presented, followed by a brief assessment of the potential for such developments in other cities in the United States.

A. Problems

The results of the survey and the site visits described in Section III show that while the polycentric city concept is a widely accepted notion among U.S. regional planners, little descriptive work has been done to identify what the urban land market is doing with respect to the location and relocation of office, retail and apartment developments. Moreover, practically nothing has been done to identify ways and means of implementing the concept in those cities which have been bold enough to publish a map which shows the location of those areas which they want developed into major diversified centers. However, such studies have been conducted in Canada and since they are readily available (and written in English), they represent the best guides available to the identification of the studies needed and implementation problems that need to be solved before any real progress toward the creation of the polycentric city can be expected in the United States. Still, the Canadian studies can only take us part of the way because of some significant differences between the U.S. and Canadian cities in urban structure and density, political organization, financing mechanisms and governmental powers to regulate and control the use of land. Moreover, it is not yet clear that the significant efforts to create large new centers in the outer city, currently underway in Toronto and Vancouver, will be successful. In fact, it will be several years, perhaps 1985 or later, before one will be able to reach even a tentative conclusion on this question.

Our review of the planning efforts and experiences in Toronto and Vancouver suggests that any American city that wanted to seriously examine the potential of the polycentric city concept should closely emulate the procedures and processes used in these two cities. These studies have identified and partially resolved several major problems that are also very likely to be present in any

American city in the 500,000 plus population category. Some of these problems are technical or methodological in nature while others relate to the political and fiscal feasibility of the concept. A listing of these problems and a brief discussion of each is as follows:

1. Technical (methodological)

Most of these problem areas have been identified in terms of the framework used in Section III to evaluate the site visits (see Figure 3.1). A basic problem that exists almost universally is that of defining the major diversified center concept more precisely in terms of its size and mix of activities. A second and highly related problem is that of determining the appropriate number of major diversified centers and their location (spacing) within the region. The modelling techniques that were developed and applied in Baltimore and the Twin Cities in the 1960's were used to address these questions in a rather limited but effective way but they have not been applied in other American cities. These techniques have been used extensively in Great Britain and the only recent literature on this topic has been written by British researchers [6][8]. If an adequate model could be developed that would be capable of allowing the planner to generate and evaluate alternative size-location patterns of major diversified centers, then it would be possible to make some progress on the key issue of how many centers, of what size, mix of activities and spacing, would tend to optimize the values of certain selected performance measures. Until such a model is developed, these questions will remain largely unanswered.

Beyond these basic size, spacing and mix questions are a host of more pragmatic tasks which are also somewhat technical in nature. In most American cities, the planners have not conducted the basic survey or inventory studies that are needed to determine the trends in the location and relocation of office, retail and apartment activities. In some cases, such data are available for one point in time. In a few cases, two data sets exist and a short trend line can be constructed. Until such inventory studies are conducted and a monitoring program established to enable them to be updated periodically, public policy regarding these land uses cannot be formulated in a realistic manner. This is probably mostly a funding problem as the knowledge and skills needed to develop a data collection effort of this type are commonly available in most large

American cities. In addition to the basic supply-side inventory work designed to determine the location of floor space and employment of various types in small areas, surveys designed to identify the location preferences of developers as well as their expectations, attitudes and values should also be conducted periodically. These data are needed to define better the demand side of this problem which is so strongly influenced by developer behavior. Adequate demand forecasts cannot be constructed without a substantial knowledge of this complex and constantly changing field of activity. It may be necessary to go beyond the type of study of developer preferences done in Toronto and Vancouver to ascertain better the role of the lender in the location decision-making process for office, retail and apartment facilities. The perception and decision-making rules used by these financial people may be more significant than the wishes of the developer in the final analysis of how location decisions are actually made. So far as is known, no city, other than Toronto, has examined this question in much depth as yet.

Once some forecasts of supply and demand are in hand, the task of allocating the demand among certain competing locations must be accomplished if the planner is to be able to generate and evaluate alternative size, mix and spacing concepts for major diversified centers. A polycentric land use plan should contain a map that shows the general location, desired size and general mix of activities that are to be encouraged to evolve during the planning period before the private sector can be expected to take the plan seriously. In our field work, only one map of this type has been identified and it deals only with size and location, leaving the mix question undefined (see Toronto map, Figure 3.10). American planners seem to be moving away from including maps that indicate the characteristics, location and timing of proposals for new major physical elements of the city, producing instead generalized sketches which are deliberately vague and capable of being interpreted in a large variety of ways. In the case of the major diversified center element of the plan, this type of map will not influence private sector decision-makers. The investments required of the private and public sector are too large and too risky to be based on anything but a clear and reasonably precisely stated map showing the location, desired size and general mix of activities at some future point in time. The analytical and forecasting techniques required to generate and evaluate alternatives in these terms are not currently available in most regional planning agencies and would have to be developed by UMTA or some other federal agency before this

task could be accomplished adequately. Training programs would also have to be conducted to develop the skills needed among the planners who would be doing this work.

Once a clear plan has been formulated, the task is to develop a development plan for the major diversified center locations that can serve as a basis for the detailed planning of the access and circulation needs of each center. A few studies of this type have been conducted but they are neither well-known nor readily available. Certainly, there is no one standard planning procedure that will fit all of the situations that presently exist in our cities, ranging from the redevelopment of existing centers to remodeling of existing centers to the creating of new centers from the ground up. What is needed is a set of general guidelines for and some examples of studies of this type that can be made widely known and available. This is again a task that could be performed best by UMTA or some other federal agency.

Implementation methods and techniques are the most underdeveloped part of the planning process outlined in Figure 3.1. This is mostly due to the fact that no American city has yet reached the stage where the implementation of the major diversified centers element of the plan was a real possibility. Again, Vancouver and Toronto (to a lesser extent) have obtained some experience that should be helpful to American planners who wish to dig into the questions of which incentives and disincentives to use to influence developers and lenders to choose MDC locations for their new or relocating facilities. Among the most significant problems of this type are (1) controlling land speculation at sites designated as MDC's, (2) controlling zoning at non-MDC sites so as to encourage growth at MDC locations while discouraging it at other competing locations, (3) developing a tax base sharing system that will allow all jurisdictions to share in the tax revenue generated by the growth at MDC locations, (4) using transportation facility investments to influence location decision-making by the private sector, and (5) developing public corporations to manage the growth and development of MDC locations. Vancouver has examined these issues in some depth, has found some solutions, and is now in the process of trying some of them out. They are also continuing to probe more deeply into these questions and are breaking much new ground in this area. Their progress should be monitored, reported and widely disseminated among American planning agencies. If Toronto's plan is adopted in the Fall of 1978, as is presently expected, the

Toronto planners will be digging into implementation questions very deeply and their experiences should also be very helpful to American planners.

Another problem that deserves special attention relates to the issue of air quality. The Clean Air Act, as amended in 1970 (42 U.S.C. 1857 et seq.), requires that all state implementation plans insure both attainment of ambient air quality standards by certain deadlines and continued maintenance of such standards once they are attained. After a federal appeals court ordered EPA in early 1973 to assure that state implementation plans are adequate for maintenance as well as attainment, EPA determined that every state implementation plan should contain an "indirect source" review regulation.

An indirect source of air pollution is a facility which does not itself emit air pollutants but which attracts automobiles in sufficient numbers so as to have the potential for creating concentrations of auto-related pollutants in excess of the ambient air standards set to protect the public health and welfare. Outer city centers are prime examples of such indirect sources. As originally promulgated, EPA's regulations required that any covered facility which commenced construction after January 1, 1975 would be subject to review. Because of intense political pressure from shopping center developers and others, this deadline was moved to July 1, 1975 and then EPA later announced that the review procedures under the regulation were being suspended, pending further notice. EPA continues to believe that the attainment of air quality standards requires the regulation of new and modified indirect sources. But the actual regulation of these actions is now being handled at the state or local levels in those states that have adopted such regulations.

The effect of such regulation can be described very well by the aerial photograph of Figure 4.1, which shows the Washington Square Shopping Mall, located south of Portland, Oregon. The developer of this mall acquired all of the land within the road system that rings this mall with the intention of developing a major diversified center on this site. His efforts to do so have been blocked by the State of Oregon, which is enforcing its own indirect source regulations. Clearly, the creation of major diversified centers which are very auto-oriented will encounter the same problem in other parts of the country. Until auto emission levels fall substantially, the only way that sites like those surrounding the Washington Square mall can be developed is to insure that they will be well-served by transit. This will be no easy task, but the alternative for the developer is to continue to pay the cost of holding this land

Figure 4.1. Washington Square Shopping Mall Located South of Portland, Oregon, 1976

which cannot be used for any activities that attract large numbers of autos. Clearly, a site like Washington Square has no potential as a major diversified center until this air quality problem can be solved. UMTA and EPA will have to work closely together to find transit-oriented solutions to this type of problem before MDC developments can be feasible in states with indirect source regulations.

2. Non-technical (political and fiscal)

As has been demonstrated by the Vancouver and Toronto planners, it is possible to produce a polycentric land use plan, get it adopted and develop an action program designed to implement it. The knowledge and skills needed to accomplish the same thing are available, to a somewhat lesser extent, in many American cities. However, the political and fiscal conditions in our cities have not yet produced a climate that has given the planners a charge to produce such plans (beyond the generalized maps with red dots and generalized policy statements that have characterized the plans of the 1960's and early 1970's). This is probably due in part to the relatively greater affluence in the U.S. which has made it possible for our cities to greatly extend their land areas and highway systems while Canadian cities have had to accommodate similar growth rates with far less land consumption and transportation facility construction. The trend in the U.S. at present is toward the concept of Urban Service Areas which generally are designed to contain growth within a defined area. This "infilling" concept is one that will move U.S. cities closer to the state which has existed in Canadian cities for a decade or more in that it will tend to cause an increase in density and will require a more intense use of existing facilities of all types. If this trend continues, one of its impacts could well be a renewed interest in the development of larger and more dense centers of activity in the various parts of the urban region.

The non-technical issues that are likely to become of major significance if planners are asked to prepare plans for major diversified centers can be identified by examining the Canadian experience once again. First, any MDC plan can be expected to be viewed as a threat to the future vitality of downtown by its major political and economic shareholders. If the plan does not have the support of downtown interests then it has little chance of succeeding, except in cities where the balance of political power is held by the outer

city. Such cities are probably few in number at present but, as the population and employment forecasts show, the central city will soon be in a minority position vis-a-vis the outer city in terms of votes and, to a lesser extent, tax base and the economic strength that goes with the location of new jobs in the outer city. Unless the planners have done their inventory work well, understand the trends in office, retail and apartment space, have produced credible forecasts of the supply and demand sides of this downtown-growth-versus-the-outer-city issue, they can expect their plans to fail because downtown interests will perceive them as a major threat. The several studies done of past downtown growth and its future prospects by the planning board of the City of Toronto are excellent examples of the type of thing that American planners must do if they expect to be able to handle this issue successfully.

A second non-technical issue is that of community resistance to growth and increasing density in the outer city. As many studies of rail rapid transit station areas have discovered, people who live at low densities in single family houses do not like the prospect of high rise, traffic-generating buildings coming into their neighborhoods. Many suburban residents do not like the idea of "bringing downtown" or "urbanity" to their neighborhoods. The would prefer to keep their environments as they are and travel to obtain whatever they need in the way of urbanity as often as they please. This issue can become highly politicized very rapidly and can be a major obstacle to any plan that calls for the creation of major diversified centers. It can often boil down to a confrontation between community groups, regional interests and the owners of the property in MDC locations. There are, of course, no ways to avoid this kind of situation but by being prepared for it, the planner can often help to make the dialogue and debate more substantive and productive than would otherwise be the case. Moreover, if he has developed some assessment of the impact of the MDC on its surrounding environment that can be easily communicated to all concerned, the dialogue and debate of the issues can be expected to be more useful and somewhat less emotional. There are few guidelines available from either the Canadian or U.S. experiences that are known to us. The station area studies now underway in Atlanta, Miami, Baltimore, and Washington, D.C. will probably produce some helpful information in this regard in the near future.

A third major non-technical issue is the concept of tax base sharing. A tax-base sharing mechanism is possibly the single most important thing that is needed before any MDC plan can be expected to have a strong chance to be

implemented on an areawide basis. Tax-base sharing exists in Toronto and the Twin Cities of Minnesota and has been an important factor in progress toward the implementation of the MDC concept in both cities. Vancouver does not have a tax-base sharing system at this time and it is not yet clear how this lack will affect the implementation of the Regional Town Centres plan.

The probability that tax-base sharing will be adopted by a large number of American cities during the next decade or two is unknown but will undoubtedly be a major factor in determining how many American cities are likely to get serious about implementing the MDC concept. If UMTA, along with other federal agencies, were to strongly advocate the adoption of tax-base sharing mechanisms in the U.S., these actions could substantially increase the prospects for the creation of MDC's in the outer city during the next two decades.

B. Especially Noteworthy Progress

In this section, we will describe the characteristics of eighteen locations in eleven regions (Los Angeles, Toronto, Vancouver, Denver, Seattle, Houston, Chicago, Minneapolis-St. Paul, London, Paris, and Lyons, France) that either are or have an unusually high potential for becoming major diversified centers. These are situations that should be monitored closely over the next few years as they may represent the beginning of a trend toward the development of MDC's in the outer city. It is very likely that there are several additional locations in other cities that should be included in this section but are not yet known to us.

1. Irvine Center, Irvine, California

Irvine Center has been described in Section III of this report and no further information on the planning of the development of this center is available from the Taubman Corporation at this time. The Irvine Company was purchased in 1977 by Taubman and the new owners have some different notions about how and when this site should be developed. A monitoring effort could provide much useful information to others around the country who are considering developments of a similar nature and comparable scale.

2. Scarborough Town Centre, Scarborough, Ontario

The Scarborough Town Centre is one of two locations that have been proposed as large centers and included in the proposed land use plan for Metropolitan

Toronto. This plan is now being reviewed and may be adopted in the fall of 1978. The site is located approximately 17 kilometers northeast of downtown Toronto in the approximate geographic center of the Borough of Scarborough.

In 1965, the 170-acre site (vacant at the time) was purchased by a private developer with the intention of constructing a large regional shopping center on it. In 1968, the Official Plan of Scarborough (originally adopted in 1957) was amended to designate this site as a Town Centre site and require that a plan be prepared to guide its development. Such a plan (called a Secondary Plan) was developed and adopted in November 1976 by the Borough Council as the 430th amendment to its Official Plan. In 1974, prior to the adoption of this development plan, a study of the potential of the site [16] was prepared and provided the background needed to support the eventual adoption of the development plan for the site. This six-month study was begun in June 1973, shortly before the opening of the Scarborough Civic Centre, noted for its architectural excellence, on the Town Centre site. Since then, a large (600,000 square feet) regional shopping mall has been constructed on the site just north of the Civic Centre. Figure 4.2 shows the Civic Centre in the foreground and the adjacent shopping mall. The remaining land has been zoned for town square, commercial, office and residential uses. As of June 1977 there were approximately 4,400 persons working at the Civic Centre, shopping mall, and an insurance company. A further 3,600 employees would come with other firms currently showing an active interest in constructing buildings in the Town Centre site in the near future. As mentioned previously, 30,000 - 40,000 jobs is the long-range objective for this site.

The Scarborough Town Centre Land Use Study was completed in 1974 and it examined a broad range of factors that will influence how the site will be developed. These factors included the existing uses on the site, community attitudes, market demand, urban goals and objectives, access and circulation, and a wide variety of other economic and social considerations. Five development concepts were formulated and evaluated; one was selected as a preferred alternative and examined in greater detail. It calls for a compact high-density development of the site. A major transit terminal station would be introduced just north of the Town Square, between the shopping center and the Civic Centre. This terminal would include a light rail transit station as well as being a focal point for buses, taxis and autos. It would connect to a central pedestrian concourse that would be enclosed and would serve most of the activities on the site. Illustrations of the preferred development concept

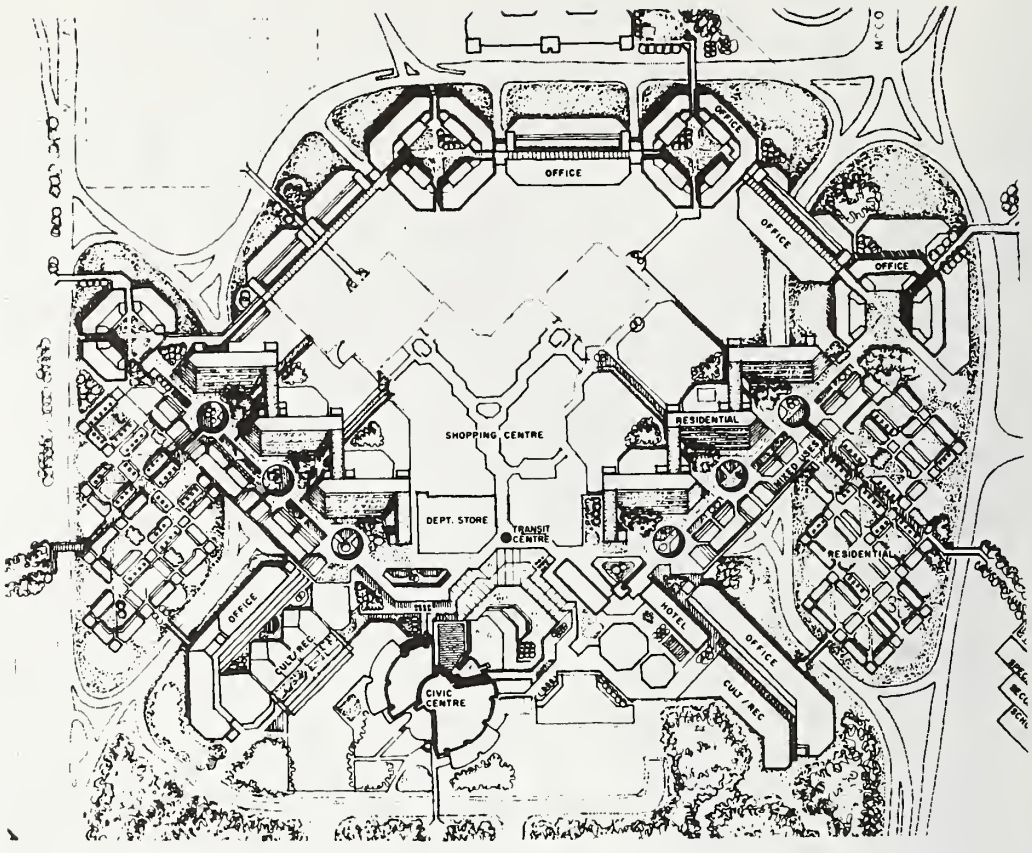
Figure 4.2. Scarborough Town Centre Site, Looking North, 1981

that were included in the land use report [16] are shown in Figure 4.3. Figure 4.4 is an illustration of the main pedestrian concourse that would be located between the Civic Centre and the shopping center and integrated with a multi-modal transportation terminal.

Since the publication of the preliminary studies for Scarborough, two reports have discussed the potential problems with developing this site into a successful node. The Toronto City Council created a Decentralization Committee, which reported on the requirements for influencing the location of office space. The Committee noted that the planning instruments necessary to create a compact development form are not yet refined, and that there would be a real need to substantially increase the densities at the Scarborough site if a sizeable amount of office space is to be attracted. The Committee also concluded that a major problem in creating a successful node at the Town Centre was the fact that the new shopping center relies primarily on automobile access. This automobile orientation might make it more difficult to attract pedestrian movement around the site.

A second report which questions the alleged advantages of the Scarborough site is from the Bureau of Municipal Research. In an article entitled, "Is Metroplan a Gamble Worth Taking?", they raise a number of issues which they feel have received inadequate discussion. The first relates to the proposed light rail transit connection. A feasibility study on connecting the site with the Toronto subway station was completed in April of 1977, and it recommended that a $68 million light rail line be constructed and available for service in June of 1980 [15]. Though this transit line might aid the development of the site, the Bureau believes that it will actually have a centralizing effect, because the line will equally serve a system focused on the core. This issue has yet to be empirically (or politically) resolved.

A second problem raised by the Bureau is the development potential at the Scarborough site. They note that the location of the site on the perimeter of a built-up area is a possible signal to developers that the market there is not great, which may be a deterrent to development. The Bureau also argues that the present configuration of the site (a suburban shopping center surrounded by large parking lots, with a civic center at one edge) may hamper the establishment of a true mini-downtown. They also studied the potential of a transit line to the area, and concluded that it would be difficult to locate the stations in the center in such a way as to stimulate the type of



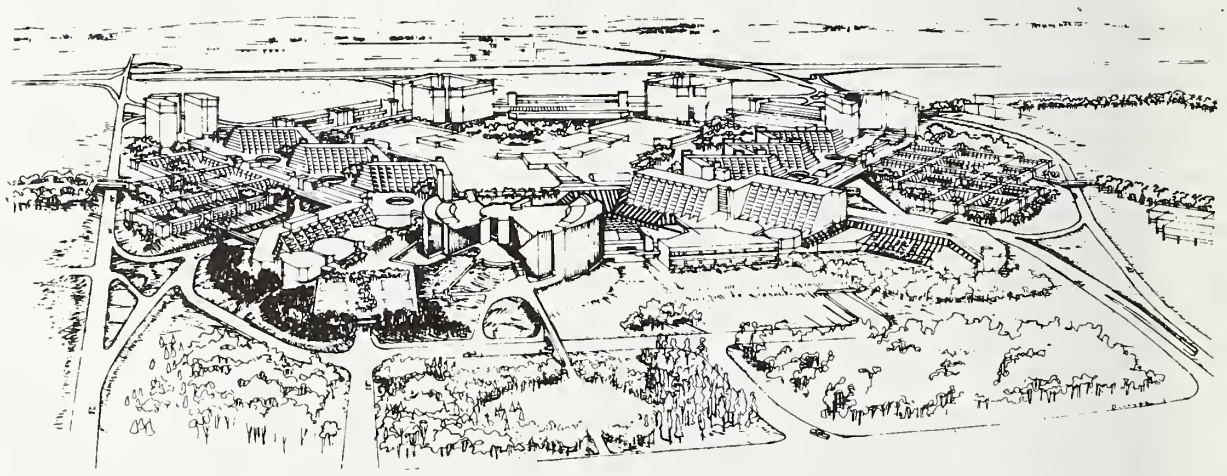


Figure 4.3. Plan and Perspective Views of an Illustrative Development Scheme for the Scarborough Town Centre Site

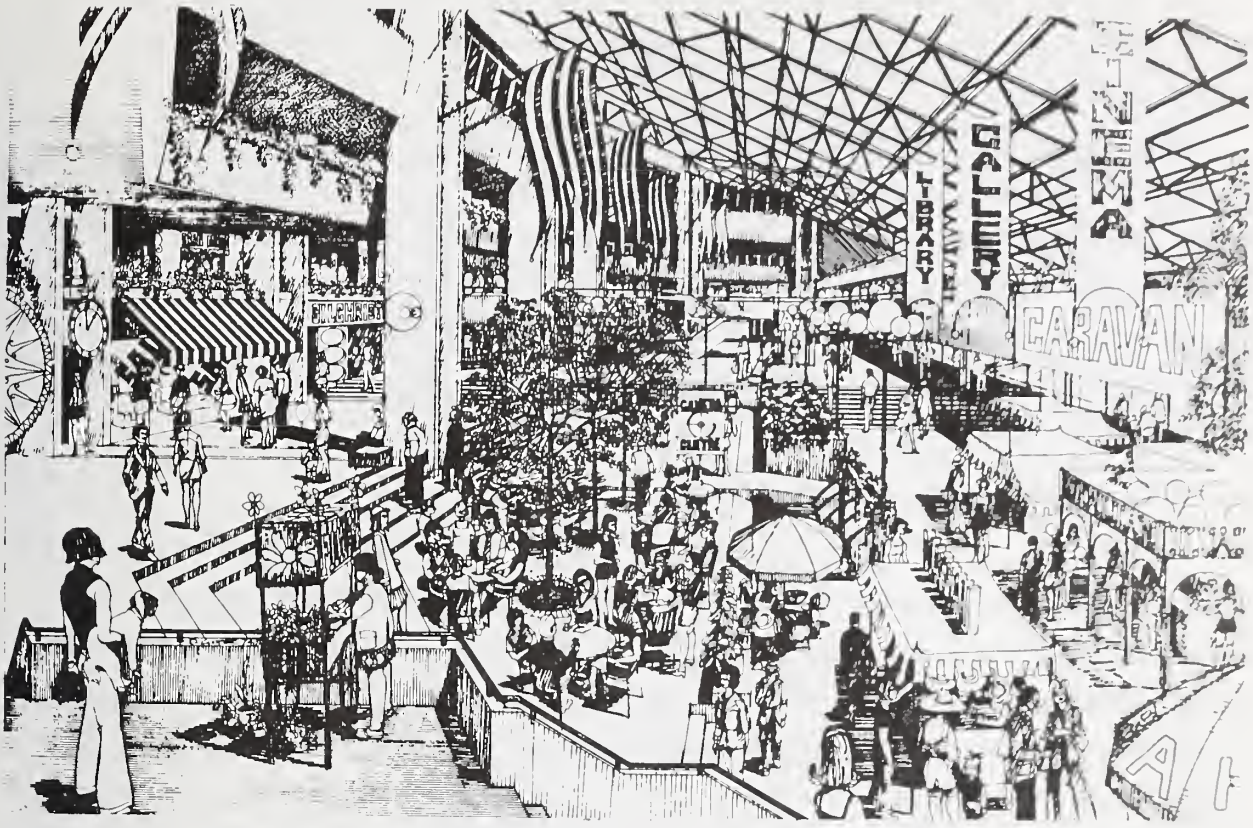


Figure 4.4. Illustration of the Proposed Pedestrian Concourse in Scarborough Town Center

development that is associated with a small downtown. The Bureau concludes that the sprawling low density environment of the Scarborough Town Centre may make the attraction of sufficient investment in the area a real challenge.

Notwithstanding these criticisms of the town center designation for Scarborough, several recent events indicate that the future of the Scarborough site is promising. For example, the light rail transit connection has been approved, and detailed design work is now in progress. In addition there have been several commitments by major organizations to locate in the center. The Bell Telephone Company is currently constructing a major office complex, which will cover six acres of land. The initial phase will consist of 250,000 square feet of office space for over 1,000 employees. Government offices are also expected at the site. The Provincial Government has decided to build a courthouse and associated facilities, and has purchased the necessary land for those buildings. The Federal Government has also announced

plans to build a new office building at the town center site. Finally, a further 200,000 square-foot addition to the existing shopping center (including another major department store) has been approved and will start construction in the near future.

Continuing efforts are being made by the planning staff to refine the existing development plan for the area. Studies have been produced on a proposed pedestrian system, a building intensities plan, parking control proposals, and long-term external road improvements. The advance planning work contained in these studies indicates a solid framework upon which to implement the town center concept. The experience at Scarborough should be closely monitored for future developments.

3. North Yonge Centre, North York, Ontario

In addition to Scarborough, North Yonge is to be the other second-level center in metropolitan Toronto. This site has excellent accessibility now by both automobile and transit, and its potential for growth is quite good. The Yonge subway connects the proposed center directly to the downtown, and Highway 401 (a 12-lane crosstown expressway) intersects the subway line just south of the North Yonge location. A large-scale development has recently been completed at the site, Sheppard Centre, which is a mixed use project of offices, retail outlets, and apartments. In addition a 600,000 square-foot Federal Government office building has also been completed in the proposed center. Part of the planning process for this center, and potential problems with the site, will be discussed below.

The Metroplan proposal for Toronto called for a major center of development at the North Yonge site. The planning staff of North Yonge responded with a redevelopment study which described the existing policies being applied within the Yonge Street corridor, the state of current development, and the constraints/advantages of attempting to create a Yonge Street center [14]. This study was discussed at public meetings in June and July of 1977. Three options for shaping the growth of the center were presented. The first called for the creation of low density linear development along the two-mile stretch of Yonge Street. The second hypothesized configuration was for a concentrated, high density center at the Sheppard Avenue and Yonge Street intersection with developments similar to the existing Sheppard Centre. The third option presented to the public was for the establishment of high density nodes at both the north and south ends of the center, each of which contains a subway station connecting them to downtown.

The presentation of these development alternatives to nearby residents of North Yonge did not meet with total acceptance. The Borough planners seemed to favor the second proposal, creation of a high density center, partly because developers expected re-zonings to higher intensity land uses, and had taken options on land in the area under that condition. In other words, the development potential appeared to be good at the site of the proposed center, and it might be politically difficult to choose another site for the center. Public response to the redevelopment study was generally in support of the creation of an activity center, but after a series of extended public meetings, citizens advocated a two-node, moderate density scheme. Their main concerns were that surrounding neighborhoods be preserved, that height and density limitations be imposed, family housing be specifically provided for, and that traffic congestion be minimized.

The compromise which resulted from these public meetings is illustrative of the planning process behind the development of outlying centers. Developers turned out not to oppose a two-node option, and in fact plans for three high-density developments in the northern node were put before the City Council for approval, before an absolute decision on the location of the center had been made. The Planning Board and the City Council, aware of the views expressed by the public and by developers, endorsed the creation of a Yonge Street center in October 1977. The following recommendations were adopted:

1. North York support the future development of a center in the general Yonge Street area;
2. The center should contain high density nodes in the general vicinity of Sheppard and Finch Avenues;
3. Center boundaries should be drawn to include street blocks or recognize development parcels; and
4. The center should accommodate approximately 40,000 employees and 20,000 residents.

The next step in the planning process was for the planning staff to devise a strategy for the development of the center. This strategy has now been prepared and presented for public discussion. The proposed form of the center is that major nodes of activity be located in the vicinity of the Sheppard and Finch subway stations, linked together by a narrow strip of lower buildings. This proposed form reflects the desirability of locating a majority of residents and employees within walking distance of the subway stations and associated bus terminals. The strip portion of the center will

remain largely auto-oriented. The strategy report recommends that the two major nodes of the center be encouraged within one municipal block of Yonge Street, or where the street pattern does not follow a basic grid, within approximately 500 to 800 feet of Yonge Street. The basic means for implementing the strategy are also indicated in the report. These generally consist of policy statements and proposed zoning code and map changes.

A number of the elements in the strategy report directly address the concerns of nearby residents. One provision is that proposals for increased densities beyond the center boundaries should be reviewed only on the basis of existing policies for the area, and should not be considered within the context of the center. In addition, several limitations were imposed on future development. These limitations are: an absolute height limit between 15 and 25 stories, with a limit of 5 stories for buildings within 250 feet of existing stable residential areas; development proposals above a certain density must satisfy additional criteria before being approved; and new buffers are to be created which will separate existing homes from any new buildings which are significantly taller or more massive than the houses. The planners believe that even with these restrictions, the employee and residential targets can be achieved.

The transportation part of the center strategy is less specific than other sections of the report. There are a number of recommendations for further study of the traffic implications of the proposed development pattern, evaluation of the modal split of users or residents of the major buildings, and the establishment of appropriate parking standards. It is further recommended that parking for each project in the corridor area be strictly regulated, and it is even suggested that the levying of a charge for parking may be necessary. There are also strong suggestions regarding proposed transit facilities which may serve the area. The first is that the Borough strongly support the indefinite postponement of an Eglinton fixed rail transit line, in favor of early implementation of a transit facility north of Highway 401. Also recommended is that the possible northward extension of the Spadina transit line be periodically re-evaluated once travel patterns have been established.

With regard to the pedestrian system of movement, the strategy report recommends a number of actions. It is first suggested that the underground pedestrian passageways serving the Finch subway station be incorporated into a system serving redevelopment projects which are near the stations. The attractiveness of these passageways is to be enhanced by the use of appropriate

lighting, color and materials to create interest and variety for pedestrian users. Above ground, attractive pedestrian courtyards are to be incorporated into the design of the center, and future building plans will be encouraged to include protected passageways adjacent to buildings. Despite these recommendations to create a pedestrian environment, the strategy does not address the impact which the heavy traffic along Yonge Street will have on this pedestrian system.

The strategy plan for the Yonge Street center has been briefly described above, with an attempt to highlight the major recommendations. The next steps in the planning process are for these recommendations to be included as policy statements in the new comprehensive plan, for additional technical studies to be done, and for the City Council to agree on or revise the recommendations in the strategy report. The City Council will also need to approve steps to implement the recommendations, principally by altering the zoning code and map designations for certain key sites in the two nodes.

North Yonge is an interesting example of intensive redevelopment of a suburban area. Elected officials, developers, planners, and the public have all been actors in the process. Other jurisdictions might learn from North Yonge and its efforts to get agreement on a development concept for the center. Whenever redevelopment of a site is necessary, local opposition is likely to surface, and this opposition must be resolved if the center is to proceed successfully. The low density, linear nature of the proposed center has required a different planning framework than those areas which are creating one high density center.

Though considerable development is now in progress in the North Yonge center, there still are some doubts as to how successful this effort to create a node can be. The Decentralization Committee (which was appointed by the Toronto Council) reported on a number of problems that had to be resolved before the site could actually develop into a node. The Committee comments that the site presently has no compactness or cohesiveness, particularly since the area is bounded by low density residential land uses. In order to support commercial development and a diverse range of service activities, the Committee argues that residential densities will have to be increased. Yet the proposed strategy clearly tries to preserve the existing character of nearby residential areas.

Another problem identified by the Committee is the barrier posed to pedestrian movement by Yonge Street. Recent improvements to Sheppard Avenue have made the Yonge-Sheppard intersection a focal point for traffic, which may make it difficult to implement a pedestrian-oriented development scheme in the

area. The goal of making pedestrian movement easy and enjoyable may also be hampered by the heavy traffic on Yonge Street. A two-tier system of movement might have to be constructed in order to provide for the needs of cars and pedestrians alike.

The Bureau of Municipal Research, a private organization in Toronto, has also pointed to a number of problems with the North Yonge site. Though noting the good accessibility which this area enjoys, they also observe that it is predominantly a car-oriented area. They raise the issue that the linear nature of the proposed development might result in severe road congestion, particularly because the area lacks a complete grid road pattern. They suggest that a grid road pattern is necessary to bring about the compact integrated development and higher densities which typify a center. The Bureau further notes that the Borough will have to make some difficult political decisions if the concept of a "mini-downtown" is to materialize.

The Bureau also has suggested that the potential of the North Yonge site may be limited because of the supply of land in the area. Because there is insufficient vacant land to accommodate the expected growth, extensive redevelopment will have to take place. In a prediction which was born true, citizen resistance is high when redevelopment is necessary. When this occurs, a great deal of effort must be exerted to get a compromise which is politically acceptable. Such a compromise may or may not be in keeping with the successful implementation of the decentralization plan.

The above discussion indicates that there are several advantages to the creation of a center at the North Yonge site. The area has excellent accessibility and a significant amount of development interest has already been expressed. However, a number of potential problems were raised which may make it difficult to redevelop North Yonge into a second-level center. Public sentiment has been in opposition to high-density development, yet zoning changes to higher densities seem an absolute necessity if the area is to be successfully developed into a node. Other problems relate to the dominance of the private automobile in this area, and the inadequacy of the road pattern to effectively spread the traffic to arterials other than Yonge Street. This concentration of traffic along Yonge Street (which will probably worsen as a result of the linear development pattern) will tend to deter pedestrian movement around the center. Problems such as these are not insurmountable, but their existence indicates that a substantial amount of work must still be done before the North Yonge site can be evolved into a successful second-level center of activity.

4. New Westminster, British Columbia (Vancouver Region)

New Westminster is an older community located on the north bank of the Fraser River about 10 miles southeast of downtown Vancouver. Downtown New Westminster has been selected as an early action site for a Regional Town Centre. It is presently close to being of a self-sufficient size and could be provided with excellent light rail transit service by utilizing an existing railroad line that connects it with downtown Vancouver. As one of the oldest centers in the region, downtown New Westminster has a history and character that is unique and can assist the development of a waterfront-oriented Regional Town Centre. Reaction to date from New Westminster officials, community members, and area businesses to the Regional Town Centre has been favorable and substantial action has occurred in this location.

A development plan for the site, entitled "A Program for the Revitalization of Downtown New Westminster," was prepared for the British Columbia Development Corporation (BCDC) in March of 1977 [18]. BCDC has worked closely with the city government and other governmental agencies to bring about the appropriate use of a large tract of land owned by the BCDC in New Westminster as well as to revitalize the downtown area of New Westminster in keeping with the Regional Town Centre objectives. This participation by the BCDC has been a very important factor in stimulating interest in the RTC concept and has been helpful to the city government in getting some further studies of its own going.

The development plan prepared under BCDC sponsorship examines the strengths and weaknesses of downtown New Westminster from a market potential point of view. It then identifies certain "prerequisite" activities that are believed to be necessary to create a new climate of development opportunity for a broad mix of urban activities. The attempt is to identify the "critical forces and mass" necessary to get the revitalization process going in its early stages. The prerequisite development activities identified are as follows [18]:

1. As an important theme concept, create a unique environment in the core area of New Westminster in which an exciting urban experience will be realized employing the existing heritage of building infrastructure and pedestrian streetscape.
2. Establish a development program for the accommodation of an in-city college of higher education.

3. Set the stage for the eventual development of a major transportation terminal designed to accommodate all forms of short and long-term local and regional transportation systems.
4. Create a waterfront development program which would take advantage of the Fraser River water's edge with the development of a lineal park system, marina, and other waterfront activities.
5. Provide a system whereby the accessibility of the downtown core area of New Westminster will be enhanced particularly from the standpoint of residents situated to the south (across the river) and in the "uptown" area of New Westminster.

The report then describes the details of these prerequisites and identifies several development opportunities in the area. It then concludes with an illustration of how the RTC might look at some point in the future (see Figure 4.5) and discusses development implementation guidelines. One of the key implementation concepts discussed is the development syndicate, which allows each landowner to contribute his holdings to the syndicate while getting "shares" in return. Each landowner would then benefit from any development in the area in proportion to his contribution to the syndicate. Such a development syndicate would help solve the land assembly problem, which is a major obstacle to any effort to develop a major diversified center in any area where several landowners exist.

Since the preparation of the development plan, many steps have been taken to initiate a Regional Town Centre in the downtown area of New Westminster. Efforts are proceeding only slightly behind schedule, despite the economic downturn in the Province. The first major commitment was in June of 1977, when the Provincial Government announced plans to construct a new courthouse in downtown New Westminster which will cost about $16 million. Since then the Douglas College has made a commitment to relocate within the Town Centre site, and the City of New Westminster has agreed to provide certain amenity features and other elements needed to foster the development of the site. The City will contribute $10 million for parking, a stepped plaza, the galleria, and the waterfront park. The City is also considering the development of a $10 million performing arts center, subject to the establishment of the economic feasibility of the project. Significant progress has also been made toward the preparation of the Official Community Plan and related zoning by-laws for the downtown area. This has been a joint process with the City, the British

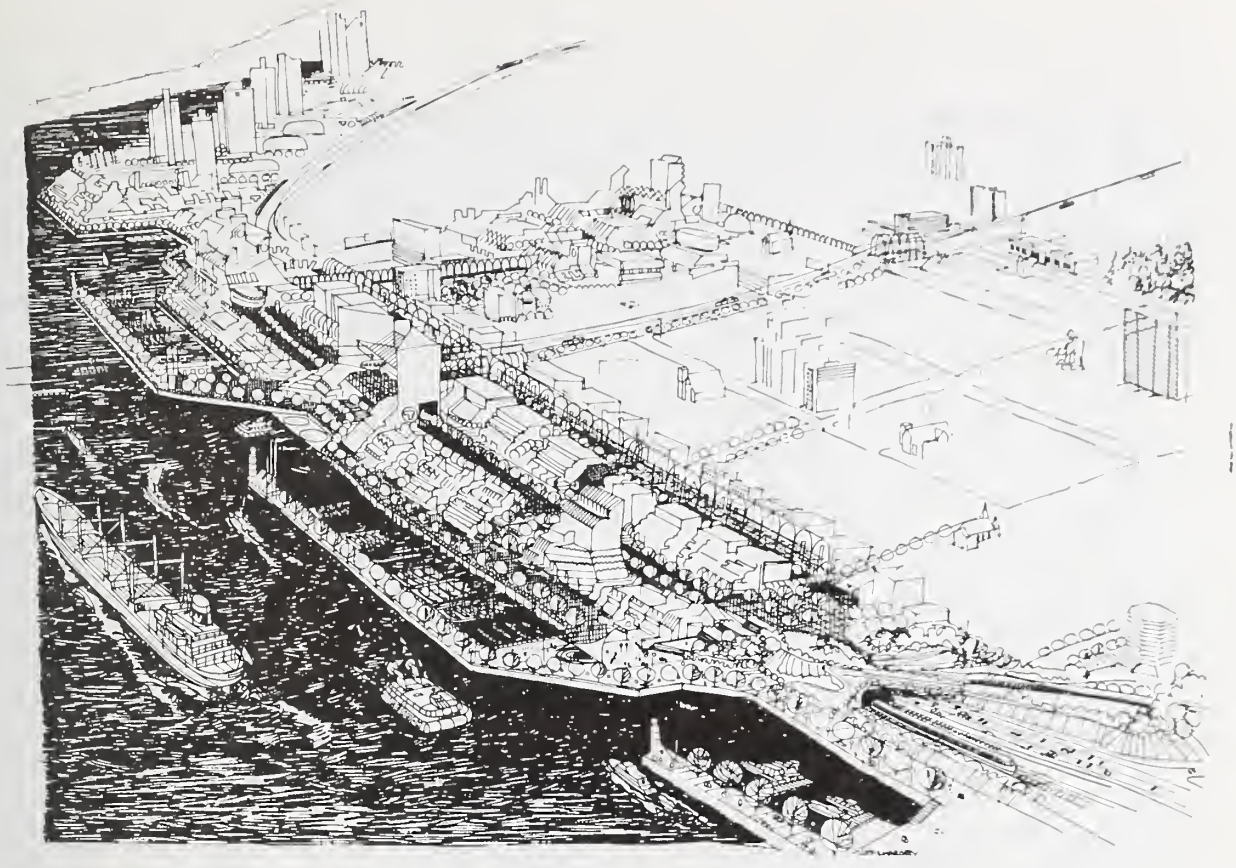


Figure 4.5. Illustration of a Development Proposal for the New Westminster Regional Town Centre

Columbia Development Corporation, and others. In general, the Greater Vancouver Regional District is playing only a limited role in New Westminster, now that the action program is being carried forward.

Perhaps the area of greatest progress toward the establishment of a Regional Town Centre at New Westminster involves the development syndicate. The BCDC first began by identifying public lands for inclusion, and then private landowners were approached for possible participation in the syndicate. The syndicate has now been formed under the name of the First Capital City Development Company (FCCDC). A financing plan has been developed under which the FCCDC will operate, and the BCDC began in February of 1978 to take options on major parcels of land to be transfered to the FCCDC. The options were expected to be taken by the end of June 1978.

The New Westminster site presents unusual advantages for overcoming the land assembly problem. For example, a majority of the land needed to establish the Town Centre is in some form of public ownership. Almost 3.5 million of 4 million square feet of land intended for syndication belongs either to the

Provincial Government, the City of Westminster, the Fraser River Harbour Commission, the Insurance Corporation of British Columbia, or is land which BCDC has under option. Given this degree of public ownership of land in the site of the Town Centre, a significant degree of expropriation is not necessary. However, expropriation may be necessary in a small amount in order to assemble the site for Douglas College.

Another problem which has been addressed by the planners for the New Westminster downtown is the land speculation which can result from encouraging development in an area. To control land speculation, the City downzoned the urban core in July 1977 from high density to low density commerical land uses. Though there has been no direct monitoring of land sales, the planners in New Westminster and BCDC believe that only modest speculative increases have occurred in the general downtown area. These increases appear to have occurred after the announcement by Douglas College that it would relocate to the Town Centre site. The planners also believe that most of the land in the area is being sold to developers, rather than to speculators. There is some disagreement as to why speculative increases in land values have been minimal. The early efforts toward syndication are one agreed-upon reason, but the effect of the downzoning on preventing changes in land values is still open to question.

One issue which remains unresolved is the effect of a light rail transit system on the development of the New Westminster Regional Town Centre. The GVRD is hoping to use the LRT to foster Town Centres in the region, and is forecasting that such a system would need to carry 7,000 to 15,000 people during the rush periods by 1986. The outstanding issues from the point of view of the Regional Town Centres are the timing and location of an LRT system. The planners at New Westminster and the FCCDC believe that the Town Centre there can be a success without the LRT. In fact, the market projections and studies for the site have been made as independent of the LRT system as possible. However, the project director believes that after ten years have passed it will be necessary to have a transit station at the Town Centre site in order for the development to mature either quantitatively or qualitatively. In the interim the majority of the trips downtown are expected to be by private automobile, with bus service expanding only in relation to demand. In other words, there are no set plans to develop a bus system which is focused on the Town Centre site.

The issue of the timing of the LRT system is a particularly sensitive one to the planners for the area. It is believed that if the development of light rail transit begins in downtown Vancouver, then there will be adverse impacts on the development potential of New Westminster. This is because of the perception that downtown Vancouver would then become an even greater focus of activity in the region. Such adverse impacts are likely to be minimized, however, if substantial activity had already taken place at New Westminster. In this case the starting place for LRT construction would be less important. In general the planners believe that the only real positive impact LRT could have would come from starting it at New Westminster and linking it with the other Town Centres first. Given this view, an early start on the construction of the system would be an advantage.

While much remains to be accomplished in this RTC project, New Westminster is getting deeply involved in trying to get an RTC started in its downtown area. The BCDC has been a major factor in stimulating interest and some action to date. Its interest lies mainly with the development of a large tract of land which it holds located in the midst of the project area and it is significant that it has been able to relate its interests to those of the larger area and the RTC objectives set forth by the Greater Vancouver Development Board. The implementation studies that have been conducted by the BCDC are exactly the kind of thing that is needed to get a project like this up and moving. They have been conducted from the point of view of the real estate investor and deal directly with questions relating to the expected return on an investment in this area. Actions taken subsequent to these studies have been just as progressive. Commitments have been obtained from the Provincial Government, Douglas College, and the City of New Westminster. In addition, the efforts to create a development syndicate are proceeding according to schedule. Once options have been taken on key parcels, private developers will be approached for their participation in the creation of a Regional Town Centre. There is so far only one part of the development plan which has not worked out, and this was the effort to attract a federal office building to the site. The Federal Department of Public Works has instead decided to build additional office space in downtown Vancouver, though it is still possible that some future interest may develop. Given the successes at New Westminster, the BCDC and the syndicate should be closely monitored as they will provide valuable experience for persons in the U.S. who wish to pursue a "revitalization" approach to the development of a major diversified center in the outer city.

5. Burnaby Centre, Burnaby, British Columbia (Vancouver Region)

Burnaby is a large municipality located within the Greater Vancouver region about four miles southeast of downtown Vancouver. It was designated as one of seven Regional Town Centre sites in the Regional Development Plan prepared by the Greater Vancover Regional District in 1975. Shortly before that, in 1974, the Burnaby Council approved a recommendation from the planning department that the Kingsway/Sussex area be designated a Metrotown development area and that guidelines reflecting the development of a Metrotown in this area be prepared (the term Metrotown has the same meaning as the Regional Town Centre term later used by the Greater Vancouver Regional District).

In June of 1977, the Burnaby Planning Department published their report, entitled Burnaby Metrotown: A Development Plan, and it was subsequently approved by the Burnaby Council in early 1978. This document describes how the development in the area could be guided so as to achieve the following objectives [2, p. 52]:

1. To foster a highly diversified and active mixed-use environment
2. To provide for appropriate growth and change over time while maintaining continuity with existing developments and important past policy decisions
3. To provide a balance of public and private uses
4. To provide interdependent yet separate comprehensive open space/pedestrian and transportation systems
5. To ensure that a balanced transportation system is provided
6. To preserve existing neighborhoods
7. To provide a highly concentrated urban focus of regional significance

The Metrotown site includes some 735 acres of which 202 acres are a large park. Some 14,500 people live on the site now and it also contains about 470,000 square feet of retail and 620,000 square feet of office space. No figures are given as to the number of jobs in the area at present but it is probably in the 5,000 - 10,000 range. The development plan suggests that the population be doubled, the retail space almost tripled and the office space quadrupled between 1976 and 1996. A key part of the development program is the provision of light rail transit service to the site, connecting it with downtown Vancouver and portions of the surrounding area. Additional bus service is also envisioned. An implementation section outlines a series of steps to be taken to get things moving. Interim development control measures, a public land assembly program and preparation of design guidelines are among the actions recommended.

The Burnaby planners are now in the process of preparing more detailed plans for various parts of the Metrotown area. They are looking for gradual progress toward their long-range objectives and are striving for quality rather than quick and dramatic results. Their progress will be worth watching over the next few years.

6. Villa Italia, Lakewood, Colorado

The City of Lakewood, located about six miles west of the Denver CBD, has recently become the leading prospect for the development of a major diversified center in the Denver region. In March 1975, Lakewood adopted Concept Lakewood: A Development Plan and Planning Process, which called for the development of four activity centers within its boundaries. One of these locations has now become the most likely site for the development of Denver's first major diversified center. The circumstances surrounding this situation are somewhat unique in that the site now includes the Villa Italia Shopping Center and a large parcel of vacant land adjacent to the shopping center which is under single ownership. The proposed development of this vacant land would produce a mixed use complex that would include a maximum of 2.2 million square feet of commercial floor space, 1.8 million square feet of office space and up to 3,400 dwelling units [7].

A key element in the current proposal is the provision of an Urban Crossover Plaza and a Transit Center in the approximate center of the complex. This would be a pedestrian area primarily. The Transit Center would be designed to serve as a terminal for buses initially but would also be scaled to accommodate other forms of transit, both local and regional in nature, in the future. The Transit Center is seen as being a highly visible facility that can serve as a "gateway" to the activities in the center and as an orientation point for users. It is also anticipated that the Transit Center could be utilized eventually as part of an internal people-mover system that could tie the various elements of the center together and allow people to move about the center without using their automobiles.

This proposed development obtained formal approval from the Council of the City of Lakewood in 1978. The Regional Transportation District has indicated its support of the Transit Center idea in this location and is now in the process of preparing a capital grant application to the Urban Mass Transportation Administration to obtain funding for possible construction in 1979. The Villa Italia Shopping Center is owned by the Equitable Life Assurance Society of America and this firm has actively supported the proposed development plan. The persons who

wish to develop the vacant land in the area have applied for a planned unit development permit and the Planning Department of the City of Lakewood has assisted them with their work as the concept conforms so well with their recently adopted plan. In short, all the major actors seem to be pulling together in this case, and this may produce a significant series of development projects on this site during the next four years. The ultimate success of the proposal will depend largely on the strength of the market for commercial, office and residential space in this location over the next few years and, according to local planners, the market potential in this area is still largely unknown. However, the Denver area is expected to be one of the fastest growing regions in the U.S. during the 1980's and 1990's and since the Lakewood proposal is a first and has no major competition in the western sector of the Denver region, it may be able to attract a significant proportion of the available growth in its sector during the next 10 - 15 years.

Lakewood had a population of about 126,000 in 1975 and is expected to increase to about 300,000 by the year 2000, if past trends continue. It is an affluent suburb in that almost 50% of the families had incomes of over $15,000 in 1970. It is not yet clear what impact the rapid expansion of the Villa Italia site would have on the other three activity centers in the Lakewood plan but it is probable that none of the three would grow substantially in the next 15 - 20 years if the proposed development plan goes ahead as proposed.

Figure 4.6 is an aerial view of the site as it now exists compared with an illustration of how the area might look if developed as proposed. The location of the proposed Transit Center is shown in the lower part of Figure 4.6.

7. Denver Technological Center, Denver, Colorado

The Denver Technological Center is an 850-acre tract of land located about ten miles southeast of downtown Denver under single ownership. A master plan was prepared for the site in the early 1960's and it has been used to guide the development of the area up to now. The plan originally envisioned a planned, highly technical business park. More recently, it has been broadened to include a variety of retail, office and residential developments and appears to be evolving toward the major diversified center concept. The DTC presently contains about 200 companies in 40 buildings. The total employment on the DTC site was about 4,500 in April, 1978 and DTC projections are 14,000 for 1985 and 45,000 for the year 2000. Some 1,000 housing units are projected for 1985 and 3,700 are

Figure 4.6. View of Present and Proposed Villa Italia Center, Lakewood, Colorado, Looking Northeast, 1978

projected for the year 2000. Figure 4.7 shows the layout of the site and indicates some of the activities that are currently located there. Figure 4.8 is an aerial photo of the site looking northwest toward the Denver CBD. As can be seen, much of the site is presently undeveloped and the type of development that has occurred so far is in low rise buildings with lots of space and parking around them. Access and circulation is largely by automobile although some bus service is presently available to downtown Denver. A tenant survey, conducted in 1975, showed that 70% of the tenants lived within 10 miles of the DTC and that 30% were within three miles. Most of the employees (73%) drive a car alone to DTC but 47% said they would use transit if better service were available.

The DTC will probably not ever achieve very high densities as its present 850-acre site is about twice as large as the Denver CBD and even if it reaches an employment level of 45,000 by the year 2000, its employment density would only be about one-third that of the Denver CBD, which currently has about 72,000 jobs on 400 acres. Still, a center of this size and density would be an important element in the urban form of the Denver region should it evolve as currently expected.

The Regional Transportation District in Denver has developed a plan for a north-south rapid transit line that does not serve the DTC. However, it can be served easily with express buses operating on the I-25 freeway which is adjacent to the site. At present, RTD has no particular plans to provide special transit facilities or services to the DTC site that might encourage its growth. If a large new regional shopping center is constructed in the northern part of the site as planned, a multi-modal transit terminal could be incorporated into the design of the shopping center to provide a focal point for transit services in this area.

The DTC does not intend to become a "downtown" in the same sense as is intended for the Irvine Center, the MCA in Eden Prairie or the Scarborough Town Centre, all of which are being built from the ground up. Its physical form will be quite spread out with few pedestrian facilities or amenities. This does not mean that it cannot fulfill the functional requirements of an MDC in that it would have the proper mix and scale to qualify for a second level center in the urban hierarchy of the Denver region.

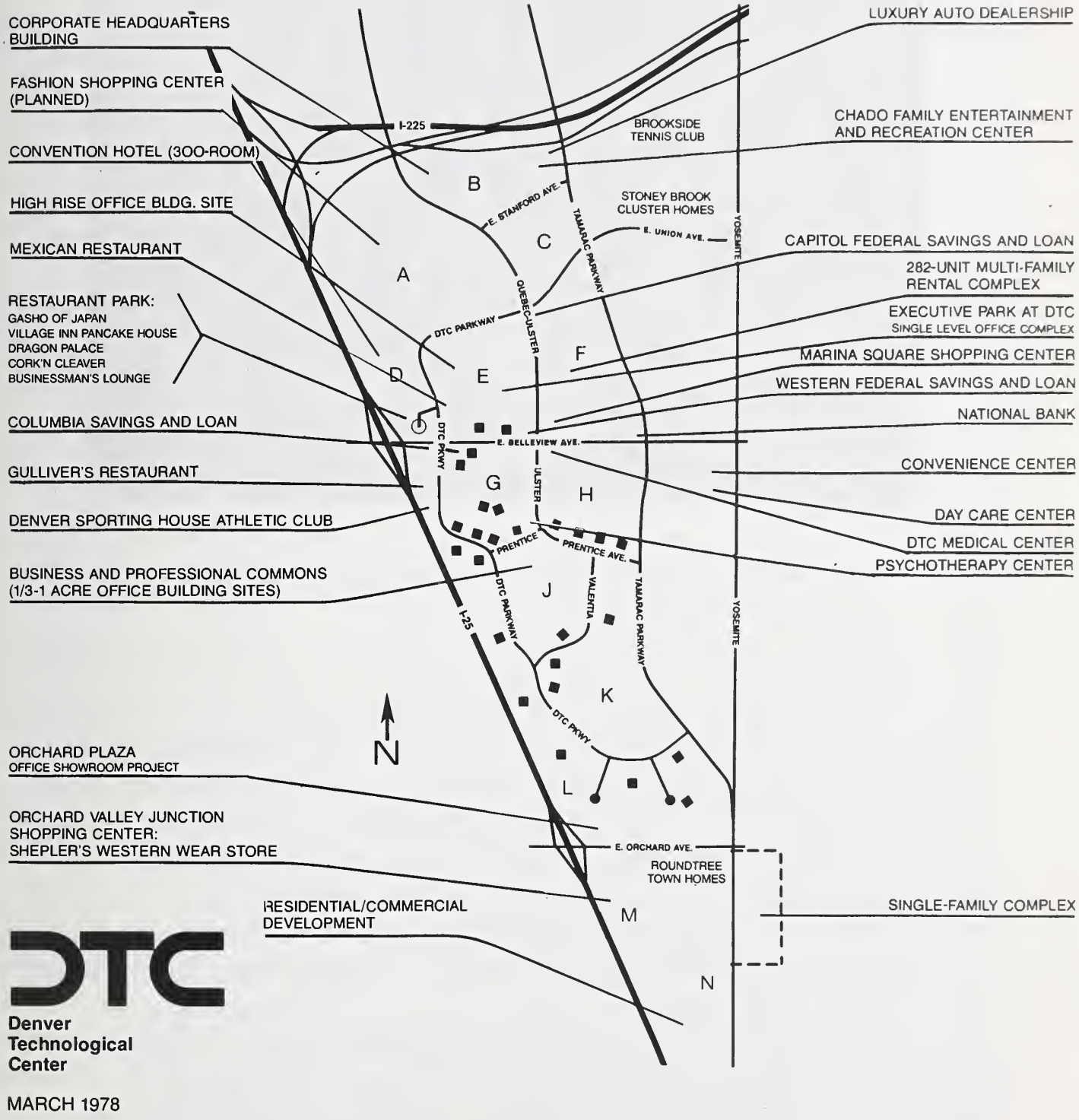


Figure 4.7. Status of DTC Site, March, 1978

Figure 4.8. View of the DTC Site, Looking North, 1976

8. Anaheim, California

A development plan that calls for the expansion of the Anaheim, California stadium area to include office, shopping and hotel activities was announced in August, 1978 by a partnership made up of the City of Anaheim, the owner of the Los Angeles Rams football team, and a private developer. In addition to expanding the stadium to accommodate football, the plan calls for the development of 95 acres of peripheral land for use as office and commercial space, restaurants, banks, and a hotel. An Amtrak rail station has also been proposed for the site, and some consideration has been given to extending the monorail system from nearby Disneyland to the stadium.

The development plan for the peripheral acreage calls for 2 million square feet of office space in high and mid-rise buildings, 475,000 square feet of hotel space, and 30,000 square feet of commercial space. The first phase of development includes the expansion of the stadium from 43,204 seats to approximately 70,000 seats, a 250,000 square foot office building, three restaurants, two banks, and a practice facility for the Rams football team, by 1980. The second

phase includes continued office development through 1983, and the third phase calls for hotel construction sometime thereafter. Although there had been some discussion of condominium and theater activities being included in the project, they have not been included in the present plan.

Stadium expansion costs will be paid for by the City of Anaheim, which will grant the developers a 75-year lease of the 95 acres of peripheral land. In return, the City of Anaheim will receive a percentage of Rams football ticket receipts for the next 30 years. The 95 acres to be developed are presently being used as stadium parking and for an elementary school. However, the amount of parking available at the stadium will remain the same due to a decking of the parking lots between the stadium and the developed areas.

An Amtrak station is being proposed on the site, approximately 2,000 feet north of the stadium. This facility would provide access to the stadium from nearby areas such as San Diego and Los Angeles. Amtrak right-of-way presently runs alongside the stadium, but the closest stops made by the trains are in neighboring Santa Ana and Fullerton.

A proposal to connect the Disneyland monorail system to the Anaheim Convention Center and the Anaheim Stadium was proposed to UMTA in 1976 as part of the DPM demonstration program. Although the Anaheim proposal was not selected by UMTA for construction, the stadium development plan has brought renewed interest in this idea. Officials of Disneyland, which is located approximately two miles west of the stadium, have expressed interest in the monorail extension as a means of relieving their parking shortage. Disneyland visitors could thus park at the stadium on non-event days and ride the monorail to the park. However, the high cost of construction, along with the difficulty in obtaining public money for a system which would primarily serve visitors, rather than residents, of the area, has discouraged further action on this concept for the time being.

Circulation within the planned stadium complex does not appear to be highly pedestrian-oriented. All buildings are proposed to be free-standing, with no pedestrian connections between them. The proposed Amtrak station is expected to be within walking distance of the stadium, although not connected to it.

While this proposal does not fit the definition of a major diversified center because it lacks a residential element and some attention to pedestrian movement, it still is a situation that is of interest because of the possibility of two transit modes being integrated into the development plan. It will probably be two or three years, or more, before an assessment of the role of transit in the development of this area will be possible.

9. Bellevue Central Business District (Seattle Metropolitan Area)

The City of Bellevue has a population of about 65,000 and is located about eleven miles east of downtown Seattle on the east side of Lake Washington. The city has an income profile which defines it as one of the highest income residential areas in the State of Washington. Downtown Bellevue is the center of commercial activity for the Eastside (population of 250,000) and has developed as an automobile-oriented retail, office and residential concentration with virtually no appeal to or provision for the pedestrian. In the early 1970's, a large tract of land near the eastern edge of Bellevue was acquired and cleared by a shopping center developer and plans were announced for a major regional retail/office/apartment complex on the site. This proposal, called Evergreen East, has been very controversial and is still in limbo. It is regarded as a major threat to the future viability of downtown Bellevue and, as a result, a series of studies have been mounted to define downtown Bellevue's potentials more clearly. The first of these studies, entitled Downtown Bellevue: Problems, Potentials and Future Directions [3], was completed in January of 1976. A second study, entitled Bellevue Central Business District Framework Plan [12], was completed in June, 1977. Both suggest that the Bellevue downtown become more dense and that the market could support either an expanded downtown or a new complex at Evergreen East but not both at the same time. In the meantime, the developer/owner of Evergreen East has conducted a study that shows that the market could support further development at both sites.

Figure 4.9 is an aerial view of downtown Bellevue looking west across Lake Washington toward downtown Seattle. The area defined as the CBD contains about 440 acres, has an assessed value of about $112 million and generates a sales volume of about $150 million annually. Studies have shown that Bellevue residents currently spend another $100 million annually outside of Bellevue that could potentially be captured by Bellevue retail firms. This CBD contains a variety of business activities but has only a few housing units within its boundaries. Traffic congestion is substantial throughout the day and air quality is quite poor. There is some transit service to the CBD and between this CBD and the Seattle CBD but the automobile is by far the dominant mode in the area.

Figure 4.9. View of the Bellevue Central Business District, Looking West, 1980

Approximately 56 per cent of the non-street land in the area is devoted to parking and it is estimated that the area presently has a surplus of parking of between 30 and 40 per cent. The tallest office building is twelve stories and plans have been announced for two more office buildings of comparable height. The development of office buildings has been strongly inhibited by a parking ordinance that requires one parking space for every 200 square feet of gross floor space developed. A parking study was conducted in 1976 [5] which showed the inhibiting effects of this very high parking requirement on the economics of building high-rise office buildings in downtown Bellevue and it concludes that such buildings will not be economically attractive until the parking requirement is lowered.

The Bellevue Downtown Development Association would like to see the area become more dense, more pedestrian-oriented and have cleaner air. To do this, they will have to give up some surface parking, build some parking structures or develop a public transit system that can maintain or enhance their accessibility to the surrounding area. The area has the potential to become a dense major diversified center but it is by no means clear that it will do so. Even under the threat of the prospect of a large competing center (Evergreen East) being built only a few miles away, the property owners in the area have not yet been able to get together on a future course of action. The recently published framework plan [12] may be of some assistance in this regard but it is too early to tell what its impact will be on the developer decision process in the area. The framework plan calls for parking structures as a replacement for the surface parking that would be lost to the construction of a shopping mall complex that its land use element recommends. Transit is barely recognized in the framework plan and this is probably a reflection of the perceptions of the landowners in the area about the minimal utility of transit to their situation. However, a $60,000 study of the transit needs of the Bellevue downtown began in March of 1978, and this study should provide a much more detailed examination of how transit could be used to support denser development, replace some surface parking, and reduce congestion and air pollution in the CBD area.

Employment in the Bellevue CBD area is estimated by the City of Bellevue Planning Department to be about 12,000 in 1976-77 and is forecast to rise to about 30,000 by 1990. It is difficult to imagine how this growth could be accommodated without the provision of substantial transit service to the CBD

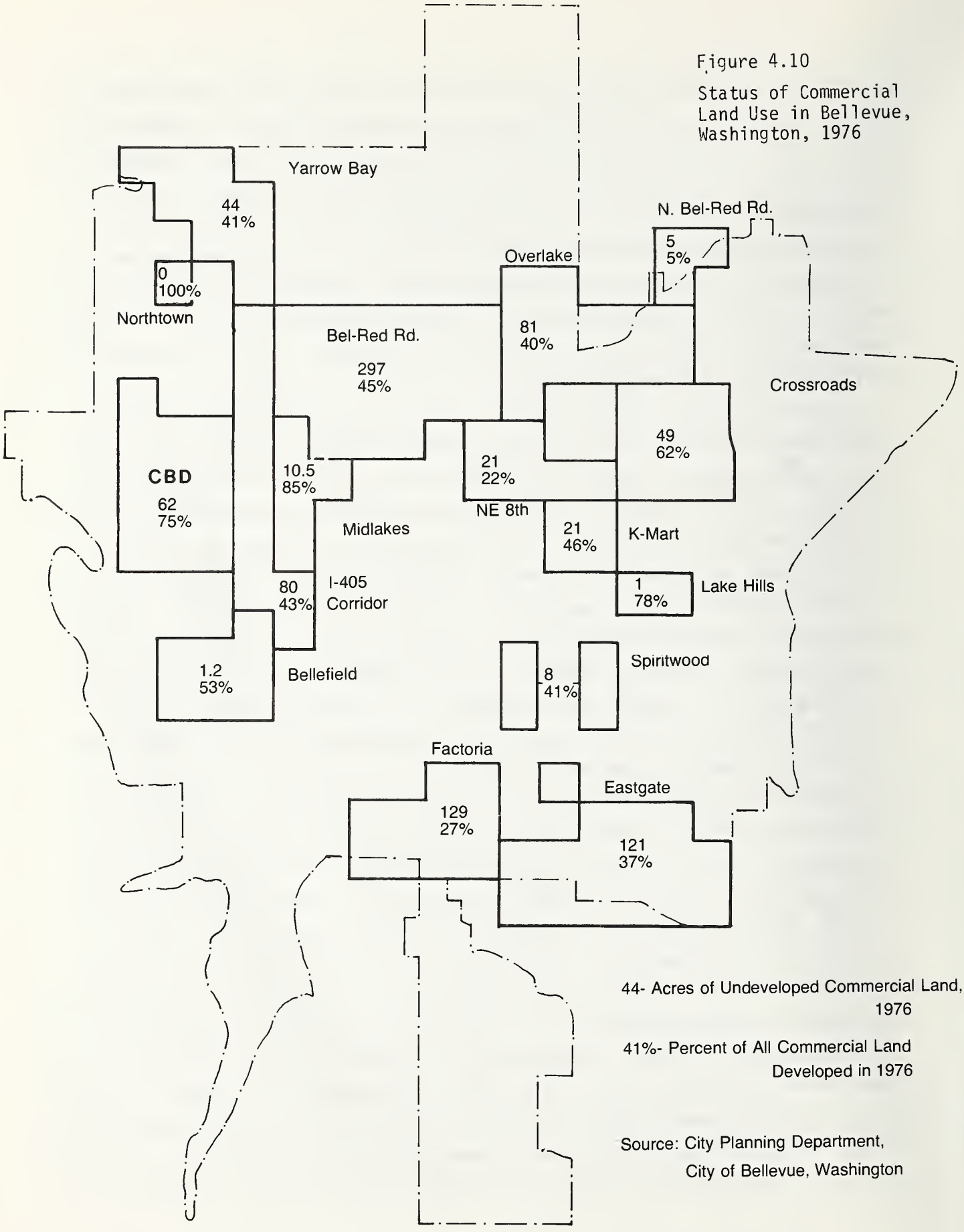
and between it and other locations in the region. The City of Bellevue did submit a proposal to UMTA for a downtown people-mover project and came reasonably close to being one of the four cities selected. This type of fixed guideway and station investment could assist the evolution of the CBD area in to a much more dense center than could be expected from a bus circulator system. However, the local elected officials and members of the Bellevue Downtown Development Board have chosen not to pursue this idea any further for the time being for reasons which are not known. A transit terminal, located in the CBD area, could also encourage more density and this option is likely to be included in the forthcoming transit study.

The Bellevue downtown is believed to be typical of a great many emerging centers in the outer city. The major question is whether or not these centers should be encouraged to become more dense and, if so, what incentives and disincentives are most likely to get the desired response from developers. Clearly, improved transit service is one of the major options available to such areas. The main trade-off appears to be between the construction of new parking structures and the provision of improved transit facilities and services. Another major problem is that there are a large number of other non-CBD locations in such areas that are already zoned for commerce and readily available for immediate development. In the City of Bellevue, it is estimated that there are about 2000 acres of land presently zoned for commercial use and that less than half of this land is currently being used for such purposes. Figure 4.10 shows the amount and location of 931 acres of undeveloped commercial land in the city. Clearly, some reduction in the amount of such land will be needed if further development in the Bellevue CBD is to be encouraged. The prospects for downzoning this land or otherwise limiting its use are, of course, not very bright.

The turmoil that the Bellevue CBD is presently experiencing is expected to continue until such time as some firm decisions are made about the key factors which will influence its future development. In June of 1977, the Bellevue City Council passed an ordinance that reduced the parking requirements for office buildings as a first step in the direction of encouraging more density. However, under the threat of a lawsuit from a major retailer who feared a loss of some of his parking, implementation of the ordinance is being held up pending the completion of further studies. Other major events that are expected in the near future include a possible decision by the developer of Evergreen East to proceed, the

Figure 4.10

Status of Commercial Land Use in Bellevue, Washington, 1976



44- Acres of Undeveloped Commercial Land, 1976

41%- Percent of All Commercial Land Developed in 1976

Source: City Planning Department, City of Bellevue, Washington

completion of the transit study for downtown Bellevue (about March, 1979), announcements of new retail projects in the CBD area, and possible adoptions of some of the incentives proposed in the framework plan by the City Council. These and other events, yet undefined, will determine if the Bellevue CBD evolves into a major diversified center or remains pretty much as it is, a spread-out, auto-dominated collection of retail and office activities.

10. Greenway/Post Oak, Houston, Texas

The Greenway/Post Oak area is by far the largest activity center in the Houston region outside of the Houston CBD. It is located about six miles west of downtown Houston in the most affluent section of the region. The area is very large, about 2,800 acres, and consists of two major nodes and a large number of smaller clusters of activity.

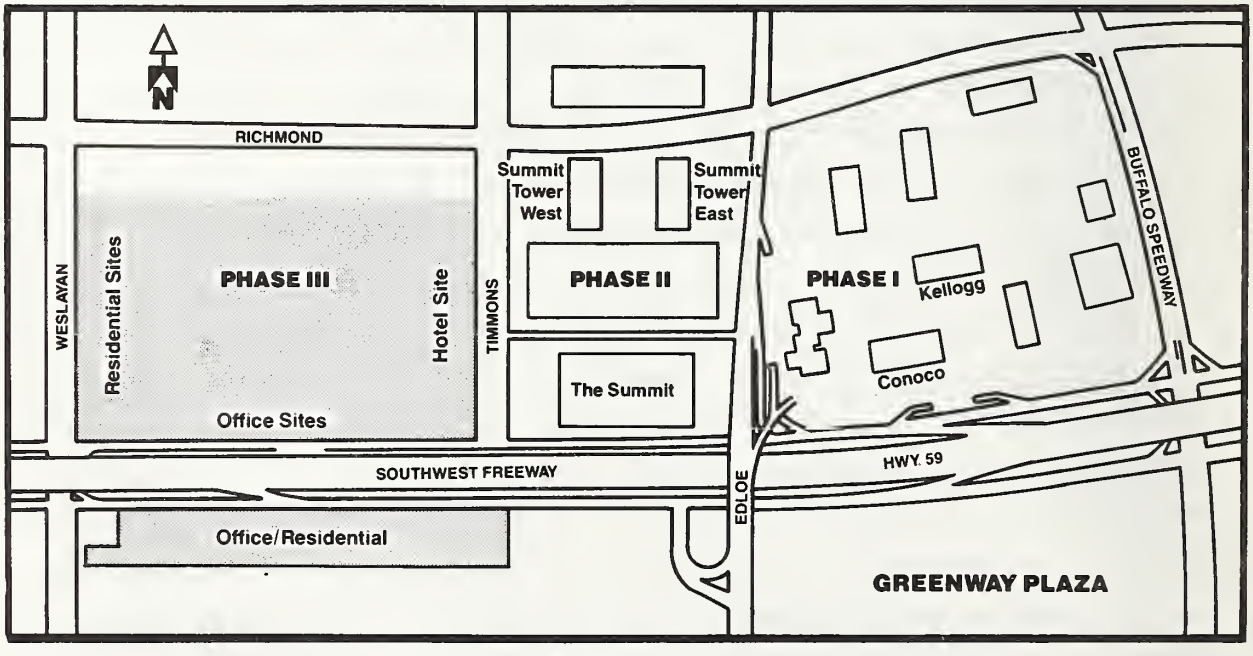
One of these nodes is Greenway Plaza, one of the most extensive mixed-use projects in the United States today. Begun in 1967, Greenway Plaza is a totally planned business-commercial-residential complex. It is located approximately five miles southwest of the Houston CBD on a site which includes 127 acres along Houston's Southwest Freeway. At the present time (1978), it contains about two million square feet of rentable floor space and has an employment level of about 10,000 people. When fully developed in the mid-1980's, the complex is projected to encompass 17 major office buildings containing seven million square feet for about 30,000 workers, two 200-unit high-rise luxury condominium towers, a 17,500-seat sports and entertainment arena, an underground shopping mall with over 100 retail shops and service establishments, two 400-plus room hotels, and a major tennis and health club facility with 16 indoor tennis courts.

As a result of the people-oriented design, the Greenway Plaza master plan has devoted more than half of the 127-acre site to open space, balancing the environment with flowers, landscaping, sculptures, pools, plazas and fountains.

Automobile traffic enters and exits in four directions via Greenway's own internal loop system which is connected to the world's largest underground parking facility (a capacity of more than 5,000 vehicles). All the buildings are connected at the Concourse Level which contains retail shops and services, restaurants and theaters. Figure 4.11 is an aerial photograph of Greenway Plaza looking northeast toward the Houston CBD, and a diagram of the development plan.

The development of Greenway Plaza has been the task of the Century Development Corporation, one of the largest commercial development firms in the Southwest. The idea of Greenway Plaza was initiated in the mid-1960's when the

Figure 4.11. View of Greenway Plaza in 1977, Looking East Toward Downtown Houston and Development Plan



Greenway Plaza master plan shown on site map

developer, who owned a vacant tract of land adjacent to the Southwest Freeway, recognized the potential for a comprehensively planned office complex. He proceeded to acquire four entire subdivisions containing 305 houses and several apartments. In this way his original site was expanded from 52 to the current 127 acres. The first building was completed in 1969 and as of March, 1978, about 45% of the property had been built upon. A master plan was developed and is being carried out in three phases over a 15-20 year period (see Figure 4.11). The total cost of the complex is expected to be about $1 billion. The redevelopment of residential property for high density uses was made economically attractive by the strong demand for office space, ready access to a freeway and a strategic location in the most affluent and most rapidly growing sector of Houston.

From the beginning, Greenway Plaza was envisioned as incorporating a full range of physically integrated land uses as it was believed that the multiplicity of uses would be mutually supportive. This belief has generally been supported by experience. For example, the sports arena generates demand for parking and restaurant services at night and many of the hotel guests are there because of business needs in the adjacent office buildings.

The developer stated that Houston's growth-oriented city leadership and lack of zoning restrictions were major factors in making a project of this size and scope possible. This view is supported by the fact that no other suburban centers (except Irvine in California) of this size are now under development anywhere in the United States. Houston's booming economy and the single ownership of the site are other key factors in the evolution of this concept into a sizeable urban subcenter.

The second major node in this area is the Galleria complex located about two miles west of Greenway Plaza adjacent to two major freeways in the City of Post Oak. The Galleria is a multi-use center consisting, initially, of a three-level retail mall of about 780,000 square feet, two office towers with 840,000 square feet and a 400-room hotel. Its stores, restaurants and recreational activities drew more daily trips than any other destination in the larger Post Oak complex. Another large hotel, 220,000 square feet of retail and 260,000 square feet in office towers were opened in 1978. Other developments in the Post Oak area include the following:

Post Oak Strip, 415,000 square feet of retail space

Smith Office Park, 655,000 square feet of office space

Post Oak Park, 716,000 square feet of office space

Post Oak Place and Post Oak Place Drive, 500,000 square feet of office space

San Felipe Green, 600,000 square feet of office space
Windsor Plaza, 60,000 square feet of retail space

Overall, in 1978, there were close to 9 million square feet of office space and 2 million square feet of retail space in the Post Oak Area. Nearly all of this space has been built since the mid-1960's. The area now is the most congested part of Houston and employees have difficulty moving about for lunch and shopping during the noon hour. A mini-bus system for internal circulation was tried in the early 1970's but failed to attract a reasonable patronage as the buses were unable to move about easily on the congested streets in the area and offered no improvement over use of private autos. An elevated people-mover system was proposed but rejected by the owners of the Galleria Mall because of its high cost. During the past few years, several improvements have been made to reduce traffic congestion but no substantial relief has been obtained. The area is still growing and the prospects for even worse traffic congestion are good.

Together, these two major nodes and the many smaller clusters of activity in the area consist of about 16.5 million square feet of office space and about two million square feet of retail space. Approximately 70,000 people work in these two areas and the Post Oak area has a daytime population of close to 100,000. Projections indicate that substantial further growth can be reasonably expected in that large tracts of land are owned by development corporations in the area that are in the business of building large projects. This prospect was one of the factors that led to an intensive study of the transit needs of the area by the Rice Center for Community Design and Research in 1976-77 [19]. This study examined the access and circulation needs of the area with the objective of discovering ways in which transit could help to maintain the viability of the area and improve the mobility of its users. This study is the most comprehensive examination of the potential role of transit in an outer city center that we have discovered to date. Several of its findings will be briefly reviewed.

For the near term, 14 transit improvement projects, lists of recommended park-and-ride target areas and Transportation Systems Management projects were identified in the Rice Center study. For the longer term, a more extensive list of transit improvement projects was identified. Four basic types of improvements were designed in a preliminary fashion: (1) minibus routes for internal circulation in the Post Oak area, (2) shuttle routes for connections between the area and other nearby activity centers, (3) express routes for improved access from the surrounding area and (4) related Transportation

Systems Management actions. Considerable investigation of the location and travel characteristics of the potential riders of these new transit services was conducted and routes and schedules were proposed in most cases. Patronage, costs and revenues were also estimated for each proposed new service. To date, none of these improvements have been implemented but with the approval of the new Metropolitan Transit Authority in August of 1978, it is likely that some of them will be in the near future.

The Rice Center study suggests that the Greenway/Post Oak area is in the midst of a transition between a suburban center and a downtown. This raises the question of whether or not an area like this will give up some of its auto access and parking in order to keep growing. Typically, the attitude of developers is that there is always room for "just one more" building. What happens after that is someone else's problem. When congestion gets so bad that no developer is willing to add another building, then improved transit access may become a major issue. The Greenway/Post Oak area is very close to the point where some basic change in attitudes toward the role of the automobile in an outer city center may soon occur. Greenway/Post Oak is, in this sense, at the leading edge of a problem that will become very much more prominent in many U.S. cities in the 1980's and 1990's.

11. Plaza del Oro, Houston, Texas

Plaza del Oro is a 544-acre site located about five miles south of the Houston downtown adjacent to the Houston Astrodome and Astroworld hotel complex, the Texas Medical Center complex and a major freeway (see Figure 4.12). It is being developed as a mixed-use project and a master plan provides for offices, medical and retail centers, and apartment complexes. Plaza del Oro is a subsidiary of the Shell Oil Company and is now selling parcels of the site to developers and business firms that will follow the guidelines in the master plan.

As of mid-1978, nine housing projects were either completed or underway on the site with 1,600 units available. The ultimate number of housing units on eleven sites is expected to be close to 3,600. Eight public and institutional projects valued at $56 million and ten non-residential projects valued at $46 million were also underway in 1978. According to the project manager, R. A. Liebrum and Associates, Inc., there are now 25,000 people living on and around the site and 37,000 working in the area. The employment level for the area is

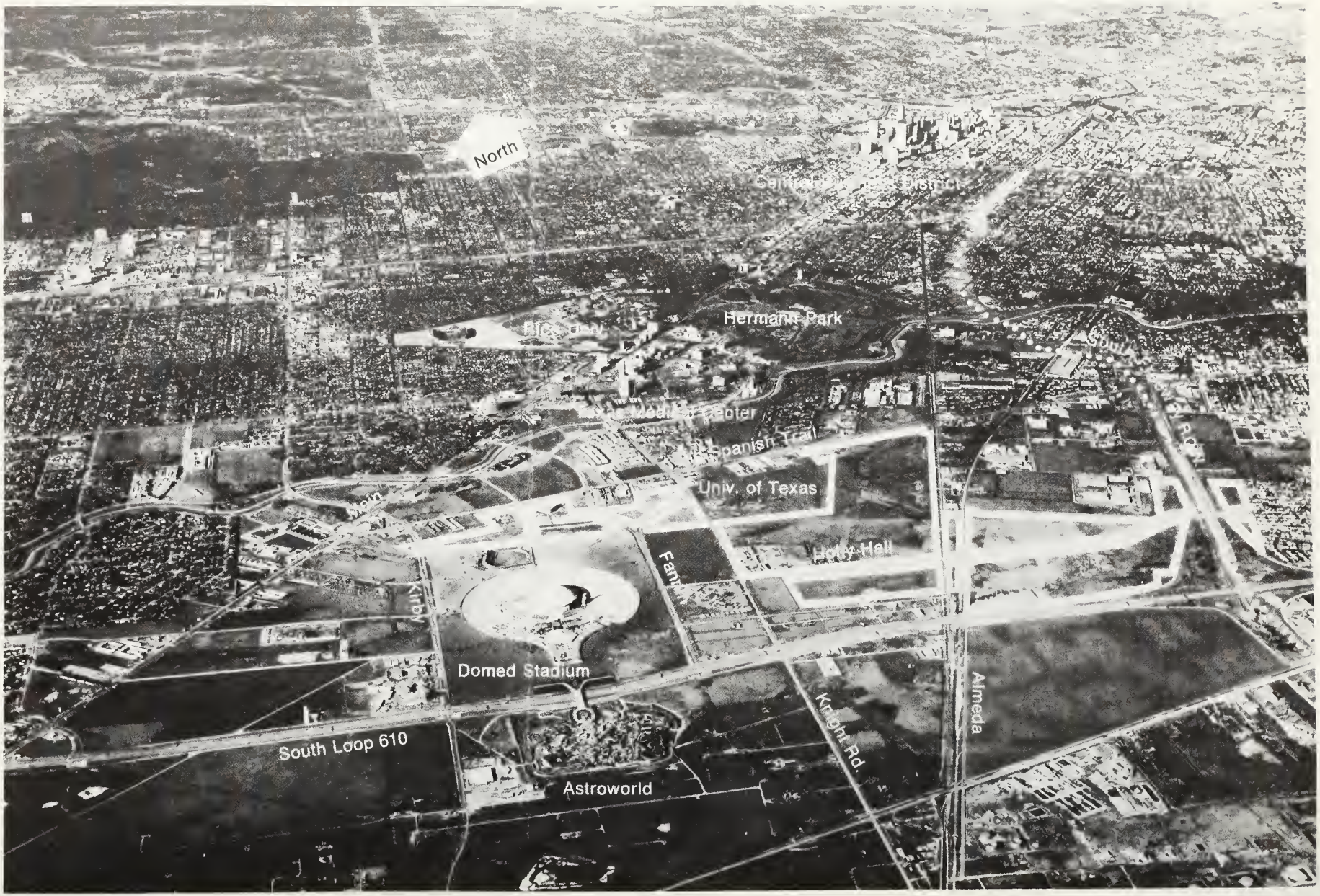


Figure 4.12. Boundaries of the Plaza del Oro Site in Houston, Texas, 1978

projected to be about 77,000 by 1990. These are not public agency projections and so may be somewhat optimistic.

It appears that the site is being developed with auto access being the dominant factor that is influencing the location and sizing of buildings. A high density environment is not being sought and little attention has been given to how transit might be integrated into the development, either as an internal circulation system or for access to other locations in the Houston region. However, as the new Metropolitan Transit Authority developes its transit improvement program, some thought will have to be given to serving this site with transit.

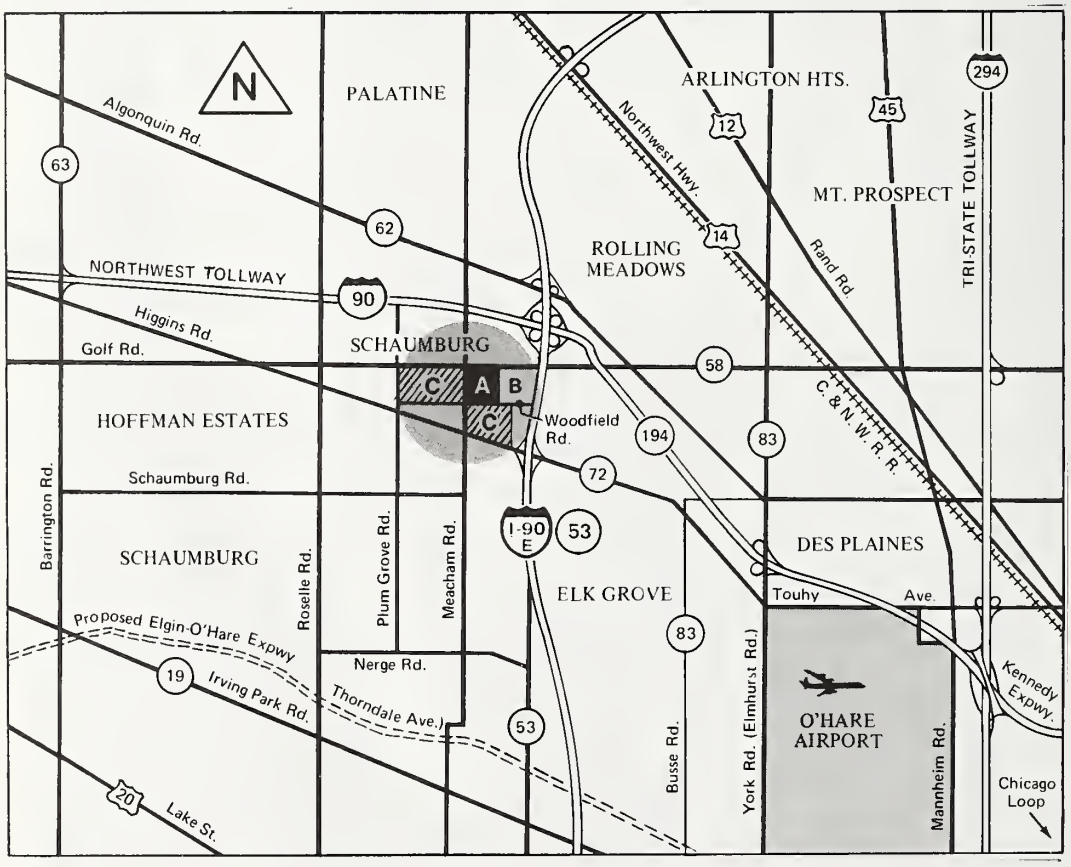
Plaza del Oro is intended to be a city-within-a-city and its evolution is being carefully guided by a project management firm in accordance with a master plan, prepared by Weldon Becket and Associates. It is billed as offering the opportunity to avoid being "burdened by the restrictive, expensive land costs and traffic problems inherent in the city's downtown area," while enjoying almost equal or better access to the city's other destinations of interest. It will be interesting to watch its development during the 1980's to see if these objectives are indeed obtained. Certainly, the prospects are quite bright at present.

12. Schaumburg, Illinois

Schaumburg, called Chicago's "second downtown" by some, is located about 25 miles northwest of the Chicago Loop and about 10 miles in the same direction from the O'Hare Airport in Chicago's "golden corridor." It was incorporated in 1956 and had a population of 800 living in an eight and one-half square mile area in 1960. In 1978, it has a population of nearly 50,000 and includes some 30,000 jobs within its boundaries. It is expected to become the second largest urban area in Illinois by the year 2000.

In 1971, the Taubman Company of Detroit opened Woodfield Mall in Schaumburg which contains about 2.2 million square feet of retail space. At the time, the three-level Woodfield Mall was the largest enclosed shopping center in the United States and even today there are only one or two that are larger. Woodfield Mall employs about 6,000 people and has an annual sales of about $450 million. The land around Woodfield Mall has increased in price substantially since 1971 and several high-rise office buildings have been built on it. An example is the Woodfield Park area, a 325-acre planned commercial development adjacent to the Mall that is well underway. Three large office buildings were built in 1974, 1975 and 1977 and a fourth is planned for 1979. As of 1975 there were about

three million square feet of office space in the Greater Woodfield area with many more projects in the planning stage [11]. Office space is now leasing for about $10 a square foot and undeveloped commercially zoned land is now selling for $6-8/square foot. Motorola's International Headquarters with 8,000 employees is located here as well as Union Oil with 1,500 employees and other smaller but nationally oriented forms. Figure 4.13 is a locational diagram of the area and Figure 4.14 provides an aerial view dated about 1976. The area has been designed primarily for the automobile and is served by two major freeways (the I-90 Northwest Tollway and Route 53/I-90 in the north-south direction) and two commuter rail lines (only one of which has any stations in the area). Downtown Chicago can be reached in 30 minutes in the off-peak but it can often take up to an hour for this trip. O'Hare Airport can be reached in 10-15 minutes by car. There is little transit service in the area now and little is planned for the future. Highway congestion is substantial during peak periods and can be expected to get much worse in the future. Provision for widening all the roads in the area has been allowed as all have 100-foot rights-of-way and 100-foot setbacks.



A. Woodfield Park Office Plaza

B. Woodfield Mall

C. Woodfield Park

Figure 4.13. Locational Diagram of the Greater Woodfield Area, Schaumburg, Illinois

Figure 4.14. View of the Greater Woodfield Area, Schaumburg, Illinois, 1976, Looking Northeast.

Within a ten-mile radius of the Woodfield Mall is a work force (aged 16 or more) of about 160,000 of which nearly two-thirds now work in the area. Only six per cent of these people work in the Chicago CBD. About one-third of the work force is college-educated and nearly 90% have completed high school. These characteristics of the local work force have made the area especially attractive to employers who need good access to workers with office skills.

From the beginning, 22 years ago, planners have envisioned Greater Woodfield as the core of a large and reasonably self-sufficient community of approximately 1 million. This vision is well on the way to becoming a reality and it will be interesting to see if the area can continue to develop as planned without experiencing intolerable congestion as have auto-oriented developments in other parts of the country. Bus transit service as well as other forms of ride-sharing could be helpful in this area at present but there is currently little interest in providing such services. The Regional Transit Authority is now rapidly expanding its services in the Chicago suburbs and will probably be increasing its activities in the Schaumburg area as well in the near future.

13. Oak Brook, Illinois

The Village of Oak Brook is located about 10 miles (25 minutes) west of the Chicago Loop and about 10 miles south of O'Hare Airport. It represents an unusual situation in that it has been developed on a site largely owned by one person, Paul Butler. Butler and Del Webb, who together formed the Oak Brook Development Corporation in 1964, have been largely responsible for the planning and developing of the retail/office complex that today is a fairly large major diversified center. The relatively small but very affluent community of Oak Brook is the residence of about 5,200 persons, yet some 20,000 shoppers and another 20,000 workers come there every day. At present, it contains about 1.5 million square feet of retail space and 12.5 million square feet of office space with another 4 million under construction. The prestige and price of residential property in Oak Brook is high. The average selling price for a home in 1976 was $112,000. The community is served by two major freeways and access to O'Hare Airport is particularly good. More than 15 large corporations are headquartered in Oak Brook and more than 70 of the Fortune 500 companies are either headquartered or represented there. Traffic congestion is now a worrisome problem and a better public transportation system is badly needed [1]. The Oak Brook Association of Commerce and Industry has been active in trying to find

solution to various traffic problems in the area but little progress has been made to date.

The issue of further development in Oak Brook is somewhat uncertain at present. Paul Butler, who once owned about 90% of the land in the Village, is now 85 years old and it is not clear how long his ideals will be maintained after he is gone. A son, Michael Butler, has indicated he would like to see the land used more intensively by building more high-towers and apartment buildings [20]. In 1976, the residents of the Village voted to purchase 269 acres of an open area called the Sports Core from Paul Butler for $9.4 million, to be paid for out of Oak Brook's first municipal tax. McDonald's, the hamburger chain, announced in 1977 that it wanted to purchase another 80 acres of the Sports Core from Paul Butler for the purpose of building a new office park/ Hamburger University complex. The Village trustees first denied McDonald's request for a rezone but then reversed itself and granted a rezone in April of 1978. This project is now in court. If this area is developed, the size of the employment base in Oak Brook would be greatly increased and some of the existing traffic problems would probably become worse in the future.

Oak Brook, despite its unique history and very affluent setting, stands as an example of how a large retail/office complex can be created in a suburban setting in accordance with a master plan. The lessons learned here have yet to be documented properly and this is a task that should be of interest to persons concerned with the evaluation of planning efforts that have been largely implemented.

14. Southdale Major Activity Center, Minneapolis, Minnesota

The Southdale Major Activity Center is located about seven miles southwest of downtown Minneapolis and serves as the center of a subregion composed of Edina, Bloomington, Richfield and South Minneapolis. This area presently contains about 6,000 jobs, some of which are located in the large Southdale Shopping Center while others are located in a variety of other retail, office and public service type activities. This area has been one of the fastest growing suburban communities in the Minneapolis-St. Paul region. Large scale development was initiated in 1956 when the Southdale Shopping Center (the first enclosed shopping mall built in the U.S.) was constructed and opened. Since that time, several other retail, office, apartment and public buildings have been developed

on land to the south of Southdale. Figure 4.15 shows this area in relation to downtown Minneapolis in the background. Figure 4.16 views the same area looking toward the south, two years later.

The result of all this activity has been an increasingly difficult traffic congestion and pollution problem. In 1973, a study was conducted to determine what should be done about these problems [4]. It recommended that the future growth in the area be guided toward a "center" concept and that a new transit service be developed to aid the development of the center as well as reducing the traffic congestion on the streets in the area. It estimated that about $1.5 million would be needed annually for the capital and operating costs of such a system. The report also called for highway improvements that were estimated to cost between $100 and $110 million. It proposed that the growth of the area be limited in some locations but encouraged in others so as to also aid the reduction of congestion and air pollution problems. This study was especially interesting in that it examined the land use side of the picture in almost as much detail as was devoted to the transportation analysis and planning work.

Since 1973, few of the recommendations of the report have been implemented. Today (1978) the conditions noted in the report are substantially worse and remain untreated for the most part. The City of Edina has made some efforts to limit growth in its jurisdiction but with little success. Some transit improvements have been made but they relate mostly to the provision of new express bus services to downtown Minneapolis and St. Paul.

In 1976, the City of Edina submitted a proposal for a downtown people-mover demonstration project to the Metropolitan Council. The idea was to use a people-mover to link the elements of this sprawling center together in the hope that the short auto trips within the center could be substantially reduced. If this could be done, then local congestion and pollution might decline to more tolerable levels. The Metropolitan Council rejected this proposal partially on the basis that the Southdale Activity Center was not a "downtown" and partially because both Minneapolis and St. Paul had also submitted downtown people-mover proposals. They were given a higher priority as they fit the UMTA guidelines better. Nonetheless, the idea that such a horizontal center could be pulled together and encouraged to become more dense by a people-mover system was seen by the Edina planners as one possible solution to an ever-increasing problem.

Figure 4.15. View of the Southdale Activity Center, Looking North, 1980

Figure 4.16. View of the Southdale Major Activity Center, Looking South, 1981

Most recently, another study of the potential for transit in this area calls for several types of transit improvements [21]. Four transit service concepts were identified as being applicable to the Southdale Major Activity Center in this report. They are as follows:

1. Modify existing fixed route services
2. Coordinate transfer service
3. Add demand responsive service (shared-ride taxis)
4. Develop an improved transit terminal near the Southdale Shopping Center

The transit terminal was estimated to cost $750,000 and would be a transfer point and focus for all types of transit services in the area.

It is too early to tell how many of the recommendations of this report will be implemented. They are all aimed at increasing transit accessibility at this major activity center and could also lead to an increased level of density in the area. However, unless the City of Edina changes its plan for the area to allow greater densities, they may not occur very rapidly. Until they can see that transit will work in this area, they are not likely to make any significant moves in this direction.

There are a number of areas in the U.S. that have characteristics similar to the Southdale Major Activity Center. By monitoring developments in this location, we should be able to learn a great deal about how one can encourage this type of area to become both more dense and more diversified.

15. Eden Prairie Center, Minneapolis, Minnesota

Eden Prairie is a relatively small (six mile square) area located about 12 miles southwest of downtown Minneapolis. The rapid suburban growth of the 1960's did not quite reach Eden Prairie but local officials recognized that the 1970's would probably bring such rapid growth. Consequently, a comprehensive plan was prepared and adopted in 1968 for the entire area. One element of this plan called for the development of a Major Center Area (MCA) for the city and its environs. Subsequently, in 1971, the Homart Development Company announced plans to construct an 800,000 square foot regional shopping center on a portion of the site set aside for the MCA. This location decision was in conformance with the major diversified centers map published in 1971 by the Metropolitan Council. This regional shopping center did not open until 1975 and its floor space is currently only partially utilized. A few office activities have located near the shopping mall but the total development of the area has been much slower

than was anticipated. However, in 1978, Super Valu Stores, Inc. received approval for a 140-acre site on which they will construct their new corporate headquarters. Several other smaller sites were also taken in 1978. Overall, the rapid growth that was forecast in the late 1960's has not yet occurred.

Figure 4.17 shows the Eden Prairie Mall in a view that is looking east along the southern part of the Twin Cities region. As can be seen, this shopping center has been built well in advance of residential developments in the surrounding area. Figure 4.18 shows the site in relation to the Twin Cities region.

A development plan for the 1,000 acre MCA site was prepared and adopted as the MCA Planned Unit Development in July, 1973. It is an amendment to the 1968 Comprehensive Guide Plan [9]. This MCA plan identifies the development potential of the area and those aspects of the environment that are to be preserved and protected. It outlines the transportation needs of the MCA and highlights the need for transit circulator services within the MCA and express services between it and other parts of the Twin Cities region. The fiscal impact of developing the MCA on the local government and its citizens is also analyzed in some detail.

The plan for the MCA envisions a center big enough to provide services for a population of 200,000 - 300,000 people. In 1975, there were about 100,000 people living within seven miles of the center, many of whom were quite close to two other regional shopping centers in nearby communities.

Eden Prairie is an outstanding example of a community that has developed a plan in advance of the first big development wave. It is now in a position to guide its development in accordance with this plan and this experience will be well worth intensive study. Of particular interest will be the pace and form of the development of the MCA. The transit needs of this area have been examined in a recent study [21] and an incremental approach to transit services focused on the shopping mall is recommended. A variety of service types is proposed including demand responsive, fixed-route deviation and some limited fixed-route service. Taxi service and other shared-ride options are also discussed. No specific actions are proposed that are designed to encourage growth in the MCA area and none are really needed as the comprehensive plan will not allow a wide scattering of commercial and office activities in the community. As this type of growth occurs in the MCA, additional transit service will be introduced. The MCA in Eden Prairie has perhaps the best chance of becoming a

Figure 4.17. View of the Eden Prairie Major Center Area, Looking East, 1975

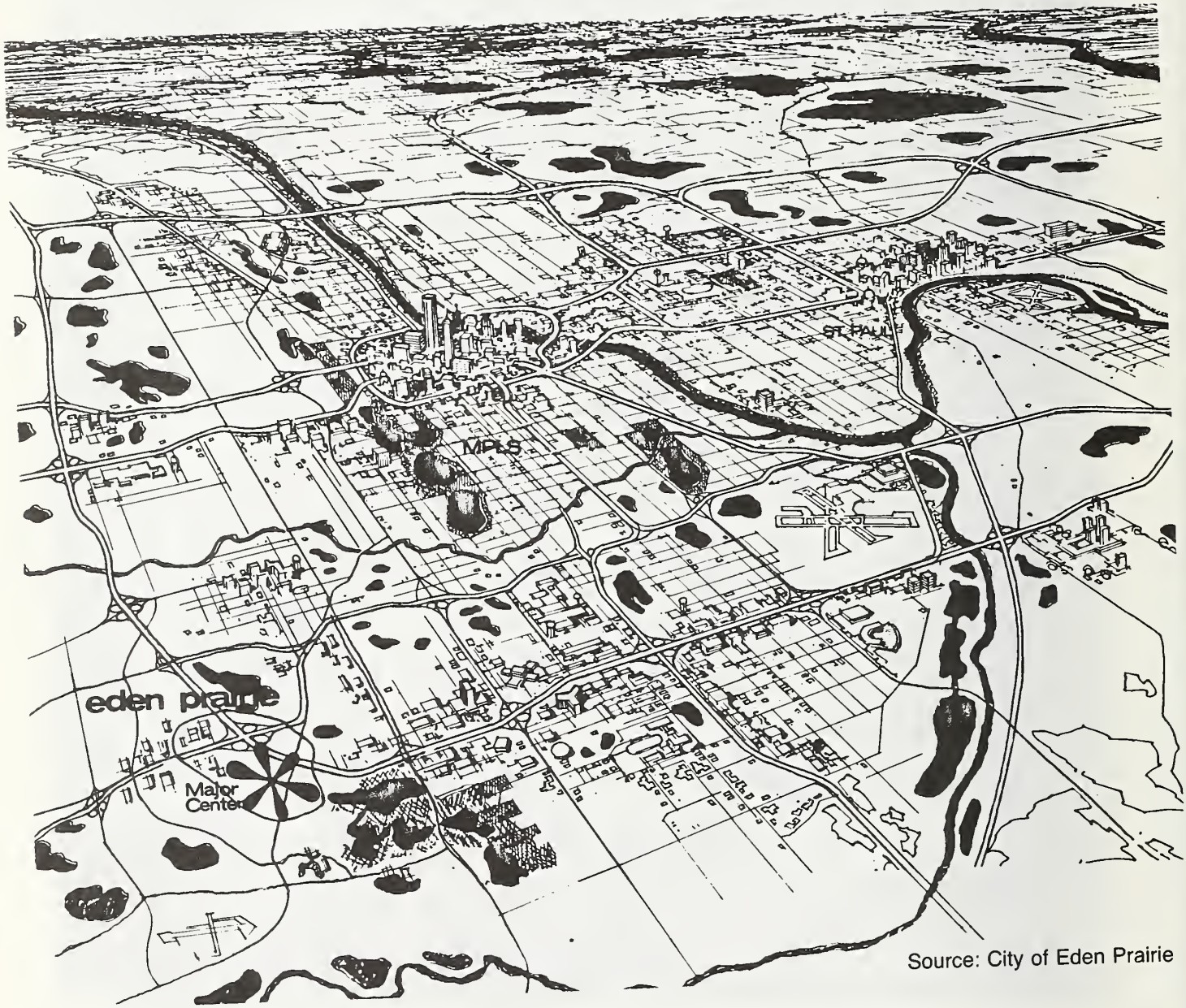


Figure 4.18. Locale of the Eden Prairie Major Center Area, Looking North

major diversified center of any of the designated MDC locations in the Twin Cities region. It will probably be at least ten years before we will know if this potential will actually be realized.

16. Croydon Centre, Greater London Region

The suburban office centre of Croydon is about 15 minutes south from central London by fast train, and is located in an area which has a population of about 327,000. Central Croydon had a well established business, administrative, and retail function before 1956 when office development began to be important. It was at this time that government policy encouraged the decentralization of offices from Central London. Between 1956 and 1970, office floor space grew by over 4.3 million square feet in Croydon.

The creation of Croydon as an office centre was initiated by the Croydon Corporation Act of 1956. Prior to the passage of this Act, the Development Plan for the area authorized a shopping and business area of 172.5 acres, of which 90 acres consisted of land uses inappropriate for the town centre. By the Act, the Croydon Corporation was allowed to acquire land, over a five year period, in the central area which was in multiple ownership. The Corporation had the ability to sell or to lease the acquired land to private developers. Some of the land actually acquired was leased to private developers for office and shopping developments, while other parts of the land went toward various public works projects. The resulting development was largely weighted toward office structures (192,000 square feet) as opposed to shopping developments (1,500 square feet).

The increased construction of office space in central Croydon occurred at the same time as office decentralization policies were being pursued by the government. As a result, Croydon allocated 45 acres of land for office development in its northeastern quadrant in order to provide opportunities for those firms leaving central London. The demand for office construction in this area has been so great that a number of developments have been built outside the 45 acre area and even beyond the town centre boundary. The Croydon office centre as a whole now provides employment for 35,000 office workers. The more than 50 office buildings which are a part of the centre provide a distinctive landmark within the suburban area of South London.

As with any such area, there are a variety of explanations for its success in attracting development to a specific location. According to a previous Croydon Borough engineer, A.E. Holt, there are five main reasons for its success [13]:

1. Fast and frequent rail service to Central London and to surrounding residential areas
2. Availability of a large supply of office workers (which is partly a result of the good public transportation to Croydon)
3. Attractiveness of the centre to the office worker because of supplementary retail services in the same area
4. Croydon has become a prestigious location
5. Several executives live in the area, and it is these people who make the location decisions

There are several less obvious reasons for Croydon's success as well. One is that the Croydon Corporation had extensive and unusually broad authority, and it proceeded with its redevelopment strategy in a unilateral manner. This is contrary to most situations of large scale development, in which there are multiple actors and conflicting views as to the type of development which should be encouraged.

Another factor involved in the success of Croydon as a suburban office centre is its relationship to the government's decentralization policies. Because Croydon is relatively close to Central London, attempts were made to control office development there so that firms decentralizing would move even further away from London. Restrictions imposed on new permissions for office development were imposed in many areas, but were strongly resisted by Croydon authorities. Instead, Croydon Corporation made the decision to make land available for speculative office development. Given that controls were in place at most other locations near Central London, office floor space in Croydon grew substantially.

The expansion of Croydon as an office centre has not been without its problems, however. Because the development of the centre has occurred through a number of additions spread over several years, it has been difficult to plan for transportation needs. Many of the early office buildings in Croydon made very little provision for parking, so there has been an increasing trend toward on-street parking. Currently over 7,000 cars are parked around the central areas during the average work day. Though more parking garages have been planned close to the main traffic routes, transportation problems cannot be permanently solved this way. There are several conflicting transportation needs which are placed on central Croydon: local workers require transportation routes and parking spaces there, while Central London workers ride in cars to the Croydon station, where they transfer to fast trains to downtown.

In addition, those making shopping trips to Croydon also must be accommodated. To date proposed solutions to these conflicting transportation needs have yet to be adequately implemented.

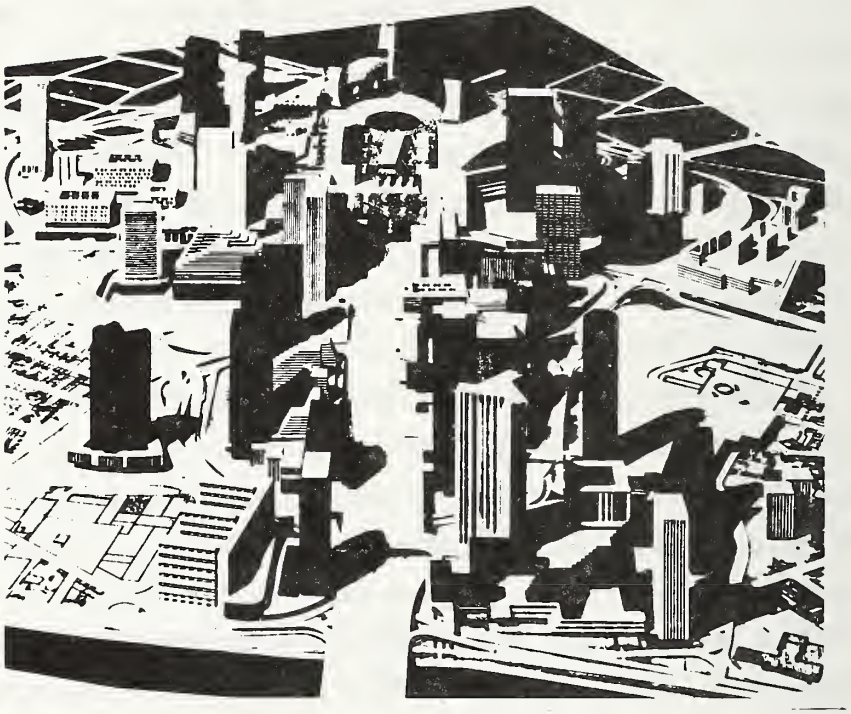
Another issue which has been addressed is the extent to which outer centres distort wage rate differentials. These differentials are sometimes brought about by competition for staff, or as compensation for the moving of firms from the Central area of London. In a study done for the Location of Offices Bureau by Peter Child, it was concluded that the wage rates of individuals coming to Croydon from Central London decreased significantly as a result of the change in job location [13]. Though this conclusion does not necessarily apply to all types of employee moves, Child did find a wage rate saving for firms decentralizing to Croydon. The distortion of wage rates has thus not been a problem for the Croydon office centre.

To summarize, the Croydon office centre outside London has experienced a considerable rise in office employment since 1956. The redevelopment of Croydon into a successful office centre has occurred largely because of the efforts of the Croydon Corporation. Given the availability of land at the site and its excellent accessibility to Central London and suburban areas, it has been able to attract a mix of office and shopping developments. Its desirability as a location for offices was substantially increased when development restrictions were put in place at other suburban locations. Though decentralization policies were intended to promote developments at greater distances from London, Croydon has contributed to the relocation of several firms from the Central London area, which was the original goal of decentralization.

17. La Defense, Paris, France

One development in Europe that is especially interesting and of relevance to the American and Canadian scenes is the La Defense Project in Paris. This project involves the redevelopment of a large tract of land on the banks of the Seine. Work was begun in 1958 and is still underway. When completed, the project will contain 30 office buildings (a total of 16,683,998 square feet), apartments for 30,000 people and a regional shopping center of 1,700,000 square feet (see Figure 4.19). In addition, the area will contain a national exhibition hall, hotels and an arts and entertainment center. All of the structures will rise from a platform that will allow all transportation facilities to be placed underground. Public transportation has been planned so that the

Aerial View



Ground View

Figure 4.19. View of Model of La Defense and Ground Level View of Site in 1973

inhabitants, employees, and visitors will be able, if necessary, to do without individual means of transportation, no matter where they are coming from or going to. Traffic that is passing through the site is contained in tunnels under the site so as to cause a minimum of intrusion.

The road system that serves the site consists of three hierarchial levels (see Figure 4.20). The first is composed of auto routes and national roads that pass through the project, meeting at a large underground interchange completely below the surface. The second level consists of the distribution roads that provide links to the through roads and to the neighboring areas. The major element in this system is a one-way circulatory road that varies in width between three and five lanes. The third level contains the access roads that link the feeder roads to the parking lots and the service areas.

The public transport interchange facility allows passengers to transfer directly from the suburban rail system to the local bus system or the rapid transit system. An interchange hall, which has direct corridors and escalators leading to the stations serving the three modes, is also connected by escalators to the pedestrian area and to the exhibition hall. A new railway station, built to serve La Defense, serves two busy lines between Paris and the western suburbs and an additional line to the southwest suburbs is planned. The rapid transit station is located under the interchange hall. It has a two-platform configuration and the journey to the Etoile station, within the central city, takes only four minutes. The new bus station acts as a terminal for several local and suburban lines and is built on top of a 1,000-car parking garage.

The traffic-free area in the center of the project provides access to all buildings. Because the area is so large, a high-capacity moving walkway has been constructed to assist pedestrian movements in the complex. A further transport link to La Defense has been planned that would connect it with the new town of Pontoise by means of an aerotrain. This would be the first commercial route of this tracked air-cushion vehicle.

La Defense is designed to be a 24-hour development that will not close down at sunset. It is intended to bring some of the urbanity of Paris to the suburbs for the first time. This project is a very good example of the kind of major diversified center that was the subject of the 1971 MDC study in the Twin Cities of Minnesota.

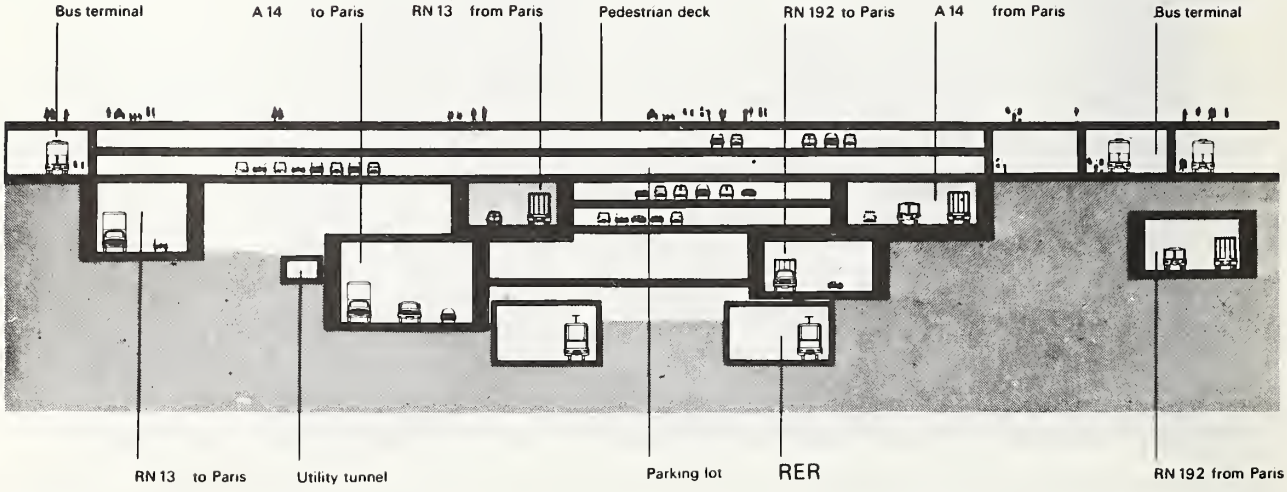


Figure 4.20. Model of Underground Transportation System for La Defense and Cross-Section Diagram

Recent information from Paris, however, indicates that the La Defense project is currently experiencing financial difficulty [10][17][22]. Construction plans are behind schedule, much of the office space remains vacant, and two department stores have postponed the opening of branch stores in La Defense. Some would argue that examining the project before its completion is unfair, yet there is widespread concern that some government action may be necessary if La Defense is to be kept financially viable. The various problems which La Defense is currently experiencing are described below.

The La Defense site has two principal areas of office, retail, and apartment space, which have been named Zone A and Zone B. In Zone A of the La Defense site, 97 percent of the land has been acquired, and 85 percent of the construction permits for apartments and 54 percent of the construction permits for offices have been sold. Financial difficulties arose in 1972 in the construction projects for this Zone, and so a decision was made to double the square footage of office space. As a development incentive, the government allowed the agency in charge to offer loan credits to private developers. Despite these efforts, only about half of the proposed office space has been constructed. This shortfall may prove to be a blessing, however. Almost half of the office construction completed in the last two years is yet to be occupied. The Neptune Tower is 40 percent full, the General Tower is 80 percent full, but the Manhatan Tower is empty. The alleged reason behind the complete vacancy of the Manhatan Tower is that its owner is from Kuwait, and he refuses to rent it to more than three parties. This situation of high vacancy is severely damaging the financial prospects of the entire project.

There seem to be two major reasons behind these financial problems. The first is that the supply of office space in the Paris region far exceeds the demand. The outgoing head of the lead planning agency for La Defense (the EPAD) noted that offices are no less saleable in La Defense than in Paris in general. The second reason, which is interconnected with the first, is that the EPAD has had its own financial problems, and it has therefore been unable to adequately fund the project. A major source of its revenues comes from the selling of construction permits. The problem, however, is that no construction permits have been sold since 1974, and monies from those sold previously have now run out. The situation of financial instability seems to apply only to office space, and not to apartment projects in Zone A. For example, of the 9,500 apartments which are planned, nearly 5,700 have been completed and only 390 remain vacant.

An interesting side issue relates to the height of the office towers which are now under construction. There were several buildings in particular which had "mirror" exteriors, which apparently distorted the perspective from the Louvre Art Museum to the Arch of Triumph along the Champs-Elysees. At the personal request of the French President, Valery Giscard d'Estaing, these towers were reduced in height by about 65 feet. It is perhaps fortunate that this request was acceded to, as it had the effect of reducing the square footage of office space at that site.

Similar problems as those outlined above have plagued construction in Zone B of La Defense. It was originally hoped that this area would contain four art schools and one museum. What has happened instead is that the art museum has located elsewhere, and only one art school has actually been constructed. In addition, the government office building that was pledged for the area will not be built after all. The greatest difficulty with the program in this Zone, however, is that not a single office building has been constructed. As was the case with Zone A, though, the provision of apartments is proceeding according to plan. Nearly 700 units of middle income housing are underway, as are 800 units for other income groups, and nearly 1,400 apartment units. There seems to be every indication that the vacancy rates for these housing units will not be abnormally high.

Another problem which has recently developed is the decision by two of the largest department stores in France to postpone the opening of branch stores in La Defense. They are not expected to make another commitment for about three years. As a result of this change in plans, the organization responsible for Zone B is asking over 10 million francs in damages and interest for the breach of contract by these two department stores. This new crisis aggravates the problems with which La Defense is already plagued. The only solution which is currently being contemplated is the solicitation of private donations and government subsidies. It is unclear at this time just how much money would be required from the government in order to make La Defense show a profit during its next fiscal year.

The analysis of the La Defense project shows how this very ambitious and large-scale effort has been imaginatively conceived and carried out since 1958. In the last few years, however, the projected demand for office space has not materialized, and so La Defense consists of substantially underutilized office structures. This situation is a major contributor to the financial problems which La Defense is now experiencing. Some type of government intervention appears necessary, though such a decision has not yet been made so far as we know.

18. La Part Dieu, Lyon, France

A second French project of interest is the La Part Dieu major diversified center that has recently been completed in Lyon, France. This complex has been built in the central part of Lyon and was basically a large-scale urban redevelopment project. It contains a large regional shopping center of 1,200,000 square feet with five major department stores and 173 smaller tenants. It also contains 13 restaurants, six cinemas and one bowling alley. A 42-story office tower which contains 500,000 square feet of office space, a 250-room hotel, parking for 4,500 cars and a rapid transit station are all included in this project as are several high rise apartment buildings, a large library and some government office buildings.

This project has attracted much attention in the United States and was featured at a recent convention (April, 1977) of the International Council of Shopping Centers, an organization of developers and operators of large shopping complexes. It will probably stimulate some similar projects in the United States and Canada in the near future. Again, it is exactly the kind of major diversified center that was the subject of the 1971 MDC study in the Twin Cities of Minnesota, although not located in the outer city.

It is probable that there are several other examples of MDC's in Europe and Japan that could provide substantial assistance to the consideration of this topic in the United States. It has not been possible to search them out in this study but future research should attempt to do so.

In summary, these 18 sites are believed to be representative of the type of opportunity that exists in the outer city of most large urban regions in the U.S. and Canada today. Table 4.1 is a summary of the attributes of some of these 18 sites and it shows that there is considerable variation among them. Any national program that was formulated to encourage the growth and densification of these sites would have to recognize and accommodate these differences as they strongly affect the development potential of each area.

C. Potential

Assessing the potential for the development of major diversified centers in the outer city is a difficult task and one that can be dealt with only in a preliminary way in this report. Clearly, the potential for the creation of such centers is greatest in those cities that are expected to grow rapidly in office and retail employment during the next few years. Table 4.2 is a list of those

TABLE 4.1

Attributes of Eighteen Outer City Centers, August, 1978

Location	Attribute						
	Present Size (Jobs)	Desired or Projected Size (Jobs)	Type	Ownership of Site	Transit Plans	Desired or Projected Density	Status
Irvine Center	0	30,000+	new	single	unknown	low	construction begins in 1979
Scarborough Town Centre	4,400	30,000+	new	single	light rail and bus	medium high	underway
North Yonge Centre	10,000	40,000	redev.	multiple	rail and bus	medium high	underway
New Westminster Centre	2,500	30,000	redev.	multiple	light rail and bus	medium high	underway
Burnaby Centre	7,000	30,000	redev.	multiple	light rail and bus	medium high	underway
Villa Italia	1,500	30,000+	new	single	bus	medium	underway
Denver Tech. Center	4,500	30,000+	new	single	bus	low	underway
Anaheim	0	unknown	new	single	rail, bus, monorail	medium	underway
Bellevue CBD	12,000	30,000	redev.	multiple	bus	medium	underway
Greenway/ Post Oak	70,000	100,000	new & redev.	multiple	bus	medium	underway
Plaza del Oro	unknown	unknown	new	single	bus	medium	underway
Schaumburg	10,000	30,000	new	multiple	bus	medium	underway
Oak Brook	20,000	unknown	new	single	bus	medium	underway
Southdale	6,000	30,000+	new	multiple	bus	medium	underway
Eden Prairie	unknown	30,000+	new	multiple	bus	low	underway
Croydon	40,000	unknown	redev.	multiple	rail and bus	high	underway
La Defense	unknown	unknown	redev.	single	rail, bus	high	underway
La Part Dieu	10,000	10,000	redev.	single	rail, bus	high	completed

Table 4.2

The SMSA's Expected to be the Fastest Growing in the U. S., 1970-2000

Rank	SMSA	Total Population 1970	Total Population 2000	Growth Increment $\frac{2000 - 1970}{1970} \times 100$
1	Ft. Lauderdale, FL	628	1,472	134
2	Miami, FL	1,278	2,817	120
3	Phoenix, AZ	968	1,886	95
4	Tampa, FL	1,012	1,955	93
5	San Jose, CA	1,017	1,954	82
6	Washington, D. C.	2,861	5,189	81
7	Orlando, FL	434	769	77
8	Atlanta, GA	1,390	2,465	77
9	Greensboro, NC	605	1,016	68
10	Houston, TX	1,985	3,256	64
11	Charlotte, NC	409	661	62
12	Denver, CO	1,227	1,981	61
13	Nashville, TN	541	872	61
14	Columbus, OH	916	1,475	61
15	Oklahoma City, OK	641	1,028	60
16	Rochester, NY	883	1,412	60
17	Richmond, VA	518	817	58
18	Louisville, KY	828	1,297	57
19	Anaheim, CA	1,431	2,245	57
20	Flint, MI	497	767	54
21	Dallas-Ft. Worth, TX	2,330	3,589	54
22	Jacksonville, FL	529	815	54
23	Honolulu, HI	621	953	53
24	Minneapolis-St. Paul, MN	1,814	2,760	52
	Average	1,056	1,810	71

Source: U. S. Department of Commerce, 1972 OBERS Projections: Economic Activities in the U. S., Vol. 5, SMSA, April 1974.

SMSA's that are expected to have the largest growth increment in relation to their 1970 situation during the 1970-2000 time period. These SMSA's all had more than 400,000 people in 1970 and are the 24 (of 79 in this size category) that had an expected growth increment of more than 50%. As noted, these projections were developed in 1972 and published in 1974 by the Department of Commerce. They are the most recent nationally recognized forecasts of this type known to us. More recent estimates from selected cities indicate that these forecasts are probably quite optimistic.

These forecasts show that the greatest growth rates during the 1970-2000 period are expected to occur in SMSA's which had an average population size of a little over 1,000,000 in 1970 and were expected to add an average of 800,000 people during a 30-year period. Typically, 800,000 people require about 320,000 jobs and if we assume that about one-fourth of these jobs will be in the service sector and available for "shaping," the average SMSA in this group would be looking at a centers program aimed at clustering about 80,000 jobs into job center locations. This is an amount that translates into not more than two or three outlying centers in the 30,000 - 40,000 size range.

In geographic terms, half (12 of 24) of these SMSA's are in the Southeast (see Table 4.3). Three of these cities (Miami, Atlanta and Washington, D.C.) have already selected a heavy rail transit system and are not likely to be interested in an outer city centers program. Tampa and Nashville have indicated some interest in the MDC concept and have included a map of activity centers in their most recent land use plans. The second largest geographic grouping is in the Southwest and includes five SMSA's. Within this group, Denver and Houston have shown interest in outer city centers thus far. The other seven are not located in any particular section of the country. Among these seven, Minneapolis-St. Paul and Anaheim have developed a plan for one or more outer city centers.

Some data regarding the status of the MDC element of the land use plan in these cities that responded to our survey are given in Table 3.1 in Section III. These cities all have a regional planning organization that is a member of the National Association of Regional Councils. No data of this type have been obtained for nine of the cities in Table 4.3.

Fast growth is not the only factor that can indicate potential for a centers program. In fact, some of our larger, older cities will be adding much larger numbers of people to their outer city areas than many of the smaller but faster growing cities in Table 4.3. Those SMSA's that are expected to grow by less than 50% but by more than 500,000 people are listed in Table 4.4. This group contains

Table 4.3

Geographic Groupings of High-Growth SMSA's

Rank	SMSA	Total Population 1970	Total Population 2000	Growth Increment
Southeast				
1	Ft. Lauderdale, FL	628	1,472	134
2	Miami, FL	1,278	2,817	120
3	Tampa, FL	1,012	1,955	93
4	Washington, D. C.	2,816	5,189	81
5	Orlando, FL	434	769	77
6	Atlanta, GA	1,390	2,465	77
7	Greensboro, NC	605	1,016	68
8	Charlotte, NC	409	661	62
9	Nashville, TN	541	872	61
10	Richmond, VA	518	817	58
11	Louisville, KY	828	1,297	57
12	Jacksonville, FL	529	815	54
Southwest				
1	Phoenix, AZ	968	1,886	95
2	Houston, TX	1,985	3,256	64
3	Denver, CO	1,227	1,981	61
4	Oklahoma City, OK	641	1,028	60
5	Dallas-Ft. Worth, TX	2,330	3,589	54
Midwest				
1	Columbus, OH	916	1,475	61
2	Flint, MI	497	767	54
3	Minneapolis-St. Paul, MN	1,814	2,760	52
West				
1	San Jose, CA	1,017	1,954	82
2	Anaheim, CA	1,431	2,245	57
Northeast				
1	Rochester, NY	883	1,412	60
Pacific				
1	Honolulu, HI	621	953	53

Source: Table 4.2

Table 4.4

SMSA's Expected to Grow by Less Than 50 Per Cent
But by More Than 500,000 People, 1970-2000

SMSA	1970	2000	Increase	Growth Increment
San Diego, CA	1,358	1,976	618	46
Kansas City, MO	1,254	1,793	539	43
Newark, NJ	1,863	2,529	666	36
San Francisco, CA	3,109	4,155	1,046	34
Boston, MA	3,754	4,995	1,241	33
Los Angeles, CA	7,032	9,115	2,083	30
Chicago, IL	6,979	8,934	1,955	28
Detroit, MI	4,200	5,322	1,122	27
Philadelphia, PA	4,818	6,015	1,197	25
New York, NY	11,572	14,323	2,751	24

Source: Same as Table 4.2

the five largest SMSA's in the U.S. in 1970 plus five others. As can be seen, the New York region is expected to add about 2,750,000 people during this time period. The expected increment is almost as large in Los Angeles and Chicago. Four other cities have population growth forecasts of more than 1,000,000 in this time period (San Francisco, Boston, Detroit and Philadelphia). It is probable that the rate of growth in the outer city portions of these ten SMSA's will equal or exceed that of the smaller, but faster growing, SMSA's listed in Table 4.2. However, no forecasts are available that can confirm or refute this assertion at present. Moreover, recent indications are that these forecasts are overly optimistic as present growth rates are less than expected a few years ago.

In summary, it appears that enough growth is expected in 20 - 30 SMSA's during the 1970-2000 period to make an outer city centers program feasible. Of these, Minneapolis-St. Paul and Denver appear to be the most likely near-term prospects in terms of their past interest in outer city centers. Among the larger SMSA's, New York, Chicago, Philadelphia, San Francisco and Los Angeles have all included an outer city centers element in their regional planning activities but none has seriously pursued its implementation to date. When

the current round of land use planning activity in Metropolitan Planning Organizations is completed (expected in late 1978 and early 1979) another survey should be conducted among these SMSA's to ascertain how the status of the outer city centers element has evolved. With this information, a more accurate assessment of the potential of this concept in these high growth areas could be developed.

A second way of examining the potential of the major diversified center concept in the outer city is to look at the trends and expectations regarding the large regional shopping centers in the United States. The large regional shopping center, defined here as having more than 800,000 square feet of gross leasable area, is a necessary element in any MDC development plan. In 1976, there were about 17,523 shopping centers in the United States and about two per cent (363) of these contained more than 800,000 square feet. Many of these large regional centers probably have the potential to become part of some type of major diversified center in the outer city. One hundred and eighty-eight or 52 per cent of these regional centers are located in six states as shown in Table 4.5.

Just because they are big does not mean that all of these centers have the potential to become part of a larger MDC but these figures do provide some sense of how many centers might become involved in any national program to create MDC's in the outer city. For example, one might expect to find that one-third to one-half of these centers (i.e., 120 to 180) are logical candidates for such a program.

Trend data regarding the number of shopping centers in this size range are available for three points in time (1972, 1974 and 1976) and they show (see Table 4.6) that the number of centers in the 800,000-plus square-foot category has increased much faster than the total of all shopping centers during this four-year period. Experts in the field do not expect to see many more large regional centers built during the next five to ten years, so this trend may not continue.

A third way of looking at the potential for MDC's is to examine the data on Major Retail Centers as defined by the Bureau of the Census as part of its Census of Business, conducted every five years. The 1967 Census of Business was published in 1970 and contains the most recent data for the nation as a whole. This Census looks at two types of retail centers: (1) central business districts and (2) concentrations of retail stores (other than CBD's) located in each SMSA. The second category includes the Major Retail Centers (MRC's) which are outer city centers and of special interest to this study. MRC's are defined

Table 4.5

States Having Five or More Regional Shopping Centers with more than 800,000 Square Feet of Gross Leasable Area, 1976

Rank	State	Number of Regional Shopping Centers			
		Type A	Type B	Total	
1	California	36	28	64	188
2	Ohio	18	9	27	
3	Texas	14	12	26	
4	New York	9	16	25	
5	Florida	14	10	24	
6	Illinois	7	15	22	
7	Pennsylvania	11	8	19	
8	New Jersey	7	9	16	
9	Missouri	8	5	13	
10	Michigan	5	6	11	
11	North Carolina	6	4	10	
12	Arizona	6	3	9	
12	Wisconsin	4	5	9	
14	Georgia	4	4	8	
14	Maryland	3	5	8	
16	Indiana	3	3	6	
17	Colorado	3	2	5	
17	Minnesota	2	3	5	
17	Virginia	3	2	5	
17	Washington	1	4	5	
	Total	164	153	317	
	Total in U. S.	192	171	363	

Type A is 800,000 to 1,000,000 square feet
Type B is more than 1,000,000 square feet

Source: Shopping Center World, January 1977.

Table 4.6

Trends in the Number of Regional Shopping Centers
as Compared with All Shopping Centers, 1972-76

	1972	1974	1976	1976/1972
Number of Regional Shopping Centers (more than 800,000 square feet)	196	242	363	1.82
All U. S. Shopping Centers	13,240	15,074	17,523	1.32

Sources: Shopping Center World, January 1973, 1975 and 1977.

Table 4.7

Major Retail Center Data from the Census of Business

	1963	1967	1972*
Total Number of MRC's in the U. S.	972	1,225	(2,200)
Number of MRC's with Annual Sales of $50 Million or More	74	139	(308)
Per Cent of All U. S. MRC's	8	11	(14)

*Estimated by the authors

by the Census Bureau as those concentrations of retail stores, located inside the SMSA but outside of the CBD, having at least $5 million in retail sales and at least ten retail establishments, one of which is classified as a department store. MRC's include not only the planned suburban shopping centers but also the older "strip" commercial areas which meet the requirements. Frequently, the boundaries of a MRC include stores within a planned center and other stores adjacent to the planned center. The 1967 Census of Business includes data for 1,700 MRC's located in 230 SMSA's and for 134 CBD's. No national summary from the 1972 Census of Business has been published.

Table 4.7 shows the most recent national summary data that have been published (in 1970) by the Census Bureau. The figure for 1972 is an estimate developed by the authors and is not an official figure. These data show that there were a large number of these MRC clusters outside the CBD in 1963 and 1972 and that the growth in the number of MRC's between 1967 and 1972 was explosive (i.e., an increase of about 80 per cent in only five years. Table 4.7 also includes a tabulation of those MRC's which had a sales of more than $50 million in 1963 and 1967. If we assume that the proportion that these larger centers are of the national total rose to about 14 per cent in 1972, then there would have been about 308 MRC's in this size range in 1972. Part of this growth in the number of centers is due to the inflation of the dollar, so only a portion of this figure can still be considered to be in a "large" size category. According to data from Shopping Center World, the average annual sales in 1976 for shopping centers with more than one million square feet was about $113 million, while the average sales figure for the 800,000 to 1,000,000 square foot centers was about $80 million. Since there were 363 shopping centers in these two size categories in 1976, it appears that there are few, if any, MRC's that have sales in excess of $50 million per year that do not include a shopping mall in the 800,000-plus square foot size category. Therefore, any outer city center stimulation program would have to deal with the problem of including a large auto-oriented shopping mall as a major element in the development of a MDC plan.

A key private sector organization in this regard is the International Council of Shopping Centers (ICSC) headquartered in New York City. ICSC is a voluntary, non-profit trade association that was established in 1957 and today has about 5,600 members located in 29 countries. Approximately two-thirds of its members are owners, developers or managers of shopping centers. ICSC's membership roster also includes a broad cross-section of lending institutions, attorneys, architects, contractors, leasing brokers and market research companies. These are the people who would have to be convinced that the creation

of outer city centers built around their shopping malls would be in their best interests. No national program aimed at creating a substantial number of outer city centers could be expected to get very far without the endorsement and cooperation of these people.

A review of recent issues of the periodicals which serve this field (Shopping Center World, Real Estate Forum, National Real Estate Investor, Chain Store Executive, National Mall Monitor) has shown that transit is not a subject of interest to the readers of these periodicals at this time. Getting these people interested in the subject of using transit to encourage the growth and densification of the areas around their malls would require a large-scale and intensive effort before one could determine how feasible a national outer city centers program might be. However, if a serious shortage or sharp rise in the price of gasoline produced a drop in sales at these shopping centers over a period of several months, one could expect the ICSC members to become more receptive to transit-oriented ideas very quickly. This industry keeps close tabs on its current operations and is quick to sense any threat to its continued prosperity. Its communication methods and channels are well-developed and new ideas can be transmitted quickly and effectively to the membership. Some assessment of the outer city center concept among these people should be a high priority item in further work on this topic.

The Bureau of the Census (Geography Division) has recognized that some dissatisfaction with the MRC concept exists and has developed some changes in the definition of the MRC that is being used in the 1977 Census of Business. Two changes have been made. First, an MRC has to have 25 rather than ten retail stores and one store has to be a general merchandise store with 100,000 square feet or more rather than one store being classified as a department store. In addition, about 25 large (500,000 or more people) cities have decided to delineate major and minor city economic areas (CEA's). Data for the CEA's will include manufacturing, wholesale, retail and services (major areas) and retail and services (minor areas). Guidelines, including the level of detail and type of data to be tabulated, were made available in October of 1977. The Census Bureau does not currently plan to publish any data from the CEA program until 1980. Even then, the data will not be published for general use. The CEA program is designed to produce the kind of data that could make an accurate count of the number of clusters of economic activity in the outer city available as well as providing information on the size and mix of activities in each center. Unfortunately, this program seems to have a relatively low priority in the Census Bureau and little useful information can be expected from it until 1982, if then.

There are two other factors which could exert a significant influence on the potential for outer city centers becoming the focus of a national program designed to encourage their growth and densification. One is the need to conserve gasoline which may arise because of sharp price increases or because of a government rationing program. In either case, the result would be a tendency for people to make fewer and shorter trips whenever possible. This would tend to make the outer city centers more attractive as locations for those activities that especially desire to be near outer city population groups, either in terms of their labor force needs or in terms of their need for middle and upper income customers.

If gasoline price increases or rationing does occur, and people respond by making fewer and shorter trips, then one could expect the air quality of our cities to improve noticeably. Of course, this can occur only if people can satisfy their needs at nearby locations. Thus, the encouragement of outer city centers can aid the achievement of both of these linked goals, if they become an important element of our national policy in the future. Still, the air quality in the outer city centers may become worse if they are developed as auto-oriented centers. If transit is provided in a timely and forceful fashion, these centers may be able to grow and become more dense without reducing the quality of the air appreciably. A well-designed transit service to and within outer city centers is therefore probably an important precondition to the achievement of any substantial reduction of travel and air pollution within the urban region.

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APPENDIX A

PERSONS INTERVIEWED

Atlanta, Georgia

John Bates, Richard Courtney, Eric Harkness, Manuel Padron, Brenda Stone, Joel Stone, Tom Weyandt, John Wilson

Baltimore, Maryland

Jacob Kominsky, T.R. Lakshmanan, James Rose, Tom Totten, Robert Young

Chicago, Illinois

Kenneth Carmignani, J. Colt Landreth, Jack Meltzer, Philip Peters, Dean Pollack

Denver, Colorado

Alan Canter, Robert Friis, Edward Gerhardy, David Howell, Ralph Jackson, Charles King, Larry Nowacki, Fernando Ospina, Don Shanfelt

Houston, Texas

Bob Bennett, John Carrara, Burton Fisher, Barry Goodman, John Hodson, Joe Pyle, Craig Roberts, Charles Savino, Carl Sharpe, Travis Tullos, Jr.

Irvine, California

Ron Hendrickson, Donald Moe

Los Angeles, California

Norman Emerson, Art Hasegawa

Miami, Florida

Roy Barden, Charles Blowers, Allan Bly, John Dyer, Harvey Flechner, Walter Geiger, Juanita Greene, Michael Lambert, Woodrow Moore, Reginald Walters, John Woodlief, Simon Zweighaft

Minneapolis-St. Paul, Minnesota

Steve Alderson, Larry Dallum, Robert Davis, Marlin Gilhousen, John Jamieson, Jean Johnson, Greg Luce, Richard Putnam, George Scheuernstuhl, Clarence Shallbetter

New York, New York

John Follis, Jr., John Keith, Jeff Zupan

San Diego, California

Dave Allsbrook, Jack Bentley, William Doyle, George Frank, Ross Hall, Walter Jaconski, Thomas Larwin, Maryann Munsell, Max Schmidt

San Francisco, California

Emilio Escudero, William Goldner, Thomas Graves, Chris Hartzell, Gordon Jacoby, Joel Markowitz, John McCallam

Seattle, Washington

Jeff Holland, Jim Johnson, Peter Marshall, Frank Orrico, William Popp, Nancy Rising, Norman Seethoff, Henry Sharpe, James Smith, Michael Smith

Toronto, Ontario

Greg Barker, Larry Bourne, Giovanni Campitelli, Malcolm Matthews, George Peter, Ronald Rice, Ed Sajecki, Robert Schmidt, Ken Whitwell

Vancouver, B.C.

Ted Droettboom, Michael Goldberg, Basil Luksun, Robert MacIntyre, Francis P.D. Navin, Donald Spaeth, Larry Ward

Washington, D.C.

George Chapman, Jay Lankford, Jane Rodgers, Richard Sheridan

Others in Various Cities who have Assisted with Advice and Materials:

Kurt Bauer, F. Stuart Chapin, Jr., Melvin Cheslow, Brian Day, Robert Einsweiler, Howard Evoy, Stanley Feinsod, Calvin Hamilton, Robert Harmon, Jack Judge, Harold Mayer, Peter Muller, John Parr, Norman Paulus, Stanley Price, Don Priest, Dennis Ryan, Jacob Silver, Al Sussman, Oscar Suttermeister, Richard Weissbrod, Meyer Wolfe

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